Is the "OK Boomer" Meme Realistic for Major Public Transfers in Canada? Intergenerational Equity and Long Run Public Policy in Canada

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Abstract

In Canada and several other wealthy countries, the confluence of population aging, very tight housing markets, and increasing health care costs are giving rise to a simplistic meme, "OK Boomer". This meme suggests that the problems facing younger birth cohorts are all due to an overly rich baby boom cohort – not only in terms of younger cohorts' abilities to enter home ownership, but also in the future when their tax burdens will have to support an older and increasingly frail elderly population.

There is considerable academic literature on so-called generational accounting, which emphasizes income and other economic inequities between younger and older birth cohorts. However, such analyses ignore other dimensions of economic inequality, not least by gender and income. However, detailed previous analyses have shown that, intergenerational redistribution in Canada on a full life course basis was dominated by redistribution between men and woman, and between income groups.

This paper updates earlier analyses by integrating recent data on incomes, taxes, cash and in-kind transfers via publicly funded health care. The results, using Statistics Canada's official demographic projections, focus on future decades as Canada's baby boom cohort moves through the time periods when frailty prevalence will peak. One question addressed is "whether publicly funded health care redistribute from me to you, or just to myself when I'm older?"

The results support the observation that intergenerational transfers are nowhere near the entire story. However, they do point to serious issues of fiscal sustainability of public pensions and publicly funded health care in the face of Canada's projected ageing population. Quantitatively, addressing costs in the health care sector are more important than public pensions. Still, there are feasible scenarios to address these longer run fiscal concerns without impairing either population health or the anti-poverty roles of public pensions.

"To portray America as riven by generational warfare, young against old, is therefore an exaggeration. Worse, it obscures a deeper divide, of class rather than age. …The big problem of the American welfare state is not that the old get too much, but that the rich do." (The Economist, January 11, 1997)

Introduction – There are persisting concerns that Canada's aging population places unsustainable pressure on public finances, particularly as healthcare and pension expenditures rise. Some observers have paired this concern with broader narratives of generational division through cooption of the "OK Boomer" meme (Wikipedia, n.d.; theconversation, n.d.). Some among the younger generations criticize the "Boomer" generation for its excessive income and wealth compared to their generation (e.g. Generation Squeeze, n.d.).

This study explores major public fiscal transfers in Canada across several person characteristics to estimate the magnitude of generational inequity, whether Boomers are indeed retaining/receiving an inequitable share, and what policy implications can be gleaned from a more comprehensive transfer analysis.

While no official or universally accepted definition of "generation" exists—a limitation in any analysis of generational trends—the Pew Research Center (n.d.), following popular conventions, has delineated a sequence of generational cohorts. Based on five-year age groupings, these classifications in 2019 corresponded to Generation Z (ages 10–24), Millennials (ages 25–39), Generation X (ages 40–54), and Baby Boomers (ages 55–74). We adopt this framework for
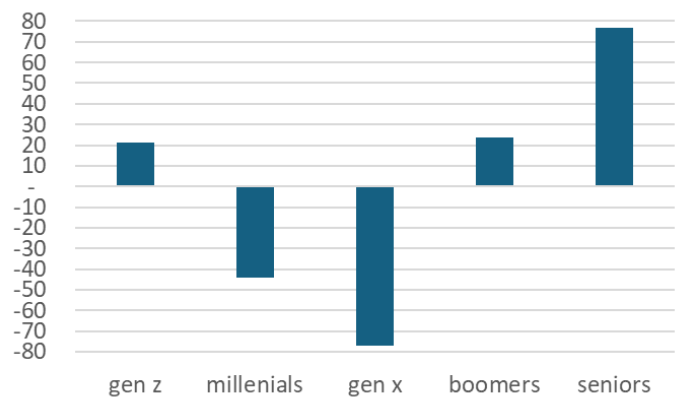
illustrative purposes.

Figure *1* shows our estimates of the overall aggregate dollar flows across these "generations" in 2019, where children age 0-9 (Generation Alpha) have been included with Generation Z, while those age 75+ (the "silent" generation) are denoted seniors.
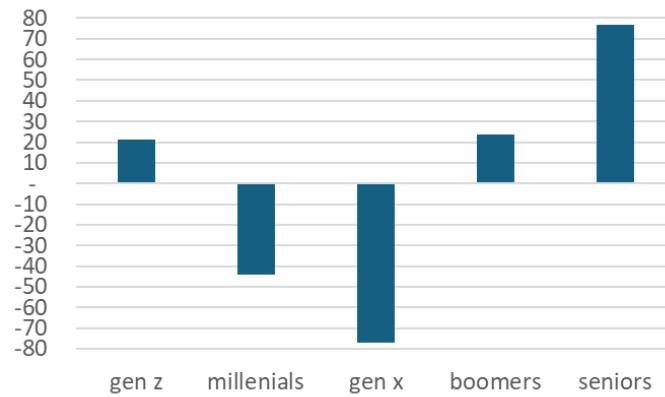
Figure 1 - Cash Transfers + Health Care Costs – Taxes (2019, $billions)
(from "main aggrs u.xlsx", sheet "resulting net")

Figure 1, and how it was produced, is discussed further below. This 2019 cross-section indicates major fiscal transfers from Millennials and Generation X to the youngest (children and Generation Z), to Boomers, and even more so to seniors. Such intergenerational transfers constitute the main focus of the literature on National Transfer Accounts (NTAs) (Mason et al. 2009, Mason et al. 2022, Merette and Navaux 2019). In turn, these transfers are the basis for much concern about the lack of intergenerational equity in Canada and many other countries. They further point to a waning "demographic dividend" as the working age population, the presumed source of a society's income and wealth, shrinks while the older "dependent" population grows.

In contrast, a recent consensus report from the US National Academy of Medicine (Wong et al., 2023) draws on population ageing to argue for a "longevity dividend", highlighting not only increasing life span but also increasing health span, with concomitant potential increases in various social contributions of this growing older age population, including increasing labour force participation.

Nevertheless, in Canada, NTA-style analysis has motivated proposals to cut cash transfers to seniors (e.g. Kershaw 2024). This common portrayal of intergenerational redistribution overlooks other significant redistributive flows, particularly those facilitated by publicly funded health care, as well as redistributions between males and females, and between income groups.

More fundamentally, the NTA focus on net fiscal transfers gives no weight to the broad reasons for the existence of the government's roles giving rise to these fiscal transfers in the first place. In particular, public pensions play the dual roles of reducing poverty amongst older age groups, and over a longer time scale than unemployment insurance providing continuity of income through the transition from paid work to retirement in the form of pre-retirement earnings replacement. Publicly funded health care services are one of the most broadly supported activities of governments, not only in Canada, but in most other countries. It is a quintessential form of social insurance, one where private markets have consistently failed.

In this context, the objective of our analysis is critically to examine the National Transfer Accounts (NTA) approach. Specifically, we assess the extent to which NTA-based analyses capture intergenerational (in)equity, juxtaposing them against two other major sources of fiscal redistribution: publicly funded health care, and gender- and income-related cash transfers. We then explore the implications of demographic change, evaluating two broad policy scenarios for public pensions and health care to contextualize better fiscal flows beyond the narrow lens of net intergenerational transfers alone.

Methods

The analytical core of our analysis is an overall data array that captures the broad features for an aging society of the main cash and in-kind transfers. Specifically, we draw principally on Statistics Canada's Social Policy Simulation Database and Model (Statistics Canada Microsimulation, n.d.) for 2019 data on incomes, cash transfers, and taxes, and the Canadian Institute for Health Information's National Health Expenditure data for disaggregated data on health expenditures (CIHI NHEx).

Ideally, this analysis would be based on a microsimulation model such as Statistics Canada's former LifePaths model (Statistics Canada Microsimulation, n.d.) as applied in Wolfson and Rowe (2007), and recently for a number of European countries by Spielauer et al. (2022, 2023) as a major extension of NTAs. These analyses effectively are using a generalization of cohort rather than period life tables. However, the LifePaths model is no longer available. Thus, we have relied on a simpler and more approximate approach. Data from a variety of sources have been assembled, and to the extent possible been made commensurable, though the alignments are not always exact. In the absence of data on longitudinal earnings dynamics, we have further assumed that an individual who starts out in the i-th earnings group remains in that group throughout their lifetime, a period life table approach as in Zhang et al. (2011).

With equity as a major focus, Canadians' population characteristics must be appropriately heterogeneous, specifically including disaggregation by age group (including generation as a partial aggregation of finer age groups), sex (classified in the data as male or female, though we also employ the gendered terms "men" and "women" as nomenclature to refer to sex), and socio-economic position, for which we use labour market (earnings) income. In turn, these data are explored (1) cross-sectionally, (2) longitudinally over individuals' life cycles, and (3) intergenerationally.

The main governmental programs considered are public pensions and all other cash transfer programs, publicly financed health care, and income, payroll, and commodity taxes. These programs and taxes are disaggregated for populations characterized by their ages, sex, earned incomes, and mortality rates.

With this focus, much is being omitted, including the recent very large temporary cash transfers to offset the adverse economic effects of the pandemic. These temporary transfers have increased government deficits, exacerbating fears that future working age generations will have to bear intolerable tax burdens. While fiscal deficits are beyond the scope of this analysis, Tombe (2020) provides a relatively sanguine analysis of projected deficits and debt. Publicly funded education has also been excluded in this analysis, though Tombe's (2020) and Merette and Navaux's (2019) analyses suggest its impacts are small compared to publicly funded health care services. Further omissions include stocks of owner-occupied housing wealth, the impacts of environmental changes, and more broadly the dramatically increased stock of human scientific and technical knowledge.

Still, our modeling of major taxes[1], all cash transfers, and almost all publicly funded health care should be sufficient to generate plausible and useful insights.

Populations – The foundation of the analysis is the distribution of Canada's population by sex and age group. There are two main perspectives. One is the observed population by age group and calendar year showing Canada's evolving age structure; the other is a period life table (i.e. steady state population). For the observed population, we explore both historical data and projected populations, based on Statistics Canada's official projections (Statistics Canada, 2023). For the life tables, projected mortality rates are used, based on special request tabulations from Statistics Canada's DEMOSIM microsimulation model (Statistics Canada Microsimulation, n.d.).

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[1] All taxes readily broken down by age and sex, specifically income, payroll and commodity taxes, are included, but corporate income, resource royalties, and municipal property taxes have not been included.
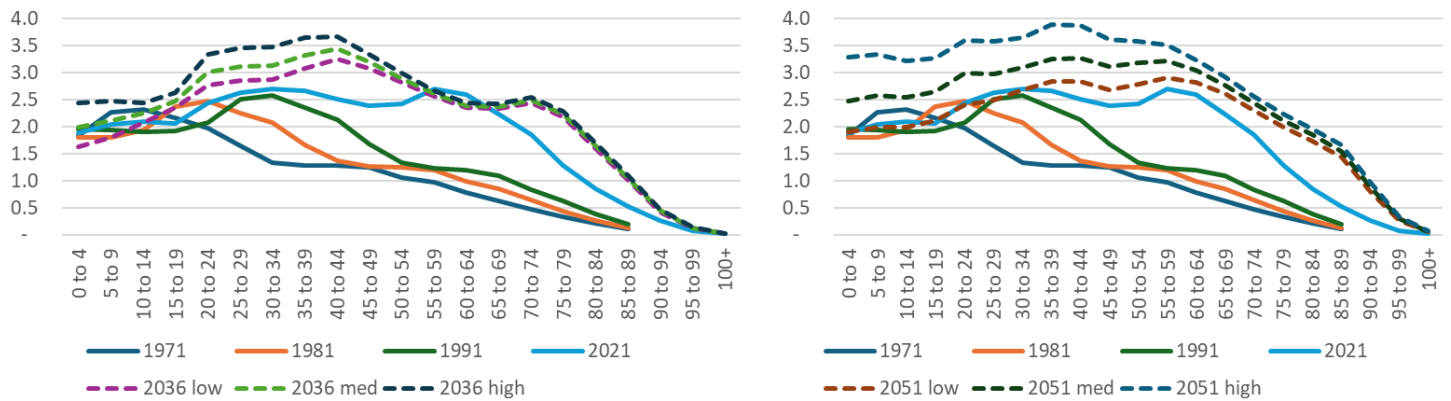
Figure 2 – Populations by Age and Year with Projections to 2036 and 2051 (millions)
From: "poplns 1971 to 2051` for pyramids i.xlsx"

For the cross-sectional population by age, Figure 2 shows actual data starting in 1971 up to 2021, and then two sets of projections to 2036 (on the left) and to 2051 (on the right). For the population projections, three official scenarios are shown for low, medium and high population growth in each graph.[2] The "baby boom" bulge is evident in both graphs, moving to the right for more recent years. By 2021, the "baby boom echo" bulge in the population, the children of the baby boom cohort, is evident for ages centred around 30-34. Most of the changes occur in the population under age 65, related to variations in assumptions regarding fertility and immigration. The impacts of alternative assumptions regarding future mortality trends are much smaller.

