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Growing old : Population ageing and democratic representation in Canada

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Résumé

Le vieillissement de la population a de nombreuses conséquences sur nos sociétés, comme la transformation du marché de l'emploi, l'émergence de nouveaux besoins en termes d'immigration et la création de nouveaux modèles familiaux qui défient le modèle traditionnel. Le vieillissement de la population affecte également l'offre et la demande de certains programmes gouvernementaux, comme la santé ou les pensions de retraite. Les conséquences du vieillissement de la population sur la politique électorale et la représentation démocratique ne sont cependant pas très bien comprises.

Les chercheurs qui ont recours à l'approche sociologique pour étudier différents phénomènes ne s'entendent pas tous sur les conséquences du vieillissement de la population pour la politique. D'une part, certains posent l'argument selon lequel l'âge n'est pas un facteur suffisamment important pour expliquer les différences dans l'appui aux différents partis politiques, ce qui fait en sorte que l'influence des aînés sur la politique ne peut qu'être minime. D'autre part, certains posent l'argument selon lequel les différences d'âge en termes de préférences politiques peuvent avoir une influence sur les résultats politiques. Par exemple, en participant aux élections ou en créant des groupes d'intérêt, les aînés peuvent influencer les décisions des élus. L'objectif de cette thèse est de présenter des assises théoriques et des éléments de preuves empiriques pour faire avancer ce débat. Plus précisément, cette thèse tente de répondre aux questions suivantes : Les personnes plus âgées ont-elles des préférences politiques différentes des autres groupes d'âge ? Les aînés préfèrent-ils certains partis politiques ? Si oui, la participation politique des aînés peut-elle mener à l'élection de ces partis ? Les élus s'intéressent-ils aux enjeux qui touchent les aînés ?

Le cadre théorique présenté dans cette thèse m'amène à formuler une série d'arguments sur les conséquences du vieillissement de la population pour la représentation. Au niveau individuel, je pose l'argument selon lequel l'âge peut influencer la formation d'opinions politiques et affecter l'accès à certaines ressources qui sont importantes pour la participation. Cela a différentes conséquences sur les préférences politiques et la participation des différents groupes d'âge, conséquences qui peuvent se transposer sur la représentation. Premièrement, si les préférences politiques des citoyens changent en raison du vieillissement de la population, alors les élus pourraient avoir tendance à vouloir représenter ces nouvelles préoccupations citoyennes pour des raisons normatives. Deuxièmement, une plus grande participation électorale chez les aînés pourrait affecter la composition des assemblées législatives, ce qui en retour pourrait avoir des répercussions sur les décisions prises au gouvernement. Troisièmement, le taux de participation plus élevé chez les aînés pourrait créer des incitatifs pour les candidats et les politiciens d'être à l'écoute des préférences de ces citoyens. Enfin, en étant plus impliqués dans des formes non-électorales de participation (comme les groupes d'intérêts, par exemple), les aînés pourraient réussir à faire entendre leurs préoccupations par les politiciens, et ainsi influencer les décisions prises par ces derniers.

Ma démonstration empirique repose sur le cas canadien et comprend trois articles. Chaque article présente des analyses qui visent à valider certains aspects du cadre théorique. Le premier article porte sur l'effet de l'âge sur les préférences en termes de dépenses publiques. Les études sur cette question ont souvent été limitées à quelques programmes gouvernementaux ou à certaines années, ce qui rend difficile de tirer des conclusions à ce sujet. Mon analyse repose sur des données canadiennes tirées de sondages d'opinion publique menés entre 1987 et 2019 lors desquels les répondants ont été amenés à se positionner sur 15 enjeux. Mes résultats démontrent que les personnes plus âgées sont plus favorables à un maintien du statu quo en termes de dépenses publiques. Ils démontrent également que les aînés sont moins favorables aux dépenses en éducation et plus favorables aux dépenses militaires et de transport.

Le deuxième article analyse le comportement électoral en résidences pour aînés. Cette question fait l'objet de très peu de recherche, et ce même si le nombre de personnes qui vivent en résidences augmente à travers le monde. Dans cet article, j'ai recours aux résultats électoraux dans les bureaux scrutin lors des élections fédérales canadiennes de 2015 et de 2019 pour analyser les différences dans la participation et le vote entre ces bureaux de scrutin et les autres bureaux de scrutin. Mes résultats confirment que la participation électorale est plus élevée dans les résidences pour aînés, tout comme l'appui aux partis conservateur et libéral. L'appui au NPD est pour sa part plus faible en résidences pour aînés. Ces différences sont quelque peu surprenantes, puisque le parti libéral n'était en général pas très populaire auprès des aînés en 2015 et en 2019. Les personnes âgées étaient aussi beaucoup plus défavorables au NPD que ce qui transparaît dans l'analyse des résidences pour aînés. Pour expliquer ces résultats, j'analyse les données d'un sondage mené auprès du personnel de résidences pour aînés pour savoir si certains partis ont plus souvent visité ces résidences que d'autres lors de la campagne de 2019. Je présente également les résultats d'entrevues menées auprès d'employés de partis politiques fédéraux. Bien que tous les partis aient un intérêt marqué envers les résidences pour aînés lors des campagnes, il semble que le parti libéral ait visité un plus grand nombre de résidences en 2019, surtout dans les provinces clés.

Le dernier article analyse la représentation des aînés à travers les débats parlementaires. L'association entre le contenu des discours parlementaires et les caractéristiques des citoyens a surtout été étudié en ayant recours à un seul enjeu ou en se penchant sur un segment des débats, comme les périodes de questions. Dans cet article, j'ai recours à l'ensemble des débats parlementaires canadiens entre 1988 et 2015 pour analyser la correspondance entre le contenu des discours et les caractéristiques des citoyens. Pour ce faire, je présente de nouveaux dictionnaires crées à partir de l'index des Hansards. Ces dictionnaires contiennent des expressions qui me servent à identifier les mentions de trois enjeux dans les débats : l'immigration, le chômage et les enjeux liés aux aînés. Les résultats confirment que les élus

parlent de l'immigration et du chômage lorsque ces enjeux concernent leurs citoyens. Or, les représentants élus dans des circonscriptions plus âgées ne discutent pas davantage des enjeux liés aux aînés. Enfin, les analyses démontrent que les élus plus âgés discutent d'enjeux liés aux aînés davantage que les autres députés, ce qui pourrait indiquer l'existence de représentation descriptive.

Dans la conclusion, j'aborde différents mécanismes qui pourraient expliquer la faible association entre l'âge des citoyens et l'attention portée aux enjeux liés aux aînés par les députés canadiens. J'y aborde également les implications théoriques de chaque chapitre empirique pour l'étude du comportement politique, de la représentation et de la politique législative au Canada et ailleurs au monde. En présentant un cadre théorique original pour expliquer la représentation des aînés dans le contexte du vieillissement de la population, cette thèse contribue à créer de nouvelles opportunités pour les chercheurs qui s'intéressent aux liens entre l'âge et la politique.

Mots clés : vieillissement de la population, représentation démocratique, politique canadienne, politique législative, opinion publique, participation électorale

Abstract

The consequences of population ageing are manifold. They include transformations to the labour market, changing needs in terms of immigration and modifications to the traditional family structure. Population ageing also influences the demand for and provision of certain government services, like health care or old-age pensions. What is less clear, however, is whether the social changes brought about by population ageing also have implications for electoral politics and democratic representation.

In fact, proponents of the sociological approach in political science do not all agree on the repercussions of population ageing for politics. On the one hand, some argue that age-group cleavages in party preferences are generally insignificant, so seniors, even though they are forming an increasingly large group of voters in many democracies, are unlikely to have an impact on electoral politics or policy output. On the other hand, others argue that age differences in policy preferences can actually affect policy decisions; for example, through electoral participation or interest group mobilization. The goal of this dissertation is to develop theoretical foundations and offer new pieces of evidence to advance this debate, thus contributing to the field of research on age and politics. More precisely, this dissertation tries to answer the following questions. Do older people have different policy preferences, when compared to younger people? Do seniors have a preference for some parties over others? If so, can the participation of older people in the democratic process contribute to the electoral success of these parties? Do elected representatives pay attention to the interests of their senior constituents?

The theoretical framework presented in this dissertation leads to a number of arguments about the repercussions of population ageing for democratic representation. At the individual level, I argue that age can shape both the formation of political opinions and access to resources that influence political participation. This leads to different patterns of policy preferences and participation in older versus younger voters, which can have four implications for democratic representation. First, there can be a direct association between aggregate policy preferences and policy output. Some representatives may simply want to fulfill their normative role and be responsive to changing citizen preferences brought about by population ageing. Second, higher levels of electoral participation by older groups of citizens have the potential to influence descriptive representation, which can itself affect policy output. Third, these higher levels of participation create electoral incentives for political candidates to be attentive to older voters. Finally, by getting involved in different forms of non-electoral political participation, members of older age groups increase their opportunities to be in contact with politicians. This can enhance the importance of seniors' issue preferences in the eyes of representatives, thus fostering political responsiveness on these issues.

The empirical demonstration relies on the Canadian case and takes the form of three articles. Each article presents pieces of evidence to validate specific aspects of the theoretical framework. The first article addresses the question of whether seniors hold different attitudes towards government spending than younger people. The literature on age and public spending preferences has been limited to a few policies or to short periods of time, which makes it difficult to draw comprehensive inferences about life cycle changes in opinions towards government expenditures. Using Canadian public opinion surveys between 1987 and 2019 that asked respondents to position themselves on fifteen policies, I find that older people are generally more favourable to the status quo when it comes to government spending. I also find that support for education spending decreases extensively over the life cycle, while support for spending on defence and transportation is more widespread in older age.

The second article investigates political behaviour in seniors' residences. This question is largely under-studied, even though the number of people living in retirement communities or long-term care facilities is increasing in many countries. In this article, I rely on electoral results and polling station location data from the 2015 and 2019 Canadian federal elections to show that voters of seniors' residences vote more than other Canadians, and are significantly more supportive of the Conservative and Liberal parties. Moreover, as compared to other voters, voters of seniors' residences are somewhat less likely to support the New Democratic Party, but this difference is small. The disparities between party vote shares in seniors' residences and other polling stations are surprising, because older people in the general population were not largely supportive of the Liberals in 2015 and 2019. Seniors were also a lot less likely to vote for the NDP. To explain these results, I analyse data from an original survey conducted with the personnel of seniors' residences and qualitative data obtained from interviewing campaign workers. Evidence confirms that all parties are interested in visiting seniors' residences, but Liberal candidates visited a larger number of them ahead of the 2019 election, especially in battleground provinces.

The third article analyzes the representation of seniors through parliamentary speeches. The association between the content of parliamentary speeches and constituency interests has mainly been studied using single issues or by analysing types of debates when legislators are less constrained by their parties, like parliamentary questions. In this article, I use a comprehensive set of parliamentary text corpora from the Canadian House of Commons to analyse congruence between the content of MPs' speeches and constituents' characteristics. To do so, I create an original topic dictionary based on the index of the Hansards to identify mentions of three policy issues in the debates: immigration, unemployment and seniors' issues. Results show that legislators are responsive to locally-relevant concerns when debating immigration and unemployment, but not when it comes to seniors' issues. However, results

confirm that older representatives discuss seniors' issues more than younger representatives, which hints at the existence of descriptive representation.

In the concluding chapter, I present potential explanations for the weak responsiveness of MPs to senior constituents. I also discuss the implications of each empirical chapter for the democratic representation of seniors, and explain how the dissertation contributes to the study of political behaviour, representation, and legislative politics in Canada and in the comparative context. By developing an original theoretical framework for the representation of seniors in the context of population ageing, this dissertations opens up new avenues of research on age and politics.

Keywords: population ageing, democratic representation, Canadian politics, legislative politics, public opinion, electoral participation

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"Nothing scares a politician more than a senior citizen."

– Liberal Party of Canada strategist, 1995

Chapter 1

Introduction

"You made promises that you wouldn't touch anything... You lied to us. I was made to vote for you, then, goodbye, Charlie Brown!" lectured 63-year old Solange Denis to Canadian Prime Minister Brian Mulroney in front of the Parliament building after his government announced the partial de-indexation of Old-Age Security benefits in May 1985 (Béland, 2005; Gifford, 1990; MacGregor, 1985). Mrs. Denis's fury against the Prime Minister would instantly make her a symbol of Canadian seniors' fight against the proposition, which aimed to decrease government spending but went directly against promises made by the Progressive-Conservative party during the previous campaign. Two months later, Brian Mulroney would come back on his government's decision: "The government clearly, in hindsight, did not proceed in as wise a manner as should have been the case."

The 1985 mobilization against the modification of old-age benefits in Canada is just one illustration of how 'age-related interests' can have an impact on politics. In the United States, the American Association of Retired Persons (AARP) is often cited as one of the largest and most influential interest groups (Campbell, 2003). Following Brexit in 2016, the EU referendum outcome was repeatedly framed as 'youth against the elderly' (Sloam and Henn, 2019). In the context of population ageing, could instances of age-based political cleavages become more frequent? Like some previously assumed (Harris, 2020; Kemp, 2013; Noah, 2019; Peyser, 2021), are ageing democracies headed towards gerontocracy?

Fields of research like political economy and public policy offer compelling theoretical frameworks to understand the political changes that are associated with population ageing,

by focusing, for example, on institutional heritage and economic shocks to explain changes in healthcare provision or pension benefits (e.g., Béland and Hacker, 2004; Béland and Myles, 2012). In contrast, few political scientists have used the sociological approach as their main framework to explain the impacts of population ageing on politics. The field of political behaviour, for instance, has produced research on the political involvement of young electors (e.g., Henn, Weinstein and Wring, 2002; Sloam, 2016; Sturgis and Jennings, 2019; Urbatsch, 2017), on the age of elected officials (e.g., Sevi, 2020) and on generational cleavages in political orientations (e.g., Abramson, 1979; Inglehart, 1971; Jennings, 1987), but has remained remarkably quiet on the potential influence of competing age interests — and especially old-age interests — for electoral politics or policy output (notable exceptions include Anzia, 2019; Campbell, 2003; Curry and Haydon, 2018; McClean, 2019; Otjes and Krouwel, 2018). This is surprising, because we know that other demographic changes, such as those driven by immigration, are associated with the transformation of existing electoral cleavages and the emergence of new patterns of representation (Bird, Saalfeld and Wüst, 2010; Bowler and Segura, 2011; Martiniello, 2006; Schönwälder, 2013). Does population ageing impact political representation in a similar way? Can population ageing move public opinion, influence party orientations or government formation, and consequently affect policy decisions?

Interest in the electoral and representational consequences of population ageing dates back to the 1970s, when scholars — mostly American — started to question the relative political influence of different age groups, and to wonder about the power that larger birth cohorts may have in the future (Binstock, 1974; Cutler, 1977). These scholars speculated on the existence of a 'grey' or 'elderly' power, sometimes even referring to 'gerontocracy' to describe the future of American democracy. In 1977, Cutler wrote:

> The "baby boom" of the 1940s represents a "bulge" in the flow of population groups in contemporary American society. Surviving members of this age cohort, consequently, will represent a "gerontology boom" in the first decades of the next century. The demographic, social-psychological, and political factors explored here bear upon the question of whether this large group of citizens is likely to represent, in the aggregate, a significant actor in the future of American political conflict (p.1011).

Cutler and other scholars writing on this topic in the 1970s argued that population ageing could eventually matter for policy decisions and representation. Their rationale relied on sociological explanations: in the foreseeable future, older citizens would be able to influence policy-making because they would represent a larger share of the population than other age groups, would be more active than others in the electoral process, and would be able to form powerful interest groups (Cutler, 1977). But these predictions relied on stronger theoretical than empirical foundations: at the time, senior citizens barely represented 10% of the American population, and this age group did not form a coordinated voting block (Binstock, 1974).

Forty years later, the prediction of 'elderly power' had not materialized, at least not in the view of Tepe and Vanhuysse. In a 2009 article, the authors maintained that "the elderly are among the groups least likely to act as floating voters," (p.4) so they are unlikely to form voting blocks or rally behind specific issues. As a consequence, Tepe and Vanhuysse argue that institutional variables, rather than social forces, are better predictors of policy decisions, such as the generosity of old-age pensions. This view is in contrast with that of other scholars who argue that senior citizens have coordinated opinions, which can influence who gets elected and what policy decisions end up being made.

For example, Vlandas (2018) found evidence that elderly voters were less likely to support incumbents who have difficulty controlling inflation. As a consequence, socio-democratic parties tend to respond to an increase in the proportion of senior voters by becoming more "economically orthodox." This would explain, Vlandas argues, why countries with larger shares of seniors tend to maintain lower inflation rates. We are also witnessing the emergence of parties that defend the interests of pensioners specifically — so-called Pensioners' parties — on the European political landscape (Otjes and Krouwel, 2018). In what is perhaps the most comprehensive piece of work on seniors' policy influence, Campbell (2003) argued that older Americans have the ability to mobilize in order to protect the programs they most benefit from:

> [Seniors] are the Über-citizens of the American polity, voting and making campaign contributions at rates higher than those of any other age group.

> They also actively defend their programs, warning lawmakers through their participation not to tamper with Social Security and Medicare. The result is continued program growth, even as programs for the poor are cut (p.2).

In short, among the proponents of the sociological approach to political change, there is no consensus on the repercussions of population ageing for political representation. One of the main points of contention in this debate is whether or not seniors can influence policy decisions through elections or other types of political participation. This question, however, is not always addressed from the same angle or national context, which makes it difficult to know which side is more convincing. On the one hand, scholars like Tepe and Vanhuysse argue against the possibility of 'gerontocracy' because they do not find substantial age-group cleavages in *party preferences* (see also Ford and Jennings, 2020). On the other hand, scholars like Vlandas and Campbell do find age differences in *policy preferences*, and argue that these differences can — though party choice and interest group mobilization — affect political outcomes (see also Anzia, 2019; Campbell and Binstock, 2011). The goal of this dissertation is to develop theoretical foundations and offer new pieces of evidence to advance this debate, thus contributing to the field of research on age and politics.

1.1. Research puzzle

The debate that has divided scholars on the topic of age-based political cleavages motivates me to further explore the question of whether population ageing can have implications for democratic representation. In this dissertation, I address the following questions: Do seniors have different policy preferences, when compared to younger people? Do seniors have a preference for some parties over others? If so, can the participation of older people in the democratic process contribute to the electoral success of these parties? Finally, do politicians represent their older constituents? To provide insight into these questions, I rely on the Canadian case, a country where the age pyramid is being transformed significantly.

1.2. Population ageing in Canada

The Canadian population is one of the most rapidly ageing of the democratic world, even though the current share of people aged 65 years and older in Canada (17.6%) is still smaller than in other countries, like Italy (23%) or Japan (28%) (United Nations, 2019). Rapid population ageing is explained in Canada by the fact that the country experienced one of the largest baby booms of the world following the Second World War (van Bavel and Reher, 2013).

Figure 1.1 shows the evolution of the age distribution in Canada between 1921 and 2017. Before the Second World War, the proportion of children (aged less than 15 years old) relative to the rest of the population had started to decrease. The post-WWII baby boom is strikingly visible in this plot. After the War, the share of children aged less than 15 years old started to increase rapidly, reaching approximately 40% in 1960. The generations that followed, however, were smaller and smaller in size. As a result, the median age remained stable at around 25 years old until the 1970s, but has increased to more than 40 years old since then. This is due not only to the baby boom, but also to declining fertility rates — from 2.76 births by mother in 1940 to 1.61 in 2011 (Statistics Canada, 2014) — and increasing life expectancy at birth — from 63 years old in 1940 to 79 years old in 2010 (among men, Statistics Canada, 2016*b*).

The group of Canadians aged 65 years and older is expected to become even more populous in the future. Figure 1.1 reports Statistics Canada projections from a medium-growth scenario of the population between 2018 to 2063. It shows that the proportion of children (less than 15 years old) in the Canadian population should remain stable in the next decades, whereas the share of working-aged people (15-64 years old) is projected to decrease. This age group is expected to make up less than 60% of the population in the 2060s, compared to 66% in 2018. The most rapid change is concentrated in the current decade, due to the ageing of the baby boomer generation. After 2030, the share of seniors (65 years old or more) should still grow somewhat, but at a slower rate.
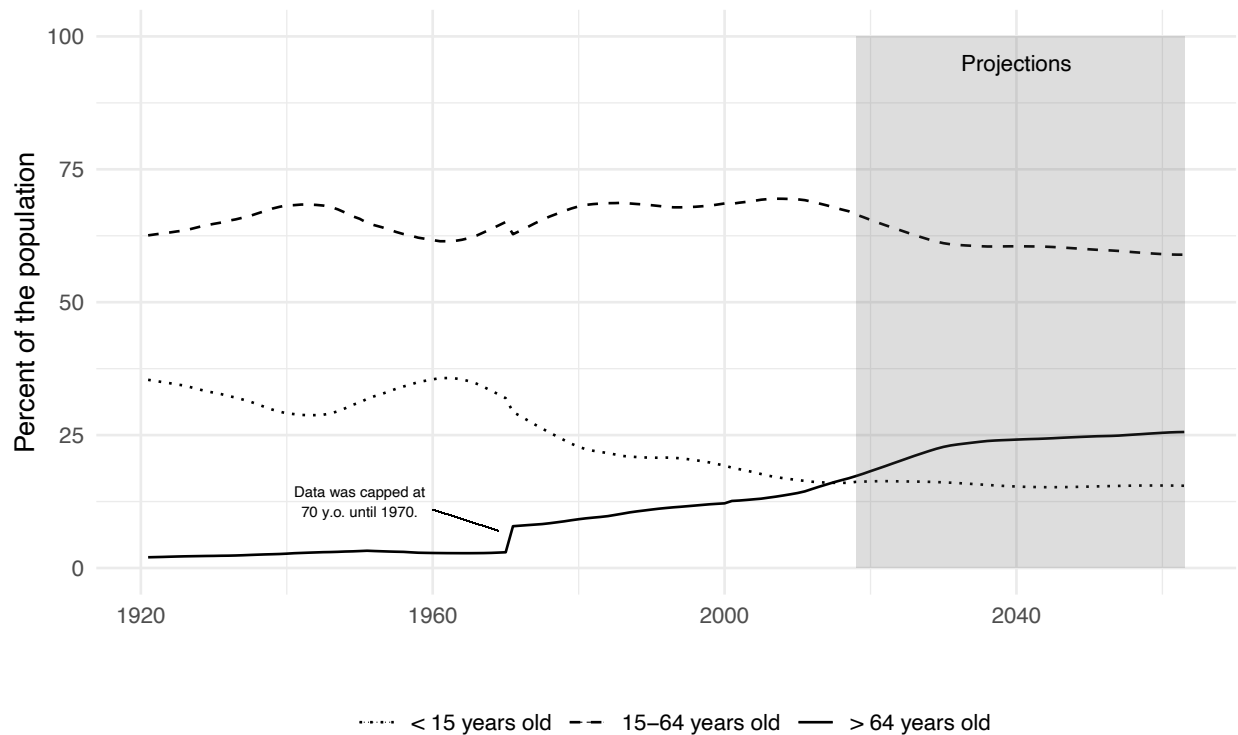
Figure 1.1. Age distribution of the Canadian population (1921-2017) and projections (2018-2063)

Note: Data from Statistics Canada. Table 17-10-0005-01 (formerly CANSIM 051-0001) Population estimates on July 1st, by age and sex

While the Canadian population as a whole is ageing rapidly, this phenomenon is not uniform across regions: the Atlantic provinces are already composed of near to or more than 20% of seniors; Quebec, Ontario and British Columbia stand in the middle of the pack with 17 to 19% of seniors; and the Prairie provinces are composed of 13 to 15% of people aged 65 and older. Figure 1.2 illustrates the regional variation in these trends. It shows that the population has been ageing more slowly in the Prairie provinces than elsewhere in the country. Between 1971 and 2017, the share of seniors increased by 5 to 7 percentage points in Alberta, Manitoba and Saskatchewan, while it increased by more than 10 points over the same period in Ontario, Quebec and British Columbia. The trend has been even steeper in the Atlantic provinces, especially in the last decade.
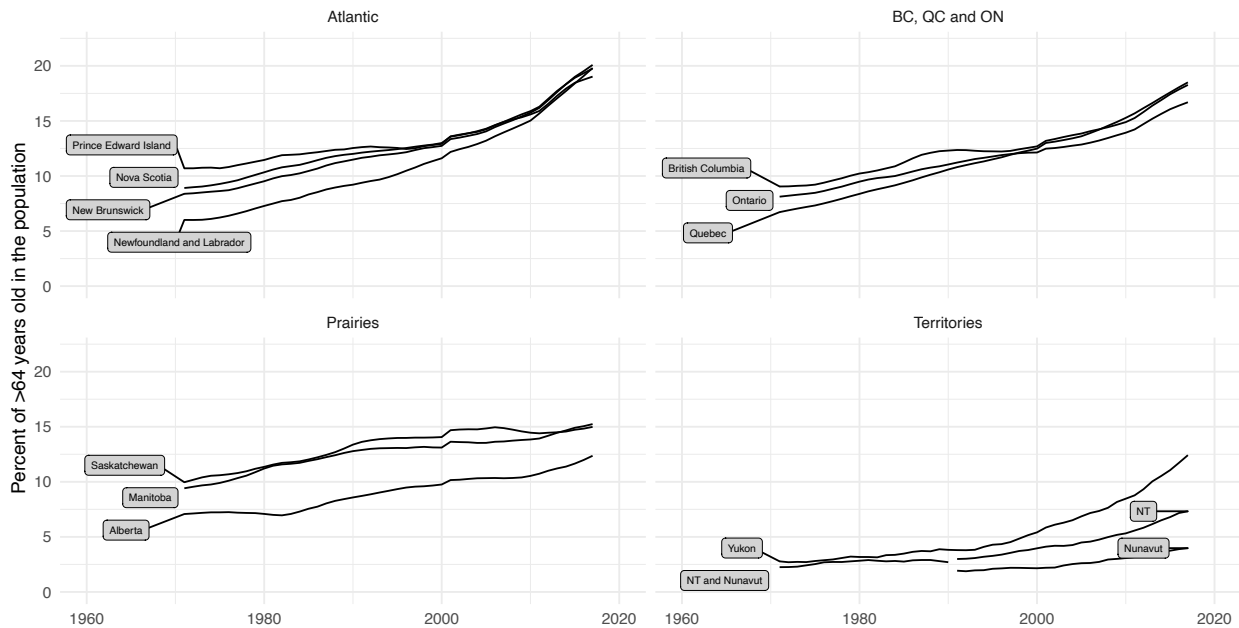
Figure 1.2. Share of people aged 65 years and older in Canadian provinces and territories (1971-2017)

Note: Data from Statistics Canada. Table 17-10-0005-01 (formerly CANSIM 051-0001) Population estimates on July 1st, by age and sex

In other words, not only is the Canadian age pyramid transforming rapidly, but at any given point in time, some regions of the country are 'older' than others. This within-country variation in the age structure gives us interesting leeway when studying age and politics, because the population's age structure can be conceived here as an 'independent variable' affecting different outcomes, such as electoral results for example.

1.2.1. The 'older' population of Canada

In Canada like in many other countries, age differences are associated with differences in other socio-demographic trends, such as ethnic, wealth and education cleavages. As of the latest census (2016), older age groups in Canada were mostly composed of people of European or North American (excluding Aboriginal origins) descent. Figure 1.3 reports on these trends. It shows the percentage of people in each age group with European, North American, Aboriginal, African, Latin/South/Central American and Asian/Oceania origins.
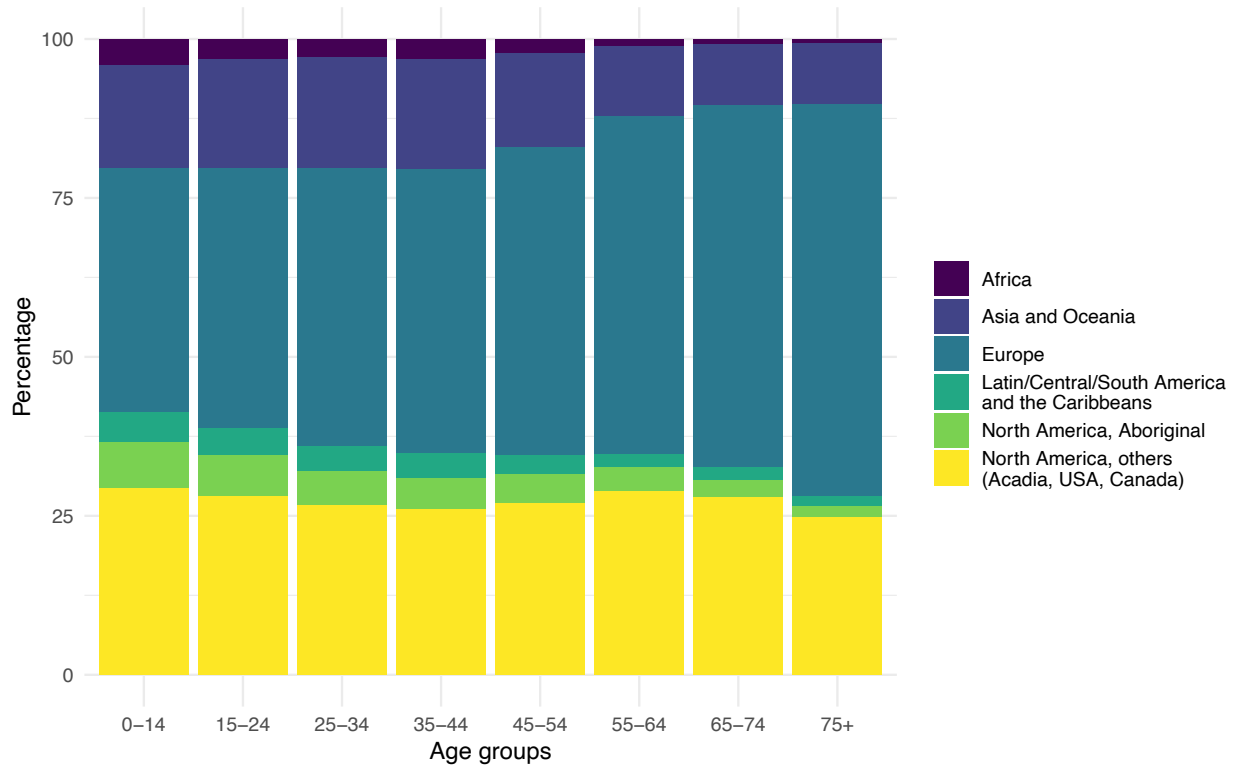
Figure 1.3. Share of age groups by ethnic origins, 2016

Note: Data from the Census of Canada. Ethnic Origin, Single and Multiple Ethnic Origin Responses, Generation Status, Age and Sex for the Population in Private Households of Canada, Provinces and Territories, Census Metropolitan Areas and Census Agglomerations, 2016 Census - 25% Sample Data

Looking at this figure, we find that more than 60% of Canadians in the 75+ years old age group had European origins in 2016, and approximately 25% had North American origins. Younger Canadians, on the other hand, were more likely to have African, Asian, Oceania, Latin, Central and South American origins than their older counterparts. Because of recent immigration patterns, 4.7% of people with Latin/Central/South American origins were between 0 and 14 years old, versus 1.9% in the 64-75 age group and 1.5% in the 75+ age group. Because of higher fertility rate among Aboriginal people, the prevalence of North American Aboriginal origins was also higher among younger than older Canadians at the time of the last census. As a result, the age cleavage in Canada is, in part, an immigration and national heritage cleavage. [1]

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1. Data from the 2021 Canadian census were not available at the time of writing. They will begin to be released in February 2022.
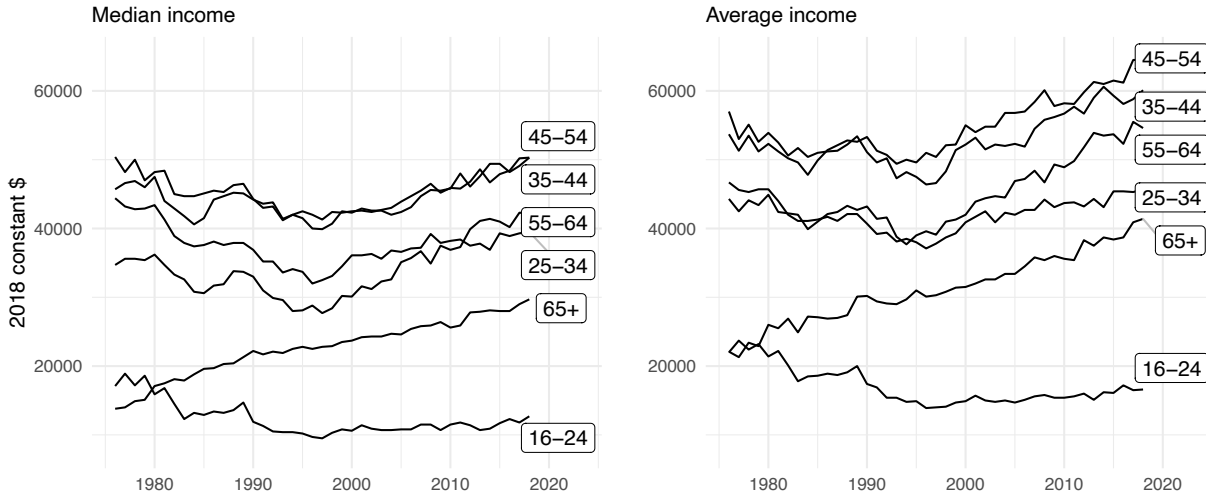
Figure 1.4. Median and average income of Canadians, by age groups, 1976-2018

Note: Data from Statistics Canada. Table 11-10-0239-01 Income of individuals by age group, sex and income source, Canada, provinces and selected census metropolitan areas.

Older Canadians also set themselves apart in terms of access to financial resources. In general, seniors in this country have lower income than other adults, but 65+ year old Canadians are the only age group whose median and average incomes have continuously increased since the mid-1970s (see Figure 1.4). Other age groups have experienced a decline in income levels prior to 2000.[2] Moreover, wealth (in the form of financial assets or real estate) is usually greater in older age in Canada (see Figure 1.5). As of 2019, the median net worth (total assets minus total debt) of Canadians in the 65+ age group approximated $500,000. This is more than any age group, except 55-64 year olds. This trend contrasts with what we found when looking at income levels. The average net worth among 65+ year old Canadians, in comparison, exceeded $900,000 in 2019. In short, older Canadians are wealthier than a majority of their younger counterparts, so the story of population ageing cannot be entirely isolated from a story on economic cleavages.

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2. Income includes employment income, Canada Pension Plan (CPP) and Quebec Pension Plan (QPP) benefits, child benefits, employment insurance (EI) benefits, government transfers, investment income, market income, Old Age Security (OAS) and Guaranteed Income Supplement (GIS), spouse's allowance, retirement income, self-employment income, social assistance, wages, salaries and commissions and all other income sources.

| Median net worth (total assets minus total debt) | Average net worth (total assets minus total debt) |
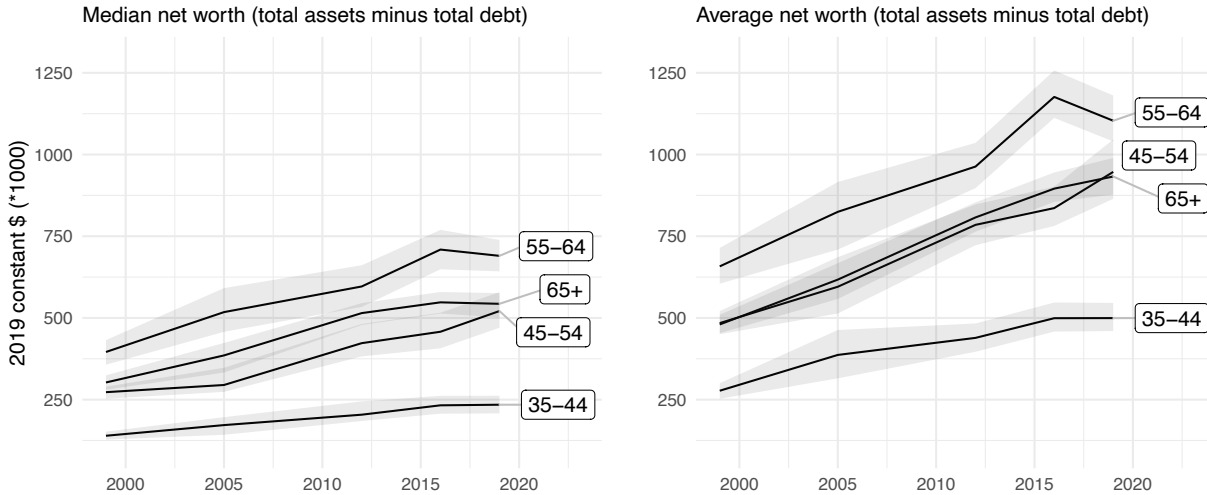
Figure 1.5. Median and average net worth of Canadians (with 95% confidence intervals), by age groups, 1999-2019

Note: Data from Statistics Canada. Table 11-10-0016-01 Assets and debts held by economic family type, by age group, Canada, provinces and selected census metropolitan areas, Survey of Financial Security (x 1,000,000)

Older Canadians are however less likely to hold university or college degrees than their younger counterparts. In 2011, 32% of "young adults aged 25 to 34 had a university degree," but only 20% of Canadians aged 55 to 64 did so (Statistics Canada, 2018*a*). The largest difference in educational attainment between these two age groups was found among female Canadians: in 2011, "59% of young adults aged 25 to 34 with a university degree" were women, versus 47% of Canadians in the 55-64 age group (*ibid*).

In short, age groups in Canada are different in more respects than age only. Age cleavages are accompanied with differences in ethnic and cultural background, income, wealth and educational attainment, which are important elements to take into account when studying age and politics. In the next chapters, we will come back to these cleavages to discuss their potential implication for political behaviour. But before going any further, in the next section I define the concept of 'age,' which is a key notion in this dissertation. What is age exactly? When does someone become 'old' in Canada?
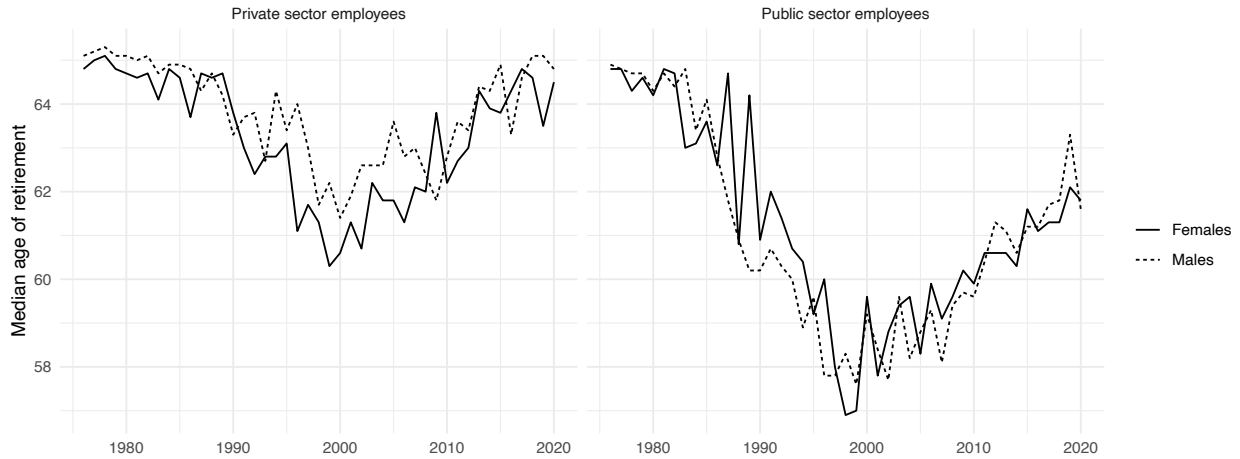
Figure 1.6. Median age of retirement in Canada, 1976-2020

Note: Data from Statistics Canada. Table 14-10-0060-01 (formerly CANSIM 282-0051) Retirement age by class of worker, annual

1.3. Defining 'old-age'

Sixty-five years old is often used as a threshold to define 'seniors' or 'old-age' in Canada. In 1965, the Canadian Parliament voted to decrease the threshold to receive old-age security from 70 to 65 years old. Because it became "the 'normal' age of retirement," institutions of the Canadian government — such as Statistics Canada or the Department of Justice — started to define seniors as people aged 65 and older in their policies, programs and statistical analyses (Turcotte and Schellenberg, 2006). Evidently, using retirement age to define old-age is overly simplistic. The definition of 'old-age' cannot only be linked to retirement. In fact, retirement itself is a moving target (see Figure 1.6), and being 'old' today is not the same as it was in the mid-1960s (see Denton and Spencer, 1999).

Many definitions exist for old-age, or age more broadly. In her 2013 book on social gerontology, Victor presents four definitions of age: chronological age, biological age, age as defined by political economy and age as a stage in the life cycle. Chronological age refers to the number of years since a person's birth, and is often used as an indicator of the three other (broader) concepts (Victor, 2013, pp.8-9). First, biological ageing is the process by which the capacities of the human body gradually decline, without any external intervention. This process happens in every individual and has death for outcome. It is

accompanied with universal physical consequences, such as "more porous bones; decrease in muscles (including heart) strength; decrease in respiratory capacities; change in the metabolic and gastro-intestinal systems; decrease in brain weight; and decrease in the sensations of touch, taste and smell" (*ibid*, p.7). Figure 1.7 presents statistics on selected chronic conditions and their prevalence in older age groups in Canada, specifically 65-74 years old, 75-84 years old and 85+ years old people. Almost all chronic conditions become more prevalent with age, especially those that are most common in the population. Evidently, however, the biological consequences of age reach different individuals at different paces. For instance, data from the Canadian Health Survey on Seniors in 2019 reveal that 16.4 % of Canadians aged 65 to 74 years old perceived their health "to be somewhat better or much better than" in the previous year. Twelve percent of people in the 75-84 age group and 7.6% of people aged 85 years or older did so too. Chronological age therefore remains an approximate indicator of biological age (see also Higgs and Gilleard, 2015; Orimo et al., 2006).

Second, when we set a threshold for 'old-age' (i.e., when we think of old-age in chronological terms), this threshold will necessarily be informed by social and cultural norms. On the one hand, this is explained by the fact that relationships between individuals and their institutions vary across societies (Victor, 2013, p.9). In a political economy approach, these relationships are what define age. For example, by implementing social policies that target older people exclusively, governments contribute to defining old-age. By placing a threshold at 65 years old on pension benefits, the Canadian Parliament contributed to defining 'seniors' for many decades following the mid-1960s. On the other hand, thresholds used to define old-age are informed by social norms, because stages of life are themselves informed by culture. Not all life stages have the same importance across societies, and all life transitions do not happen at the same chronological age in all cultures (*ibid*, p.12). In many Western societies, important life stages include finishing school, leaving the family home, getting married or finding a life partner, integrating the job market, having children and retiring. Everyone has their own idea of the age when each of these transitions *should* happen, but these ideas
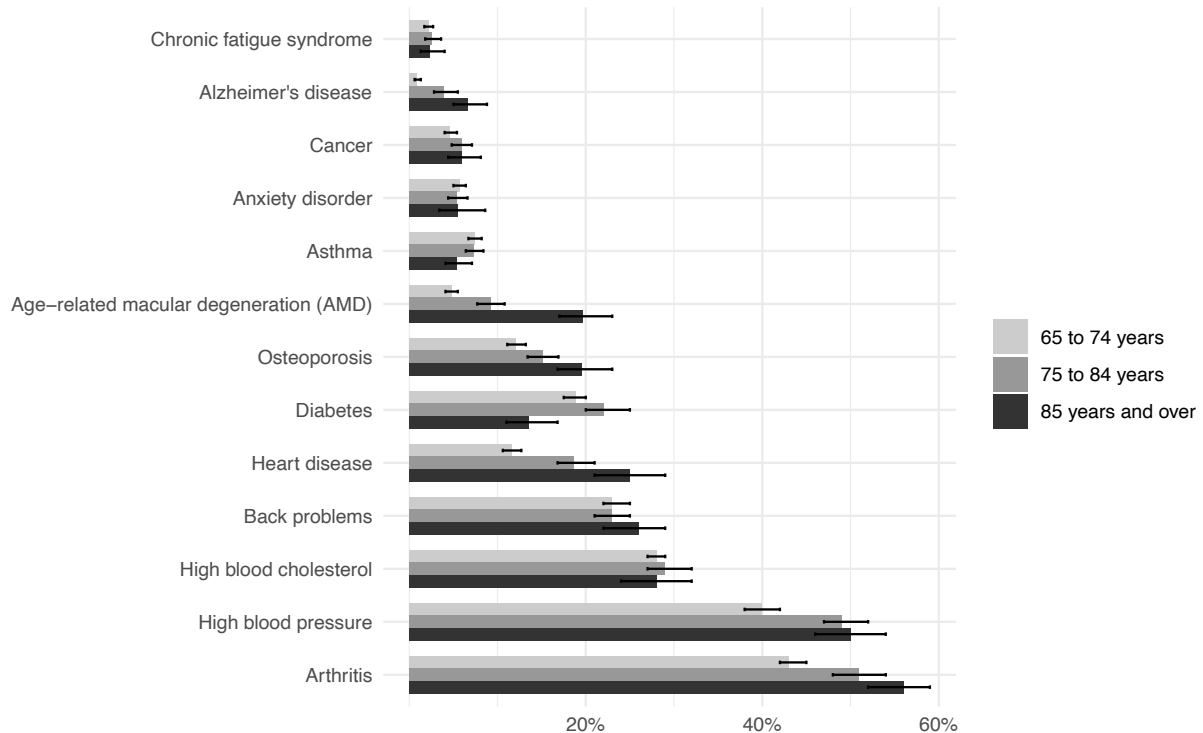
Figure 1.7. Prevalence of selected chronic conditions in Canadians aged 65 years or older (with 95% confidence intervals), 2019

Note: Data from Statistics Canada. Table 13-10-0788-01 Chronic conditions among seniors aged 65 and older, Canadian Health Survey on Seniors

vary depending on one's background, culture and upbringing (see also Clark-Kazak, 2009; Neugarten, Moore and Lowe, 1965).

In this dissertation, my epistemology is positivist and my methodological approach is largely quantitative. I use chronological age as an indicator of the broader concept of age. That being said, I try as much as possible not to set a threshold for 'old-age' or for an 'older stage of life.' Instead, I treat age as a continuous process, during which individuals experience biological and social changes. Whenever possible, I try to perform statistical analyses that use a continuous indicator of the age variable.[3] But by attempting to draw generalizing inferences about age and politics, my analyses do overlook variations within the 'older' age group, or any age group by that matter. When interpreting the findings presented

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3. Not all governmental age data are available as continuous indicators, which explains why some analyses rely on categorical age groups.

in this dissertation, one should always weight these generalizations against the very real and evolving context of Canadian society.

1.4. Setting the stage: Age and politics in Canada

Before diving into the theoretical and section of this dissertation and trying to assess the impacts of population ageing for politics, I situate in this section the aspect of 'age' in Canadian politics. To do so, I present descriptive and anecdotal evidence on age in public discourse surrounding politics, the age of elected representatives, and the relationship between age, turnout and vote choice in Canada.

Like in other democracies (Delrue, Pommiers and Durand, 2017; Zak, 2021), age has recently taken more room in public discourse surrounding Canadian politics. A search for the keywords 'electoral campaign', 'seniors' and 'Canada' in Canadian news archives returns 51 entries for the 1990-1999 period, 97 for the 2000-2009 period, and as much as 196 for the 2010-2019 period. [4]

The election coverage surrounding Justin Trudeau's first government in 2015 is a good example of this trend. Trudeau himself became the first Prime Minister from Generation X (born approximately 1970-1990), and several political commentators pointed out this fact in their columns: "As Canada's first Gen-X PM, Trudeau strikes parallels with his father" (CBC), "A generational change in Canadian politics; It seems unlikely we will have another baby boomer prime minister" (Montreal Gazette), "Xers in power" (La Presse). [5] But while the election of Justin Trudeau in 2015 represented a generational shift in the Prime ministerial position, it did not mark a drastic change in the overall age distribution of members of Parliament. The median age of MPs had been slowly increasing long before the election of Justin Trudeau, from 43 years old in 1980 to 48 years old in 2000. This trend

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4. The keyword search was performed on ProQuest (https://search.proquest.com/canadiannewsmajor/) for major Anglophone dailies and on Eureka (https://nouveau.eureka.cc/Search/AdvancedMobile) for major Francophone news outlets. Anglophone papers include The Globe and Mail, the National Post, the Montreal Gazette, the Ottawa Citizen, the Toronto Star, the Regina Leader Post, the Edmonton Journal, the Vancouver Sun and the Victoria Times Colonist. Francophone news outlets include La Presse, Le Devoir, Le Journal de Montréal, TVA Nouvelles (web), Le Radiojournal de Radio-Canada and Le Téléjournal de Radio-Canada. French keywords were the following: 'campagne électorale', 'aînés' and 'Canada'.

5. Author's translation: "Les X au pouvoir".
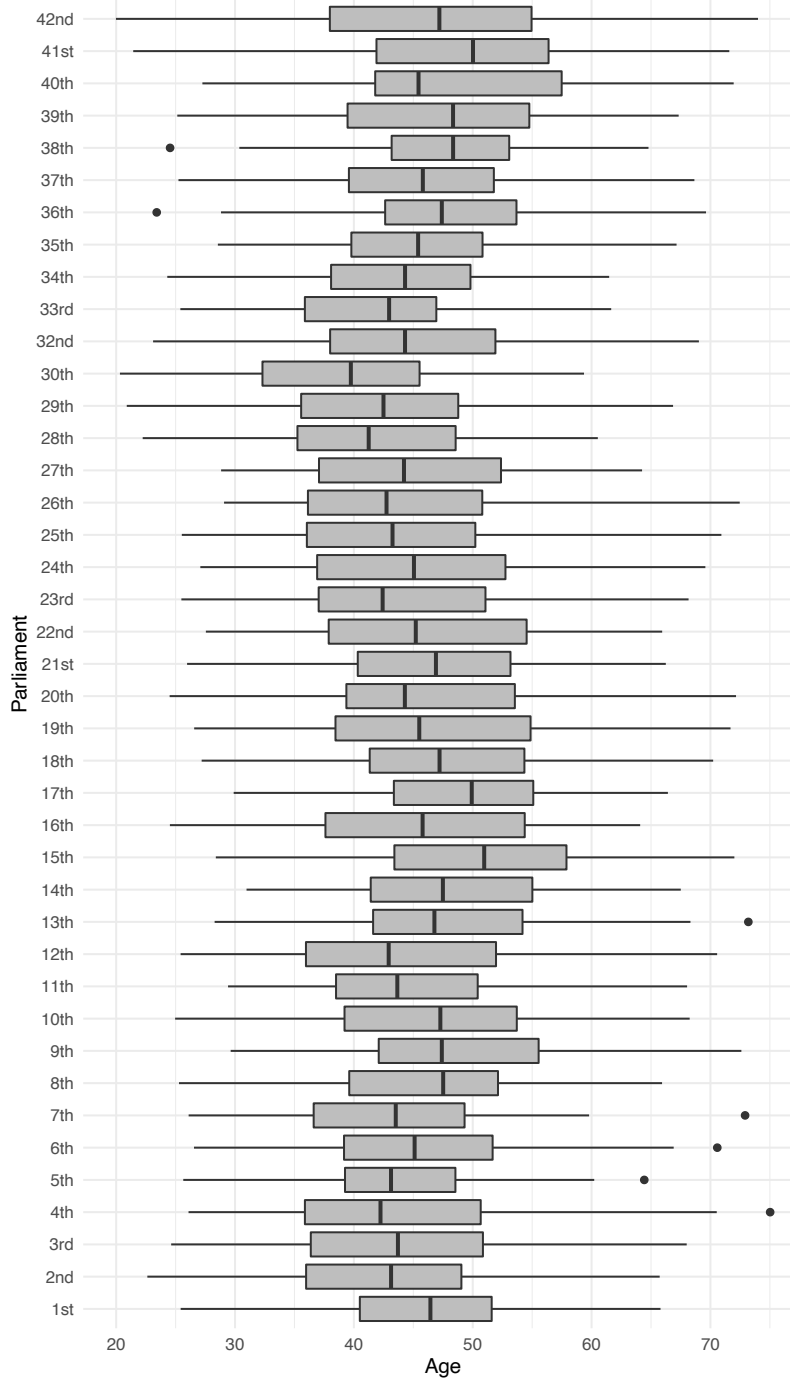
Figure 1.8. Age of MPs at time of first election and retirement, Canadian House of Commons

Note: Data from the Library of Parliament. Data available here: `https://lop.parl.ca/sites/ParlInfo/default/en_CA/People/parliamentarians`

has since stabilized around 46-50 years old. Following the 2015 general election, the median age in the House was 48.4 years old.

Figure 1.8 reports the distribution of MPs' age at the time of their first election in every Parliament since 1867. The distribution is consistent with the evolution of Canadian demographics. The country's population was becoming older in the first half of the twentieth century, and so were House members. In the decades that followed the Second World War, Parliament (and society in general) became younger, up until 30 to 40 years ago, when the average age of elected representatives started to increase again.

But what about age and individual electoral behaviour? Are there differences in the electoral participation or vote choice of younger and older Canadians? To begin, there has been an age gap in turnout for more than forty years in Canada (Smets, 2012). Figure 1.9 presents Elections Canada's official estimates for turnout rates by age group for the 2004 to 2019 general elections.[6] Horizontal lines indicate the mean values for each age group. These estimates confirm the presence of an age gap in turnout, with older people being more likely to participate than younger people. They also show that older seniors (aged 75 years and older) are less likely to participate than younger seniors (in their sixties).[7] In short, age is not only part of public discourse around Canadian politics, but it has shaped a very important element of Canadians' political behaviour — turnout — for several elections now.

In contrast, the age gap in vote choice is not as systematic as the age gap in turnout in this country, but some patterns are nonetheless discernible. Figure 1.10 illustrates reported vote choice for the four main political parties by age group during the 1965 to 2019 elections, measured in the Canadian Election Study surveys. These are the Liberal party (the main centre-left party; Johnston [2017]), the (Progressive-)Conservative party (the main right-wing party; Cochrane [2010]), the New Democratic party or NDP (the main left-wing party;

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6. These rates are estimated by Elections Canada using the following methodology: "Since 2004, under the Chief Electoral Officer's authority, Elections Canada is using administrative data from the electoral process to obtain a sample of electors who voted at an advance poll, by special ballot or at a polling station on election day. By using these figures with the date of birth of each sampled elector obtained from the National Register of Electors, Elections Canada is able to produce estimates by age group. The same methodology was used in each turnout study between 2004 and 2015, thus allowing for comparison. For 2008, 2011 and 2015, a breakdown by gender is also included." (Elections Canada, 2016)

7. These results are mostly confirmed when using reported turnout. See Appendix A.
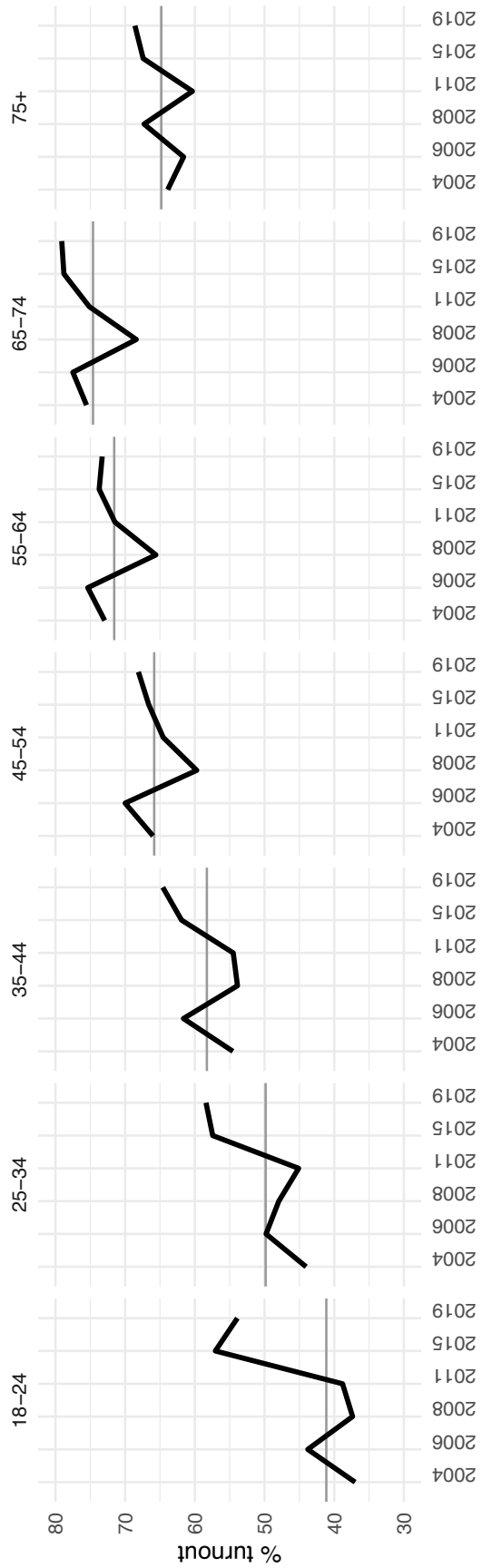
Figure 1.9. Voter turnout by age group, as estimated by Elections Canada, 2004-2015

Note: Data from Elections Canada. Data available here: https://www.elections.ca/content.aspx?section=res&dir=rec/part/estim&document=index&lang=e

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Fournier et al. [2013]) and the Bloc Qquébécois (the Quebec regional/nationalist party; Tremblay [2015]). We can draw three main observations from this graph.

First, there used to be age differences in support for the Liberals in the 1980s and 1990s, but since then these differences have gradually declined. In the last 20 years, there did not seem to be any systematic age gaps in support for the main brokerage party in Canada (Carty, 2015), at least not when assessing age differences from reported voting behaviour in Canadian Election Study surveys. Second, there have been increasing age gaps in support for the New Democratic (higher support among younger age groups) and (Progressive-)Conservative parties (higher support among older age groups) in recent decades. In fact, the observation that younger voters are more likely to support the NDP and older voters are more likely to support the Conservatives seems to be quite consistent in recent elections. Since 2011, support for the NDP is actually higher than support for the Conservatives among 18 to 24 year old voters, which is startling given the historical prevalence of the Conservatives over the NDP in the House. Finally, while support for the Bloc Québécois used to be higher among younger people in the 1990s, age differences in support for this party are today insignificant. Similar analyses for party identification can be found in Appendix A — the general conclusions are the same.

In short, age has taken an increasingly important place in public discourse around Canadian politics. It also appears to be an important predictor of political participation and vote choice. Descriptive results confirm that older Canadians are more likely to vote than younger citizens. Evidence also suggests that older voters are more supportive of the main right-wing political formation (the Conservatives), while younger voters are more supportive of the main left-wing party (the NDP), especially in the last decade. Combined with population ageing, do these trends translate in the election of more right-wing governments, or the implementation of more conservative policies? After all, senior citizens are making up approximately 20% of the population today. They participate more in elections than younger people. If we consider these pieces of evidence together, older citizens appear to be in a good position to pull policy decisions to the right. But at least two limitations could make
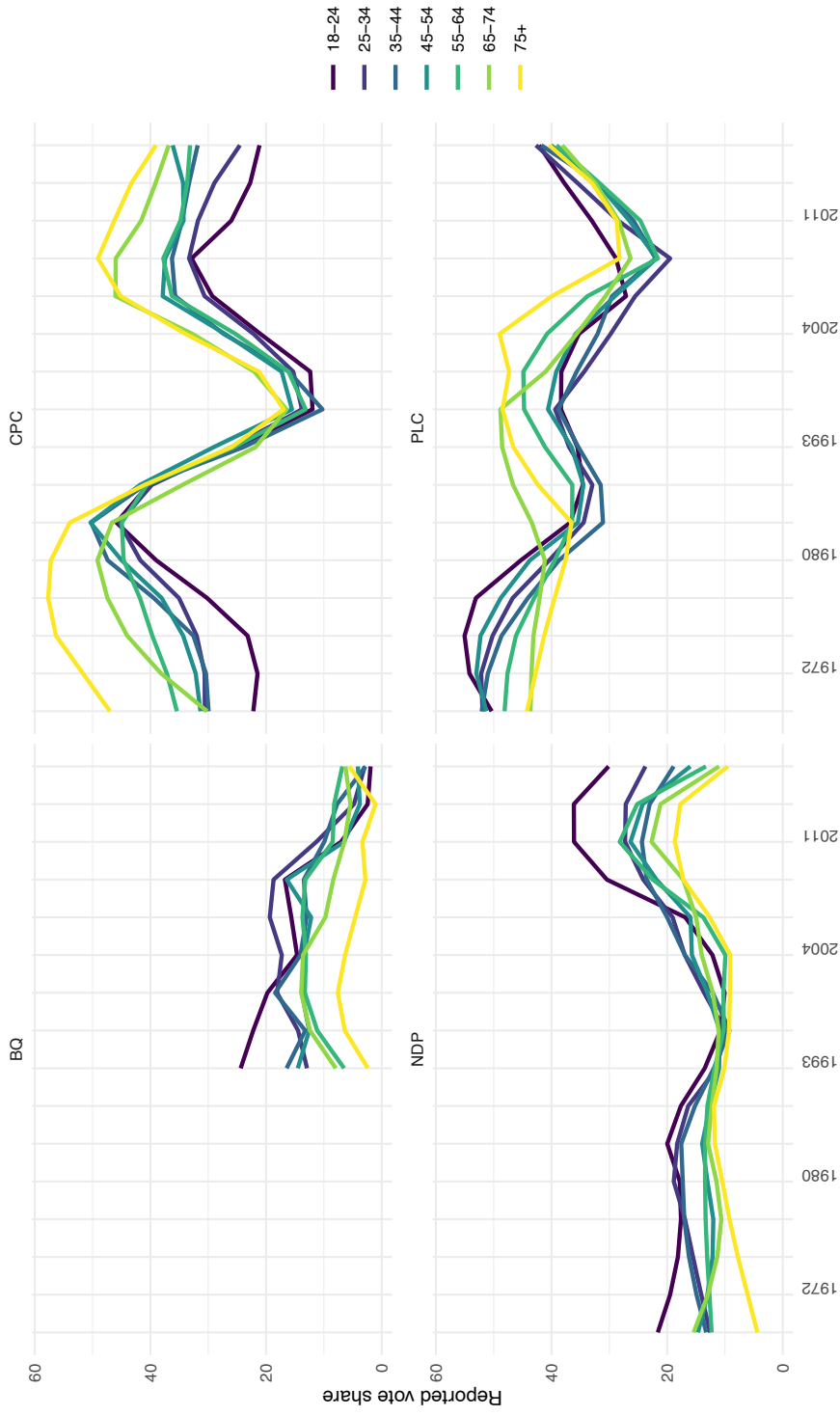
Figure 1.10. Reported support for the four main parties by age group, 1965–2019

Note: Data from the Canadian Election Studies. In 1972, the oldest age group is 65+ years old. The age variable is missing in the 1968 CES, so this election is removed from the analysis.

us doubt this conclusion. The next and final section of this introductory chapter discusses these limitations.

1.5. Methodological considerations in the study of age and politics

When studying age and politics, one has to take into account important methodological considerations. These considerations are central to the three empirical chapters included below, and can help bring nuance to the descriptive statistics on age, turnout and vote choice presented in the previous section.

First, before drawing conclusions from descriptive evidence of age gaps in turnout or vote choice, one should bear in mind that these differences may not be 'true' age differences, but artefacts of the data generating process. Generational differences could be hiding behind age gaps in party support. If this is the case, then it would be wrong to suggest that *older age groups* have the potential to influence policy, because at any given point in time, observations of political outcomes could also be attributable to *cohorts* effects. Cohort or generational effects are defined as "enduring intercohort distinctions [in attitudes, opinions, patterns of participation] that are attributable to the common 'imprinting' of cohort members" (Markus [1985] cited in Neundorf and Smets [2017]). They influence all members of the same birth cohort, so individuals born in the same period often share common political preferences or patterns of political participation. For example, Québécois who experienced the Quiet Revolution in the early 1960s are generally more supportive of Quebec independence (Vallée-Dubois, Dassonneville and Godbout, 2020). In addition to cohort effects, period effects could also be hiding behind age trends. Period effects are "major events, such as the presence of war or economic downturn, that affect the population as a whole, and not just certain age, regional, gender, education or income groups" (Neundorf and Smets, 2017). When an economic crisis hits, for example, all individuals in society may change their views on economic issues.

Because period and cohort effects exist in conjunction with age effects, estimating the causal effect of age on individual political choices is almost, if not entirely impossible. When

comparing members of two age groups at the same point in time, we are also comparing members of two different generations. When tracking the evolution of a person's opinions through time, we are tracking the influence of age but are capturing the effect of periods too. In practice, it is impossible to manipulate people's age in an experimental setting; age cannot be assigned to individuals in the same way other treatments can. As a consequence, to estimate the influence of age on opinions, vote choice or policy preferences, we have to resort to statistical techniques that bring us close to an estimate of age effects, without actually being causal (see Bell, 2019). This limitation is discussed more at length in the first empirical chapter (chapter 3) below.

