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Two decades of poverty reduction politics in Canada:

Better for single parent families and single working age adults?[*]

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Abstract

Over the past two decades, poverty reduction entered and often stayed on the political agenda of Canada's jurisdictions, generating a trail of government reports documenting many actions and spanning multiple election cycles. This paper investigates whether this social inclusion-oriented policy environment improved the position of single parent families and single working age adults, two groups at particularly high risk of experiencing poverty. They are also more likely to face multiple barriers making it harder for them to avoid or escape poverty. Using microdata from the Canadian Income Survey (CIS) and its predecessor (1999-2017), we analyze poverty changes in a relative sense (compared to the typical Canadian) and an absolute sense (purchasing power). Our model controls for changes in demographic and regional characteristics and uses households consisting of multiple working age adults as a reference. Against the backdrop of substantive declines in absolute poverty with little change in relative poverty levels for Canada as a whole, we find that the poverty disadvantage declined for both groups. However, although improvements for single parent families have been strong and widespread, improvements for single adults of working age have been smaller and were more concentrated in provinces experiencing stronger economic growth. These results support the claim that governments prioritize the inclusion of families with dependent children while the inclusion of single working age adults is largely left to the fortunes of the economy. Notwithstanding the progress documented here, poverty rates of these high poverty risk groups remain far above Canada's average and single working age adults continue to experience deeper than average poverty gaps.

Titre

Deux décennies de politique de réduction de la pauvreté au Canada : Mieux pour les familles monoparentales et les adultes célibataires en âge de travailler ?

Résumé

Au cours des deux dernières décennies, la réduction de la pauvreté est entrée et est souvent restée à l'ordre du jour politique des juridictions canadiennes, générant une série de rapports gouvernementaux documentant de nombreuses actions et s'étendant sur plusieurs cycles électoraux. Cet article cherche à savoir si cet environnement politique axé sur l'inclusion sociale a amélioré la situation des familles monoparentales et des adultes célibataires en âge de travailler, deux groupes particulièrement exposés au risque de pauvreté. Ils sont également plus susceptibles d'être confrontés à de multiples obstacles, ce qui rend plus difficile pour eux d'éviter ou d'échapper à la pauvreté. À l'aide des microdonnées de l'Enquête canadienne sur le revenu (ECR) et de son prédécesseur (1999-2017), nous analysons l'évolution de la pauvreté au sens relatif (par rapport au Canadien type) et au sens absolu (pouvoir d'achat). Notre modèle contrôle les changements dans les caractéristiques démographiques et régionales et utilise comme référence les ménages composés de plusieurs adultes en âge de travailler. Dans le contexte d'une baisse substantielle de la pauvreté absolue et d'un faible changement des niveaux de pauvreté relative pour l'ensemble du Canada, nous constatons que le désavantage de la pauvreté a diminué pour les deux groupes. Cependant, bien que les améliorations pour les familles monoparentales aient été fortes et généralisées, les améliorations pour les adultes célibataires en âge de travailler ont été plus faibles et plus concentrées dans les provinces connaissant une plus forte croissance économique. Ces résultats appuient

l'affirmation selon laquelle les gouvernements donnent la priorité à l'inclusion des familles avec enfants à charge, tandis que l'inclusion des adultes célibataires en âge de travailler est largement laissée aux aléas de l'économie. Malgré les progrès documentés ici, les taux de pauvreté de ces groupes à haut risque de pauvreté restent bien supérieurs à la moyenne canadienne et les adultes célibataires en âge de travailler continuent de connaître des écarts de pauvreté plus importants que la moyenne.

Mots clés : Pauvreté, Mesure de faible revenu (MFR), Mesure de faible revenu ancrée, Canada, Adultes célibataires en âge de travailler, Familles monoparentales, taux de pauvreté, écart de pauvreté, risque de pauvreté, différence de pauvreté

Classification JEL : I31 Bien-être général, bien-être, I32 Mesure et analyse de la pauvreté, I38 Politique gouvernementale ; fourniture et effets des programmes d'aide sociale.