For the life table perspective, populations are based on standard survival curve methods (Figure 3Figure *3* --). The 2018-2020 curve draws on observed mortality rates, while the other three curves are based on mortality rates from three DEMOSIM scenarios. From this survival curve perspective, the impacts of alternative projections of mortality rates are more evident.
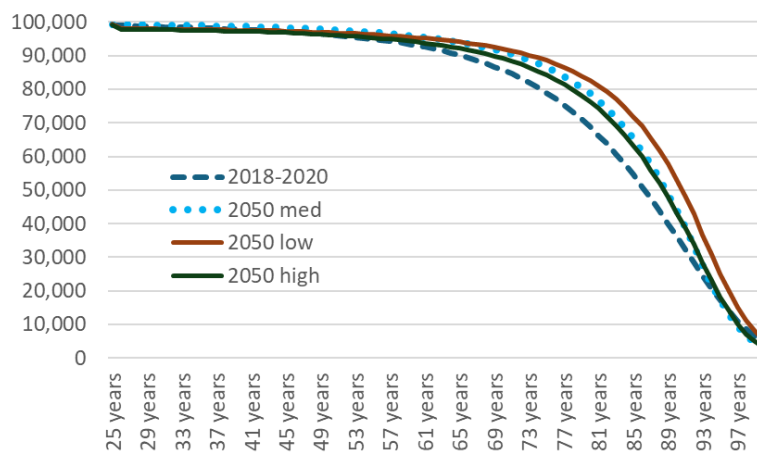

Figure 3 -- Survival Curves based on Current Data and DEMOSIM Projection Scenarios (radix = 100,000)
From: "poplns 1971 to 2051` for pyramids k.xlsx"

For both the cross-sectional population graphs above, and the survival curve graph, differences between males and females (data not shown) are relatively small. All further analysis, though, is disaggregated by sex.

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[2] Specifically, scenarios LG (low growth), M4 (medium growth), and FA (fast ageing) for low, med and high respectively. FA = fast ageing has lower immigration and fertility rates than the HG = high population growth scenario.

Earnings Groups – To assess vertical equity, a series of ten earnings groups have been defined. These groups are based on earnings deciles derived from Statistics Canada's Social Policy Simulation Database for 2019[3] (Statistics Canada Microsimulation, n.d.). The earnings decile cut-points demarcating these deciles (Figure *4*) were based on 10-year age groups for both males and females combined.
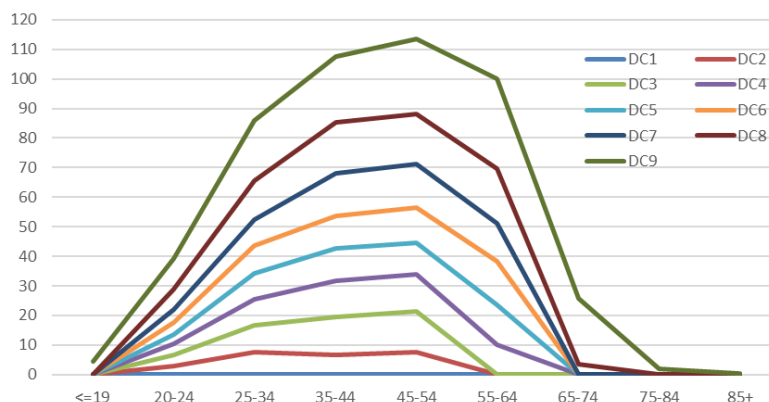

Figure 4 – Unisex Earnings Decile Cut-points ($000s)
(From decile limits c.xlsx)

Because women typically earn less than men, they are underrepresented in higher unisex earnings brackets, whereas men are more likely to occupy these higher income groups. The earnings group cut-points are all quite small and close together in the youngest and higher age groups. The percentages of women in each earnings group by age, where the fractions of women in the higher earnings groups decline, while those for men increase (Figure *5*). In total, there were 18.8 million females and 18.5 million males in 2019.
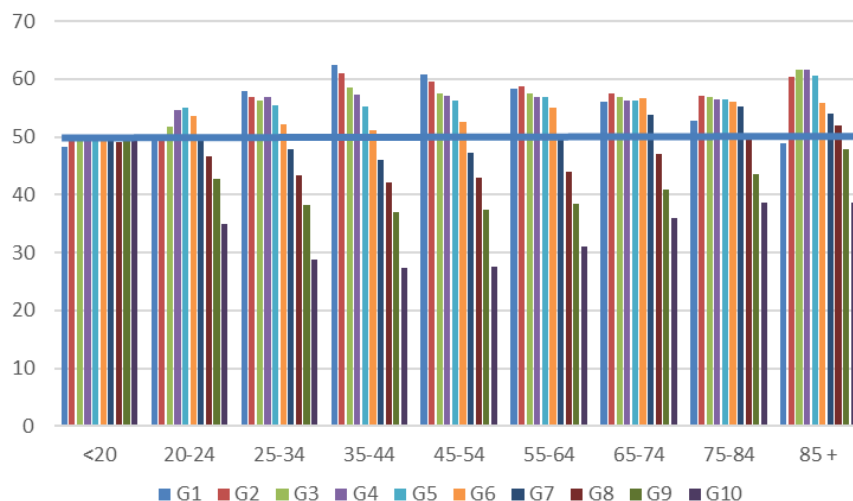

Figure 5 – Females as Percent of Total SPSD Population by Age and Earnings Group, 2019
(from: Tables mcw g.xlsx, sheet 10-yr ages)

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[3] We are using 2019 incomes and taxes as this is just before the pandemic. Other data used in this analysis are for years close to if not exactly for 2019.

Income Concepts and Income Components – Given the earnings groups just defined, disposable and consumable incomes and income components were drawn from the SPSD for 2019. These SPSD data are based on over 1 million records derived by synthetic matching of several large microdata sets (Statistics Canada Microsimulation n.d.). The derived results build on the basic identity:

> disposable income = labour income (= "earnings") + investment income + money transfers (public pensions + all others) – taxes (federal and provincial income taxes + payroll taxes)

> consumable income = disposable income - commodity taxes (sales and excise taxes)

In turn, these data are structured as arrays having the dimensions age x sex x earnings group.

Health Care – Detailed data on publicly funded health care disaggregated by age group and sex are based on the Canadian Institute for Health Information National Health Expenditure published online data (CIHI NHEx). These costs in NHEx are available separately for the major categories of expenditure: hospitals, doctors, drugs, and other, which for the elderly population is primarily long term care (LTC) expenditures. Implicitly, we treat these disaggregated health care costs as benefits to individuals in the form of publicly funded health insurance premiums, where the premiums vary by 5-year age group and sex.

For this analysis, health expenditures have been further stratified by earnings group, drawing on an earlier study using the Canadian Community Health Survey (Statistics Canada CCHS). Several steps were involved, building on previously published studies. These started with the 2011-2012 NHEx data for calendar 2010 which had been imputed to the CCHS (Wolfson and Corscadden, 2014). These data were tabulated by age and sex via CIHI, then by income group via the CCHS. The income concept used is not the same as the earnings groups defined above; nevertheless we have assumed they are sufficiently similar for the purposes of this study. Finally, these older health care costs data have been updated using the observed ratios of 2019 to 2010 NHEx per capita costs, correspondingly broken down by spending category, age group and sex. However, it was necessary to assume that these updates were independent of earnings group. Equivalently, we assume that the 2019 patterns of per capita health care costs across earnings groups are the same as those previously estimated by Wolfson and Corscadden (2014).

Results – Lifetime Perspective

One perspective on the redistributive impacts of cash transfers, in kind health care benefits, and taxes is to consider these over an individual's full life cycle. Using a period life table approach, the data have been summarized in a pair of arrays for males and females separately, evaluated across two dimensions; age group and earning group. The lifetime values are derived by multiplying the observed per capita dollar amounts in each sex / age / earnings group by the lifetable populations for 2021. With the assumption that per capita economic growth is equal to the discount rate[4], we sum values in each array along the age dimension to generate a set of lifetime values broken down by sex and the ten earnings groups. The disaggregations by earnings group are based on the earnings-related mortality rates in Milligan and Schirle (2021).

Figure 6 shows a series of results for the various lifetime income concepts. Moving from right to left, the rightmost set of bars shows investment incomes for ten (recall not equal-sized) earnings groups for males ("m inv") and females ("f inv"). The next set of bars to the left show earnings (with "m earn" and "f earn" the earnings of males and females respectively), followed to its left by a set of bars showing disposable income ("m disp" and "f disp") which is total income

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[4] These can be either real or nominal growth and discount rates; in effect the inflation rate is immaterial.

less income and payroll taxes. Finally, the leftmost set of bars shows consumable income ("m cons" and "f cons") which is disposable income less commodity taxes.
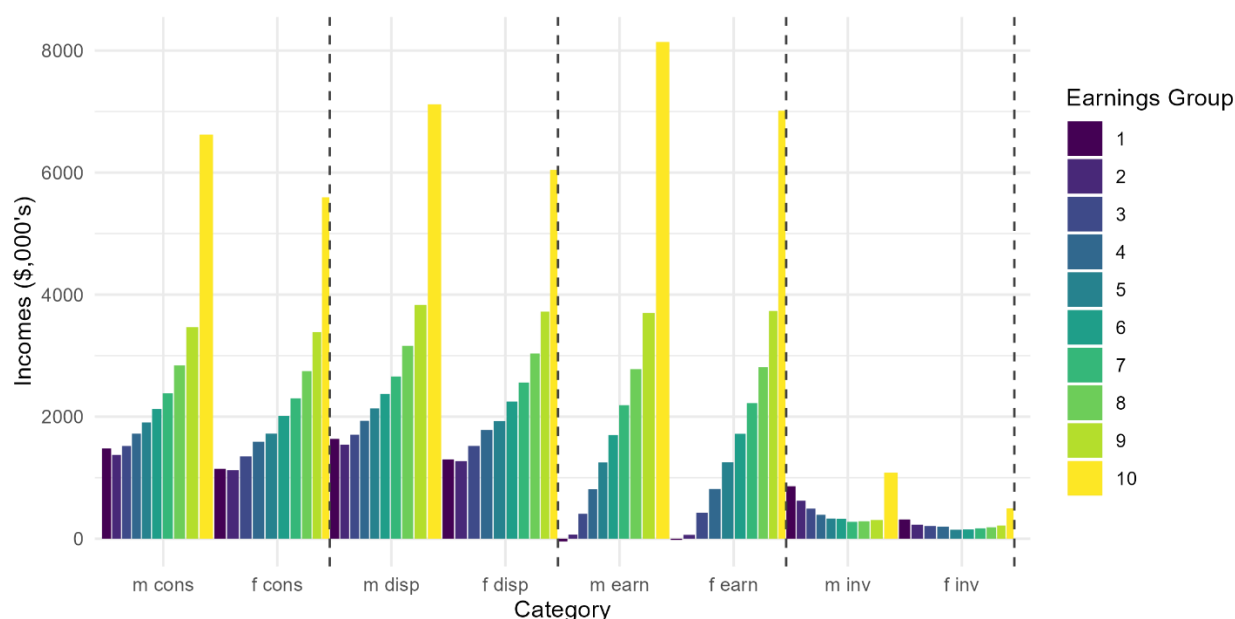

Figure 6 – Lifetime Consumable, Disposable, Earned and Investment Incomes ($000s) by Sex and Earnings Group
(n.b. widths of bars correspond to percentages of males and females in each earnings group)
(from intergen per capita survival p.xlsx)

Earnings are highly unequally distributed, as indicated by the steeply increasing values moving from lower to higher earnings groups i.e. from the left to the right within each set of ten bars. Women's earnings show a very similar pattern to men's. However, it is important to recall that these earnings groups are defined using unisex decile cut-points, so that there are fewer women and more men as one moves up the earnings groups, as shown in Figure *6* by the variable width bars.

Notably, investment incomes decrease with earnings groups except for the highest group. The reason is that working age individuals with zero or low earnings typically have other sources of income, which include investment income, as well as cash transfers such as public pensions. In particular, as the earnings groups shown are for all ages combined, retired individuals will generally have zero or relatively low earnings while also having investment income. For all earnings groups, women have lower investment incomes than men.

The disposable and consumable income portions of the graph (the sets of columns labelled "m disp", "f disp", "m cons", and "f cons" respectively) show incomes after the impacts of cash transfers and taxes are considered (income and payroll taxes for disposable income, and income, payroll, and commodity taxes for consumable income). Consumable incomes are somewhat lower than disposable incomes, showing the impact of commodity taxes.

Both consumable and disposable income are more evenly distributed than earnings, indicating the generally progressive net impacts of cash transfers and taxes. The shapes of the disposable and consumable income distributions are very similar, indicating that commodity taxes are mostly proportional to incomes, neither appreciably progressive nor regressive.

Again, women's consumable and disposable incomes show a very similar pattern to men's, due to the earnings groups having been defined using unisex decile cut-points.