In the same vein, estimating the causal effect of the age structure (at the level of a country or region) on electoral outcomes or policy output is also extremely difficult. We could manipulate the age structure of a fictitious society in laboratory setting and measure the impact of this manipulation on fictitious outcomes, but such experiment would lack external validity. Thinking in terms of quasi-experimental design, we could look for natural conditions that modify the age structure of a political unit and study their impact on policy outcomes or other phenomena. Certain events — such as heat waves or pandemics — do lead to the tragic decease of large numbers of elderly people. Changes to electoral borders can also modify the age structure of electoral districts. That being said, such events or modifications also have an impact on other aspects of life and are often accompanied with several other demographic changes, so their effects cannot be considered truly exogenous. McClean's work on Japanese municipalities (2019) represents one of the most reliable attempts at estimating the causal effect of age on policy output. But his analysis uses regression discontinuity to measure the impact of a change in the age of mayors (i.e., representatives) on policies, not the effect of the population's age structure in a given political entity. In other words, studying the impact of age — at the individual or aggregate levels — on politics comes with important challenges in terms of identification.

Second, before making inferences about age cleavages in political views, one should bear in mind that party shares are not always the best measure to evaluate age-group differences

in policy preferences or the quality of seniors' representation. On the one hand, parties can move positions in time, and election outcomes can be influenced by several factors, such as issues of the day. Indeed, Cochrane (2010) demonstrated that the (Progressive-)Conservative party of Canada shifted to the right in the 1980s and 1990s, while the Liberal and New Democratic parties moved much less over the same period. The 1990s also correspond to the creation of Western and Quebec regional parties in Canada's federal legislature. The fact that we do not find large 'age cleavages' in party shares during this period (Figure 1.10) *could* imply that there were no age cleavages in vote choice at the time. But it could also mean that age cleavages in ideology simply did not 'match' party positions as well as they do now (for a discussion on this limitation, see Ford and Jennings, 2020). If this is the case, then using party shares as an indicator of how successful seniors have been in moving their interests to Parliament may be limited. On the other hand, if we judge the quality of seniors' representation by comparing which parties seniors tend to support with who is forming the government, we risk finding that there is not much variation in who gets to form the government in Canada. The Liberal party has been the "natural governing party" of Canada since the early 1900s (Johnston, 2017). To have an influence on election outcomes or the party system, seniors would need to represent a sufficiently concentrated voting block to help bring their favourite party to government. In other words, looking at party support across age groups helps to set the ground for further analyses of age and politics in Canada, but this variable may not be the most informative overall.

1.6. Organisation of the dissertation

I take each of these methodological limitations and challenges into consideration in the empirical chapters presented below, which all center on the topic of age and politics in Canada. But first, in chapter 2, I introduce the theoretical framework of this dissertation, which is embedded in the literatures on representation and political behaviour.

The three following empirical chapters address questions on 1) age and political preferences, 2) age and political participation, and 3) age and representation. In the first empirical

article (chapter 3), I examine age differences in policy priorities within Canadian public opinion. Using survey data collected between 1987 and 2019, I demonstrate that older Canadians — as opposed to their younger counterparts — are more supportive of the status quo when it comes to government spending. Age also increases support for spending on transportation and the military, but decreases support for education.

In the second article (chapter 4), I study electoral turnout and vote choice in seniors' residences in Canada. Using novel data on the location of polling stations, qualitative interviews with campaign managers and original survey data collected with personnel of seniors' residences, I show that residents of seniors' homes participate more than other citizens. I also find that the Liberal and Conservative parties are most successful among voters who live in seniors' residences. Finally, I bring insight into how parties approach political campaigning in seniors' residences, and show that the Liberal party may be doing a better job than other parties in mobilizing residents of seniors' homes.

In the third article (chapter 5), I use parliamentary speech data from the Canadian House of Commons to verify whether representatives elected in constituencies where the population is older pay attention to seniors and senior issues more when debating of the House of Commons. The analysis also covers the issues of immigration and unemployment. Contrary to these two issues, where I find correspondence between citizens' interests and the content of parliamentary speeches, I do not find that Canadian members of Parliament are responsive to their senior population as much.

I address potential explanations for this result in the concluding chapter (chapter 6) of this dissertation. In the conclusion, I also draw inferences about the democratic representation of seniors and discuss the contributions of this dissertation for studies of political behaviour, representation, and legislative politics in Canada and in the comparative context.

Chapter 2

The Democratic Representation of Age Groups

What are the implications of population ageing for democratic representation? Can an increase in the size of the senior population influence political outcomes? In this chapter, I review the literature on democratic representation and political behaviour in order to provide insight into these questions. The goal of this chapter is to develop a theoretical framework for the study of population ageing, political behaviour and representation. That theoretical framework guides three empirical analyses in the following chapters.

The chapter is organized as follows. In the first section, I present a review of the literature on democratic representation and define the concept of representation that I will be using throughout the rest of this dissertation. This first section also discusses inequalities in representation, and provides reasons why some groups of the population may be able to achieve better representation than others through several mechanisms, such as contacts with politicians, higher levels of political participation and better descriptive representation. I then relate these factors to the specific case of older citizens, justifying why older age groups may be able to achieve better representation than their younger counterparts.

Since between-group variations in political opinions are necessary conditions for inequalities in representation (Soroka and Wlezien, 2008), the second section of this chapter presents a review of the literature on political behaviour and opinion formation. My goal in this section is to situate the influence of age as a potential determinant of political attitudes, vote choice and participation.

In the final section, I combine the main ideas from these two reviews of the literature to develop a theoretical framework which guides the rest of this dissertation. At an individual level, I argue that age can influence the formation of political preferences and access to politically-relevant resources, like time, money and civic skills. This leads to different patterns of policy preferences and political participation in older versus younger people, which has four implications for political representation. First, there can be a direct association between aggregate policy preferences and policy output. Some representatives may simply want to fulfill their duties and be responsive to changing citizen preferences brought about by population ageing. Second, higher levels of electoral participation by older citizens have the potential to influence descriptive representation, which can itself affect policy output. Third, these higher levels of participation create electoral incentives for political candidates to be attentive to older voters. Finally, greater proximity with elected officials by older age groups — through implication and contacts with politicians — can make seniors' preferences more important to representatives, thus increasing responsiveness to these issues.

2.1. Democratic representation

2.1.1. Theoretical foundations of democratic representation

In her 1967 book, Pitkin presented two conceptions of representation, *standing for* and *acting for*, each in contrast with the formalistic (or authorization) view of representation brought forward by Hobbes. According to the formalistic conception of representation, when one has been authorized to represent, they can do whatever they want: "There can be no such thing as representing well or badly; either he [the legislator] represents or he does not" (Pitkin, 1967, p.39). Hobbes' authorization view of representation is somewhat corollary to Schumpeter's conception of democracy. According to Schumpeter (1950), democracy is "a mechanism for choosing and authorizing governments" where "the role of the citizenry" simply "is to 'produce a government' " (cited in Elliott, 1994, p.290-1). Following this view, political leaders are the ones influencing public opinion, not the other way around (Faber, 2011; Mackie, 2009).

In contrast to these 'elitist' conceptions of representative democracy, Pitkin argues that elected representatives are not only *authorized* to represent, but *stand* and *act for* those who elected them (Pitkin, 1967). In the words of Key (1961), governments "do not only maintain their authority by brute force alone; they must seek willing acceptance and conformity from most of their citizens" (p.412).

The two ways of *standing for* others include descriptive and symbolic representation. Descriptive representation refers to the characteristics of the individual who is standing for others. It does not entail "acting with authority, or acting before being held to account, or any kind of acting at all," but representing by way of simply *being* (*ibid*, p.61). And by 'characteristics,' theorists of representation do not only refer to what a representative looks like. Characteristics include anything from personality traits to party identification; in other words, anything that can help citizens "predict the representative's future behavior" (Mansbridge, 2003, p.521). In fact, these traits help shape the representatives' decisions in the legislature (what Mansbridge [2003] calls 'gyroscopic' representation), which in theory explains why legislators who 'look like' their constituents should defend legislation that is in the interest of the represented.

Another way of *standing for* others is through symbolic representation, whereby representatives are symbols able to "evoke feelings or attitudes" among the represented (Pitkin, 1967, p.97). Eulau and Karps (1977) explain that the actions a representative poses, even the least meaningful ones such as introducing bills that would never make it to law, send signals to constituents. When these actions are consistent with constituents' views, it helps to strengthen legislators' position as good representatives, giving them "more freedom in [their] legislative activities" (Eulau and Karps, 1977, p.247)

Acting for is what political scientists usually refer to as substantive representation (e.g., Hero and Tolbert, 1995; Celis et al., 2008; Franceschet and Piscopo, 2008; Soroka and Wlezien, 2010). One of Pitkin's most cited lines is the following: "representing here means acting in the interest of the represented, in a manner responsive to them," but what follows brings important nuances to the concept of substantive representation:

> The representative must act independently; his action must involve discretion and judgment; he must be the one who acts. The represented must also be (conceived as) capable of independent action and judgment, not merely being taken care of. [...] He [The representative] must not be found persistently at odds with the wishes of the represented without good reason in terms of their interest, without a good explanation of why their wishes are not in accord with their interest. (Pitkin, 1967, p.210)

In other words, both the representative and the represented are active in the process of substantive representation. Representatives, even if they should be responsive, can also make decisions based on their own intuitions of what is in the best interest of the represented. If necessary, they must be able to explain why their decisions are not aligned with citizens' preferences. For their part, the represented do not leave all control to their representatives upon electing them. These nuances are important because they suggest that representation comes in part from the interactions between citizens and legislators. Representation is not crystallized on election day or when government is formed, but remains alive between electoral contests too.

The literature presents different explanations as to why substantive representation happens. That is, scholars have identified different mechanisms through which substantive representation can be achieved. First, as expressed by Manin, Przeworski and Stokes (1999b, p.3), some representatives may simply be "public-spiritied" and find satisfaction in attending to citizens' interests. They wish to fulfill the normative goals of their position by giving weight to "the preferences of the governed" (Key, 1961, p.412), and this is why we find congruence between citizens' and their representatives' positions.

Second, substantive representation can be explained by a selection mechanism (Lee, Moretti and Butler, 2004; Manin, Przeworski and Stokes, 1999b). Through elections, citizens choose representatives who generally agree with them, so policies that end up being implemented reflect the interests of citizens. Manin, Przeworski and Stokes (1999a) call this the 'mandate' conception of representation. Provided that candidates are transparent about the mandate they wish to pursue, citizens can select the best representatives for them. Once in power, representatives implement the policies for which they were elected. In Mansbridge's

terms (2003), this is called 'promissory' representation: "Representatives made promises to constituents, which they then kept or failed to keep" (p.515).

Third, substantive representation can be explained by the anticipation of future electoral contests (see Key, 1961, chap.18). Elections motivate politicians to consider their constituents' opinions. This mechanism is in line with Mansbridge's 'anticipatory' conception of representation (2003, pp.517-9): according to her, representatives anticipate retrospective voting, which pushes them to be alert to any changes in public preferences (see also Stimson, Mackuen and Erikson, 1995; Urbinati and Warren, 2008). Anticipatory representation is conceptually close to the 'accountability' conception of representation (Manin, Przeworski and Stokes, 1999*a*), which states that citizens can "control governments" by inducing "the incumbents to anticipate that they will have to render accounts for their past actions" (p.40, see also Canes-Wrone, Brady and Cogan, 2002). In short, the translation of citizens' interests into policy (i.e., substantive representation) can happen because representatives are public-spirited, because citizens select representatives who share their positions, and because representatives want to be reelected in the future (eventually, this is how the party system reaches its equilibrium, see Downs, 1957).

When explaining what she means by substantive representation, Pitkin uses the terms 'interests' and 'wishes' somewhat interchangeably. The difference between interests and wishes is not always clear in empirical studies of democratic representation either (see Soroka and Wlezien, 2010, p.7). But Pitkin does explain the difference between the two elements: "The representative's obligation is to the constituent's interest but the constituents' wishes are relevant to that interest. Consequently, the representative also has an obligation to be responsive to those wishes" (Pitkin, 1967, p.162). She argues, in short, that both wishes and interests should be relevant to legislators if they want to be 'good' representatives (see also Manin, Przeworski and Stokes, 1999*b*, p.2). [1]

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1. According to Mair (2009, p.17), the disconnect between "what citizens might like governments to do and what governments are obliged to do [...] lies at the heart of the disaffection and malaise that now suffuses democracy," especially in Europe but in the West more generally. This disconnect is explained by the fact that the responsibilities related to governing have become more important, thus leading to a professionalization of politics and a growing divide between civil society and parties.

Acting according to citizens' wishes and interests is a difficult thing to achieve when we know that most citizens are poorly informed about what is in their best interest (e.g., Blais et al., 2009; Delli Carpini, 2005; Kahneman and Tversky, 1986; Lau and Heldman, 2009; Zaller, 1992). When this is the case, their wishes and interests risk being at odds. That is why empirical studies of substantive representation should clearly state whether they are trying to capture citizens' wishes (i.e., preferences, attitudes) or their interests. Theoretically, however, the presence of sometimes competing wishes and interests allows for different conceptions of representation. At one end of the continuum, we find the Burkean view, according to which "the representative [is a] member of a superior elite of wisdom and reason" and people are "ignorant." As a consequence, representatives should only rely on people's *interests* when making decisions (Pitkin, 1967, p.211). The opposite view considers that representatives and the represented are equals. As such, representatives should always "consult" with people's *wishes*, even though it may hinder their capacity to act (*ibid*). A more moderate view considers that when representatives are confronted with competing interests and/or wishes, they should decide to protect "an interest that is collective," even though it goes against what some people want. They could also decide to minimize dissatisfaction by representing the interests of the majority over what the minority prefers (Manin, Przeworski and Stokes, 1999*b*).

2.1.2. From theory to measurement

The previous section identified three types of representation: symbolic, descriptive and substantive. Symbolic and descriptive representation can be conceptualized as *standing for* others. For its part, substantive representation means to *act for* others in a way that is consistent with their interests and/or preferences.

Empirically, the three types of representation — descriptive, symbolic and substantive — are intertwined and work together. A representative may share the characteristics of her constituents and act in their interests as well. In fact, descriptive representation can enhance substantive and symbolic representation (Manin, Przeworski and Stokes, 1999*a*): As an example, Schwindt-Bayer and Mishler (2005) showed that when a legislature is composed

of more women (better descriptive representation), women's issues tend to be better reflected in policies adopted by the assembly (substantive representation, see also Minta [2009] in the case of Black and Latino interests). Descriptive representation can also increase citizens' confidence in the legislature (symbolic representation, see Whaman et al. [2021]) or affect turnout (e.g., Griffin and Keane, 2006).

That said, while political theorists offer clear definitions of descriptive, symbolic and substantive representations and describe the normative implications of these concepts, the theoretical foundations of representation do not necessarily allow us to know what representation is in practice. In real-life politics, what does it mean to be well-represented? How can we go about operationalizing the three types of representation?

Empirical work in political science did try to establish whether different polities were 'representative' in substantive (e.g., Owens, 2005; Bird, 2010; Saalfeld, 2011; Gilens, 2012), descriptive (e.g., Bratton and Ray, 2002; Gay, 2002; Griffin and Keane, 2006; Minta, 2009; Butler and Broockman, 2011) and symbolic terms (e.g., Lawless, 2004; Campbell and Wolbrecht, 2006; Wolbrecht and Campbell, 2007; Theobald and Haider-Markel, 2009). When doing so, empirical scholars of representation have generally gauged 'good representation' in two main ways.

First, they examined the *congruence* between representatives and constituents. Congruence refers to "the extent to which the actions of the representative are in line with the interests [or, alternatively, wishes] of the represented at *a fixed point in time*" (Golder and Ferland, 2018, emphasis added). Second, they looked at the degree of *responsiveness* of legislators to changes in public opinion.[2] Responsiveness is a more dynamic concept than congruence. It "refers to how representatives change their behavior to become more congruent with the interests [or wishes] of the represented over time" (*ibid*). If citizens become more liberal than their representatives on a given issue, such as environmental protection, then legislators should move towards a more liberal position on the environment. In other

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2. And sometimes, they *literally* examined responsiveness to constituents, i.e. the tendency to respond to communication attempts by local constituents (for a review, see Costa, 2017).

words, responsiveness means following the citizens' "signals" (Manin, Przeworski and Stokes, 1999*b*, p.9).

In order to capture congruence and responsiveness, one needs to measure citizens' and representatives' interests, priorities, preferences, attitudes, opinions or descriptive characteristics. Once these concepts are captured, one can verify if the two sides are *congruent* with each other, and if the representatives' side is *responsive* to changes in the citizens' side. In order to operationalize these concepts, scholars have used different indicators and measures, summarized in Table 2.1. The table is divided horizontally between citizens and representatives. The former usually corresponds to the independent variable (the demand side) in empirical studies of representation based on quantitative methodology, while the latter often corresponds to the dependent variable (the supply side). In other words, when testing substantive representation, scholars often want to know if representatives' positions are caused by citizens' positions. When testing descriptive representation, they want to know if representatives' personal characteristics are reflective of citizens' personal characteristics.[3] In the second column, the table lists common indicators used to operationalize these independent and dependent variables, such as opinion on the 'most important problem' to operationalize citizens' priorities, or legislators' income to describe a body of representatives in terms of wealth. The third column includes examples of data sources used to find the relevant indicators, while the fourth column lists examples of studies where authors adopted these indicators and measurements. Evidently, to analyse congruence and responsiveness, scholars have to measure both the citizens and the representatives sides of the equation; but to prevent repetition, examples of studies using different types of operationalizations are included only once in the table — i.e., they are categorized in either the 'citizens' or the 'representatives' section of the table.

Operationalizing representation in terms of congruence and responsiveness misses part of the big picture. According to Mansbridge (2003), even if congruence is important, when

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3. In their thermostatic model, Soroka and Wlezien (2010) conceptualize both sides as independent and dependent variables: citizens' interests inform policy output, and vice-versa.

judging the quality of representation, one needs to also account for "the quality of the deliberation that [representatives] produce or that produces them" (p.525). On the one hand, deliberation in the form of the electoral process influences who ends up in the legislature, so evaluating the quality of this process is of the foremost importance if we want to judge the quality of representation (because voters sanction representatives through elections). And, if representatives want to be able to respond to changes in public opinion, there should be a possibility for deliberation between legislators and citizens between elections too. Pitkin (1967, p.221) hints at the importance of judging institutions based on the quality of deliberation when she stresses that "when we call a governmental body 'representative,' we are saying something broader and more general about the way in which it operates as an institutionalized arrangement." In short, the indicators of congruence and responsiveness can help evaluate the quality of representation empirically, but more work is still needed to capture the all-encompassing meaning of this concept.

In this dissertation, I do not suggest new criteria for operationalizing representation. Like others before me, I define democratic representation as *congruence between the interests of citizens and the actions taken by elected representatives, and representatives' responsiveness to changes in the public's interests or preferences.* In other words, I conceive representation as having a static (congruence) and a dynamic (responsiveness) component. I do present new ways of measuring legislator-constituents congruence in the third article, but the main contribution of this dissertation is to present a theoretical framework to study the democratic representation of age groups in the context of population ageing. To help make sense of this question, in the next section I review some of the most important empirical findings related to the quality of democratic representation. I further explore the reasons why some groups of citizens tend to be better represented than others.

Variables	Indicators	Measurement (data sources)	Examples
Citizens' interests, priorities, wishes or characteristics	Preference for policy change Preference for governmental spending Issue attitudes Opinion on 'most important problem' Position on the left-right axis Share of population by party identification	Public opinion surveys	Hanretty et al. (2017) Gilens (2005; 2012; 2014) Jacobs and Page (2005) Spoon and Klüver (2015)
	Share of population identifying as ethnic or racial minority Share of population in each income group Share of population from different religious groups	Public opinion surveys; Census data	Theobald and Haider-Markel (2009) Soroka and Wlezien (2010) Curry and Haydon (2018)
	Demands to representatives	Data on constituency work	Butler and Brookman (2011)
Representatives' positions, priorities or characteristics	Policy support Issue attitudes Position on governmental spending Opinion on 'most important problem' Position on the left-right axis	Roll-call votes; Content of legislative debates; Campaign communications (manifestos); Data on bills introduced in the legislature; Budget data; Expert surveys or interviews with legislators; Data on committee membership	Miller and Stokes (1963) Saalfeld (2011) Soroka et al. (2009) Griffin and Newman (2005) Dassonneville et al. (2020) Reher (2015; 2016)
	Party affiliation Individual income of legislators Share of women in the legislature Ethnic or racial identification of legislators Religious affiliation of legislators	Official data on members of the legislature; Surveys or interviews with legislators	Bird (2010) Bowen and Dohmen (2014) Bratton and Ray (2002) Flavin (2012)
	Answers to constituents	Data on constituency work	Brookman (2013)

Table 2.1. Summary of indicators and measures used in the literature to capture citizens' and representatives' positions

2.1.3. The quality of democratic representation

Miller and Stokes (1963) were among the first to analyse the congruence between public opinion at the constituency level and the voting records of members of the American Congress. They found that members of Congress tended to vote in favour of legislation with which their constituents were also in agreement, and this relationship was particularly strong in the case of legislation related to civil rights. They found positive but weaker correlations between constituents' positions and legislators' roll-call votes on foreign policy or welfare legislation. In the case of welfare, the representatives' own position was a more important predictor of legislative behaviour. In general, these findings place Miller and Stokes on the 'optimistic' side when it comes to evaluating the quality of substantive representation. Others who share the optimistic view include Page et al. (1984, p.753), who found "a substantial amount of correspondence between congressmen's roll call votes and their constituencies' policy preferences" for welfare, women's rights and racial questions, but less so on civil liberties and abortion (see also Page, 1994). When it comes to policy responsiveness, Stimson, Mackuen and Erikson (1995) found that American institutions, especially the Senate, are sensitive to changes in the public's ideological orientation and respond to these changes, especially through the mechanism of electoral turnover (see also Page and Shapiro, 1983; Soroka and Wlezien, 2010).

Others are more pessimistic and argue that elected legislators generally do not represent constituents well. This is the argument posed by Jacobs and Page (2005) in their account of governmental responsiveness to public preferences over American foreign policy. The authors found that elected representatives are more responsive to the preferences of business actors than to those of experts, labour groups or the general public (see also Gilens and Page, 2014). According to Achen and Bartels (2017), the fact that policy changes primarily as a consequence of electoral turnover (Stimson et al.'s main finding) is no indication of government responsiveness to public opinion. Actually, Achen and Bartels showed that the association between districts and representatives' left-right orientation was weak after controlling for the party identification of Congress members. In other words, two Democratic representatives

elected in districts with comparable levels of liberalism may exhibit largely different patterns of voting in the House. Achen and Bartels hence conclude that in order to predict House members' behaviour, one should look at the party affiliation of members rather than the ideological orientation of their constituents. Another branch of representation research where we often find underwhelming results is the study of descriptive representation. Time and time again, research has shown that women (e.g., Stockemer, 2015; McEvoy, 2016), members of ethnic or sexual minorities (e.g., Bowen and Clark, 2014; Casellas and Wallace, 2015; Haider-Markel, 2010; Lewis and Pitts, 2011), and members of the working-class (e.g., Carnes and Lupu, 2015, 2016) were under-represented in legislatures. If legislatures consistently exclude some groups, then descriptive representation is not well achieved. But what hides behind these results? What explain these very different conclusions of scholars evaluating the quality of representation?

Explanations as to why we reach different results — especially in the case of substantive representation — include variation in measurement, variation in what issues are being studied, and variation in which institutions or groups are being examined. First, Achen (1977) has criticized Miller and Stokes' use of correlations to measure the association between constituents' issue positions and congresspeople's roll-call votes. Since "correlations cannot be compared across samples," Achen (1977, p.813) argues that Miller and Stokes are making a mistake in comparing the level of congruence across issues. According to Achen (1978), one should give special attention to how proximate representatives are, on average, to their constituents, and to how close they are to the middle of the distribution.[4] In other words, to evaluate how well citizens are generally represented, scholars should pay attention to variation in public opinion (in the population sample drawn for analysis), as it could affect estimates of representative-constituents congruence. The variation in representatives' positions can also be taken into consideration, for example by weighting the constituent-legislator distance by the "dispersion of the preferences" in the legislator's party (André and Depauw, 2017, p.385). More generally, the validity of indicators used to measure issue

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4. Two representatives could be located on the median voter (i.e. in the middle of their respective constituency), but one could be overall less proximate to his or her voters if there is more variation in his or her constituents' positions.

position has been called into question. Since most people do not have strong positions on many issues or may be influenced by question framing (Kahneman and Tversky, 1986; Zaller, 1992), capturing citizens' issue positions or policy preferences using surveys may result in 'made-up' positions or large numbers of don't know's (Soroka and Wlezien, 2010, p.27-8). Limitations in our ability to develop a valid measure of public opinion have the potential to affect estimates of representatives-constituents congruence and responsiveness.

Second, departing from methodological issues, one fundamental reason that explains why we sometimes find good representation, and sometimes not, is because we are not always studying the same issues. In fact, issue salience is a crucial factor that can explain why legislators are sometimes responsive to public opinion, and sometimes not so much. Theoretically, when issues are more salient, citizens should pay more attention to them. In turn, elected representatives should be more drawn towards the preoccupations of their constituents on these issues (Page and Shapiro, 1983; Jacobs and Page, 2005; Ellis, 2013, see also Soroka and Wlezien, 2010, chap. 3). For example, American, British and Canadian representatives have been found to be more responsive to changes in opinion towards more salient policy issues (measured using the 'most important problem' question in survey data). These include healthcare, welfare and the environment in the Canadian case; defence in the British case; and healthcare, defence and welfare in the U.S. case (Soroka and Wlezien, 2010). Empirical findings also indicate that the Democratic party's downfall in the 2010 midterm elections can be attributed in large part to Democratic incumbents' support for the very salient healthcare reform (Nyhan et al., 2012). Issue salience is taken into consideration not only by elected representatives, but by political parties in general: Spoon and Klüver (2014) found that parties changed the content of their manifestos to reflect the priorities of citizens, especially in more salient elections (see also Spoon and Klüver, 2015).

Third, institutions do not all respond to public opinion in the same way. So far, I have mostly referred to work on representation drawn from the American case. I already noted that the different institutions within the United States government varied in their capacity to represent the public (Stimson, Mackuen and Erikson, 1995). But comparative

work in the study of representation was able to highlight much more institutional variation in democratic representation. Electoral rules are responsible for some of this variation: majoritarian electoral systems, since they create less incentives for consensus, should be less representative than proportional systems once the government has been formed (Ferland, 2018; Huber and Powell, 1994; Wlezien and Soroka, 2012; Lijphart, 2012, chap. 16). Indeed, the number of parties is usually lower (and more centrist) in majoritarian than in proportional systems, which makes "congruence between the party system as a whole and the diversity of citizens' preferences [...] greater in proportional systems." (Golder and Ferland, 2018).

Variation in electoral rules raises other questions related to the quality of representation. One of them is the question of aggregate vs. dyadic representation, or representation at the national vs. the district level. While geographically-based systems of representation allow us to examine the quality of representation between constituents and *their* legislator (dyadic representation), the same cannot be said of countries where the geographic connection between representatives and constituents is weaker. But even within geographically-based electoral systems, we may find better aggregate than dyadic representation (Weissberg, 1978), because on average "policy output [should reflect] the collective (e.g., nation-wide) distribution of public opinion" even though some citizens are not well-represented locally (Hurley, 1982).

My goal in this dissertation is not to explain institutional variation in the quality of representation. Suffice to say that the question of whether representatives' positions are congruent or responsive to constituents' positions is a fertile one in the comparative political science literature. This review can however help situate Canada, which is the country selected for the empirical analysis. Because it is a parliamentary system, we might find weaker congruence and responsiveness between citizens' positions and policy output in Canada than in other countries. However, because the country's electoral system relies on single member districts, we should find a strong link between constituents and their own representative in Canada. In short, reviewing institutional variations in representation can help formulate expectations and understand results. The focus of this dissertation is instead on variations in the representation of different groups: it addresses the question of whether particular groups

(older citizens) are well represented, if they are better represented than others (younger citizens), and if so, why. Fortunately, a rich array of research has already attempted to tackle this question.

2.1.4. Inequalities in democratic representation

Even when individual legislators or entire governments represent citizens relatively well, it does not mean that *all* citizens are equally well represented. Dahl already hinted towards this possibility in his 1961 book on democracy in New Haven, Connecticut: "Other things being equal, rules supported only by a wealthy, educated minority (money and knowledge being important political resources) and opposed by the rest of the voters are surely likely to endure longer than rules supported only by a poor, uneducated minority and opposed by the rest of the voters." (p.314-5). Following Dahl, empirical work confirmed the presence of heterogeneity in substantive representation due to income and political participation, among other things. Here, I review some of these findings and discuss the theoretical reasons for these inequalities in representation.

One of the most extensively studied patterns of inequalities in representation is the one dividing higher- and lower-income citizens. According to Gilens (2012, chap.3), the policy preferences of higher-income Americans are more strongly correlated with governmental decisions [5] than the preferences of middle- or low-income Americans (see also Flavin, 2012). This is especially true when the preferences of different income groups differ more markedly, but also for economic and foreign policy issues. Bartels (2016, chapter 8) confirmed Gilens' main finding by measuring the association between the position of House and Senate members on the DW-NOMINATE scores (see Poole and Rosenthal, 1985) and the liberal-conservative orientation of low-, middle- and high-income citizens living in each US district (measured using expressed issue positions in surveys). He found that the correlation between House representatives' roll-call votes and the positions of higher-income citizens was twice as strong as with the position of low- or middle-income citizens. The difference in congruence was even

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5. Individual policy preferences were measured using survey questions that ask respondents if they agree with a given policy change (Gilens, 2012, p.57-9). Policy outcomes were measured by asking coders to determine "whether or not the proposed policy change occurred" (Gilens, 2012, p.60).

larger in the Senate, where the positions of higher-income citizens were five times more likely than those of middle-income people to be represented in Senators' voting records. Lupu and Warner (2021) confirmed this finding in a comparative analysis of 52 countries over 33 years. They measured the distance between citizens and representatives on the left-right axis using existing elite and mass surveys and showed that less affluent citizens were not as well represented than more affluent citizens across the globe (see also Blais et al., 2020). Importantly, however, more affluent people turned out to be better represented on economic issues, while less affluent people turned out to be better represented on cultural issue.

Not all authors agree that representatives are more responsive to affluent citizens. In a re-analysis of Gilens and Page's data, Branham, Soroka and Wlezien (2017) have shown that differences between the preferences of the rich (90th percentile), middle (50th) and poor are not as large as indicated by previous analyses. To make this argument, the authors examined those policies for which there is disagreement between income groups (a majority of the rich supports a policy, but a majority of the middle-class disapproves, a majority of the rich disapproves a policy, but the poor approves, and so on and so forth). First, their results showed that preferences of the different income groups correlate strongly (0.94 between rich/middle, 0.93 between middle/poor and 0.84 between poor/rich). Second, when the middle and rich disagree (approx. 10% of the cases), the rich "win" (i.e., their favoured policy is adopted, or their opposed policy is not adopted) 53% of the time. This difference is not statistically different from 50%. In short, Branham and his colleagues were unable to confirm that "US policy is only responsive to the preferences of high-income citizens". Soroka and Wlezien (2010, p.162-4) also reached nuanced findings: they did not find any significant income variation in the representation of preferences towards welfare, healthcare, education, and defence in the United States. But their analyses showed that in the Canadian context, the preferences of high- and middle-income citizens in terms of welfare, health and education spending were better represented than those of lower-income people.

If there are indeed differences in the representation of income groups, we should be able to explain them. A variety of mechanisms have been argued to explain why we sometimes

observe better representation of the policy preferences of higher-income citizens. Campaign contributions and contacts with politicians are some of the most important ones. As Bartels (2016, p.262-5) highlights, more generous campaign contributions by affluent citizens and frequent contacts between them and House members explain part (but not all) of the income gap in representation found in the United States. Since money is an important currency in politics, the possibility of losing campaign contributions due to poor responsiveness acts like a sword of Damocles over the heads of potential and established legislators (Gilens, 2012). Plus, contacts with politicians give greater visibility to some policy preferences, because each contact is an opportunity for citizens to communicate their issue positions to representatives (Griffin and Newman, 2005).

In short, higher-income citizens can use donations and contacts with politicians to get representatives interested in their policy preferences. As we already discussed, when the population considers an issue to be more important, legislators tend to be more responsive to citizens on this issue. But wealth is not the only way in which citizens can make their policy preferences more visible to representatives.

Other types of political activities like voting or the organization of interest groups can also make a difference. In electoral democracies, elections help relaying citizens' preferences to governmental offices. It makes sense theoretically for voters to be better represented than non-voters because they are the ones choosing who articulates public policy, but also because incumbents will be looking to mobilize voters in future elections. Griffin and Newman (2005) confirmed that the prospect of reelection made American senators more responsive to the preferences of the voting population, but in a comparative study of OECD countries, Dassonneville et al. (2020) refuted the reelection hypothesis, rather arguing in favour of the interest group hypothesis. In fact, interest groups have the potential to influence policy decisions (Gilens, 2012; Gilens and Page, 2014) by "shaping the voices that [legislators] hear and in helping them to understand the views and interests of their districts" (Ellis, 2013, p.776; see also Key, 1961). Ultimately, this process can influence the formation of candidate and party priorities, which is another important driver of policy output. Indeed, party

agendas, or the content of party manifestos, are crucial "predictors of legislative priorities" (Guinaudeau and Guinaudeau, 2020; see also Froio et al., 2017; John et al., 2014; Jones and Baumgartner, 2004), so knowing which actors influence party priorities is central to understanding policy congruence and responsiveness (e.g., Katz, 2014; Naurin, Royed and Thomson, 2019).

While electoral participation has been called into question as an effective mechanism to explain the quality of representation, this mechanism can still be relevant if we think of its impacts on descriptive representation. By selecting candidates who share their own characteristics (consciously or not), voters can strengthen their descriptive representation, which can in turn foster substantive representation. For instance, evidence suggests that black elected officials are more responsive to the demands of their black constituents in the United States, and vice-versa for white politicians and constituents (Butler and Broockman, 2011; Broockman, 2013).

In fact, research on the substantive representation of minority groups, women and people with disabilities usually analyses the interaction between descriptive and substantive representation, and the effect of this interaction on the quality of representation. Reher (2021) showed that citizens and representatives with disabilities were more likely to support left-wing policies and government spending (specifically on healthcare) as well as redistribution. This finding was not explained by partisan differences, but held even within party caucuses. She concluded "that having more disabled representatives in parliament will likely benefit the interests of disabled voters" (p.12). On the question of women's representation, many studies confirmed the link between the number of women legislators and the number of bills related to women's issues that are introduced (Htun, Lacalle and Micozzi, 2013, e.g.,) or adopted (e.g., Cowell-Meyers and Langbein, 2009) in the legislature. Finally, descriptive representation is important to explain the substantive representation of racial or ethnic minorities. In the UK, members of the House of Commons with Black, Asian or minority ethnic background are more likely to ask parliamentary questions related to immigration and ethnic minority rights (Saalfeld 2011; 2013; see also Aydemir and Vliegennthart 2021 on

the German case). Black and Latino members of the American Congress are also more likely to make interventions "consistent with minority policy interests" during legislative oversight hearings of the House of Representatives (Minta, 2009). In the Canadian context, research has shown that the "ethnic background of MPs matters more than the ethnic composition of the constituency" to predict MPs' probability of mentioning ethnic-related issues in the House of Commons (Bird, 2010).

While establishing the impact of descriptive representation on minorities' representation, scholars have tried to situate other factors — such as contacts with politicians, political participation and general support for specific issues — in this process. In their article on Civil and Penal Code reforms in Turkey, Ayata and Tütüncü (2008) showed that descriptive representation was not always key to the implementation of feminist policies. In the Turkish case, they found that the interaction between the ideological orientation of the party in power, the presence of male representatives who cared about reform and the involvement of women's organizations were instrumental to "ending the supremacy of the husband over the wife" (p.468). Without surprise, being part of a women's organization can increase female legislators' responsiveness towards women's issues, but public opinion towards feminist policies is also important (Carroll, 2001). This result was confirmed by Cowell-Meyers and Langbein (2009), who found that public opinion was a more consistent explanation for the adoption of feminist policies in American states than the number of women's organizations. In the case of racial or ethnic minority representation, scholars found that the size of the non-white population in a district influenced the likelihood of all representatives to address minority-related issues (Saalfeld, 2011). Results also confirmed that representatives respond to electoral incentives on these issues (Saalfeld and Bischof, 2013). This result was confirmed in the United States by Hutchings, McClerking and Charles (2004), who found that Democratic members of Congress from southern states were more influenced by the size of their district's black population when deciding to vote in favour of black interests on "high-profile bills". According to them, this is explained by the fact that southern members of Congress need the electoral support of Black citizens more than members of northern states. In

other words, while descriptive representation is crucial to explain racial and ethnic minority interests, electoral incentives should not be disregarded.

To summarize, we can identify three main reasons why the preferences of some groups of citizens are more likely to be translated into policy:

(1) **Non-electoral political participation**: e.g., members of the group make campaign contributions, are involved in organized interest groups or entertain social contacts with incumbents and/or candidates. These activities have the potential to influence *candidate and party priorities* and ultimately, policy output.

(2) **Electoral participation**: members of the group have higher turnout rates. This strengthens their *descriptive representation*, thus influencing policy output. It can also create *electoral incentives* for candidates/incumbents, who need to be responsive to preoccupations of these groups if they want to maximize their chances of being (re)elected (mixed evidence).

(3) **Public opinion**: The issue preferences of a given group are aligned with general public opinion on this issue. This creates additional *electoral incentives* for politicians to be responsive to these preferences.

The literature on democratic representation has focused a lot on income, race and gender to explain how these mechanisms work and describe inequalities in policy congruence or responsiveness. Scholars of this field did not focus so much, however, on differences in the democratic representation of age groups. The few studies that investigated this question did confirm the role of several of these factors to explain the responsiveness of legislators to senior citizens.

2.1.5. The democratic representation of older citizens

First and foremost, evidence from the American context indicates that legislators *are* responsive to their senior population. In general, when there are more senior constituents in a district, representatives give more careful consideration to 'seniors' issues' (Campbell, 2003; Curry and Haydon, 2018; Anzia, 2019). In the literature, 'seniors' issues' have been used

to refer to health programs such as Medicare, senior-friendly transportation, "elder abuse, late-life housing, assisted living needs, and continuing education" (Curry and Haydon, 2018, p.568). But what mechanisms have been used to explain the quality of seniors' representation?

On the one hand, the age of elected representatives influences their likelihood of supporting policies that are favourable to seniors. This suggests that descriptive representation matters. Curry and Haydon (2018) found that 69-year old members of Congress introduced almost two times more "non-salient senior issue bills" than 44-year old members. In other words, less salient seniors' policies (those that received less media attention) were almost exclusively taken into consideration by older representatives. The opposite seems to also be true. In Japan, one of the most rapidly ageing societies, McClean (2019) confirmed — using a quasi-experimental design — that younger mayors tended to increase child welfare relative to senior welfare in their municipalities.

On the other hand, there is growing evidence that the organization of seniors into interest groups is an important factor explaining their capacity to attract legislators' attention. In accordance with recent findings that raised doubts on the importance of turnout for democratic representation, Anzia (2019) showed that seniors of Californian municipalities are not necessarily better represented when they make up a larger proportion of the electorate. In fact, municipalities with senior commissions or in which there are more senior centres or clubs are those where senior interests (i.e., senior-friendly transportation) are more prevalent. Anzia's conclusions are in line with Campbell's argument (2003) that seniors' mobilization within the AARP, but also their participation in campaigns, proximity with politicians and engagement in groups concerned with social security, all contributed to strengthening legislators' focus on senior interests in the United States.

2.1.6. Summary

To conclude, we saw that representation can have descriptive, symbolic and substantive meanings. Empirical work in political science have found that the quality of representation — usually operationalized as constituents-representatives congruence or policy responsiveness

— varies as a function of measurement, issue importance, institutional features and group membership. Evidence suggests that specific groups, such as higher-income citizens, tend to be better represented by elected (and sometimes, non-elected) members of government. This can be explained by the fact that these groups entertain more contacts with politicians, participate in politics more, are better represented descriptively, are a key group for the formation of a winning coalition, or because broader public opinion is aligned with their preferences.

Older citizens are not estranged from this logic. While legislative attention to seniors' issues usually increases with the number of seniors in a constituency, the age of legislators works as an additional factor fostering the implementation of policies that benefit seniors. Moreover, just like higher-income citizens, seniors can make their priorities more important to representatives by working together as organized interest groups.

I will end this discussion on representation by raising an important methodological imperative for the study of policy congruence and responsiveness. When studying inequalities in representation, scholars should first establish the existence of *differences* in the policy preferences of the groups they are interested in. As Soroka and Wlezien put it, "Where preferences vary, there is potential for unequal representation; conversely, where preferences are identical, there is no basis for inequality" (2008, p.319). In the rest of this chapter, I review the reasons why we might expect age differences in political behaviour, and conclude by presenting the theoretical framework guiding the remaining chapters of this dissertation.

2.2. Age and political behaviour

Does age influence political behaviour enough to possibly cause inequalities in representation? Age is a recurring variable in the study of political behaviour. Like other socio-demographic characteristics, such as gender, education, income, ethnicity or religiosity, it is regularly included as a control variable in quantitative political science research. But researchers have also theorized about the influence of age on opinion formation, vote choice and political participation.

2.2.1. Age, opinion formation and vote choice

The *Predisposition framework* is a good starting point to understand the relationship between age and opinion formation. This model can be traced back to Zaller, according to whom "every opinion is a marriage of information and predisposition" (1992, p.6). In *The Nature and Origins of Mass Opinion* (1992), Zaller defines predispositions as "a distillation of a person's lifetime experiences, including childhood socialization and direct involvement with the raw ingredients of policy issues, such as earning a living, paying taxes, racial discrimination, and so fort." To him, "Predispositions also partly depend on social and economic location, and probably at least as strongly, on inherited or acquired personality factors and tastes" (p.23). In other words, predispositions include various individual characteristics, such as interests, personality, biology and attachments (Leeper and Slothuus, 2014, p.131). One could classify these factors into broad categories, such as the individuals' identity in terms of their personality and socio-demographic characteristics (gender, ethnicity, financial resources, level of education, etc.), their experiences of socialization (family, friends, etc.) and the groups they belong to (parties, ethno-cultural groups, etc., see also Alford, Funk and Hibbing, 2005; Sears and Funk, 1999).

Following the predisposition framework, age predisposes individuals towards certain political opinions and electoral choices. Zaller even claims that "One important but not manifestly political predisposition is chronological age" (1992, p.172). But not everyone agrees that age is an important predisposition for political attitudes or vote choice. In their 2019 paper, Peterson, Smith and Hibbing nicely summarized competing theories used to explain the role played by age in opinion formation. Figure 2.1 presents a summary of these theories by placing them on an axis ranging from the most to the least persistent of political orientations over the life-course, i.e., from stronger to weaker influence of age on political orientations.

On the one hand, Peterson et al. cite the *Lifelong Persistence model*, the *Impressionable Years model* and the *Party Loyalty model*, which all argue that individual attitudes remain generally stable after early political socialization. Proponents of the Lifelong Persistence model argue that individuals do not change their attitudes following very early — often

Running tally
Individuals update their opinions in reaction to new information, but weight this information against prior attitudes.

Impressionable years
Individuals form their political attitudes in late adolescence and early adulthood. These attitudes persist throughout the life-cycle.

The least persistence ←——————————————————→ **The most persistence**

Lifelong openness
Individuals remain open to new information across the life-cycle, thus continuously updating their opinions.

Party loyalty
Individuals form attitudes based on the party they identify with. Party identification is generally stable across the life-cycle, but if a party adopts new positions, identifiers of this party will follow.

Lifelong persistence
Political attitudes are adopted early in life.

Note: Figure adapted from the review of the literature presented in Peterson et al. (2019).

Figure 2.1. Review of main theories on opinion formation across the life cycle

family — socialization (see also Jennings and Niemi, 1975; Kerry and Murray, 2018). The Impressionable Years theory flows from a similar logic, but according to this view, the most important moment for opinion formation falls around late adolescence and early adulthood. Following this crucial period of the life cycle, when young people are especially susceptible to new experiences, attitudes remain largely stable (see also Alwin and Krosnick, 1991; Jennings and Markus, 1984; Jennings, 1987; Niemi and Hepburn, 1995). According to this view, things experienced during adolescence and early adulthood "influence the formation of attitudes towards new attitude objects" (Sears and Funk, 1999, p.1). Lastly, the Party Loyalty model "holds that individuals have no stable or fixed opinions separate from their partisan loyalty," so if parties do not change positions, then neither do their partisans (Peterson, Smith and Hibbing, 2019, p.602). In other words, following these three models, the influence of age on opinion formation is overall weak because other predispositions — like childhood socialization, formative experiences or party identification — are relatively much stronger.

On the other hand, Peterson and his colleagues situate the *Lifelong Openness* and *Running Tally models*, two theories that leave more room for life cycle change in individual

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opinions. The Lifelong Openness model allows for any amount of change across the life cycle, whereas the Running Tally represents a middle-ground approach, closer to the Impressionable years model. It allows for newly acquired information to create attitudinal change, but proponents of this approach consider that the acquisition of new information is itself influenced by "prior attitudes" (Kinder, 2006; Peterson, Smith and Hibbing, 2019, p.602).

Empirical work in political science more often supports opinion stability over the life cycle. Indeed, important determinants of political behaviour such as party identification or position on the left-right scale have been found to endure with age (e.g., Kinder, 2006; Krosnick, 1991; Krosnick and Alwin, 1989). In fact, party identification even appears to strengthen with age and the repeated act of voting (Dinas, 2014). But despite this overall stability, we do have evidence that opinion change over the life-course is possible. For example, Cornelis et al. (2009) confirmed — using Belgian and Polish samples — that individuals tend to become more conservative when they become older. Tilley and Evans (2014) used panel data to show that support for the British Conservative Party was more prevalent in older age. Analysing the Michigan Youth-Parent Socialization Panel Study collected between 1973 and 1997, Peterson, Smith and Hibbing (2019) found that some Americans changed attitudes in older age, and when they do, most adopt a more conservative view of politics. Moreover, research in public policy has shown that age can influence preferences towards government spending. Older people are usually less favourable to government spending on education or childcare, and more so of government spending on healthcare and social security (Fullerton and Dixon, 2010; Goerres and Tepe, 2010; Poterba, 1997, 1998; Sørensen, 2013).

2.2.2. Age and participation

Research has shown that one's likelihood to participate in elections increases with age, but at a declining rate (as reported in chapter 1). Electoral participation even reaches a plateau around 65 to 70 years old, then decreases (Bhatti, Hansen and Wass, 2012; Franklin, 2004). Older people are also more likely to become a party member, to establish contacts with politicians and to make political donations (Campbell, 2003). Younger people are for their

part more likely to sign petitions, to boycott, to take part in a protest or to discuss politics on the internet (Marien, Hooghe and Quitelier, 2010; Sloam, 2016).

As is the case with opinion formation and vote choice, many theories have been put forward to study these age trends in political participation. The *Resource model* of political participation, developed by Brady, Verba and Schlozman (1995), offers a good framework to understand the influence of age on political engagement. Brady, Verba and Schlozman argue that socioeconomic status (education, income, occupation) is not the only answer to political participation. In fact, resources (time, money and civic skills) interact with status to facilitate specific forms of participation in specific groups of people. The authors define *time* as hours left over "after accounting for time spent in an average day doing work for pay, doing necessary household work of all sorts, studying or going to school, and sleeping." They define *civic skills* as communications and organizational capacities, such as writing, speaking or being "comfortable organizing and taking part in meetings." These can be acquired in school or other institutions, like "the workplace, voluntary associations, and churches" (p.273). According to the Resource model, different resources can also be linked to certain dispositions, like political interest, political efficacy or the size of the social network, which themselves influence political engagement. Brady and his colleagues tested their model by surveying more than 15,000 Americans on their choice of political activities. They confirmed that voting did not require much resources except time, that donating money to campaigns or causes was most strongly influenced by monetary resources, and that activities such as contacting politicians, working on a community problem, serving on a board, doing campaign work and protesting were mostly determined by free time and civic skills.

These resources can change with age, and this why the Resource model can help explain age differences in political participation. First, institutionalized forms of political participation like voting, joining a party or making political donations require more time, money and civic skills. Since financial resources and disposable time tend to increase with age, it is no surprise that older adults are more likely to be involved in these types of political activities. In fact, younger people are more likely to be hung up on family and early career obligations

than their older counterparts (Jennings, 1979; Kinder, 2006; Stoker and Jennings, 1995). Civic skills like organizational capacities can also become stronger with age, as one gets more involved in his or her community (Bhatti, Hansen and Wass, 2012; Bhatti and Hansen, 2012). Second, less institutionalized forms of participation, like discussing on the internet or signing a petition, require fewer financial resources, which helps explain why younger people are more drawn to these activities. Third, a decrease in disposable income and greater isolation from the community can explain why older seniors are less likely to participate in any type of political activity (Kam et al., 1999; Nie, Verba and Kim, 1974). [6]

In addition to resources, which likely change with the ageing process, there is also a generational component to age differences in political participation (see Dassonneville, 2016). In fact, even when trying tease out the effect of age, contemporary studies still find differences between the levels of electoral participation of different generations (Franklin, 2004; Wass, 2007). This brings us back to the Impressionable Years model introduced previously, which states that political behaviours remain largely stable following adolescence and early adulthood. Citizens who happen to have been politically socialized in a context that fostered political participation, hence, are more likely to continue doing so throughout their life. Political socialization does not imply that there are no age effects in political participation, but that initial *levels* of participation may differ across generations. This is explained by the fact that members of older generations hold a "set of values predisposing them to vote," and "are being replaced by newer generations with another set of values predisposing them to abstain" (Blais and Rubenson, 2013, p.97). These values, more salient in older generations, include attention to politics, political interest and civic duty (Blais et al., 2004; Blais and Rubenson,

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6. When it comes to age and voting, the Habit model of electoral participation reaches an interpretation that is similar to the Resource model. Since accomplishing an action several times can contribute to making it a habit, participating in electoral contests repeatedly can make the act of voting almost automatic (Aldrich, Montgomery and Wood, 2011; Coppock and Green, 2016; Dinas, 2012; Gerber, Green and Shachar, 2003; Green and Shachar, 2000). Theoretically, then, older citizens should be more likely to have developed a habit of voting, thus justifying the higher levels of participation that we find among older age groups. The Habit model reaches 'ambiguous' results, however it has been called into question (e.g., Blais and Daoust, 2020). In addition, if habits do strengthen with age, the model does not help to answer why older seniors tend to 'lose' the habit of voting.

2013; Rubenson et al., 2004).[7] In a similar vein, the adoption of post-materialist values by younger generations has been used to explain generational differences in less institutionalized forms of political participation, like protesting or signing a petition. According to this view, "with the fulfillment of material needs and the extension of political rights in post-modern societies, the politically active youth is likely to seek self-realization and the advancement of their goals through unconventional participation" (Melo and Stockemer, 2014, p.49). In short, experiences of socialization explain why current older generations are more likely to turn out to vote. This is an important factor to take into account when studying the influence of age on participation, because it stresses the need to filter out generational effects in empirical analyses.

2.2.3. *Why* does age influence behaviour?

The previous sections situated age as a potential determinant of political behaviour, and gave empirical examples illustrating the effect of age on opinions, vote choice and patterns of participation. But where do these effects come from? In other words, why does age influence behaviour? In what follows, I identify two mechanisms by which ageing can influence individual political behaviour. First, ageing brings about physical and cognitive changes in individuals. Second, ageing is associated with life transitions that can affect individuals personally and induce change in their social relationships.

2.2.3.1. *First mechanism: age as a biological state*

Ageing has physical and cognitive consequences on individuals. As discussed in chapter 1, 'normal' or 'healthy' ageing is associated with a decline in cardiovascular, pulmonary and muscular functions; changes in the body composition (height and weight, bone density, etc.); and increased risk of illness and injuries (Chodzko-Zajko et al., 2009). Cognitively, ageing is associated with diminishing "processing speed, executive functions, and [working] memory" (Fjell and Walhovd, 2010; Craik and Salthouse, 2008).

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7. Older generations are also composed of more women who are less likely to turn out than their male counterparts (Bhatti, Hansen and Wass, 2012).

These consequences of ageing have the potential to affect decision-making and, in turn, political choices. For instance, because they lead to greater "preference for order" and less "openness to experience," these biological consequences of ageing have been associated with a tendency for greater conservatism (Peterson, Smith and Hibbing, 2019, p.600). At the same time, biological ageing has also been associated with a greater need for state interventionism, which could make individuals more supportive of left-wing policies (*ibid*, p.601). Slower cognitive processing speed has for its part been associated with greater risk aversion (Dohmen et al., 2010; Albert and Duffy, 2012; Kurnianingsih et al., 2015; Bonsang and Dohmen, 2015), which in turn can decrease one's affinity with uncertain political projects such as state separatism (Nadeau, Martin and Blais, 1999). Similarly, developing new health conditions can change an individual's balance of interests by drawing more emphasis on health- or security-related concerns. This mechanism is often put forward in studies of public spending preferences to explain why older people are more favourable to government spending on healthcare (e.g., Sørensen, 2013).

The biological changes that go hand-in-hand with ageing can also affect the balance of time, money and civic skills that individuals have access to, thus affecting patterns of political participation. I have already hinted towards this mechanism when discussing the Resource model. With, access to political resources that foster electoral participation and involvement in institutionalized political activities (donating money, getting involved in a party, etc.) usually increases. But after a certain point, however, these resources (especially time and civic skills) can start to decrease. In 'older old-age', physical limitations can make it more difficult to engage socially with others, thus reducing opportunities to maintain civic skills that are important to political participation (Rosso et al., 2013). Empirical research in political behaviour has already confirmed that poorer functional ability[8] and self-rated health[9] were associated with lower turnout in Europe (Mattila et al., 2013; Wass et al., 2017). Disability has been associated with lower turnout in the United States (Schur et al.,

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8. Functional ability is operationalized using the following question: "Are you hampered in your daily activities in any way by any longstanding illness, or disability, infirmity or mental health problem?"
9. Self-rated health is operationalized using the following question: "How is your health in general?"

2002). In short, biological changes associated with the process of ageing help explain why political participation often stabilizes, and even declines, in older seniors.

2.2.3.2. *Second mechanism: life transitions*

When becoming older, individuals experience various life transitions — such as having children, changing jobs, leaving the workforce, mourning loved ones, etc. (Tilley and Evans, 2014) — that can induce changes in political attitudes and behaviour. These different stages of life can be accompanied with changes in an individual's living situation or social network; and we know that such transitions can induce change in political behaviour (Smets, 2016). For instance, parenthood has been associated with higher levels of social conservatism (Kerry and Murray, 2018).

The effect of life transitions on the key resources of political participation are however not straightforward. Some transitions, like having children, can be associated with a decrease in free time (Bhatti, Hansen, Naurin, Stolle and Wass, 2019). But others, which usually happen in older age — like seeing children leave the family home — can lead to more free time. Likewise, some events, like divorcing or losing a job, often lead to a decrease in financial resources. But the effect is not so clear for other transitions: retirement, for example, can lead to less disposable income but also to a decrease in certain expenses. Finally, particular transitions may lead to an increase in civic skills. Starting a new job may be one of them. On the contrary, moving may lead to a stagnation in civic skills if one has yet to join new activities or associations. In other words, the overall process of ageing is paved with various life transitions, each of them having a different effect on the resources needed to participate in the political process. While life transitions can have unexpected consequences, in general the transitions experienced by middle-aged adults (getting married, having children, getting a promotion) are "associated with activities (involvement in organizations, associations, the community, etc.) that tend to enhance political participation due to increased motivation, mobilization, skills, and pressure" (Smets, 2021, p.291). In contrast, the experiences of younger adults (going off to college, dating, graduating, moving, getting a first job)

and people in older age ("retirement, declining family income") decrease politically-relevant resources (see Brians, 1997; Highton, 2000; Kinder, 2006; Smets, 2021).

2.2.4. Summary

To conclude, the influence of age on opinion formation does not command consensus in the political science literature. Even though age can be conceived as a predisposition and is widely used in empirical political science as a control variable, scholars do not all agree on its importance for opinions, ideological position and party choice. In fact, many argue that political orientations are crystallized no later than in early adulthood, or that political choices are heavily influenced by partisan identification, itself almost immutable. Reality probably lies somewhere between this view and the possibility that some opinions can change as a result of ageing. In contrast, life cycle patterns in political participation receive broader consensus. Turnout and participation in institutionalized political activities usually increase at a declining rate over the life cycle. Participation in less institutionalized forms of political activities is usually more prevalent in younger age. Two mechanisms explain the effect of age on political opinions and participation. First, becoming older has biological consequences on individuals and second, the ageing process is paved with life transitions. Both of these mechanisms can influence political choices and behaviours.

2.3. Theoretical framework

This section draws connections between the main conclusions highlighted in the review of literature on democratic representation and political behaviour to develop a theoretical framework that helps to explain the relationship between the ageing process in individuals and the representation of age groups. Figure 2.2 summarizes this framework.

On the one hand, as underlined in the previous section, ageing is accompanied with several transformations in individuals, including physical and social changes (see the left-hand side of Figure 2.2). Becoming older eventually leads to the emergence of physical constraints that can slow-down participation, but this effect is constrained in older old-age. During most of one's life cycle, becoming older increases financial resources (see Figure 1.4 and 1.5

in chapter 1) and disposable time, which foster political involvement. Individuals who have access to more time, money and civic skills tend to get more involved in different forms of political activities, like voting, making political contributions, becoming a party member and engaging with organized groups. The social and biological consequences of ageing can also have a more direct effect on individual policy preferences, by making one more reluctant to change or modifying one's balance of interests, for example.

At the aggregate level, or when examining the relationship between groups of citizens and their representatives, we know that different mechanisms can help citizens to realize democratic representation. This aggregate level is illustrated in the right-hand side of Figure 2.2. On the one hand, through their electoral participation, voters contribute to selecting those who will elaborate policy. By voting for candidates who 'look like' them, citizens can improve their descriptive representation, which can ultimately influence policy output. Electoral participation also creates electoral incentives for current or potential candidates, who may want to pursue policies that are close to the preferences of voters in order to get their support. This fits the prototypes of older citizens, who vote more, on average, than younger people. On the other hand, other types of political involvement, such as political contributions or interest groups, often increases groups' proximity to politicians. Through these contacts, groups of citizens can inform politicians on issues that are important to them, thus influencing candidate and party priorities and increasing the probability that representatives will attend to these issues. Again, older citizens 'fit' this mechanism well because they are on average more involved in their community, make more political donations and are more likely to join political parties. Finally, considering that the individual process of ageing has an impact on individual opinions and preferences, population ageing has the potential to increase the prevalence of seniors' policy preferences in society, which could modify electoral incentives for politicians and influence policy output.

Like all theoretical frameworks, this model is a simplification of reality. It comes with important assumptions — three specifically. First, it assumes that the individual effects of ageing on political behaviour are not cancelled out in the aggregate. In other words, it
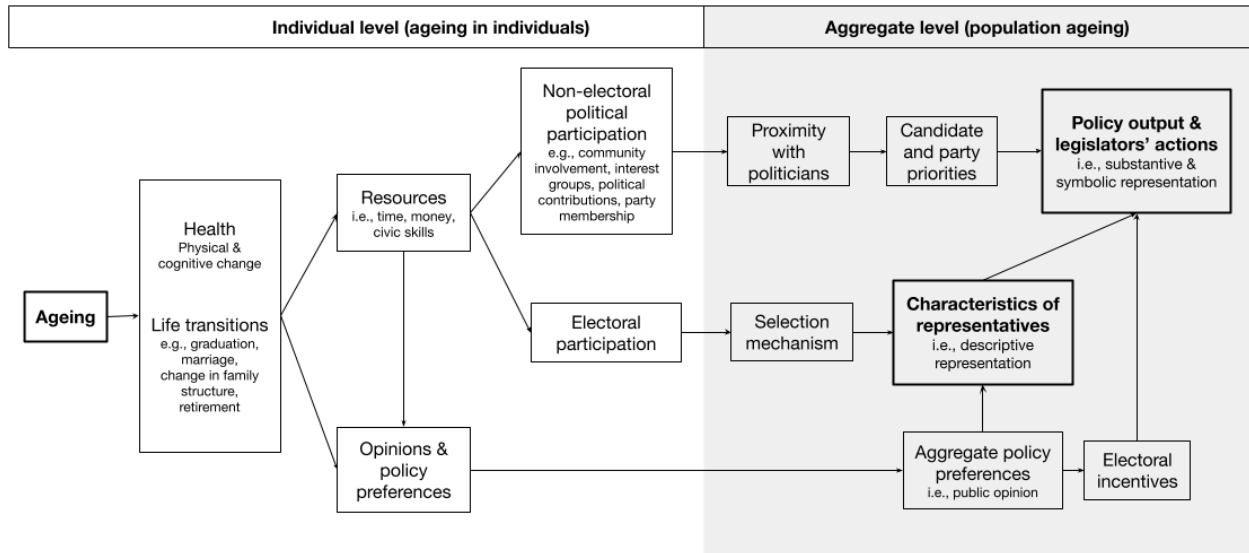
Figure 2.2. Graphical representation of the theoretical framework

assumes that an increase in the size of the senior population will increase the prevalence of older people's policy preferences, but ignores the possibility that other groups in the population may move in the opposite direction, thus canceling out changes. For example, if older individuals are more favourable to increasing public pension benefits and the share of older people increases in society, then aggregate support for more generous pensions should increase. But while this happens, other age groups may become simultaneously *less* favourable to increasing pension benefits, thus leaving public opinion unchanged (see Druckman and Leeper, 2012, pp.58-61). In the theoretical framework, I assume that individual-level opinion changes brought about by the process of ageing add up in the aggregate and are not cancelled out. In other words, the model presupposes the presence or emergence of an 'age cleavage' in opinions (Ford and Jennings, 2020). While it is not the goal of this project, the validity of this assumption could eventually be tested empirically.

The second assumption is that of no policy feedback. Stated differently, it rules out any simultaneity bias — or arrows that go from the outcomes to the independent variables. In Figure 2.2, there is no arrow pointing from policy output to resources, from representatives' characteristics to turnout, and so one and so forth. For example, the model assumes that policies implemented by representatives do not have any consequences on the resources (money, civic skills, time) of older citizens. This is a strong assumption. In *How Policies*

Make Citizens (2003), Campbell demonstrates that the patterns of participation of older Americans — such as involvement in the AARP — led to the consolidation of seniors' benefits in the United States. In return, an increase in seniors' income gave seniors more time to participate in politics. For simplification purposes, this feedback effect is ignored by the model presented here, but it could be taken into consideration by researchers who want to test the relationship between participation and policy output specifically.

Third, closely linked with the previous assumption, the framework assumes no thermostatic effect of policy on public opinion. This means that the policies implemented by representatives are assumed to have no impact on the policy positions of citizens. The thermostatic model was developed by Soroka and Wlezien (2010). It states that "policy will respond positively to public preferences for more spending, shifting policy upward (downward) when the public prefers more (less) policy." In return, public "preferences will adjust downward (upward) as policy moves increase (decrease)" (p.41). Making the assumption of no thermostatic effects does not mean that these effects do not exist; yet, I assume they do not exist in this simplified view of the reality, and when trying to measure empirically the impact of aggregate opinion on policy output. In the context of this project specifically, this is not a strong assumption because the analysis on citizens-representatives congruence (chapter 5) is not performed over an extensive period of time. That said, in more long-term analyses, the assumption may need to be relaxed.

Even though they sometimes rely on strong assumptions, the usefulness of theoretical frameworks rests in their ability to make generalizations about reality and to guide expectations. The framework put forward here helps to formulate a few expectations about ageing, political behaviour and the representation of older citizens. For example, because becoming older changes opinions, *there should be age differences in policy preferences at the individual level.* Likewise, because ageing comes with changes in resources, such as money, time and civic skills, *there should be age differences in patterns of political participation at the individual level.* This should translate into *differences in aggregate policy preferences and patterns of participation between constituencies with a larger share of 'younger' people, as*

compared to constituencies with a larger share of 'older' people. In other words, regions with (relatively) larger older populations should be more supportive of policies that are preferred by older people. In these regions, we should also find that some political activities, specifically those preferred by older people, are more popular than others. Following what we now know from descriptive representation, and from past empirical studies on representatives' age, we can also expect *older elected representatives to have a greater interest in seniors' issues than their younger counterparts.* In terms of substantive and symbolic representation, the demographic composition of the citizenry should have an impact on policy output and representatives' actions. Stated differently, *when the number of older citizens increases, the policy output should reflect seniors' preferences more.* This relationship should be explained by patterns of political participation: it should be linked with older citizens' turnout rates, involvement in interest groups, levels of political donations, and propensity to become party members, among other things.

2.4. Conclusion

In the following empirical chapters, I will not be testing all of these expectations, nor will I be providing empirical tests for all elements included in the theoretical framework. This framework offers theoretical background for the papers included in this dissertation, and lays the ground for future research on age, political behaviour and democratic representation. To my knowledge, this framework consists in the first attempt to develop a comprehensive theory about the impact of the ageing process in individuals on democratic representation in the context of population ageing. To do so, it builds on research in gerontology, political behaviour, opinion formation and democratic representation.