1. Introduction[1]

Over the past two decades, poverty reduction entered and often stayed on the political agenda of Canada's jurisdictions, generating a trail of government reports documenting many actions and spanning multiple election cycles (Béland et al. 2022; Noël 2006; Notten and Kaplan 2021; Plante 2019). This paper investigates whether this social inclusion-oriented policy environment improved the position of single parent families and single working age adults. Both groups are much more likely to experience poverty. They are also more likely to face multiple barriers making it harder to avoid or escape poverty. Improving conditions for such groups, albeit often deemed a priority from a justice perspective (Aaberge, Brandolini, and Kyzyma 2021), reflects a stronger test as it is more challenging and / or more costly (Falvo and Jadidzadeh 2020; Fleurbaey 2018; Herd, Kim, and Carrasco 2020).

This paper uses the Canadian Income Survey (CIS) and its predecessor (1999-2017) to analyze poverty using two income poverty methods, the LIM, and a so-called anchored LIM.[2] It calculates two poverty measures for each, namely the headcount and the average poverty gap among the poor. This combination of statistics enables us to analyze poverty reduction in an absolute sense (purchasing power) and a relative sense (compared to the typical Canadian). We do so using both the percentage of poor (poverty headcount) and their average percentage income shortfall (poverty gap). We study changes in poverty for these two groups relative to that of a reference group while controlling for demographic and regional characteristics. The reference group are households consisting of multiple working age adults that have no dependent children or adults above the age of 65.

Against the backdrop of substantive declines in absolute poverty with little change in relative poverty levels for Canada as a whole, we find that the poverty disadvantage declined for both groups. Improvements for single parent families have been strong and widespread, whereas improvements for single adults of working age have been smaller and were more concentrated in provinces experiencing stronger economic growth. These results support the claim that governments prioritize the inclusion of families with dependent children while the inclusion of single working age adults is largely left to the fortunes of the economy. Notwithstanding the progress documented here, poverty rates of both high poverty risk groups remain far above Canada's average and single working age adults remain experiencing far deeper than average poverty gaps.

Section 2 reviews the literature on poverty in Canada and other rich countries with an emphasis on the factors associated with cross-jurisdictional differences in poverty and what is known about the effects of poverty reduction policymaking on poverty in Canada. Section 3 explains the

[2] With an anchored LIM one can tracks the longitudinal effects of changes in purchasing power on income poverty rates. The LIM is a relative poverty method in which the poverty threshold is set at 50 percent of median income. With an anchored LIM, the threshold is set at that level in the benchmark year (2008 in our case) and it is subsequently converted to other years using a consumer price index (Notten and De Neubourg 2011).

data, concepts and variable operationalizations and Section 4 sets out the empirical methodology used in this paper to study poverty differences. Section 5 presents the results and 6 discusses them in the broader setting of the literature. Section 6 concludes.

2. Literature review

In rich countries such as Canada, one commonly measures poverty by comparing a household's income to a poverty line; when a household's income falls below this threshold amount, all its members are counted as poor (Notten 2015; Notten and Kaplan 2021). Albeit not without its imperfections, measuring poverty by measuring income makes sense because income is an important resource by which people finance their social and material needs in these countries (Notten 2015; Notten and Kaplan 2021). The two most often used poverty statistics are the poverty rate, measuring the percentage of poor persons, and the poverty gap, measuring the average depth by which income falls below the poverty line (Goedemé, Decerf, and Van den Bosch 2022). When assessing progress on their poverty reduction ambitions, governments use such income poverty indicators alongside other social indicators (Notten and Kaplan 2021; Plante 2019). Sometimes governments even set quantitative targets indicating by how much they aim to reduce income poverty over a pre-specified period (Notten and Laforest 2016; Plante 2019). Canada's federal government, for instance, set targets for a 20 percent poverty reduction in 2020 and a 50 percent reduction in 2030 when launching its poverty reduction strategy in 2018 (ESDC 2018).