From the perspectives of intergenerational equity and NTAs, the focus is typically on public sector redistributive programs. Figure 7 shows three major public sector activities involved in this redistribution: cash transfers, transfers in kind via publicly funded health care, and the major taxes – income, payroll, and commodity.[5]

"m tran" and "f tran" are total cash transfer payments received. For those in older age groups, this is mainly public pensions, while for those of working age these cash transfers include unemployment insurance, welfare, and refundable income tax credits. They are progressively distributed, with larger amounts at lower earnings groups. Women receive more lifetime transfers than men.

"m tax" and "f tax" both show generally increasing amounts of lifetime taxes with higher earnings, especially for the top earnings group. The exception is for the lowest earnings groups for men, reflecting this earnings group's higher investment incomes.

Health care costs, similarly to cash transfers, are progressively distributed. Recall that women are more numerous in the lower earnings groups while men are more numerous in the higher earnings groups. Note that the extent of redistribution is overstated insofar as there is mobility between the earnings groups over individuals' lifetimes.
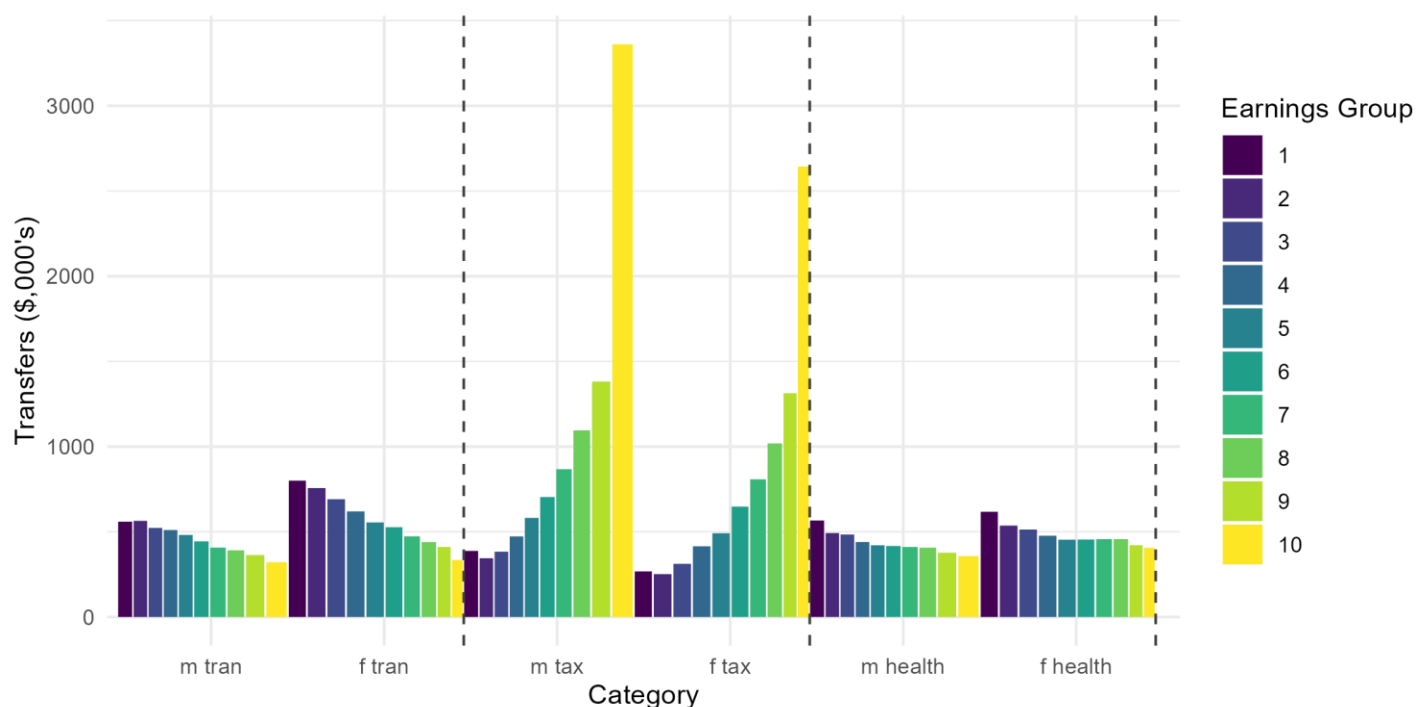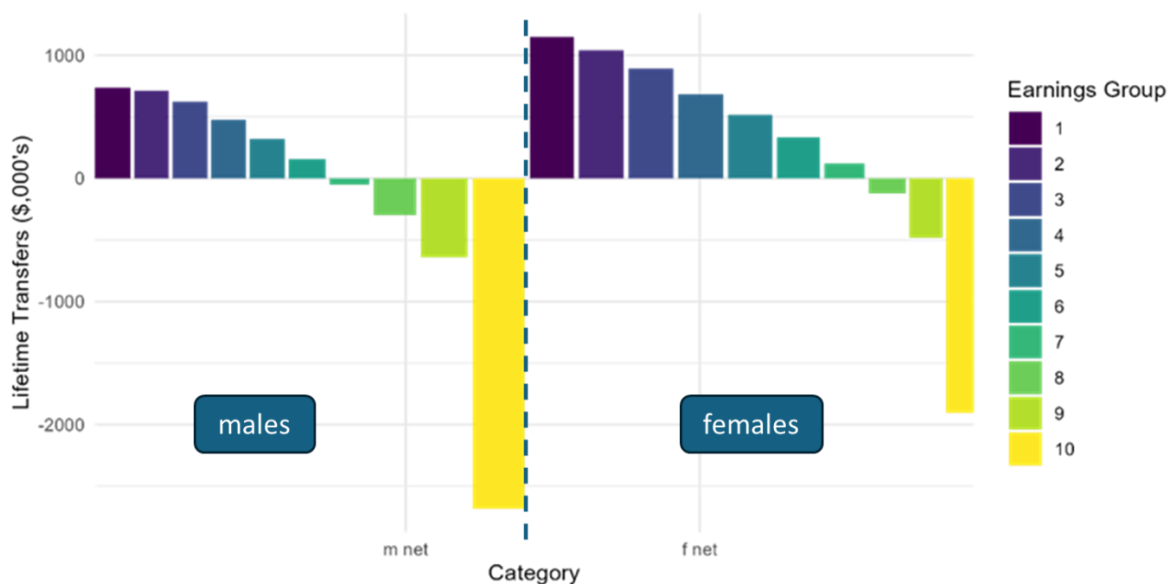

Figure 7 - Lifetime Cash Transfers, Health Care and Taxes ($000s) by Sex and Earnings Groups
(n.b. widths of bars correspond to percentages of males and females in each earnings group)
(from intergen per capita survival p.xlsx)

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[5] Other major sources of government financing in Canada are corporate income taxes, resource royalites, and fiscal deficits. These are beyond the scope of this analysis, not least because it is not possible to disaggregate them by the age / sex / earnings groups used here.

Finally,

Figure *8* shows the net lifetime values of cash transfers + health care costs – taxes. Taxes have been scaled (i.e. all income, payroll, and commodity taxes have been multiplied by the same constant, 0.9) so that total taxes equal total cash transfers plus total health care costs. These lifetime results show very substantial impacts in terms of vertical equity. Essentially, the bottom 70% of earnings groups for both males and females receive more in cash transfers and health care services than they pay over their lifetimes by way of income and payroll taxes plus commodity taxes.   The net payments are concentrated especially among those in the top 10% earnings group. Further, these net amounts are redistributive from men to women.[6]
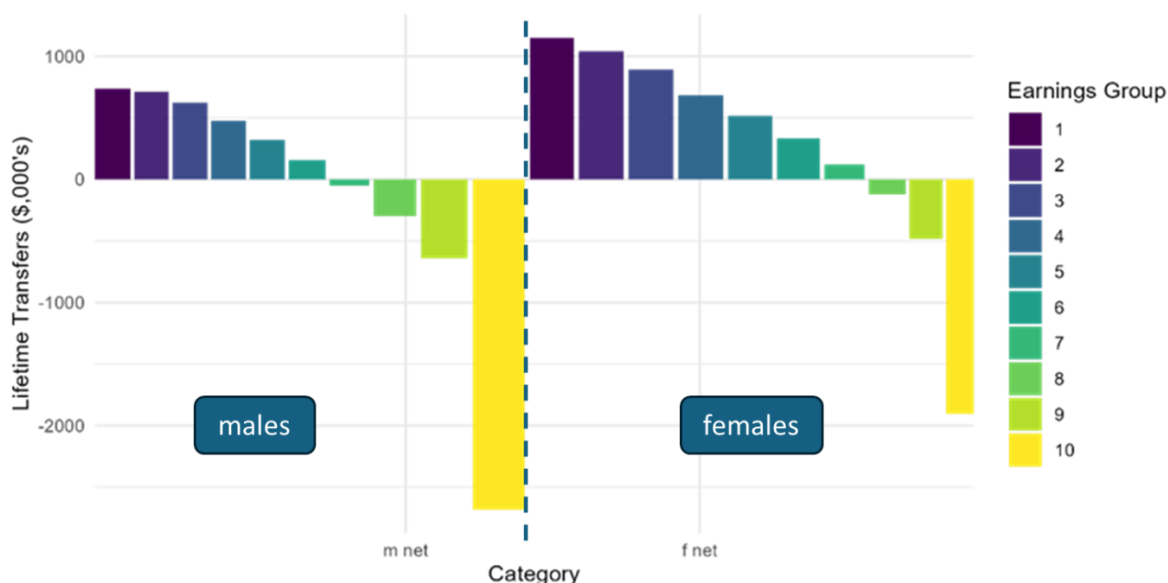

Figure 8 -- Lifetime Net Redistribution = Cash Transfers + Health Care – Taxes ($000s) by Sex and Earnings Group
(n.b. widths of bars correspond to percentages of males and females in each earnings group)

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[6] These lifetime results have additionally been computed assuming no differential mortality by earnings group. As in Wolfson and Corscadden (2014), mortality differences by earnings group had no notable effects.

Results – Aggregate Dollar Flows

This section disaggregates 2019 total dollar cross-sectional results by sex and earnings groups as well as age groups. This is an elaboration of Figure 1 and sheds particular light on NTA-style results.   Figure 9 shows results broken down by earnings groups, while Figure 10 shows the breakdowns by age groups. Within each of these graphs, there are three sets of variables, from left to right cash transfers ("m tran" and "f tran"), health care costs ("m health" and "f health"), and income + payroll + commodity taxes ("m tax*" and "f tax*"). These taxes have been scaled down from their observed values so in total (across all age and earnings groups) they equal similarly totalled cash transfers + health care costs.   Both the cash transfers received and the taxes paid are from Statistics Canada's SPSD for 2019.
Figure 9 shows that cash transfers are relatively flat across earnings groups for men, while substantially progressive for women.
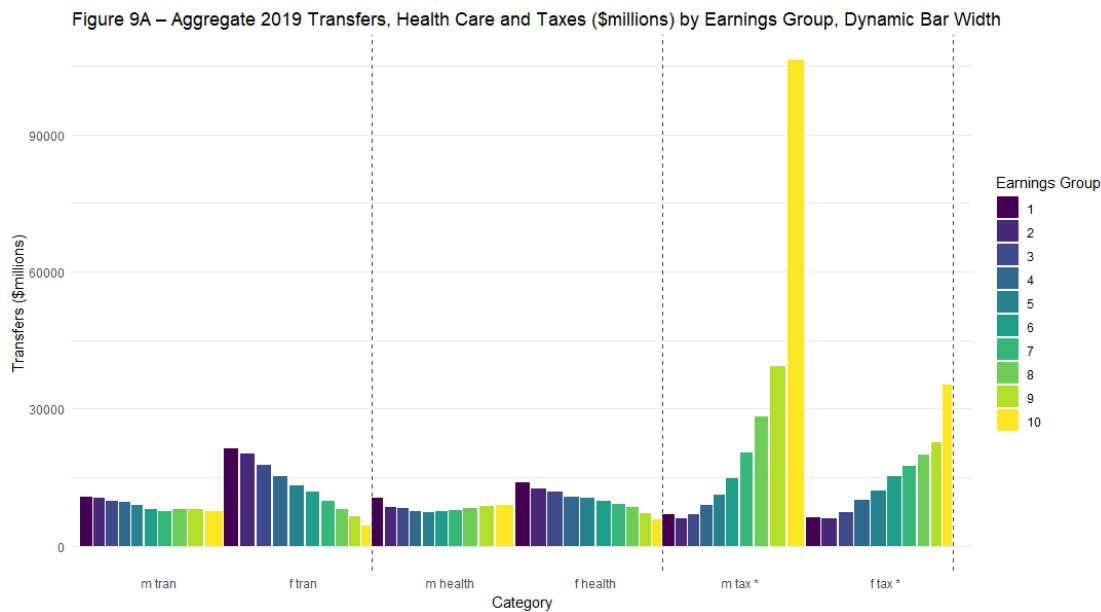

Figure 9 - Aggregate 2019 Transfers, Health Care and Taxes ($millions) by **Earnings** Group
(from "main aggrs u.xlsx", sheet "resulting net" at B68)