Given the constraints that go along the realization of a doctoral dissertation, I decided to focus, in the empirical part of this project, on three specific elements related to the theoretical framework presented in this chapter. The first relates to the influence of age on individual political preferences, the second is about the influence of age on political participation and vote choice, while the last relates to the association between citizens' age and representatives'

behaviour. I also chose to focus on the Canadian case only. Three reasons explain this choice. First, several scholars have already used the Canadian case to study questions of representation (e.g., Bird, 2005; Soroka, Penner and Blidook, 2009; Soroka and Wlezien, 2010). By relying on the same case, this dissertation builds on these studies. Second, as explained previously, the choice of the Canadian case is also motivated by the fact that this country's electoral system relies on single-member districts, which allows for analyses of dyadic representation. Finally, as highlighted in chapter 1, Canada is one of the most rapidly ageing societies in the world, and there are important regional variations in population ageing in this country. This allows for more variation in the analysis of representation.

In the first article presented below (chapter 3), I analyse the relationship between age and support for governmental spending on fifteen policies in Canada. Using data spanning over three decades, I isolate the effect of age on individual spending preferences from generational and period effects. On the one hand, results show that older Canadians are generally more favourable to the status quo when it comes to government spending. On the other hand, when investigating specific policies, I find evidence that older people are less favourable to increasing government spending on education and more favourable to spending on defence and transportation. This paper can be situated on the left-hand side of the theoretical framework, where we find the link between ageing and individual policy preferences (see Figure 2.2). Doing so, it contributes to the literature on opinion formation, and confirms that some attitudes can actually change over the life cycle.

In the second article (chapter 4), I present an analysis of voting behaviour within seniors' residences. As reviewed previously, the literature on turnout finds that 'older olds' are usually less likely to participate in elections than their younger counterparts. To overcome this problem, Elections Canada places polling stations in seniors' residences. Using original data from the 2015 and 2019 federal elections at the level of polling stations, I find that this measure has a positive impact on the turnout rates of citizens living in seniors' homes. During these two elections, turnout was 4 to 6 points higher in seniors' residences than in other polling stations. This measure also benefited the Conservative and Liberal parties, who

scored as much as 2 to 4 points higher in seniors' residences than outside of residences. This paper can also be situated on the left-hand side of the theoretical framework: it investigates questions related to the costs of voting and to the mobilization of older voters by electoral parties in Canada.

In the third article (chapter 5), I investigate the question of representation in Canadian federal electoral districts between the 34th and 42nd legislatures. Relying on the content of parliamentary debates, I develop a measure of MPs' attentiveness to three issues: unemployment, immigration and seniors' issues. I link these measures to the demographic composition of every electoral district in an attempt to verify if representatives elected in regions with higher unemployment rates, where more residents come from outside of Canada, or where more senior citizens live, are more likely to discuss each of these topics during legislative debates. Contrary to what we might expect, I do not find evidence of strong correspondence between the age composition of districts and MPs' attention to seniors' issues. I discuss the importance and potential explanations for this result in the concluding chapter of this dissertation. This paper can be situated on the right-hand side of the theoretical framework: it asks questions related to the relationship between constituents and representatives in a democracy.

Chapter 3

Article 1. Government spending preferences over the life cycle: A comprehensive overview

This paper was submitted to the Journal of Public Policy.

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Abstract: Do seniors hold different attitudes towards government spending than younger people? The literature on age and public spending preferences has been limited to a restricted set of policies or to short periods of time, which makes it difficult to draw comprehensive inferences about life cycle changes in opinions towards government expenditures. Using Canadian public opinion surveys between 1987 and 2019 that asked respondents to position themselves on fifteen policies, I find that older people are generally more favourable to the status quo when it comes to government spending. I also find that support for education spending decreases extensively over the life cycle, while support for spending on welfare, defence and transportation is more widespread in older age. These findings broaden our understanding of the influence of age on individual preferences towards government spending and allow us to stipulate about the consequences of a growing senior electorate on government budgets.

Keywords: public spending preferences, population ageing, public opinion, age-period-cohort analysis

3.1. Introduction

Population ageing is forcing governments to review the breadth and generosity of several welfare programs, including healthcare, pensions and employment insurance (OECD, 2017). In electoral democracies, we may wonder if some of these policy decisions could be driven by changing citizen preferences. In fact, alleged 'age cleavages', or the 'greying of democracies' have already been cited in public discourses as explanations for political outcomes (Glueck and Tavernise, 2020; Stanton, 2020; Založnik, 2016). Even though these explanations are appealing and catchy, they do not necessarily represent verified empirical patterns. For example, generations are frequently confounded with age cleavages in these public claims.

Investigations of life cycle trends in support for government spending are therefore important to enrich our discussions about the consequences of demographic change for budgetary decisions. If support for specific types of public spending is more prevalent among older age groups, then population ageing could be accompanied with increasing popular support for some policies and decreasing support for others. The context of population ageing thus stresses the importance of developing a good understanding of life cycle fluctuations in support for public spending in major budgetary sectors, like healthcare or education, but also in programs that could be constrained in a context of heightened budgetary demands, like the arts or public transportation.

Other things equal, we may expect older people — as compared to younger adults — to be more favourable to the status quo in terms of government spending. In fact, studies in political behaviour show that resistance to change increases with age, which could make older people more inclined to maintaining current levels of public spending (Peterson, Smith and Hibbing, 2019). On the other hand, one's position within the life cycle could also influence their interest for specific policy areas, thus influencing their support for spending in these domains. Life cycle trends in support for different policies could therefore be much more nuanced than support for government spending in general. In fact, the literature on public spending has confirmed that preferences depend on one's use of government services (e.g., Svallfors, 2008). Following this rationale, we may expect seniors to be more supportive of

government expenditures on programs such as elderly services and younger adults to be more favourable towards programs like education or childcare.

Past research already provides insight into these questions. Even though political orientations are often stable over the life cycle (Sears and Funk, 1999), and even though seniors can have positive views on policies that benefit younger generations (Goerres and Tepe, 2010), empirical findings indicate that older people are often less supportive of education spending (Busemeyer, Goerres and Weschle, 2009; Goerres and Tepe, 2010), are more supportive of government spending in healthcare, pensions (de Mello et al., 2016; Hess, Nauman and Steinkopf, 2017) and social security (Fullerton and Dixon, 2010). One of the main shortcomings of this area of research, however, is that it does not cover a wide scope of policy preferences, but remains limited to the study of education, healthcare, childcare, social security and pensions. In addition, many studies in this field use data that cover relatively short periods of time, so the age gaps found in these articles may be overly sensitive to period effects, or could be hiding generational differences.

I address these limitations by investigating life cycle changes in individual preferences towards fifteen government portfolios, including areas such as defence, transportation, environment and the arts. To do so, I rely on an original dataset of Canadian cross-sectional data collected between 1987 and 2019. These data include consistent measures of attitudes towards government spending, which allows me to distinguish the influence of age from that of generations and time periods. Indeed, for more than thirty years, two survey organizations — Environics and the Canadian Election Studies — asked the exact same questions regarding support for government spending on a total of fifteen policy areas. Apart from this advantage in terms of data access, the selection of the Canadian case for this research is justified by the fact that this country is one of the most rapidly ageing across established democracies (van Bavel and Reher, 2013). Analysing the impact of age on support for public spending is therefore particularly relevant in this country.

When aggregating respondents' answers on all policies to create a measure of support towards general government spending, I find that older people are more favourable to maintaining the status quo in terms of spending. These life cycle effects are not sizable, however: support for "maintaining the same amount of government spending" increases by less than 3 points between 50 and 75 years old. In contrast, results presented in this article point to substantial age differences in attitudes towards specific policy domains. Seniors are on average less supportive of state spending in education and the arts, but more so of defence, transportation and welfare spending. Finally, support for spending on elderly services increases with age among younger adults, reaches its peak around retirement, then decreases with age in older adults.

The main contribution of this article is to provide a descriptive outlook on life cycle fluctuations in support for government spending that is as comprehensive and reliable as possible. By considering a broad set of programs, this article confirms some findings highlighted in previous research, but it also brings important nuances to our understanding of age and public spending preferences. For instance, contrary to what we might expect, findings indicate that support for spending on elderly services is not more widespread among the oldest individuals, but rather among people on the verge of retirement. Results also show that support for many programs, such as justice or the environment, does not change significantly with age. This article also contributes to public opinion research by showing that attitudes towards public spending are influenced by age. Doing so, this article lays ground for future research on age and politics and allows us to extrapolate on the consequences of population ageing for governmental decisions on a wide variety of policy areas.

3.2. Individual support for government spending

Scholars have investigated several explanations to account for individual differences in support for government spending. For example, scholars analysed symbolic racism (Goren, 2008; Krimmel and Rader, 2017) and gender (Shorrocks and Grasso, 2020) to explain why some citizens are more favourable than others to government spending or the welfare state. The

effect of age on these attitudes has not been entirely overlooked (e.g., Sørensen, 2013), but this topic of research is gaining significance in the current context of population ageing, when many established democracies are experiencing drastic changes to their age pyramid. These demographic changes revive the interest for topics like age cleavages in vote choice (e.g., Tilley and Evans, 2014), or the influence of representatives' age on policy output (McClean, 2019). In this context, investigations that center around age are pertinent and should co-exist with studies on generational cleavages, because the process of population ageing is accompanied with generational turnover and with an increase in the relative importance of older age groups. Knowing if opinions towards government spending change with age is important if we want to be able to draw robust inferences about the consequences of population ageing for politics. This paper therefore asks the following question: Do spending preferences change over the life cycle, or are they mostly immutable?

In order to answer this question, it is essential to consider the different theories that could inform expectations about life cycle changes in support for government spending. On the one hand, we find proponents of the ideological theory, who argue that ideological orientations and partisanship structure individual preferences for public spending (e.g., Krimmel and Rader, 2017; Oldendick and Hendren, 2018). This theory rests on the idea that preferences for government spending are manifestations of left-right or conservative-liberal orientations among individuals (Jacoby, 1994). In accordance with this view, research has shown that support for welfare spending in the United States was lower among those exhibiting higher levels of symbolic racism (e.g., Goren, 2008; Krimmel and Rader, 2017).

According to ideological theory, we should not expect important age gaps in public spending preferences, because political orientations such as partisan identification are generally stable over the life cycle (Jennings and Niemi, 1975; Campbell et al., 1960). In fact, even though scholars found that people tend to become more conservative or vote for Conservative parties more as they age (Cornelis et al., 2009; Tilley and Evans, 2014; Peterson, Smith and Hibbing, 2019), the lifelong persistence of political attitudes remains more generally accepted

in the political science literature (Peterson, Smith and Hibbing, 2019). Ideological theory would therefore predict very few life cycle changes in support for government spending.

Another theory that has been used in work on public spending preferences is the self-interest theory. This alternative view provides more tools to articulate expectations about the relationship between age and support for government spending. According to self-interest theory, keeping ideology and other factors constant (like gender, occupation, etc.), rational considerations remain important drivers of support for government spending. Assuming that people are aware of the impact government spending has on them, self-interest theory predicts that "people are less likely to favour policies that hurt them financially or where they feel their economic loss does not outweigh the social gains" (Pederson, 2014). This means that individuals who need public services more or who feel that services should be improved regardless of the costs will be more favourable to increasing government expenditures. In line with this view, evidence has shown that individuals with lower income are more likely to support government spending because they are more likely to use public services than wealthier people (Krimmel and Rader, 2017).

Self-interest theory also allows for the possibility of changing interests, which explains why scholars who study the effect of age on public spending preferences have naturally been drawn to this theory (Duncombe, Robbins and Stonecash, 2003; Clark et al., 2009). Age is accompanied with change in needs, occupation, family structure, material well-being and psychological conditions, among other things (Vlandas, 2018). Following self-interest theory, younger people — as compared to middle-aged adults — should generally be more favourable to increasing government expenditures (or, conversely, less favourable to decreasing spending or maintaining the status quo). This expectation is based on the fact that younger members of society are more likely to have low income or to rely on public services, like education. Seniors are confronted to similar conditions — for example, their income is often fixed. But should seniors be supportive of increasing government spending, or maintaining the status quo? Studies in psychology and cognition have confirmed that ageing was associated with less openness to experience and more resistance to change. These "psychological dispositions"

in older age could trigger "a preference for familiarity" (Cornelis et al., 2009, p.56 and 72), which suggests that seniors should be more favourable to the status quo. Finally, self-interest theory predicts that on average, middle-aged adults should be more favourable to decreasing public expenditures (or less supportive of increasing spending) than both younger and older people because increasing spending could be more costly to them as they pay more income taxes. These, of course, are generalizing expectations. Not everyone of the same age has the same needs, but these expectations represent trends that should be observed when keeping other individual factors constant.

Rational considerations (i.e., self-interest) also allow speculating about the effect of age on support for different policies. According to this theory, we should expect younger people to be more supportive of youth-oriented policies, including education (Duncombe, Robbins and Stonecash, 2003; Busemeyer, Goerres and Weschle, 2009; Busemeyer and Lober, 2019) and childcare (Goerres and Tepe, 2010), of which they are the direct beneficiaries. In contrast, becoming older should make individuals increasingly favourable to public spending in policies that seniors need more, such as old-age pensions and healthcare (de Mello et al., 2016; Hess, Nauman and Steinkopf, 2017). Again, nuance is important here. A "broader perspective on self-interest" (Busemeyer and Lober, 2019, p.4) recognizes that expected future use of government services or family motivations should also be factored into rational considerations (Svallfors, 2008). Following this logic, public investments on programs like healthcare would still be relatively popular among non-users (like healthy young adults) because it is also in their personal interest to perpetuate an adequate healthcare system, in case they ever need it (Svallfors, 2008). In addition, solidarity with younger family members may drive older people who are not attending school themselves or sending their own children in day care to still have positive views towards government investments in education and childcare. As a matter of fact, individual age-based self-interest and solidarity with younger family members are not always mutually exclusive. Goerres and Tepe (2010) showed that seniors were less likely to support public childcare spending, but especially when they did not entertain contacts with children in their family. Despite these nuances, however, extensive empirical evidence

confirms that older people are less likely to support education, and more likely to support pension or healthcare spending (see Sørensen, 2013).

3.3. Broadening the scope of research

As highlighted by this review, most scholars interested in life cycle changes in support for government spending have focused on child- or senior-oriented policies, such as education and pensions. This has left us with limited knowledge about the influence of age on on support for government spending in general, or on support for other policy areas. This is unfortunate, because changing motivations over the lifetime may also impact preferences for other policies, such as defence, the environment or job-creation programs. Moreover, many studies on this topic have relied on few — no more than four, and sometimes only one — data points to test their expectations (e.g., Busemeyer, Goerres and Weschle, 2009; Goerres and Tepe, 2010; Sørensen, 2013). The age gaps presented in these analyses could therefore have been affected by events happening when the data were collected.

This article presents new data to tackle these limitations. Between 1987 and 2010, the Environics Canada firm conducted 25 surveys that included a question often used in welfare or public spending research: "*Keeping in mind that increasing services could increase taxes, do you think the federal government is spending too much, just the right amount, or should be spending more on each of the following: ...?*"[1] Fifteen different portfolios were almost always included in the surveys: the arts, childcare, defence (or the military), education, energy, environment, farmers, healthcare, job-creation programs, justice, regions, services for the elderly, social services for the poor, transportation and welfare.[2] A similar question referring to some of the same policies (the arts, defence, education, environment, healthcare, justice and welfare) was also included in seven Canadian Election Studies surveys conducted between 2000 and 2019.[3]

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1. To see how these data have been used in the past, see Soroka and Wlezien (2010).
2. Other policies were sometimes included, such as technology and unemployment insurance, but I only selected policies that occurred at least 15 times over the period.
3. "Should the Federal government spend more, less, or about the same as now on the following areas?" Because the question does not specify that "increasing services would increase taxes", CES respondents are probably more likely to say they want more spending on every program, when compared to Environics surveys. Yet, I assume that this is true across all age groups, thus not affecting the estimates.

Having access to individual attitudinal measures on such a large variety of policies makes it possible to test various expectations about life cycle changes in support for government spending. On the one hand, we can aggregate individual answers on all policies to verify if older people are more favourable to maintaining 'the same amount of government spending', i.e., if they are generally more reluctant to change. Evidently, aggregate support for these options adds up to 1, so if support for the status quo increases in older age, it should necessarily be accompanied with a decrease in at least one of the two other options. I expect the option of 'more spending' to be more popular among seniors because older people are more dependent on government services than middle-aged adults. Youth should also be less favourable to decreasing public spending (or more favourable to increasing it) given their lower income.

On the other hand, we can use these data to formulate expectations about specific policy domains. My expectations are summarized in Table 3.1. First, following self-interest theory and in accordance with empirical studies cited above, I anticipate support for public spending on education and childcare to decline over the life cycle. I also expect older people to be less supportive of spending on job-creation programs than all other age groups, because seniors are less active on the labour market, as compared to younger people.

Support for public spending on the environment should take an inverted U-shape over the life cycle. Recent research based on panel data showed that younger and older people were both less concerned with the long-term benefits of environmental protection. Among seniors, this was explained by shorter life spans; among youth, by a tendency of "acting 'as if there is no tomorrow'" (Geys, Heggedal and Sørensen, 2020, p.2).

Second, I expect support for defence and justice spending to increase with age. Studies in cognition have established that ageing is associated with risk aversion (James et al., 2015), which can make individuals more supportive of military policies (Huddy et al., 2005) and crime control. The expectation that older people are more supportive of military spending has been confirmed following the 2004 and 2011 federal elections in Canada (Fitzsimmons, Craigie and Bodet, 2014), and in the American context as well (Simon and Lovrich, 2010).

A similar pattern has been found when analysing support for spending on crime prevention (Cohen, Rust and Steen, 2006). I also anticipate support for public spending on elderly services and healthcare to increase with age. Previous work have confirmed that support for healthcare generally increases with age (Sørensen, 2013). As opposed to healthcare, elderly services have not been covered in the literature. I therefore do not have any benchmark to formulate expectations. But since these services are aimed at seniors, I expect older people to be more favourable to them.

Expectations regarding transportation are also more nuanced. Support for transportation spending may or may not be more positive in older age. On the one hand, mobility challenges are frequent among seniors (Statistics Canada, 2015), who may see positively the public provision of transportation services. On the other hand, younger adults use roads and public transportation more frequently to travel to their workplace. I therefore hypothesize that support for transportation spending may increase over the life cycle, or be stable. In other words, I do not expect support for this policy to decline with age. Finally, I expect support for the six remaining policies to be stable over the life cycle. We have no theoretical reasons to believe that interest for energy, farming, regions, the arts, welfare or social services for the poor changes over one's lifetime. [4]

3.4. Measures and descriptive outlook

Pooling the Environics and Canadian Election Studies surveys creates a dataset that includes 120,790 individual respondents between 1987 and 2019. Descriptive statistics on all measures are available in Appendix B.1. [5]

To begin, let us investigate trends in support for each possible answer. To do so, I started by dividing the possible answers into two dependent variables: support for *more* government

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4. 'Welfare' is the term commonly used to describe social assistance in Canada.

5. All questions are not included in all surveys. The maximum number of complete observations is 52,917, for the issue of education. The 2019 CES comprises a larger number of respondents than other surveys. To make sure results are not sensitive to the inclusion of this survey, I reproduced all analyses without the subset of 2019 respondents. Almost all results are substantively the same, except one, which I report below. Results can also be found in Appendix B.3.

Support for government spending on...	should...
education	**decrease** over the life cycle.
childcare	**decrease** over the life cycle.
job-creation programs	**decrease** over the life cycle (or, minimally, in older age).
environment	increase, then decrease (**inverted U-shape**).
defence	**increase** over the life cycle.
justice	**increase** over the life cycle.
services for the elderly	**increase** over the life cycle.
healthcare	**increase** over the life cycle.
transportation	**increase** or be **stable** over the life cycle.
regions	be **stable** over the life cycle.
arts	be **stable** over the life cycle.
farmers	be **stable** over the life cycle.
services for the poor	be **stable** over the life cycle.
energy	be **stable** over the life cycle.
welfare	be **stable** over the life cycle.

Table 3.1. Theoretical expectations about the relationship between age and support for government spending

spending (coded 1, otherwise 0), and support for *the same amount* of spending (coded 1, otherwise 0). Then, I averaged individual answers on all policies by age. Figures 3.1 and 3.2 track these averages in every survey year. In every year, if we sum the average for 'wants more spending' and the average for 'wants the same amount of spending', we obtain a value close to 100%. This is because the third option not shown here — support for *less* government spending — is much less popular than the two other ones. Unsurprisingly, more respondents think the government is spending 'just the right amount' or 'should be spending more' than 'spending too much'. This last option was never selected by more than 22 per cent of respondents. In contrast, between 1987 and 2019, 26 to 61 per cent of respondents thought the government should be spending more, with the lowest value observed in 1993 and highest value observed in 2008. The 'status quo' category largely mirrors this trend, with Canadians being more favourable to the status quo in the early 1990s (maximum = 56 per cent in 1991) but less so since the new millennium (minimum = 30 per cent in 2008).

Figures 3.1 and 3.2 show that support for the two options does not change a lot with respondents' age. Support for more public spending declines in older age in 2003, but the opposite can be said of the age trend in 1995. In 2015, support for the status quo increases
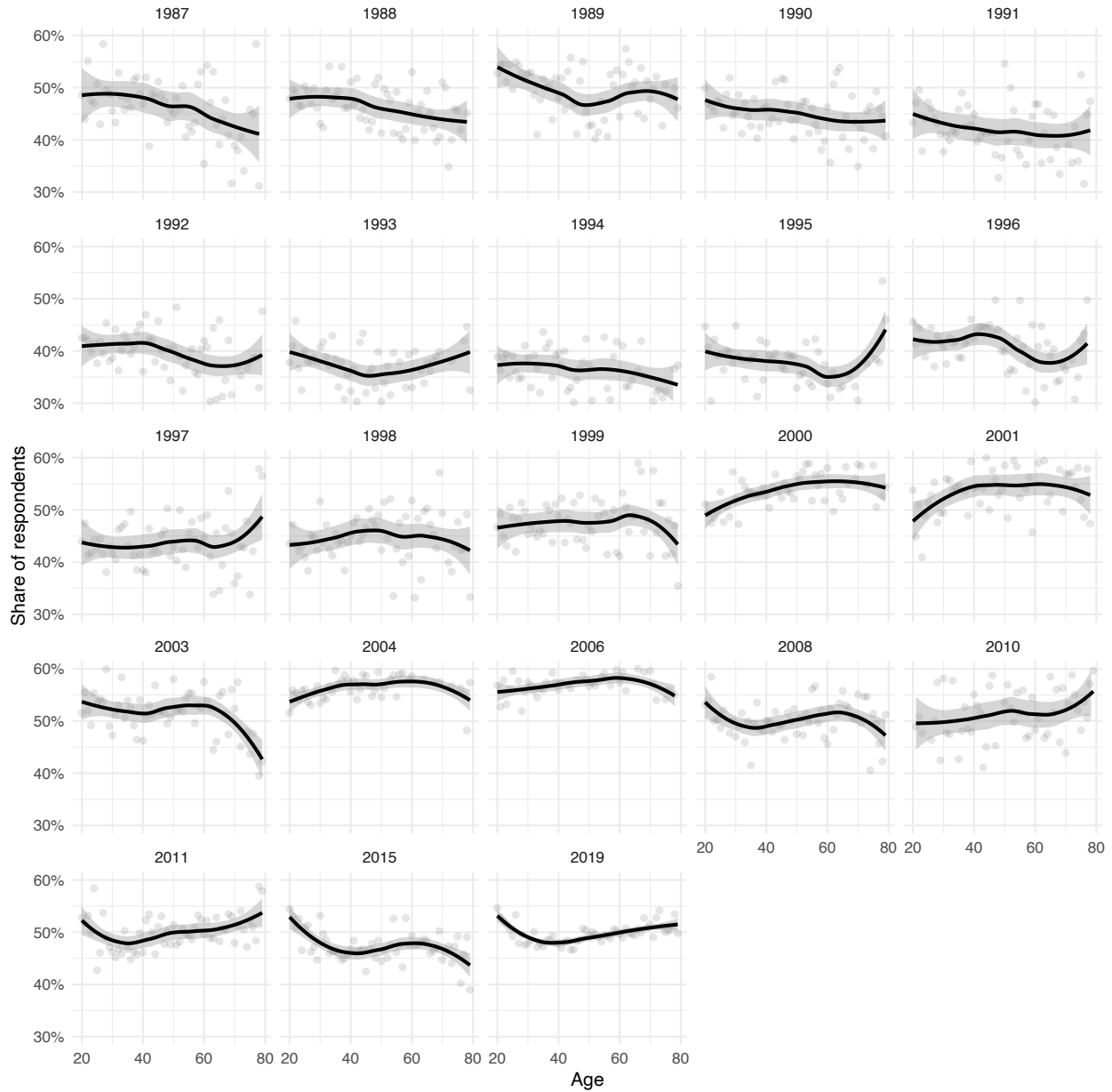
Figure 3.1. Share of respondents who want more government spending, according to age

Note: Support for more government spending is coded 1, otherwise 0. Answers are then averaged across respondents of the same age in every survey year. These averages are represented by the points. Lines are smoothed conditional means with span = .75 and 95% confidence intervals.

by approximately 20 percentage points between 20 and 80 years old, but this trend is absent in other years. We cannot, however, conclude to age effects from eyeballing Figures 3.1 and 3.2 only. The presence (or absence) of age differences in these figures could be explained by two other factors.
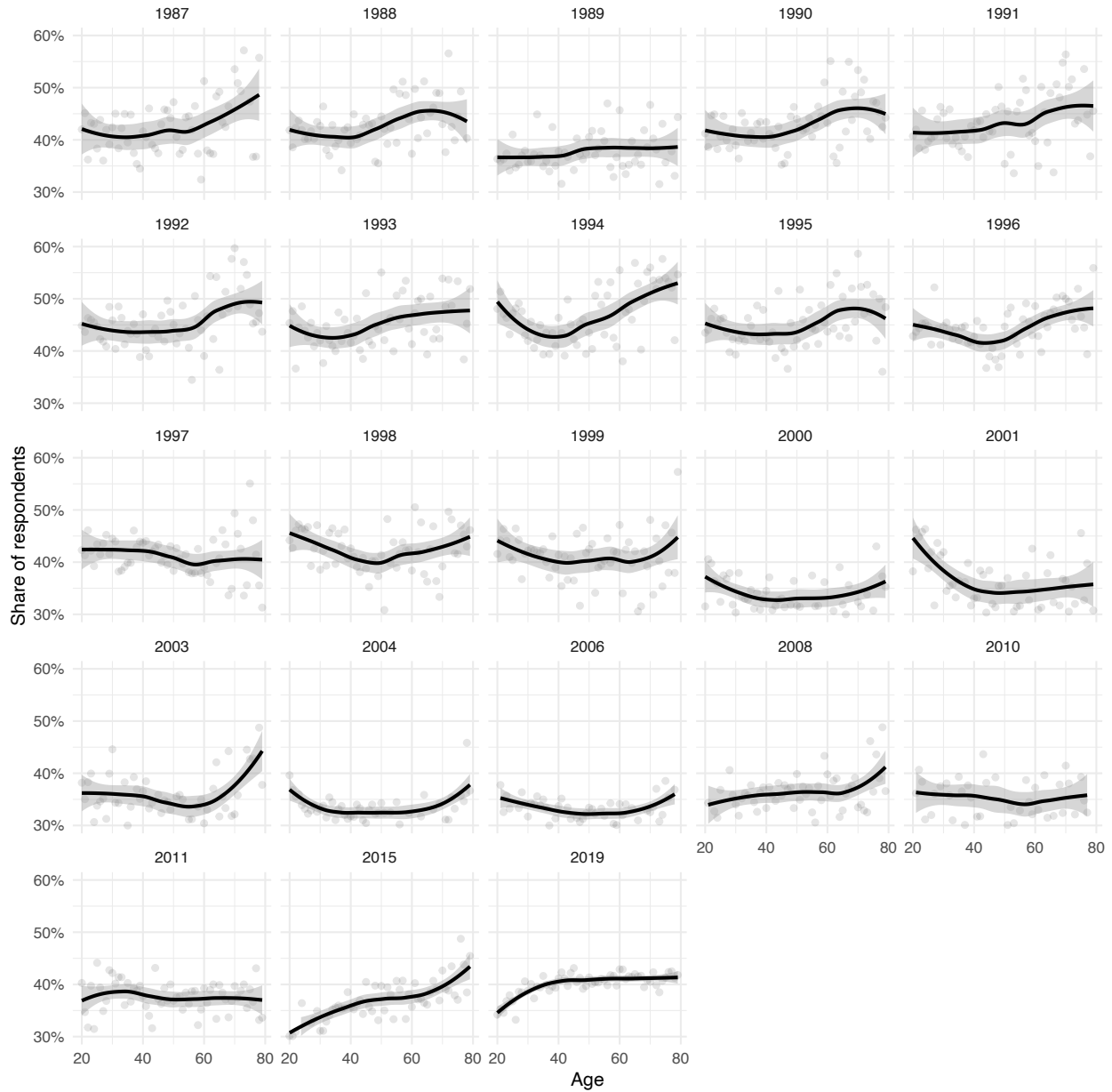
Figure 3.2. Share of respondents who want the same amount of government spending, according to age

Note: Support for the same amount of government spending is coded 1, otherwise 0. Answers are then averaged across respondents of the same age in every survey year. These averages are represented by the points. Lines are smoothed conditional means with span = .75 and 95% confidence intervals.

First, they could be explained by cohort effects, or the "socialization experiences [of different generations] which manifest themselves in their belief systems" (Neundorf and Niemi, 2014, p.2). At any given point in time, cohort effects are confounded here with age: the opinions that prevail in different age groups are not only explained by how old their members are,

but also by the generation to which they belong. Socialization effects have been confirmed repeatedly in the political behaviour literature (Jennings and Markus, 1984; Neundorf and Soroka, 2012; Vallée-Dubois, Dassonneville and Godbout, 2020). For example, evidence has shown that "coming of age under sustained periods of Conservative governments" leads to the development of more conservative political values (Grasso et al., 2017, p.17). Second, as is made visible in Figures 3.1 and 3.2, period effects could also be at play. Period effects are defined as the influence of current events (e.g., an economic recession, a political scandal, terrorist attacks, a pandemic, etc.) on issue attitudes (Neundorf and Niemi, 2014). For example, in the 1990s, the Canadian government made important deficits, which had an effect on public opinion towards public spending. Figure 3.1 shows that there was, during this period, a decline in support for government spending across all age groups.

3.5. Identification strategy

To capture the effect of age on issue attitudes, one therefore needs to phase out cohort and period effects. Theoretically, to do so, one would have to compare the policy preferences of a 30-year-old with the preferences of a 60-year-old, had they both been socialized at the same time. This counterfactual is impossible to observe. A reasonable approach would be to track changes in an individual throughout their lifetime (in a panel, for instance), while controlling for time periods. This approach is impractical in the present case, because the data available to us are not panel data but cross-sectional — they cover different individuals in different time periods.

When relying on cross-sectional data, one needs to 'control' for birth years and periods to be able to estimate the effect of age on political attitudes. But when doing so, one faces an important methodological challenge: age, birth year and survey year are perfectly linearly correlated (Age = Survey year - Birth year). Including these three variables in the same regression model would make it impossible to estimate each parameter (Smets and Neundorf, 2014; Fosse and Winship, 2019). To circumvent this issue, scholars have come

up with different solutions, such as proxy models, fixed-effects models and hierarchical age-period-cohort models (Yang and Land, 2006; Neundorf and Niemi, 2014), all relying on a different set of assumptions (Bell, 2019).

On the one hand, we can make the strong assumption that one of the effects (either age, period or cohort) is flat, and to exclude this factor from the equation altogether (Neundorf and Niemi, 2014; Bell, 2019). This is not something we can easily do here, because we have theoretical reasons to believe that members of certain birth cohorts have different opinions on government spending due to their socialization. We also have reasons to believe that the political and economic circumstances can have an influence on individual attitudes towards spending. We therefore cannot remove any one of these effects from the analysis.

The alternative is to make the not-so-strong assumption that some individuals can be pooled within age groups, periods or birth cohorts. If only one of these factors was treated as categorical instead of linear in the model, we would be able to estimate all coefficients. When making this assumption, however, Bell (2019) warns us to be transparent and to create groupings based on *theory*. In the case before us, it is reasonable to group individuals together within generations. Indeed, as explained previously, studies in political behaviour confirm that 'impressionable years' can influence the formation of political opinions. Individuals of the same generation — who have lived through the same formative experiences as adolescents and young adults — are therefore more likely to have similar opinions on political questions (Neundorf and Niemi, 2014). Pooling individuals within generations therefore makes sense theoretically.

I define generations as follows: respondents born between 1900-1928, 1929-1945, 1946-1964, 1965-1979, 1980-1996 and 1997 or more. There is no consensus on the cut-off years of generations in Canada, but the thresholds selected here correspond to what most scholars view as the main political generations in this country, i.e., birth cohorts defined by influential events. In fact, scholars generally agree that the baby boomer generation is the cohort born between the end of the Second World War and the early to mid-1960s (Badley et al., 2015; Newbold and Scott, 2017). Most also agree that there are at least two generations following

baby boomers (Blais et al., 2004; Leiter, Jackson and Shaughnessy, 2009), with one ending in the late 1970s when the economic crisis hit and another ending around the middle of the 1990s, following the fall of the Soviet Union. Prior to the Second World War, it is sensible to create two generations because of the events that happened in these times: one ending before the Great Depression of 1929, and one between 1929 and 1945, which represent two major transformative events for people coming of age at the time.

3.5.1. Estimating support for government spending

To introduce this identification strategy, I begin by estimating ordinary least squares regressions with two different dependent variables. First, I use individual support for *more* public spending. This variable is obtained by coding support for more spending on every policy as 1 in the dataset (otherwise, 0), then averaging answers on all issues across individuals. Second, I follow the same process to create a variable of individual support for *the same level* of public spending. The third option (support for *less* government spending) is the inverse of the two other options. If support for the status quo decreases over the life cycle and support for more spending increases *by the same amount*, it necessarily means that support for less spending decreases over the life cycle. It is therefore unnecessary to report all three options. I also decided not to report support for less spending because this option is generally the less popular of the three.

I add generations as dummy variables in the models (using the first generation as reference category), along with the linear terms of survey year and age.[6] I also add a quadratic age term in order to account for a potential curvilinear relationship between age and support for government spending. Models control for gender, income, education level, religiosity, employment and marital status, and vote intention.[7]

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6. Year is included as a linear term (instead of dummies) to reduce collinearity. Models with dummies achieved the substantively similar results.

7. Gender is binary coded (men or women). Income and education levels are normalized (0 to 1) because coding was different across time. Religiosity is binary coded (respondent declared having a religion or declared being atheist). Employment status is categorical (employed, unemployed and looking for work or other employment [reference category]). Marital status is binary coded (in a couple [married, living with partner] or not in a couple). Vote intention is categorical (Liberal party, [Progressive-]Conservative party, Reform party/Canadian Alliance, Bloc Québécois [reference category], NDP or other). Vote intention is not causally prior to age but has been added to the models to allow for the estimation of age effects while keeping

In order to estimate support for government spending on each of the fifteen policy areas introduced previously, I run ordinary least squares regression models with support for more or the same amount of government spending on each of the fifteen policies as dependent variables. In the first group of models, support for more spending is coded 1 (otherwise, 0). In the second group of models, support the same amount of spending is coded 1 (otherwise, 0). Age (linear and squared) is the main explanatory variable in all models.[8] Again, models include generations and year of survey, as well as controls for gender, income, education level, religiosity, employment and marital status, and vote intention.[9]

3.6. Results

3.6.1. Support for government spending in general

The first set of results are visualized in Figure 3.3, which presents predicted probabilities derived from the models estimating support for more spending on all policies averaged together. The dotted line represents a model that only includes the independent variable of age along with its quadratic component, age-squared (and all other demographic controls). The solid line represents a model that controls for generations and year of survey.[10] Complete regression results are available in Appendix B.2.

Controlling for generations and periods is important when estimating the effect of age on support for these two options. Without controlling for these effects, age trends are more pronounced. Support for more public spending increases in the first half of life, reaches its peak at 48 years old, then decreases. But when accounting for generations and survey years, life cycle changes in support for more public spending are substantively unimportant and

party support constant. Results can therefore be interpreted as "the influence of a one-year increase in age on support for government spending *among supporters of party X*".

8. I ran the same models using logistic regressions, multinomial models, and hierarchical age-period-cohort models with random effects for birth cohorts and survey years. Because errors between equations could be correlated, I also ran the models using seemingly unrelated regressions. Results are substantively the same and are available in Appendix B.3.

9. In Appendix B.3, I report results from models that include an interaction term between age ad gender. Results indicate that age effects are similar across gender.

10. When calculating predicted probabilities, all other model covariates are held at their mean value. Variables that are not numeric are set at an "average value, which represents the proportions of each factor's category" (see the ggemmeans documentation in R).
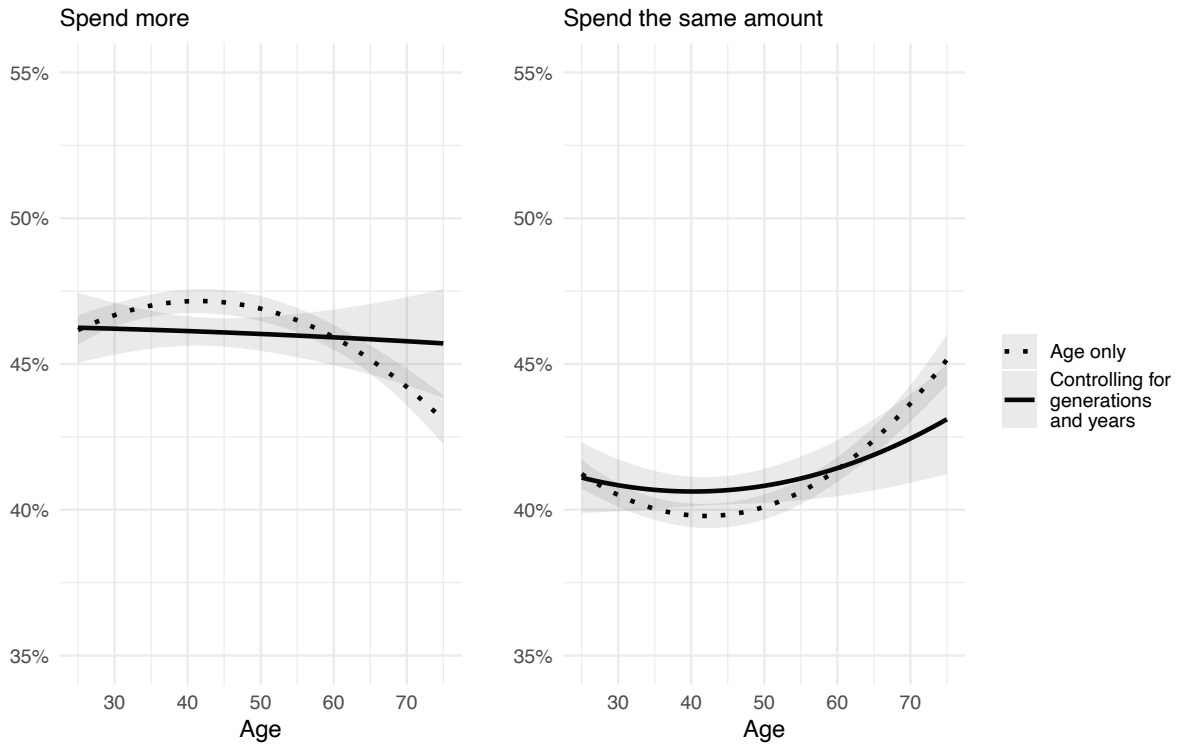
Figure 3.3. Predicted probability of supporting more/the same amount of spending according to age

not statistically significant (left-hand plot). The estimation of life cycle trends in support for the status quo is also affected by the inclusion of survey years and generations in the analysis. But this inclusion does not obliterate age effects altogether. The option of the status quo is somewhat less popular among younger people than seniors (right-hand plot). Keeping constant generations, periods, and other individual determinants like party support, support for the same amount of government spending increases by 2.4 points between 44 and 75 years old ($p < .05$).

In short, in accordance with theory, becoming older is associated with greater support for the status quo, but this effect is small. A 2- to 3-point change in preferences over 25 years of age is negligible. In addition, change is restricted to older age: support for this option remains largely stable in the first half of life. Support for more government spending also does not change. In other words, when aggregating opinions over a large set of issues, we

find that different age groups have relatively similar views on government spending, although seniors are somewhat more supportive of the status quo.

3.6.2. Life cycle support for spending on fifteen policies

The previous analysis revealed that age differences in support the status quo in terms of government spending are present, but minimal. However, averaging individual answers together may hide variation across programs, especially if age effects cancel each other out. Is support for the status quo always higher among seniors than young adults, regardless of the policy? On the contrary, does age strengthen support for government spending on some policies, such as defence and justice, while depressing support for other programs, like education and childcare?

Results from the thirty regressions (15 policies, times 2 models) estimating the effect of age on support for government spending on each policy domain can be found in Appendix B.2; but in the spirit of conciseness, results are reported in Figures 3.4 to 3.6. The figures plot the probability of supporting each option (more or the same amount of government spending) between 25 and 75 years old. Younger (less than 25 years old) and older (more than 75 years old) ages are excluded from the plots because lower number of respondents of these ages make for less precise predictions. Policies for which I expected increasing support over the life cycle are presented in Figure 3.4; policies for which I expected decreasing support or an inverted U-shape over the life cycle are presented in Figure 3.5; and policies for which I expected no change over the life cycle are presented in Figure 3.6. [11]

Three main findings can be drawn from the analyses. First, six of the fifteen policies are in accordance with theoretical expectations. On the one hand, support for more spending in *transportation* and the *military* increases over the life cycle (Figure 3.4). [12] In the case of

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11. After correcting for false discovery rates, 1) the effect of age on support for the same amount of spending on justice and healthcare, and 2) the effect of age and age-squared on support for same amount of spending on environment become insignificant at the $p < 0.05$. In the main text, I interpret these effects as minimal.

12. The 'defence' finding is robust across model specifications (see Appendix B.3), except when removing the 2019 CES data. When doing so, age effects become non-significant in the case of this policy. Note that variables (age, generation, year) are highly correlated in all models, so estimates can be easily affected by a decrease in the number of observations.
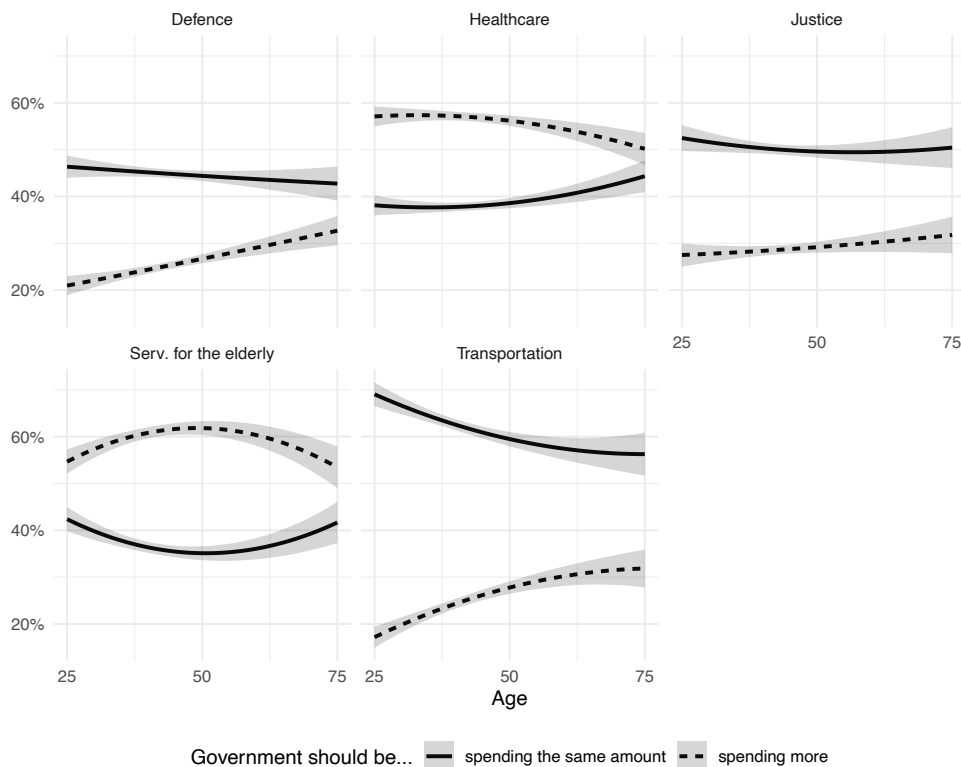
Figure 3.4. Predicted probability of supporting more/the same amount of spending according to age. Expectation: Increasing support over the life cycle

transportation, this happens at a decreasing rate and is accompanied with a decline in the option of 'the same amount of' spending.

On the contrary, older people are less likely to say they want more public spending in *education*, *childcare* and *job-creation programs* (Figure 3.5). As expected by the theory, support for more spending in education decreases over the life cycle. Results also indicate that this decline happens at an decreasing rate. It is accompanied with a weaker (but still significant) increase in support for the same amount of spending. Support for more spending on childcare and job-creation programs decline with age, but these decreases are not statistically significant at the $p < .05$ level. Note also that in the case of childcare, while support for more spending decreases with age, support for the status quo takes a curvilinear shape. This could be in agreement with a broader interpretation of self-interest: when they start having grandchildren, older individuals continue to be less supportive of an increase in childcare spending than younger people, but they begin to support the option of the status

quo more. Finally, in line with hypotheses, there are no differences between age groups when it comes to public spending on *farmers*, *energy*, *regions* and *services for the poor* (Figure 3.6).
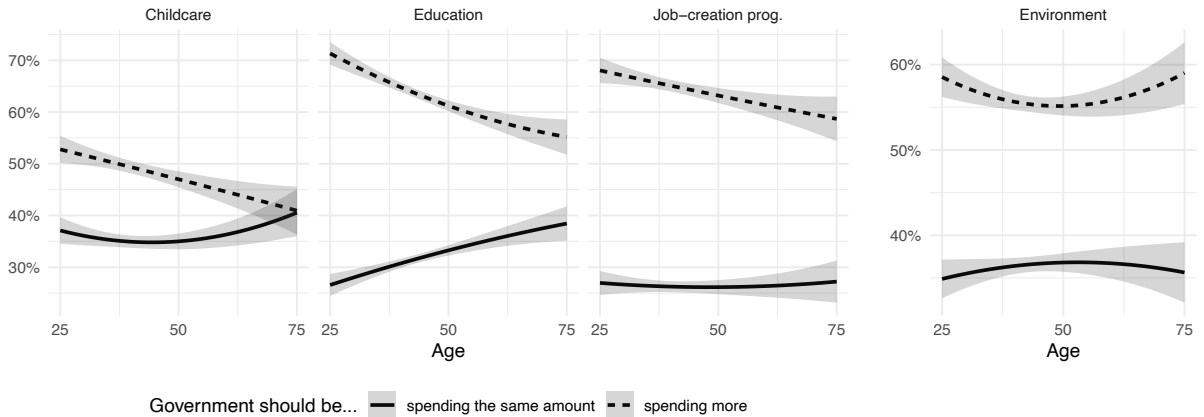
Figure 3.5. Predicted probability of supporting more/the same amount of spending according to age. Expectation: Decreasing support over the life cycle

Second, four policies — *justice*, *environment*, *healthcare* and *elderly services* — are in contradiction with theoretical expectations. Just like defence, support for justice spending was expected to increase over the life cycle because of higher prevalence of risk aversion among seniors, but evidence suggests that support for this program does not differ across age groups (Figure 3.4). Support for the same amount of public spending on justice does increase, but this change is overall weak. The same conclusion can be drawn for environment (Figure 3.5) and healthcare (Figure 3.4). Life cycle support for these two policies take opposite curvilinear shapes, but effects are weak. Support for more spending on the environment begins by decreasing with age, then starts to increase; and vice-versa for healthcare. Support for the same amount of spending on the environment increases in younger age, then decreases; and vice-versa for healthcare. In fact, even though the slope of support for more spending on healthcare resembles an inverted U-shape, effects are actually minimal, yielding an overall horizontal trend over the life course. This could be explained by the fact that Canadians are generally satisfied with their healthcare system (Nadeau et al., 2014), thus alleviating age effects. Support for environment spending has a shape that is opposite to what Geys et al.

found in their 2020 paper. Their analysis showed that support for environment spending was weaker in younger and older adults and higher in middle-aged people (inverted U-shape). The difference between these findings and the results presented in this paper could be explained by the fact that the survey question used in Geys et al.'s article explicitly tells respondents that their standard of living could be considerably affected by environmental protection. Geys and his colleagues argue that young people and seniors discount the future more, so priming respondents about long-term consequences may explain the inverted U-shape found in their analysis, in comparison with what is found here, i.e. a mostly stable trend over the life cycle.

The life cycle trend in support for elderly services does take an inverted U-shape shape, one that was unexpected (Figure 3.4). Support for more public spending on these services increases in younger age, then decreases. Support for the status quo mirrors this trend: older and younger people are more favourable to keeping expenses as they are when it comes to elderly programs, but middle-aged adults would prefer making them more generous. Middle-aged people are at a point in their life where they plan for retirement and are often required to take care of ageing family members. This could explain why they are more favourable to broadening public coverage of elderly services than any other age group.

Third, two policies for which we expected no age effects exhibit surprising life cycle trends. These are the portfolios of *welfare* and the *arts* (Figure 3.6). Older adults do not want more spending than younger adults in the arts sector, but they are less supportive of the status quo, meaning that in general, support for arts spending is lower in older than younger people. In contrast, when compared to youth, older adults would rather increase or maintain the same level of welfare expenditures, meaning that they are less favourable to decreasing government spending on welfare.

3.6.3. What does it mean?

The presentation of many results for a large number of different policy topics may be difficult to digest. First, support for government spending on education decreases over the life cycle. Second, support for transportation and military spending increases with age. Third, support
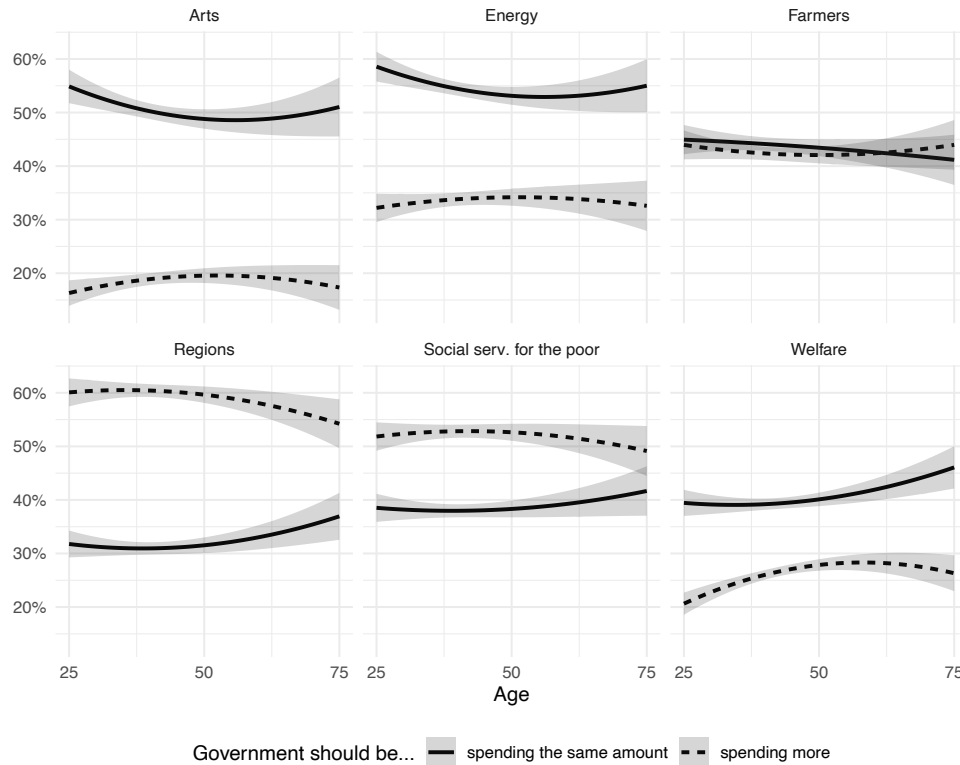
**Figure 3.6.** Predicted probability of supporting more/the same amount of spending according to age. Expectation: Stable over the life cycle

for elderly services follows a curvilinear trend (inverted U-shape) over the life cycle. These trends presented over 50 years of one's lifetime may however seem unrealistic, because several of the generations found in our sample do not include respondents from 25 to 75 years old. For instance, the 1929-1945 generation includes respondents of no less than 42 years old, the 1946-1964 generation includes respondents between 23 and 73 years old, and the 1965-1979 generation does not include respondents older than 54 years old. These are the three generations for which we have the largest age ranges, with younger, middle-aged and older people represented in each group. Restricting effects to ages that truly 'exist' in the dataset, what is a more realistic change in support for these policy domains as one becomes older? In other words, how does a 10 or 20 year increase in age affect support for these policies?

Table 3.2 reports probabilities of supporting *more* government spending in five policy areas, according to age and generation.[13] The initial value in each column is the predicted level of support for the corresponding age. For example, the probability of supporting more spending on defence is estimated at 24.37 per cent among 45 years old members of the 1929-1945 generation. Other values (preceded by a plus or minus sign) indicate incremental increases or decreases in the previous probability. Support for defence among the 1929-1945 generation thus increases by 2.34 points between 45 and 55 years old, 2.39 points between 55 and 65, and so one and so forth. Four of the policies included in the table — defence, transportation, education and elderly services — are programs for which we found substantively important and statistically significant effects of age. The last one, healthcare, is used to illustrate a policy where age effects are weaker.

Note how the support for more spending on defence surges over the life cycle. Twenty-five-year-old baby boomers (born between 1946 and 1964) have a 23 per cent likelihood of supporting more military spending. By 65 years old, this probability is up by 9 percentage points, meaning that about one third of 65-year-old baby boomers would like the government to increase spending on this program. Recall that this finding was obtained after controlling for generations, so it cannot be driven by higher support for defence among certain birth cohorts. Models also control for vote intention, so results cannot be driven by differences in party preferences in younger vs. older age. In the case of transportation, increments are larger first, then smaller. The probability of supporting this program is predicted at 19 per cent among 25-year-old members of the 1965-1979 generation, and at 33 per cent among 55-year-old members of the same cohort. Mobility issues are becoming more salient with population ageing. The fact that older individuals are more favourable to public investments in transportation may be an indication of even more widespread support for public transportation in the future.

In education, the pattern is reversed but even more important. Keeping everything else constant, the probability of supporting more government spending in education is estimated

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13. By adding dummies for generations in the models, we created different intercepts for different birth cohorts. This explains why generations 'start' at different levels. The slopes, however, are assumed constant across generations.

at 71 per cent among 25-year-old members of the 1965-1979 generation, but 60 per cent among 55-year-old members of the same generation. The baby boomer generation, for which we have an even broader age range, shows that support for education spending declines by 14 points over 40 years of one's lifetime. Education is the second largest government portfolio of most provincial governments in Canada, after healthcare (Statistics Canada, 2019a). Among Canadians in their twenties, support for education spending is higher than support for any other policy, including healthcare. In 65-year-old Canadians, however, support for education spending drops below healthcare and services for the elderly. In fact, education is the policy for which we find the largest decline in support over the life cycle.

Contrary to what we might expect, the decline in support for this 'youth' policy does not translate into comparable increases in support for government expenditures in elderly services (or healthcare by that matter). Spending in elderly services is more popular among middle-aged than young Canadians: 45-year-old members of the 1965-1979 generation have a 64.71-per cent likelihood of supporting more spending on these programs, versus 57.73 per cent among 25-year-old members of the same birth cohort. But when one gets into their mid-50s, support for spending in elderly services starts to decline — it decreases by 5.22 points between 65 and 75 years old. A similar trend can be found in healthcare, but in this case, support does not change as quickly — a 3-point decline between 65 and 75 years old. Plus, in younger adults, support for more spending on healthcare changes less than support for elderly services.

3.7. Conclusion

In the current context of population ageing, it becomes critical to know how age groups differ in terms of public spending preferences. Using an original dataset measuring opinions towards fifteen policies over thirty-two years in Canada, this article broadens our knowledge of the influence of age on support for governmental expenditures. The evidence presented in this article suggests that in the aggregate, support for government spending changes

| | Age | Generation | | |
		1929-1945	1946-1964	1965-1979
Defence	25		22.65	22.50
	35		+2.26	+2.26
	45	24.37	+2.30	+2.30
	55	+2.34	+2.34	+2.34
	65	+2.39	+2.39	
	75	+2.43		
Transportation	25		17.65	19.15
	35		+5.02	+5.02
	45	24.49	+3.98	+3.98
	55	+2.93	+2.93	+2.93
	65	+1.89	+1.89	
	75	+0.85		
Education	25		73.23	71.27
	35		-4.53	-4.53
	45	63.13	-3.88	-3.88
	55	-3.23	-3.23	-3.23
	65	-2.58	-2.58	
	75	-1.93		
Elderly services	25		57.62	57.73
	35		+4.73	+4.73
	45	59.56	+2.25	+2.25
	55	-0.24	-0.24	-0.24
	65	-2.73	-2.73	
	75	-5.22		
Healthcare	25		57.69	56.92
	35		+0.24	+0.24
	45	58.11	-0.57	-0.57
	55	-1.39	-1.39	-1.39
	65	-2.20	-2.20	
	75	-3.02		

Table 3.2. Probability of supporting *more* public spending, according to age and generation

minimally over the life cycle, with seniors being slightly more favourable to the status quo in terms of spending than middle-aged adults.

In contrast, becoming older does influence individual attitudes towards key governmental portfolios. First, consistent with previous research in the comparative political science literature (e.g., Goerres and Tepe, 2010; Sørensen, 2013), results show that support for government expenditures in education decreases substantially with age. In fact, this decline is the largest life cycle change that could be identified. The goal of this paper is not to make predictions about the aggregation of individual opinions, but this trend could have important

implications for government spending in the future. If this trend persists, it could lead to a decline in support for public education spending in the context of population ageing.

Second, adding to existing knowledge, this article finds that spending on the arts is less popular in older age, while support for defence, transportation and welfare spending is more widespread among seniors. Public transportation is at the centre of many important questions in relation with population ageing. Cities, which are in part responsible for transportation investments, increasingly need to review their infrastructures to make them accessible to residents and visitors of all ages (e.g., Plouffe, 2013; Van Hoof et al., 2018). The finding that public transportation spending is more popular in older age is consistent with this new reality.

Third, findings indicate that adults in their mid-forties to mid-fifties are more supportive of public investments in elderly services than any other age group. Again, this result is important in the current context of changing demographics. The ageing of larger generations like the baby boomers could increase overall support for public spending on elderly services, not because seniors are more supportive of this policy area, but because their children (i.e., current middle-agers) are.

These results help to confirm that policy preferences are not always settled following the 'impressionable years' of adolescence and early adulthood. Even though conservatism is only slightly more prevalent among older people (Peterson, Smith and Hibbing, 2019) and party identification usually remains stable over the life cycle (Sears and Funk, 1999), the evidence presented in this article shows that age can influence attitudes towards public spending. This is consistent with the idea that interests and rational considerations change over the lifetime and are reflected in individual preferences towards governmental expenditures. When interpreting these results, one should be careful not to assume that life cycle trends in public spending preferences are the same across all individuals, or that seniors cannot be influenced by other preoccupations — like solidarity with younger family members — when forming opinions on welfare spending. For example, support for education spending could be stronger among people who have grandchildren. This pattern has actually been confirmed in the case

of childcare (Goerres and Tepe, 2010). While this question falls beyond the scope of this paper, further research could paint a more nuanced picture of public spending preferences across the life cycle.

Some might worry about the generalizability of these results, considering that they rely on the Canadian case only. The national context certainly cannot be ignored when interpreting the determinants of citizens' attitudes towards the welfare state. For instance, the null result obtained in the case of healthcare could be explained by the fact that this policy can be characterized as a valence issue in Canada (Nadeau et al., 2014). Indeed, unlike citizens of the United States, who are highly divided on the best way to manage and finance healthcare, Canadians are more on the same page when it comes the issue of healthcare funding. The same analysis performed in the American context could reveal larger age (or generational) differences in support for healthcare spending. In other words, national features can help make sense of unexpected results. It is important to note, however, that the findings presented in this article are overall consistent with empirical studies conducted in other countries. Research found comparable age variation in support for childcare spending in OECD countries (see Goerres and Tepe, 2010). In addition, one of the strongest effects presented in this article — the observation that support for education spending declines significantly over the life course — is in line with previous studies comparing different national contexts (Busemeyer, Goerres and Weschle, 2009).

To conclude, the analyses presented in this article help to advance our understanding of age and individual support for government spending, but in doing so, they open up new questions about the future of aggregate public opinion towards the welfare state. One of the questions that remain open is whether individual-level age trends in public spending preferences could translate into age cleavages in party support. Further research could help answer this puzzle and several others in the field of age and politics.

Chapter 4

Article 2. Electoral behaviour in seniors' residences: The Canadian case

This paper was submitted to the Journal of Political Marketing.

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Abstract: Growing senior populations raise the importance for us to develop a better understanding of patterns of electoral participation and vote choice among individuals who live in seniors' residences (SRs). In this paper, I present original evidence documenting this phenomenon. I rely on electoral results and polling station location data from the 2015 and 2019 Canadian federal elections to show that voters of SRs participate more than other Canadians, and are significantly more supportive of the Conservative and Liberal parties. The finding for the Liberal party is particularly surprising because older people in the general population were not drastically more supportive of the Liberals in 2015 and 2019. To explain this unexpected result and investigate party mobilization in SRs, I analyse data from an original survey conducted with administrators of seniors' residences and qualitative data obtained from interviewing campaign workers. This paper represents one of the first attempt at understanding political behaviour and party mobilization in SRs.
Keywords: electoral behaviour, costs of voting, seniors' residences, mixed-methods research, Canadian politics

4.1. Introduction

The population of many democracies is ageing. In several countries, members of the largest generation of the last century — the baby boomers — are reaching a time in their life when they are retiring from the workforce and sometimes, opting for new living arrangements. What is the impact of these changes on voting outcomes and political participation? In general, citizens face higher costs of voting due to greater physical and cognitive limitations (Schur et al., 2002) and isolation from social networks (Bhatti and Hansen, 2012). These factors contribute to decreasing levels of turnout among older seniors, as compared to younger seniors who are more connected with friends and family and face fewer limitations in terms of mobility. To alleviate these barriers to political participation, the electoral agencies of many countries have come up with solutions to make voting more accessible to senior citizens, including internet voting, voting assistance for people with disabilities at the polling station, placing polling stations inside of seniors' homes, and rolling out mobile polling stations that travel to voters (Karlawish et al., 2011; McEldowney and Teaster, 2009).

We know a lot about the challenges surrounding the implementation of more accessible methods of voting, like internet and mail-in voting, and on their potential benefits to the general population (e.g., Miller and Powell, 2016; Thompson et al., 2020). But our knowledge of turnout and voting patterns in polling stations aimed specifically at older voters remains limited. This paper focuses on one of these types of measures — stations established in seniors' residences (SRs) — in an attempt to broaden our understanding of the voting behaviour of citizens assigned to these polls. Do citizens assigned to vote in SRs participate more than other people, despite their older age? Do voters of these stations support the same parties as the general elderly population? Why or why not?

Because of the extreme closeness of these polling stations with voters (see Dyck and Gimpel, 2005; Garnett and Grogan, 2021), one might expect turnout in SRs to be higher than elsewhere in the community. But by how much? To answer this question, I draw on an original dataset that includes information on the location of every polling station used during the last two federal elections in Canada (2015 and 2019). Relying on these data, I find that

turnout was 3 to 6 points higher in polling stations located in SRs than in other stations during the 2015 and 2019 Canadian federal elections. This result has important normative implications if we consider that in 2015, turnout was only 1.5 points higher among 75+ years old people — those most likely to live in SRs — than among all other Canadians. In 2019, turnout was 1.9 points higher among 75+ year olds than in the rest of the population, which is nowhere close to the difference found when comparing SRs and other polling stations.

I also expect ideologically conservative and well-established parties to be more popular among voters assigned to participate in SRs because older individuals are usually more inclined to vote for these parties (Goerres, 2008; Peterson, Smith and Hibbing, 2019). In addition to the age factor, I argue that campaign mobilization could explain part of the difference between voting outcomes in SRs and other types of polling stations. In fact, seniors' homes are host to large numbers of electors, whom parties can easily connect with during a single visit. Because solicitation and canvassing can make a difference in electoral outcomes (Johnston et al., 2012; Pattie and Johnston, 2012), I expect parties that visit residences more to have more success at these polling stations.

Again, results are in line with expectations. The main conservative political formation — the Conservative party — and the "natural governing party" of Canada (Johnston, 2017) — the Liberal party — were the most successful in SRs in 2015 and 2019. Compared to other voting locations, support for the Conservatives was 1.8 to 2.4 points higher and support for the Liberals was 1.8 to 4.3 points higher in polling stations located at SRs in the last two federal elections. Despite being consistent with theoretical expectations, the Liberal result is particularly surprising, because post-electoral survey data reveal comparatively lower support for the Liberals among the oldest age group during these two electoral contests. The same surprising pattern is found in the case of the New Democratic party, which is the main left-wing party of Canada. As would be expected by theory, this party was not more popular in SRs than in other polling stations in 2015 or 2019. Nonetheless, the difference in NDP support between ordinary polling stations and SRs was relatively small, between 0 and 1 percentage point.