National and provincial poverty statistics, however, hide significant variation in the risk and depth of poverty experienced across subpopulations, with some having below average levels of poverty and others experiencing a risk of poverty many multiples thereof (Aaberge et al. 2021; Hillel 2020; OECD 2019:201). Such high poverty risk groups tend to face multiple barriers in generating an income above the poverty line, making sustained and significant reductions in poverty a far more challenging policy task (Herd et al. 2020; Richards 2010). The constraints that give rise to differences in income poverty between population groups are a function of household characteristics (micro-determinants) and societal forces (macro-determinants). We discuss these in turn.

Income poverty and micro-level determinants

Underlying the risk of income poverty and its depth are economic, socio-demographic, and geographic characteristics of the household and its members (Murphy, Zhang, and Dionne 2012; Notten 2015; Notten and Kaplan 2021). Poverty is the product of *economic characteristics* such as household financial resources (including the amount, source and stability/security of income, access to savings, and assets such as home ownership), cost of living and education level. *Socio-demographic* characteristics also play a role, with a high risk of poverty among unattached individuals, single parent families, those defined by Aboriginal status, recent immigrants, seniors and persons with activity limitations (Green, Riddell, and St-Hilaire 2016; Herd et al. 2020; Hillel 2020; Murphy et al. 2012; Notten and Kaplan 2021; Petit and Tedds 2020). Finally, there is marked *geographic* variation in the risk of poverty between provinces, regions and within municipalities (Hillel 2020; Murphy et al. 2012; Notten and Kaplan 2021).

Combinations of these characteristics also influence a household's access to specific income-support programs, which in turn is associated with large differences in income poverty. For instance, households reliant on social assistance provided by Canada's provinces are guaranteed to have an income below the poverty line whereas those relying on the minimum federal pension have a much lower risk of income poverty (Falvo 2020; Falvo and Jadidzadeh 2020; Herd et al. 2020; Hillel 2020; Tabbara, Laidley, and Kapoor 2022).

Macro-level determinants of income poverty: the economy and the social safety net

The economy is a powerful macro-level determinant of income poverty in Canada as most households largely or fully rely on markets to generate income and to purchase the goods and services to meet their needs (Corak 2016; Green et al. 2016; Haddow 2018; Van den Berg et al. 2017). There is considerable inter-regional variation in the nature and strength in the local economy of Canada's regions, which in turn relates to regional differences in the prevalence and trends of income poverty (Murphy et al. 2012). For instance, increases in the price of crude oil increase employment and wages for the local economies of regions situated close to the oil industry, whereas they also raise fuel prices thereby reducing the purchasing power of households (Corak 2016; Marchand 2012). Controlling for the effect of the local economy on regional poverty levels can be important as the forces driving it are largely beyond the control of governments.

Social safety nets are another powerful macro-determinant of poverty (Banting and Myles 2013; Barr 2012; Béland and Mahon 2016; Bergh, Kolev, and Tassot 2017; Cantillon 2018; Corak 2016; Esping-Andersen 1990; Green et al. 2016; Nelson 2012). Social safety nets are complex systems shaped by both provincial and federal governments and local conditions and local stakeholders, including municipal governments (Banting 2008; Corak 2020; Petit and Tedds 2020). They include social assistance, unemployment benefits, pensions, universal healthcare, tax credits, free education, legal aid, mutual funds, workers compensation, severance packages, social credit, food banks, homeless shelters, and subsidized services such as public transport. As in other advanced economies, Canada's higher-level governments have a large influence on local social safety nets (Banting 2008; Béland and Daigneault 2015; Bergh et al. 2017; Haddow 2014, 2015, 2018; OECD 2018).

A large body of international comparative research shows that the nature of social safety nets is an important determinant of cross-national differences in income poverty and outcome-based poverty indicators such as material deprivation (Bergh et al. 2017; Brady, Finnigan, and Hübgen 2017; Cantillon 2018; Moller et al. 2003; Nelson 2010; Notten and Guio 2019; OECD 2018; Renahy et al. 2018). Albeit with more moderate variation across provinces, research on Canada also shows that inter-provincial differences in income poverty are associated with differences in provincial social safety nets (Haddow 2015; Van den Berg et al. 2017). Studies focusing on single parents and/or single working age adults similarly find that the incidence of poverty of such groups differs considerably across jurisdictions, and link such differences to differences in the access, coverage and generosity of social safety nets towards such groups (Béland and Daigneault 2015; Brady et al. 2017; Herd et al. 2020; Hillel 2020; Nelson 2012; Noël 2020; OECD 2011).