As shown in Figure 10, cash transfers are largest for older age groups, primarily public pension benefits. Note that the <20 and 85+ age groups cover wider age groups and thus have larger populations than all the other 5-year age groups. Cash transfers decline from the 65-69 to 85+ age groups in line with the declining sizes of the populations in these older age groups. Notably, there are also substantial cash transfers accruing at younger ages. Cash transfers to men are relatively flat in the working age groups, while those for women peak in the child-rearing years (25-49), associated with programs including the child tax benefit (a refundable income tax credit).
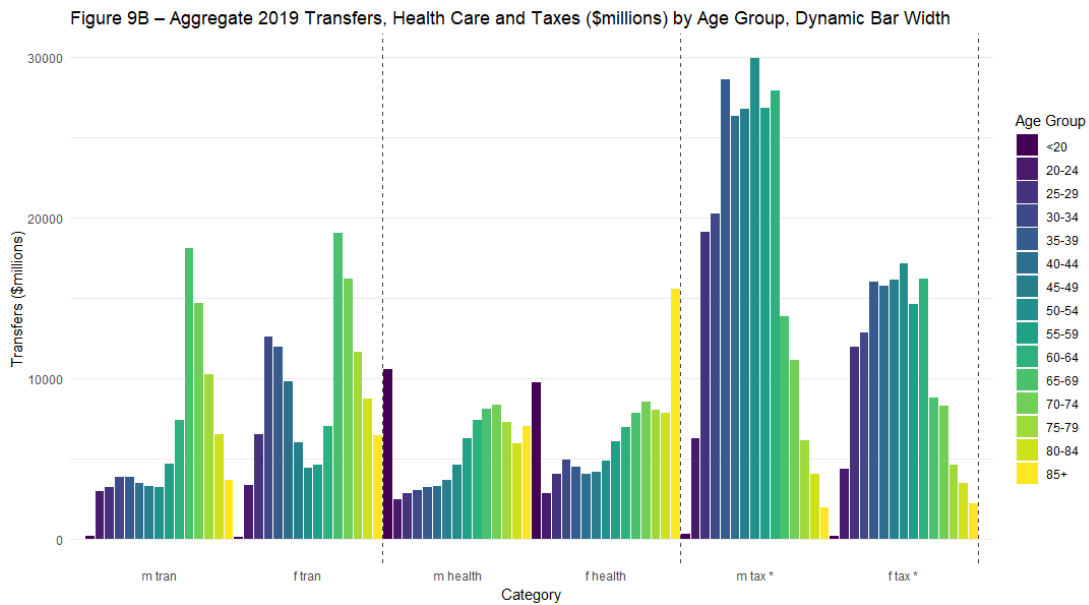
Figure 9B – Aggregate 2019 Transfers, Health Care and Taxes ($millions) by Age Group, Dynamic Bar Width

Figure 10 - Aggregate 2019 Transfers, Health Care and Taxes ($millions) by **Age** Group
(from "main aggrs u.xlsx", sheet "resulting net" at B68)

The middle sets of bars in both Figure 9 and Figure 10 show aggregate health care costs. Most notable are the peaks for the <20 age group, and the general increase with age. Otherwise, the patterns of health care costs by age group (Figure 10) follow the expected patterns, including a noticeable hump for women in their child-bearing years compared to men.

In terms of earnings groups (Figure 9), health care costs are generally lower for men than for women, as well as being flatter across the earnings groups. Health care costs are more progressively distributed for women.

Finally, the rightmost sets of bars in both Figure 9 and Figure 10 show the distributions of income + payroll + commodity taxes paid. These taxes have been scaled by 0.9 to equal the overall sum of cash transfers and health care costs, $402 billion. Across earnings groups, taxes are very progressively distributed. Both across earnings groups and age groups, these taxes are substantially higher for men than for women. Across age groups, taxes are highest for both men and women in the core working age years.

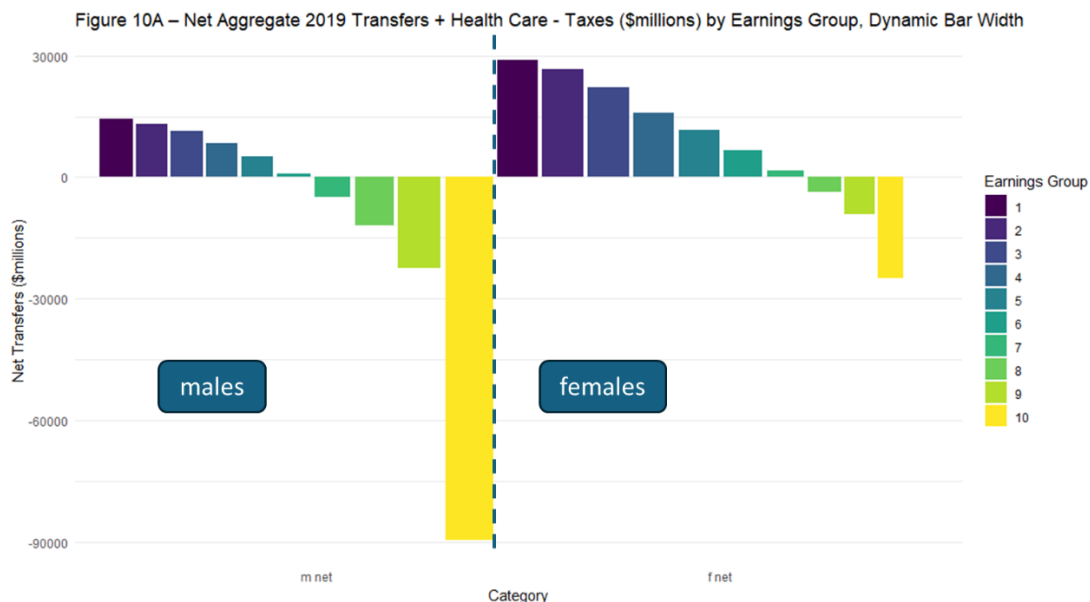A key question is the net impacts of cash transfers + health care costs - income taxes. These results are shown in

Figure 10A – Net Aggregate 2019 Transfers + Health Care - Taxes ($millions) by Earnings Group, Dynamic Bar Width

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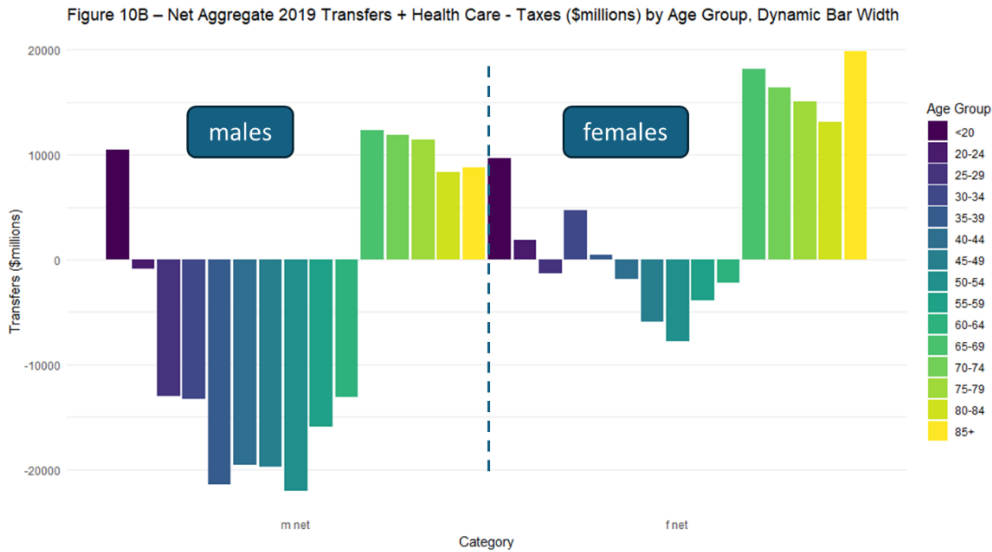Figure 11 broken down by earnings groups, and in

Figure *12* by age groups.

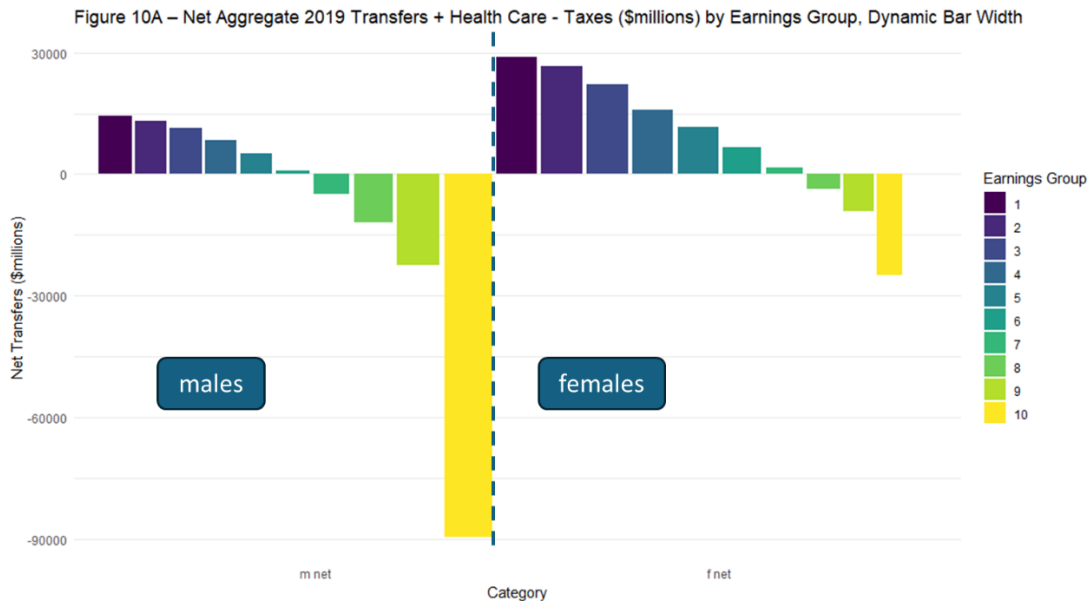
Figure 11 - Net Aggregate 2019 Transfers + Health Care - Taxes ($millions) by Earnings Group

(from "main aggrs u.xlsx", sheet "resulting net" at B46)

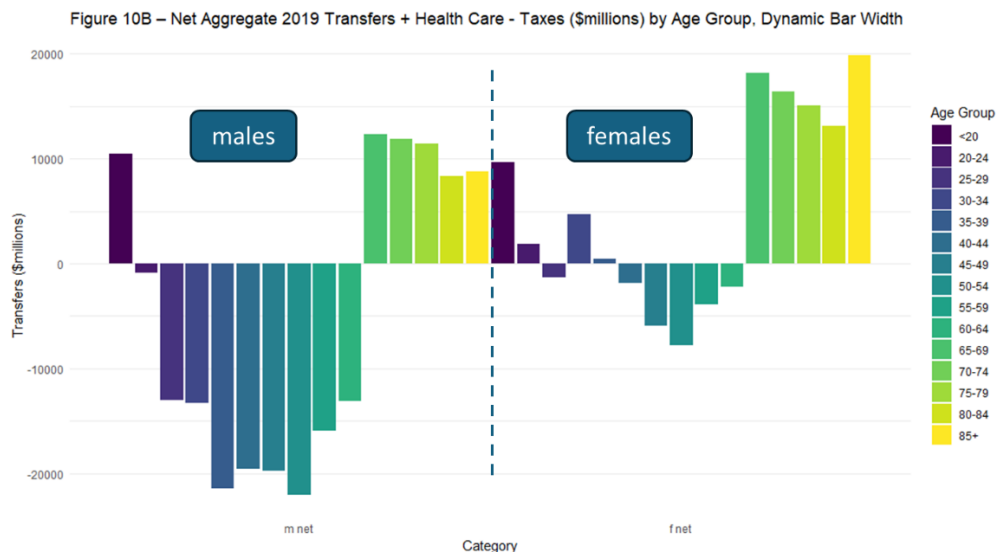Figure 10B – Net Aggregate 2019 Transfers + Health Care - Taxes ($millions) by Age Group, Dynamic Bar Width

Figure 12 - Net Aggregate 2019 Transfers + Health Care - Taxes ($millions) by Age Group
(from "main aggrs u.xlsx", sheet "resulting net" at B46)

Overall, with this scaling down of taxes, there is a net transfer of $76 billion from males to females. In terms of redistribution from higher to lower incomes, there was a net transfer of $165 billion from the top four earnings groups to the bottom six earnings groups.

In terms of intergenerational transfers (Figure *1*), the net amounts are $44 and $77 billion coming from Millennials (ages 25-39) and Generaton X (ages 40-54) respectively, with $24 and $77 billion flowing to Boomers (ages 55-74) and seniors (ages 75+) respectively, as well as $21 billion flowing to children (age 0-9) + Generation Z (age 10-24).

As a result, in 2019 intergenerational transfers, defined in terms of the popular Pew Research Center age categories ($44 + $77 = $121 billion), were larger than the cash and in-kind health care transfers between males and females ($76 billion), but smaller than those across earnings groups $165 billion).