I explore this puzzle using insights from interviews with campaign workers and an original survey conducted with the personnel of more than 700 seniors' residences across Canada. These data confirm that all parties have an interest in mobilizing voters who live in SRs. However, the Liberal and New Democratic parties were particularly active in Quebec and Ontario, which are two battleground provinces in Canada.

The contributions of this article are twofold. First, it contributes to the literature on electoral behaviour by investigating the electoral consequences — both in terms of participation and voting outcomes — of placing polling stations in SRs. Second, using a mixed-methods approach, this paper presents original evidence documenting partisan mobilization inside SRs. Taken together, these contributions represent fertile ground for new research on age and electoral politics.

4.2. Electoral behaviour in seniors' residences

A lot of attention has been focused on how early, proxy, and mail-in voting can facilitate the participation of older citizens or citizens with disabilities (e.g., Schur et al., 2002; Wass et al., 2017), but voting outcomes in seniors' residences remain understudied in the literature on electoral behaviour (Karlawish and Bonnie, 2007). This topic is nonetheless important, because SRs and nursing homes are becoming an increasingly common living arrangement in many democracies given the context of population ageing. Over the last 15 years, the number of long-term care recipients as a share of the total population has increased in most OECD countries (OECD, 2021) and retirement communities are becoming more common in countries like the United States, Australia, the UK and Canada (e.g., Ball and Nanda, 2013; Bernard et al., 2012). Studying patterns of participation and vote choice in seniors' homes is also of interest because anecdotal evidence suggests parties spend quite some time reaching out to residents of seniors' homes during electoral campaigns.

4.2.1. Electoral participation

In terms of turnout, placing polling stations in SRs should have a positive effect on the participation of older citizens. While individuals get a certain sense of satisfaction from

voting, citizens also need to invest time and energy in order to vote (Blais et al., 2019). These costs of voting are usually higher in older age. In fact, studies have shown that the prevalence of physical impairments in "gait, vision, and manual dexterity", as well as cognitive difficulties — such as those caused by dementia — increases in older age (Karlawish and Bonnie, 2007). The U.S. Center for Disease Control and Prevention (2009) found that 43% of people aged 80 and over and 31% of people between 70 and 79 years old lived with at least one type of physical limitation, versus 23% of people in the 60-69 age group. Processing speed (including the capacity to assess new information) decreases by approximately .02 standard deviation every year in an average individual (Murman, 2015). Physical and cognitive impairments, but also greater social isolation, are important reasons why turnout is usually lower among older seniors. Indeed, research has shown that people with worse health conditions or chronic diseases were less likely to turn out (Sund et al., 2017). The impact of health limitations on turnout is even greater among older than younger (Mattila et al., 2013). Empirical research in electoral behaviour finds that participation rates usually increase until 70-75 years old, after which the relationship between age and turnout becomes negative (Bhatti and Hansen, 2012).

One of the strategies to make voting more accessible to older seniors is to place polling stations directly in SRs, such as independent care facilities for seniors, assisted living facilities, nursing homes or long-term care institutions (Karlawish and Bonnie, 2007; Karlawish et al., 2011; McEldowney and Teaster, 2009). Placing polling stations closer to one's place of residence is a proven approach to increasing turnout. Research in electoral participation has shown that bringing polling stations closer to voters had a substantial effect on turnout. Using precinct-level data from the 2001 Atlanta mayoral election, Haspel and Knotts (2005) found that placing a polling station 0.69 miles away from a voter's residence decreased their probability of voting by 24 percentage points[1], as compared to placing a polling station 0.01 miles away. This substantive result was confirmed by Bhatti (2012) in the Danish case and Garnett and Grogan (2021) in the Canadian case. Theoretically, setting up a polling station inside one's place of residence should make it a lot easier for this person to participate. This

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1. Among individuals who did not own a car.

theoretical expectation should apply to SRs as well, but in these types of living arrangements, the benefits of bringing polling stations closer to voters could be smaller than for 'regular' polling stations because of the higher costs of voting that residents of seniors' homes often have to face. Indeed, apart from being older than the rest of the population, the population of SRs may also be more likely to live with physical or cognitive impairments, which may explain why they decided to reside in places where services (nursing, care, etc.) are more accessible.

4.2.2. Vote choice

In terms of electoral results, two elements explain why some parties could be more popular among voters living in SRs. First, because SRs are populated by older citizens, parties that are more popular among older people should get more support at these types of polling stations. There is an ongoing debate in the political behaviour literature about the effect of age on vote choice. Age differences in voting behaviour are often attributable to generational effects (Peterson, Smith and Hibbing, 2019), but some studies have confirmed — using panel data — that conservative values or support for conservative parties were more prevalent in older age (Cornelis et al., 2009; Tilley and Evans, 2014). This is explained by stronger preferences, in older age, for "a stable, predictable, secure society" and "greater reluctance to change" (Peterson, Smith and Hibbing, 2019, p.601). Moreover, in an analysis of age and vote choice in the UK and Germany, Goerres (2008, p.288) suggested that older voters may be more favourable to more established parties or parties that have formed government more often because they have had more time to "collect impressions" on these parties (see also Wagner and Kritzinger, 2012). Focusing on older generations instead of older age only, there are theoretical reasons to believe that current members of older birth cohorts are more favourable to parties that put forward materialistic questions such as income security, as opposed to post-materialistic issues such as environmental protection or gender, because the former were more salient when these individuals were first socialized to politics (Goerres, 2008). In short, we should expect voters of SRs to be more supportive of ideologically

conservative and well-established parties, especially if these parties put forward issues related to materialistic concerns.

Second, in addition to individual party preferences in older age, campaign mobilization may also contribute to increasing support for some parties in SRs. Seniors' residences represent easy focal points for campaign organizers because they can be home to tens and sometimes hundreds of voters. Compared to door-to-door or telephone mobilization, visits in SRs are more 'efficient' in the sense that a candidate can go to only one place and meet several potential electors. Unlike door-to-door (Bhatti, Dahlgaard, Hansen and Hansen, 2019; Michelson, 2003), telephone (Gerber and Green, 2000; John and Brannan, 2008) or even internet campaigning (Hooghe et al., 2010), party mobilization in SRs has not been theorized about or documented as much in the political science literature. General theories of party mobilization point to two mechanisms through which parties can increase their support through canvassing. On the one hand, research has shown that canvassing can increase party support due to persuasion effects, i.e., changing one's mind about who they should vote for (see Broockman and Kalla, 2016). On the other hand, canvassing can increase party support through 'getting-out-the-vote' effects, i.e., increasing levels of participation among supporters of one's party (see Pattie et al., 2011). These two mechanisms could be happening in SRs, but the former could be somewhat less prevalent if we consider that older people's opinions about parties have had more time to crystallize (Dinas, 2014), thus making them less vulnerable to persuasion effects. Disentangling these mechanisms falls beyond the scope of this study, but empirical evidence presented below will attempt to verify the claim that parties that make more visits in SRs have a higher voting share at these polling stations. I will also present evidence from parties themselves in order to advance our understanding of *why* candidates decide to visit SRs during electoral campaigns.

4.3. The Canadian case

To investigate patterns of turnout and vote choice in seniors' residences, I focus on the Canadian case. Canada offers an appropriate context to study this question because electoral

management is centralized in this country. There are therefore no regional variations in the reasons that explain placing polling stations in SRs. Below, I give more details on who makes decisions relative to the location of polling stations Canada, and the factors filtering into this process. But before diving into this topic, I present below more precise expectations about party support in Canadian SRs.

First, based on the review of the literature presented above, I expect voters assigned to vote in SRs to be more supportive of the Conservative Party, which is the main ideologically conservative political formation in Canada (Cochrane, 2010). Individual-level survey data from the Canadian Election Studies help corroborate this intuition, showing that support for the Conservative party was 5.8 to 12 points higher among 75+ years old Canadians than among other Canadians in the last four general elections (2008, 2011, 2015 and 2019).[2] Note that the 2008 and 2011 studies were phone surveys, the 2015 study was a phone and web-based survey, and the 2019 study was a web-based survey.

Second, I expect individuals assigned to vote in SRs to be less inclined to vote for the New Democratic Party (NDP), which is the main left-wing political party in Canada. Again, this intuition is supported by looking at party choice across age groups in the Canadian Election Studies. NDP support was 9.1 points lower among 75+ years old Canadians than among all other Canadians in 2019, 2.8 points lower in 2015, 12.5 points lower in 2011, and almost equal (only .02 points lower) in 2008.

Third, I expect support for the Liberal party to be higher than support for the NDP in SRs, but lower than for the Conservatives. On the one hand, the Liberal party is considered as the "natural governing party" of Canada (Johnston, 2017) by having been in government for 48 years since 1945. If we consider that older people are often more drawn to political formations that have a long history of success (Goerres, 2008), Liberals should be a common choice for voters of SRs. On the other hand, the Liberal party has historically been situated to the left of the Conservative party (Cochrane, 2010), and perhaps even more so since the election of Trudeau's Liberals in 2015 (Grenier, 2016; Kohut, 2015). If we think in terms of ideology, then, we would expect residents of seniors' homes to be less favourable to the

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2. Survey weights have been applied when calculating frequencies. Detailed results are in Appendix C.3.

Liberal than to the Conservative party. Data from the Canadian Election Studies help confirm this nuanced interpretation. Liberal support was 7.1 points lower among 75+ years old Canadians than other age group in 2015. However, it was 1.3 points higher in 2019, .6 points higher in 2008 and 8.7 points higher in 2011. In short, in the last four elections, older Canadians have not been consistently more supportive of the Liberal than the Conservative party, but they have been more supportive of the Liberal than the New Democratic Party. Importantly, the direction of these differences does not change when comparing party support among Canadians aged 70+ years old or 65+ years old (instead of 75+ years old) to all other Canadians.[3]

As highlighted previously, all of these expectations could be conditional upon patterns of political mobilization. Some parties may be doing a better job reaching out to citizens assigned to vote in SRs. I therefore expect parties that visit residences more to be more successful than other parties at these polls.

4.3.1. Electoral management in Canada

During Canadian federal elections, which are organized and ran by Elections Canada, every citizen casts one vote to select the single representative in their district. Voters who require assistance to vote may request it at the polling station and ballot information is presented in large print by default. Magnifiers are available upon request.[4] Citizens with mental disabilities are not excluded from voting, and postal voting is accessible to all, making Canada a country with strong democratic rights, according to Blais, Massicotte and Yoshinaka (2001). Returning officers (ROs) at Elections Canada are responsible for selecting buildings to establish polling stations in their district. When doing so, their decisions are informed by the building's accessibility, proximity and familiarity to voters (Elections Canada, 2020b).

Centralized electoral management prevents regional variations in the voting system. But more importantly, this centralized organisation of elections also prevents partisan influence

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3. Results also hold when we regress party support on age while controlling for gender, education, language and province. They are confirmed using data from the 2015 Local Parliament Project (see Appendix C.3).
4. Information confirmed with a senior employee at Elections Canada.

in the selection of polling locations. ROs "must abstain from all activities of a politically partisan nature, both during and between election and referendum periods" (Elections Canada, 2020c). Returning officers are appointed by the Chief Electoral Officer, whose position is secured for a period of 10 years (non-renewable) and whose accountability is to Parliament, not the government (Library of Parliament, 2013). In short, decisions related to polling station locations follow the same rules across Canada, and should not be influenced by partisan considerations.

Like for all other buildings, the decision to use SRs as polling locations rests in the hands of ROs, and is justified if "a large enough number of electors" live in the residence. In theory, when a residence is selected as polling location, it "only serves the electors living in that residence" (Elections Canada, 2013). In practice, there are some instances of SRs being used as polling station locations for other citizens of the community, but this practice is rare. It can happen when the residence is small or if it is located in a remote community, where a seniors' residence happens to be the main voting location (information confirmed with two senior employees of the Operations and Field Governance Department at Elections Canada). From 2004 to 2019, between 1.9 to 3.1% of all ordinary (i.e., non-mobile, non-advance) polling stations were found in a seniors' residence. These types of polling stations were more prevalent in Prince Edward Island, Nova Scotia and Manitoba and less so in Newfoundland and Labrador, Alberta and British Columbia. Appendix C.2 contains more descriptive statistics on the prevalence of polling stations in SRs across Canada.

Evidently, polling stations placed in SRs have for target older voters primarily, and people in the 75+ age group specifically. According to Statistics Canada (2018b), between 2005 and 2009, 87.7% of women and 80.6% of men living in SRs without continuing care were 75 and older. The pattern is comparable in SRs with continuing care, but in these types of facilities, the share of residents is even more skewed towards older age. In other words, a majority of Canadians living in SRs are at a stage in their life where turnout often starts to decline (Bhatti, Hansen and Wass, 2012). We would therefore expect residents of these institutions to be less likely to turn out than younger seniors. In fact, estimates from Elections Canada

show that turnout was 1.5 points higher among 75+ years old Canadians than all other Canadians in 2015 and 1.9 points higher in 2019 (Elections Canada, 2020d). But this was mostly explained by very low levels of participation among youth: compared to 65-74 years old Canadians, turnout in the 75+ years old age group was as much as 11.4 points lower in 2015 and 10.5 points lower in 2019.

4.4. Methods: Measuring electoral behaviour in seniors' residences

4.4.1. Data

Using the Canadian case, this paper has three goals: 1) to compare the level of turnout in seniors' residences with turnout in other types of polling stations, 2) to verify if certain parties are more successful than others in SRs and, if so, 3) to understand why. To do so, I rely on data from four sources.

The two first data sources are used to compare turnout and vote choice between SRs and polling stations located elsewhere in the community. First, I collected data on electoral results at the level of polling stations from the Elections Canada web page. Second, I merged these data with information on buildings used to host polling stations across the country. The latter set of data was obtained through a Freedom of Information Request filed to Elections Canada in August 2020. In response to this request, Elections Canada provided me with a file including information on all polling locations used in 2015 and 2019. Places are identified by name, address, and type of building (e.g., educational, community centre, church, etc.). I then merged electoral results in each polling station with the location file using the stations' names and addresses. Because some of the spellings differed, I resorted to "fuzzy" matching, which means finding most-likely matches using an algorithm in natural language processing. This approach yielded a success rate of 75%, or a total of 105,541 polling stations for the 2015 and 2019 elections. More information on the data and matching process can be found in Appendix C.1. [5]

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5. Validated turnout at the individual level is not available for research purposes in Canada, and exit polls or district-level surveys are uncommon, making it difficult to know exactly how people of different age groups voted in specific locations. This explains why the paper relies on polling station level data rather than data at the level of individual voters.

The two other data sources are used to investigate party mobilization in SRs and verify if some parties reach out more to voters living in these homes. First, I conducted a survey of SRs between April 7th and June 7th, 2021. A total of 2,311 residences and nursing homes across Canada were contacted via email, with an invitation to answer a series of questions on the presence of political candidates in their institutions during the 2019 campaign, the types of events organized by candidates in their residences, the general response of residents to these visits, etc. A total of 709 individuals (each residence could answer only once) completed the survey, for a response rate of 30.7%. In general, employees who answered the survey were managers (79%), but owners and members of the administrative staff also participated. Twelve percent of responses came from assisted living institutions, 11% from long-term care homes, 25% from independent living residences and 43% from residences offering both independent and assisted living. Seven out of ten hosted a polling station on the day of the vote and 8% received the visit of an agent of Elections Canada to help people vote in a mobile poll.

Second, I conducted interviews with campaign workers involved in each of the five main federal political parties in Canada (the Liberal Party, the Conservative party, the New Democratic Party, the Bloc Québécois and the Green party) during the 2015 and/or 2019 federal electoral campaigns. Like the survey, interviews were conducted between April and June 2021. People were recruited via personal and professional connections, or by contacting their office directly. Three respondents were campaign managers, one was involved with their party's district association and contributed to campaign efforts, and one was a candidate. One worked in an Ontario district, three in Quebec and one in British Columbia. During the interviews, I asked respondents about their own experience campaigning, focusing on their memories about visiting SRs and targeting senior electors more generally. The goal of the interviews was to complement information collected in the survey. By collecting qualitative information from parties, I can offer insight on the reasons why parties choose to visit seniors' homes, the difficulties that they face when doing so, and the benefits that

they perceive from these visits. More information on the survey and interview process can be found in Appendix C.1.

4.4.2. Models

To analyze differences in *turnout* between SRs and other polling stations, I estimate ordinary least squares regression models with turnout in the polling station as the dependent variable. Turnout is obtained by calculating the share of voters as a proportion of registered electors.[6] The independent variable is a dummy indicating if the polling station was located in a SR (=1, otherwise 0).[7] To analyse the effect of voting in a SR on *vote choice*, I estimate OLS models with the share of votes obtained by each of the three main parties (the Conservative Party, the Liberal Party and the NDP) in every polling station as the dependent variable.[8] Again, the independent variable is a dummy variable coded 1 for stations located in a SR and 0 otherwise.

I include additional controls in the models in order to avoid omitted variable bias. First, one bias may arise from not taking into account advance voters. In the dataset, there are entries for advance polling stations, with the number of people who voted in these polling stations, and how many voted for each party. However, every advance polling station is linked to more than one voting-day station. It is therefore impossible to dispatch advance voters to their voting-day polling station because of how the dataset is organized. If voters of SRs are less (more) likely to vote in advance, then turnout rates estimated by the regression model will be higher (lower) in SRs because the analysis is based on voting-day polling stations only (see Garnett and Grogan, 2021). In other words, the regression coefficients estimated by the model may be artificially inflated (deflated). Likewise, supporters of some parties may be more or less likely to vote in advance, thus introducing the same kind of bias

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6. Voter registration is mandatory to participate in elections, but all citizens are automatically added to the National Register of Electors upon turning 18 or when immigrating. Electors who are registered "do not have to register again for every election." (Elections Canada, 2020a). If they move, Canadians can consent for their address to be changed in the Register through their tax form submitted every year to the Canadian Revenue Agency.

7. In Appendix C.5, I reproduce all analyses using a categorical independent variable (one category per location). Results do not change substantively.

8. Since errors terms may be correlated between equations, I also perform seemingly unrelated regression models in Appendix C.5. Results are substantively the same.

in the estimates. In the *Turnout* model, I address this potential bias by controlling for the number of people who voted in advance. In the *Vote choice* models, I control for the number of advance voters who supported each party.[9]

Third, a bias may arise if SRs are more likely to be located in specific neighborhoods or localities, thus influencing the demographic background of voters of these stations. For example, there may be more SRs in wealthier neighbourhoods or in urban settings. If this is the case, omitted demographic variables that explain turnout or vote choice could be affecting regression estimates. To exclude this possibility, I control for four socio-demographic variables at the level of the neighbourhood in the *Turnout* models: citizens' mobility (the share of people who moved in the last year), population size, a measure of the population's age[10] and the share of people who identify as a visible minority.[11] In a meta-analysis, Cancela and Geys (2016) found that population size, population stability and the size of the minority population were consistent predictors of aggregate turnout, which is why these variables are included in the models as controls. Another justification for adding population size relates to the fact that SRs can sometimes be used as polling locations for community members who do not live in the residence. As explained previously, this happens infrequently, but it can be more common in remote areas, where the population is scarcer. Adding population size in the models controls for this possibility. The population's age was not considered in Cancela and Geys' analysis, but I include this variable because it is associated with the presence of SRs and could affect turnout. The age measure is included as a linear and a quadratic term to account for potential curvilinear effects between the population's age and turnout rates (see Bhatti, Hansen and Wass, 2012).

In the *Vote choice* models, I control for population size, the population's age (linear term only), the share of people who identify as visible minority, household median income, the

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9. As noted, each advance station is associated with more than one voting-day station, so values for this control variable are common to several observations. For example, if voting-day stations number 1, 2, 3 and 4 are all associated with advance station number 600, these four stations will have the same values for the number of advance voters.

10. For the 2019 election, I use median age and for the 2015 election, I use average age. These are the available 'age' indicators in these two censuses.

11. "The Employment Equity Act [of Canada] defines visible minorities as 'persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour'."

percentage of people with post-secondary schooling and the share of people whose mother tongue is French.[12] In both models, socio-demographic variables are measured at the level of census dissemination areas (DAs), i.e., "small, relatively stable geographic [units] composed of" 400 to 700 individuals. DAs are "the smallest standard geographic area for which all census data are disseminated."[13] In order to match polling stations with dissemination areas, I first identified the latitude and longitude of polling stations using their addresses, then located the buildings inside dissemination areas' geographical boundaries.

These control variables have been selected parsimoniously: they will help achieve more precise estimates of the effect of polling station location on voting behaviour, while preventing omitted variable bias.[14] But to assess the robustness of the results, I also present results from OLS models that also include fixed effects for electoral constituencies (n = 338).

4.5. Results

Regression coefficients for the models predicting turnout are reported in Figure 4.1 (see Appendix C.4 for complete tables). When controlling for the number of advance voters and the demographic background of the population (models with controls), I find that turnout was 3.9 points higher in SRs in 2015, and 6.6 points higher in 2019 ($p < 0.001$). These substantive result hold after including fixed effects for constituencies. Even when taking 95% confidence intervals into consideration, we can reasonably conclude that electoral participation was at a minimum 3.2 points higher in SRs in 2015 and 5.2 points higher in 2019, compared to the levels of participation in other polling stations. Difference between the 2015 and 2019 effects could be explained by the fact that electoral participation among youth was exceptionally high in 2015, thus reducing the difference between SRs and other polling stations.

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12. These socio-demographic factors are all associated with vote choice in Canadian electoral behaviour research (e.g., Anderson and Stephenson, 2010).

13. I use the 2011 National Household Survey to create controls for the 2015 models, and the 2016 Census of the Population to create controls for the 2019 models. This is the closest possible match because no comprehensive surveys of the population were ran in 2015 or 2019.

14. In Appendix C.5, I present results from models that include all demographic controls — all controls of the *Turnout* model are also included in the *Vote choice* models, and vice-versa. Results are substantively the same.

If we compare this finding with estimates of voter turnout by age groups in the Canadian population, we realize the broader implication of placing polling stations in SRs. Following the 2015 election, Elections Canada estimated that turnout was only 1.5 points higher among 75+ years old citizens than among all other citizens (estimations based on a sample of administrative data combined with the National Register of Electors). It was 1.9 points higher among 75+ years old people than all other Canadians in 2019, again according to Elections Canada's objective data on participation (2020d). Considering that people living in SRs are primarily members of this age group, and that the costs of voting are generally higher for older seniors due to greater social isolation and physical and cognitive impairments, it is striking to find such large turnout differences (of 3 to 6 points) between SRs and other polling stations. Placing polling stations in SRs appears to have positive consequences on the electoral participation of older seniors.
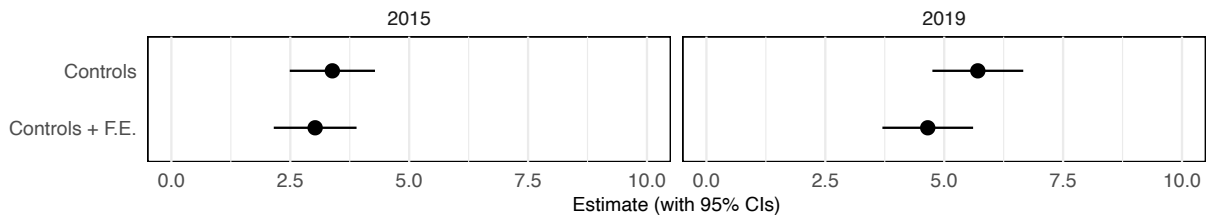
Figure 4.1. Turnout difference in seniors' residences, 2015 and 2019 Canadian federal elections

Figure 4.2 reports results from the models predicting support for the main political parties during the 2015 and 2019 electoral contests. In both years, Conservative support was *higher* in SRs if we keep constant the number of advance voters and the demographic background of the neighbourhood where polling stations were located. These differences range from 1.8 to 2.2 points in 2015 and 2.3 to 2.4 points in 2019, depending on model specification. In other words, consistent with expectations, the main ideologically conservative party was more popular in seniors' homes than in other polling stations in the last two federal elections. However, when looking at public opinion survey data from these two elections, I find that

support for the Conservative was as much as 9 to 12 point higher among 75+ year olds than among other Canadians. The difference between voters of seniors' residences and all other voters is therefore much smaller than one might have suspected from analysing survey data only.
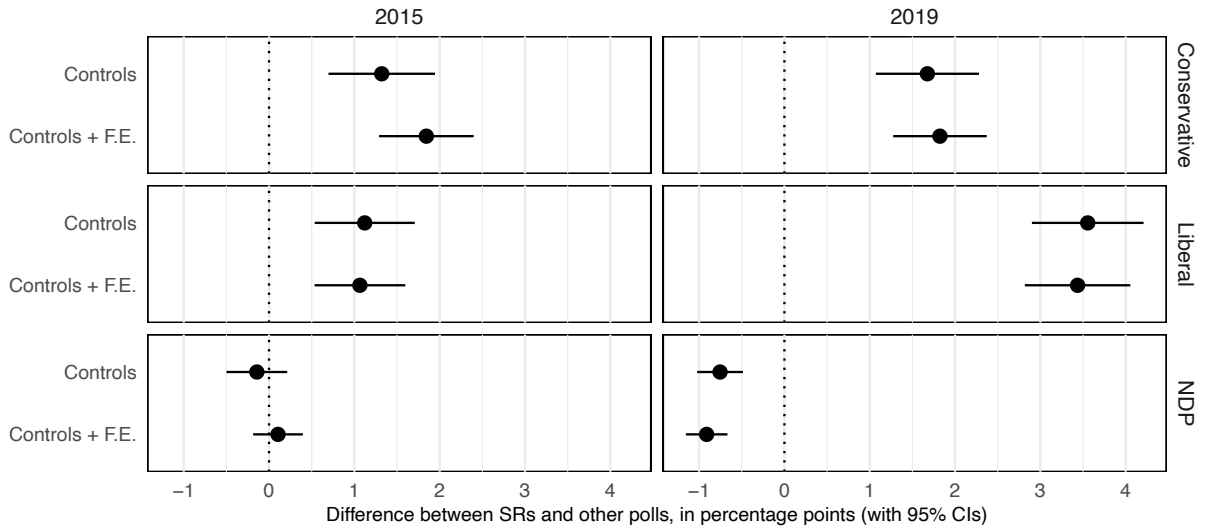
Figure 4.2. Party support difference in seniors' residences, 2015 and 2019 Canadian federal elections

In contrast, support for the main left-wing party was *lower* in SRs than at other polling stations in 2019. Controlling for potential confounders, I find that NDP support was approximately 0.5-0.8 points lower in SRs in 2019 but equivalent in SRs and other polling stations in 2015. The 2019 result is consistent with theoretical expectations, which predicted lower support for the NDP in SRs than elsewhere, but not the 2015 result. Plus, even in 2019, the difference is relatively small (less than one point), which was unexpected if we consider age differences in reported vote choice measured through post-electoral surveys. In fact, in 2019, the Canadian Election Studies data revealed that NDP support was *9 points lower* among 75+ years old Canadians than among all other people.

Results for the Liberal party are also surprising. Coefficients reported in Figure 4.2 show that the Liberal party was more popular in SRs than in other stations in 2015 and 2019 ($p < 0.001$). Expectations regarding the Liberal vote share in SRs were more nuanced

than for the two other parties: I expected Liberal candidates to be successful in these polls because their party has existed for more than 150 years and has formed government during a majority of the post-World War II period, which can make this party more appealing to older voters. But this came with a caveat, because survey data indicated that Liberal support was sometimes higher among older voters, and sometimes lower depending on the election. While Liberal support was 7.1 points lower among 75+ years old Canadians than other people in 2015 (according to the Canadian Election Study data), estimates presented in Figure 4.2 show that Liberal candidates scored about 1.3-1.8 points higher in SRs than at other polling stations during this election. In 2019, the difference between SRs and other polling stations was 3.9-4.3 points, even though the difference between 75+ years old and others in the population was equal to 1.3 points only.

Other parties (not shown in Figure 4.2) received the same or lower levels of support in seniors' residences than in other voting locations. The two smallest parties with representatives in the House of Commons — the Bloc Québécois and the Green party — did not perform better or worse in seniors' residences than elsewhere in 2015 and 2019 (coefficients cannot be distinguished from zero). Estimates for even smaller parties are less precise because of their overall lower vote share, but aggregating all of these parties' vote share shows that their support was lower in seniors' residences than other stations in 2019, while the difference was indistinguishable from zero in 2015.

In summary, comparing electoral results in SRs versus polling stations located elsewhere in the community, I find that support for two of the three main political parties was higher in seniors' residences than in other polling stations. These are the Liberal and the Conservative parties. The Liberal difference is consistent with theory but inconsistent with post-electoral survey data, according to which I expected Liberal support to be more moderate in seniors' residences. The Conservative difference is consistent with the expectation that ideologically conservative parties should be more popular among seniors, but the difference between Conservative vote choice in seniors' residences and other stations is smaller than the difference between seniors and younger electors, when measured using survey data. Finally, as revealed

by the analyses, the NDP vote share was the same or slightly lower in SRs than in other polling stations in 2015 and 2019. Again, this finding is inconsistent with survey data, but also with theoretical expectations, which predicted even lower support for this party among voters of seniors' residences.

4.5.1. Voter mobilization in seniors' residences

What explains these somewhat surprising model results, especially in the Liberal and NDP cases, which performed better in seniors' residences than would have been expected in the last two Canadian federal elections? Of course, differences between individual-level survey data and polling station-level data are to be expected, as they are not comparing exactly the same populations. First, not everyone who lives in a seniors' residence belongs to the 75 years old age group. But an important majority of them are, and conclusions still hold if we use 70 or 65 years old as a threshold for comparison in the survey data. Second, individual survey data may not be entirely reliable due to recollection issues or sampling bias. In fact, survey firms may not be recruiting enough respondents from SRs. If seniors living in residences are different from seniors living outside of residences, not including them in survey samples could affect predictions of the vote breakdown by age groups. Durand, Blais and Vachon (2002) hinted to this idea in their paper on election survey bias following the 1998 Quebec provincial election. According to them, "Even though pollsters may reach half of the voters living in institutions [SRs, religious communities, etc.], adjustment weighting used by these firms does not take into account this segment of the voting population since it is based on Statistics Canada's Census of private households" (p.41).

Even though these sampling biases are possible, they still do not help explain *why* voters of SRs may be different from others voters. Could differences be explained by party mobilization in SRs? To explore this puzzle, let us turn to the personnel of these residences, who — through a survey — provided insight on the presence of political parties in their institutions ahead of the 2019 election. Analyzing results from the survey, I find that 28.8% of residences sampled received a visit from at least one political party ahead of the 2019 election. In 15% of the cases, residents got involved in the organization of the visit.

	All regions	Atlantic	Quebec	Ontario	Prairies	B.C.
Liberal	18.3%	17.2%	18.9%	20.2%	9.1%	12.0%
Conservative	14.2%	13.8%	11.8%*	27.0%*	21.2%	12.0%
NDP	7.0%	3.4%	4.9%*	19.1%*	12.1%	8.0%

* Indicate statistically significant differences ($p < 0.05$; based on chi-squared tests) between a given value and the percentage for the entire sample. For example, the share of Conservative visits in Quebec (11.8%) is significantly lower than the overall share of Conservative visits (14.2%). The Prairies include Alberta and Manitoba (no residences from Saskatchewan). The Atlantic includes New Brunswick, Newfoundland and Labrador and Prince Edward Island (no residences from Nova Scotia).

Table 4.1. Share of residences visited by each party ahead of the 2019 election

With regards to party differences, I find that 18.3% of residences sampled mentioned having received the visit of a Liberal candidate, versus 14.2% from a Conservative candidate and 7.0% from an NDP candidate (see Table 4.1). Forty-five residences mentioned having received the visit of the Liberal party only, compared to 25 that received a Conservative candidate only and 7 that received only the NDP. Liberals and Conservatives more often visited the same residence (72 times), while the Liberal/NDP duo happened almost as often as the Conservative/NDP duo (39 vs. 30 time).

In short, the Liberal party seems more active than other parties in SRs. But are these impressions from only one survey reliable? While 709 residences from eight provinces completed the questionnaire, selection was not random. The survey sample is biased in favour of some regions. Seventy-five percent of all responses came from the province of Quebec, which is more than the proportion of SRs in this province (40%) relative to the rest of Canada (Canada Housing and Mortgage Corporation, 2019). In Ontario, there are 747 residences in total (26% of Canada's SRs), but only 89 residences participated in the survey (12% of the sample). Other provinces are under-represented in the sample too (British Columbia, Manitoba, Saskatchewan and Atlantic provinces). Alberta comes closer to representativeness — the province has 4.5% of all residences and makes up 4.1% of the sample. These gaps may be problematic if parties have different strategies in different regions of the country.

Actually, evidence collected from interviews with campaign workers during the 2019 and/or 2015 election confirm that the decision to visit SRs rests in the hands of the candidate

and their campaign manager. None of the interviewees mentioned that their national party organization encouraged them to visit seniors' homes. Like other campaign strategies, this decision is de-centralized in Canadian federal parties (Coletto, Jansen and Young, 2011), so candidates from different regions of the country could have different inclinations towards SRs. That said, interviewees from all parties confirmed that they had a strong interest in visiting SRs because senior voters have higher turnout rates than other citizens.

In Table 4.1, we find that Conservatives and New Democrats have been less active in Quebec's SRs relative to the entire sample, but more active in Ontario and in Prairie provinces. Even tough most visits from *all* parties were recorded in Ontario, increasing the number of residences from this province and from the Prairies could still decrease the difference between Liberals and the two other parties that is reported in the first column of the table. In fact, after weighting results by the number of residences in each province,[15] I find that 16.9% of all residences were visited by a Conservative candidate, 18% by a Liberal candidate and 9.6% by an NDP candidate. In other words, weighting the data to account for an unbalanced sample increases the proportion of residences having been visited by the New Democratic and Conservative parties. The Conservatives and the Liberals are now almost equivalent in terms of numbers of visits.

Regional differences in visits also nicely fit the parties' success in each region of the country. Conservative support was higher in the Prairie and Atlantic provinces and in Ontario (relative to Quebec) in the last two general elections. NDP support was higher in British Columbia, Ontario and two of the three Prairie provinces (Manitoba and Saskatchewan) than in Quebec. Liberal support was higher in Ontario, Quebec and Atlantic provinces than elsewhere (Grenier, 2019). This could be an indication of parties focusing their SRs' mobilization efforts in regions where they are already more successful. Such interpretation is consistent not only with survey results, but also with evidence provided by campaign workers. According to interviewees, visiting SRs represents a way for parties to "refresh citizens' minds" more so than persuade them to vote for their party. On that note, respondents

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15. Numbers obtained from the 2019-2020 Seniors Housing Survey Data Tables of the Canada Mortgage and Housing Corporation.

confirmed having scheduled visits in SRs as close as possible to election day or after their main competitor to make sure voters remembered them well when casting their vote. In other words, insights from political actors support a theory of political canvassing in SRs that would focus on increasing the participation rates of party supporters more so than on the mechanism of persuasion.

In short, the survey of SRs allows us to better understand the differences in party support found in electoral data. It shows that the Liberal party made more visits in SRs than all other parties (even after weighting the data). The bulk of these visits were made in Ontario and Quebec, where more seniors' homes are located. The New Democratic party also visited one fifth of Ontario residences. Visits could have contributed to increasing these parties' vote share in SRs. Conservatives also made several visits to seniors' homes, but less so in Quebec. The fact that this party is the most popular among older age groups may have limited the effect of Conservative party visits on vote share.

4.6. Conclusion

In 2019, more than 20% of the population was 65 years or older in Japan (28%), Italy (23%) and Germany (22%), among others. In many South American, East Asian, East European and Oceanian countries, the share of people aged 65 and older has already reached more than 15% (e.g., the Republic of Korea, Poland, Hungary, Uruguay, Australia). Globally, this trend is expected to persist in countries where fertility is declining, and especially in countries with lower immigration rates (United Nations, 2020). This context highlights the importance for political scientists to ask questions on the political behaviour of senior citizens, including their patterns of electoral participation and vote choice.

To decrease the costs of voting in 'older old-age', electoral agencies can place polling stations inside of seniors' residences (SRs). Residents of these homes can access the voting booth very easily, without having to leave their living environment. Using electoral data on polling stations from the 2015 and 2019 Canadian federal elections, this paper investigated patterns of turnout and vote choice in these polling stations.

First, it showed that this measure had a positive impact on turnout among older people. During the 2015 and 2019 elections, turnout was 3 to 6 points higher at polling stations located in SRs when compared to stations located elsewhere in the community. This is an important result if we consider that turnout among Canadians aged 75 years or older, who represent the majority of people living in SRs, was merely 1.5 and 1.9 points higher than all other Canadians during the 2015 and 2019 elections.

Placing polling stations in SRs thus broadens the capacity of older citizens to participate in elections. From a normative standpoint, this policy has positive democratic implications because it can increase turnout. But this result also raises the question of who exactly can benefit from this measure. Due to data limitation, I was unable to identify the types of SRs in the statistical analysis. There are probably variations between independent and supported living residences when it comes to the impact of placing polling stations in seniors' homes (see Wass et al. [2017] on the differentiated impact of policies that aim to reduce the costs of voting). In a similar vein, the analyses presented in this paper could not identify who (i.e., which group of voters) is more likely to live in a seniors' residence. Even though the analyses included demographic controls at the level of neighbourhoods, there might still be a selection mechanism operating at the level of SRs, with some groups — such as specific cultural communities or income groups — being more likely to move to a seniors' home upon reaching a certain age. As a consequence, some groups may benefit more than others from easier access to the voting booth in older age. More work is needed to reach a nuanced understanding of electoral participation in SRs. This paper represents a first step in this direction.

Second, the analyses presented in this paper identified what parties get higher support in SRs compared to other polling stations. In general, research has shown that conservative or well-established parties were more popular among older people than among younger age groups (Goerres, 2008). Results presented in this paper showed that support for the Conservative and Liberal parties was 1.3 to 4.3 points higher in polling stations stationed in seniors'

homes, as opposed to other voting stations during the 2015 and 2019 Canadian federal elections. Even though the Liberal party is an established political formation in Canada, this finding is somewhat surprising because support for this party was not so widespread among older Canadians in 2015 and 2019. Findings about the New Democratic Party were the second most unexpected. Analyses revealed that support for the NDP was equal to or less than one point lower in SRs than at other types of polling stations. Theory and individual-level survey data would have suggested a larger negative gap, not only because the NDP is a left-wing party, but because support for this formation was more prevalent among younger people in the last two elections.

Why are voters of SRs different from other voters? Apart from the age factor, there is not much to rely on when formulating expectations about party choice in seniors' homes. One aspect that is especially under-theorized is the role played by party mobilization inside of these residences. This issue remains poorly documented even though SRs are 'easy targets' for parties who want to reach out to voters. This paper contributed to this bridging gap by presenting new empirical evidence on parties' approaches to SRs. Using original survey data collected with the personnel of SRs, I found that more Atlantic and Quebec residences received a visit from the Liberal party than from any other party ahead of the 2019 Canadian election. Residences in the Prairie provinces were visited by the Conservative party more than by other parties, just like Ontario residences. However, even though Conservatives were most active in Ontario, most visits from the two other parties happened in this province as well. Plus, Liberals visited twice as many residences as the Conservatives in Quebec. Ontario and Quebec are the two provinces where we find the largest number of SRs and the bulk of polling stations located in these institutions. There were 572 and 328 polling stations located in Ontario and Quebec, respectively, in 2019. In contrast, the next province with the largest number of polling stations located in seniors' residences during the 2019 election was Manitoba, with a total of 99. Quebec and Ontario are also two battleground provinces in Canadian federal elections. Based on these results, I argue that visits in SRs can contribute to increasing party support by refreshing voters' minds about candidates. In fact, the data

suggest that parties are more likely to visit residences in regions where their overall support is higher, which indicates that candidates may be more involved in getting-out-the-vote of their own electors than in persuading new electors of voting for them. This view is supported by impressions collected from political campaigners, according to whom citizens encountered in seniors' homes are more often than not already convinced of the party they are going to vote for. Of course, more research is still needed to test this hypothesis directly. One way to uncover the truth about these processes would be to conduct surveys with voters of SRs directly.

Findings about party support in SRs point to one final issue, this time related to electoral survey data. Voters of SRs are mostly members of the 75+ years old age group. Comparisons of *SRs vs. other polling locations* (in terms of vote choice) should therefore resemble comparisons of *75+ year olds vs. all other citizens* in the general population. Obviously, this is an imprecise test, but differences should at least be substantially similar (i.e., in the same direction). This paper instead revealed large discrepancies between estimates obtained from these two sources of data. Residents of seniors' homes are a lot more supportive of the Liberal and New Democratic parties, and less supportive of the Conservative party, than seniors of the same age surveyed in post-electoral surveys. Like Durand, Blais and Vachon (2002), I argue that these discrepancies can be explained by sampling bias. Age gap in party support found in survey samples could be different if sampling included more respondents from SRs. Since older people will represent a larger proportion of the electorate in the future, we need better estimates of vote choice across different types of seniors' living arrangements if we want be able to mobilize these voters during campaigns.

Chapter 5

Article 3. House speakers: Parliamentary speech and representation in Canada

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Abstract: Parliamentary speech is an important component of the representational role of legislators. The association between the content of parliamentary speeches and constituency interests has mainly been studied using single issues or by analysing types of debates where legislators are less constrained by their parties, like question periods. In this paper, I use a comprehensive corpus of parliamentary text corpora from the Canadian House of Commons to analyse congruence between the content of MPs' speeches and constituents' characteristics. To do so, I create an original topic dictionary based on the index of the Hansards to identify mentions of three topics in the debates: immigration, unemployment and seniors' issues. Results show that legislators are responsive to locally-relevant concerns when debating immigration and unemployment — even during general debates — but not when it comes to seniors' issues. This nuanced finding helps to restore confidence in the work of individual members of Westminster legislatures and contributes to the study of democratic representation in general.
Keywords: parliamentary speech, representation, Westminster Parliaments, legislative politics, text-as-data

5.1. Introduction

Elected representatives can use parliamentary speech to influence policy, promote citizens' interests, or send signals to constituents (e.g., Poyet and Raunio, 2020; Yildirim, 2020). This process is related to the legislators' role as representatives in a democracy. Conveying their positions to electors legitimizes legislators, enhances their relationship with constituents, and allows for accountability to occur (Koop, 2018; Proksch and Slapin, 2015).

Past research has shown that individual members of Parliament used parliamentary questions to address issues that are important to the constituents of their own district, thus fulfilling the expectations of dyadic representation. For example, Portuguese MPs representing districts where unemployment and crime are more severe ask more questions about these topics when participating in the debates (Borghetto, Santana-Pereira and Freire, 2020). Canadian MPs representing left-wing constituencies ask fewer questions on debt and taxes, while MPs representing constituencies with military bases are more likely to ask questions related to defence (Soroka, Penner and Blidook, 2009). Outside of question periods, which are types of debates when members are usually less constrained by their party, the representation of constituents' interests in legislative speeches has not been studied extensively. In this paper, I argue that if MPs are to address constituency-relevant issues in the legislature, they should not only do so during question periods, but during general debates as well.

To verify this claim, I rely on a comprehensive corpus of parliamentary speeches from the Canadian House of Commons. Despite the incentives of local representation that come with Canada's electoral system, party discipline is still ubiquitous in the Canadian Parliament. Since 1945, at least half of the Liberal and Conservative members — the two major parties — voted with the majority of their caucus more than 95 percent of the time (Godbout, 2020, pp.5-7). Free votes happened only fourteen times in Canada since 1960, and only twice since 2000 (Library of Parliament, 2018). Evidence also suggests that Canadian MPs are strongly influenced by the party line when making interventions outside of Parliament (Marland, 2020). Canada can thus be seen as a tough test for the use of speeches to address locally-relevant issues, which motivates the selection of Canada for the analysis. If MPs dealing

with strong partisan constraints still address issues that are important to their constituents when speaking in the House, then we should be more confident that MPs in other contexts can do so as well.

The empirical demonstration relies on every speech pronounced in the Canadian House of Commons between 1988 and 2015 to capture the attention of Canadian MPs to three different issues: unemployment, immigration and seniors' issues. To measure attention to these issues, I created topic dictionaries inspired by the House of Commons Hansard indexes, which I used to identify instances of these topics among more than 800,000 legislative speeches. By combining measures of issue attention with the demographic profile of every riding, I was able to identify which members of the Canadian Parliament have greater interest in issues that are relevant to their own constituents, such as job-creation programs in districts with high levels of unemployment, immigration quotas in ridings where more residents were born outside Canada, and old-age pensions in regions where the population is older.

Results show that MPs who represent constituencies with a higher unemployment rate or a larger proportion of people born outside the country tend to discuss the topics of unemployment or immigration more when debating in Parliament. This is the case in all types of debates, not only in periods where MPs have more freedom, like Private Members' Business, private members' statements or question periods. In contrast, results suggest that the age of constituents does not help explain MPs' attention to seniors' issues, but the age of MPs does. These results paint a nuanced picture of the use of legislative speeches to represent constituents' interests.

With the increasing accessibility of political text corpora, automated text analysis constitutes a convenient way of broadening the scope of representation and legislative studies. This paper presents an original method to analyse the content of parliamentary speech data, based on the indexes of legislative debates. In addition to this empirical contribution, this paper makes a theoretical contribution to the study of parliamentary speech and representation. In legislatures where party discipline is stronger, we may be more pessimistic about the ability of parliamentarians to attend to their constituents' interests. Results presented

in this paper suggest that members evolving under such constraints can pay attention to their constituents' interests. This is an optimistic finding that helps to restore the role of individual members of Parliament in democracy.

5.2. Parliamentary speech and representation

5.2.1. The role of speeches

Parliamentary speech is part of the representational role of legislators. In their seminal work on legislative speech, Proksch and Slapin (2015) identified two goals of parliamentary interventions. First, speeches can be used to "affect policy outcomes." After all, developing good public policies is one of the objectives of elected representatives (Godbout, 2020). In this sense, "directing the attention" to specific issues (Jones and Baumgartner, 2004, p.2) or designing speeches to slow down the progress of certain policies (Eggers and Spirling, 2016) are ways in which members of Parliament (MPs) can influence the parliamentary agenda. But while research on the U.S. Congress has shown that members of American legislature consider legislative speeches important for policy reasons (Maltzman and Sigelman, 1996), oral interventions in the legislature are not always intended to have policy impact (Rozenberg et al., 2011).

The role of parliamentary speeches for representation can be more manifest when we think of the second goal of legislative interventions. Like with other means of expression, such as social media messages (Barberá et al., 2019; Castanho Silva and Proksch, 2021) or press releases (Grimmer, 2013), legislators can use parliamentary speeches to "stake out a position and communicate it to their parties and to voters" (Proksch and Slapin, 2015). The position being communicated may be the legislator's own position, their constituents', or it can be a shared preoccupation of legislator and their constituents (Saalfeld, 2011). Legislators who use speaking opportunities to stake out their own position may be doing so to fulfill their role as a trustee (Baumann, Debus and Müller, 2015; Koop, 2018) or as a means to advance their careers within the party (Godbout, 2020). Legislators who use speeches to stake out their constituents' or a shared position may want to satisfy their role as delegates (Blidook,

2012) or to increase their chances at reelection (Marcinkiewicz and Stegmaier, 2019; Martin, 2011; Mayhew, 1974). In other words, MPs can use their speaking time in the legislature to address their own or their constituency's interests (Raunio, 1996, p.357) for normative reasons, like acting as a trustee or a delegate, or for instrumental reasons, such as advancing their career or achieving reelection (Raunio, 1996, p.311).

Whether they are speaking about issues important to them or their constituents, and whether they are doing so for normative or strategic reasons, legislators who express a position in Parliament contribute to fostering representation. On the one hand, constituents need to know where their representatives stand in order for democratic accountability to be enforced, especially if representatives' positions differ from citizens' positions. On the other hand, when communicating a position with which constituents agree, elected representatives contribute to "nurturing" and "strengthening" their connections to citizens, which is an important component of symbolic representation (Koop, 2018, p.17-18; see also Pitkin, 1967; Fenno, 2003; Poyet and Raunio, 2020). In other words, even when parliamentary speeches do not translate into policy, they can inform citizens about their representative's positions or reveal MPs' dedication to citizens' preoccupations. In this sense, parliamentary speeches are important components of democratic representation.

But do citizens have information about what is said in Parliament? Van Aelst and Vliegenthart (2014) found that about half of oral questions asked in the Dutch Parliament were "covered in the national press" This substantive result was confirmed by van Santen, Helfer and van Aelst (2015) in their analysis of parliamentary questions coverage in the Netherlands (40 percent of questions covered in the media), France (18 percent) and Germany (5 percent). The authors explain national differences by the frequency and the televised nature of question periods (QPs). There tends to be more media attention around the content of QPs in countries where the periods are more frequent (and therefore close to current events), and when they are televised. What is said in Parliament can be conveyed to citizens in other types of media too. Castanho Silva and Proksch (2021) showed that the content of tweets published by members of national parliaments in the EU reflected

the sentiment of their parliamentary speeches. While not all legislative interventions are covered in the media, research on the EU parliament found that the "more parliaments engage with EU affairs," especially through debates, "the more visible their EU involvement was in the media" (Auel, Eisele and Kinski, 2018). In short, the issues that are discussed during parliamentary debates can be relayed to citizens through traditional and non-traditional media (see also Proksch and Slapin, 2015, p.22).

In systems with geographically-defined electoral districts, parliamentarians who wish to "stake out and communicate" positions to their constituents should have in mind the interests of the people living in their own district. In other words, parliamentary speeches should fulfill the expectations of dyadic representation (e.g., Hanretty, Lauderdale and Vivyan, 2017). Past research has confirmed that elected representatives use interventions in parliament to address local questions. Saalfeld (2011) found that Members of the British House of Commons who represent a larger minority population asked more questions about the topics of ethnic minorities and immigration, regardless of their own minority status. This substantive result was confirmed by Soroka, Penner and Blidook (2009) in the Canadian House of Commons, where MPs have been found even more responsive to local interests in contexts of greater electoral instability. In his analysis of oral and written questions asked in the Turkish parliament, Yildirim (2020) showed that MPs participating in legislative debates were more likely to mention their own constituency when the debates were televised than when they were not, again confirming the strategic aspect of parliamentary interventions. The crucial nature of speeches for signaling positions and appealing to local interests is also recognized by political parties themselves, which can decide to grant floor access to members "who need to connect with constituents" (Alemán, Ramírez and Slapin, 2017, p.654), but not to those who are too "likely to deviate from the party line" (Bäck and Debus, 2018, p.74).

5.2.2. Argument and research opportunity

When using parliamentary speech to study legislators' appeal to local issues, scholars generally focused on subsets of the debates related to specific topics (e.g., O'Grady, 2019, on welfare) or on periods of the debates when MP are less constrained by their party, such as

question periods (Fernandes, Won and Martins, 2020; Martin, 2011; Papp, 2016; Soroka, Penner and Blidook, 2009). While parliamentary questions can reflect the "true preferences and interests of individual members" of parliament (Martin, 2011, p.260), they represent a small amount of MPs' legislative work (e.g., Cochrane, Godbout and VandenBeuke, Forthcoming). Plus, depending on the rules and procedures of parliament, some MPs may have a higher probability of speaking during question periods, thus limiting the analysis to these legislators. These instances are also "relatively low-cost and discipline-free initiatives" (Yildirim, 2020, p.110). If we are to draw inferences about the use of parliamentary speech by Members of Parliament to appeal to local interests, I argue that we should broaden the scope of analysis. In fact, we should expect legislators to be attentive to locally-relevant issues in other types the debates as well. [1]

I test this expectation by analysing the association between citizens' priorities and the content of legislators' speeches in a comprehensive set of legislative debates. I also focus on a context where party discipline is strong, the Canadian House of Commons. Like in other Westminster parliamentary systems (Hanretty, Lauderdale and Vivyan, 2017; Proksch and Slapin, 2015), Canadian governments must always retain the confidence of the House, otherwise they have to resign or dissolve parliament to trigger an election. This confidence convention, in conjunction with parliamentary rule changes and the process of partisan sorting that happened throughout the twentieth century, have caused an important increase in party cohesion in the Canadian legislature since the beginning of the 1900s (Godbout, 2020). Today, even though electoral incentives would predict greater freedom for individual MPs (Proksch and Slapin, 2015), members of the House almost always vote with their caucus, even when confidence is not called into question (Godbout, 2020). At the same time, and again in contradiction with what would be expected of a single-member plurality electoral system, these high levels of roll-call discipline have been accompanied with an increase in "message" discipline in and outside the House (Marland, 2020, p.128). Elected representatives are more and more required to stick to the "brand message," even when personally interacting with

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1. Fernandes, Won and Martins (2020) did study the entire corpus of legislative debates in Portugal between 1999 and 2015, but their analysis aimed at identifying references to geographic locations in a constituency, not policy topics, which is the focus of this analysis (see also Papp, 2016)

constituents (Marland, 2020, p.130). This strong discipline imposed on caucus members may restrain their ability to speak freely about the issues that they want — such as constituency-relevant topics — when debating in Parliament. If MPs who are confronted to such strong partisan constraints can adapt the content of their parliamentary speeches (not only during question periods, but at other moments of the debates too) to address constituency-relevant issues, it would represent convincing evidence in support of the theory. In this sense, Canada can be considered as a tough test for the theory (see also Borghetto, Santana-Pereira and Freire, 2020; Yildirim, 2020)

5.2.3. Constraints to parliamentary speech in the Canadian House of Commons

Parliamentary rules or conventions can influence legislative speech patterns. While in the British House of Commons we still find the practice of 'catching the Speaker's eye' to get access to the floor, in Canada it is not uncommon for parties to provide the Speaker with a list establishing the order of speaking turn ahead of the debates (Cochrane, Godbout and VandenBeuke, Forthcoming). Members sitting on the backbench have on average less opportunities to intervene in the debates than Cabinet or Shadow Cabinet members, and party leaders are more likely to allow speaking time to MPs who stick to the party line (*ibid*).

But this might vary according to the types of debates. Like in the UK, government business is prominent within Canadian parliamentary debates, with government orders taking up about two thirds of proceedings. During government orders, speakers may be more likely to follow the party script because business "is determined solely by the government" (Bosc and Gagnon, 2017, chap. 10; see also Godbout, 2020, p.136-7). It might be more difficult for parliamentarians to speak on local matters during these periods than at other times, such as debates over private members' business. In the British House of Commons, specific days are set aside in each session for the consideration of private members' bills. In Canada, the same type of opportunity falls under Private Members' Business (PMB), scheduled within each sitting day. Along with statements by private members (also called *statements pursuant to Standing Order [S.O.] 31*) and question periods (QP), PMB represent moments when members of the House of Commons are arguably less restricted by their party, even

though "some MPs now use their individual speaking time [during PMB] to read speeches prepared for them by the office of the party" (Cochrane, Godbout and VandenBeuke, Forthcoming). Statements pursuant to S.O. 31 and QP have been qualified as "position taking" opportunities (Soroka, Penner and Blidook, 2009, p.569), whereas time allocated for PMB allows private members to introduce and discuss legislation or motions of their own (Blidook and Kerby, 2011).[2] Taking advantage of the fact that the analysis relies on the entire scope of parliamentary debates, I can test the hypothesis that MPs are more considerate of constituency-relevant issues during PMB, S.O. 31 and QP than during government orders.

Finally, I also expect MPs sitting on the frontbench — and whose job it is to routinely communicate and defend the party line in the House — to have less opportunities to speak on behalf of their constituents than backbenchers, whose speeches should be less scripted by the party. In the UK, for example, evidence suggests that government backbenchers use speeches to rebel against their party and "stake out positions" (Slapin and Kirkland, 2020, p.171). Given that the Canadian and UK parliaments share many functioning features, I anticipate better congruence between constituents' interests and the content of interventions made by backbenchers, as compared to frontbenchers.

5.3. Issues, measures and models

In order to empirically test whether members of the Canadian House of Commons address issues that are important to their constituents when debating in parliament, I selected three specific topics of the debates: unemployment, immigration and seniors' issues.

These three issues were selected because they correspond to important socio-demographic cleavages in Canadian politics. Transformations to the age structure and increase in immigration rates are two of the most significant demographic changes of the last fifty years

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2. Every day, "one hour is set aside [...] for Private Members' Business, that is, for the consideration of" public and private bills, motions, notices of motions and papers "presented and sponsored by private Members" (Bosc and Gagnon, 2017). The House speaker, deputy speaker and parliamentary secretaries are explicitly excluded from these types of debates, and members of the Cabinet are excluded by convention (*ibid*). Statements pursuant to S.O. 31 are scheduled for 15 minutes every Mondays, Tuesdays, Wednesdays and Thursdays afternoon and Friday morning, prior to the question period (Canada House of Commons, 2020). During this type of debate, MPs other than members of the Cabinet can be recognized by the speaker to make one-minute statements on the topic, policy, person or problem of their choice.

in this country. Canada is facing one of the most rapidly ageing population of the democratic world (van Bavel and Reher, 2013), and population ageing is happening more quickly in certain regions (Atlantic provinces, Quebec, Ontario, British Columbia) than in others (Manitoba, Saskatchewan, Alberta). The number of immigrants to land in Canada has more than doubled between 1982 and 2012 (Statistics Canada, 2016a). In Canadian electoral politics, immigrant citizens have been considered as somewhat of a puzzle for many years because of their strong support for the Liberal party (Blais, 2005). More recently, however, this cleavage has started to fade (Harell, 2013). Finally, unemployment is a crucial issue for politics: it is frequently used as an indicator of a country's economic well-being in analyses of economic voting and political accountability. Godbout and Bélanger (2002) have shown that unemployment was one of the most important factors influencing party choice at the federal level in Canada. Moreover, there are large variations in unemployment rates across Canada (Statistics Canada, 2021), which makes this issue an interesting one for research on representation in this country. Appendix D.1 includes more information on the politicization of these topics in Canada, including a discussion of how parties are usually positioned on these issues.

The three topics were also selected because it is possible to associate local considerations with legislative debates on these areas in a relatively straightforward manner. I expect (1) representatives elected in districts where the population is older to be more drawn to seniors' issues, (2) representatives elected in districts where a larger share of residents were born outside Canada to be more drawn to immigration, and (3) representatives elected in districts where the unemployment rate is higher to be more drawn to unemployment when participating in debates of the House. Below, I present the strategies used to test these expectations.

5.3.1. Citizens' interests

Measuring constituents' interests often implies using survey data to estimate average policy preferences at the constituency level from samples of respondents. This approach can be challenging and sometimes impossible if samples are too small (Warshaw and Rodden, 2012).

Using proxies for constituents' interests gives us more room to manoeuvre, because such measures are often more easily accessible in social science data. For example, Soroka, Penner and Blidook (2009) have used the presence of military bases in electoral ridings as a proxy for citizen interest in the military issue. Others have relied on demographic characteristics, like median income, ethnic or age composition, educational attainment or labour activity as proxies for constituents' interests to predict legislators' voting behaviour (e.g., Borghetto, Santana-Pereira and Freire, 2020; Fleck and Kilby, 2002). I adopt the same strategy in this paper.

Demographic indicators were taken from the 1991, 1996, 2001, 2006 and 2016 Census of Canada and the 2011 National Household Survey.[3] I performed linear interpolation to estimate population composition at the beginning of each of the nine parliaments of this period (1988, 1993, 1997, 2000, 2004, 2006, 2008, 2011 and 2015; see Appendix D.2 for more details).[4] This approach yielded an estimate of average age, percentage of people born outside Canada and unemployment rate in every electoral district between the 34th and the 42nd Parliaments. Average age in the district ranges from 23.0 to 47.7 years old (mean = 37.8), the share of people born outside Canada ranges between 0.3 and 69.2 percent (mean = 17.6), and the unemployment rate in the district ranges from 2.8 to 38.6 percent (mean = 8.5). More descriptive statistics for these measures can be found in Appendix D.1.[5]

Using these three indicators to measure citizens' interests has methodological implications. On the one hand, unemployment rate — or the number of unemployed people as a share of the labour force — effectively captures constituencies' interest in the unemployment issue. On the other hand, the proxies used for interest in seniors' issues and immigration may be less obvious. Average age is a valid proxy for citizens' interest in seniors' issues, because average age is higher in constituencies where more senior people live. However, the

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3. The National Household Survey was used in 2011 as a replacement for the census's long-form survey.

4. I use the 1991 census information for the 34th Parliament, which started in 1988. The Parliament ended in 1993, so 1991 is approximately the mid-point of this period. Having access to 1988 demographics would have been ideal, but 1991 is the earliest we can go with the Census data.

5. The correlation between the share of people born outside of Canada and the unemployment rate is equal to -.17 ($p < .05$). The correlation between the share of people born outside of Canada and average age is equal to -.02 ($p = .33$). The correlation between average age and the unemployment rate is equal to -.10 ($p < .05$).

'share of seniors' has also been used in studies that look at the democratic representation of seniors (e.g., Anzia, 2019). To make sure that my findings are not sensitive to this choice, I reproduced all empirical analyses using the share of seniors as independent variable instead of average age, and found substantially similar results (see Appendix D.5). Finally, the proxy used for interest in the immigration issue (share of people born outside Canada) captures the number of citizens with an immigrant background, but also permanent and temporary residents. It is important to note, however, that permanent residency is the first step to become a Canadian citizen. On average between 1991 and 2006, 56 percent of permanent residents acquired citizenship after living in Canada during 5 years only, and 80 percent did so after 10 years (Statistics Canada, 2019b). These people most probably have an interest in issues related to visas, permits or citizenship requirements, and most of them eventually become voters. Temporary residents can also become permanent residents, but they do so at a smaller rate (Statistics Canada, 2017b). Still, most temporary residents are in Canada for labour or educational reasons, so interest in immigration questions — such as visa requirements — is arguably greater among Canadian citizens who live in ridings that attract large numbers of temporary residents.

5.3.2. Issue mentions

I used the digitized versions of the Canadian House of Commons Hansards, collected by the Lipad project (Beelen et al., 2017), to measure MPs' attention to these three issues. The Lipad dataset contains entries for every single speech given in the House of Commons since 1901. The speaker of each intervention is identified, as well as their constituency and party affiliation. From these data, I selected all speeches pronounced between the 34th and 42nd Parliaments, because this is the period for which we have information on the demographic composition of electoral ridings. [6]

I used the Hansard Indexes to identify references to the topics of seniors' issues, immigration and unemployment in this corpus of legislative debates (for a similar approach, see

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6. The corpus comprises 837,055 speeches, with a mean speech length of 223 words and a mean number of interventions by an MP (in one Parliament) of 292.

O'Grady, 2019). Like any other book index, the Hansard Indexes list every significant term in the text, organized under broad categories. From the Indexes, I selected all terms listed under the categories of 'Senior citizens', 'Immigration/Immigrants' and 'Unemployment', which provided a list of 82 expressions related to seniors' issues, 126 expressions related to immigration, and 49 expressions related to unemployment. While doing so, I made sure to follow a specific set of rules.

First, because Hansard Indexes are only available until the 38th Parliament, I did not include expressions referring to specific people or organizations in the topic dictionaries. Most terms were recurrent in the Indexes of the 34th to 38th Parliaments, but some people or organizations, especially in the immigration topic, have also been cited during a specific parliamentary session. For example, the case of Saadia Hetaj, a Moroccan woman who was deported then granted legal status in the country, has been debated in the House of Commons during the 38th Parliament. It does not mean, however, that her name or the name of any other people in her situation are essential to identify the topic of immigration across time. I excluded those terms to avoid capturing issues that are specific to these parliaments, rather than generalize-able to all parliaments. [7]

Second, I made sure to reduce the expressions to their simplest expression. For example, some words like 'seniors' can be used to identify many different things, like 'seniors month' or 'seniors housing', so we can include 'seniors' in the dictionary and still capture all of these other concepts. In its singular form, however, 'senior' is sometimes used in other contexts unrelated to old-age issues, such as 'senior advisor' or 'senior position in the administration'. It therefore needs to be accompanied with a noun, like 'senior citizens', 'senior benefits', etc. in order to have any meaning in the context of this paper. Table 5.1 presents short excerpts from the three topic dictionaries; the complete lists can be found in Appendix D.3.

Using the topic dictionaries, I counted (automatically) the number of times MPs mentioned each issue when intervening in every Parliament between the 34th and 42nd. In

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7. I also excluded bill numbers, because the same numbers can be used to refer to different bills in different parliaments.

Seniors' issues	Immigration	Unemployment
age credit*	aliens	job creation
age discrimination	boat people	job loss*
aging	canada border services agency	labour force
caregiver*	citizenship	labour market
elderly	compassionate ground*	minimum wage
guaranteed income supplement	deportation	poverty
nursing home*	family reunification	unemployed
pension*	foreign credentials	unemployment
retirement	point system	welfare recipient*
rrsp*	resident status	worker adjustment program*

Note: ∗ means that plural forms of the words are also included.

Table 5.1. Excerpt from the Hansards dictionaries

addition to counting issue mentions across the entire corpus, I also produced the same measures for speeches given during QP, S.O. 31 and PMB. This allows me to verify whether the quality of representation varies according to the type of debates.

Figure 5.1 presents density plots for these measures. More descriptive statistics can be found in Appendix D.1, which also presents over-time fluctuations in these measures. Units of observation are the total number of mentions of an issue by an MP in a Parliament. Distributions are right-skewed: more MPs mentioned the issues a few times (or never) rather than frequently. William Warren Allmand, the Liberal representative for Notre-Dame-de-Grâce, made 1,278 mentions of the unemployment topic during the 34th Parliament. He is the MP who did so the most. The maximum number of mentions of seniors' issues and the immigration topic were pronounced by Irene Mathysson (NDP, London-Fanshawe, 41st Parliament) and Osvaldo Nunez (Bloc Québécois, Bourassa, 35th Parliament), with respectively 1,771 and 1,988 mentions.