The effects of poverty entering on political agendas on poverty

Over the past decades, poverty reduction gradually entered the political agenda of Canada's governments (Noël 2006; Notten and Kaplan 2021; Plante 2019). To coordinate actions across many policy domains and stakeholders, governments often launched so-called poverty reduction strategies (PRS) processes. Despite the growing political consensus on poverty reduction, provincial policymakers drew up considerably different policy agendas to change the social safety net, whereas the federal government arrived late on the scene (Béland et al. 2022).

Evaluating the effect of multiple changes to a jurisdiction's social safety net is notoriously difficult because the actions, implementations, and timing are highly variable. Moreover, signature actions sometime precede the official launch of poverty reduction. Sometimes, the availability of data over time helps in finding a credible control group for a single initiative but this is unlikely when the aim is to assess the effects of a package deal. Comparative policy research therefore studies conditional associations using a broad range of regression techniques and data types to control for confounding factors such as changing demographics and the economy. The next paragraphs review the evidence available on poverty reduction (strategies) or some of the signature programs under its umbrella in Canada and/or its provinces.

Some studies evaluated the effects of changes in single programs undertaken under the umbrella of poverty reduction (strategies). Studies on the introduction of highly subsidized universal child care in Quebec show a strong increase in maternal labor supply but negative and persistent effects on the non-cognitive development of children (Baker, Gruber, and Milligan 2008, 2015). Various reforms leading to more generous federal child tax credits have reduced child poverty in Canada without affecting labour supply responses (Baker, Messacar, and Stabile 2021). There is also evidence that the Canada Child Benefit increased spending on food, shelter and children's clothing (Najjarrezaparast and Pendakur 2021). Focusing on food insecurity, Brown and Tarasuk (2019:1) find that the Canada Child Benefit "disproportionately benefited households most susceptible to food insecurity".

A few studies analyzed the combined effects of policies on poverty or related outcomes. Two studies, one on Newfoundland and Labrador and the other on Ontario, find a significant effect of the provincial poverty strategy on the prevalence and severity of food insecurity (Loopstra, Dachner, and Tarasuk 2015; Tarasuk et al. 2019). In a comparison between Canada's four largest provinces, van den Berg and co-authors (2017) analyze the links between a mix of family friendly policies in Quebec to reductions in poverty among families with children and emphasize the important role of increased female labour market participation. In analyzing poverty trends and the timing of poverty reduction strategies, Plante (2019) finds, however, that poverty levels have often dropped before rather than after the introduction of the strategy. Lacroix's (2019:114) comparison between Ontario and Quebec, also does not yield evidence that the policies that were implemented in the mid-1990s contributed reduced transitions into poverty in Quebec. In a comparison of minimum income protection for four household types across Canada's 10 provinces, Noël (2020:399) presents evidence that poverty reduction strategies negatively affected the income of social assistance recipients.

The two high poverty risk groups we focus on in this research, single parent families, and single working age adults, tend to experience multiple challenges and are therefore more likely to need

a combination of favourable factors before leaving and/or avoiding poverty. By introducing a long-term policy process for poverty reduction, federal and provincial governments intend to increase the coherence of policy changes among many programs, which they hope leads to more poverty reduction overall because a coherent package of policies is thought to benefit groups facing multiple challenges (Notten and Laforest 2016). Single program evaluations are not designed to pick up such cumulative effects and may find smaller or no program impacts for such groups, assuming sample sizes even allow the measurement of impacts on such small population groups.

This study therefore analyzes the combined effect of government efforts on income poverty for single parent families and single working age adults while conditioning on regional and other demographic factors. Moreover, making these groups the focus of the research represents a litmus test: in spite of a broadly shared moral imperative to help those who need it most, achieving poverty reduction among high risk groups is more difficult and costlier and yields fewer electoral gains (Aaberge et al. 2021; Falvo and Jadidzadeh 2020; Fleurbaey 2018; Goedemé et al. 2022; Herd et al. 2020; Noël 2020).