Results – Lifetimes versus Cross-sections

While the aggregate results just shown in

Figure 10B – Net Aggregate 2019 Transfers + Health Care - Taxes ($millions) by Age Group, Dynamic Bar Width
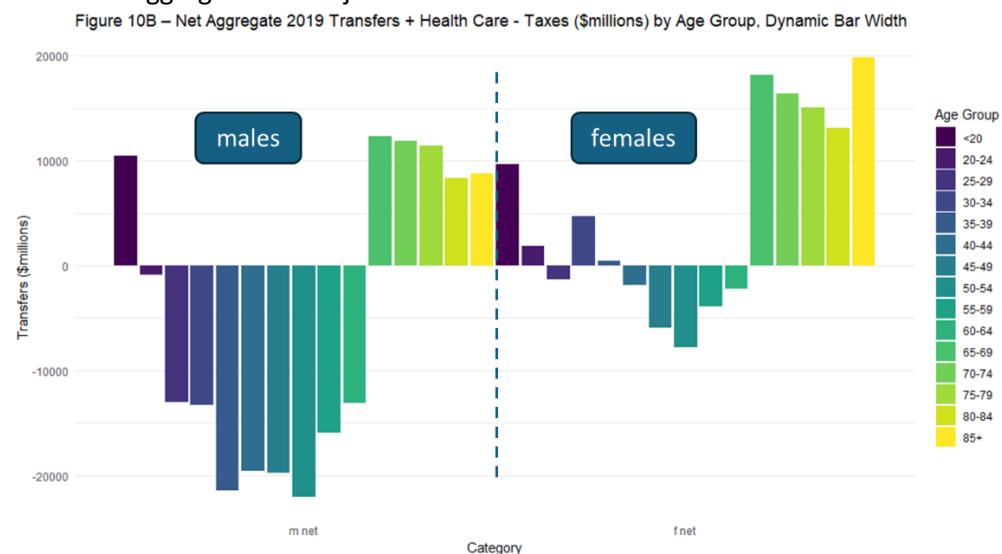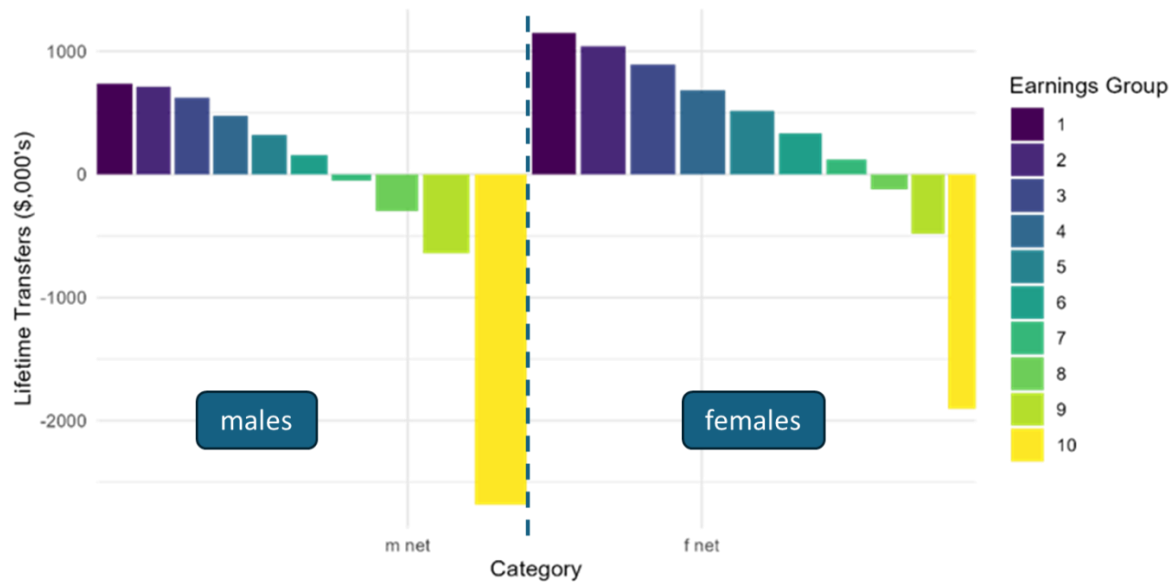
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Figure 12 indicate substantial intergenerational transfers, most everyone over their lifetimes passes through all these

age groups.

Figure 8 showing net lifetime redistribution across earnings groups indicates similar patterns of vertical redistribution as

Figure 10A – Net Aggregate 2019 Transfers + Health Care - Taxes ($millions) by Earnings Group, Dynamic Bar Width
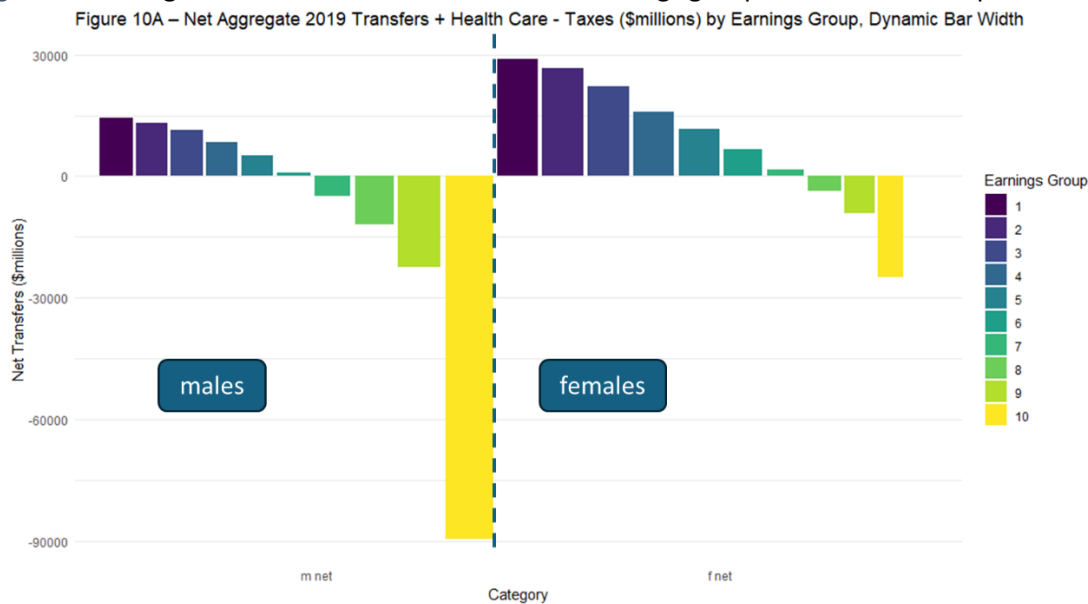
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Figure 11. As in Wolfson and Corscadden (2014), the comparison of these two patterns suggests that the taxes paid by those in working age groups at one point in time, leaving aside the vertical high to low income and the male-to-female redistribution, generally match publicly provided benefits at both earlier ages and after retirement (or more properly, withdrawal from the paid labour force). In effect, a substantial portion of the taxes paid when of working age can be considered inter-temporal transfers to ourselves in future in the form of public pensions and health care. Thus, what

appears to be intergenerational transfers in a cross-sectional analysis, or equivalently from the NTA perspective in
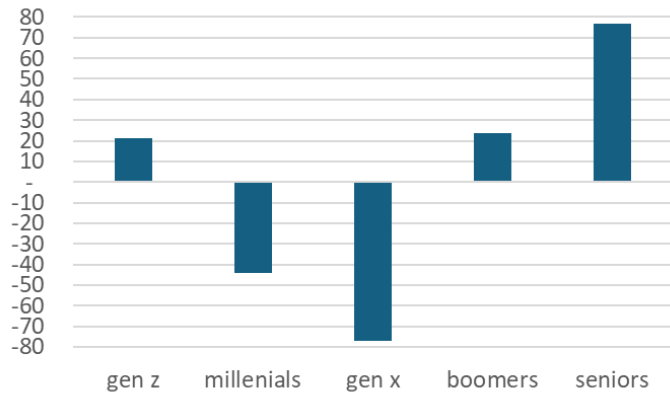

Figure 1Figure 1 largely disappears when considered over individuals' lifetimes.   Of course, these results are contingent on the strong assumption that the cross-sectional patterns of per capita amounts observed in 2019 are, have been, and will remain relatively constant over calendar time.

Another View – Labour Market Hours

Our analysis is focused on population counts by sex and age group, and dollar flows by earnings groups. This is an extension of the NTA approach which focuses on dollar flows primarily between age groups. In turn, the NTA approach is an extension of the usual demographic approach which focuses on "body counts", so-called demographic dependency ratios, especially the "old age dependency" ratio of the 65+ population to the "working age" population (e.g. age 20 to 64). With population ageing, this ratio is increasing quite dramatically.

However, not everyone of working age is employed in the labour market, while an increasing proportion of those age 65+ are. Thus, trends in "dependency" in an economic sense are better reflected by aggregate hours spent in the paid labour market per capita.[7]
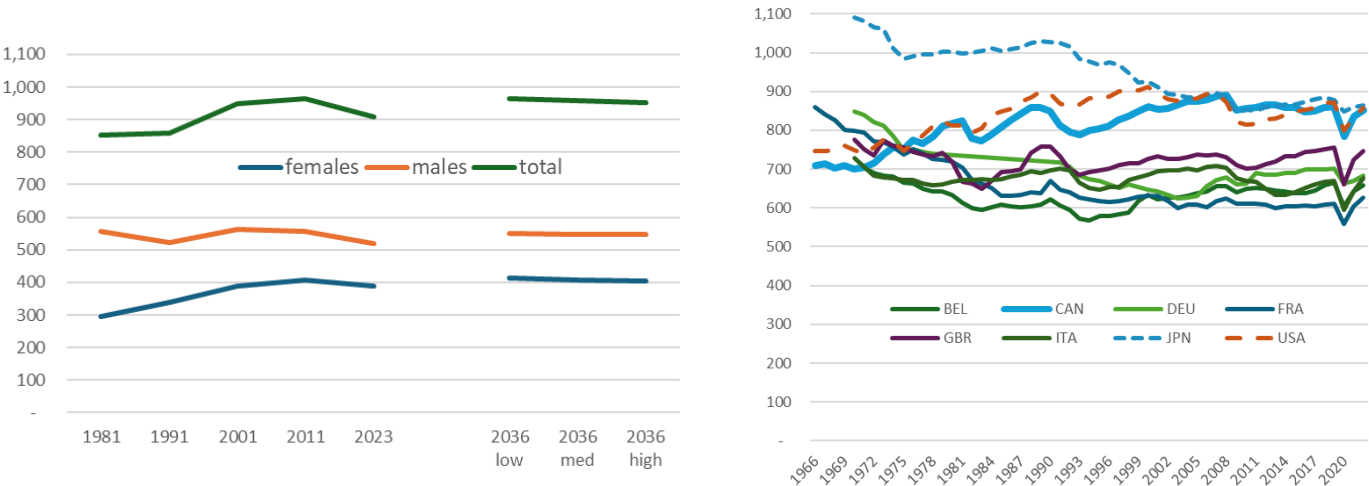
Figure 13 -- Aggregate Hours Worked Per Capita, Canada with Projections (left) and Selected OECD Countries (right)

[7] For short, we refer to this as "hours per capita". This measure ignores unpaid hours of informal work, disproportionately done by women. This idea of focusing on hours per capita rather than the conventional body count demographic dependency ratio was set out in a LSE working paper by Jane Falkingham in the 1970s (MCW recollection).

Two versions of these trends are shown in Figure 13. On the left, historical data from the Canadian Labour Force Survey are shown, first from 1981 to 2023, and then for three alternative projections to 2036, by which time all the baby boom cohort will be age 70+. Historically, the most important change has been the increase in women's hours per capita. Jumping forward in time, the 2036 projections are very simple: aggregate hours of work, which are assumed to remain fixed within age/sex groups, the only change being the population sizes for each of these groups. The different official demographic projections have almost no impact. Most importantly, the simple 2036 projections show slightly higher hours per capita, i.e. if anything somewhat lower economic "dependency".

Further, the right-hand graph in Figure 13 contrasts the Canadian trend in hours per capita with several OECD countries. Canada, the US, and Japan have the highest rates, recently over 850 aggregate hours per capita per year. In contrast, major EU countries expend 100 to 250 hours per capita per year less in paid work, i.e. as much as 30% less than Canada. It would be difficult to conclude that these countries' standards of living are correspondingly 30% lower, or that their labour productivity is 30% higher than Canada's. These lower hours per capita are presumably matched by increases in non-work time available for other activities including leisure, hence possibly related to higher levels of unmeasured wellbeing. Assuming so, there is ample scope in Canada for lowered aggregate volumes of paid work in the economy notwithstanding population ageing with, if anything, improved overall wellbeing. This area of analysis, however, is not considered further in this study.