To perform the analyses that follow, I complemented these data and the demographic variables at the level of ridings with information on MPs found on the website of the Library of Parliament (party affiliation, date of birth, position in Parliament, whether or not they were born in Canada). The resulting dataset comprises 2,898 MP-Parliament dyads between the 34th and the 42nd Parliaments.
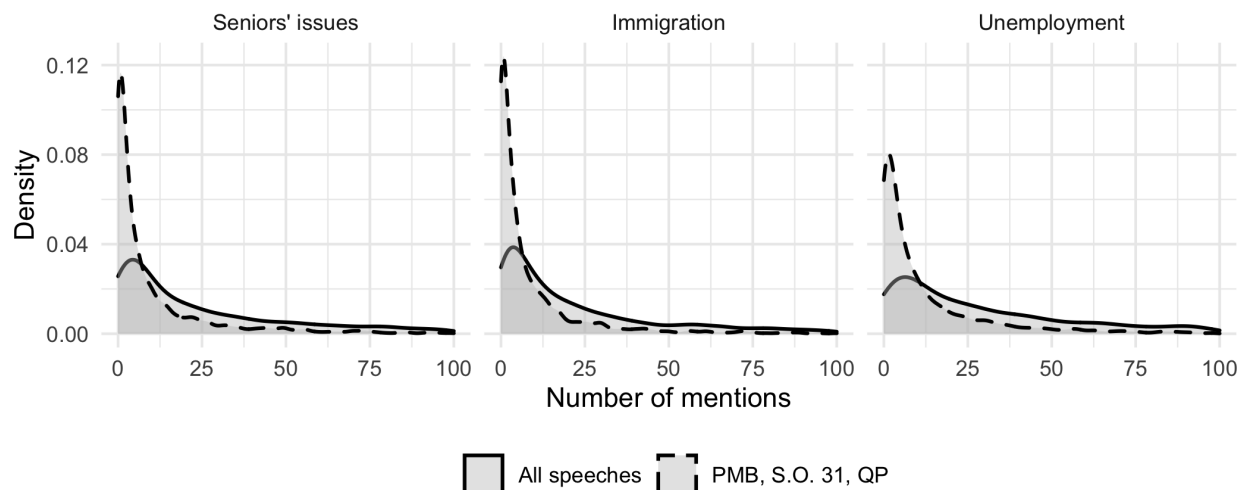
Figure 5.1. Number of mentions of issues

Note: X axes are restricted to 100 for visualization purposes.

5.3.3. Models

I run zero-inflated negative binomial (ZINB) regression models to estimate the effect of population composition on the number of mentions of immigration, unemployment and seniors' issues in the House. The dependent variables are the number of mentions of each issue by an MP in one Parliament, and the main independent variables are the three measures of population demographics (average age, share of people born outside Canada and unemployment rate). Outcomes are modeled as the ratio of mentions to the total number of spoken words, so results should be interpreted as the effect of a 1-point increase in independent variable on the ratio of immigration mentions to the total number of spoken words.[8]

In the models used to estimate the number of mentions of seniors' issues, I control for the age of MPs at the beginning of Parliament. In the models used to estimate the number of mentions of immigration, I control for MPs' immigrant background.[9] Including these control variables allows me to estimate the effect of constituency composition on MPs' speech patterns independent of MPs' own personal characteristics. In the models used to estimate the number of mentions of unemployment, I include a dummy variable for MPs elected in the

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8. Practically speaking, the models are fitted with an exposure (or offset) term corresponding to the total number of spoken words by an MP in a given Parliament.

9. MPs born in a country other than Canada are coded 1 (n = 383), otherwise 0.

Atlantic provinces (New Brunswick, Prince Edward Island, Nova Scotia and Newfoundland and Labrador). The economy of Atlantic provinces relies heavily on seasonal activities like fisheries, which creates higher unemployment levels than in the average Canadian province. This characteristic of their labour market may also influence the topics discussed by MPs from this region, which is why I control for these provinces in the models. Finally, in all models, I add dummy variables for parliaments to account for potential omitted variable bias. Standard errors are clustered by MP to account for the fact that units (MP-Parliament dyads) are not independent.

ZINB models can be used when the number of zeros in a count variable is inflated, meaning that something in the data-generating process is creating excess zeros. Two processes are at play: one generating true zeros, and another one generating the excess. In the case of issue mentions in parliamentary debates, some MPs may decide not to mention an issue because it is not their priority (i.e., they prefer talking about something else) when given the chance to speak (true zeros). Others may never mention an issue simply because they were not given the chance to speak, or because they were absent at a given moment of the debates (excess zeros). The first part of a ZINB model predicts the number of issue mentions (counts) using negative-binomial regression, while the second part of the model uses logit to estimate the probability of excess zeros. In the following analyses, excess zeros (the logit part) are predicted by the number of words the MP spoke in a given Parliament. [10] A larger number of spoken words should decrease the probability of making zero mention of an issue.

I begin by estimating two different sets of models. First, I estimate the number of mentions of seniors' issues, immigration and unemployment without controlling for party. This helps to evaluate the influence of constituents' interests on issue attention across party caucuses. Second, I estimate the same models controlling for party in order to evaluate if members of the same caucus align themselves with the priorities of their own district. [11]

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10. The variable has been divided by 1000 to facilitate model convergence.
11. The party variable has six categories: Bloc Québécois (reference category), Conservative (including members of the Progressive Conservative Party until 2003 and of the Conservative Party since then), Liberal, NDP, Reform and Canadian Alliance, and other (including independent members and third parties).

	Effect of average age / share of residents born outside Canada / unemployment rate on mentions of...		
	Seniors' issues	Immigration	Unemployment
All speeches			
Without party control	−0.015	0.025***	0.039***
With party control	−0.013	0.027***	0.017*
PMB, S.O. 31, QP			
Without party control	−0.022	0.028***	0.047***
With party control	−0.018	0.031***	0.024*
Num. obs.	2820	2860	2861

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$. Zero-inflated negative binomial regression models. There are fewer observations in models estimating mentions of seniors' issue because there are missing values for the birth dates of MPs (a control variable) in the 42nd Parliament.

Table 5.2. Influence of demographic composition on speech content, before and after controlling for party

5.4. Are MPs attentive to the interests of their constituents?

Results can be found in Table 5.2 (count section only, complete regression results can be found in Appendix D.4). Note that coefficients are log odds. The influence of population demographics on issue mentions is in the expected (positive) direction in the models predicting the number of mentions of immigration and unemployment. When the share of residents born outside of Canada increases in a district, the ratio of mentions of immigration to the total number of spoken words increases too. Likewise, the higher the unemployment rate in one riding, the more this topic will be mentioned by the MP during the debates. Importantly, these relationships hold even after controlling for party. In other words, variation in the level of attention to immigration or unemployment is not only explained by variation in party priorities.[12]

Figure 5.2 presents predicted probabilities obtained from the models that control the party. Predictions were calculated for a Liberal MP sitting in the 39th Parliament, keeping all other variables at their mean values. Confidence intervals for these predictions were obtained

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12. In Appendix D.5, I present results from models that include an interaction term between the share of people born outside Canada and the unemployment in order to test for a potential additive effect. Results show that the influence of immigrant share on mentions of immigration is not stronger in districts with higher unemployment, and vice-versa for unemployment.

using bootstrapping. [13] Going from one standard deviation below the mean (1.28 percent) to one standard deviation above the mean (33.85 percent) on the 'share of people born outside of Canada' variable increases the number of mentions of the immigration topic from less than 27 to more than 64. In other words, when comparing two MPs from the same party, one elected in a constituency where less than two percent of residents were born outside of Canada and one where 33 percent of residents were born outside of Canada, we find that the second made twice more mentions of immigration when debating in Parliament. MPs elected in districts where the unemployment rate is equal to 12.48 percent, which corresponds to one standard deviation above the mean, make on average 7 more mentions of unemployment during one parliamentary term than MPs elected in ridings where the unemployment rate is one standard deviation below the mean (or 4.5 percent). The association between the unemployment rate in the district and MPs' mentions of this issue is therefore weaker than on the immigration topic. I return to this finding in the discussion section below.

How do these increases compare with the ones found in the subset of speeches given during PMB, S.O. 31 and QP? When looking at regression coefficients, we find that effects are stronger in this subset of speeches. But the distributions of the dependent variables are not the same, so in order to compare effects, let us compare predicted probabilities. Doing so reveals that MP-constituents congruence is better in debates over Private Members' Business, private members' statements and question periods on the topics of immigration and unemployment. The number of mentions of immigration increases by a factor of 2.7 when we go from the minimum (1.28) to the maximum (33.85) on the X axis. The number of mentions of unemployment increases by 10 when we go from an unemployment rate of 4.5 percent to an unemployment rate of 12.48 percent, which is a larger increase than in the analysis of all speeches. In line with theoretical expectations, MPs are more responsive to constituents' interests during these "position-taking opportunities" than in debates over general government orders.

13. I computed 200 samples for the estimated mean response.
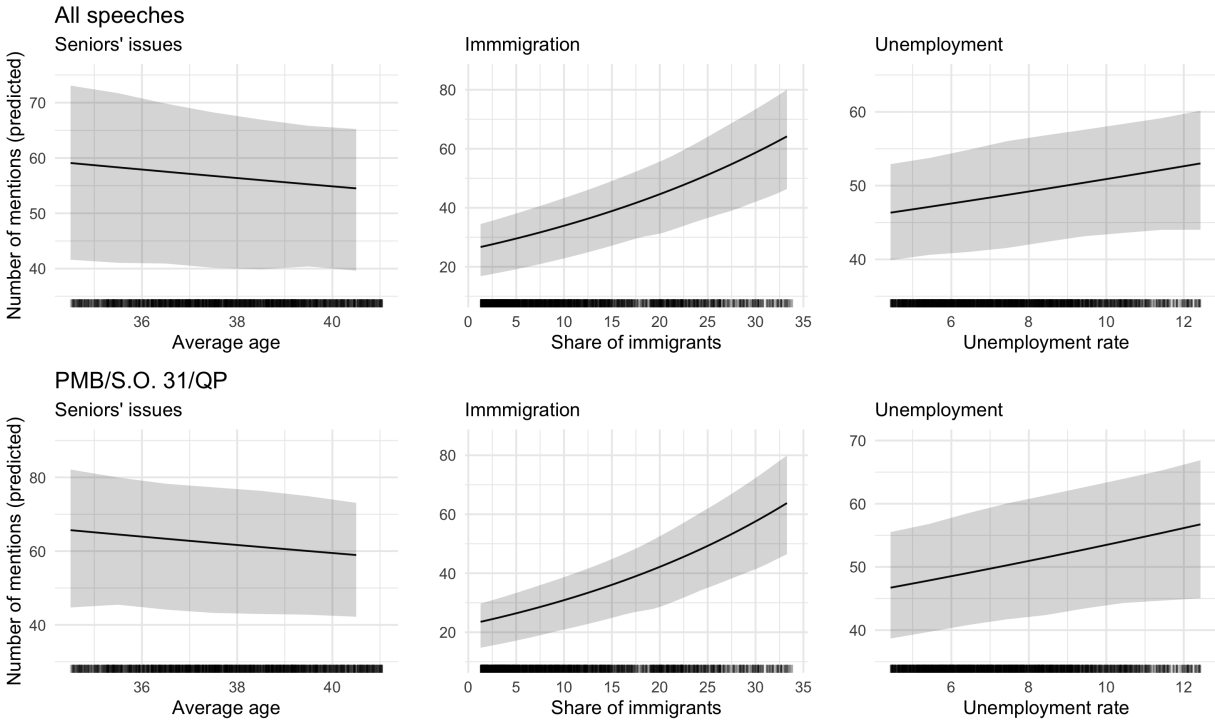
Figure 5.2. Influence of ridings' demographic profile on MPs' issue attention (models with party control)

The figure also reports the distribution of the independent variables at the bottom of each plot, which can help make sense of the width of standard errors. X axes are restricted to plus or minus one standard deviation from the means of the independent variables: population's average age = [34.5;41.05]; share of immigrants = [1.28;33.85]; unemployment rate = [4.43;12.48].

Results for the topic of seniors' issues do not go in the expected direction. MPs representing older constituencies are not more likely to mention programs related to seniors than MPs elected in 'younger' ridings. When estimating mentions of this topic in all debates or during PMB, S.O. 31 and QP, we find that the relationship between average age and mention of seniors' issue cannot be distinguished from zero (see Table 5.2). This is reflected in the predicted probability slopes (Figure 2). At first glance, this result may be underwhelming from the perspective of democratic representation. Shouldn't MPs who represent constituencies where residents are older address seniors' issues more often when debating in the House? Varying the position of MPs in the House may help us refine these findings.

5.4.1. Are backbenchers more responsive?

When they participate in debates of the Canadian House of Commons, members of the Cabinet or party leaders (i.e., frontbenchers) may have less opportunities to bring up the local interests of their ridings than their colleagues sitting on the backbench, because they are more often required to intervene on general government matters. In order to test this expectation, I present in Table 5.3 results of the same regression models as in the previous section, but in addition to other control variables and party, this time I also include an interaction between the main independent variables of interest (average age, share of people born outside Canada, unemployment rate) and MP position in the House. Frontbenchers, which include party leaders, ministers, whips and parliamentary secretaries, are coded 1, while all other members are coded 0. Opposition leaders are also included in the frontbencher category, but not members of the Shadow Cabinet, who could not be identified in the dataset. Regressions are run on all debates but not on the subset of debates over PMB, S.O. 31 and QP because Cabinet members do not participate in PMB and do not make statements pursuant to Standing Order 31. Analysing the influence of MP position on this subset of debates is simply not relevant theoretically.

After taking into account MP positions in the House, coefficients for the percentage of people born in another country and the unemployment rate (demographic predictors) remain positive. Since backbenchers are coded 0, these coefficients correspond to positive relationships between each demographic predictor and the number of issue mentions made by backbenchers (coded 1). In the 'Unemployment' model, the effect of constituency composition on speech content among backbenchers coefficient is however not significant at the $p < 0.05$ level. It is nevertheless stronger than in the 'Seniors' model, where the relationship between the age of constituents and the number of mentions of seniors' issues made by backbenchers is not only statistically insignificant, but extremely weak.

However, when looking at the coefficient for the interaction terms (demographic predictor*frontbenchers), we find that the association between the content of legislative interventions and constituents' characteristics is stronger among backbenchers than frontbenchers.

	Seniors	Immigration	Unemployment
Intercept	−7.689***	−7.305***	−5.512***
	(0.548)	(0.246)	(0.180)
Demographic predictor	−0.000	0.034***	0.020
	(0.015)	(0.004)	(0.011)
Frontbenchers	0.585	0.119	−0.048
	(0.733)	(0.122)	(0.129)
Demographic predictor	−0.021	−0.009	−0.005
*Frontbenchers	(0.019)	(0.005)	(0.014)
Control (inclu. party)	✓	✓	✓
Num. obs.	2820	2860	2861

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$. Zero-inflation negative binomial regression models. Clustered standard errors in parentheses. Controls include: in the 'Seniors' model, the MPs' age; in the 'Immigration' model, a dummy variable indicating if the MP was born outside Canada; in the 'Unemployment' model, a dummy variable indicating if the MP is from an Atlantic province. All models control for MPs' party affiliation and include dummies for parliaments.

Table 5.3. Moderating effect of MP position on representation (all speeches)

All coefficients for the interaction terms are negative. Again, though, none of these differences are statistically significant at the $p < .05$ level, so these results should be interpreted as tentative evidence that backbenchers are more responsive to the interests of their constituents than frontbenchers when participating in debates of the Canadian House of Commons. These results, however, represent conservative estimates of the difference between backbenchers and frontbenchers, because Shadow Cabinet members could not be identified in the data. Just like Cabinet members, these MPs should be less responsive to local matters.

5.4.2. Robustness checks

In order to validate the use of the Hansard index to measure MPs' issue attention, I performed a manual validation check that involved reading through 600 speeches containing at least one mention of each of the three topics (200 each). The process revealed that more than three quarters of speeches that contained at least one mention of seniors' issues, immigration or unemployment were either entirely related to the issues at hand, or included the mention as part of a broader discussion on more general matters (like war, the budget, criminality, for example). However, when compared to immigration and unemployment, a relatively larger proportion of 'senior'-related speeches did not relate exclusively to the topic of seniors'

issues. This could explain the weakness of the 'seniors' result in the models: even though the distributions of issue counts are similar across issues, mentions of seniors' issues are more often buried in longer, more general speeches, like interventions on the budget. This could be an indication that MPs place less importance on seniors' issues, thus explaining why representatives are less reactive to seniors' issues. More detailed information on this validation test are available in Appendix D.1.

I also performed a second validation test by comparing mentions counts (the variables used in the main analyses) to the probability that a speech be associated with each topic as identified in the Hansards' sub-headers (probability obtained using a trained classifier). Correlations between the number of mentions of immigration, unemployment and seniors' issues in a speech and the probability that this speech be associated with each of these issues in the sub-headers are equal to .81, .54 and .66, respectively (see Appendix D.1). These are moderate to strong correlations, giving me further confidence in the classification of speech content based on the Hansard dictionary.

To compare the index approach against other methods of topic identification, I created four alternative topic dictionaries to count the number of mentions of seniors' issues, immigration and unemployment in the corpus of Canadian parliamentary debates. Dictionaries were composed of 1) terms to identify groups only (e.g., 'immigrants', 'seniors', 'unemployed citizens', etc.), 2) terms included in the codebook of the Canadian Policy Agendas Project, 3) terms drawn from my own knowledge of the topics, and 4) terms included in a corpus-specific index created from word embeddings. I reproduced all empirical analyses using these other dictionaries, and obtained substantively similar results, which helps to support the use of the Hansard Index as an appropriate tool to create the dependent variables presented in this paper. Appendix D.3 describes this comparison and presents results for additional analyses performed with each dictionary.

Finally, to make sure that results are robust to model specification, I reproduced the analyses by adding all control variables in all models. The direction and significance of effects did not change. I also reproduced all analyses using OLS regression models. In these

models, I used the total number of mentions of each issue per 1,000 words as the dependent variable. Effects are substantively the same as those presented here. Results can be found in Appendix D.3.

5.5. Discussion

The empirical analysis presented in this paper highlighted two main findings regarding parliamentary speech and representation in the Canadian House of Commons. First, it confirmed that members of Parliament elected in ridings where more residents were born outside Canada or where the unemployment rate is higher are more likely to mention programs, problems or policies related to immigration or unemployment when making speeches in Parliament, even when compared to members of their own party. Constituents' interests — not just ideological affiliation — influence MPs' decision to discuss immigration and unemployment in Parliament. This is especially the case among backbenchers, who are even more attentive to their constituents' interests when making speeches than their colleagues sitting on the frontbench. Correspondence between constituents' interests and the content of legislative speeches is a significant finding in a country where party discipline is ubiquitous, and where the contribution of individual MPs in parliamentary debates is often minimized (Marland, 2020). The evidence presented in this paper also suggests that representatives are interested in problems that touch their constituents when participating in Private Members' Business, private members' statements and question periods. This is consistent with the idea that interventions over government orders are less used to address local matters. Second, results indicate that MPs elected in ridings where the population is older do not necessarily speak more about seniors' issues — such as retirement, pensions, nursing homes or long-term care — than representatives elected in younger districts.

In order to make better sense of these results, I turn to the literature on electoral behaviour. Research on the electoral participation of visible minorities and immigrant communities reveals that they are one of the most highly mobilized group of electors in Canada (Harell, 2013). People born outside Canada represented between 16 and 21 percent of the

Canadian population in the 1991-2011 period. This figure could reach 25 to 30 percent by 2036. Appealing to individuals of this group may be electorally rewarding, especially given that more than 90 percent of immigrants acquired citizenship between 1991 and 2000, and more than 75 percent did so between 2001 and 2010 (Statistics Canada, 2017a). The Liberal party has historically been the best at mobilizing the "ethnic vote" (Blais, 2005), but more recently the Conservative party has also adopted this strategy and reached out to immigrant communities in urban and suburban areas when running campaigns in the last decade, especially in 2004 and 2006 (Harell, 2013, p.144-5). Intervening on the topic of immigration during parliamentary debates may be a good way for MPs to appeal to this numerous and very active group of voters.

In a similar vein, addressing unemployment in parliamentary debates may also be beneficial to representatives elected in regions where more Canadians are unemployed. Recall that the association between the unemployment rate in the district and mentions of the unemployment issue in the House is weaker than the corresponding association on the immigration topic. Studies in political behaviour have attempted to understand the links between economic hardship and voter turnout. At the individual level, being unemployed can depress electoral participation (e.g., Aytaç, Rau and Stokes, 2020), but at the aggregate level, unemployment can increase turnout if it motivates electors to find a replacement for the people in power (e.g., Cebula, 2017). While Canadian MPs are more preoccupied with the issue of unemployment when their populations are dealing with higher unemployment rates, lower responsiveness to this issue than to the issue of immigration could be explained by the fact that MPs consider the immigrant vote as having more influence on their chances of being reelected.

Using the electoral behaviour literature, we can also try to understand why MPs of 'older' ridings do not intervene more on seniors' issues. The existence of a seniors' voting block is not generally accepted in the literature (Anzia, 2019), except in very localized settings and when seniors feel that their status may be threatened (Andel and Liebig, 2002). Comparing the degree of seniors' involvement in organizations, clubs or groups across districts could reveal

that some senior constituents are better able to attract the attention of political candidates than others. While data availability limits our ability to do so in the context of this paper, evidence from the United States suggests that seniors' involvement is crucial to understanding responsiveness to this group of citizens (Campbell, 2003). Indeed, Anzia (2019) found that the size of the senior electorate was unrelated to expenses on senior-friendly transportation in Californian municipalities, but that the presence of seniors' centers and commissions did improve the quality of services provided to seniors.

The weakness of the 'seniors' results could also be explained by the fact that MPs are simply less drawn to seniors issues than they are to unemployment or immigration. Even though the distributions of issue counts are similar across issues (see Figure 5.1), manual validation of the automatic count approach revealed that seniors' issues less often get the MPs' undivided attention. I would urge scholars interested in the automatic identification of issue topics in legislative debates to perform a manual check of their results, as this could bring insight into their findings, while also helping to spot potential problems with identification (see Castanho Silva and Proksch, 2021, for a similar preoccupation regarding sentiment analysis). [14]

Finally, one more finding is worth discussing at length. Models presented in the paper include control variables for personal characteristics of legislators. The age of MPs is included in the model that predicts the number of mentions of seniors' issues, the immigrant background of MPs is included in the model that predicts the number of mentions of immigration, and the location of MPs (Atlantic provinces or not) is included in the model that predicts the number of mentions of unemployment. Could MPs' personal characteristics explain part of the relationships found in the previous sections? When looking at regression results attentively, I find that the effect of MPs' age on mentions of seniors' issues is positive and statistically significant in all models, even those that control for party or include an interaction term to account for differences between front- and backbenchers. Older MPs speak about seniors' issues more than younger MPs. The same can be said about MPs' immigrant background. MPs who were born outside of Canada speak about immigration more

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14. I would like to thank the anonymous reviewer who made this suggestion.

when making interventions in Parliament, as compared to other members of the House. In contrast, being from an Atlantic province does not influence MPs' attention to the unemployment issue. These findings in the case of seniors' issues and immigration hint at the presence of descriptive representation in legislative speech. In fact, evidence suggests that a 1-year increase in the average age of a district is associated with a 0.4 year increase in the age of the MP ($p < .05$).[15] A 1-point increase in the share of immigrants in a district is associated with a 0.7 percentage point increase in the probability that the MP was born outside of Canada ($p < .05$).[16] In other words, older districts have a tendency to elect older MPs, and larger immigrant populations are more likely to elect MPs with an immigrant background. While further analyses are needed to confirm these findings, it could imply that representation on seniors' issues is explained in part by MPs' age: older districts tend to elect older MPs, and older MPs speak about seniors' issues more. On the topic of immigration, the content of legislative speeches is influenced directly by the constituency's characteristics, as shown in the main analyses, but also by MPs' personal background.

5.6. Conclusion

In this article, I raised a common but critical question in the study of democratic representation: Do elected officials pay attention to locally-relevant issues when participating in legislative debates? I addressed this question in the context of the Canadian parliamentary system, where despite incentives for personal votes, a strong impetus to toe the party line may collide with elected representatives' ability to speak about the issues that they want. My approach relied on an original dataset combining population demographics at the level of constituencies with comprehensive data on the content of legislative speeches. Using these data, I proposed to analyse the content of parliamentary speeches not only during specific

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15. To reach this finding, I used the same dataset and estimated an ordinary least squares regression model with MPs' age as the dependent variable, and average age in the district as independent variable. The model controls for the MPs' party and included dummies for parliaments.

16. To reach this finding, I used the same dataset and estimated an ordinary least squares regression model with MPs' immigrant background (=1 if born outside of Canada, otherwise 0) as the dependent variable, and the share of immigrants in the district as independent variable. The model controls for the MPs' party and included dummies for parliaments.

periods of the legislative calendar — such as parliamentary questions — but in general debates as well, when MPs may be even more constrained by their party. When debating in the legislature, I found that members of the Canadian Parliament address issues that are in the interest of those they represent, especially on the topics of immigration and unemployment.

The findings presented in this paper offer a nuanced outlook on parliamentary speeches as representational tools for legislators, but one that has important practical and normative implications. Past studies on representation have confirmed an association between legislative behaviour and constituency characteristics or opinion, but because of methodological limitations, authors of these studies struggled to test their hypotheses beyond instances of looser party discipline, like question periods or free votes (Hanretty, Lauderdale and Vivyan, 2017; Soroka, Penner and Blidook, 2009). Even though the phenomenon studied in this paper (issue attention) is not as tangible as the introduction of bills or legislative votes, we observe nonetheless that members of Parliament use their speaking opportunities to raise issues that affect their constituents, especially on the question of immigration, but also on the topic of unemployment. We know that legislation is today mostly debated in committees of the Canadian legislature (Cochrane, Godbout and VandenBeuke, Forthcoming), but by speaking about issues that affect the people of their district during general debates, representatives can influence the legislative agenda, send signals to constituents and "evoke feelings or attitudes" among the represented (Pitkin, 1967, p.97), which are crucial components of democratic representation.

The analyses presented in this paper do not test the causal effect of constituency composition on the content of legislative speeches. My main empirical contribution has been to propose an original approach — using the index of legislative debates — to identify issues within speeches. This approach made it possible to capture MPs' attention towards a variety of issues and within a comprehensive set of parliamentary debates. Nevertheless, more research is needed to further widen the scope of analysis (i.e., include more topics). The proposed method also does not pretend at universality, especially given that indexes of legislative debates are not available in all countries. In these contexts, one could adopt a

different text classification method to analyse comparable-sized corpora. Examples of such methods include O'Grady's approach (2019), which relies on topic identification from the Hansards' subheaders and on latent Dirichlet allocation; Rice and Zorn's method (2019) to create dictionaries based on word embeddings; or Dieng et al.'s method (2020) that combines topic modeling and word embeddings to identify topics within text corpora.

Despite this limitation, the approach presented in this paper represents an effective tool for scholars interested in studying legislatures where indexes exist, such as New Zealand, France or the United States, to name a few. This method could eventually be applied by other scholars of representation, so it is interesting to think of potential causal explanations for the results presented in this paper. On the one hand, individual MPs may not be paying attention to the interests of their constituents because they are "public-spirited" (Manin, Przeworski and Stokes, 1999b). Rather, party leaders may be assigning certain MPs to specific topics during the debates to foster support in constituencies where these problems are more salient (relatedly, see Fernandes, Geese and Schwemmer, 2019; Poyet and Raunio, 2020). While plausible, this interpretation is inconsistent with the finding that MPs are more responsive during debates over Private Members' Business, private members' statements and question periods than in debates over government orders. On the other hand, candidates with long-standing concern for seniors' issue, immigration or unemployment could be selecting into ridings where these issues are more important (e.g., Fernandes, Won and Martins, 2020). For example, a labour activist could chose (or be assigned by her party) to run in a riding where the unemployment rate is increasing. I addressed part of this problem by controlling for some of the personal characteristics of legislators, but a causal design could help tackle this selection bias.

Simply put, there is still a lot of room for new research on parliamentary speech and representation. Yet, the relationships between constituency interests and the content of legislative speeches uncovered in this paper are hopeful to both scholars of democratic representation and actors of Parliament. This article does not only suggest a new approach to studying representation from legislative speech data, but it also confirms that members of Parliament

subject to strong party discipline are able to address the concerns of their constituents when debating in the legislative arena.

Chapter 6

Conclusion

The goal of this dissertation was to develop theoretical foundations and present evidence to advance the half century-long debate of whether (and how) age cleavages can influence politics. Since the 1970s, scholars have disagreed on the potential for seniors to represent "important actors in political conflict" (Cutler, 1977). While some argue that gerontocracy could materialize because seniors have different policy preferences and participate more in politics (e.g., Poterba, 1997), others doubt this possibility, arguing instead that age is neither a strong nor a consistent predictor of voting outcomes (e.g., Tepe and Vanhuysse, 2009).

In order to advance this debate, I unpacked the relationships between age, political behaviour and representation into a series of specific research questions: Do seniors have different policy preferences when compared to younger people? Do seniors have a preference for some parties over others? And if true, can the participation of older people in the democratic process contribute to the electoral success of these parties? Finally, are elected representatives responsive to the interests of their older constituents?

To answer these questions, I developed an original theoretical framework based on two literatures: the study of political behaviour and the study of representation (see chapter 2). By combining these two literatures, I argued that the individual effects of age — such as health changes and life transitions — can influence individuals' political resources and balance of interests. As a consequence of these differences in resources and interests, older individuals should exhibit different patterns political participation but also adhere to different policies, when compared to members of other age groups.

These differences in terms of participation and political preferences, I argued, have the potential to influence democratic representation in at least three ways. First, because older age groups are becoming more numerous with the process of population ageing, the prevalence of certain policy preferences in the population may increase as well. This can have a direct effect on government decisions, or create electoral incentives for politicians to attend to these preferences. Second, by participating in elections more than their younger counterparts, older people can influence who gets elected, which in turn can affect policy output. Finally, through non-electoral participation (like campaign contributions, interest group mobilization, etc.), older age groups can increase their contacts with politicians, thus influencing the priorities that these politicians will put forward. In the empirical section of this dissertation, I attempted to validate some of the components of this framework.

6.1. Discussion of main findings and contributions

The first article — *Government spending preferences over the life cycle: A comprehensive overview* (chapter 3) — analysed the relationship between age and policy preferences. It sought an answer to the following question: Do government spending preferences remain stable over the life cycle, or do they change with age? Many scholars already attempted to answer this question, but empirical tests have generally been limited to a small number of policies or to short periods of time. Because of this, it is still unclear whether seniors have different public spending preferences than younger people and if age differences in preferences are stronger for some policies than others (Goerres and Tepe, 2010; Fullerton and Dixon, 2010; Plutzer and Berkman, 2005; Sørensen, 2013). Using public opinion survey data collected over three decades, I found that older Canadians are generally more favourable to the status quo when it comes to general government spending. I also found that support for education spending decreases extensively over the life cycle, while support for spending on defence and transportation is more widespread in older age. These results are consistent with theories that leave room for a certain malleability in political opinions over the life cycle (see also Cornelis et al., 2009; Fullerton and Dixon, 2010; Tilley and Evans, 2014; Peterson,

Smith and Hibbing, 2019). They are also consistent with an interpretation based on rational considerations (Svallfors, 2008). Older people are less likely to use education services, which can explain why they are less supportive of this area of spending. In contrast, many older people are reliant on public transportation and preoccupied with public safety, which can explain why they support transportation and military spending more than their younger counterparts.

The results presented in the first paper hold even after controlling for generational and period effects, which means that population ageing could increase the prevalence of positive opinions regarding defence and transportation spending, while decreasing support for education spending. Does this mean that governmental decisions are eventually going to reflect this new distribution of policy preferences? In other words, could governments decide to increase public spending on transportation because the share of seniors is increasing with population ageing, and older people are more supportive of this area of spending? The second article of this dissertation — *Electoral Behaviour in Seniors' Residences: The Canadian Case* (chapter 4) — investigated one of the mechanisms that could help translate seniors' policy preferences into policies, and therefore provided insight into this question. This mechanism is the one of electoral participation. Indeed, because they participate more in elections than younger voters, seniors could contribute to electing representatives who "look like" them, or share their views on politics. Candidates could also be incentivized to implement policies that correspond to the preferences of the senior population to attract the votes of this segment of the electorate.

With this in mind, chapter 4 focused primarily on electoral participation and vote choice in seniors' residences. Resources that foster electoral participation, such as money, time and civic skills, increase with age, but tend to decline in 'older old-age' because of health constraints and isolation from the social network. As a consequence, older citizens vote more than younger ones, but *older seniors* participate less than *younger seniors* (see Figure 1.9 in chapter 1). This is an important factor to take into account when formulating expectations about the impact of seniors' participation on representation. If we expect seniors to be

able to influence politics because they participate more in elections, then we cannot ignore the fact that a sizeable portion of senior citizens have to navigate important constraints to voting. But can we mitigate this participation decline in older age? If so, what would be the impact on electoral outcomes?

One of the ways to foster participation in older age is to facilitate voting by placing polling stations inside of seniors' residences. Contrary to other polling station locations (Bhatti, 2012; Dyck and Gimpel, 2005; Garnett and Grogan, 2021), voting in seniors' residences has not been studied extensively in the political behaviour literature. Combining data on federal election results with information on the locations where polling stations are set up in Canada, I showed in chapter 4 that participation rates were higher in seniors' residences than at other polling stations during the 2015 and 2019 Canadian federal elections. This finding confirms that making participation easier can increase voter turnout (see also Blais et al., 2019). Implementing measures that facilitate participation in older age could therefore strengthen the mechanism of electoral incentives hypothesized in this dissertation. Seniors' impact on policy output could be facilitated if voting was made easier to a larger proportion of the senior electorate. In fact, interviews with campaign workers conducted for the purpose of chapter 4 confirmed that the five main federal political parties in Canada were very much aware that the seniors' vote was important. All parties also confirmed that they visited seniors' residences ahead of elections because those who live in these residences participate more. In other words, the vote of seniors is important to parties, which provides evidence in support for the mechanism of electoral incentives introduced in this dissertation.

Party mobilization in seniors' residences also has the potential to influence electoral outcomes. Indeed, the analysis presented in chapter 4 showed that Conservative and Liberal support was significantly higher in seniors' residences than at other polling locations in 2015 and 2019. When looking at individual-level survey data, one would not suspect Liberal support to be so much higher in seniors' residences, as compared to other polling stations. I argue that party visits could have contributed to this phenomenon, because survey data collected with personnel of seniors' residences confirmed that Liberal (and NDP) candidates

visited more residences in battleground provinces. In short, residents of seniors' homes have distinctive voting patterns and easier access to the voting booth. Candidates know that seniors participate a lot in elections, and they admit reaching out to residents of seniors' homes because of this. By mobilizing seniors, parties may contribute to increasing their own vote share. But what could be the consequences of this pattern for representation? Does interest in the senior electorate during campaign translate into interest in seniors' issues in the legislature? Do representatives elected in older constituencies address issues that are important to seniors?

The third article — *House speakers: Parliamentary Speech and Representation in Canada* (chapter 5) — explored these questions. In this final article, I argued that parliamentary speeches are part of the representational role of legislators. Existing studies that investigate the use of speech by members of Parliament to address constituency-relevant issues are however often restricted to periods of the debates when legislators are less subject to party discipline, such as question periods. Chapter 5 contributed to bridging this gap in the literature by investigating the association between constituency characteristics and the content of every MP's interventions in Parliament. Analysing the entire content of legislative debates between the 34th and 42nd Canadian Parliaments, I found that representatives elected in districts where the population is older do not speak more about seniors' issues when making interventions in the House. This is in contrast with the issues of immigration and unemployment, where I did find correspondence between constituency interests and topics of interventions. That is, the larger the immigrant population in a district and the higher the level of unemployment in the riding, the more its MP talks about issues related to immigration or unemployment respectively.

What could explain this result? In *House speakers*, I argued that seniors may not be as strong an electoral influence as immigrants. But perhaps they are in constituencies where electoral contests are more competitive. As stated previously, candidates are very much aware of the importance of seniors' turnout. In districts where the race is more competitive, candidates could be more considerate of seniors' interests when making communications

of all sorts, including parliamentary speeches. In practice, election competitiveness could moderate the relationship between the population's age and MPs' interest in seniors' issues. To test this possibility, I ran the regression models presented in the third paper and added an interaction between average age (the main independent variable of the analysis) and election competitiveness, measured as the difference between the first and second candidates in the district. Results confirm that when competitiveness increases, representatives become more sensitive to seniors' interests when debating in the House.[1] While in line with theoretical expectations, this result remains tentative as it associates competitiveness in an election with the content of parliamentary speeches in the following parliamentary sessions, some of them happening several years after the election.

Apart from an electoral explanation, could other factors also explain why I did not find responsiveness to seniors' issues in the Canadian House of Commons? In the third article, I discussed the fact that MPs' age was a significant predictor of attention to seniors' issues. In other words, I could not confirm that the age of constituents influenced the number of mentions of seniors' issues by their MP in the House of Commons, but I found that older MPs made more mentions of seniors' issues than younger ones. This finding is in line with Curry and Haydon's study (2018), which confirmed the effect of American lawmakers' age on their support for seniors' issues in Congress. In chapter 5, I also found that districts with larger senior populations had a tendency to vote for older representatives more. This finding is in line with a recent article by Sevi (2020), who confirmed that electors vote for politicians closer to them in age. Sevi's result holds even after controlling for the voter's age and their party affiliation. The representation of seniors' interests could therefore happen through a 'descriptive' route rather than through a 'population composition' route. As a matter of fact, this descriptive route was introduced in chapter 2, where I hypothesized that seniors' participation could influence the composition of the legislature, and in return the issues brought forward in Parliament. This mechanism of descriptive representation was

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1. In comparison, a similar interaction included in the 'immigration' and 'unemployment' models did not go in the direction expected by theory. In the immigration model, the interaction coefficient could not be distinguished from zero. In the unemployment model, the interaction coefficient is positive, meaning that greater electoral competitiveness actually leads to weaker MP responsiveness.
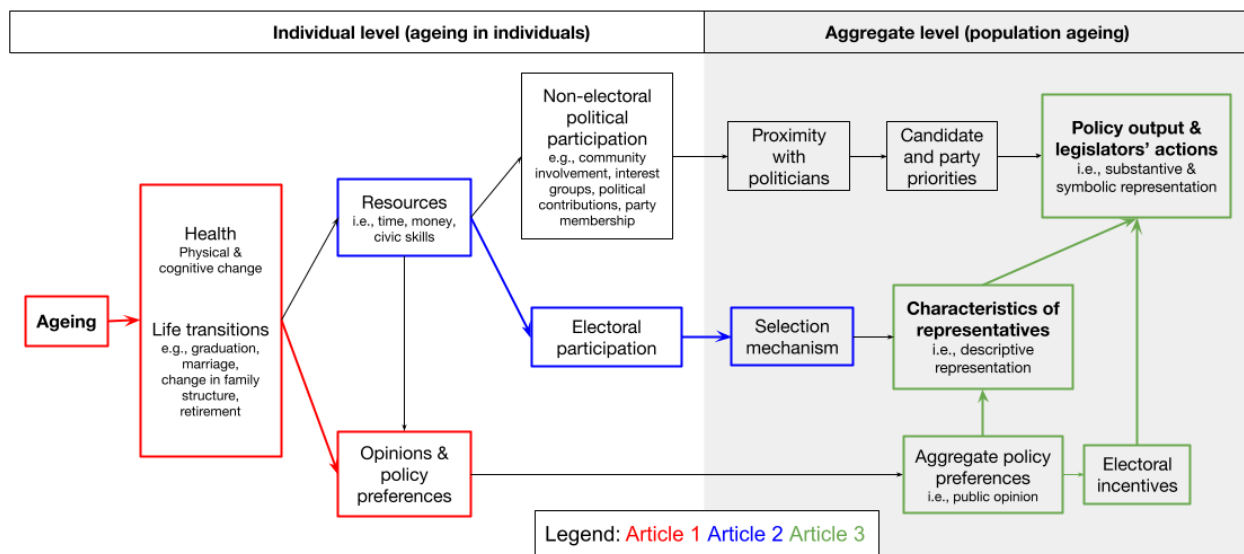
Figure 6.1. Graphical representation of the theoretical framework with positions of the three empirical chapters

included in the graphical representation of the theory in Figure 2.2, which I reproduced below in Figure 6.1. In short, voting for older representatives could thus ultimately strengthen seniors' representation.

6.1.1. Summary

The three empirical chapters of this dissertation provided pieces of evidence to test the relationships and mechanisms included in the original theoretical framework that I developed in this dissertation (see Figure 6.1). First, results presented in chapter 3 showed that political preferences can change with age. This inquiry can be situated on the left-hand side of the theoretical framework (in red); as it relates to the relationship between age and opinions. Second, the analyses included in chapter 4 investigated the link between electoral participation in older age and electoral outcomes (in blue). Third, even though the analyses presented in chapter 5 could not confirm the existence of a direct relationship between a population's age structure and the content of MPs' interventions in the House, the evidence suggests that the representation of seniors' interests could take form through descriptive representation, i.e., the election of older representatives. This relationship can be situated on the left-hand side of Figure 6.1 (in green).

Before discussing limitations and future research in relation with this dissertation, it is important that I highlight one last contribution. Throughout this research, I collected original data and attempted to approached questions using innovative methods. The data collected for all articles included in this dissertation — the dataset of 32 public opinion surveys used in the first article; the dataset of polling stations (electoral results and type of building linked with demographic information) and survey data of seniors' residences used in the second article; and the dataset of parliamentary speeches and constituency information used in the third article — will be made available publicly following the publication of each article. In fact, the dataset of constituency demographics used in the third paper has already been published online.[2] In short, apart from proposing an original theoretical framework, this dissertation also contributed to making available new data on Canada's legislative institutions, public opinion and electoral outcomes for scholars interested in these questions.

6.2. Limitations

The theoretical framework presented in this dissertation allowed me to formulate and test specific questions related to population ageing and politics. But the analyses presented in this dissertation remain limited in several ways.

One of the main limitations of this dissertation stems from the fact that it focuses exclusively on the Canadian case. Relying on one case only to answer broad theoretical questions means that conclusions could be sensitive to institutional or individual-level characteristics specific to the case at hand. For example, as discussed in chapter 2, the quality of representation could vary across electoral systems. In proportional electoral systems, the representation of seniors' interests (and other groups) could be better than in Canada, where the majoritarian electoral system decreases incentives for consensus (Ferland, 2020). In a similar vein, access to politically-relevant resources in older age — such as money, time and civic skills — may differ across national contexts. In countries where seniors have fewer monetary

2. Available here: `https://florencevdubois.github.io/datasets.html`

resources, or where physical constraints in older age are more widespread, patterns of partic-ipation may be different over the life cycle. In short, opening up this research to new cases could help bring nuance to the findings and enrich the theory.

Apart from limitations that stem from the use of a unique case, there are other limits to this dissertation. I discuss only three here — one related to each article — but this list is in no way exhaustive. First, the study of life cycle trends in policy preferences presented in chapter 3 remains limited by the fact that no statistical technique can truly isolate the effect of age from that of birth cohorts and time periods. While my approach (controlling for generations and years) allowed me to get closer to an identification of age effects, only panel data could truly be used to track changes in an individual's policy preferences across their lifetime. And even with panel data, one would need to distinguish age effects from period effects. In other words, no matter the method, we are always left with a certain dose of uncertainty surrounding the influence of age on political behaviour. It is therefore especially important that we build upon each other's work when trying to analyse this phenomenon. Indeed, I would argue that the accumulation of evidence on this question is crucial, as it can help build confidence about age trends in policy preferences, even though every single study remains limited in terms of identification.

Second, the study of vote choice in seniors' residences presented in chapter 4 is limited by the fact that data on validated turnout and vote choice are not available for research purposes in Canada. As a consequence, I needed to rely on aggregate measures of turnout and party support in polling stations to conduct the empirical analysis. Using aggregate-level data limits our understanding of the theoretical mechanisms behind electoral participation in seniors' residences because we do not have information on why these voters decided to participate. This approach allowed me to evaluate the impact of age and polling station location on participation, but did not allow me to isolate the effect of other factors entirely, such as the influence of social connections between residents of seniors' homes.

Finally, the study of representation presented in chapter 5 showed that older members of the Canadian House of Commons make more mentions of seniors' issues than their younger

counterparts. But it is unclear how robust this finding is. Do older representatives also support bills that are in the interest of their senior population? Unfortunately, I did not explore other types of MPs' behaviours — like roll-call votes — in this analysis. One of the reasons for this is that party discipline is especially strong in Canada, so analysing the outcome of individual votes in the Canadian legislature risks highlighting party differences, rather than differences between MPs. In other words, votes cannot effectively be used in the Canadian context to measure differences between MPs' policy positions (for a research in the American context, see Curry and Haydon, 2018). As a consequence, the analysis presented in this paper was constrained to speech patterns only. This limits our understanding of MPs' age on substantive representation because speech patterns do not necessarily have the same influence on policy output than legislative votes.

6.3. Future research

In addition to these limitations, certain elements of the theoretical framework presented in Figure 6.1) could not be analysed in this dissertation (as represented by the remaining black elements in the figure). Indeed, the three articles answered some of the questions related to the framework, but further work is needed to get a comprehensive portrait about the impact of population ageing for representation. Below, I discuss ideas of what this future research could entail. I present these ideas by organizing them underneath research questions.

First, *Do seniors' patterns of community involvement, interest group or party membership affect candidate and party agendas?* As highlighted in chapter 2, non-electoral forms of political participation, like interest group mobilization or campaign contributions, could also affect the quality of seniors' representation. After all, Mrs. Solange Denis, who managed to change the Progressive-Conservative position on old-age security benefits in 1985, was lucky enough to have the support of thousands of other seniors rallying up against the government's proposition. Considering that turnout declines in 'older old-age', what is the role of other types of participation, like retirees' associations or *Âge d'or* clubs, on the representation of seniors? Unfortunately, testing these possibilities fell outside the scope of this dissertation,

but further research could very well attempt to test this hypothesis, which is one of the important mechanisms presented in chapter 2. One way of doing so could be to collect data on seniors' organizations (see Anzia, 2019), such as information on their lobbying activities.

Second, *Do individual age differences in policy preferences translate into aggregate age cleavages in policy preferences?* Chapter 3 confirmed the presence of age differences in individual support for government spending. However, the theoretical framework of chapter 2 assumes that population ageing will increase the prevalence of certain ideas in society by increasing the share of seniors relative to other age groups. This assumption was not verified in this dissertation. It is an extremely difficult assumption to validate, because population ageing happens gradually over time. If we wanted to associate aggregate opinion on government spending with the population age structure, then we would need to isolate other effects correlated with time. A comparative study would be crucial to answer this question (see Powell, 2016, on the effect of population ageing on economic growth).

Third, *Do seniors' levels of turnout create electoral incentives that influence representatives' behaviour?* Chapter 4 showed that political candidates are aware of seniors' participation rates, and visit seniors' homes in order to convince them to turn out to vote. I argued previously that facilitating the participation of seniors could strengthen the electoral mechanism and foster representation. However, none of the empirical analyses included in this dissertation actually tested this electoral mechanism. Data limitation justifies this omission. I could not measure the level of turnout of different age groups in different electoral districts because validated turnout is not available in Canada. It is therefore unclear whether candidates who receive more votes *from seniors* are more attentive to seniors' issues. This question could be answered by obtaining data on the local vote breakdown by age groups, or by conducting large-scale surveys that would include enough respondents in each electoral district (in Canada, one of these surveys is the Local Parliament Project survey, conducted once in 2015).

Fourth, *What could be the impact of a diversifying senior electorate on the representation of older citizens?* In *Targeting Senior Voters*, MacManus (2000) writes: "the declining

cohesiveness that comes with a growing senior electorate [could] bring some surprises" (p.8). In the introduction of this dissertation, I presented data showing that the senior electorate is likely to become more diversified in the future, for example, in terms of educational attainment and ethnicity. This means that life cycle trends in policy preferences could evolve with time. Stated differently, age effects could interact with period or generational effects. Life cycle fluctuations in support for certain area of spending could be different in certain time periods, or in certain generations. Unfortunately, I could not test this possibility in chapter 3 because doing so requires even more statistical power (the three effects of age, generations and years are extremely correlated with one another). This possibility does not necessarily invalidate the theoretical framework presented in chapter 2, but it stresses the importance of continuing to perform analyses of age differences in political preferences.

Finally, several *Why?* questions also need to be explored further. For instance, *Why* do certain parties get more support in seniors' residences than at other polling stations? *Why* do older people have a preference for military and transportation spending, but less so for education spending? *Why* don't MPs representing older constituencies make more interventions on seniors' issues than their colleagues? These questions in electoral politics, political behaviour and representation could all be part of a broad research agenda on age and politics, of which the articles included in this dissertation are only a few building blocks.

To conclude, the process of population ageing that is unfolding in many democracies could be accompanied with changes in citizens' political preferences and patterns of political participation. What could be the implications of these trends for politics and democratic representation? Are we headed towards gerontocracy? In this dissertation, I presented an original theoretical framework and provided empirical insights into this broad research question, but more work is needed to advance this puzzle. One thing is certain, the field of research on age and politics represents fertile ground for new projects.

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Chapter A

Appendix to the introduction

This is the supplementary material for chapter 1. Figure A.1 reports identification by age group for each of the four main federal parties. Data for this figured comes from the Canadian Election Studies. It shows that age gaps in Liberal party identification were larger in the 1980s and 1990s, and have since then diminished. Older Canadians are more today likely to identify with the Conservative party but less likely to identify with the NDP. In the 1990s, identification with the Bloc Québécois was also more prevalent among older than younger people. This is consistent with what we find for vote choice (as stated in the chapter 1).
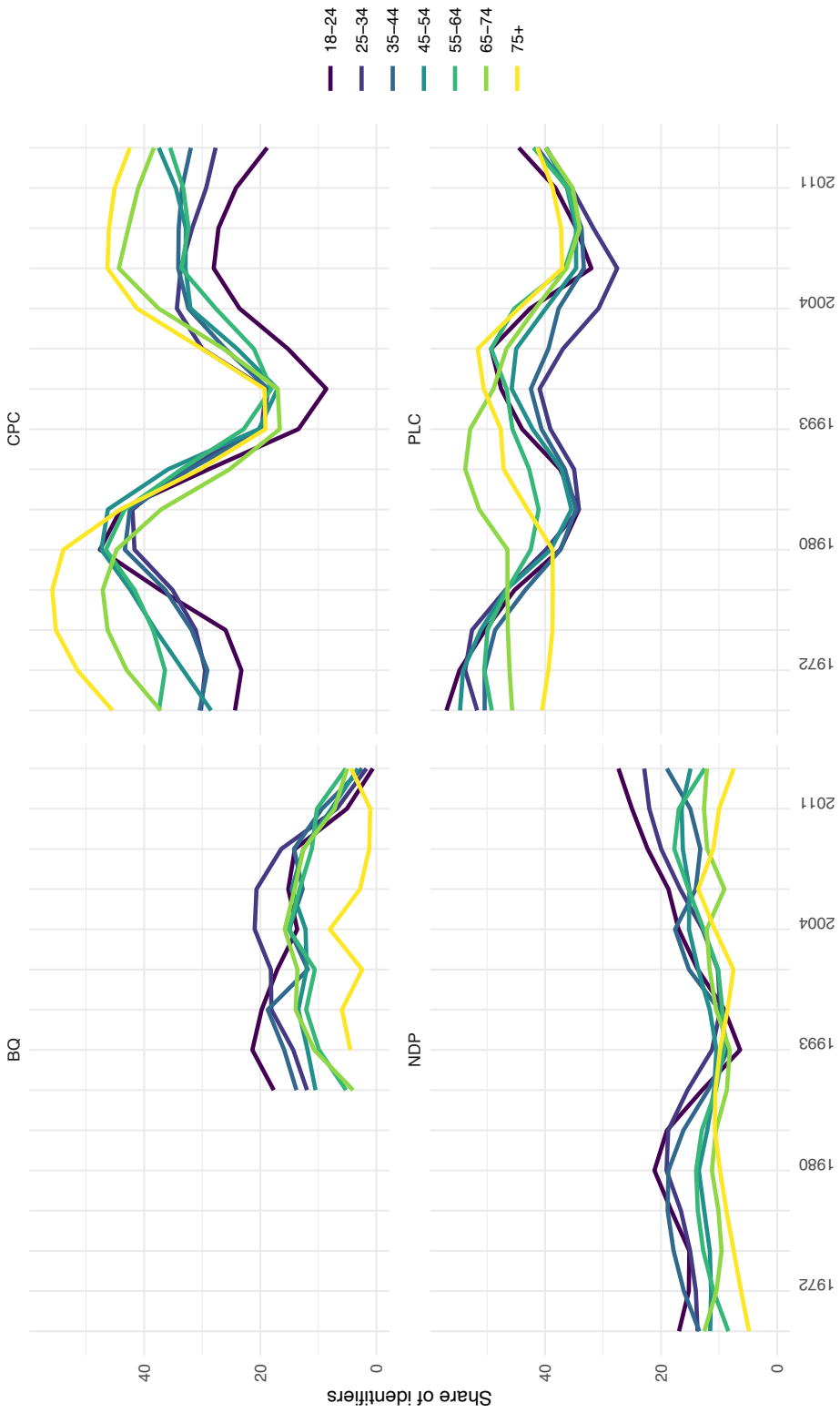
Figure A.1. Party identification by age group, 1965-2019

Note: Data from the Canadian Election Studies. PID is missing in the 28th election (1972). The age variable is missing in the 29th election (1973). The age variable is missing in the 28th election (1968).

Figure A.2 shows presents reported turnout by age groups based on the Canadian Election Studies between 1965 and 2019. Horizontal lines indicate the mean values for each age group. These estimates confirm the presence of an age gap in turnout, with older people being more likely to participate than younger people.
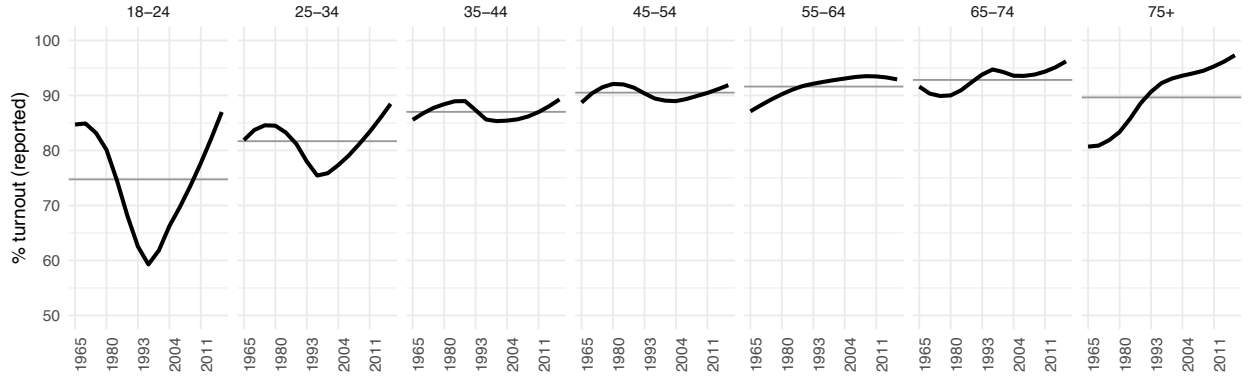
Figure A.2. Voter turnout by age group, as reported in the Canadian Election Studies, 1965-2019

Note: Data from the Canadian Election Studies. The age variable is missing in the 1968 CES. In 1972, there is a mistake in the codebook for the variable of reported turnout (categories are not mutually exclusive). These two elections are removed from the analysis.

Chapter B

Appendix to the first article

This is the supplementary material for chapter 3.

B.1. Descriptive statistics

The following table and figures include descriptive statistics for the main variables used in the analyses.

— Table B.1 reports the number of observations and main descriptive statistics for all dependent variables (support for more spending is coded 1, support for less spending is coded -1 and support for the same amount of spending is coded 0). The table also includes statistics on the three main independent variables (age, birth year and survey year).

— Figure B.1 reports the share of respondents in each generation, by year of survey.

— Figure B.2 reports the age distribution of respondents, by generation.

— Figure B.3 reports the mean value of each dependent variable (the 15 policies) for each age in the sample.

— Figure B.4 reports the mean value of each dependent variable (the 15 policies) for each generation in the sample.

— Figure B.5 reports the mean value of each dependent variable (the 15 policies) for each survey year in the sample.
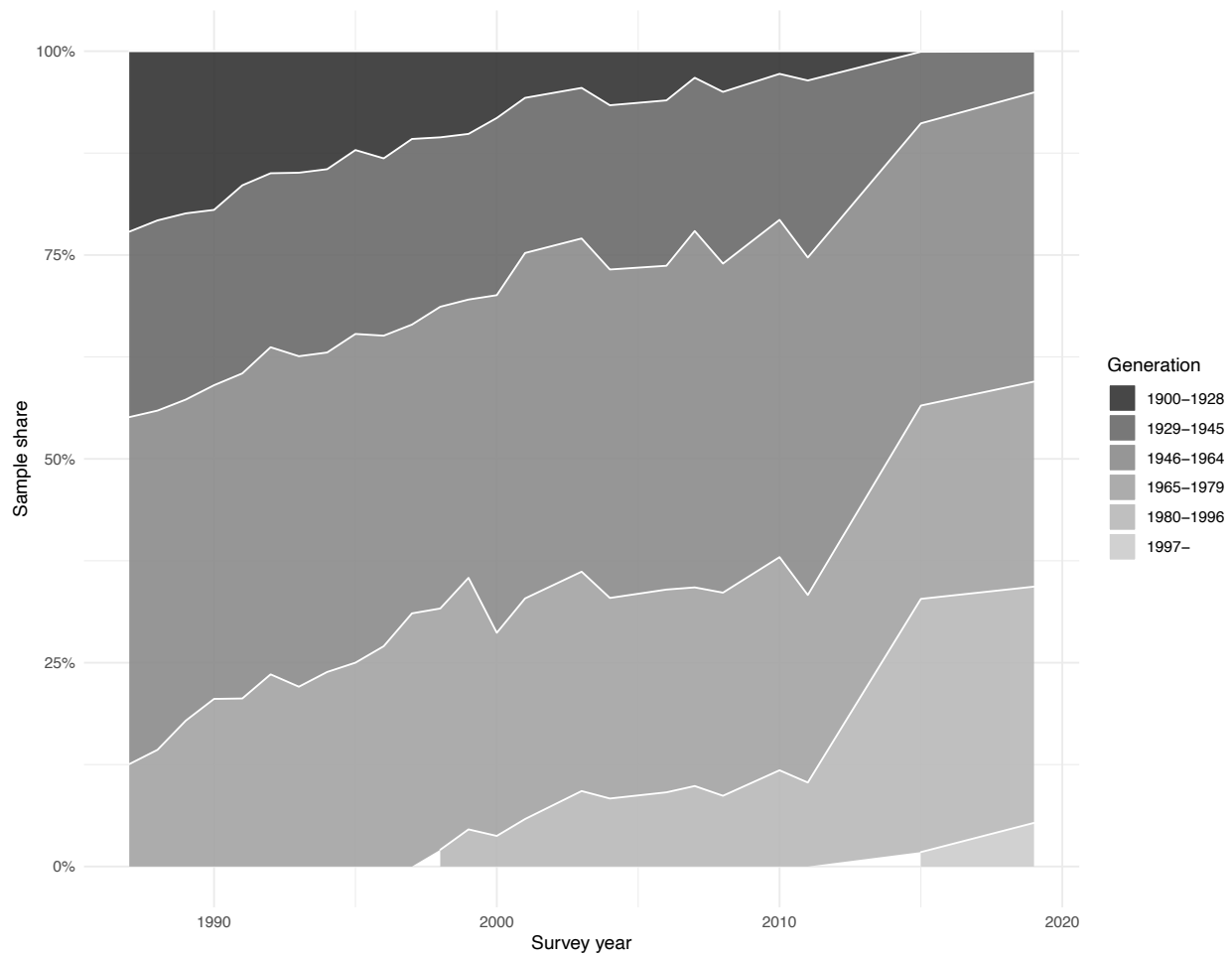
Figure B.1. Sample share of each generation, by year

Note: The 1900-28 generation is the oldest generation in the analysis. The 1929-45 generation is usually referred to as the Greatest generation. The 1946-64 generation is usually referred to as the Baby boomer generation. The 1965-79 generation is usually referred to as Generation X. The 1980-97 generation is usually referred to as the Millenial generation. The 1997+ generation is usually referred to as Generation Z.