3. Data

We use the Survey of Labour and Income Dynamics (SLID, 1999-2011) and the Canadian Income Survey (CIS, 2012-2017), which we accessed through the Research Data Centres of Statistics Canada in Ottawa and Saskatoon.[3] The CIS and its predecessor the SLID are the leading data instruments for income poverty statistics in Canada. We pooled all survey waves into a single dataset containing 1,321,309 individual-year observations. Table 1 offers a breakdown of the sample size by year and jurisdiction.

This period covers nearly two decades during which poverty gradually re-appeared on the political agendas of all provinces and the federal government (Noël 2006; Notten n.d.). Quebec was the first province, indicating its willingness to engage in a poverty reduction strategy process in early 2001. Other provinces gradually followed suit, with the then newly elected government in British Columbia being the last to commit to such a process in 2017. The federal government started its process in 2016 following the 2015 elections. Table A1 offers an overview on when each jurisdiction started a poverty reduction strategy process

With these data, we study the long-term evolution of poverty among single parent families and single adults of working age, two groups with poverty rates very far above the national poverty rate, and groups which would seem an obvious target for poverty reduction policies in a political environment that prioritizes poverty reduction. The SLID/CIS data hold detailed information on income sources and various definitions of aggregate income for various household definitions, most of which is retrieved from respondents' tax files.[4] We calculate four income poverty

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[3] Project number 5955 titled "Do Canadian provincial poverty reduction strategies reduce poverty?". The results presented in this paper are based on microdata drawn from the original microdata on 7 November 2019.
[4] For detailed documentation see Statistics Canada's starting webpages for detailed information on the Canadian Income Survey (https://www150.statcan.gc.ca/n1/en/surveys/5200) and the Survey of Labour and Income Dynamics (https://www150.statcan.gc.ca/n1/en/surveys/3889).

statistics covering two poverty thresholds and two poverty measures. We use the household definition that is used by Statistics Canada to compute for the Low-Income Measure (LIM) and we follow the tradition in poverty measurement to count individuals as the unit of analysis when computing poverty statistics (Murphy et al. 2012).

The first threshold is Canada's relative poverty threshold called the Low-Income Measure (LIM), which is set at 50 percent of the national median income for each survey year. Income is measured at the household level and made comparable across household using an equivalence scale (the square root of household size) (Murphy et al. 2012). The second threshold is an anchored relative threshold, which we call the anchored LIM or LIM-08. It is set similarly to the LIM in the benchmark year but, for other years, is it only adjusted for changes in purchasing power using the Consumer Price Index (CPI – All Items).[5] Given our aim to discern long-term trends, we chose 2008 as the benchmark year as it is in the middle of the period of interest and just precedes the (income reference) year in which the great recession visibly affects the LIM poverty trend.[6] This combination of poverty thresholds allows to analyze changes in poverty in a relative sense (compared to the typical Canadian) and in an absolute sense (purchasing power). They thereby capture two key notions of inclusiveness in terms of material progress and thus also poverty reduction (Notten and De Neubourg 2011). Including both perspectives is important because there is no agreement on which is more relevant (as normative views on what constitutes progress differ) and because these perspectives regularly yield conflicting findings (Corak 2016; Notten and De Neubourg 2011).

We do not use Canada's official poverty indicator, the Market-Basket-Measure (MBM), which became official in 2018 (ESDC 2018). This measure is not available for the early years in the period we study, and its thresholds get rebased every five years, which leads to breaks in the series. Despite various differences in the measurement methodology between the MBM and the anchored LIM (e.g. different definitions of income and household, the purchasing power of the thresholds, and geography of price indexes used), both indicators tend to show very similar poverty trends in relation to the year in which they are anchored or based, albeit at geographically different poverty levels (Figure A1).[7]

For each threshold, we calculate the poverty headcount and poverty gap measures (Brady 2003; Goedemé et al. 2022; Osberg and Xu 2000). The poverty headcount reflects the incidence of poverty, namely the percentage of a population with an income below the poverty line. The poverty gap reflects the intensity of poverty, namely the average income shortfall of those who are poor expressed as a percentage of the poverty line. These are the most common statistics used by governments around the world to monitor poverty. They are easy to understand by a broad audience and they reflect two key dimensions of poverty that, when combined, regularly