Results – Sensitivity of Aggregate Redistribution to Population Age Structure

A major question is how the redistributive impacts observed for 2019 might change as the age structure of Canada's population continues to change and grow, especially with the ageing of the baby boom cohort.   Figure 14 shows the major 2019 amounts of cash transfers from the SPSD from both the federal ("fed") and provincial ("prov") levels of government in Canada. (All other cash transfers are far smaller.) The largest cash transfers are the federal government's public pensions. The federal government also provides very substantial child benefits via refundable income tax credits, payable primarily to mothers. The other major cash transfers are from the federal government's unemployment insurance program, and the provinces' welfare programs, both of which accrue mainly to those of working age.
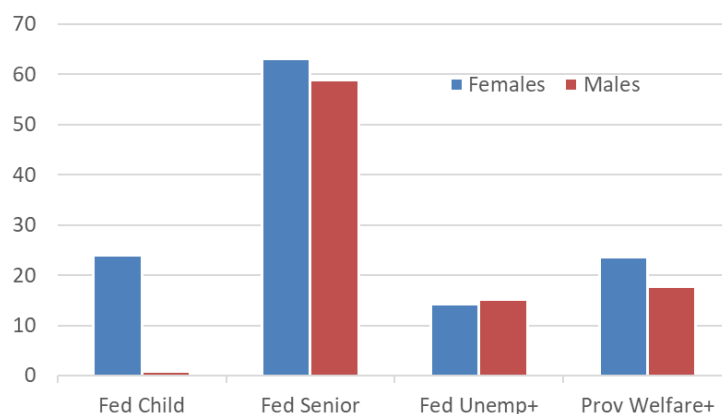

Figure 14 – Major Cash Transfers by Level of Government and Broad Age Group ($billions)

A straightforward approach to assess the expected impacts of population ageing is to adjust the various amounts observed in 2019 according to Canada's officially projected population. In effect, this approach holds the array of per capita amounts fixed and recomputes the aggregates by reweighting to account for the projected changes in the

population age and sex composition, as in Zhang et al. (2011) and Tombe (2020).[8] Figure 15 shows the results for projections to each of 2036 and 2051 with three demographic growth scenarios in each case.
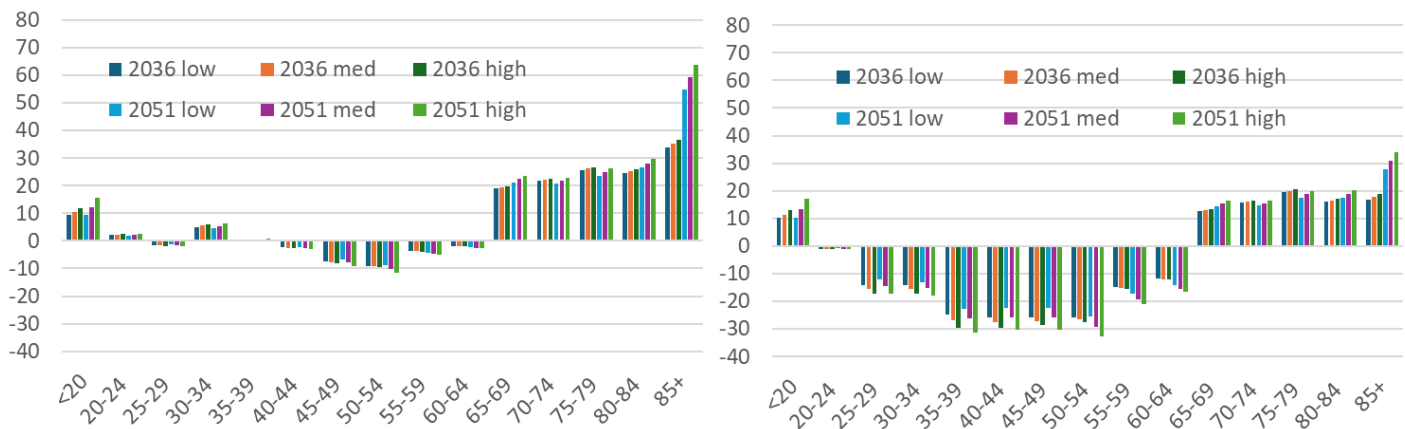

Figure 15 – Hypothetical Aggregate Redistribution based on 2019 Amounts Scaled by 2036 and 2051 Official Demographic Projections, Three Scenarios ($ billions; females at left, males at right)
(from "main aggrs u.xlsx", sheet "for 2036 & 2051" at A90)

As for the 2019 results shown above, there are substantial net transfers from those in working ages to the elderly. The net transfers from men to women are even larger. One striking feature is that the net transfers to the 85+ age group increase substantially between 2036 and 2051. By this later year, most of the baby boom cohort will have died. Thus, the likely volume of net transfers to the future 85+ population will not be to today's baby boom cohort; rather it will be to the current Generation X age group.

Further, these net transfers are not balanced. Cash transfers + health care costs exceed the taxes being considered by about $49 billion in 2036 and by $89 billion in 2051.

Results – Two Policy Changes

Given the substantial fiscal imbalances just noted, one obvious option is to increase taxes. Note that various ways of increasing "means testing", including more stringent income-testing of public pensions such as OAS, are essentially equivalent to tax increases. There are myriad ways to increase taxes, so we leave this to future analyses. Instead, and more interestingly, we explore two policy changes that reduce expenditures. As in Tombe (2020), we assume these are phased in gradually over the following 15- and 30-year periods to 2036 and 2051.

Delayed Age for Public Pension – Ever since the federal government Task Force on Retirement Income Policy (Lazar Report 1979), the ageing of the population has been identified as a major factor where one key policy change would be gradually increasing the normal age of entitlement for public pensions. The US Social Security system had already begun phasing in such a change before the 1970s. 45 years have passed since the Lazar Report made this observation, and there have been several federal government attempts to implement some form of this kind of change, though all were

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[8] Note however, that Tombe's (2020) projections are inconsistent. Both the personal income tax and much of old age pensions, per current legislation, are indexed to the CPI. Tombe projects the income tax growing in line with per capita economic growth, but cash transfers growing only in line with price inflation, typically assumed to be on the order of 1% per year lower. We assume both are increasing in line with per capita economic growth. The Parliamentary Budget Officer's (PBO, 2024) assumptions underlying its very sanguine assessment of long run fiscal sustainability assume both income taxes and most cash transfers follow the current legislated CPI indexing. This assumption is highly unrealistic over a period of decades: real per capita economic growth would move income tax payers into ever higher progressive income tax brackets, while relative poverty would increase especially among the elderly in both the Tombe and PBO projections as their cash transfers continued to shrink compared to per capita wages.

abandoned in the face of strong political opposition. Nevertheless, to determine the general scale of changes needed, we have developed a scenario where OAS and C/QPP benefits are phased out for the 65-69 age group over the three decades to 2051, while GIS remains for those in this age group and is increased to compensate for the reductions in OAS benefits for those with low incomes.[9]

These changes are not simulated in detail. Rather they are approximated by reducing federal transfers only to seniors age 65-69 by 35% and 70% in years 2036 and 2051 respectively. However, every reduction in seniors' transfers in this 65-69 age range will likely be associated in future with some increase in earnings. If we assume these additional earnings would be somewhat larger than the reductions in OAS and C/QPP, and would be taxed at least at the same marginal rate as OAS and C/QPP (not only income and possibly payroll taxes, but also commodity taxes), there would also be an increase in tax revenues. As a result, the hypothetical policy scenario posits 40% and 80% net reductions in fiscal costs for the 65-69 age group in 2036 and 2051 respectively. In terms of redistributive impacts, the only change from that shown in Figure 15 is that the bars for the 65-69 age group are proportionately lower.

Reforming Health Care Costs – The second policy change involves health care. Canada's publicly funded health care is considered one of the signature accomplishments of Canadian society. Unfortunately, though, one of the top public concerns and therefore political issues is the widespread view that there is not enough funding. There are literally millions of Canadians who do not have a regular primary care provider, and emergency rooms are over-crowded with long wait times. However, health care expenditures, if they continue to grow per capita by age group in line with the economy, will increase faster even than public pension costs given population ageing and the steep increase in per capita health care costs with higher age.   It is therefore critical to consider reforms that would slow rather than increase the growth in age-specific per capita health care expenditures, notwithstanding the current problems of apparent underfunding.

While any cuts to health care spending would be highly controversial, it has long been known informally that there are tremendous inefficiencies in the delivery of health care services.[10] Physicians are paid mainly on a fee for service basis with the obvious incentive to provide as many services per day as possible. Specialist physicians are paid substantially more than primary care doctors, so the relative shortage of primary care providers should not be surprising. Further, physicians have for decades successfully blocked the licensing and payment for nurse practitioners to provide much of the needed primary care at considerably lower cost (e.g. De Witt and Ploeg, 2005; Flood et al., 2025). A recent study (Hafner et al. 2022) estimated that more extensive use of telemedicine in Canada could save up to $5 billion per year. There is no disincentive for physicians to order lab tests and diagnostic imaging even though there may be good evidence that they are not needed.

In hospitals, while the evidence is scattered, the informal impression is that up to 30% of hospital costs result from unnecessary if not iatrogenic procedures. A major problem is that Canadian data are generally not available to ascertain the extent of these inefficiencies. Health Infoway (2023) recently identified over $2 billion in annual savings just from improving and using electronic medical records. One unique Canadian study showed 3 to 1 variation in the rates of heart attack surgery with no evident difference in health outcomes (Johansen et al., 2009). Studies using US Medicare data have for years shown similar overuse of heart surgery (Katritsis and Ioannidis 2005), yet cardiac surgeons there

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[9] OAS = Old Age Security, is a demogrant generally payable to every Canadian age 65+, but subject to a clawback at higher incomes. GIS = Guaranteed Income Supplement, is essentially a guaranteed annual income subject to a 50% tax back rate. C/QPP = Canada and Quebec Pension Plans, provides retirement, survivor and disability pensions based on career average earnings. Both OAS and C/QPP are normally available at age 65, but individuals have the flexibility to commence payments at any age between 60 and 70, subject to an actuarial adjustment. All of these pensions in pay are automatically indexed to the CPI = Consumer Price Index.
[10]MCW's informal personal conversations spanning decades with many senior health care officials in Canada have repeatedly indicated that health care costs could be cut by 30% without impairing health care quality. The challenge, as long noted by Bob Exans, Canada's leading health economist, is that every health care cost is someone's income. It is not easy to cut someone's income, especially if they are powerful players in the health care sector.

continue their patterns of heart attack treatments at tremendous cost (Forbes 2023). The Dartmouth Health Atlas (n.d.) has for decades shown tremendous small area variations in health care costs after statistically controlling for variations in major risk factors, with the clear implication that these variations are at the whim of health care providers without empirical basis. Unfortunately, comprehensive data to support corresponding small area variations analyses are lacking in Canada, but there is every reason to expect that once such data become available, similar scope for major improvements in health care services' cost-effectiveness will become evident.

Health care in Canada is managed at the provincial level, not nationally. While provinces do provide some publicly funded drugs, each has its own drug formulary and purchasing. They try to negotiate discounted prices, but estimates suggest that if Canada had a single nation-wide drug purchasing system, overall pharmaceutical costs could be reduced by $5 billion per year, though public sector costs would increase as public pharmacare replaced the myriad of private ways of paying for drugs. (Government of Canada, 2019)   Further cost reductions would arise if prescribing behaviour followed evidence-based guidelines more closely, including more aggressive deprescribing to address useless and iatrogenic polypharmacy (Desai et. al., 2022; Choosing Wisely, n.d.), and public funding of increasingly costly cancer drugs with negligible benefits were limited (Common Sense Oncology, n.d.)

On the other hand, long term care (LTC) services are woefully underfunded. Milligan and Schirle (2023) provide an economic overview of the health and social care services currently provided in the LTC sector in Canada, while MacDonald et al. (2019) indicate unmet needs several fold larger than the services currently supplied. There is clearly a basis for substantially increased health care spending on LTC (both home care and nursing homes).

To provide further detail, the population pyramid in Figure 16 is based on over 8 million responses in the 2021 population census (disability screening questions (DSQs)[11] plus counts of individuals living in LTC establishments (Statistics Canada, custom tabulations).[12]
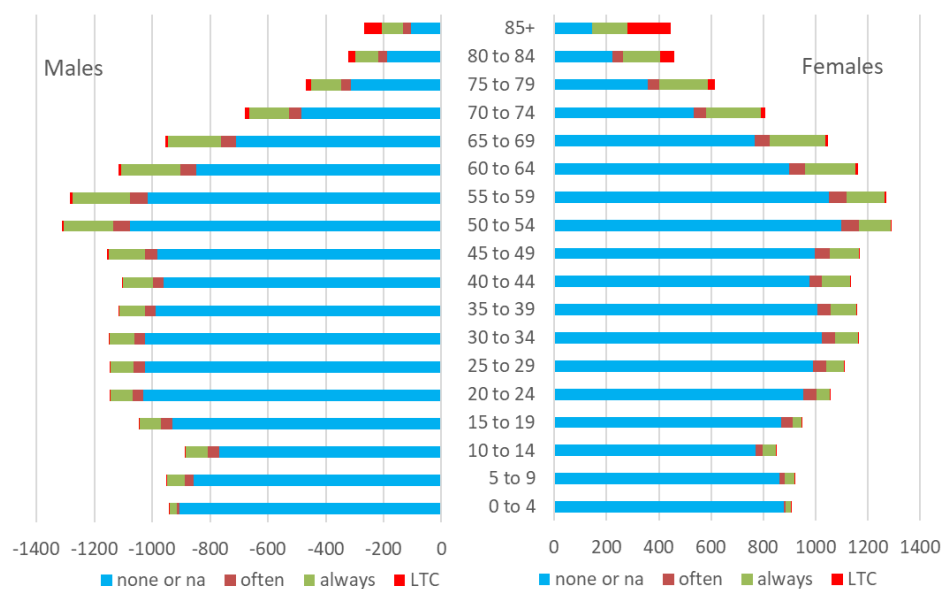

Figure 16 – Population Pyramid Showing Disability Status (000s)
(from "DSQ 2016 and 2021 f.xlsx")

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[11] There were six DSQs for seeing, hearing, walking, using stairs, using your hands or fingers or doing other physical activities, learning, remembering or concentrating, emotional, psychological or mental health conditions, and any other health problem or long-term condition that has lasted or is expected to last for six months or more. The response categories were: no, sometimes, often, and always.