Age of respondents in each generation
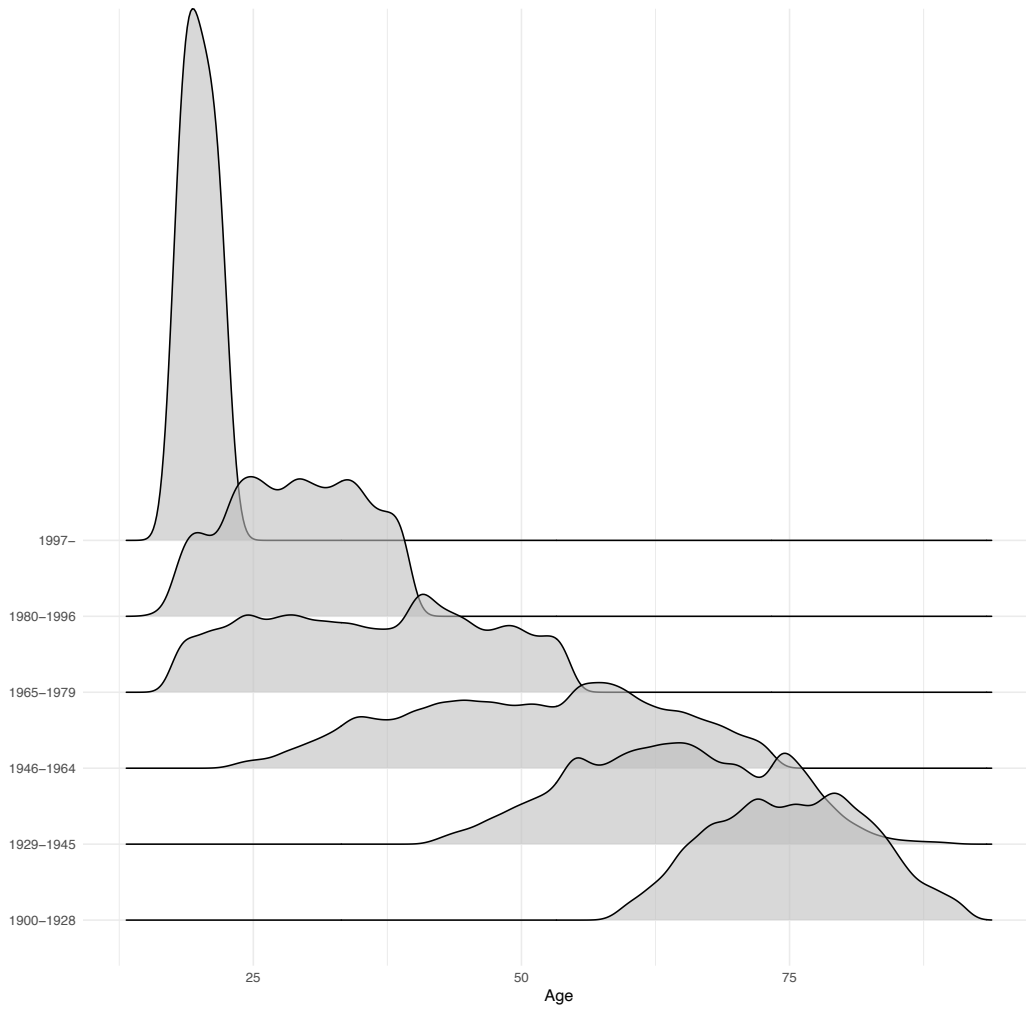
Figure B.2. Distribution of age groups in the sample, by generation

	N	Mean	Median	St. Dev.	Min	Max
Ind. variables						
Survey year	120,790				1987	2019
Age	120,790	47.181	46	16.984	16	91
Birth year	120,790				1900	2001
Dep. variables						
Welfare	47,892	−0.056	0.000	0.759	−1.000	1.000
Environment	86,737	0.522	1.000	0.636	−1.000	1.000
Defence	87,728	0.011	0.000	0.728	−1.000	1.000
Childcare	32,560	0.352	0.000	0.715	−1.000	1.000
Job-creation prog.	33,427	0.540	1.000	0.659	−1.000	1.000
Elderly services	33,507	0.560	1.000	0.559	−1.000	1.000
Healthcare	61,802	0.583	1.000	0.574	−1.000	1.000
Regions	32,471	0.513	1.000	0.647	−1.000	1.000
Transportation	32,502	0.185	0.000	0.619	−1.000	1.000
Education	90,712	0.628	1.000	0.558	−1.000	1.000
Farmers	31,629	0.319	0.000	0.684	−1.000	1.000
Arts	26,577	−0.100	0.000	0.693	−1.000	1.000
Energy	28,714	0.259	0.000	0.643	−1.000	1.000
Serv. for the poor	30,555	0.443	1.000	0.651	−1.000	1.000
Justice	73,168	0.214	0.000	0.670	−1.000	1.000

Table B.1. Summary statistics of dependent variables and main independent variables
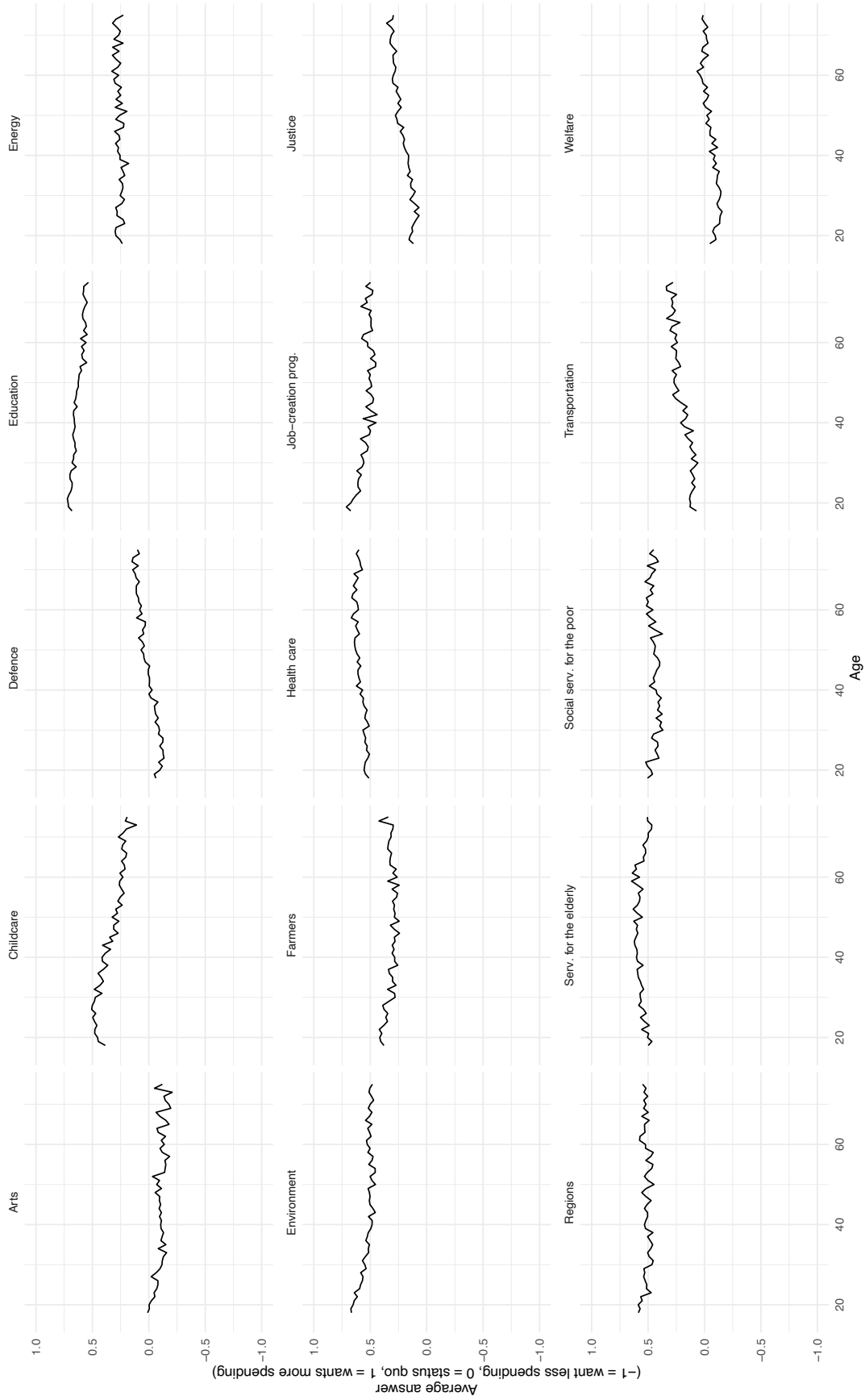
Figure B.3. Value of the dependent variables, averaged by age

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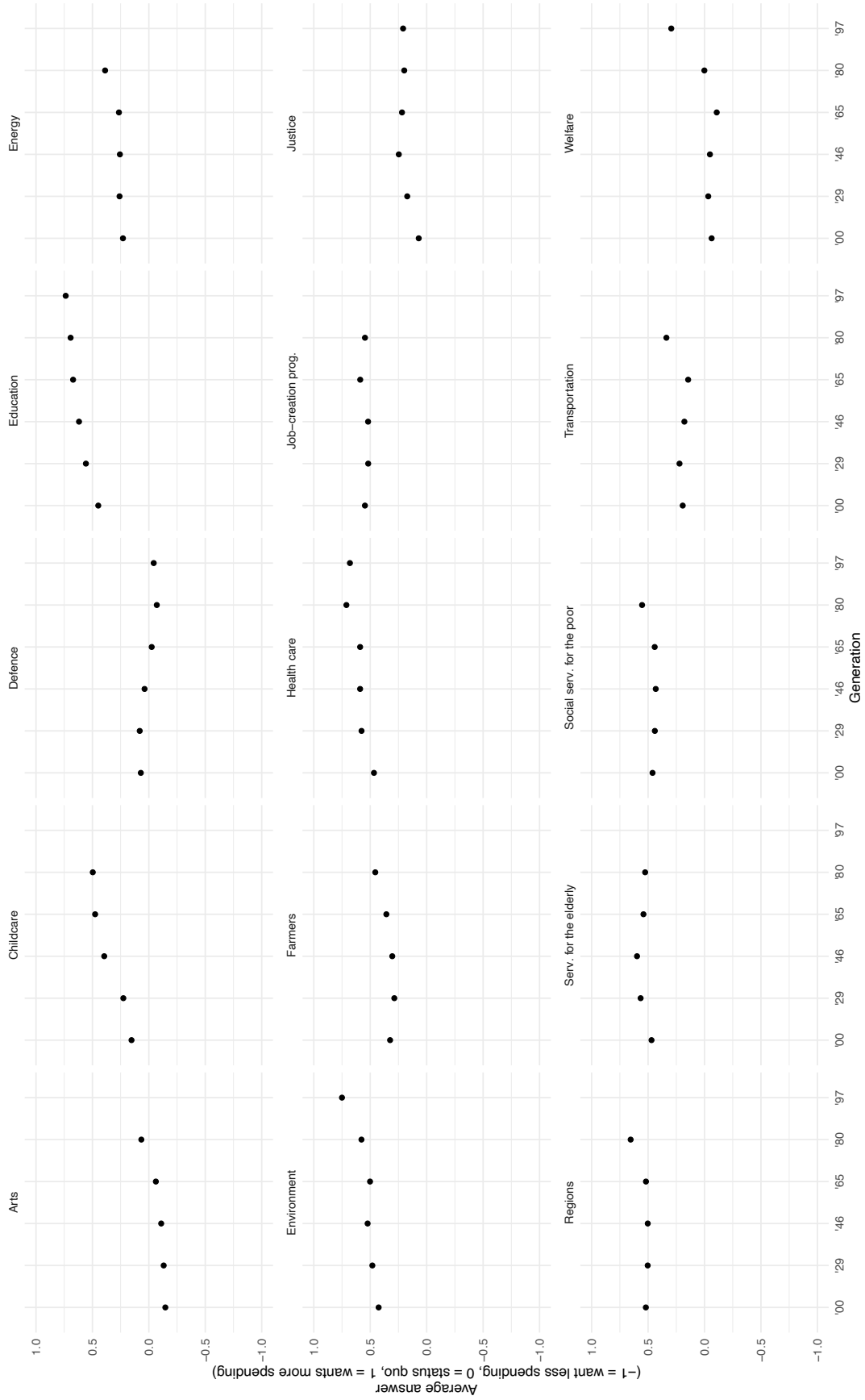
Figure B.4. Value of the dependent variables, averaged by generation
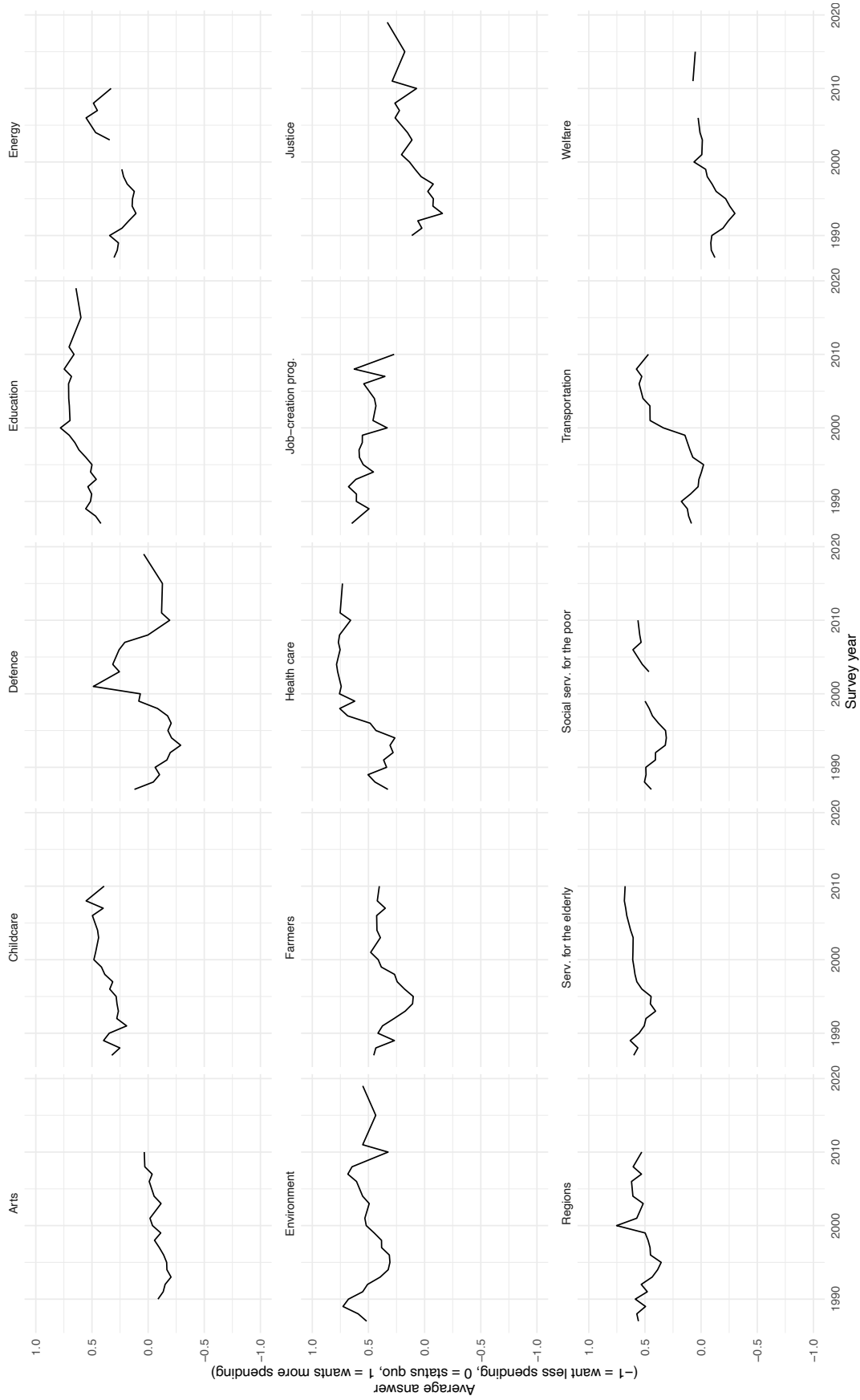
Figure B.5. Value of the dependent variables, averaged by year

B.2. Regression tables for models presented in the main text

The following tables report estimates for the regression models presented in the main text. The predicted probabilities presented in Figures 3.3 to 3.6 and Table 3.2 are derived from these regression analyses.

— In Table B.2, the dependent variables are support for more or the same amount public spending on all programs.

    — Support for more spending is coded 1, otherwise 0, then individual values are averaged together.

    — Support for the same amount of spending is coded 1, otherwise 0, then individual values are averaged together.

— If a respondent did not provide an answer for a policy, their answer is not considered in the average (the respondent is not dropped from the analysis).

— The number of observations corresponds to the maximum number of complete observations on all variables in the model (age, birth year, socio-demographic controls).

— The main independent variable is age (linear and squared). Models control for generations (reference category = 1900-1928), survey year, income, gender, education level, employment and marital status, religiosity and vote intention. Models are ordinary least squares regressions.

— In Tables B.3 to B.8, the dependent variables are support for more (=1, otherwise 0) or the same amount of (=1, otherwise 0) public spending on each of the 15 policies. Again, models are ordinary least squares regressions with the same controls.

	Spend more		Spend the same amount	
	(1)	(2)	(3)	(4)
Age	0.003***	−0.00002	−0.004***	−0.002**
	(0.001)	(0.001)	(0.001)	(0.001)
Age, sq.	−0.00004***	−0.00000	0.00005***	0.00002***
	(0.00001)	(0.00001)	(0.00001)	(0.00001)
Income	−0.114***	−0.084***	0.077***	0.052***
	(0.005)	(0.005)	(0.005)	(0.005)
Men (ref = Women)	−0.027***	−0.025***	0.006*	0.004
	(0.003)	(0.003)	(0.003)	(0.003)
Religious (ref = Not religious)	−0.005	0.005	0.019***	0.010**
	(0.004)	(0.004)	(0.004)	(0.004)
Conservative (ref = BQ)	0.012*	0.006	0.001	0.008
	(0.006)	(0.006)	(0.006)	(0.006)
Liberal (ref = BQ)	0.037***	0.039***	−0.009	−0.009
	(0.006)	(0.006)	(0.006)	(0.006)
NDP (ref = BQ)	0.100***	0.102***	−0.071***	−0.072***
	(0.006)	(0.006)	(0.007)	(0.007)
Other party (ref = BQ)	0.031***	0.038***	−0.018***	−0.023***
	(0.006)	(0.006)	(0.006)	(0.006)
Reform (ref = BQ)	−0.044***	−0.035***	−0.008	−0.015**
	(0.007)	(0.007)	(0.007)	(0.007)
Education level	−0.037***	−0.081***	0.019**	0.055***
	(0.007)	(0.008)	(0.008)	(0.008)
Unemployed (ref = Other employment)	0.010	0.013**	−0.005	−0.009
	(0.006)	(0.006)	(0.006)	(0.006)
Working (ref = Other employment)	−0.003	−0.004	−0.003	−0.004
	(0.004)	(0.004)	(0.004)	(0.004)
Not in couple (ref = In a couple)	0.001	0.007**	0.003	−0.003
	(0.003)	(0.003)	(0.003)	(0.003)
Year	No	Yes	No	Yes
Generation	No	Yes	No	Yes
Constant	0.467***	−5.081***	0.440***	4.890***
	(0.014)	(0.649)	(0.014)	(0.653)
Observations	39,438	39,438	39,438	39,438
R^2	0.039	0.048	0.017	0.024
Adjusted R^2	0.039	0.048	0.017	0.024

Note: *p<0.1; **p<0.05; ***p<0.01
OLS coefficients with standard errors in parentheses.
Models in the second and fourth columns include a
linear term for the survey year and a categorical
generation variable.

Table B.2. Support for more or the same level of government spending (all issues averaged together)

	Arts	Childcare	Defence	Education	Elderly serv.
Age	0.005***	−0.002	0.002*	−0.006***	0.012***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)
Age, sq.	−0.00004**	−0.00000	0.00000	0.00003***	−0.0001***
	(0.00002)	(0.00002)	(0.00001)	(0.00001)	(0.00002)
Income	−0.022*	−0.094***	0.001	−0.076***	−0.123***
	(0.011)	(0.013)	(0.009)	(0.010)	(0.012)
Men (ref = Women)	−0.007	−0.073***	0.052***	−0.038***	−0.064***
	(0.006)	(0.007)	(0.005)	(0.005)	(0.007)
Conservative (ref = BQ)	−0.154***	−0.088***	0.271***	−0.109***	0.013
	(0.013)	(0.015)	(0.011)	(0.011)	(0.015)
Liberal (ref = BQ)	−0.131***	−0.047***	0.172***	0.007	0.030**
	(0.011)	(0.014)	(0.010)	(0.011)	(0.013)
NDP (ref = BQ)	−0.062***	0.083***	0.159***	0.034***	0.133***
	(0.013)	(0.015)	(0.011)	(0.012)	(0.015)
Other party (ref = BQ)	−0.120***	−0.047***	0.179***	−0.020*	0.039***
	(0.012)	(0.014)	(0.011)	(0.011)	(0.014)
Reform (ref = BQ)	−0.197***	−0.182***	0.261***	−0.043***	−0.062***
	(0.012)	(0.016)	(0.012)	(0.013)	(0.016)
Religious (ref = not religious)	−0.047***	−0.027***	0.031***	−0.013*	0.018*
	(0.009)	(0.010)	(0.007)	(0.007)	(0.010)
Unemployed (ref = Other empl.)	−0.003	0.047***	−0.014	0.003	0.028**
	(0.012)	(0.014)	(0.011)	(0.011)	(0.014)
Working (ref = Other empl.)	−0.019**	0.020**	−0.005	0.012*	0.002
	(0.008)	(0.009)	(0.006)	(0.007)	(0.009)
Education level	0.218***	0.086***	−0.136***	0.005	−0.198***
	(0.016)	(0.018)	(0.013)	(0.014)	(0.018)
Not in couple (ref = In a couple)	0.055***	0.009	0.014**	−0.011*	0.015**
	(0.007)	(0.008)	(0.006)	(0.006)	(0.007)
Year	Yes	Yes	Yes	Yes	Yes
Generation	Yes	Yes	Yes	Yes	Yes
Constant	−5.557***	−6.477***	−3.525***	−10.256***	0.415
	(2.014)	(1.994)	(1.074)	(1.162)	(1.951)
Observations	16,249	21,170	30,778	31,921	21,841
R^2	0.041	0.052	0.042	0.040	0.042
Adjusted R^2	0.040	0.051	0.041	0.040	0.042

Note: *p<0.1; **p<0.05; ***p<0.01

OLS coefficients with standard errors in parentheses.
Models include linear term for the survey year and a
categorical generation variable.

Table B.3. Effect of age on support for more government spending, OLS models 1-5

	Energy	Environment	Farmers	Healthcare	Job-creat.
Age	0.003	−0.006***	−0.003	0.003*	−0.002
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Age, sq.	−0.00003	0.0001***	0.00003	−0.00004***	0.00000
	(0.00002)	(0.00001)	(0.00002)	(0.00001)	(0.00002)
Income	0.041***	0.025**	−0.075***	−0.169***	−0.139***
	(0.013)	(0.011)	(0.013)	(0.010)	(0.012)
Men (ref = Women)	0.052***	0.004	−0.053***	−0.079***	−0.049***
	(0.007)	(0.006)	(0.007)	(0.005)	(0.006)
Conservative (ref = BQ)	0.062***	−0.121***	0.096***	−0.024**	−0.148***
	(0.015)	(0.012)	(0.016)	(0.011)	(0.014)
Liberal (ref = BQ)	0.047***	−0.004	0.076***	0.019*	−0.104***
	(0.014)	(0.012)	(0.014)	(0.010)	(0.013)
NDP (ref = BQ)	0.104***	0.097***	0.158***	0.083***	−0.071***
	(0.016)	(0.013)	(0.016)	(0.011)	(0.014)
Other party (ref = BQ)	0.056***	−0.007	0.091***	0.024**	−0.116***
	(0.014)	(0.012)	(0.015)	(0.011)	(0.013)
Reform (ref = BQ)	0.026	−0.164***	0.070***	−0.073***	−0.228***
	(0.016)	(0.015)	(0.017)	(0.012)	(0.015)
Religious (ref = not religious)	−0.025**	−0.075***	0.015	0.039***	0.074***
	(0.010)	(0.008)	(0.010)	(0.007)	(0.009)
Unemployed (ref = Other empl.)	0.021	−0.002	0.009	−0.007	0.081***
	(0.014)	(0.012)	(0.014)	(0.011)	(0.013)
Working (ref = Other empl.)	−0.006	−0.030***	−0.026***	0.011*	0.013
	(0.009)	(0.007)	(0.009)	(0.007)	(0.008)
Education level	0.034*	0.184***	−0.173***	−0.198***	−0.285***
	(0.018)	(0.015)	(0.019)	(0.014)	(0.017)
Not in couple (ref = In a couple)	0.010	0.006	0.029***	−0.026***	0.007
	(0.008)	(0.006)	(0.008)	(0.006)	(0.007)
Year	Yes	Yes	Yes	Yes	Yes
Generation	Yes	Yes	Yes	Yes	Yes
Constant	2.078	3.259***	12.962***	−40.584***	16.580***
	(2.056)	(1.232)	(2.028)	(1.303)	(1.870)
Observations	19,095	29,764	20,545	32,817	21,848
R^2	0.009	0.045	0.027	0.108	0.064
Adjusted R^2	0.008	0.045	0.026	0.107	0.063

Note: *p<0.1; **p<0.05; ***p<0.01

OLS coefficients with standard errors in parentheses.
Models include linear term for the survey year and a categorical generation variable.

Table B.4. Effect of age on support for more government spending, OLS models 6-10

	Justice	Regions	Serv. poor	Trans.	Welfare
Age	0.0001	0.003	0.003	0.008***	0.008***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
Age, sq.	0.00001	−0.00004**	−0.00003*	−0.0001***	−0.0001***
	(0.00001)	(0.00002)	(0.00002)	(0.00002)	(0.00001)
Income	−0.008	−0.129***	−0.174***	−0.023**	−0.195***
	(0.011)	(0.013)	(0.013)	(0.011)	(0.009)
Men (ref = Women)	−0.025***	−0.036***	−0.053***	0.044***	−0.021***
	(0.006)	(0.007)	(0.007)	(0.006)	(0.005)
Conservative (ref = BQ)	0.148***	−0.055***	−0.114***	−0.010	−0.089***
	(0.013)	(0.015)	(0.016)	(0.013)	(0.011)
Liberal (ref = BQ)	0.100***	−0.029**	−0.072***	0.005	−0.037***
	(0.011)	(0.014)	(0.014)	(0.012)	(0.010)
NDP (ref = BQ)	0.112***	0.078***	0.076***	0.082***	0.104***
	(0.013)	(0.015)	(0.016)	(0.013)	(0.011)
Other party (ref = BQ)	0.085***	−0.037***	−0.065***	0.026**	−0.034***
	(0.012)	(0.014)	(0.014)	(0.012)	(0.011)
Reform (ref = BQ)	0.102***	−0.137***	−0.195***	−0.017	−0.132***
	(0.014)	(0.016)	(0.017)	(0.014)	(0.012)
Religious (ref = not religious)	0.031***	0.032***	−0.005	−0.018**	−0.025***
	(0.008)	(0.010)	(0.010)	(0.009)	(0.007)
Unemployed (ref = Other empl.)	0.011	0.055***	0.052***	−0.002	0.066***
	(0.012)	(0.014)	(0.014)	(0.012)	(0.011)
Working (ref = Other empl.)	−0.002	−0.024***	−0.045***	−0.018**	−0.063***
	(0.008)	(0.009)	(0.009)	(0.008)	(0.007)
Education level	−0.138***	−0.100***	−0.108***	0.010	−0.017
	(0.016)	(0.018)	(0.018)	(0.016)	(0.014)
Not in couple (ref = In a couple)	0.001	0.020***	0.027***	0.028***	0.049***
	(0.007)	(0.008)	(0.008)	(0.007)	(0.006)
Year	Yes	Yes	Yes	Yes	Yes
Generation	Yes	Yes	Yes	Yes	Yes
Constant	−14.338***	3.157	7.562***	−18.784***	0.398
	(1.338)	(1.983)	(2.059)	(1.733)	(1.246)
Observations	22,442	21,161	20,429	21,049	26,558
R^2	0.041	0.034	0.057	0.030	0.079
Adjusted R^2	0.040	0.033	0.056	0.029	0.078

Note: *p<0.1; **p<0.05; ***p<0.01
OLS coefficients with standard errors in parentheses.
Models include linear term for the survey year and a
categorical generation variable.

Table B.5. Effect of age on support for more government spending, OLS models 11-15

	Arts	Childcare	Defence	Education	Elderly serv.
Age	−0.007***	−0.005***	−0.001	0.004***	−0.011***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)
Age, sq.	0.0001***	0.0001***	0.00000	−0.00001	0.0001***
	(0.00002)	(0.00002)	(0.00001)	(0.00001)	(0.00002)
Income	0.020	0.057***	−0.017	0.065***	0.109***
	(0.015)	(0.012)	(0.010)	(0.009)	(0.012)
Men (ref = Women)	−0.043***	0.036***	−0.055***	0.023***	0.053***
	(0.008)	(0.007)	(0.006)	(0.005)	(0.007)
Conservative (ref = BQ)	−0.011	0.016	0.046***	0.101***	−0.008
	(0.018)	(0.015)	(0.012)	(0.011)	(0.015)
Liberal (ref = BQ)	0.016	0.006	0.089***	0.001	−0.023*
	(0.014)	(0.013)	(0.011)	(0.010)	(0.013)
NDP (ref = BQ)	−0.044***	−0.099***	0.017	−0.019	−0.116***
	(0.017)	(0.015)	(0.013)	(0.012)	(0.015)
Other party (ref = BQ)	−0.035**	−0.021	0.047***	0.014	−0.041***
	(0.015)	(0.014)	(0.012)	(0.011)	(0.014)
Reform (ref = BQ)	−0.151***	−0.025	0.022	−0.0001	0.032**
	(0.016)	(0.016)	(0.014)	(0.013)	(0.016)
Religious (ref = not religious)	0.041***	0.024**	0.038***	0.014**	−0.014
	(0.011)	(0.010)	(0.008)	(0.007)	(0.010)
Unemployed (ref = Other empl.)	−0.0002	−0.035**	0.007	−0.007	−0.030**
	(0.016)	(0.014)	(0.012)	(0.011)	(0.013)
Working (ref = Other empl.)	−0.004	−0.014	0.006	−0.016**	−0.003
	(0.010)	(0.009)	(0.007)	(0.007)	(0.009)
Education level	−0.068***	−0.105***	−0.065***	−0.016	0.169***
	(0.021)	(0.018)	(0.015)	(0.014)	(0.018)
Not in couple (ref = In a couple)	−0.020**	0.016**	−0.024***	0.009	−0.013*
	(0.009)	(0.008)	(0.006)	(0.006)	(0.007)
Year	Yes	Yes	Yes	Yes	Yes
Generation	Yes	Yes	Yes	Yes	Yes
Constant	1.799	−3.870**	−3.866***	8.967***	0.925
	(2.650)	(1.957)	(1.244)	(1.132)	(1.936)
Observations	16,249	21,170	30,778	31,921	21,841
R^2	0.018	0.016	0.012	0.029	0.033
Adjusted R^2	0.017	0.015	0.012	0.029	0.032

Note: *p<0.1; **p<0.05; ***p<0.01

OLS coefficients with standard errors in parentheses.
Models include linear term for the survey year and a
categorical generation variable.

Table B.6. Effect of age on support for the same amount of government spending, OLS models 1-5

	Energy	Environment	Farmers	Healthcare	Job-creat.
Age	−0.007***	0.003**	−0.0002	−0.003**	−0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Age, sq.	0.0001***	−0.00002**	−0.00001	0.00004***	0.00002
	(0.00002)	(0.00001)	(0.00002)	(0.00001)	(0.00002)
Income	−0.030**	−0.022**	0.033**	0.138***	0.091***
	(0.013)	(0.010)	(0.013)	(0.009)	(0.011)
Men (ref = Women)	−0.062***	−0.020***	−0.007	0.054***	0.011*
	(0.007)	(0.006)	(0.007)	(0.005)	(0.006)
Conservative (ref = BQ)	−0.046***	0.071***	−0.091***	0.028**	0.109***
	(0.016)	(0.012)	(0.016)	(0.011)	(0.014)
Liberal (ref = BQ)	−0.020	0.004	−0.068***	−0.004	0.085***
	(0.014)	(0.011)	(0.014)	(0.010)	(0.012)
NDP (ref = BQ)	−0.106***	−0.086***	−0.141***	−0.055***	0.067***
	(0.016)	(0.012)	(0.016)	(0.011)	(0.014)
Other party (ref = BQ)	−0.042***	−0.018	−0.086***	−0.015	0.084***
	(0.015)	(0.012)	(0.015)	(0.011)	(0.013)
Reform (ref = BQ)	−0.054***	0.077***	−0.141***	0.029**	0.099***
	(0.017)	(0.014)	(0.017)	(0.012)	(0.014)
Religious (ref = not religious)	0.048***	0.061***	0.017*	−0.027***	−0.035***
	(0.011)	(0.007)	(0.010)	(0.007)	(0.009)
Unemployed (ref = Other empl.)	−0.031**	0.006	−0.012	0.005	−0.073***
	(0.015)	(0.012)	(0.014)	(0.011)	(0.012)
Working (ref = Other empl.)	0.003	0.027***	0.009	−0.012*	−0.015*
	(0.010)	(0.007)	(0.009)	(0.007)	(0.008)
Education level	−0.043**	−0.121***	0.092***	0.145***	0.167***
	(0.019)	(0.015)	(0.019)	(0.014)	(0.016)
Not in couple (ref = In a couple)	−0.006	−0.005	−0.013	0.023***	0.003
	(0.008)	(0.006)	(0.008)	(0.006)	(0.007)
Year	Yes	Yes	Yes	Yes	Yes
Generation	Yes	Yes	Yes	Yes	Yes
Constant	0.624	1.503	−12.017***	39.882***	−11.842***
	(2.166)	(1.204)	(2.047)	(1.295)	(1.765)
Observations	19,095	29,764	20,545	32,817	21,848
R^2	0.012	0.029	0.012	0.088	0.024
Adjusted R^2	0.011	0.028	0.011	0.087	0.023

Note: *p<0.1; **p<0.05; ***p<0.01
OLS coefficients with standard errors in parentheses.
Models include linear term for the survey year and a
categorical generation variable.

Table B.7. Effect of age on support for the same amount of government spending, OLS models 6-10

	Justice	Regions	Serv. poor	Trans.	Welfare
Age	−0.003**	−0.003*	−0.002	−0.008***	−0.003*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Age, sq.	0.00003*	0.00005**	0.00003	0.0001***	0.00004***
	(0.00002)	(0.00002)	(0.00002)	(0.00002)	(0.00002)
Income	0.045***	0.090***	0.112***	−0.009	0.016
	(0.013)	(0.012)	(0.013)	(0.012)	(0.011)
Men (ref = Women)	−0.014**	0.014**	0.040***	−0.081***	0.010*
	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)
Conservative (ref = BQ)	−0.066***	0.036**	0.061***	−0.009	−0.001
	(0.014)	(0.015)	(0.015)	(0.015)	(0.013)
Liberal (ref = BQ)	−0.032**	0.026**	0.042***	−0.013	−0.002
	(0.013)	(0.013)	(0.014)	(0.013)	(0.012)
NDP (ref = BQ)	−0.049***	−0.065***	−0.084***	−0.075***	−0.063***
	(0.014)	(0.015)	(0.015)	(0.015)	(0.013)
Other party (ref = BQ)	−0.055***	0.021	0.024*	−0.038***	−0.038***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.013)
Reform (ref = BQ)	−0.130***	0.052***	0.068***	−0.077***	−0.069***
	(0.016)	(0.015)	(0.016)	(0.016)	(0.014)
Religious (ref = not religious)	−0.006	−0.015	0.019*	0.015	0.005
	(0.009)	(0.009)	(0.010)	(0.010)	(0.009)
Unemployed (ref = Other empl.)	−0.005	−0.049***	−0.041***	0.006	−0.012
	(0.014)	(0.013)	(0.014)	(0.014)	(0.013)
Working (ref = Other empl.)	−0.017**	0.022***	0.029***	0.009	0.00004
	(0.009)	(0.008)	(0.009)	(0.009)	(0.008)
Education level	0.109***	0.051***	0.112***	−0.047***	0.175***
	(0.018)	(0.017)	(0.018)	(0.018)	(0.016)
Not in couple (ref = In a couple)	−0.006	−0.018**	−0.016**	−0.014*	−0.005
	(0.008)	(0.007)	(0.008)	(0.008)	(0.007)
Year	Yes	Yes	Yes	Yes	Yes
Generation	Yes	Yes	Yes	Yes	Yes
Constant	3.619**	−1.088	−5.253***	18.313***	−3.355**
	(1.498)	(1.904)	(2.039)	(1.965)	(1.465)
Observations	22,442	21,161	20,429	21,049	26,558
R^2	0.010	0.016	0.028	0.024	0.012
Adjusted R^2	0.009	0.016	0.027	0.023	0.011

Note:	*p<0.1; **p<0.05; ***p<0.01
	OLS coefficients with standard errors in parentheses.
	Models include linear term for the survey year and a
	categorical generation variable.

Table B.8. Effect of age on support for the same amount of government spending, OLS models 11-15

B.3. Additional model specifications

B.3.1. Logistic regression models

This specification uses logistic regressions to estimate the effect of age on support for public spending.

— In Tables B.9 and B.10, the dependent variables are support for more or the same amount public spending on all programs (coded 1, otherwise 0). The main independent variable is age (linear and squared). Models control for generations (reference category = 1900-1928), survey year, income, gender, education level, employment and marital status, religiosity and vote intention. Models are ordinary least squares regressions.

— Log-odds are shown with standard errors in parentheses.

— Results are substantively the same as in the main models presented in the paper. Effects that were statistically significant at the $p < 0.05$ are also significant when using logistic regression models.

	Arts	Childcare	Defence	Education	Elderly serv.
Age	0.031**	−0.008	0.015**	−0.029***	0.052***
	(0.013)	(0.008)	(0.006)	(0.006)	(0.008)
Age, sq.	−0.0003**	−0.00002	−0.00003	0.0001**	−0.001***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	−41.614***	−29.320***	−20.947***	−46.564***	−0.474
	(14.128)	(8.411)	(5.839)	(5.286)	(8.369)
Observations	16,249	21,170	30,778	31,921	21,841
Log Likelihood	−7,333.711	−14,101.260	−16,791.860	−20,196.350	−14,393.730
Akaike Inf. Crit.	14,707.420	28,242.530	33,627.730	40,436.690	28,827.460
	Energy	Environment	Farmers	Healthcare	Job-creation
Age	0.013	−0.024***	−0.012	0.013**	−0.009
	(0.009)	(0.006)	(0.008)	(0.006)	(0.008)
Age, sq.	−0.0001	0.0002***	0.0001	−0.0002***	0.00001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	7.193	15.506***	52.271***	−189.980***	74.193***
	(9.346)	(5.282)	(8.517)	(6.310)	(8.719)
Observations	19,095	29,764	20,545	32,817	21,848
Log Likelihood	−12,050.360	−19,622.180	−13,760.360	−20,586.610	−13,484.790
Akaike Inf. Crit.	24,140.720	39,288.360	27,560.730	41,217.220	27,009.590
	Justice	Regions	Serv. poor	Trans.	Welfare
Age	0.003	0.013	0.012	0.054***	0.044***
	(0.007)	(0.008)	(0.008)	(0.009)	(0.008)
Age, sq.	0.00001	−0.0002**	−0.0001*	−0.0004***	−0.0004***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	−68.819***	11.356	29.895***	−104.993***	4.915
	(6.757)	(8.490)	(8.738)	(9.685)	(7.183)
Observations	22,442	21,161	20,429	21,049	26,558
Log Likelihood	−13,051.280	−13,944.830	−13,552.830	−11,288.400	−13,851.010
Akaike Inf. Crit.	26,146.560	27,929.650	27,145.670	22,616.790	27,746.030

Note: *p<0.1; **p<0.05; ***p<0.01
Log-odds with standard errors in parentheses.
Controls include income, gender, education level,
employment and marital status, religiosity and vote intention.
Models include linear term for the survey year and a
categorical generation variable.

Table B.9. Effect of age on support for more government spending, logistic models

	Arts	Childcare	Defence	Education	Elderly serv.
Age	−0.030***	−0.023***	−0.004	0.016***	−0.049***
	(0.010)	(0.008)	(0.006)	(0.006)	(0.008)
Age, sq.	0.0003***	0.0003***	0.00001	−0.00005	0.0005***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	5.256	−19.113**	−17.043***	38.308***	2.073
	(10.800)	(8.560)	(5.107)	(5.416)	(8.438)
Observations	16,249	21,170	30,778	31,921	21,841
Log Likelihood	−11,105.930	−13,730.220	−20,980.850	−19,435.950	−14,221.550
Akaike Inf. Crit.	22,251.860	27,500.440	42,005.710	38,915.900	28,483.090

	Energy	Environment	Farmers	Healthcare	Job-creation
Age	−0.027***	0.012**	−0.001	−0.015**	−0.008
	(0.008)	(0.006)	(0.008)	(0.006)	(0.009)
Age, sq.	0.0002***	−0.0001*	−0.00002	0.0002***	0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	0.533	1.521	−51.304***	189.350***	−63.471***
	(8.874)	(5.401)	(8.413)	(6.405)	(9.202)
Observations	19,095	29,764	20,545	32,817	21,848
Log Likelihood	−13,003.580	−18,971.040	−13,956.510	−20,388.780	−12,391.080
Akaike Inf. Crit.	26,047.170	37,986.070	27,953.020	40,821.550	24,822.150

	Justice	Regions	Serv. poor	Trans.	Welfare
Age	−0.014**	−0.017**	−0.010	−0.035***	−0.012*
	(0.007)	(0.008)	(0.008)	(0.008)	(0.007)
Age, sq.	0.0001*	0.0002***	0.0001	0.0002***	0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	13.129**	−7.319	−24.890***	77.425***	−17.577***
	(6.108)	(8.839)	(8.825)	(8.613)	(6.161)
Observations	22,442	21,161	20,429	21,049	26,558
Log Likelihood	−15,436.890	−13,137.880	−13,352.620	−13,625.280	−17,784.150
Akaike Inf. Crit.	30,917.770	26,315.760	26,745.250	27,290.570	35,612.310

Note: *p<0.1; **p<0.05; ***p<0.01
Log-odds with standard errors in parentheses.
Controls include income, gender, education level,
employment and marital status, religiosity and vote intention.
Models include linear term for the survey year and a
categorical generation variable.

Table B.10. Effect of age on support for the same amount of government spending, logistic models

B.3.2. Multilevel models (hierarchical APC models)

Yang and Land (2006) developed cross-classified hierarchical APC model or mixed (fixed and random) effects APC regression model to address the identification problem in APC analyses (see Yang and Land 2016). Since individuals are nested within birth cohorts and periods in repeated cross-sectional data, Yang and Land argue that the independence of units assumption is violated. This, according to them, justifies modeling the effect of age as fixed and the effect of periods and/or cohorts as random in a multilevel model, allowing for random intercepts and/or slopes. The solution described by Yang and Land makes it possible to investigate heterogeneous effects of age across cohorts and periods, and this is an advantage of multilevel models in general. But the increase in the popularity of hierarchical APC models for answering questions in political science, medicine, sociology and other disciplines has been followed by the publication of several statistical and conceptual critiques of this method. These critiques highlighted an important reason why hierarchical APC models should be treated with scepticism: The "range of periods and cohorts" or the number of groupings of these variables can affect results in substantive ways, because by trying to minimize variance, the model "assigns the linear trend" to the variable with the least variance (Bell and Jones, 2018, p.785). In other words, when the range of periods is larger than cohorts, the model "would tend to assign trends to cohorts instead of periods" (Bellavia and Valeri [2018, p.788], see also Fosse and Winship [2019] and Luo and Hodges [2019; 2019]). This can affect estimates for the age, cohort and period trends (Bell and Jones, 2014a). Estimates can also vary depending on which of cohorts or periods are specified as random in the model (Luo and Hodges, 2019), which underlines the importance of choosing model specifications based on theory (see Bell and Jones, 2014b,c, 2015; O'Brien, 2017; Achen and Wang, 2019).

In fact, the solution proposed by Yang and Land assumes that random effects are uncorrelated with one another or with level-1 predictors. But if we have reasons to believe that unobserved variables at the group level (cohorts and/or periods) affect both the explanatory and dependent variables, then estimates of hierarchical models will be biased. This is the case in the present study. We know that respondents' age is explained by their year of birth

and by the year when they completed the survey. We also have theoretical reasons to believe that birth cohorts and periods help explain individual support for public spending (because of formative experiences and political events). This is enough reason to suspect estimates obtained from random effects APC models to be biased.[1]

For this reason and because of the limitations of HAPC models made evident in recent years, I rely in this article on models that use categorical controls for generations and linear controls for survey year to estimate the effect of age on individual public spending preferences. But to satisfy my curiosity and that of readers interested in the HAPC method, I present here the results of multilevel logistic models (or hierarchical age-period-cohort logistic models) with random effects for 5-year birth cohorts and survey years (level-2 predictors).

— There are a total of 21 birth cohorts (1900-1904 to 2000-2004) and 32 survey years.

— Age — linear and squared — is included as a level-1 predictor.[2]

— The models control for income, gender, employment and marital status, vote intention, religiosity and education level.

— The dependent variable is binary: respondents who said they wanted more governmental spending on each of the programs were coded 1, otherwise 0.

Multilevel models do not help address omitted variable bias to the same extent as fixed effects models because cohort effects are specified as random in the models. I argue that members of the same birth cohort (or generation) share common unobservable factors because they have been socialized in similar periods. In this sense, I argue that the identification strategy presented in the main text makes more sense theoretically, as it is more likely to yield unbiased estimates of the effect of age on individual policy preferences. I am aware that multilevel models have gained in popularity in the last decade to answer age-period-cohort problems, so some readers might be curious as to what results are obtained using this model specification.

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1. Based on Monte Carlo experiments, Clark and Linzer (2015, p.407) advised that the decision between fixed- and random-effects models should be based on sample size and on the "level of correlation between" x and unit effects. If it is high and the number of observations by cluster is high, "fixed-effects models may be preferable." In the present case, generations, survey year and age are all highly correlated.

2. The age variable has been standardized to facilitate model convergence.

For the most part, results are substantively the same as in the main text. The effect of age on support for more spending on farmers is statistically significant in the multilevel model, but it is not in the OLS model. By reporting no effect in the main text, the results should therefore be considered more conservative.

	Arts	Childcare	Defence	Education	Energy
Age, stand.	0.258	−0.076	0.218**	−0.341***	0.128
	(0.162)	(0.116)	(0.106)	(0.082)	(0.098)
Age, sq., stand.	−0.255	−0.146	−0.113	0.084	−0.113
	(0.166)	(0.119)	(0.108)	(0.084)	(0.103)
Constant	−1.330***	0.291***	−2.791***	1.053***	−1.085***
	(0.118)	(0.098)	(0.186)	(0.136)	(0.122)
Observations	16,249	21,170	30,778	31,921	19,095
Log Likelihood	−7,327.737	−14,058.050	−16,291.180	−19,925.100	−11,907.420
Akaike Inf. Crit.	14,689.470	28,150.090	32,618.360	39,886.210	23,848.840
Bayesian Inf. Crit.	14,820.300	28,285.420	32,768.390	40,036.890	23,982.410

	Environment	Farmers	Healthcare	Job-creation	Justice
Age, stand.	−0.567***	−0.354**	0.268**	−0.068	0.177
	(0.097)	(0.145)	(0.124)	(0.092)	(0.117)
Age, sq., stand.	0.411***	0.260*	−0.372***	−0.097	−0.084
	(0.095)	(0.152)	(0.127)	(0.097)	(0.118)
Constant	0.643***	−0.030	1.997***	1.857***	−1.095***
	(0.152)	(0.128)	(0.233)	(0.112)	(0.165)
Observations	29,764	20,545	32,817	21,848	22,442
Log Likelihood	−19,104.500	−13,519.860	−19,931.440	−13,414.250	−13,008.170
Akaike Inf. Crit.	38,244.990	27,073.720	39,898.890	26,862.500	26,052.340
Bayesian Inf. Crit.	38,394.410	27,208.540	40,050.060	26,998.360	26,196.670

	Regions	Serv. elderly	Serv. poor	Trans.	Welfare
Age, stand.	0.185*	0.567***	0.244*	0.597***	0.596***
	(0.105)	(0.172)	(0.129)	(0.128)	(0.144)
Age, sq., stand.	−0.249**	−0.707***	−0.304**	−0.392***	−0.614***
	(0.107)	(0.172)	(0.132)	(0.129)	(0.143)
Constant	1.031***	0.951***	1.153***	−1.042***	0.124
	(0.118)	(0.115)	(0.101)	(0.157)	(0.128)
Observations	21,161	21,841	20,429	21,049	26,558
Log Likelihood	−13,761.500	−14,271.370	−13,492.580	−11,040.060	−13,807.220
Akaike Inf. Crit.	27,557.010	28,576.740	27,019.160	22,114.130	27,650.440
Bayesian Inf. Crit.	27,692.330	28,712.600	27,153.880	22,249.360	27,797.810

Note: *p<0.1; **p<0.05; ***p<0.01
Log-odds shown with standard errors in parentheses.
Controls include income, gender, education level,
employment and marital status, religiosity and vote intention.
Random intercepts for 5-year birth cohorts and survey years.

Table B.11. Effect of age on support for more government spending, multilevel models

	Arts	Childcare	Defence	Education	Energy
Age, stand.	−0.451***	−0.444***	−0.116	0.243***	−0.334***
	(0.099)	(0.098)	(0.088)	(0.078)	(0.092)
Age, sq., stand.	0.450***	0.508***	0.120	−0.026	0.308***
	(0.104)	(0.102)	(0.090)	(0.081)	(0.098)
Constant	0.234***	−0.537***	−0.062	−1.181***	0.435***
	(0.090)	(0.090)	(0.104)	(0.132)	(0.109)
Observations	16,249	21,170	30,778	31,921	19,095
Log Likelihood	−11,102.330	−13,711.000	−20,864.600	−19,230.500	−12,903.250
Akaike Inf. Crit.	22,238.670	27,456.010	41,765.190	38,497.000	25,840.510
Bayesian Inf. Crit.	22,369.490	27,591.330	41,915.210	38,647.670	25,974.080
	Environment	Farmers	Healthcare	Job-creation	Justice
Age, stand.	0.378***	0.066	−0.282**	−0.265**	−0.358***
	(0.098)	(0.147)	(0.122)	(0.111)	(0.098)
Age, sq., stand.	−0.217**	−0.021	0.373***	0.335***	0.312***
	(0.097)	(0.151)	(0.125)	(0.114)	(0.101)
Constant	−0.902***	−0.221**	−1.953***	−1.934***	0.047
	(0.147)	(0.104)	(0.234)	(0.109)	(0.130)
Observations	29,764	20,545	32,817	21,848	22,442
Log Likelihood	−18,612.420	−13,879.240	−19,915.200	−12,359.650	−15,431.580
Akaike Inf. Crit.	37,260.840	27,792.480	39,866.410	24,753.300	30,899.160
Bayesian Inf. Crit.	37,410.260	27,927.300	40,017.580	24,889.160	31,043.500
	Regions	Serv. elderly	Serv. poor	Trans.	Welfare
Age, stand.	−0.295**	−0.513***	−0.245**	−0.449***	−0.229***
	(0.118)	(0.169)	(0.118)	(0.116)	(0.077)
Age, sq., stand.	0.349***	0.643***	0.330***	0.326***	0.350***
	(0.120)	(0.169)	(0.121)	(0.120)	(0.081)
Constant	−1.178***	−1.002***	−1.228***	0.779***	−0.976***
	(0.107)	(0.111)	(0.092)	(0.122)	(0.111)
Observations	21,161	21,841	20,429	21,049	26,558
Log Likelihood	−13,055.480	−14,133.980	−13,341.550	−13,510.310	−17,754.580
Akaike Inf. Crit.	26,144.950	28,301.950	26,717.100	27,054.610	35,545.150
Bayesian Inf. Crit.	26,280.270	28,437.810	26,851.820	27,189.840	35,692.520

Note: *p<0.1; **p<0.05; ***p<0.01
Log-odds shown with standard errors in parentheses.
Controls include income, gender, education level,
employment and marital status, religiosity and vote intention.
Random intercepts for 5-year birth cohorts and survey years.

Table B.12. Effect of age on support for the same amount of government spending, multi-level models

B.3.3. Categorical dependent variable with multinomial models

This specification uses another operationnalization for the dependent variable. Preferences for public spending are measured using the same survey question ("Keeping in mind that increasing services could increase taxes, do you think the federal government is spending too much, just the right amount, or should be spending more on each of the following: ...?"). However, in this coding scheme, the dependent variable takes three categories ("just the right amount", "should be spending more" and "spending too much").

— The regression results presented in Tables B.13 to B.15 are from multinomial regressions (log-odds shown with standard errors in parentheses).

— Controls include generations, survey years, income, gender, education level, employment and marital status, religiosity and vote intention.

— The effects should be interpreted as a change in the log-odds of each outcome happening compared to the baseline ("government should spend the same amount") given a one-year increase in age.

Almost all results are substantively the same as in the models presented in the main text, except job-creation programs, where the sign in the 'spend more' model is reversed. The corresponding result in the main text is reported as being non-statistically significant and is not highlighted as an important life cycle effect in the conclusion.

	Arts spend less	Arts spend more	Childcare spend less	Childcare spend more	Defence spend less	Defence spend more
Age	0.024***	0.039***	0.068***	0.010*	0.003	0.015***
	(0.006)	(0.007)	(0.008)	(0.005)	(0.005)	(0.005)
Age, sq.	−0.0002***	−0.0004***	−0.001***	−0.0002***	−0.0001*	−0.00005
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.00005)
Constant	13.077***	−36.467***	91.086***	−4.184***	39.992***	−6.159***
	(0.00001)	(0.00001)	(0.00001)	(0.00002)	(0.0001)	(0.0001)
N	16,249	16,249	21,170	21,170	30,778	30,778
Akaike Inf. Crit.	31,756.790	31,756.790	40,696.150	40,696.150	63,409.770	63,409.770

	Education spend less	Education spend more	Elderly serv. spend less	Elderly serv spend more	Energy spend less	Energy spend more
Age	0.060***	−0.022***	−0.009	0.052***	0.046***	0.021***
	(0.010)	(0.004)	(0.012)	(0.005)	(0.008)	(0.006)
Age, sq.	−0.0005***	0.0001*	0.0002*	−0.001***	−0.0004***	−0.0002***
	(0.0001)	(0.00005)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	26.058***	−43.171***	−16.975***	−0.876***	−18.657***	4.607***
	(0.00001)	(0.0001)	(0.00000)	(0.00002)	(0.00001)	(0.00003)
N	31,921	31,921	21,841	21,841	19,095	19,095
Akaike Inf. Crit.	48,829.610	48,829.610	33,801.350	33,801.350	35,608.410	35,608.410

Note: *p<0.1; **p<0.05; ***p<0.01
Log odds shown with standard errors in parentheses.
Controls include income, gender, education level,
employment and marital status, religiosity and vote intention.
Models include linear term for the survey year and a
categorical generation variable.

Table B.13. Effect of age on support government spending, multinomial models, issues 1-6

	Environment spend less	Environment spend more	Farmers spend less	Farmers spend more	Healthcare spend less	Healthcare spend more
Age	0.041***	−0.018***	0.026***	−0.007	0.015*	0.015***
	(0.008)	(0.005)	(0.008)	(0.005)	(0.009)	(0.004)
Age, sq.	−0.0005***	0.0002***	−0.0002**	0.0001	−0.0002*	−0.0002***
	(0.0001)	(0.00005)	(0.0001)	(0.0001)	(0.0001)	(0.00005)
Constant	−60.133***	6.354***	24.707***	58.494***	−89.511***	−200.217***
	(0.00002)	(0.0001)	(0.00001)	(0.00002)	(0.00000)	(0.00002)
N	29,764		20,545		32,817	
Akaike Inf. Crit.	50,431.610		39,866.720		51,280.840	

	Job-creation prog. spend less	Job-creation prog. spend more	Justice spend less	Justice spend more	Regions spend less	Regions spend more
Age	0.056***	0.003	0.026***	0.009*	0.017*	0.016***
	(0.009)	(0.006)	(0.006)	(0.005)	(0.009)	(0.005)
Age, sq.	−0.0004***	−0.0001	−0.0003***	−0.0001	−0.0002**	−0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	−4.295***	74.159***	65.595***	−53.141***	−11.593***	9.628***
	(0.00001)	(0.00002)	(0.00004)	(0.0001)	(0.00001)	(0.00002)
N	21,848		22,442		21,161	
Akaike Inf. Crit.	35,329.240		44,684.340		36,712.960	

Note:

*p<0.1; **p<0.05; ***p<0.01
Log odds shown with standard errors in parentheses.
Controls include income, gender, education level,
employment and marital status, religiosity and vote intention.
Models include linear term for the survey year and a
categorical generation variable.

Table B.14. Effect of age on support government spending, multinomial models, issues 7-12

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	Dependent variable:					
	Serv. for the poor	Serv. for the poor	Transportation	Transportation	Welfare	Welfare
	spend less	spend more	spend less	spend more	spend less	spend more
Age	−0.006	0.011**	0.007	0.055***	−0.008*	0.038***
	(0.009)	(0.005)	(0.007)	(0.006)	(0.005)	(0.005)
Age, sq.	0.00002	−0.0001**	−0.0001	−0.0004***	−0.00003	−0.0004***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	−6.580***	29.153***	−20.576***	−107.952***	24.134***	13.872***
	(0.00001)	(0.00002)	(0.00001)	(0.00002)	(0.00002)	(0.00003)
N	20,429	20,429	21,049	21,049	26,558	26,558
Akaike Inf. Crit.	36,654.000	36,654.000	37,013.300	37,013.300	54,496.950	54,496.950

Note: *p<0.1; **p<0.05; ***p<0.01

Log odds shown with standard errors in parentheses.

Controls include income, gender, education level,

employment and marital status, religiosity and vote intention.

Models include linear term for the survey year and a

categorical generation variable.

Table B.15. Effect of age on support government spending, multinomial models, issues 13-15

B.3.4. Removing the 2019 respondents

The 2019 Canadian Election Study includes a larger number of respondents when compared to other surveys taken individually — 8,956 of the 52,917 respondents who gave an answer on the "education" question come from the 2019 CES. To make sure results are not sensitive to the inclusion of this survey, I reproduced all analyses presented in the main text without the subset of 2019 respondents.

— In Tables B.16 and B.17, the dependent variables are support for more (=1, otherwise 0) or the same amount of (=1, otherwise 0) public spending on each of the 15 policies.

— The main independent variable is age (linear and squared).

— Models control for generations (reference category = 1900-1928), survey year, income, gender, education level, employment and marital status, religiosity and vote intention.

— Models are ordinary least squares regressions.

The only result sensitive to the removal of the 2019 respondents is the effect of age on support for more spending on defence. When removing these respondents, the result becomes non-statistically significant and changes sign. I highlighted this limitation in the main text. Other results are substantively the same.

	Arts	Childcare	Defence	Education	Elderly serv.
Age	0.005***	−0.002	−0.0001	−0.006***	0.012***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)
Age, sq.	−0.00004**	−0.00000	0.00002*	0.00003*	−0.0001***
	(0.00002)	(0.00002)	(0.00001)	(0.00001)	(0.00002)
Constant	−5.557***	−6.477***	−10.632***	−16.836***	0.415
	(2.014)	(1.994)	(1.291)	(1.409)	(1.951)
Observations	16,249	21,170	26,157	27,112	21,841
R^2	0.041	0.052	0.044	0.042	0.042
Adjusted R^2	0.040	0.051	0.043	0.041	0.042

	Energy	Environment	Farmers	Healthcare	Job-creation
Age	0.003	−0.004***	−0.003	0.002*	−0.002
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Age, sq.	−0.00003	0.00004***	0.00003	−0.00004***	0.00000
	(0.00002)	(0.00002)	(0.00002)	(0.00001)	(0.00002)
Constant	2.078	13.245***	12.962***	−39.397***	16.580***
	(2.056)	(1.498)	(2.028)	(1.310)	(1.870)
Observations	19,095	24,978	20,545	32,817	21,848
R^2	0.009	0.039	0.027	0.110	0.064
Adjusted R^2	0.008	0.038	0.026	0.109	0.063

	Justice	Regions	Serv. poor	Trans.	Welfare
Age	0.003*	0.003	0.003	0.008***	0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Age, sq.	−0.00004**	−0.00004**	−0.00003*	−0.0001***	−0.0001***
	(0.00002)	(0.00002)	(0.00002)	(0.00002)	(0.00001)
Constant	−10.656***	3.157	7.562***	−18.784***	1.076
	(1.688)	(1.983)	(2.059)	(1.733)	(1.252)
Observations	17,736	21,161	20,429	21,049	26,558
R^2	0.017	0.034	0.057	0.030	0.080
Adjusted R^2	0.016	0.033	0.056	0.029	0.079

Note: *p<0.1; **p<0.05; ***p<0.01
OLS coefficients with standard errors in parentheses.
Controls include income, gender, education level,
employment and marital status, religiosity and vote intention.
Models include linear term for the survey year and a
categorical generation variable.

Table B.16. Effect of age on support for more government spending, OLS models without the 2019 CES

	Arts	Childcare	Defence	Education	Elderly serv.
Age	−0.007***	−0.005***	0.001	0.003**	−0.011***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Age, sq.	0.0001***	0.0001***	−0.00002	−0.00001	0.0001***
	(0.00002)	(0.00002)	(0.00002)	(0.00001)	(0.00002)
Constant	1.799	−3.870**	4.710***	15.227***	0.925
	(2.650)	(1.957)	(1.492)	(1.374)	(1.936)
Observations	16,249	21,170	26,157	27,112	21,841
R^2	0.018	0.016	0.012	0.031	0.033
Adjusted R^2	0.017	0.015	0.011	0.030	0.032

	Energy	Environment	Farmers	Healthcare	Job-creation
Age	−0.007***	0.002	−0.0002	−0.003**	−0.001
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Age, sq.	0.0001***	−0.00001	−0.00001	0.00004***	0.00002
	(0.00002)	(0.00002)	(0.00002)	(0.00001)	(0.00002)
Constant	0.624	−7.688***	−12.017***	38.942***	−11.842***
	(2.166)	(1.473)	(2.047)	(1.303)	(1.765)
Observations	19,095	24,978	20,545	32,817	21,848
R^2	0.012	0.024	0.012	0.089	0.024
Adjusted R^2	0.011	0.023	0.011	0.089	0.023

	Justice	Regions	Serv. poor	Trans.	Welfare
Age	−0.006***	−0.003*	−0.002	−0.008***	−0.003*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Age, sq.	0.0001***	0.00005**	0.00003	0.0001***	0.00004***
	(0.00002)	(0.00002)	(0.00002)	(0.00002)	(0.00002)
Constant	4.580**	−1.088	−5.253***	18.313***	−3.739**
	(1.942)	(1.904)	(2.039)	(1.965)	(1.473)
Observations	17,736	21,161	20,429	21,049	26,558
R^2	0.010	0.016	0.028	0.024	0.012
Adjusted R^2	0.009	0.016	0.027	0.023	0.011

Note: *p<0.1; **p<0.05; ***p<0.01
OLS coefficients with standard errors in parentheses.
Controls include income, gender, education level,
employment and marital status, religiosity and vote intention.
Models include linear term for the survey year and a
categorical generation variable.

Table B.17. Effect of age on support for the same amount of government spending, OLS models without the 2019 CES

B.3.5. Seemingly unrelated regressions

Table B.18 presents results from seemingly unrelated regression models used to estimate support for more public spending (in each of the 15 areas).

— The dependent variables are support for more public spending on all programs.

— The main independent variable is age (linear and squared). Models control for generations (reference category = 1900-1928), survey year, income, gender, education level, employment and marital status, religiosity and vote intention.

Results are substantively the same as those presented in the main text, and the correlation matrix of residuals (Table B.19) reveals that equations are weakly correlated (no more than 39) with one another.

Table B.18. Support for more public spending, SUR

	SUR
Education: Intercept	−11.235***
	(1.112)
Education: Age	−0.006***
	(0.001)
Education: Age, sq.	0.000*
	(0.000)
Transportation: Intercept	−22.337***
	(1.272)
Transportation: Age	0.006***
	(0.001)
Transportation: Age, sq.	−0.000***
	(0.000)
Defence: Intercept	−4.003***
	(0.963)
Defence: Age	0.002*
	(0.001)
Defence: Age, sq.	0.000
	(0.000)
Elderly serv.: Intercept	−2.217
	(1.429)
Elderly serv.: Age	0.012***
	(0.001)
Elderly serv.: Age, sq.	−0.000***
	(0.000)
Arts: Intercept	−5.768***
	(1.582)
Arts: Age	0.002*
	(0.001)
Arts: Age, sq.	−0.000
	(0.000)
Healthcare: Intercept	−40.818***
	(1.197)
Healthcare: Age	0.003*
	(0.001)
Healthcare: Age, sq.	−0.000***
	(0.000)
Environment: Intercept	2.693*
	(1.170)
Environment: Age	−0.006***
	(0.001)
Environment: Age, sq.	0.000***
	(0.000)
Justice: Intercept	−14.010***

Continued on next page

	SUR
	(1.199)
Justice: Age	−0.000
	(0.001)
Justice: Age, sq.	0.000
	(0.000)
Welfare: Intercept	−0.394
	(1.111)
Welfare: Age	0.008***
	(0.001)
Welfare: Age, sq.	−0.000***
	(0.000)
Childcare: Intercept	−7.677***
	(1.496)
Childcare: Age	−0.002
	(0.001)
Childcare: Age, sq.	−0.000
	(0.000)
Energy: Intercept	−4.967**
	(1.544)
Energy: Age	0.002
	(0.001)
Energy: Age, sq.	−0.000
	(0.000)
Regions: Intercept	−0.675
	(1.501)
Regions: Age	0.003*
	(0.001)
Regions: Age, sq.	−0.000**
	(0.000)
Farmers: Intercept	8.365***
	(1.518)
Farmers: Age	−0.003*
	(0.001)
Farmers: Age, sq.	0.000
	(0.000)
Job-creation: Intercept	15.936***
	(1.441)
Job-creation: Age	−0.002
	(0.001)
Job-creation: Age, sq.	−0.000
	(0.000)
Social. serv. poor: Intercept	2.611
	(1.485)
Social. serv. poor: Age	0.004***

Table B.18 – *Continued from previous page*

	SUR
	(0.001)
Social. serv. poor: Age, sq.	-0.000^{***}
	(0.000)

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

	Educ.	Healthc.	Envir.	Def.	Just.	Welf.	Child.	Eld. s.	Ener.	Arts	Regions	Transp.	Farm.	Job-creat.	S. poor
Educ.	1.00														
Healthc.	0.27	1.00													
Envir.	0.16	0.09	1.00												
Def.	0.09	0.07	0.11	1.00											
Just.	0.14	0.15	0.14	0.18	1.00										
Welf.	0.14	0.20	0.14	0.09	0.11	1.00									
Child.	0.24	0.19	0.18	0.07	0.14	0.22	1.00								
Eld. s.	0.20	0.37	0.16	0.10	0.15	0.24	0.27	1.00							
Ener.	0.15	0.09	0.28	0.14	0.14	0.06	0.14	0.13	1.00						
Arts	0.15	0.09	0.19	0.07	0.15	0.13	0.18	0.14	0.13	1.00					
Regions	0.17	0.20	0.19	0.06	0.14	0.18	0.21	0.26	0.14	0.13	1.00				
Transp.	0.15	0.12	0.16	0.13	0.19	0.14	0.14	0.14	0.18	0.21	0.14	1.00			
Farm.	0.18	0.15	0.16	0.13	0.17	0.12	0.19	0.21	0.15	0.15	0.23	0.18	1.00		
Job-creat.	0.19	0.18	0.11	0.03	0.13	0.12	0.19	0.20	0.11	0.08	0.28	0.10	0.19	1.00	
S. poor	0.19	0.28	0.18	0.07	0.14	0.37	0.25	0.34	0.10	0.14	0.39	0.16	0.19	0.24	1.00

Table B.19. Correlation matrix of residuals, SUR

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B.3.6. Differentiated effects based on gender

One may wonder whether the effect of age on support for government spending is the same for men and women. In fact, needs may differ between the two genders across the life cycle (Shorrocks and Grasso, 2020). Moreover, women tend to live longer lives, which may affect their views on where the government should spend public monies.

Tables B.20 to B.23 report estimates for the same regression models as in the main text, but for each gender. This allows us to analyse the differentiated impact of age on support for government spending between men and women (gender is binary coded).

— I opted for two regressions instead of adding an interaction term between gender and age, because it can be difficult to interpret interactions that involved squared terms (age is included as a linear and squared term in the analysis).

— The dependent variables are support for more (=1, otherwise 0) or the same amount of (=1, otherwise 0) public spending on each of the 15 policies.

— The main independent variable is age (linear and squared).

— Models control for generations (reference category = 1900-1928), survey year, income, gender, education level, employment and marital status, religiosity and vote intention.

— Models are ordinary least squares regressions.

Effects are similar across genders. If we look at policies for which we found the most important effects in the main text (education, defence, transportation, elderly services, the arts), we find that men and women follow similar life cycle trends. The strength of effects differs a little bit, however.

— Education: Decreasing support for more spending is slightly stronger among men than women.

— Defence: Increasing support for more spending is slightly stronger among men than women.

— Transportation: Increasing support for more spending is slightly stronger among men than women.

— Elderly services: The slope of life cycle trend in support for more spending is slightly more positive among men (the linear term is .01 point larger), but the curvilinear term is the same for both men and women.