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[5] For more information see Statistics Canada's Consumer Price Index portal: https://www.statcan.gc.ca/en/subjects-start/prices_and_price_indexes/consumer_price_indexes.
[6] We also calculated anchored LIM rates using 1999 and 2017 as a benchmark year. Whereas the level of poverty differs between the benchmark years, the poverty trend is similar (Figure A2).
[7] We would prefer using the income definition of the MBM for calculating the LIM because it includes a value for imputed rents and tax deductions received from health and childcare expenses. Other than historical inertia, we do not understand why the two most used poverty indicators in Canada rely on different income definitions.

tell a more nuanced story than the headcount measure alone. Moreover, the situation of those escaping poverty (and the factors that help them doing so) can be different from that of groups falling into or remaining in poverty.

National and provincial poverty trends form the backdrop for our analysis of changes in the disadvantage of high poverty risk groups over the past two decades and are therefore relevant to take note of. Depending on the poverty method and poverty measure used, poverty either increased, fluctuated, remained constant, or declined. Such patterns are not unusual for rich countries (Corak 2016; Goedemé et al. 2022; Notten and De Neubourg 2011). In Canada, the percentage of poor persons (headcount) declined considerably for both MBM and LIM-08 poverty methods, whereas it stayed approximately constant for the LIM. The percentage of income shortfall of those with an income below the poverty line (poverty gap) is at a higher level for the MBM but with a similar fluctuating trend as the other poverty methods. Note A1 in the appendix describes national and provincial trends for the MBM, the LIM and the LIM-08 in more detail (Figures A1 to A4).

The SLID/CIS data hold information on a range of demographic and socio-economic characteristics of households and their members, with which we construct variables identifying different household types and various control variables. We categorize the sample into six mutually exclusive household types, where children aged 17 and below are considered dependent and persons aged 65 and above are of pension-age: [8]

1. Single parent family
2. Single adult of working age
3. Couple with dependent children
4. Other households with dependent children
5. Household composed of at least one pension-aged person
6. Multiple working age adults

This categorization acknowledges that age and household composition are key elements in determining eligibility to and generosity of income transfer programs in Canada's social safety net (e.g. provincial and federal family benefit programs, the leave arrangements falling under Employment Insurance, provincial welfare programs, Old-Age Security and the General Income Supplement).

The control variables, whose role is discussed in section 4, reflect other factors associated with a household poverty status. In addition to household type, these demographic factors are a household size and whether at least one household member identifies as immigrant or Aboriginal. Unfortunately, the SLID does not include information about visible minority status, which meant we could not include such a variable. In terms of geography, we test for the relevance of a variable indicating the household lives in a rural community and 76 dummy variables indicating more fine-grained economic regions (Table A2 in appendix). Household economic variables are the highest level of education in the household, whether the dwelling is

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[8] We deleted households consisting exclusively of dependent children from our sample, which represent a very small group.

owned, the number of income earners, and whether a member reported being unemployed for part or the whole reference year. In section 4 we argue that economic variables should not be included as control variables given our aim is to assess the effects of a package of policies on poverty, many of them aiming to facilitate income generation through employment. To demonstrate how this choice matters, we also present results including these variables as controls.

Tables 2 and 3 provide summary statistics of these variables for the Canadian sample in a selected number of years. Headcount poverty rates for the LIM are relatively stable, hoovering around 12-13 percent, whereas they decline for the anchored LIM from 19 percent in 1999 to 10 percent in 2017. The MBM (2008 base) also declines from 12.7 percent in 2012 to 9.5 percent in 2017. The poverty gaps for the LIM and anchored LIM fluctuate between 30-33 percent, with no discernable long-term trend. The MBM poverty gap increases from 32 percent in 2008 to 35 percent in 2017. These patterns already indicate that the choice of poverty statistic matters. The population shares of each household type display long-term demographic shifts associated with population ageing. The share of single parent families is declining from 6 to 4 percent whereas that of single adults of working ages hovers around 6 – 7 percent. These two types have relatively small population shares, a factor that we consider in our analyses and discuss where relevant. Of the control variables, households with a member identifying as Aboriginal also represent a small population share.