[12] The negative population counts for males are simply to enable the Excel graph to be a mirror reversal of the one for females.

For the scenario where the age of normal retirement is delayed from 65 to 70, Figure 16 Figure *16* – Population Pyramid Showing Disability Status (000s)shows a large majority of individuals in this age range reporting no functional limiations at all,

While there are many individuals living all the time with at least one of these DSQs at all ages, these *counts* start increasing at about age 50. The *proportions* of the population "always" living with at least one of the DSQs increase with age as well, since the total populations in each age group are declining with age. The population living in institutional LTC facilities (i.e. nursing homes) becomes most evident at ages 80+.

While the population living in LTC facilities (i.e. nursing homes) may not look that large in Figure 16, many of those in the household population have substantial health and social care needs, as shown in Figure 17, based on the Canadian Survey of Disability (Statistics Canada CSD, custom tabulations). The CSD provide data on the prevalence of disability, measured by reference to a range of activities of daily living (ADLs) for the household population.[13] The CSD further asked whether help was needed and/or received with any of the ADLs, and whether whatever help provided was adequate.
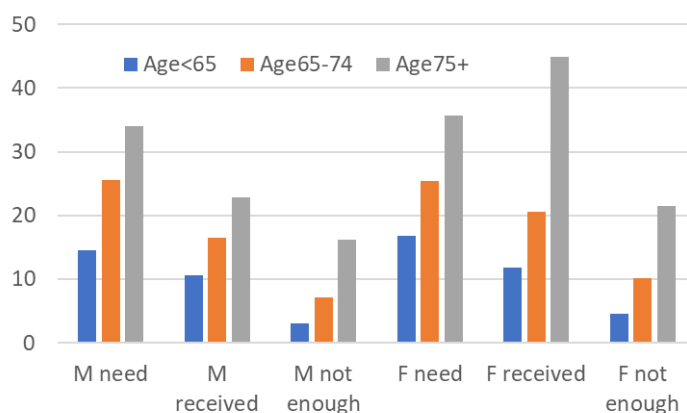

Figure 17 – Needing and Receiving Help with Activities of Daily Living, 2017 (%)
(from "CSD 2017 help received for ADLs d.xlsx")

For both men and women, the proportions of each age group expressing a need for help, receipt of help, and still needing help with at least one of their ADLs increased with age. The one exception is that help received for women age 65 to 74 was higher than their expressed need, perhaps reflecting the fact that most such help is provided informally especially by other family members (ref). Most important are the proportions indicating that, whether or not they had received any help, whatever help with their ADLs they did receive was not enough – about 15% of men and 20% of women age 75+.

From the perspective of power and influence in Canada's health care sector, our impression is that there is an evident hierarchy in Canada: large pharmaceutical firms at the top, then hospital senior managers, specialist physicians, primary care physicians, nurse practitioners, and nurses. At the bottom of this hierarchy are the personal service workers in LTC (both home care and nursing hones). This hierarchy corresponds to the portions of Canada's health care sector where there is the most to least over-spending, and finally at the bottom of the hierarchy the need for more resources for LTC.

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[13] The ADLs in the Canadian Survey of Disability were different from the functional limitations assessed via the DSQs from the population census. The ADLs referenced needs and help received regarding meals, housework, chores, errands, personal care, finances, medical, moving, and other.

Politically, it would be a major challenge to address this inversion of needs versus resources. However, if governments are to be serious in addressing the projected fiscal impacts of Canada's ageing population, this inversion must be addressed.

As a broad approximation of a politically very challenging reallocation of health sector resources, but with no adverse effects on population health, and indeed improvements especially for frail elderly, we posit a real per capita net reduction in health care costs for hospitals, physicians and pharmaceuticals of 0.9 percent per year (compounded) across all age groups, hence real per capita reductions of 15% to 2036 and 30% to 2051. At the same time, we posit a 50% increase in publicly funded LTC by 2036 and 100% increase by 2051.

Figure *18* shows the resulting distributional patterns in a manner comparable to Figure 15. Most notable are the increased net transfers to those age 80+, due to the increase in publicly funded long term care, and the generally lower or more negative net transfers everywhere else.
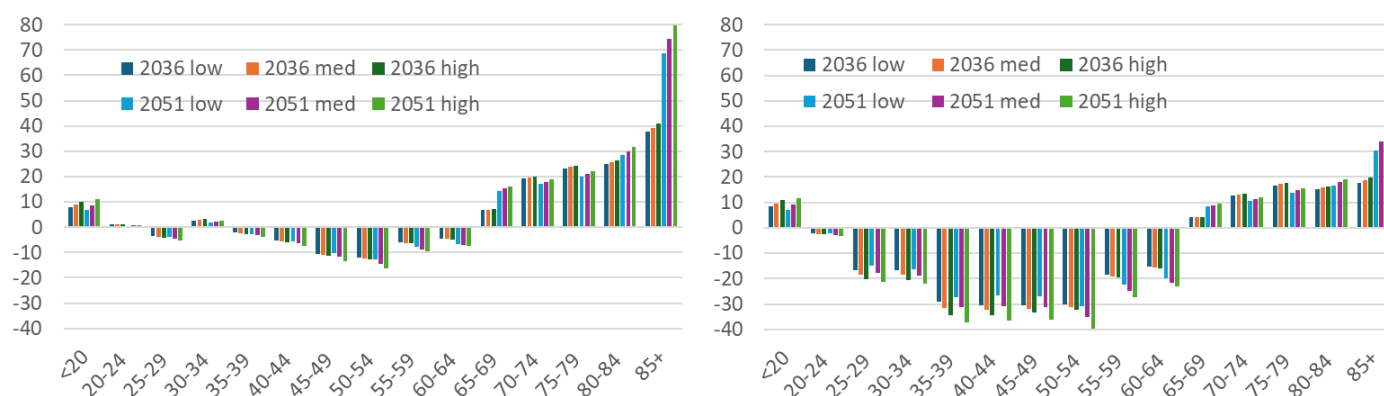

Figure 18 - Hypothetical Aggregate Redistribution based on 2019 Amounts Scaled by 2036 and 2051 Official Demographic Projections with Posited Health Care Expenditure Reductions Except for LTC, Three Demographic Scenarios ($ billions; females at left, males at right)
(from "main aggrs u.xlsx", sheet "for 2036 & 2051" at AB47)

The projected scenarios for 2036 and 2051 in Figure 15 were not fiscally balanced, unlike those for 2019 where taxes were scaled to equal cash transfers plus health care in aggregate (
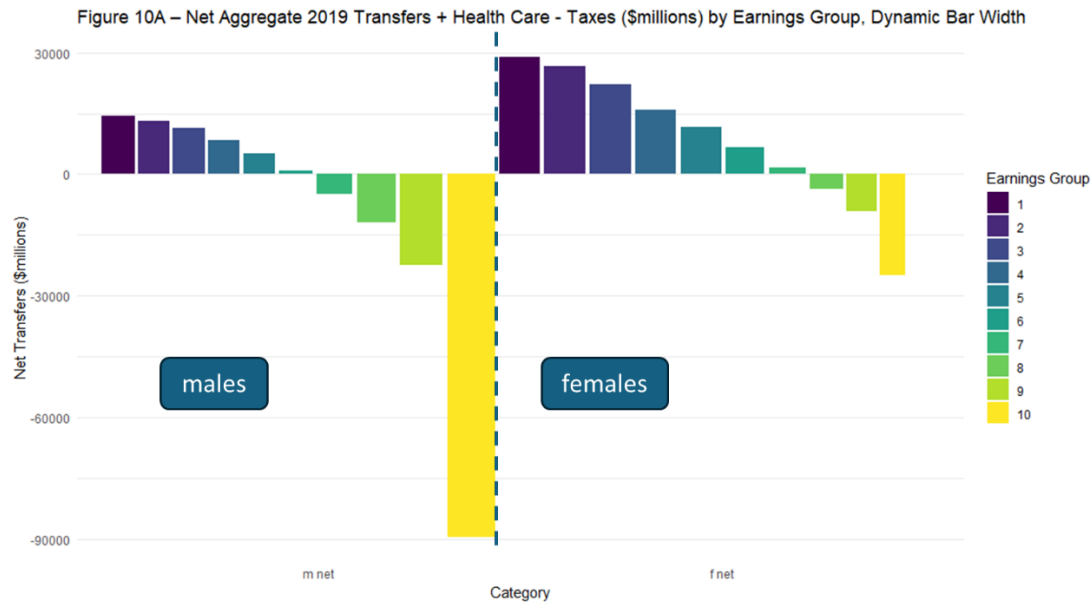

Figure 10A – Net Aggregate 2019 Transfers + Health Care - Taxes ($millions) by Earnings Group, Dynamic Bar Width

Figure 11 and

Figure 10B – Net Aggregate 2019 Transfers + Health Care - Taxes ($millions) by Age Group, Dynamic Bar Width
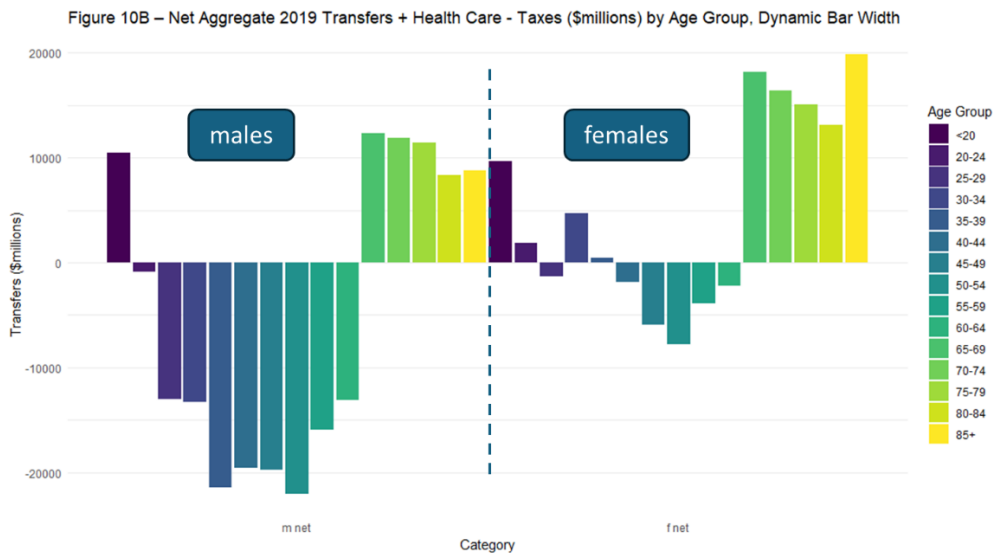
Figure *12*). Figure 19 shows the net effects for projections to 2036 and 2051 for three scenarios: no policy changes to cash transfers or health care expenditures ("demog only"), phase in of a delay in the normal retirement age from 65 to 70, ("delay retire") and the general 0.9% per year cuts to health care generally except an increase in public spending for long term care ("health redn"). The groups of bars in Figure *19*Figure 19 further distinguish males and females, and low, medium and high demographic growth scenarios.
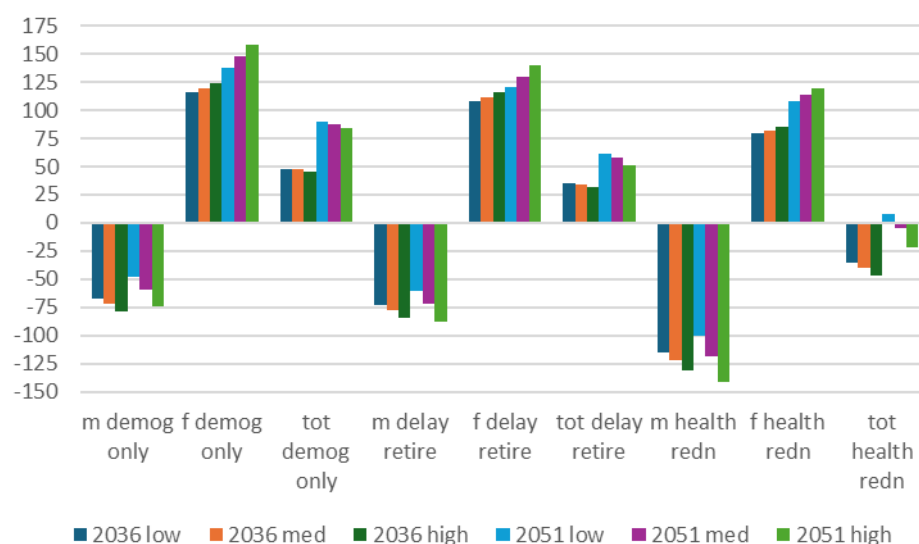
Figure 19 - Net Redistribution Projected to 2036 and 2051 with Three Population Growth Scenarios for Demographic Changes Only, Delayed Retirement, and Health Care Expenditure Reductions ($ billions)
(from "main aggrs u.xlsx", sheet "for 2036 & 2051" at R96)

Overall, in all cases, males have negative net transfers while those for females are all positive. Within each cluster of the six demographic bars, net transfers for males become more negative and females become more positive as the demographic projections are higher for the three 2036 scenarios and the three 2051 scenarios.