— The arts: Decreasing support for more spending is slightly stronger among men than women.

	Arts	Childcare	Defence	Education	Elderly serv.
Age	0.003	−0.003	0.003*	−0.008***	0.013***
	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)
Age, sq.	−0.00004	0.00000	−0.00001	0.00005**	−0.0001***
	(0.00003)	(0.00003)	(0.00002)	(0.00002)	(0.00003)
Constant	−9.186***	−8.966***	−4.579***	−9.717***	4.106
	(2.871)	(2.971)	(1.644)	(1.778)	(2.922)
Observations	7,388	9,555	14,156	14,304	9,966
R^2	0.042	0.046	0.045	0.038	0.041
Adjusted R^2	0.040	0.044	0.043	0.037	0.040

	Energy	Environment	Farmers	Healthcare	Job-creation
Age	−0.0005	−0.006***	−0.008***	0.003	−0.006**
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Age, sq.	−0.00002	0.0001***	0.0001**	−0.00003	0.00004
	(0.00003)	(0.00002)	(0.00003)	(0.00002)	(0.00003)
Constant	−2.432	6.528***	9.480***	−39.266***	12.556***
	(3.053)	(1.863)	(2.926)	(1.905)	(2.804)
Observations	9,072	13,281	9,613	15,511	10,046
R^2	0.005	0.041	0.032	0.109	0.069
Adjusted R^2	0.003	0.040	0.030	0.108	0.068

	Justice	Regions	Serv. poor	Trans.	Welfare
Age	0.001	0.002	0.003	0.009***	0.008***
	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)
Age, sq.	−0.00001	−0.00003	−0.00004	−0.0001**	−0.0001***
	(0.00002)	(0.00003)	(0.00003)	(0.00002)	(0.00002)
Constant	−16.425***	3.657	9.413***	−24.551***	0.969
	(1.989)	(2.949)	(3.061)	(2.604)	(1.750)
Observations	9,812	9,770	9,337	9,785	12,474
R^2	0.041	0.039	0.058	0.034	0.082
Adjusted R^2	0.039	0.037	0.056	0.032	0.080

Note: *p<0.1; **p<0.05; ***p<0.01
OLS coefficients with standard errors in parentheses.
Controls include income, education level, employment and marital status,
religiosity and vote intention. Models include linear term for
the survey year and a categorical generation variable.

Table B.20. Effect of age on support for more government spending, OLS models, men only

	Arts	Childcare	Defence	Education	Elderly serv.
Age	−0.006*	−0.007**	−0.003	0.004**	−0.011***
	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)
Age, sq.	0.0001*	0.0001**	0.00002	−0.00002	0.0001***
	(0.00003)	(0.00003)	(0.00002)	(0.00002)	(0.00003)
Constant	5.386	−3.900	−2.974	7.282***	−0.191
	(3.840)	(2.963)	(1.832)	(1.731)	(2.911)
Observations	7,388	9,555	14,156	14,304	9,966
R²	0.020	0.014	0.007	0.026	0.031
Adjusted R²	0.017	0.012	0.006	0.024	0.029
	Energy	Environment	Farmers	Healthcare	Job-creation
Age	−0.004	0.003	0.003	−0.003	0.0005
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Age, sq.	0.00005	−0.00002	−0.00004	0.00004*	−0.00001
	(0.00003)	(0.00002)	(0.00003)	(0.00002)	(0.00002)
Constant	4.797	−2.093	−10.800***	38.982***	−8.141***
	(3.172)	(1.815)	(2.989)	(1.911)	(2.635)
Observations	9,072	13,281	9,613	15,511	10,046
R²	0.008	0.023	0.014	0.084	0.021
Adjusted R²	0.006	0.021	0.013	0.083	0.019
	Justice	Regions	Serv. poor	Trans.	Welfare
Age	−0.006**	−0.003	−0.002	−0.010***	−0.003
	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)
Age, sq.	0.0001**	0.00003	0.00003	0.0001**	0.00003
	(0.00002)	(0.00003)	(0.00003)	(0.00003)	(0.00002)
Constant	4.446*	−2.001	−7.157**	20.083***	−4.013*
	(2.279)	(2.843)	(3.069)	(2.940)	(2.133)
Observations	9,812	9,770	9,337	9,785	12,474
R²	0.010	0.016	0.027	0.023	0.013
Adjusted R²	0.008	0.014	0.025	0.022	0.011

Note: *p<0.1; **p<0.05; ***p<0.01
OLS coefficients with standard errors in parentheses.
Controls include income, education level, employment and marital status,
religiosity and vote intention. Models include linear term for
the survey year and a categorical generation variable.

Table B.21. Effect of age on support for the same amount of government spending, OLS models, men only

	Arts	Childcare	Defence	Education	Elderly serv.
Age	0.006**	−0.001	0.002	−0.005***	0.012***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Age, sq.	−0.00005**	−0.00001	0.00001	0.00002	−0.0001***
	(0.00002)	(0.00003)	(0.00001)	(0.00002)	(0.00002)
Constant	−2.281	−4.548*	−2.673*	−10.819***	−2.737
	(2.831)	(2.698)	(1.414)	(1.537)	(2.627)
Observations	8,861	11,615	16,622	17,617	11,875
R^2	0.042	0.046	0.038	0.038	0.036
Adjusted R^2	0.040	0.044	0.037	0.037	0.034

	Energy	Environment	Farmers	Healthcare	Job-creation
Age	0.006**	−0.005***	0.001	0.003	0.001
	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)
Age, sq.	−0.00004	0.0001***	0.00000	−0.00005***	−0.00002
	(0.00003)	(0.00002)	(0.00003)	(0.00002)	(0.00002)
Constant	5.938**	1.140	15.599***	−41.896***	19.896***
	(2.787)	(1.641)	(2.819)	(1.793)	(2.514)
Observations	10,023	16,483	10,932	17,306	11,802
R^2	0.008	0.056	0.018	0.094	0.055
Adjusted R^2	0.006	0.054	0.017	0.093	0.054

	Justice	Regions	Serv. poor	Trans.	Welfare
Age	−0.001	0.004	0.002	0.007***	0.008***
	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)
Age, sq.	0.00002	−0.00005*	−0.00003	−0.00004**	−0.0001***
	(0.00002)	(0.00003)	(0.00003)	(0.00002)	(0.00002)
Constant	−12.853***	2.477	5.536**	−13.403***	−0.279
	(1.810)	(2.687)	(2.793)	(2.323)	(1.774)
Observations	12,630	11,391	11,092	11,264	14,084
R^2	0.040	0.027	0.049	0.026	0.074
Adjusted R^2	0.039	0.026	0.048	0.025	0.073

Note: *p<0.1; **p<0.05; ***p<0.01
OLS coefficients with standard errors in parentheses.
Controls include income, education level, employment and marital status,
religiosity and vote intention. Models include linear term for
the survey year and a categorical generation variable.

Table B.22. Effect of age on support for more government spending, OLS models, women only

	Arts	Childcare	Defence	Education	Elderly serv.
Age	−0.009***	−0.005*	0.0005	0.003**	−0.011***
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Age, sq.	0.0001**	0.0001**	−0.00001	−0.00000	0.0001***
	(0.00003)	(0.00002)	(0.00002)	(0.00002)	(0.00002)
Constant	−1.865	−3.830	−4.544***	10.524***	1.939
	(3.678)	(2.614)	(1.699)	(1.498)	(2.596)
Observations	8,861	11,615	16,622	17,617	11,875
R^2	0.016	0.017	0.012	0.031	0.030
Adjusted R^2	0.014	0.015	0.011	0.030	0.029

	Energy	Environment	Farmers	Healthcare	Job-creation
Age	−0.008***	0.003	−0.003	−0.003	−0.003
	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)
Age, sq.	0.0001**	−0.00003	0.00002	0.00005***	0.00003
	(0.00003)	(0.00002)	(0.00003)	(0.00002)	(0.00002)
Constant	−2.739	4.080**	−12.757***	40.878***	−14.857***
	(2.976)	(1.610)	(2.819)	(1.768)	(2.381)
Observations	10,023	16,483	10,932	17,306	11,802
R^2	0.009	0.038	0.011	0.086	0.029
Adjusted R^2	0.007	0.037	0.009	0.085	0.028

	Justice	Regions	Serv. poor	Trans.	Welfare
Age	−0.002	−0.004*	−0.002	−0.006**	−0.003
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
Age, sq.	0.00001	0.0001**	0.00002	0.00004	0.0001**
	(0.00002)	(0.00002)	(0.00003)	(0.00003)	(0.00002)
Constant	2.986	−0.035	−3.083	16.490***	−2.606
	(1.993)	(2.572)	(2.735)	(2.647)	(2.025)
Observations	12,630	11,391	11,092	11,264	14,084
R^2	0.013	0.017	0.027	0.014	0.013
Adjusted R^2	0.011	0.015	0.025	0.012	0.011

Note: *p<0.1; **p<0.05; ***p<0.01
OLS coefficients with standard errors in parentheses.
Controls include income, education level, employment and marital status,
religiosity and vote intention. Models include linear term for
the survey year and a categorical generation variable.

Table B.23. Effect of age on support for the same amount of government spending, OLS models, women only

Chapter C

Appendix to the second article

This is the supplementary material for chapter 4.

C.1. Information on the data

C.1.1. Polling station data

To perform the analyses of vote choice presented in this paper, I relied on an original dataset created from the three following sources:

(1) A dataset reporting the types of polling locations. Fourteen types of locations are possible: apartment building, Band office, church hall, commercial site, community centre, educational, fire hall, municipal or township hall, post office, private home, Royal Canadian Legion, recreation centre, seniors' residences and others. This dataset includes the **names of locations and their addresses**. [File accessed through Freedom of Information request number A-2020-00015]

(2) A dataset including all polling stations identified by **number**. The type of polling station is identified:

— ordinary polling stations (same-day voting in an ordinary station),

— advance polling stations (prior to election day in an advance polling station),

— mobile polling stations (stations that visit non-mobile electors in their place of residence — usually hospitals and long-term care homes, same-day voting)

This dataset also includes information on where the polling stations are located (**name of the location and address**), which I could use to match these data with dataset (1). [File accessed through Freedom of Information request number A-2020-00015]

(3) A dataset including all polling stations (identified by their **number**) with information on the vote breakdown and turnout in each station. Using the polling stations' number, I could merge this last dataset with dataset (2). [File accessed through the Elections Canada website]

The names and addresses in the two first datasets were not always spelled the same way. For example, an address spelled *385 rue Principale, Suite 1* in one file could be spelled *1-385 rue Principale* in the second. Directly matching the two datasets yielded a success rate of 60%. In other words, the names and addresses of 60% of locations were identical in the two datasets. To improve this rate (i.e. increase the number of valid observations), I matched observations for which the spelling was *similar yet not identical*. To do so, I placed a threshold at a cosine distance of .05 (cosine ranges from -1 to 1). To calculate cosine distance, I first transformed strings into vectors based on character co-occurrences. Then, for vectors x and y, I calculated cosine distance using the following formula (for more information, see the documentation for the *stringdist* function in R):

$$1 - x \cdot y/(|x|\,|y|)$$

Vectors with a cosine distance of .05 or less were considered similar-enough to be matched together. Note that increasing the threshold increases tolerance to non-similarity, thus increasing the risk of introducing mistakes. A .05 threshold allowed me to improved matching by 15 percentage points, to 75%.

C.1.2. Semi-directed interview schedule

Five interviews with campaign workers were conducted between April and June 2021. They were conducted in French with French-speaking respondents and in English with English-speaking respondents. An Ethics certificate was obtained from my institution before conducting the interviews. Participants were sent the final manuscript and allowed to provide comments before submission to a journal.

The following interview schedule was used to conduct the interviews. This schedule is indicative; some questions changed depending on the interviewee.

... Introductions...

— What was your role during the 2019 electoral campaign?

— In which district were you working?

— Did you have any knowledge of events organized by your party in one or more seniors' residences during the 2019 campaign? (Did you participate in the organization of such events?)

    — If so, what type of events was that?

        — Did your party go back more than one time to the same residence? / Did you visit many residences?

        — Are you under the impression that voters who live in seniors' residences are receptive to your efforts? Do many residents normally participate in your events?

        — Can individual candidates decide to organize events in seniors' residences, or it is decided by the party?

        — What drives the decision to visit residences? Is it because seniors are a fertile ground for your party? Or is it the opposite, i.e. seniors are not used to voting for your party so you want to convince them?

    — If not, why? [Is it because voters living in seniors' residences are not a targeted population for your party in your district? Is it because you are not welcome in residences? Is it because you are lacking time or resources?]

— Were you involved in another campaign, like the 2015 campaign?

— If so, were mobilization efforts in seniors' residences the same, or were they different in 2015?

— Are you thinking of working for the party in the next election? If so, how do you think your party will adapt its strategy efforts to each out senior voters in the context of the pandemic?

... Conclusions and information about next steps...

C.1.3. Survey with personnel of seniors' residences and nursing homes

The survey with personnel of seniors' residences was sent by email to seniors' residences, nursing homes or long-term care homes whose email address could be retrieved on the internet. To build a list of SRs across Canada, I relied on seniors' housing directories found on the website of provincial governments or provincial seniors' associations. When possible, the email addresses were collected using webscraping, otherwise manual collection was performed.

The collection yielded a total of 2,529 emails for the provinces of Newfoundland and Labrador (36), Prince Edward Island (24), New Brunswick (36), Quebec (1443), Ontario (561), Manitoba (Winnipeg only, 28), Alberta (174) and British Columbia (220). Even though it is quite extensive, this list is not comprehensive because the email addresses of some smaller residences could not be found — phone was the only way of reaching them. Some larger SRs belong to housing corporations for which there is a single email for several residences. These were excluded from the list because emailing them would require a staff member of the corporation to dispatch the survey to individual residences. In some provinces, I was able to find a directory of private residences only, in others, a directory of long-term care homes only, and in others, both. Finally, the list of emails does not include Saskatchewan and Nova Scotia. Both provinces required manual search of individual email addresses (i.e., emails were not included in a centralized directory). Since I already had collected a large number of emails from the two other Prairie provinces (Manitoba and Alberta), I decided to leave out Saskatchewan because of the time-intensive nature of this collection. The same

reason justifies why I left out Nova Scotia — the list already contains a large sample of residences from all other provinces of the Atlantic.

Seniors' residences, nursing homes and/or long-term care homes were identified using the following sources:

— Newfoundland and Labrador: The list of personal care homes from the government of Newfoundland and Labrador allows us to manually search the contact information for the province's personal care homes. "Personal Care Homes are private, for profit residential settings providing care and accommodations primarily for seniors and adults requiring assistance with activities of daily living": `https://www.gov.nl.ca/hcs/seniors/residentialoptions-pch/`.

— Prince Edward Island: The directory of the PEI Association for Community Long Term Care Homes contains the contact information for the province's long-term care homes: `https://peicommunitycare.ca/directory/`

— New Brunswick: The directory of licensed Nursing Homes from the government of New Brunswick allows us to manually search the contact information for the province's nursing homes: `https://www2.gnb.ca/content/gnb/en/departments/social_development/nursinghomes.html`.

— Quebec: The *Registre des résidences privées pour aînés* contains information on private seniors' residences in Quebec, including their contact information: `http://k10.pub.msss.rtss.qc.ca/K10accueil.asp`. I could not identify any centralized registry of public seniors' residences in Quebec. To contact individual long-term care homes (*CHSLD*) in this province, one needs to go through regional health authorities. Because of this setting, long-term care homes were not contacted in Quebec.

— Ontario:

— The Retirement Home Database includes information on all retirement homes in Ontario: `https://www.rhra.ca/en/retirement-home-database/`

— The Ontario's search engine for long-term care homes ("also called nursing homes, municipal homes for the aged, or charitable homes") contains contact information

on these facilities: `https://www.health.gov.on.ca/en/public/programs/ltc/home-finder.aspx`

— Manitoba (Winnipeg only): The Winnipeg housing directory from the A&O Support Services for Older Adults contains contact information for seniors' homes. `https://www.aosupportservices.ca/our-three-pillars/counselling-services/housing/`. Outside Winnipeg, seniors' housing information is centralized by Regional Health Authority, which makes it difficult to access individual email addresses for every nursing home. The Long Term and Continuing Care Association of Manitoba provides lists of seniors' residences, assisted and supportive living options and personal care homes in the province, but manual collection of emails is required.

— Alberta: The seniors' housing directory of the Alberta Seniors and Community Housing Association contains contact information for seniors' homes. "All listings on the Alberta Seniors Housing Directory are owned or operated by Albertan seniors housing organizations operating congregate seniors housing (defined as four or more units)": `https://housingdirectory.ascha.com/`

— British Columbia: The seniors' housing directory of British Columbia, maintained by the Seniors Services Society of BC, contains contact information for seniors' homes. "Housing providers are required to complete a form that will include all the information listed in the directory. The type of housing is determined based on the information provided": `https://www.seniorsservicessociety.ca/housing-finder/`

The survey was designed to take approximately 5 minutes to complete and was made available in French and English. An Ethics certificate was obtained from my institution before conducting the survey. It includes the following 14 questions.

(1) Did one or more political party organize events in the residence or nursing for which you work during the last federal electoral campaign (in 2019)? Events can include meals organize for residents, Q and A sessions, conferences, social activities or any other activity. [Only one possible answer]

   (a) Yes

(b) No

(c) Don't know / Prefer not to answer

(2) If YES to Q1: Which party or parties came to your residence? [More than one possible answer]

(a) The Conservative party

(b) The Liberal party

(c) The NDP

(d) The Green party

(e) Bloc Québécois

(f) Another party

(g) Don't know

(h) Prefer not to answer

(3) If YES to Q1: What type of events did the party or parties organize? [More than one possible answer]

(a) A meal with the party or political candidate

(b) A conference

(c) A Q and A session

(d) Another social activity, for e.g., a game night, a dancing night, etc.

(e) Another type of activity : [elaborate]

(f) Don't know / Prefer not to answer

(4) If YES to Q1: Did people who live in your residence or nursing home get involved in the organization of activities with political parties or candidates? [Only one possible answer]

(a) Yes, residents did get involved in the organization of activities with political parties and candidates.

(b) No, residents did not get involved in the organization of such activities.

(c) Don't know / Prefer not to answer

(5) How were partisan activities managed by your residence or nursing home before the pandemic? [Only one possible answer]

(a) Political parties and candidates needed to ask for an authorization before coming to the residence.

(b) Political parties and candidates could come by the residence and ask for an authorization once on site.

(c) Political parties and candidates were never admitted to the residence or nursing home.

(d) Don't know / Prefer not to answer

(6) To the best of your recollection, was there a polling station in your residence or nursing home on the day of the election in 2019? [Only one possible answer]

(a) Yes, a polling station was located in my residence/nursing home and residents could vote directly at this polling station.

(b) No, there was no polling station on site. Residents could not vote in the residence/nursing home.

(c) No, there was no polling station on site, but employees from Elections Canada came by during the day to help residents with limited mobility to vote.

(d) Don't know / Prefer not to answer

(7) If YES to Q6: Did one or more political candidate come to your residence or nursing home on the day of the vote in 2019? [Only one possible answer]

(a) Yes

(b) No

(c) Don't know / Prefer not to answer

(8) If YES to Q7: Which party or parties came to your residence? [More than one possible answer]

(a) The Conservative party

(b) The Liberal party

(c) The NDP

(d) The Green party

(e) Bloc Québécois

(f) Another party

(g) Don't know

(h) Prefer not to answer

(9) In which province is the residence or nursing home located? [List of 10 provinces]

(10) What are the 3 first characters of the postal code of your residence or nursing home? This question aims to identify the electoral district where the residence is located. [Open answer; question not mandatory]

(11) What is the approximate number of residents in your residences and nursing home? [Open answer]

(12) What type of residence or nursing home do you work for? [Only one possible answer]

(a) Independent living residence

(b) Assisted/Supportive living residence

(c) Independent living and Assisted/Supportive living residence

(d) A long-term care home

(e) Other : [specify]

(f) Prefer not to answer

(13) Since when do you work in this residence/nursing home? [Only one possible answer]

(a) Since less than 1 year

(b) Since 1-2 years

(c) Since 3-4 years

(d) Since 5 years or more

(e) Prefer not to answer

(14) What is your position in the residence or nursing home? [Only one possible answer]

(a) I hold a management position

(b) I am a member of the administrative staff (for e.g., accounting, welcome desk)

(c) I am an activities coordinator.

(d) I am a member of the executive board

(e) I hold another type of position: [specify]

(f) Prefer not to answer

The survey was conducted between 7 April and 7 June 2021; weekly reminders were sent to increase participation. A total of 2,311 residences could be reached. The remaining 217 residences were dropped from the sample, either because they were not yet open in 2019, or because "recipients email system refused to accept a connection from my email system" (see Table C.1).

	Number of emails collected	Number of emails that bounced	% of emails that bounced	Real sample size	Number of respondents	Response rate
MA	28	3	10.71	25	3	12.00
NL	42	3	7.14	39	11	28.21
NB	36	1	2.78	35	14	40.00
PEI	24	6	25	18	3	16.67
ON	561	80	14.26	481	89	18.50
QC	1443	45	3.12	1398	535	38.27
AB	174	33	18.97	141	29	20.57
BC	220	46	20.91	174	25	14.37
Others					3	
Total	**2528**	**217**	**8.58**	**2311**	**709**	**30.68**

Table C.1. Number of emails collected, real sample size and response rate

C.2. Descriptive statistics

Table C.2 reports the share of polling stations located in seniors' residences, by province. These proportions were calculated using Elections Canada data on polling locations [File accessed through Freedom of Information request number A-2020-00015].

	2019	2015	2011	2008	2006	2004
N.L.	0.41	0.50	1.04	0.73	0.84	0.80
PEI	2.40	4.01	4.33	5.84	6.50	8.41
N.S.	2.91	3.46	4.18	4.67	4.62	5.56
N.B.	2.34	2.20	1.61	1.72	1.79	2.89
Qc	2.05	2.45	2.57	2.70	3.02	3.38
Ont.	2.11	2.44	3.00	3.13	3.51	3.73
Man.	4.20	4.18	4.29	4.09	4.88	5.36
Sask.	2.61	2.87	2.11	2.26	2.45	2.61
Alta.	1.13	1.33	1.50	1.24	1.36	1.63
B.C.	0.46	1.09	0.98	0.96	1.20	1.34
Y.T.	0.00	0.00	0.00	0.00	0.00	0.00
Nvt.	0.00	0.00	0.00	NA	NA	NA

Table C.2. Share of polling stations in seniors' residences, all provinces, 2004-2019

C.3. Individual-level party support

Figure C.1 presents data on reported vote choice for the four main federal political parties in Canada, obtained from the Canadian Election Studies (CES).[1] The combined (phone + online) file was used for 2015 while the online file was used for 2019.

The figure shows that support for the Conservatives has been higher among seniors (defined as 65+, 70+ or 75+ years old people) than other Canadians in the last four general elections. In contrast, support for the NDP has always been lower among older people, except in 2008 when levels of NDP support were equal among 75+ years old Canadians and all other Canadians. Support for the Liberals has been higher among seniors than younger Canadians in 2008, 2011 and 2019, but lower in 2015. When calculating these frequencies, I applied survey weights provided in the dataset.

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1. Data available on the Canadian Opinion Research Archive: `https://www.queensu.ca/cora/our-data/data-holdings`

Figure C.1. Reported party support, 2008-2019

To make sure that rates of reported vote choice in the Canadian Election Studies presented in Figure C.1 are consistent with other surveys, I verified these age trends in party support using the Local Parliament Project (LPP) 2015, "a novel dataset from the 2015 Canadian federal election. It is much larger than typical election studies, including 37,380 respondents in the campaign period survey—on average 692 respondents per day—and 11,699 respondents in the post-election survey." The data is available on the Harvard Dataverse: `https: //dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/DACHKP`

With the LPP data, we should be careful when looking at age differences in 2011 vote choice, because the 2011 vote was also asked following the 2015 election. There are higher chances that respondents did not recall and/or answered mistakenly.

Looking at Figure C.2, we see that the party support differences between seniors and other Canadians are consistent with the CES data, but their magnitude varies. Support for the Conservative party was higher among seniors than other age groups in 2015 and 2011 (larger effect in 2015, smaller in 2011). Liberal support was lower among seniors in 2015 (larger effect than in the CES) but approximately the same in 2011 (in the CES, the positive difference is bigger). NDP support was lower among seniors in both years (just like in the CES).
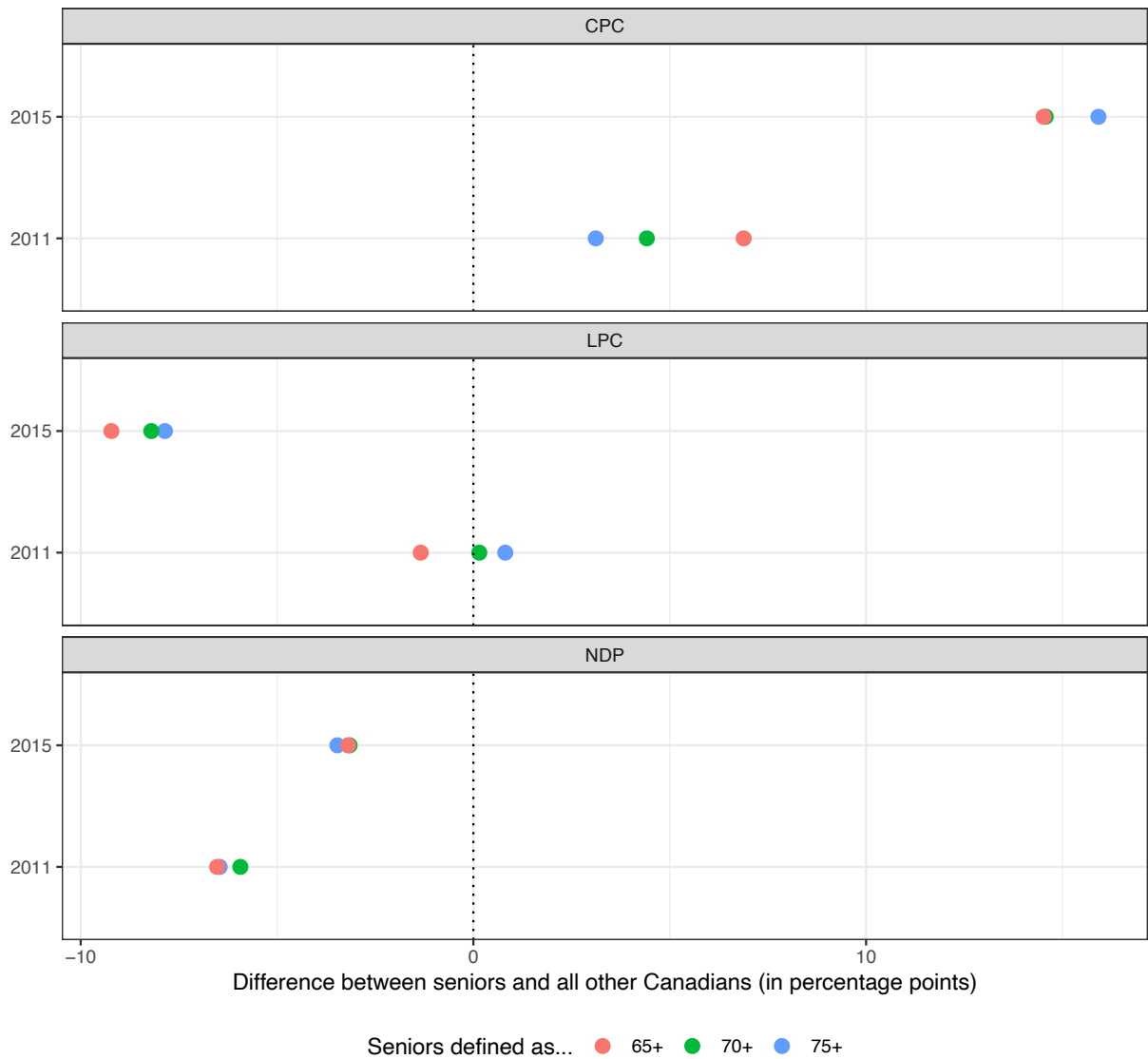
Figure C.2. Reported party support, 2011 and 2015, LPP data

Finally, to make sure that the descriptive statistics obtained from the CES data are not biased by individual-level predictors (even though frequencies were weighted), I estimated multinomial regression models with party choice (Liberal, Conservative, NDP) as the dependent variable and age group as the main independent variable of interest. The models control for gender, education, province and language. Results are reported in Figure C.3, which shows predicted support for each party among people aged less than 75 years old and people aged 75 years or older. Predictions are calculated by setting the language to English and the province to Ontario in the models. Gender and education are set to average values. I only report results for 2015 and 2019 because these are the years covered in the paper.
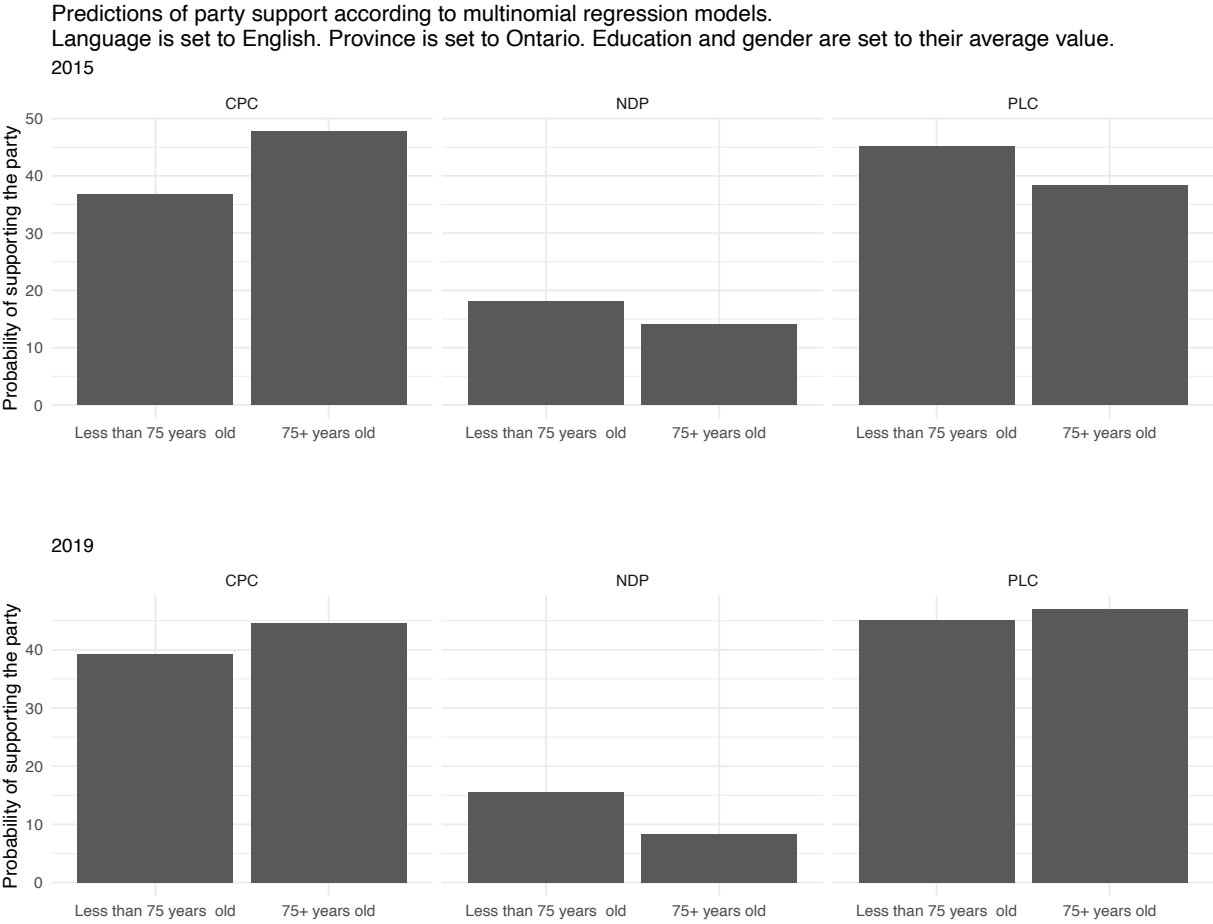
Figure C.3. Predicted vote choice at the individual level (2015-2019), multinomial regression models

After controlling for gender, education, province and language, results show that support for the Conservative Party was higher among seniors than other Canadians in 2019 and 2015. NDP support was lower among seniors in both years, and Liberal support was lower among seniors in 2015, and almost equal in both groups in 2019.

C.4. Regression tables

Tables C.3 to C.7 report the complete regression results for models presented in the text.

— In Table C.3, models are ordinary least squares regression models with turnout in the polling station as the dependent variable. Turnout is obtained by calculating the share of voters as a proportion of registered electors. The independent variable is a dummy indicating if the polling station was located in a SR (=1, otherwise 0).

— In Table C.4, models are ordinary least squares regression models with turnout in the polling station as the dependent variable and fixed effects for electoral districts. Turnout is obtained by calculating the share of voters as a proportion of registered electors. The independent variable is a dummy indicating if the polling station was located in a SR (=1, otherwise 0).

— In Tables C.3 and C.4, controls include the number of people who voted in advance, the share of people who moved in the last year, population size, a measure of the population's age (linear and squared)[2]) and the share of people who identify as a visible minority.

— In Table C.5, models are ordinary least squares regression models with the share of votes obtained by each party in every polling station as the dependent variable. The independent variable is a dummy indicating if the polling station was located in a SR (=1, otherwise 0).

— In Tables C.6 and C.7, models are ordinary least squares regression models with the share of votes obtained by each party in every polling station as the dependent variable. Fixed effects for electoral districts are included. The independent variable is a dummy indicating if the polling station was located in a SR (=1, otherwise 0).

— In Tables C.5, C.6 and C.7, controls include the number of advance voters who supported each party, population size, the population's age (linear only), the share of people who identify as visible minority, household median income, the percentage of

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2. For the 2019 election, I use median age and for the 2015 election, I use average age. These are the available variables in each of the corresponding census data.

people with post-secondary schooling and the share of people whose mother tongue is French.

— In all models, socio-demographic variables are measured at the level of census dissemination areas (DAs).

	2015	2019
Intercept	62.501***	61.373***
	(1.125)	(1.491)
Seniors' residence	3.385***	5.707***
	(0.457)	(0.487)
Nb adv. voters	0.001***	−0.001***
	(0.000)	(0.000)
Perc. v. minority	−0.069***	−0.056***
	(0.002)	(0.002)
Population size	0.000***	0.000***
	(0.000)	(0.000)
Perc. movers -1yr	−0.064***	−0.092***
	(0.005)	(0.006)
Median age	−0.278***	
	(0.045)	
Median age (sq.)	0.002***	
	(0.000)	
Nb of voters assigned to poll	−0.007***	−0.011***
	(0.001)	(0.001)
Av. age		−0.280***
		(0.063)
Av. age (sq.)		0.002***
		(0.001)
R^2	0.051	0.067
Adj. R^2	0.051	0.066
Num. obs.	39243	43210
RMSE	8.215	8.184

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$. OLS regression models.
Robust standard errors in parentheses.

Table C.3. Turnout in seniors' residences, vs. other types of polling stations

	2015	2019
Seniors' residence	3.023***	4.654***
	(0.4441)	(0.4865)
Nb adv. voters	-0.0020***	-0.0029***
	(0.0002)	(0.0002)
Perc. v. minority	-0.0798***	-0.0753***
	(0.0031)	(0.0031)
Population size	0.0003***	0.0003***
	(3.83×10^{-5})	(2.5×10^{-5})
Perc. movers -1yr	-0.0601***	-0.0717***
	(0.0049)	(0.0057)
Median age	-0.0801*	
	(0.0456)	
Median age, sq.	0.0008*	
	(0.0005)	
Nb of voters assigned to poll	-0.0089***	-0.0134***
	(0.0006)	(0.0005)
Av. age		-0.1457**
		(0.0624)
Av. age, sq.		0.0014**
		(0.0007)
Fixed-effects		
Constituencies	Yes	Yes
Observations	39,243	43,210
R^2	0.23470	0.25486
Within R^2	0.04311	0.06633

Heteroskedasticity-robust standard-errors in parentheses.
Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Table C.4. Turnout in seniors' residences, vs. other types of polling stations, fixed-effects models

	Cons 2015	Cons 2019	Lib 2015	Lib 2019	NDP 2015	NDP 2019
Intercept	13.368***	18.952***	16.410***	6.714***	10.663***	11.778***
	(0.357)	(0.361)	(0.329)	(0.349)	(0.216)	(0.203)
Seniors' residence	1.321***	1.676***	1.121***	3.555***	−0.143	−0.754***
	(0.318)	(0.308)	(0.299)	(0.334)	(0.182)	(0.137)
Nb adv. voters	0.030***	0.023***	0.025***	0.026***	0.036***	0.035***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Perc. v. minority	−0.056***	−0.064***	0.009***	0.028***	−0.043***	−0.040***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
Median age	−0.012*		0.003		−0.056***	
	(0.005)		(0.005)		(0.003)	
Median household income	0.000***	0.000***	−0.000***	−0.000***	−0.000***	−0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Perc. post-secondary	−0.053***	−0.101***	0.023***	0.064***	−0.017***	0.010***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Perc. French	−0.079***	−0.072***	−0.022***	−0.012***	−0.002**	−0.036***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Nb of voters assigned to poll	−0.008***	−0.010***	−0.010***	−0.010***	−0.003***	−0.002***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Av. age		−0.021***		0.050***		−0.089***
		(0.005)		(0.006)		(0.003)
R^2	0.508	0.564	0.375	0.452	0.574	0.545
Adj. R^2	0.508	0.564	0.374	0.452	0.574	0.545
Num. obs.	38790	43158	38798	43155	38795	43149
RMSE	6.903	6.242	6.411	6.140	4.234	3.670

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$. OLS regression model. Robust standard errors in parentheses.

Table C.5. Vote choice in seniors' residences, vs. other types of polling stations

	Conservatives		Liberals	
	2015	2019	2015	2019
Seniors' residence	1.844***	1.823***	1.064***	3.436***
	(0.2830)	(0.2799)	(0.2715)	(0.3155)
Nb adv. voters	0.0106***	0.0066***	0.0071***	0.0069***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Perc. v. minority	-0.0456***	-0.0313***	0.0175***	0.0296***
	(0.0021)	(0.0019)	(0.0021)	(0.0019)
Median age	0.0620***		0.0006	
	(0.0045)		(0.0044)	
Median hld inc.	3.6×10^{-5}***	3.48×10^{-5}***	-2.64×10^{-6}**	1.36×10^{-6}
	(1.26×10^{-6})	(1.2×10^{-6})	(1.08×10^{-6})	(10×10^{-7})
Perc. postsec.	0.0095***	-0.0163***	0.0382***	0.0703***
	(0.0028)	(0.0030)	(0.0027)	(0.0030)
Perc. French	-0.0578***	-0.0357***	0.0186***	0.0041
	(0.0042)	(0.0043)	(0.0071)	(0.0058)
Nb of voters	-0.0059***	-0.0066***	-0.0042***	-0.0067***
assigned to poll	(0.0004)	(0.0003)	(0.0004)	(0.0003)
Av. age		0.0427***		0.0632***
		(0.0048)		(0.0050)
Fixed-effects				
Constituencies	Yes	Yes	Yes	Yes
Observations	38,790	43,158	38,798	43,155
R^2	0.73137	0.75989	0.65030	0.71396
Within R^2	0.13631	0.10705	0.04006	0.08907

Heteroskedasticity-robust standard-errors in parentheses.
Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Table C.6. Vote choice in seniors' residences, vs. other types of polling stations, fixed-effects models (Conservatives and Liberals)

	NDP	
	2015	2019
Seniors' residence	0.1049	-0.9113***
	(0.1489)	(0.1245)
Nb adv. voters	0.0139***	0.0146***
	(0.0004)	(0.0005)
Perc. v. minority	-0.0259***	-0.0249***
	(0.0012)	(0.0012)
Median age	-0.0479***	
	(0.0026)	
Median hld inc.	-1.52×10^{-5}***	-2.15×10^{-5}***
	(6.29×10^{-7})	(6.38×10^{-7})
Perc. postsec.	0.0043**	0.0198***
	(0.0018)	(0.0021)
Perc. French	0.0141***	-0.0237***
	(0.0045)	(0.0029)
Nb of voters assigned to poll	-0.0018***	-0.0006***
	(0.0003)	(0.0002)
Av. age		-0.0700***
		(0.0027)
Fixed-effects		
Constituencies	Yes	Yes
Observations	38,795	43,149
R^2	0.76061	0.72587
Within R^2	0.09392	0.10150

Heteroskedasticity-robust standard-errors in parentheses.
Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Table C.7. Vote choice in seniors' residences, vs. other types of polling stations, fixed-effects models (NDP)

C.5. Additional model specifications

C.5.1. Categorical polling station location

In the main text, polling station location (the independent variable) is treated as a dummy variable, coded 1 if the polling station is located in a seniors' residences, otherwise 0. Here, I perform the analyses (models with controls) again by using all categories of polling station locations. This allows me to know which type of polling stations have higher turnout than SRs, even though *on average*, turnout is higher in SRs than in all other places combined. It also allows me to know if there are party differences in other polling locations, and not only SRs.

— Models are ordinary least squares regression models with the share of votes obtained by each party in every polling station as the dependent variable. The independent variable is a categorical variable indicating station's location.

— Controls include the number of advance voters who supported each party, population size, the population's age (linear only), the share of people who identify as visible minority, household median income, the percentage of people with post-secondary schooling and the share of people whose mother tongue is French.

— Socio-demographic variables are measured at the level of census dissemination areas (DAs).

Figures C.4 to C.6 report the coefficients for each category of the polling station location variable. The reference category is SRs, so dots below the zero line indicate lower turnout or lower party support in these locations than in SRs.

The Figures confirm that turnout was lower in every type of polling station than in SRs, except for apartment buildings (and hospitals in 2015, where the coefficient is not significant). Conservative support is higher in apartment buildings than in SRs, but otherwise lower (in 2015 and 2019). A similar finding is observed for Liberal support, but in this case voters of apartment buildings and Fire Halls were more likely to support Liberals than voters of SRs in 2015. Some differences in NDP support across locations can be found in both elections, but there is not consistent trend in comparison to SRs. In some polling places, NDP support is higher and in others, it is lower.

Figure C.4. Turnout model with categorical independent variable

Figure C.5. Party support model with categorical independent variable, 2015

Coefficients for each category of the location variable, 2019 election. Reference category (0) = Seniors' residence.
Models with socio-demographic controls
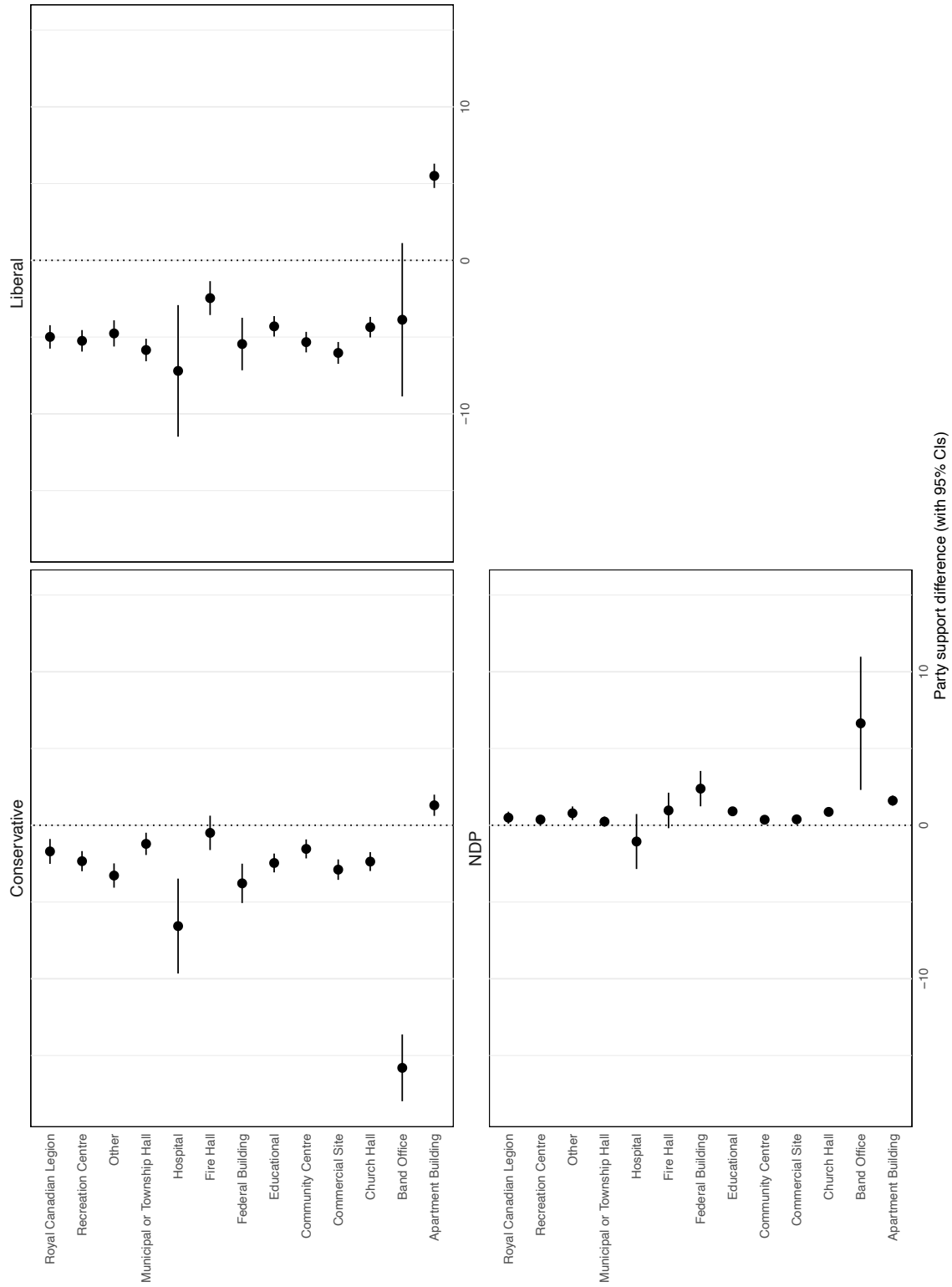
Figure C.6. Party support model with categorical independent variable, 2019

C.5.2. Including every control variable in every model

In the main text, socio-demographic controls are not the same for the *Turnout* and *Vote choice* models. The models both include a measure of the population's age and the share of people identifying as a visible minority, but differ on other variables. The *Turnout* models also include citizens' mobility (the percentage of people who moved in the last year) and population size. The Vote choice models include household median income, the percentage of people with post-secondary schooling and the share of people whose mother tongue is French.

Figures C.7 and C.8 present estimates for the effect of voting in a seniors' residence on turnout and vote choice when the models include all socio-demographic controls.

— Models are ordinary least squares regression.

— Fixed effects for electoral districts are included.

— The independent variable is a dummy indicating if the polling station was located in a SR (=1, otherwise 0).

— In Figure C.7, the dependent variable is turnout.

— In Figure C.8, the dependent variable is percent support for each party.

The direction and size of effects are no different that those presented in the paper.
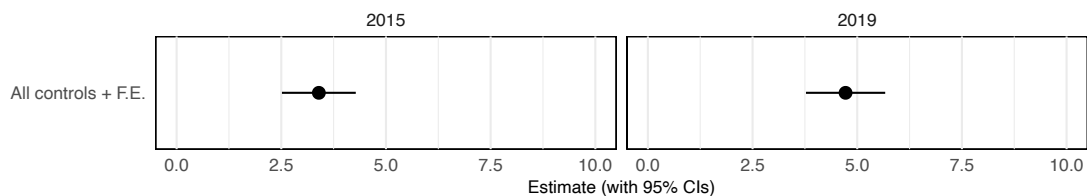
Figure C.7. Turnout models with all control variables and fixed effects
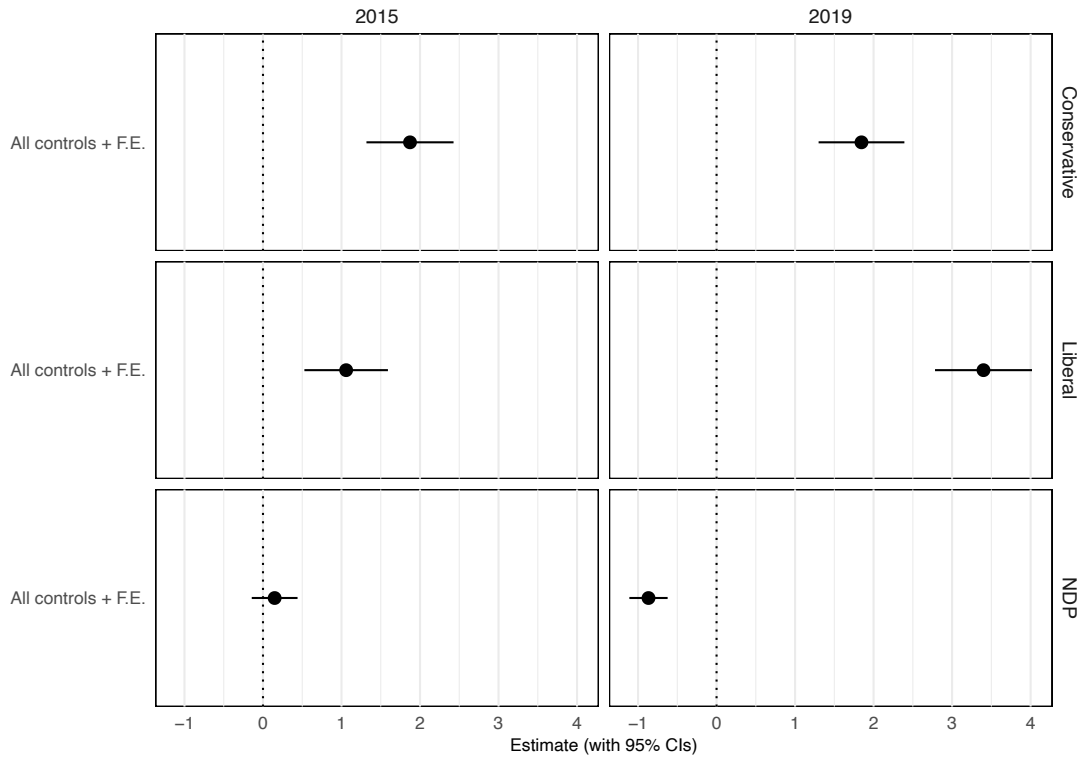
Figure C.8. Party support models all control variables and fixed effects

C.5.3. Seemingly unrelated regressions

Seemingly unrelated regression models can be used when error terms in equations are correlated. In the *Vote choice* models presented in the paper, unexplained variation in a given party's vote share could be correlated with the unexplained variation in the other parties' vote share.

Tables C.8 and C.9 present results from seemingly unrelated regressions that predict support for each of the three main Canadian federal parties in 2015 and 2019. The coefficients for *seniors' residence* indicate the difference between each party's vote share in seniors' residences vs. other polling stations. Results are substantively the same as those presented in the main text.

	Liberal	NDP	Conservative
Intercept	12.459***	9.189***	9.915***
	(0.245)	(0.165)	(0.264)
Seniors' residence	1.706***	0.131	1.788***
	(0.229)	(0.150)	(0.245)
Nb adv. voters	0.028***	0.037***	0.031***
	(0.000)	(0.000)	(0.000)
Perc. v. minority	0.005**	−0.042***	−0.059***
	(0.001)	(0.001)	(0.002)
Median age	0.004	−0.057***	−0.002
	(0.004)	(0.003)	(0.005)
Median hld inc.	−0.000***	−0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Perc. postsec.	0.015***	−0.017***	−0.056***
	(0.003)	(0.002)	(0.003)
Perc. French	−0.021***	−0.003***	−0.078***
	(0.001)	(0.001)	(0.001)
Population size	−0.000***	−0.000***	0.000***
	(0.000)	(0.000)	(0.000)
R^2	0.363	0.573	0.505
Adj. R^2	0.363	0.573	0.505
Num. obs. (total)	116424	116424	116424

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table C.8. Support for the Liberal party, the NDP and the Conservative party in seniors' residences in 2015, SUR

	Liberal	NDP	Conservative
Intercept	2.509***	10.612***	13.167***
	(0.274)	(0.164)	(0.280)
Seniors' residence	4.228***	−0.517***	2.452***
	(0.222)	(0.131)	(0.226)
Nb adv. voters	0.030***	0.037***	0.025***
	(0.000)	(0.000)	(0.000)
Perc. v. minority	0.019***	−0.038***	−0.063***
	(0.001)	(0.001)	(0.001)
Median age	0.054***	−0.092***	0.000
	(0.005)	(0.003)	(0.005)
Median hld inc.	−0.000***	−0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Perc. postsec.	0.052***	0.011***	−0.098***
	(0.003)	(0.002)	(0.003)
Perc. French	−0.010***	−0.033***	−0.065***
	(0.001)	(0.001)	(0.001)
Population size	0.000	−0.000***	0.000
	(0.000)	(0.000)	(0.000)
R^2	0.435	0.544	0.551
Adj. R^2	0.435	0.544	0.551
Num. obs. (total)	129507	129507	129507

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table C.9. Support for the Liberal party, the NDP and the Conservative party in seniors' residences in 2019, SUR

Chapter D

Appendix to the third article

This is the supplementary material for chapter 5.

D.1. Descriptive statistics and validation of issue mentions

The following tables and figures report descriptive statistics on variables used in the text.

— Tables D.1 and D.2 present descriptive statistics on the sample.

— Table D.3 presents descriptive statistics for all independent and control variables included in the empirical analyses.

— Table D.4 presents descriptive statistics on the dependent variables (counts of issue mentions).

— Figure D.1 reports density plots for the three main independent variables of interest.

— Figure D.2 reports variation in the dependent variables according to parliaments and parliaments/parties.

The following qualitative information can ease the interpretation of Figure D.2:

Canadian federal political parties have been divided on these three issues, which also justifies their selection. During the period covered in the analysis, the main political parties on the federal stage were the (Progressive-)Conservative party (right-wing), the Liberal Party (centre) and the New Democratic party (left-wing). In the 1990s, two other political formations have occupied important places in the House: the Bloc Québécois (a nationalist party from the province of Quebec) and the Canadian Alliance (later: Reform Party), a right-wing regional party that was most successful in the Western provinces and eventually

merged with the Conservatives. When debates unfolded around pension reform in the late 1980s and early 1990s, the Progressive Conservative party was responsible for proposing them (it had the control of government). The Liberal and New Democratic parties were initially positioned against the reform, but when they came back in power in the mid-1990s, the Liberals introduced new reforms to the pension system, which reduced benefits even more. On the issue of unemployment, the NDP and the Liberal party are usually supportive of more government support than the Conservative party, but the Liberals did introduce cuts to unemployment insurance in the 1990s. Finally, when compared to the Conservative party, the Liberal party and the NDP are usually more favourable to immigration (especially to increasing the number of asylum seekers).

Party	Number of MP-Parliament dyads in the sample
Liberal	1175.00
Conservative	849.00
NDP	327.00
Bloc Québécois	317.00
Reform/Alliance	180.00
Other	50.00

Table D.1. Party frequencies in the sample

Parliament	Number of MP-Parliament dyads in the sample
34	294.00
35	304.00
36	314.00
37	315.00
38	311.00
39	322.00
40	316.00
41	349.00
42	373.00

Table D.2. Parliament frequencies in the sample

Statistic	Min	Mean	Median	St. Dev.	Max
Average age	22.951	37.831	37.862	3.304	47.745
Share people born outside Canada	0.270	17.577	11.800	16.322	69.198
Unemployment rate	2.816	8.461	7.527	4.035	38.595
MPs' immigrant background	0	0.132	0	0.339	1
MPs' age	19.923	50.230	50.910	9.845	77.355
Atlantic MPs	0	0.104	0	0.305	1

Table D.3. Descriptive statistics of independent and control variables

Statistic	Min	Mean	Median	St. Dev.	Max
Seniors (All speeches)	0	49.537	19	91.623	1,771
Immigration (All speeches)	0	46.795	15	123.796	1,988
Unemployment (All speeches)	0	61.108	27	102.534	1,228
Seniors (PMB, SO 31, QP)	0	13.252	3.000	30.499	424.000
Immigration (PMB, SO 31, QP)	0	13.521	3.000	40.307	818.000
Unemployment (PMB, SO 31, QP)	0	17.545	5.000	39.993	656.000

Table D.4. Descriptive statistics for the number of issue mentions
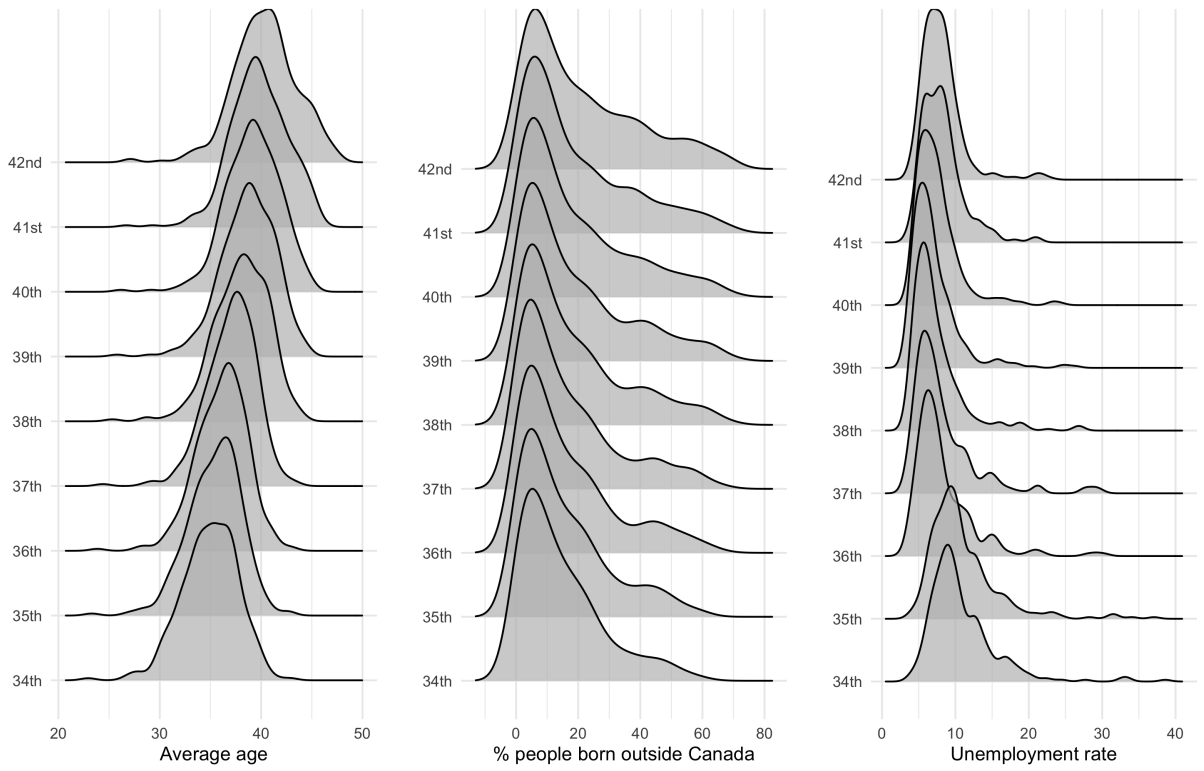
Figure D.1. Density plots of independent variables
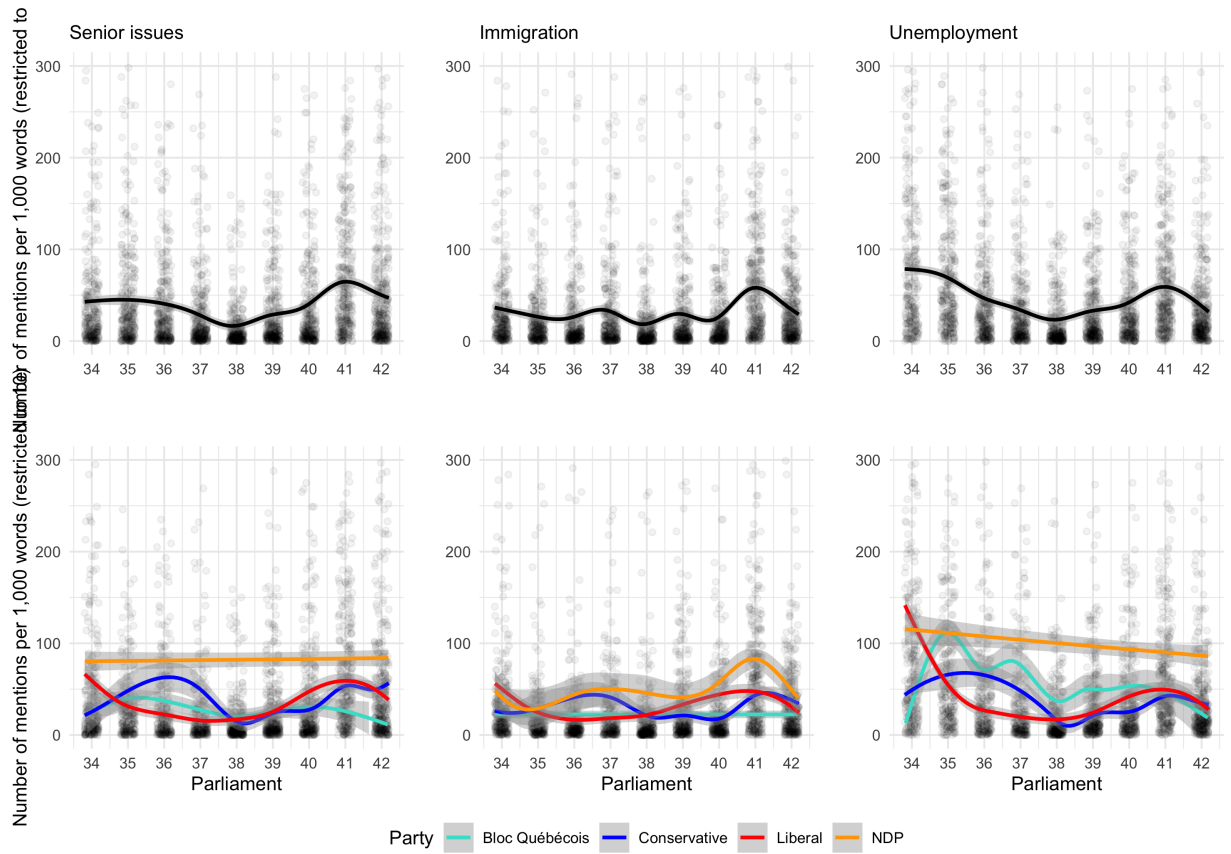
Figure D.2. Variation in issue mentions across parliaments and parties

D.1.1. Manual validation of issue mentions

I ran a manual validation check to verify if speeches that contained mentions of seniors' issues, immigration and unemployment were truly focused on these issues, or if the dictionaries were selecting speeches that referred to unrelated topics. When counting mentions automatically, one loses some of the context. Even though I made sure to develop dictionaries that were as specific as possible, a certain word can still be used in another context, less directly related with the targeted topic.

To verify if this could be the case, I read through 600 randomly-selected documents with at least one mention of immigration, unemployment and seniors' issues (200 each). I found that 63% of all speeches containing immigration mentions focused mainly on the topic of immigration, 67% of speeches with unemployment mentions focused mainly on unemployment, and 50% of speeches with mentions of seniors' issues focused mainly on seniors' issues. A smaller proportion of speeches — 22% of 'immigration' speeches, 29% of 'unemployment' speeches, and 29% of 'seniors' speeches — made one or more mentions of the topics, but discussed other issues as well. For example, speeches on the budget or on poverty often included references to unemployment or seniors, and speeches on the war often included references to immigration. When MPs make more general speeches — on the budget for example — they can choose how to frame their interventions. In other words, mentioning seniors' issues in a budget speech may be deliberate, reflecting the fact that the person speaking does have an interest in seniors' issues. These, I would argue, are still valid identifications of the issues because the MP decided to refer to the topic when making his/her intervention.

By comparing the number of speeches that focus mainly on each of the three issues to the number of speeches that contain at least one mention within a more general intervention, I find that a relatively larger proportion of 'senior'-related speeches did not relate exclusively to this topic. This could explain the weakness of the 'seniors' result in the main text. MPs are perhaps less drawn seniors' issues than they are to unemployment or immigration. Even though the distributions of issue counts are similar across issues (see Figure D.2 in the main text), mentions of seniors' issues are more often buried in longer, more general speeches, like

interventions on the budget. This could be an indication that MPs place less importance on seniors' issues, thus explaining why representatives are less reactive to seniors' issues.

The remaining speeches — 15% of 'immigration' speeches, 4% of 'unemployment' speeches, and 21% of 'seniors' speeches — appeared entirely unrelated to the topics at hand. This is explained by the fact that more general terms — such as "pension" or "citizenship" — are sometimes used in contexts unrelated to the topics at hand. That said, we have no theoretical reason to believe that the probability of a 'false positive' is in any way related to the demographic composition the constituency, which means that their presence should not bias estimates of the relationship between demographic composition and issue mentions. They are, however, good reminders of the limits of automated text analysis, especially when it comes to losing part of the context.