For the demographic changes alone, the net fiscal imbalance for males and females combined is just under $50 billion in 2036 and about $80 billion in 2051. If the normal retirement age were delayed from 65 to 70, these fiscal imbalances decline by about $20 billion.

The fiscal impacts of reducing and reallocating health care costs would be substantially larger than those for delaying the normal retirement age. In fact, by 2051 the health care changes would leave the net fiscal transfer approximately in balance, while in 2036 they would generate a net surplus on the order of $30 to $40 billion.

Technology, Climate Change, and Science Fiction

The pressure of growing catastrophic climate change, notwithstanding the largely inadequate responses by governments around the world, is generating tremendous investments in new kinds of technologies especially regarding electricity. In parallel, and largely due to a different dynamic, huge investments and technological changes are occurring in computing, especially in so-called artificial intelligence. Less visible in the popular media are dramatic advances in other areas such as materials science (e.g. superconductivity), and in computational / molecular biology, These major strands of technological change together promise to generate major innovations in medicine (e.g. diagnostic imaging, drugs, genetics), robotics (personal services, assistive devices), labour markets (displacing much white-collar work), entertainment (immersive virtual reality) and transportation (urban public transit).

The pace of this technological change and innovation has increased dramatically compared not only to the industrial revolution in the 19th century, or the plastics and infectious disease revolutions of the early and mid 20th century, but also the computer revolution of the late 20th century. Further, the pace of innovation and related social change is

accelerating; more change is likely from 2021 to 2051 than in the previous 30 years, which in turn saw more change than over the previous 30-year time period from 1961 to 1991.

In this context, it is necessary to maintain a large measure of humility regarding the multi-decade projections in the preceding sections of this paper. As in biology, social structures and economies are evolving; conventional economic concepts such as equilibria and projection models that assume fixed structural relationships are inappropriate and likely misleading. On the one hand, previous predictions of impending massive increases in structural unemployment have repeatedly failed to materialize. On the other hand, there is the potential for major advances in economic productivity. In any case, there is an important likelihood of major social and structural changes over the time period of our projections. Hence, the reader is cautioned that such changes, likely as they are, have not been considered.

Strengths and Limitations

A major limitation in this analysis, in addition to the caveats in the section just above, has been the lack of appropriate data. Ideally, it requires multivariate data with the full joint distributions of incomes by source, various taxes, and health care expenditures, as well as education and social services, all broken down in the same way by income group, sex, and age group. Even better would be the simulation capacity and data on individual's longitudinal dynamics as was assembled for Statistics Canada's LifePaths microsimulation model (Statistics Canada Microsimulation, n.d.) and applied recently by Spielauer et al. (2022, 2023). In the absence of these data and modeling capacity, this analysis has instead relied on more partial data juxtaposed as carefully as possible.

Further limitations are the omissions of other key factors involved in various "OK Boomer" discussions of intergenerational equity, such as housing and other wealth, and governments' overall fiscal deficits. Nevertheless, this analysis is a significant advance over analyses that examine only the demographic structure of the population, as it has included redistributional flows between men and women, and vertical redistribution across income groups as well as between generations.

At a more technical level, important assumptions are implicit regarding indexing and discounting. It is assumed that cash transfers, income tax brackets, and related tax parameters maintain their relative positions in the economy. This is essentially equivalent to these provisions being indexed to per capita wages rather than to price inflation. If instead currently legislated price indexing had been assumed, cash transfers like OAS/GIS and C/QPP pensions in pay would be shrinking, thereby increasing relative poverty rates among the older population, while individuals would find themselves in ever higher marginal income tax brackets – highly unrealistic assumptions over the decades' span of this analysis. Correspondingly, the implicit discount rate in this analysis is the per capita real economic growth rate.

The major strength of this analysis is the use of quantitative analysis with some of the best data available to assess aspects of intergenerational equity in the context of Canada's ageing population.

Concluding Discussion

Discussions of intergenerational equity, in Canada and in many other countries, have been dominated by demographic data. One leading form of these discussions is represented by National Transfer Accounts (NTAs, Mason et al. 2009, 2022, Merette 2019) of which Figure *1* at the beginning of this paper is a typical example. In turn, various commentators (e.g. Generation Squeeze n.d.) have dramatized these kinds of aggregate fiscal transfers as putting the "squeeze" on

current working age populations in wealthier countries like Canada. The "OK Boomer" meme, as uttered by some in younger generations, has the clear connotation that the current range of public sector programs is unfairly and disproportionately benefitting the baby boom cohort.

The essential problem with this OK Boomer perspective is that it omits a range of other factors beyond the population's age structure, both today and as projected. A further concern is that in Canada, some of the focus is on publicly funded pensions, especially the idea of cutting spending on the Old Age Security pension demogrant (OAS) in Canada. This analysis shows these perspectives are misplaced and misleading. For example, one scenario for cutting OAS spending is not sufficiently large to have adequate impact on the fiscal imbalances we have projected.

Focusing only on fiscal imbalances between broad age groups further fails to consider other major axes of public sector redistribution, especially between men and women, and vertically across income groups. More fundamentally, these redistributive flows, both in cash and via publicly-funded provision of services in-kind, are the results of strong public support – including for the reduction of poverty, for income smoothing over the life course, and for adequate health and social care.

This analysis has shown that male to female redistribution via publicly funded cash transfers and in-kind health care services is on the same order as that between baby boomers and Generation X, and both are substantially smaller than the vertical redistribution across income groups – as emphasized by the opening quote from The Economist almost 30 years ago (The Economist 1997).

While the baby boom cohort will be a substantial net beneficiary over the next 15 to 20 years, it is notable that Generation X is likely to be an even larger beneficiary of net fiscal transfers in the years following, while the current seniors generation has also been a large net beneficiary (Figure *1*).

NTA-style analyses also generally fail to consider a life course perspective. Most individuals' lives pass through all of childhood, schooling, child-bearing ages, paid work, and then retirement. Taxes, especially during working ages, can be viewed as payments for publicly provided health care and pensions at later ages. Notably, from this life course perspective, our analysis shows only high income men comparatively pay substantially more in taxes than they receive in cash transfers and health care.

Nevertheless, population ageing in Canada will create large fiscal imbalances given current patterns of cash transfers, health care expenditures, and taxes. Two policy options have therefore been simulated. These two options have been structured at a broad level to provide an approximate sense of the scale of their impacts. One policy change gradually increases the normal age of pension entitlement for OAS and C/QPP from 65 to 70 by about 2 months per year over the 30 year period from 2021 to 2036 and then to 2051, while retaining and correspondingly increasing GIS for those with low incomes in the 65 to 69 age group to offset the reduction in OAS. The other policy change cuts spending on hospitals, physicians, drugs, and other health care by about 0.9% per year while increasing spending on long term care for those age 80+ by 50% by 2036 and 100% by 2051. There is every reason to believe that these net health care spending cuts are feasible and indeed long overdue to root out wasteful and iatrogenic health care interventions, while long term care has long been woefully underfunded.

The net fiscal results of these simulation are shown in Figure 19. To the extent there has been any public discussion of these two kinds of policy options, it has focused on public pensions, and even more narrowly on the OAS in Canada. However, as these simulation results show, by far the larger impact will come from more efficiently managing health care.

In sum, the OK Boomer meme, and the discussion of intergenerational equity it connotes, does raise a fundamental issue for Canada's longstanding and widely supported social insurance and health care programs. However, its unduly narrow focus primarily on the demographic aspects of their redistributive impacts is misplaced and misleading. If anything, the first priority should be the efficient management of Canada's health care sector.
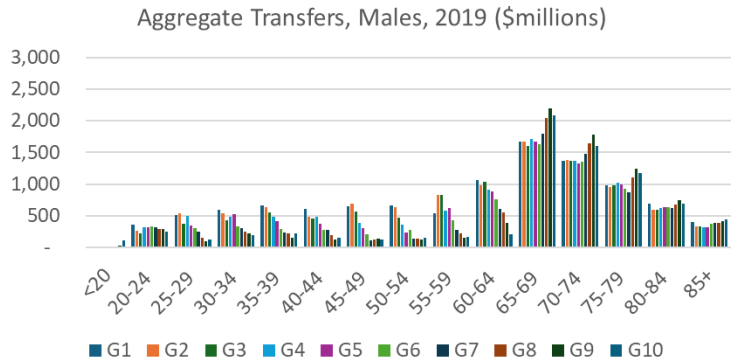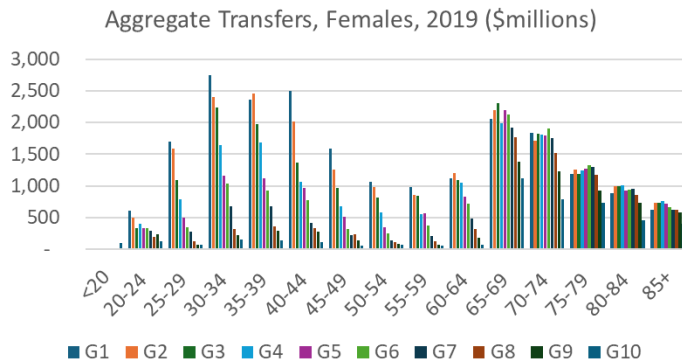
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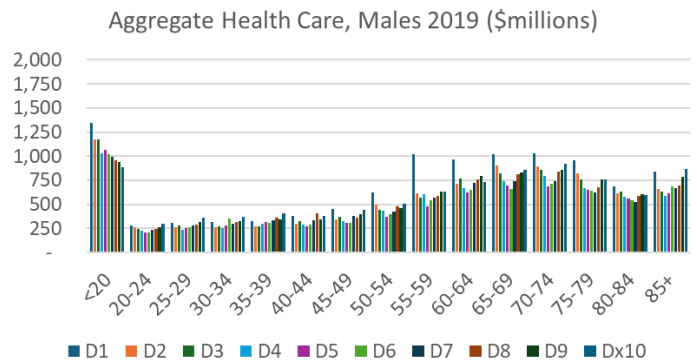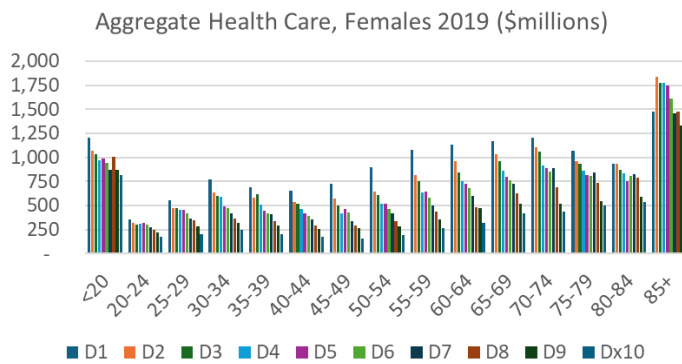
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Annex

More detailed aggregate distributions

Aggregate Transfers, Females, 2019 ($millions)

Legend: G1 G2 G3 G4 G5 G6 G7 G8 G9 G10

Aggregate Transfers, Males, 2019 ($millions)

Legend: G1 G2 G3 G4 G5 G6 G7 G8 G9 G10

(from "main aggrs m.xlsx", sheet "adj tran")

Aggregate Health Care, Females 2019 ($millions)

Legend: D1 D2 D3 D4 D5 D6 D7 D8 D9 Dx10

Aggregate Health Care, Males 2019 ($millions)

Legend: D1 D2 D3 D4 D5 D6 D7 D8 D9 Dx10

(from "main aggrs m.xlsx", sheet "adj HC aggrs")

Aggregate Taxes, Females, 2019 ($millions)

Legend: G1 G2 G3 G4 G5 G6 G7 G8 G9 G10

Aggregate Taxes, Males, 2019 ($millions)

Legend: G1 G2 G3 G4 G5 G6 G7 G8 G9 G10

(from "main aggrs m.xlsx", sheet "adj tax")