D.1.2. Validation of issue counts against probabilities obtained from a trained classifier

I trained a classifier on the corpus of parliamentary speeches to further validate the identification of topics using the Hansard dictionary. The resulting model gives the probability that a speech relates to the topic of immigration, seniors' issues or unemployment, against which I compared the number of mentions of immigration, seniors' issues and unemployment in the speeches. If the Hansard dictionary effectively captures the topics of speeches, then probabilities obtained using a trained classifier should correlate with the number of mentions of each issue in the speeches. Speeches that contain more mentions associated with a given topic should have a higher probability of being associated with this topic.

Since I do not have access to a dataset of topic-coded Canadian legislations (or other relevant political text) to use as training set, I developed my own. In fact, the Policy Agendas Project codebook has been adapted to the Canadian case, but contrary to the American counterpart, there is no publicly available dataset of Canadian bills or other textual content associated with Policy Agendas Project topics (in the U.S., see Adler and Wilkerson's Congressional Bills Project). A few scholars (see Gauvin and Montpetit, 2019) did code samples of Canadian House of Commons bills, questions, Speeches from the Thone and

Supreme Court decisions using the Canadian Policy Agendas Topics, but their datasets are not available publicly.

I therefore created the training set by identifying the "objective" topics of Canadian parliamentary speeches using the Hansards' sub-headers. I began by reading through all sub-headers in the corpus of debates used in the analysis, identifying those related to the topics of immigration, unemployment and seniors' issues. All headers that contained the words "immigration" or "immigrants" were recoded as "immigration"; all headers containing the words "unemployment" or "unemployed" were recoded as "unemployment"; and all headers that included the words "seniors", "senior [followed with a noun]", "old-age" and "elderly" were recoded as "seniors". I then removed stop-words, and randomly selected 103,497 speeches of 27 to 87 words in length, which corresponds to the 1st and 3rd quartiles. These 103,497 speeches represent 25% of all speeches of these length. I did not use the entire corpus of speeches to make estimation less computationally intensive.

I then split this corpus into a training and a testing set. Three quarters of the speeches (77,623) were used as training set, while the remaining 25% were used as test set (25,874). I trained a classifier model on the training set using cv.glmnet in R, which yielded scores for each word contained in these speeches. I used these scores to compute the probability that each speech in the test set was on the topic of immigration, unemployment and seniors' issues. I then calculated the correlation between these probabilities and the number of mentions of immigration / unemployment / seniors' issues in each of these speeches.

The Pearson correlation between the number of mentions of seniors' issues and the probability that a speech be associated with the 'seniors' topic in the Hansard sub-headers is .66 ($p < 0.001$). The correlation between the number of mentions of immigration and the probability that a speech be associated with the 'immigration' topic in the Hansard sub-headers is equal to .81 ($p < 0.001$). The correlation between the number of mentions of unemployment and the probability that a speech be associated with the 'unemployment' topic in the Hansard sub-headers is .54 ($p < 0.001$). These are moderate to strong correlations, giving me further confidence in the classification of speech content based on the Hansard dictionary.

D.2. Merging census data and Parliament data

The Census of Canada is carried out every five years. Since 1991, the census data is available at the level of federal electoral districts. It is thus possible to match these data with election outcomes. Because most elections since 1991 happened between census years (1993-1997-2000-2004-2006-2008-2011-2015), I performed linear interpolation to estimate the population statistics in-between census years. To do so, I took into consideration the fact that representation orders changed since the early 1990s (i.e. there has been redistricting).

— The 1993 election used the 1987 representation order. There were 295 seats in the House of Commons.

— The 1997 and 2000 elections used the 1996 representation order. There were 301 seats.

— The 2004, 2006, 2008 and 2011 elections used the 2003 representation order. There were 308 seats.

— The 2015 election used the 2013 representation order. There are now 338 seats.

The following timeline indicates Census years, election years and periods for each representation order between 1991 and 2015:
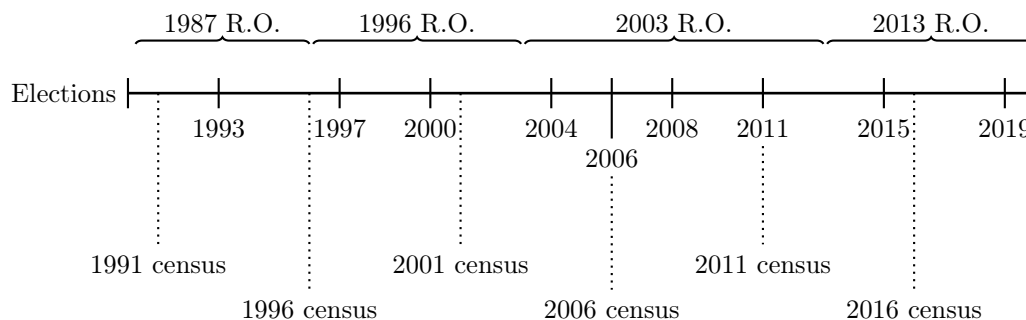
Census data are available for the representation orders that come before and after each census year. For example, the 1996 census data are provided for 1987 electoral ridings and the 1996 electoral ridings. This is useful, because we can interpolate demographics values in each election year with using its true representation order. For example, the 2000 election came between the 1996 and 2001 censuses. I used these two censuses to find the population values in 2000. Since this election was run under the 1996 r.o., I used the 1996 and 2000 census data that are organized along the 1996 ridings. Likewise, I matched the 1997 election

311

data with the 1996 census data under the 1996 r.o., because this was the representation order in this year.

D.3. Comparison of methods to count issue mentions

The goal of this appendix is to explore different methods of measuring my dependent variables: MPs' *issue attention*. I discuss a total of five different methods to measure this dependent variable, compare them and discuss the reasons why some are more appropriate than others for the present study, but also for future research.

D.3.1. Dictionaries to capture MPs' issue attention: presentation

I operationalize MPs' issue attention as the number of times each MP mentions an issue in the debates of the House of Commons. This operationalization is relatively straightforward, but counting the number of issue mentions is not. In order to do so, one needs a dictionary containing a list of terms used to identify issues. For example, the term 'women' could be included in a dictionary that aims at measuring MPs' attention towards gender or women's issues. I am interested in three issues in this paper: seniors' issues, immigration and unemployment, so I need to find an appropriate method of creating dictionaries to identify mentions of these issues in the House. This section presents the methods I tested to create different dictionaries. The goal is to compare methods, highlight their pros and cons, and select the most reliable one.

In sections D.3.1.1 to D.3.1.6, I present *three* methods to create dictionaries of issue mentions:

(1) A dictionary made from the Hansard Indexes

(2) A reduced dictionary to identify groups only

(3) A dictionary created from word embeddings

I also present *two* additional methods that I tested on seniors' issue only.[1]

(4) A custom dictionary

(5) A dictionary made from the Canadian Policy Agendas Project

I list the pros and cons for each method, making sure to compare them in terms of:

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1. I present a sixth method in section D.3.1.6, and explain why I decided not to go through with it.

— Scalability.

— Convergent validity: Are the measures similar to one another?

— Concurrent validity: Are the measures identifying which MPs are paying attention to the issues only, or are they capturing something else as well?

In section D.3.2, I apply each of these three methods to the corpus of Canadian parliamentary debates (34th-42nd parliaments) and report descriptive statistics obtained from each of them. I report correlations between them in section D.3.3. Finally, in section D.3.4, I report results of regressions analyses to estimate the relationship between the different measures of MPs' issue attention and the demographic composition of their riding. Specifically, I report:

— The relationship between the percentage of people in a district who are born outside Canada and MPs' attention to immigration (measured 3 ways).

— The relationship between the unemployment rate and attention to unemployment (measured 3 ways).

— The relationship between the percentage of seniors and attention to seniors' issue (measured 5 ways).

Results indicate that the dictionary presented in section D.3.1.1 — created from the *Hansard Indexes* — provides the most comprehensive and exclusive list of words to identify mentions of issues in the debates. The Hansard method is also more accessible to political scientists with various methodological backgrounds.

D.3.1.1. *A dictionary from the Hansards indexes (dictionary used in the main text)*

The first dictionary that I created to measure of MPs' issue attention is made from the House of Commons Hansard Indexes. This dictionary is the one used in the main text. From the Hansard Indexes, I manually extracted every keyword found under 'senior citizens', 'immigrants and immigration' and 'unemployment'. I did so in the Indexes of the 34th to the 38th Parliaments, because the Indexes are only available until the first session of the 38th Parliament. That said, except for a few specific policies debated in specific Parliaments,

most expressions were recurrent in the different Indexes. [2] This method yielded a list of 82 keywords to identify seniors' issue, 126 keywords to identify immigration and 49 keywords to identify unemployment (see Tables D.5, D.6 and D.7).

I made sure to reduce the terms to their simplest expression. For example, general terms such as 'seniors' can be used to identify many different things, like 'seniors month' or 'seniors housing', so I could include 'seniors' alone to capture these other expressions. In its singular form, however 'senior' can be used in other contexts unrelated to old-age, such as 'senior advisor,' so it needs to be accompanied with a noun, like 'senior citizens', 'senior benefits', 'senior housing', etc. in order to have any meaning in the context of this analysis.

I used these lists to automatically identify issue mentions in the debates. I counted the number of times these terms appeared in MPs' speeches automatically using R. I then summed this count by MP and Parliament, creating an observation for each MP/dyad between the 34th and 42nd parliaments.

In addition to counting the number of times these terms appear in the entire corpus, I produced the same measure for speeches given during question periods, statements pursuant to Standing Orders 31 (S.O. 31), Private Members' Business (PMB) and the introduction of private members' bills. These are the times when members of the House of Commons are less restricted by their party: question periods and statements pursuant to S.O. 31 are "position taking" opportunities for members (Soroka, Penner and Blidook, 2009, p.569), whereas time allocated for PMB allows private members to introduce legislation of their own (Blidook, 2010). It makes sense to measure the number of times MPs referred to issues during these periods specifically because these interventions likely reflect the MPs' issue positions. However, it is also important to count these instances in the entire corpus because members

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2. To make sure not to capture issues that are specific to these parliaments and not generalize-able to other parliaments, I did not include keywords referring to specific people or organizations in my topic dictionaries. Some people or organizations, especially in the 'immigration' topic, may be cited in parliament during a given term, but it does not mean that they are important to identify the topic in general across time. I also excluded bill numbers, because the same numbers can be used to refer to different bills in different parliaments (in one parliament, a given number can be used to refer to an immigration bill and in another, to a criminal justice bill).

of the opposition are over-represented relative to government members in the sub-sample of question periods, S.O. 31 and PMB.

Pros:

— The method can easily be used for other issues as well — simply identify the topic in the Index. It can also be used in other national contexts where an index exists, like France or Australia.

— The dictionary captures the entire domain of the issue, because the list comes from the Debates themselves.

— Good *concurrent validity*: some terms could be used to refer to other issues, but it is mostly exclusive.

Cons:

— Requires more time to search through the indexes.

— Reducing expressions to their simplest forms requires a few arbitrary decisions.

1	age credit*	42	older men
2	age d or	43	older people
3	age discrimination	44	older person*
4	ageing	45	older woman
5	aging	46	older women
6	aine*	47	pension*
7	ainee*	48	retirement
8	allowance* for survivor*	49	rrsp*
9	allowance* for the survivor*	50	senior benefit*
10	at home living	51	senior canadian*
11	caregiver*	52	senior care
12	caregiving	53	senior citizen*
13	cpp	54	senior employment
14	elder	55	senior facilities
15	elderly	56	senior fitness
16	geriatric*	57	senior game*
17	geriatry	58	senior group*
18	gis	59	senior health
19	guaranteed income supplement	60	senior health care facilities
20	home care	61	senior homelessness
21	home health	62	senior housing
22	home safety	63	senior income
23	institutional care	64	senior independence
24	living at home	65	senior literacy
25	long term care	66	senior lodge*
26	new horizons program	67	senior man
27	nursing home*	68	senior men
28	oas	69	senior neglect
29	old age	70	senior people
30	old canadian*	71	senior person*
31	old citizen*	72	senior poverty
32	old is cool	73	senior quality of life
33	old man	74	senior residence*
34	old men	75	senior woman
35	old people	76	senior women
36	old person*	77	seniors
37	old woman	78	specialty care program*
38	old women	79	spousal allowance*
39	older canadian*	80	spouse* allowance*
40	older citizen*	81	survivor* allowance*
41	older man	82	the aged

Table D.5. Words contained in the Hansard dictionary, seniors

Table D.6. Words contained in the Hansard dictionary, immigration

1	admissibility assistance program*	64	landed status application*
2	aliens	65	landing fee*
3	asylum	66	language training
4	bar entry	67	maple leaf card*
5	barring entry	68	marriage* with canadian citizen*
6	boat people	69	mcdougall gagnon tremblay agreement
7	border security	70	medical screening*
8	brain drain	71	migrant*
9	canada border services agency	72	migration
10	canadian passport*	73	minister of justice v burns and rafay
11	cbsa	74	multiculturalism
12	children born in canada	75	multiple sponsorships
13	citizenship	76	new canadian program
14	compassionate consideration*	77	non canadian visitor*
15	compassionate ground*	78	non citizen*
16	compassionate stream	79	once in a lifetime sponsorship*
17	country of origin	80	oral examination*
18	credentials not recognized	81	parent* sponsorship*
19	cross cultural learning centre*	82	parental sponsorship*
20	cullen couture agreement	83	people smuggling
21	culturelink	84	people trafficking
22	customs act	85	permanent landing status
23	datacard canada inc	86	permanent residence
24	deportation	87	permanent resident*
25	deported	88	point* system
26	deporting	89	preventing entry
27	determination process	90	processing backlog*
28	economic discrimination	91	processing centre*
29	education requirement*	92	processing cost*
30	entrepreneur* program	93	processing delay*
31	equating with criminals	94	processing fee*
32	equating with terrorists	95	processing improvement*
33	equivalency test*	96	provincial nominee class
34	exclusion powers	97	refugee*
35	facilitating removal	98	residence requirement*
36	family class	99	residency requirement*
37	family reunification	100	resident status
38	financial screening*	101	right of landing fee*
39	foreign credentials	102	rolf
40	foreign national*	103	screening process
41	foreign student*	104	security card systems inc
42	foreign trained professional*	105	security screening*
43	foreign volunteer*	106	seeking better life
44	gagnon tremblay mcdougall agreement	107	self exiled

45	grandparent* sponsorship*	108	settlement arrangement*
46	head tax	109	settlement fee*
47	hiv positive applicant*	110	settlement program*
48	hiv screening*	111	settlement service*
49	humanitarian ground*	112	skilled labour
50	humanitarian request*	113	skilled trades and technology workforce
51	humanitarian stream	114	skilled worker*
52	identification prior to entry	115	sponsorship of relative*
53	imm 1000 form*	116	temporary canadian*
54	immigrant*	117	temporary resident*
55	immigration	118	temporary worker*
56	inadmissibility criteria	119	territorial nominee class
57	income requirement*	120	travel document*
58	independent applicant*	121	undesirables
59	integration	122	undocumented
60	interdiction program*	123	visa*
61	interview waiver rate*	124	visible minorities
62	investor* category	125	work permit*
63	investor* program*	126	worker* without legal status

1	bankruptcy	26	poor man
2	canada job grant*	27	poor men
3	canada jobs fund	28	poor people
4	employment	29	poor person*
5	global economic restructuring	30	poor woman
6	help wanted index	31	poor women
7	income support program	32	poverty
8	insolvency	33	skilled trades
9	job counselling program*	34	skilled worker*
10	job creation	35	training program*
11	job entry program*	36	transitional job fund*
12	job loss*	37	underemployment
13	job opportunit*	38	unemployed
14	labour force	39	unemployment
15	labour market	40	unfilled job*
16	labour mobility	41	unionization
17	looking for work	42	welfare recipient*
18	mandatory savings plan	43	work for tomorrow
19	minimum wage	44	work force
20	mobility assistance program*	45	work sharing
21	number of hours of work	46	work week*
22	older worker*	47	worker adjustment program*
23	on to ottawa trek	48	worker* earning under
24	poor canadian*	49	working to your full potential
25	poor family*		

Table D.7. Words contained in the Hansard dictionary, unemployment

D.3.1.2. *A reduced dictionary to identify groups*

These dictionaries are reduced versions of the previous ones. They only include words that can be used to refer to groups or people concerned with the issues, for example, 'immigrants' for the issue of immigration or 'poor people' for the issue of unemployment. Tables D.8 to D.10 present the terms included in these dictionaries.

Pros:

— Good *concurrent validity*: it does not generally tap into other groups.

— It could be use in research looking at group-based appeals (e.g., Thau, 2019).

Cons:

— It has weaker statistical power because it identifies fewer observations than previous lists.

— The dictionary measures attention to groups, but not necessarily issues or policies.

— Some groups are more difficult to identify than others. For example, which terms identify 'immigrants'? Should migrants be included in such a list? Minorities?

1	elderly canadian*	19	older citizen*
2	elderly citizen*	20	older man
3	elderly man	21	older men
4	elderly men	22	older people
5	elderly people	23	older person*
6	elderly person*	24	older woman
7	elderly woman	25	older women
8	elderly women	26	senior canadian*
9	the elderly	27	senior citizen*
10	old canadian*	28	senior man
11	old citizen*	29	senior men
12	old man	30	senior people
13	old men	31	senior person*
14	old people	32	senior woman
15	old person*	33	senior women
16	old woman	34	seniors
17	old women	35	the aged
18	older canadian*		

Table D.8. Words contained in the Groups dictionary, seniors

1	aliens	11	non citizen*
2	boat people	12	permanent resident*
3	children born in canada	13	refugee*
4	foreign national*	14	skilled worker*
5	foreign student*	15	temporary canadian*
6	foreign trained professional*	16	temporary resident*
7	foreign volunteer*	17	temporary worker*
8	immigrant*	18	undocumented
9	migrant*	19	visible minorities
10	non canadian visitor*	20	worker* without legal status

Table D.9. Words contained in the Groups dictionary, immigration

1	looking for work	8	poor person*
2	older worker*	9	poor woman
3	poor canadian*	10	poor women
4	poor family*	11	skilled worker*
5	poor man	12	unemployed
6	poor men	13	welfare recipient*
7	poor people	14	worker* earning under

Table D.10. Words contained in the Groups dictionary, unemployment

D.3.1.3. *A dictionary created from word embeddings*

Here, I did not create a list of terms from what we already know about each of these three issues, but took a more inductive path. I used natural language processing to find the words most closely-related to the terms 'seniors', 'immigration' and 'unemployment' in the corpus of parliamentary debates between the 34th and 42nd Parliaments. But what do I mean by 'most closely-related'?

Word embeddings is a method that allows us to translate words into vectors of numbers by looking at which words tend to appear together within in a corpus.[3] We can use the vectors created from word embeddings to locate words in space, and calculate the distance between each word using the angle between vectors. The smaller the distance between word vectors, the more likely it is that two words share common meaning in our corpus (see Rheault and Cochrane, 2020; Spirling and Rodriguez, 2020). A classic example in word embeddings is the following: King - Man + Woman = Queen. If we subtract the vector for 'man' from 'King' and add instead the vector for 'woman', we should obtain a value close to the vector for 'Queen'.

Before performing this type of analysis, I removed digits, punctuation and stop-words from the text of debates, and transformed every character to lower case. I reduced sparsity by removing words found in less than 0.1 percent or more than 50 percent of speeches (very rare and common words).[4] I then computed embeddings with the GloVe algorithm in R, using a context window of 6 words and 300 dimensions (see Spirling and Rodriguez, 2020, for a discussion of different algorithms and choices related to window and dimension sizes).

I then searched through these embeddings for the 75 words that had the smallest cosine distance to the vectors for 'immigration' [v(immigration)], the 75 words closest to the vector for 'unemployment' [v(unemployment)] and the 75 words closest to the vector for 'seniors' minus 'young' [v(seniors)-v(young)]. To account for the inherent instability of word embeddings models, I followed Spirling and Rodriguez (2020) and ran the model 10 times, each

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3. More specifically, within a context window of words (x number of words before and after a target word).

4. Number of documents = 837,055; number of words = 6,754

time calculating the cosine distances of interest. I then averaged these values and extracted words with the smallest average distance over these 10 iterations.

I would characterize this method as "minimally supervised" (Rice and Zorn, 2019), because I chose these vectors myself. For the issues of immigration and unemployment, the vectors are straightforward. But I subtracted the vector for young from the vector for seniors to identify seniors' issues, because seniors are often discussed in conjunction with families, children and youth in Parliament. My attempt was to find terms close to seniors *exclusively*, not words that are sometimes used in conjunction with seniors but also youth. This is why I removed these other groups by subtracting the vector for young. A similar method has been used in the political science literature to create specialized sentiment dictionaries from word embeddings (Rice and Zorn, 2019).

The lists of 75 terms can be found in Tables D.11 to D.13, ranked in order of their closeness to the vector representing immigration, unemployment and seniors. I used these terms to create the same type of count variable as in the previous dictionaries, i.e., I summed the number of mentions of these terms by MP/Parliament.

This method creates larger values of the count variable, because the terms comprised in the dictionaries are more general than the terms in other dictionaries, like the one created from the Hansard Indexes. For example, the dictionary for seniors includes words such as 'taxable', 'monthly' and 'cheques', which are likely to be mentioned by many MPs.

Pros:

— Much less time intensive than dictionaries created manually.

— Inductive search of words similar to seniors, immigration and unemployment, which makes it less vulnerable to the researchers' own biases (but not entirely since one has to decide on the words contained in the vectors).

Cons:

— Not so good *concurrent validity*: It produces a list of words that can refer to other issues as well (non-exclusive list, as opposed to the previous ones that were exclusive

to the issues of interest), because the method is based on word co-occurrences. This could introduce bias in the estimation.

— Word embeddings' inherent instability means that different results could be obtained when re-running the model. Even though I tried to work around this limitation by running the model 10 times and averaging across iterations, others may still have difficulty reproducing exactly the same results.

1	seniors	39	benefits
2	oas	40	earners
3	gis	41	hardearned
4	supplement	42	universal
5	lowincome	43	security
6	guaranteed	44	relief
7	income	45	disability
8	pensioners	46	families
9	pensions	47	rely
10	splitting	48	plans
11	incomes	49	lift
12	housing	50	transit
13	cpp	51	charities
14	pension	52	homelessness
15	affordable	53	annual
16	retirement	54	secretariat
17	monthly	55	supplementary
18	poorest	56	accounts
19	retirees	57	middleclass
20	savings	58	lifted
21	fixed	59	taxpayers
22	poverty	60	senior
23	payments	61	low
24	allowance	62	budget
25	households	63	cheqques
26	modest	64	trusts
27	taxfree	65	reductions
28	veterans	66	increasing
29	benefit	67	care
30	rolls	68	rent
32	indexed	69	middleincome
33	cuts	70	infrastructure
34	increases	71	isolation
35	plan	72	living
36	pharmacare	73	expense
37	taxfree	74	receipt
38	clawback	75	medication

Table D.11. Words contained in the Word embeddings dictionary, seniors

1	immigration	39	official
2	refugee	40	claimants
3	citizenship	41	asylum
4	department	42	critic
5	refugees	43	law
6	immigrants	44	reform
7	multiculturalism	45	canadas
8	justice	46	also
9	officials	47	new
10	status	48	number
11	applications	49	agency
12	application	50	dealing
13	customs	51	rcmp
14	affaires	52	defence
15	system	53	offices
16	minister	54	fisheries
17	employment	55	regarding
18	foreign	56	secretary
19	canada	57	fact
20	current	58	stated
21	policy	59	said
22	act	60	criminal
23	process	61	claims
24	regard	62	program
25	backlog	63	staff
26	immigrants	64	reunification
27	office	65	security
28	changes	66	laws
29	applicants	67	told
30	policies	68	visa
31	committee	69	labour
32	board	70	ministers
33	review	71	responsible
34	border	72	tell
35	appeal	73	procedures
36	officers	74	come
37	processing	75	matters
38	consultants		

Table D.12. Words contained in the Word embeddings dictionary, immigration

1	unemployment	39	numbers
2	employment	40	payments
3	insurance	41	seasonal
4	rate	42	programs
5	rates	43	cuts
6	ei	44	program
7	unemployed	45	statistics
8	ui	46	year
9	poverty	47	experiencing
10	welfare	48	now
11	premiums	49	increasing
12	benefits	50	increases
13	deficit	51	figures
14	cent	52	youth
15	high	53	increased
16	income	54	problems
17	higher	55	pension
18	qualify	56	weeks
19	low	57	fact
20	reduced	58	crissi
21	inflation	59	economy
22	regions	60	far
23	recession	61	situation
24	levels	62	premium
25	jobs	63	region
26	lower	64	number
27	social	65	rising
28	increase	66	reduction
29	per	67	economic
30	lowest	68	fund
31	jobs	69	still
32	since	70	current
33	workers	71	years
34	debt	72	assistance
35	growth	73	period
36	cut	74	surplus
37	problem	75	hit
38	worse		

Table D.13. Words contained in the Word embeddings dictionary, unemployment

D.3.1.4. *A custom dictionary*

Before looking into the previous methods of dictionary building, I created a customized dictionary of seniors' issue from my personal knowledge of the domain. The list includes 39 keywords and expressions to identify older people and seniors' issue (see Table D.14). I did not apply this method to the two other issues because my knowledge of these domains is less extensive.

Pros:

— Very specific, no possibility of catching non-related issues (i.e. good *concurrent validity*).

Cons:

— Created from personal knowledge of the domain, so I may have forgotten important expressions or terms.

D.3.1.5. *A dictionary from the Canadian Policy Agendas Project codebook*

I created a list of terms to identify mentions of seniors and seniors' issue/policies using the Canadian Policy Agendas Project (CPAP). I did not apply this method to other issues due to its limitations (see pros and cons). To do so, I divided the descriptions of sections *204: Age Discrimination, 507: Canadian Pension Plan (CPP), 1303: Elderly Issues and Elderly Assistance Programs* and *1408: Elderly and Handicapped Housing* of the Canadian Policy Agendas Codebook into 45 keywords (see Table D.15). Like with the Hansard Indexes, I reduced expressions to their simplest form. For example, 'community alternatives to institutional care' becomes 'institutional care'; 'nursing homes standards and regulations' becomes 'nursing homes'; 'mandatory retirement age' and 'retirement age policies' become 'retirement age'; 'elderly care' and 'social services for the elderly' become 'elderly'; and so on and so forth. Since 'seniors' and 'older Canadians' were found in the list, I added the variations of these terms, just like in the previous dictionaries (i.e., older men/women/person, etc.).

1	senior person/people	12	elderly assistance
2	senior citizen(s)	13	elderly program(s)
3	senior canadian(s)	14	guaranteed income supplement (or gis)
4	elder	15	old-age security (or oas)
5	elderly person/people	16	canada pension plan (or cpp)
6	elderly citizen(s)	17	age credit(s)
7	elderly canadian(s)	18	survivor(s) pension(s)
8	old person/people	19	survivor(s) allowance(s)
9	old citizen(s)	20	allowance(s) for the survivor
10	old canadian(s)	21	allowance(s) for survivors
11	old-age	22	old-age discrimination
		23	senior(s) residence(s)
		24	long-term care
		25	home health
		26	home care
		27	caregiver(s)
		28	caregiving
		29	geriatry
		30	geriatric(s)
		31	ag(e)ing in place
		32	healthy ag(e)ing
		33	elder/senior(s) abuse
		34	elder/senior(s) neglect
		35	elder/senior(s) care
		36	elder/senior(s) health
		37	elder/senior(s) employment
		38	elder/senior(s) housing
		39	elder/senior(s) poverty

Table D.14. Words contained in the Custom dictionary

The CPAP is part of the Comparative Policy Agendas project. Its codebook has been adapted from the US Policy Agendas Project by Stuart Soroka in 2004 (Gauvin and Montpetit, 2019). It can and has been used to code policy output manually (e.g., Soroka, Penner and Blidook, 2009).

Pros:

— CPAP is also used to code content manually in other papers, which allows for comparability.

Cons:

— It does not contain an exhaustive list of terms (the codebook merely aims at aiding manual coders reading through corpora).

— Reducing expressions to their simplest forms requires a few arbitrary decisions.

— For other issues (immigration, unemployment), the number of CPAP categories is lower, which makes it difficult to come up with a complete list of terms.

1	age discrimination	24	older canadians
2	canada pension plan	25	older citizen*
3	cost of living adjustment*	26	older man
4	cpp	27	older men
5	elderly	28	older people
6	gis	29	older person*
7	guaranteed income supplement	30	older woman
8	home health care	31	older women
9	institutional care	32	qpp
10	long-term care	33	quebec pension plan
11	long-term health care	34	research on ageing
12	nursing home*	35	research on aging
13	oas	36	retirement age
14	old canadian*	37	senior canadian*
15	old citizen*	38	senior citizen*
16	old man	39	senior man
17	old men	40	senior men
18	old people	41	senior people
19	old person*	42	senior person*
20	old woman	43	senior woman
21	old women	44	senior women
22	old-age security	45	seniors
23	older canadian*		

Table D.15. Words contained in the dictionary created from the Canadian Policy Agendas Project

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D.3.1.6. *Issue prevalence drawn from topic modeling*

I could have measured MPs issue attention using topic modeling, especially Latent Dirichlet Allocation. However, I decided not to go through with this method because of technical limitations and because this method has too many drawbacks compared to others.

Latent Dirichlet Allocation is an automated text classification algorithm (topic model) used to classify the content of text corpora. Based on word co-occurrences within a given corpus, LDA assigns each word a probability of belonging to a topic, and each topic a probability of belonging to a document.

Before estimating the topic model, one usually goes through a few pre-processing steps, including removing speeches that are too short, because topic models can more easily converge when documents contain more words. Pre-processing also entails stemming the corpus, removing stop-words, digit and punctuation. In order to facilitate model convergence, one should remove very rare and very common words (e.g., those appearing in more than 50 percent or less than 0.1 percent of documents).

One can then fit their model, choosing the number of topics they want.[5] Looking at the output of the model, one can then 'label' the topics based on which words are most associated with each topic. For example, topics with which the words seniors, elderly, pensions, etc. are most associated could be labelled 'Seniors' topics'.

Topic models tell us what is the prevalence of each topic in each document (i.e. speeches). I could have calculated the average prevalence of the 'senior' topic for each MP-Parliament dyad. Topic models are an inductive method of analysis, just like word embeddings. This can be seen as a advantage in comparison to manual dictionaries. However, I decided not to adopt this method because of the following drawbacks:

— One important downside is that outputs of topic models are very sensitive to choices such as the number of topics. It is therefore less easily replicable, which is an important limitation in my opinion.

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5. There is no 'right' number of topics, but one can make a decision based on exclusivity and semantic coherence.

— It is entirely possible for the model not to find any topic related to a given issue. This would represent an important limitation in an analysis of representation.

— From past experience, the topic model would likely have 'caught' the topic of the Canada Pension Plan, because it was an important object of debates in the early 2000s. But other, more minor seniors' issue would not necessarily 'appear' in the topic model output, because they would be mixed up with other social topics like welfare or family. This means that we would be missing some of the attention MPs give to seniors' issue. The same phenomenon could have happened with other issues as well.

— Running an automated topic model on a corpus of more than 800,000 documents necessitates strong computing power. Despite going through all of the pre-processing steps and reducing the number of terms to facilitate convergence, running the topic model to explore different number of topics took several hours. Given the aforementioned limitations, I decided not to go through with this method and instead focus on the alternatives.

D.3.2. Descriptive statistics of count measures

The count measures are obtained by counting the number of times each MP mentioned the terms contained in each dictionary. Counts are then summed by Parliament (to create MP-Parliament dyads), then expressed in terms of 1,000 words pronounced in each Parliament.

The same procedure is used for the subset of speeches pronounced during PMB, QP and S.O. 31. Issues mentions are counted during these moments only, then summed by MP-Parliament and expressed in terms of 1,000 words pronounced during these specific moments of each Parliament.

	Min	Mean	Median	St. Dev.	Max
Seniors					
Hansard	0.000	1.529	0.771	2.969	85.295
Groups	0.000	0.555	0.204	1.765	54.198
Embeddings	0.000	30.829	28.164	12.539	193.692
Custom list	0.000	0.476	0.191	0.997	26.877
CPAP	0.000	0.824	0.313	2.323	71.746
Immigration					
Hansard	0.000	1.525	0.566	3.388	48.137
Groups	0.000	0.553	0.156	1.422	21.664
Embeddings	0.000	73.361	72.531	12.006	142.957
Unemployment					
Hansard	0.000	1.820	1.165	2.337	48.991
Groups	0.000	0.252	0.081	0.568	11.276
Embeddings	0.000	83.623	81.760	15.797	184.438

Table D.16. Descriptive statistics of alternative measures (all speeches)

	Min	Mean	Median	St. Dev.	Max
Seniors					
Hansard	0.000	1.500	0.487	4.122	104.651
Groups	0.000	0.640	0.111	2.710	81.395
Embeddings	0.000	28.332	25.035	14.559	255.814
Custom list	0.000	0.445	0.077	1.328	32.973
CPAP	0.000	0.870	0.177	3.400	93.023
Immigration					
Hansard	0.000	1.581	0.446	3.872	48.887
Groups	0.000	0.553	0.068	1.703	24.708
Embeddings	7.778	73.509	72.053	15.971	149.921
Unemployment					
Hansard	0.000	1.750	0.805	2.811	30.998
Groups	0.000	0.252	0.000	0.806	17.751
Embeddings	0.000	81.109	78.470	17.409	205.043

Table D.17. Descriptive statistics of alternative measures (PMB, question periods and S.O. 31)

D.3.3. Correlations between count measures

Figures D.3 to D.5 show Pearson correlations between every measure, for each issue topic. We can see that methods that implied the most manual coding — Hansard and Group dictionaries — are the most strongly correlated with each other.

In all speeches related to seniors' issue, the correlations between Hansard and Groups is equal to .94, while the correlation between Hansard and Embeddings is equal to .65. These are moderate to very strong correlations. The correlation between Groups and Embeddings is lower (.53). This is not surprising, as most words found in the Embeddings list refer to issues, whereas the Groups dictionary include terms to identify people or actors of the issue.

In the case of immigration, the correlations between the Embeddings dictionary and the two others are much lower (.45 and .39). These are weak to moderate correlations. In contrast, the correlation between Groups and Hansard is equal to .92, which means that the additional terms in the Hansard list almost make no difference in capturing the issue of immigration.

Finally, correlations between Embeddings and other measures in the unemployment issue are equal to .69 with Hansard and .49 with Groups. Perhaps the Embeddings dictionary obtained for the immigration issue contains too many general words, and as a consequence the dictionary taps into issues unrelated to immigration. It includes, for examples, the words *minister*, *ministers*, *canada* and *canadas*. One way of reaching a more restrictive list could be to subtract the vector for 'Canada' from the vector for 'immigration' before calculating cosine distances. This might remove some of these general terms from the dictionary. The correlation between Hansard and Groups in unemployment is strong (.69).

Note that the correlations between Embeddings and other measures are always stronger in the subset of speeches related to PMB, question periods and Standing Orders 31. There is at least one potential explanation for this finding. During parliamentary debates over PMB, question periods and S.O. 31, it is possible that MPs use less general vocabulary, 'cutting to the chase' more than in other moments of the debates. This would also imply that backbenchers (who are more active during these times) speak about issues in a more

straightforward way than frontbenchers (see Spirling, Huang and Patrick, 2018). This would explain why the dictionaries created using word embeddings, which contain more words that are less directly related to the issues at hand, perform more similarly to other dictionaries when used on this subcorpus of debates. In this subcorpus, they perhaps capture less of these general terms.
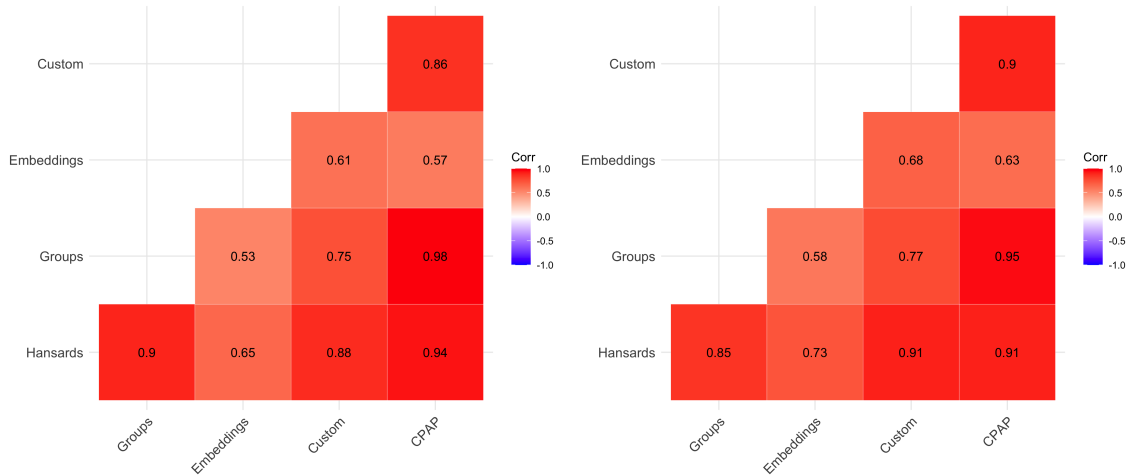
Figure D.3. Seniors: Correlations between measures, all Speeches (left) and PMB/QP/S.O. 31 (right)
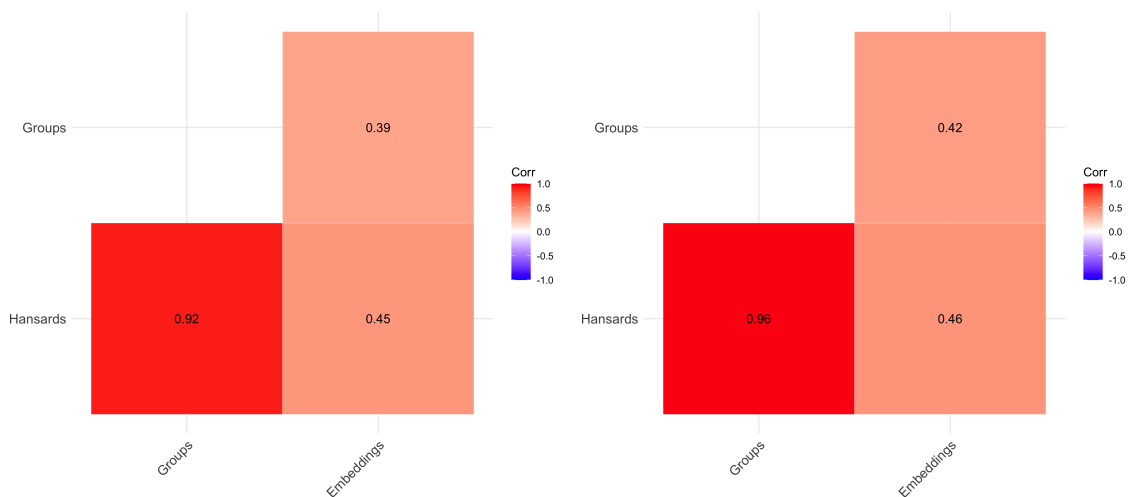
Figure D.4. Immigration: Correlations between measures, all Speeches (left) and PMB/QP/S.O. 31 (right)
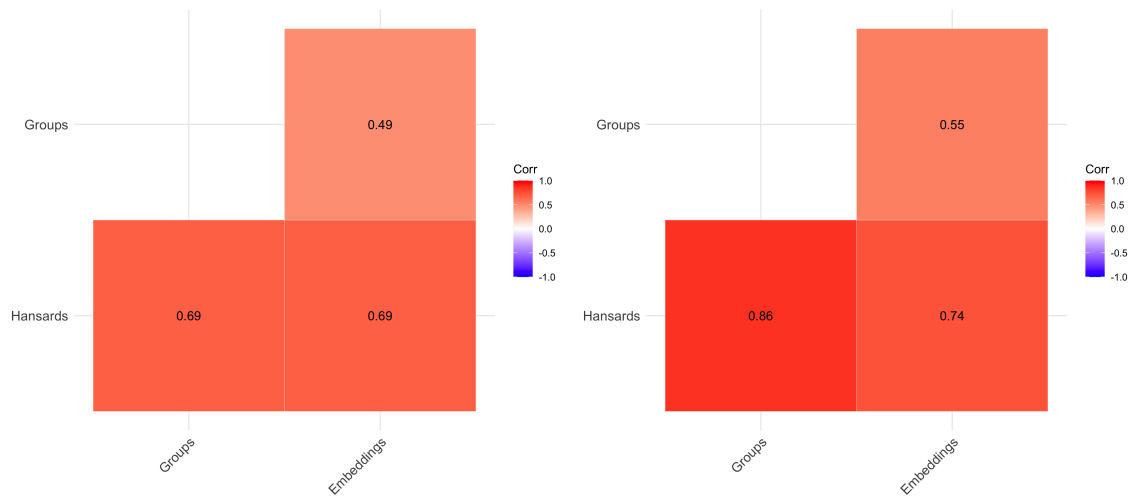
Figure D.5. Unemployment: Correlations between measures, all Speeches (left) and PMB/QP/S.O. 31 (right)

D.3.4. Regressions results

Figures D.6 and D.7 report coefficients obtained from estimating the effect of ridings' average age, share of people born outside of Canada and unemployment rate on the number of mentions of seniors' issues, immigration and unemployment per 1000 words pronounced in Parliament. Models are estimated using ordinary least squares regression. The units of analysis are MP-Parliament dyads. The *Seniors* models control for the age of the MP at the time of election. The *Immigration* models control for MPs' immigrant background. The *Unemployment* models control for Atlantic provinces. All models control for the party affiliation of MPs. Dummies for Parliaments are also included. For comparison purposes, I standardized the coefficients (so the effects should be interpreted in terms of standard deviations).

Coefficients are generally in the same direction, regardless of how the dependent variables are measured. When the dependent variables are measured using the Embeddings dictionary, coefficients are always weaker than in other models. This is not surprising: word embeddings capture more general terms, so what we measure as being 'attention to seniors, immigration or unemployment' is actually 'attention to seniors, immigration or unemployment *and other things*'. In the *Seniors* models, all coefficients but the Embeddings coefficient cannot be distinguished from zero. In the *Unemployment* models, only the Hansard coefficient can be distinguished from zero.
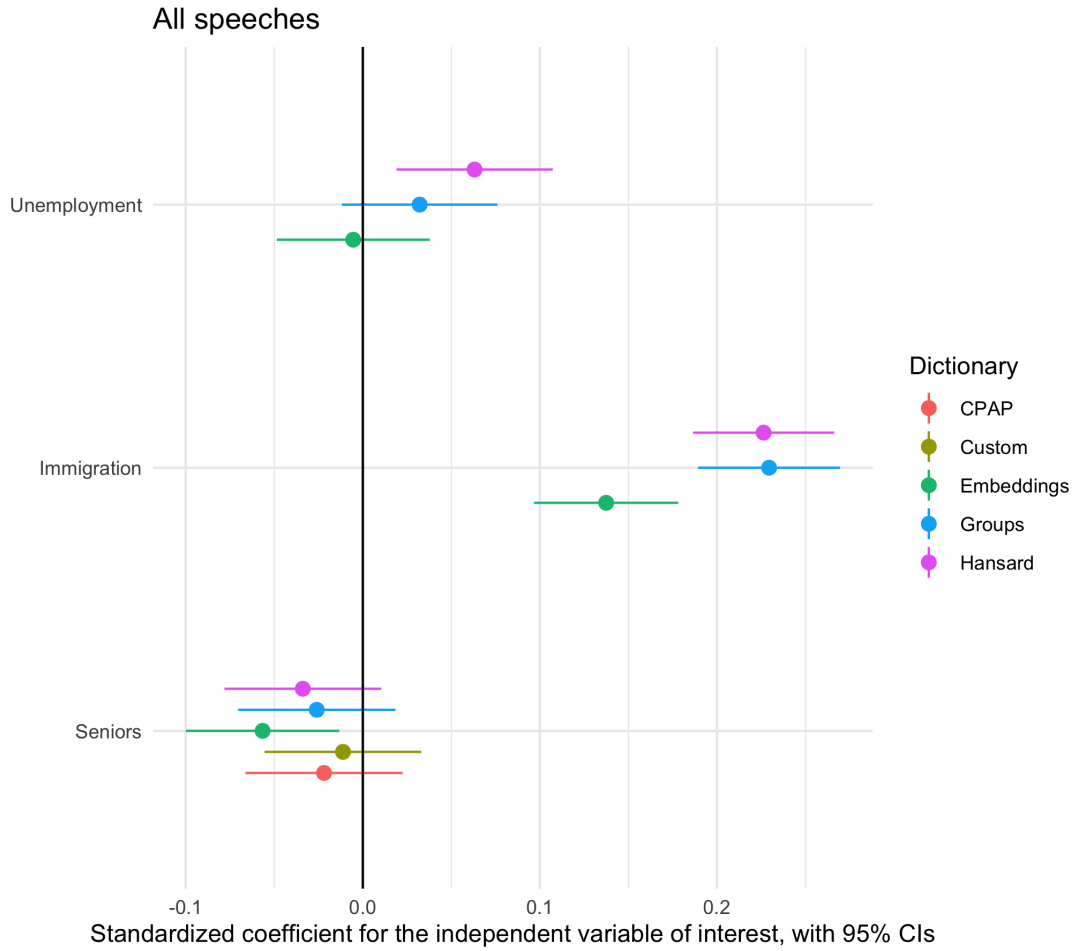
Figure D.6. Effect of demographic variables on issue mentions, different measures, all speeches
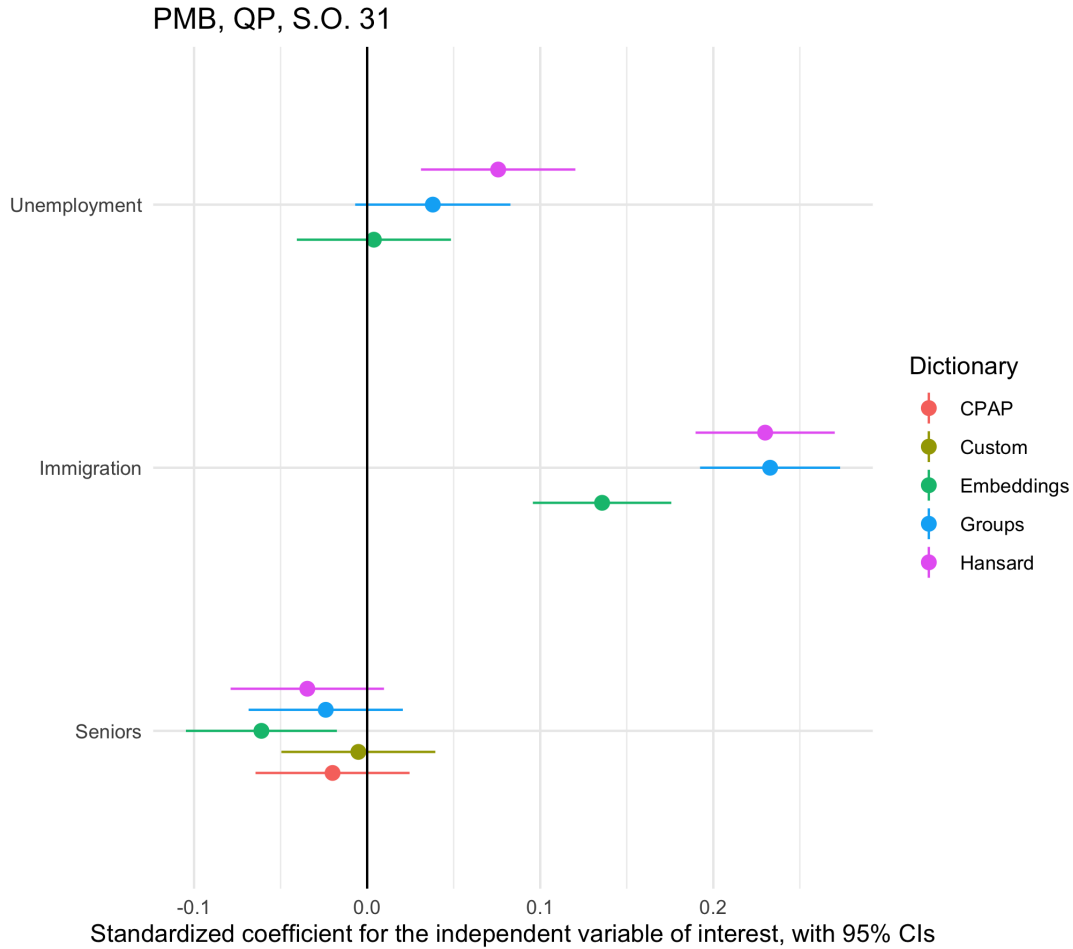
Figure D.7. Effect of demographic variables on issue mentions, different measures, PMB/QP/S.O. 31

D.3.5. Conclusion

Looking at the regression results, we find some differences in terms of statistical significance. These, however, did not always concern the same dictionaries. In the *Seniors* model, the only significant coefficient was obtained from the Embeddings lexicon. In the *Unemployment* model, it was obtained from the Hansard lexicon. Statistical significance cannot be used as a criterion to decide which dictionary performs better. I also argue that we cannot reject dictionaries based on the strength of coefficients either. The Embeddings dictionary did yield weaker estimates; but these were not largely different from other models. Given these results and the strong levels of correlation between the measures, I argue that we should

instead select a dictionary based on scalability, concurrent validity, and the accessibility of each measurement method for members of the political science community.

I argue that the dictionary presented in section D.3.1.1 — created from the *Hansard Indexes* — provides the most comprehensive, yet exclusive list of words to identify mentions of issues in the Canadian House of Commons. Even though all measures are highly correlated, other dictionaries were created more arbitrarily (section D.3.1.4, *Custom list*), which makes them less generalizable, or did not tap into all dimensions of the concepts (section D.3.1.2, *Groups* and section D.3.1.5, *CPAP*). On the contrary, the dictionary presented in section D.3.1.3 — *Word embeddings* — tapped into dimensions not related to the issues at hand, which weakened it in terms of concurrent validity. Moreover, the Hansard Indexes method could be used for other issues or in other national contexts as well, provided that legislative transcriptions are accompanied with Indexes. It is also not too demanding computationally, which means that it could be used by political scientists with various methodological backgrounds.

D.4. Complete regression results

Tables D.18 to D.20 present complete regression results for the models presented in the text.

	Seniors All speeches	Immigration All speeches	Unemployment All speeches	Seniors PMB/ SO 31/QP	Immigration PMB/ SO 31/QP	Unemployment PMB/ SO 31/QP
Count part						
Intercept	−6.894***	−7.353***	−6.335***	−7.032***	−7.257***	−6.401***
	(0.468)	(0.103)	(0.122)	(0.576)	(0.114)	(0.152)
Av. age	−0.015			−0.022		
	(0.013)			(0.015)		
MP age	0.011**			0.019***		
	(0.004)			(0.005)		
Perc. born outside CAN		0.025***			0.028***	
		(0.003)			(0.003)	
Imm. background		0.644***			0.548***	
		(0.134)			(0.130)	
Unemployment rate			0.039***			0.047***
			(0.010)			(0.012)
Atlantic			−0.127			−0.218
			(0.114)			(0.150)
Parliament F.E.	✓	✓	✓	✓	✓	✓
Zero-inflated part						
Intercept (ZI)	0.030	−0.435	0.104	0.458	0.388	0.540
	(0.449)	(0.625)	(0.430)	(0.313)	(0.423)	(0.353)
Total nb of spoken words/1000 (ZI)	−0.457***	−0.599***	−0.613***	−0.854***	−1.208***	−1.267***
	(0.111)	(0.169)	(0.123)	(0.145)	(0.300)	(0.187)
N	2820	2860	2861	2820	2860	2861

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$. Zero-inflation negative binomial regression models. Clustered standard errors in parentheses.

Table D.18. Effect of constituency composition on MPs' attention to seniors, immigration and unemployment (without party control)

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Table D.19. Effect of constituency composition on MPs' attention to seniors, immigration and unemployment (with party control)

	Seniors All speeches	Immigration All speeches	Unemployment All speeches	Seniors PMB/ SO 31/QP	Immigration PMB/ SO 31/QP	Unemployment PMB/ SO 31/QP
Count part						
Intercept	−7.197***	−7.233***	−5.508***	−7.500***	−6.970***	−5.518***
	(0.488)	(0.228)	(0.164)	(0.607)	(0.190)	(0.216)
Av. age	−0.013			−0.018		
	(0.013)			(0.015)		
MP age	0.012**			0.020***		
	(0.004)			(0.005)		
Perc. born outside CAN		0.027***			0.031***	
		(0.003)			(0.003)	
Imm. background		0.683***			0.584***	
		(0.138)			(0.133)	
Unemployment rate			0.017*			0.024*
			(0.009)			(0.011)
Atlantic			0.026			−0.047
			(0.107)			(0.141)
Conservative	0.115	−0.071	−0.768***	0.237	−0.255	−0.866***
	(0.143)	(0.228)	(0.120)	(0.175)	(0.188)	(0.158)
Liberal	0.248	−0.344	−0.543***	0.188	−0.500**	−0.601***
	(0.137)	(0.211)	(0.110)	(0.162)	(0.182)	(0.139)
NDP	0.395*	−0.313	−0.274*	0.517**	−0.457*	−0.218
	(0.156)	(0.220)	(0.131)	(0.187)	(0.189)	(0.157)
Other	0.116	−0.123	−0.584***	0.086	−0.083	−0.660**
	(0.246)	(0.328)	(0.163)	(0.284)	(0.276)	(0.218)
Reform	0.283	0.130	−1.154***	0.313	−0.023	−0.960***
	(0.152)	(0.235)	(0.118)	(0.188)	(0.223)	(0.163)
Parliament F.E.	✓	✓	✓	✓	✓	✓

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Table D.19 – continued from previous page

	Seniors All speeches	Immigration All speeches	Unemployment All speeches	Seniors PMB/ SO 31/QP	Immigration PMB/ SO 31/QP	Unemployment PMB/ SO 31/QP
Zero-inflated part						
Intercept (ZI)	0.046	−0.513	0.001	0.442	0.338	0.424
	(0.442)	(0.636)	(0.449)	(0.324)	(0.430)	(0.386)
Total nb of spoken words/1000 (ZI)	−0.458***	−0.598***	−0.603***	−0.878***	−1.202***	−1.308***
	(0.109)	(0.171)	(0.125)	(0.152)	(0.299)	(0.199)
N	2820	2860	2861	2820	2860	2861

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$. Zero-inflation negative binomial regression models. Clustered standard errors in parentheses.

	Seniors	Immigration	Unemployment
Count part			
Intercept	−7.689***	−7.305***	−5.512***
	(0.548)	(0.246)	(0.180)
Av. age	−0.000		
	(0.015)		
Perc. born outside CAN		0.034***	
		(0.004)	
Unemployment rate			0.020
			(0.011)
Frontbenchers	0.585	0.119	−0.048
	(0.733)	(0.122)	(0.129)
Dem. indicator*Frontbenchers	−0.021	−0.009	−0.005
	(0.019)	(0.005)	(0.014)
MP age	0.012**		
	(0.004)		
Imm. background		0.694***	
		(0.139)	
Atlantic			0.028
			(0.108)
Conservative	0.209	−0.089	−0.732***
	(0.134)	(0.214)	(0.114)
Liberal	0.359**	−0.350	−0.496***
	(0.131)	(0.199)	(0.105)
NDP	0.440**	−0.345	−0.254*
	(0.151)	(0.215)	(0.128)
Other	0.162	−0.131	−0.558***
	(0.238)	(0.334)	(0.157)
Reform	0.347*	0.102	−1.134***
	(0.145)	(0.233)	(0.116)
Parliament F.E.	✓	✓	✓
Zero-inflated part			
Intercept	0.051	−0.515	−0.007
	(0.433)	(0.640)	(0.448)
Total nb of spoken words/1000	−0.452***	−0.599***	−0.599***
	(0.104)	(0.172)	(0.124)
N	2820	2860	2861

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$. Zero-inflation negative binomial regression models.

Clustered standard errors in parentheses.

Table D.20. Effect of constituency composition on MPs' attention to seniors, immigration and unemployment (PMB/SO 31/QP)

D.5. Additional model specifications

D.5.1. Full models: all control variables

I estimated the models presented in the main text, but included all control variables (MP age, immigrant background and Atlantic provinces) in every model. Results are substantively the same and can be found in Table D.21.

	Seniors All speeches	Immigration All speeches	Unemployment All speeches	Seniors PMB/ SO 31/QP	Immigration PMB/ SO 31/QP	Unemployment PMB/ SO 31/QP
Count part						
Intercept	-7.221^{***}	-7.056^{***}	-5.411^{***}	-7.520^{***}	-6.807^{***}	-5.534^{***}
	(0.490)	(0.372)	(0.194)	(0.612)	(0.304)	(0.249)
Av. age	-0.011			-0.017		
	(0.013)			(0.016)		
Perc. born outside CAN		0.027^{***}			0.032^{***}	
		(0.003)			(0.004)	
Unemployment rate			0.018^{*}			0.026^{*}
			(0.009)			(0.011)
MP age	0.011^{**}	-0.004	-0.002	0.019^{***}	-0.004	-0.000
	(0.004)	(0.005)	(0.003)	(0.005)	(0.004)	(0.004)
Imm. background	0.256	0.691^{***}	0.104	0.234	0.588^{***}	0.119
	(0.132)	(0.139)	(0.077)	(0.160)	(0.133)	(0.105)
Atlantic	0.033	-0.060	0.025	0.035	-0.101	-0.047
	(0.094)	(0.161)	(0.112)	(0.106)	(0.155)	(0.147)
Parties	✓	✓	✓	✓	✓	✓
Parliament F.E.	✓	✓	✓	✓	✓	✓
Zero-inflated part						
Intercept (ZI)	0.053	-0.676	-0.084	0.437	0.337	0.386
	(0.443)	(0.687)	(0.482)	(0.321)	(0.441)	(0.404)
Total nb of spoken words/1000 (ZI)	-0.459^{***}	-0.582^{**}	-0.598^{***}	-0.867^{***}	-1.193^{***}	-1.302^{***}
	(0.109)	(0.178)	(0.132)	(0.149)	(0.309)	(0.202)
N	2819	2819	2819	2819	2819	2819

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$. Zero-inflation negative binomial regression models. Clustered standard errors in parentheses.

Table D.21. Effect of constituency composition on MPs' attention to seniors, immigration and unemployment, full models

D.5.2. Additive effect of unemployment rate and share of immigrants

Could there be an additive effect of the share of immigrants on the association between unemployment rate and mentions of unemployment, and vice-versa for mentions of immigration? While unemployment rate and the size of the immigrant population could be positively associated, evidence suggests that there is actually a weak negative correlation between these two variables. Indeed, using the dataset presented in this paper, I find a -0.16 correlation between the two variables ($p < 0.05$). Still, in order to investigate the potential additive effect of these two factors, I ran the same regression models as those presented in the text, but this time adding an interaction term between the unemployment rate and the share of immigrants.

Results can be found in Table D.22. There is a negative relationship between the unemployment rate and the number of mentions of immigration and a negative (almost null) effect of the share of immigrants on the number of mentions of unemployment. Plus, the coefficients for the interaction terms are equal to almost zero. The influence of immigrant share on mentions of immigration is not stronger in districts with higher unemployment, and vice-versa for unemployment.

	Immigration All speeches	Unemployment All speeches	Immigration PMB/ SO 31/QP	Unemployment PMB/ SO 31/QP
Count part				
Intercept	−6.847***	−5.498***	−6.512***	−5.509***
	(0.293)	(0.165)	(0.273)	(0.218)
Perc. born outside CAN	0.016*	−0.006	0.023**	−0.007
	(0.008)	(0.005)	(0.009)	(0.007)
Unemployment rate	−0.039**	0.016	−0.044**	0.024*
	(0.014)	(0.009)	(0.016)	(0.012)
Imm. background	0.692***	0.153	0.585***	0.180
	(0.140)	(0.080)	(0.134)	(0.106)
Atlantic	0.164	−0.035	0.165	−0.119
	(0.181)	(0.113)	(0.179)	(0.151)
Conservative	−0.078	−0.730***	−0.295	−0.822***
	(0.227)	(0.123)	(0.193)	(0.160)
Liberal	−0.335	−0.488***	−0.525**	−0.535***
	(0.211)	(0.115)	(0.191)	(0.147)
NDP	−0.306	−0.246	−0.461*	−0.188
	(0.216)	(0.134)	(0.191)	(0.160)
Other	−0.188	−0.584***	−0.154	−0.656**
	(0.360)	(0.172)	(0.309)	(0.225)
Reform	0.118	−1.128***	−0.069	−0.930***
	(0.231)	(0.118)	(0.221)	(0.163)
Perc. born outside CAN*Unemployment rate	0.001	0.000	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Zero-inflated part				
Intercept (ZI)	−0.742	−0.044	0.330	0.395
	(0.686)	(0.474)	(0.441)	(0.397)
Total nb of spoken words/1000 (ZI)	−0.569***	−0.599***	−1.200***	−1.293***
	(0.167)	(0.130)	(0.305)	(0.202)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Zero-inflation negative binomial regression models. Clustered standard errors in parentheses.

Table D.22. Additive effect of constituency composition on MPs' attention to seniors, immigration and unemployment

D.5.3. OLS models

Table D.23 reports results of linear regression models where the dependent variables are counts of issue mentions per 1,000 words by one MP in one Parliament, and the independent variables are the demographic indicators of average age, share of people born outside Canada and unemployment rate. The seniors models control for the MPs' age, the immigration models control for MPs' immigrant background the unemployment models control for the Atlantic region. The models control for party. Dummies for parliaments are included in all models. Standard errors in all models are clustered by MP. Since evidence of heteroskedasticity was found in the models, all models were estimated using heteroskedastic-robust standard errors.

Results are substantively the same as those obtained from zero-inflated negative binomial models (main analyses). The share of immigrants in a district is associated with the number of mentions of immigration in the House. The unemployment rate in a district is associated with the number of mentions of unemployment in the House. There is no statistically significant effect of the population's age on the number of mentions of seniors' issues in the House.

	Seniors All speeches	Immigration All speeches	Unemployment All speeches	Seniors PMB/ SO 31/QP	Immigration PMB/ SO 31/QP	Unemployment PMB/ SO 31/QP
Intercept	0.878	0.588*	3.490***	0.626	0.846**	3.438***
	(0.813)	(0.276)	(0.374)	(1.034)	(0.298)	(0.507)
Av. age	−0.031			−0.048		
	(0.023)			(0.033)		
MP age	0.021**			0.034**		
	(0.008)			(0.011)		
Conservative	0.091	−0.262	−1.480***	0.252	−0.452	−1.703***
	(0.209)	(0.294)	(0.296)	(0.273)	(0.303)	(0.402)
Liberal	0.245	−0.565*	−1.171***	0.235	−0.802**	−1.339***
	(0.189)	(0.275)	(0.275)	(0.227)	(0.299)	(0.365)
NDP	0.505	−0.534	−0.588	0.862*	−0.600	−0.486
	(0.276)	(0.314)	(0.343)	(0.358)	(0.343)	(0.435)
Other	−0.239	−0.106	−1.380***	−0.216	0.020	−1.508**
	(0.376)	(0.783)	(0.344)	(0.439)	(0.799)	(0.457)
Reform	0.314	−0.007	−1.918***	0.389	−0.076	−1.749***
	(0.199)	(0.313)	(0.255)	(0.238)	(0.362)	(0.354)
Parliament F.E.	✓	✓	✓	✓	✓	✓
Perc. born outside CAN		0.047***			0.054***	
		(0.006)			(0.007)	
Imm. background		1.618***			1.479***	
		(0.365)			(0.388)	
Unemployment rate			0.036*			0.053*
			(0.017)			(0.021)
Atlantic			0.003			−0.142
			(0.220)			(0.256)
R²	0.030	0.101	0.091	0.026	0.090	0.072
Adj. R²	0.025	0.096	0.087	0.021	0.085	0.068
Num. obs.	2820	2860	2861	2820	2860	2861
RMSE	2.945	3.227	2.227	4.086	3.661	2.709

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$. OLS regression models. Clustered standard errors in parentheses.

Table D.23. Effect of constituency composition on MPs' attention to seniors, immigration and unemployment, OLS models

D.5.4. Share of seniors in the 'seniors' model

Table D.24 reports results for the 'seniors' models performed in the main text, but with different operationalizations of the independent variable. Here, I use the share of people aged 65 years and over instead of average age in the district. Dummies for Parliaments are included (but not shown in the table). Results are in the same direction as in the main analyses.

	All speeches	PMB/SO 31/QP
Count part		
Intercept	-7.496^{***}	-7.914^{***}
	(0.230)	(0.293)
Share of seniors	-0.016	-0.020
	(0.009)	(0.011)
MP age	0.012^{**}	0.020^{***}
	(0.004)	(0.005)
Conservative	0.127	0.250
	(0.142)	(0.174)
Liberal	0.258	0.198
	(0.137)	(0.162)
NDP	0.411^{**}	0.537^{**}
	(0.156)	(0.187)
Other	0.124	0.100
	(0.244)	(0.281)
Reform	0.295	0.332
	(0.151)	(0.187)
Parliament F.E.	✓	✓
Zero-inflated part		
Intercept (ZI)	0.049	0.441
	(0.442)	(0.325)
Total nb of spoken words/1000 (ZI)	-0.458^{***}	-0.879^{***}
	(0.109)	(0.152)

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$. Zero-inflation negative binomial regression models. Clustered standard errors in parentheses.

Table D.24. Effect of the share of seniors on MPs' attention to seniors' issues