Breaks in the data, whether due to a switch in survey instruments, a change in sampling strategy or a variable definition and operationalization are unavoidable for such a long period. Statistics Canada aims to reduce the impact of such changes and the data in the RDC are regularly updated to the most recent version (Statistics Canada 2015). As for the switch from SLID to CIS surveys, Statistics Canada's indicates "that income estimates before 2006 remain suitable for analyzing long term, cyclical trends, and can be used with the recalibrated results from 2006 to 2011 and the CIS results from 2012 and beyond" (Statistics Canada 2015:12). We analyzed trends of all variables by province, focusing particularly on the 2011/12 reference years involving the switch between survey instruments. Trends are smooth overall, with an occasional jump in the mean or population share of specific a variable – survey – province combination, and especially in cross-tabulations involving smaller sample sizes. Presenting summary statistics for Canada, Table 2 does not show breaks in income poverty and household type whereas Table 3 shows modest shifts in the level of some control variables (immigrant, Aboriginal, rural, unemployed household member and highest education in household).

Table 1: Sample size

	CAD	NFL	PEI	NS	NB	QC	ON	MB	SK	AB	BC
1999	78,109	3,320	2,218	5,055	4,635	15,340	23,012	5,830	5,492	6,577	6,630
2000	76,826	3,325	2,225	5,100	4,703	14,738	23,121	5,630	5,293	6,316	6,375
2001	78,454	3,397	2,227	5,272	4,816	14,837	23,196	5,794	5,556	6,738	6,621
2002	74,462	3,153	2,112	4,929	4,393	14,141	21,639	5,690	5,475	6,414	6,516
2003	75,199	3,139	2,112	4,951	4,361	14,431	22,091	5,563	5,530	6,463	6,558
2004	72,278	3,037	2,017	4,817	4,150	13,910	20,934	5,230	5,375	6,413	6,395
2005	69,555	2,951	1,940	4,440	4,014	12,970	20,171	4,873	5,083	6,632	6,481
2006	70,195	2,996	1,975	4,438	4,062	13,267	20,143	4,827	5,033	6,921	6,533
2007	68,282	2,887	1,908	4,373	3,942	13,105	19,409	4,657	4,894	6,795	6,312
2008	64,155	2,794	1,785	3,685	3,635	11,877	18,506	4,392	4,816	6,499	6,166
2009	65,521	2,872	1,838	3,732	3,731	12,282	18,842	4,462	4,813	6,711	6,238
2010	63,610	2,794	1,766	3,709	3,684	11,883	18,045	4,411	4,619	6,654	6,045
2011	61,030	2,450	1,616	3,487	3,568	11,326	17,134	4,781	4,248	6,193	6,227
2012	60,974	2,343	1,488	3,300	3,157	11,290	16,751	5,488	4,594	6,306	6,257
2013	57,716	2,174	1,556	3,245	3,128	10,721	15,452	5,234	4,219	5,933	6,054
2014	58,794	2,200	1,552	3,296	2,818	10,920	15,326	5,985	4,609	5,843	6,245
2015	63,190	2,377	1,616	3,434	3,121	11,403	16,677	6,064	5,162	6,683	6,653
2016	65,775	2,438	1,600	3,567	3,294	11,959	17,280	6,512	5,156	6,995	6,974
2017	97,184	3,644	2,476	5,247	4,978	17,449	25,374	9,353	7,580	10,262	10,821

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.
Note: Total observations: 1,321,309.

Table 2: Poverty and the population share of household types for selected years

Year	1999	2008	2011	2012	2017
Mean					
Poverty headcount:					
- LIM	12.4	13.4	13.3	13.7	12.7
	(0.12)	(0.13)	(0.14)	(0.14)	(0.11)
- LIM-08	19.2	13.4	12.7	12.6	10.2
	(0.14)	(0.13)	(0.13)	(0.13)	(0.10)
- MBM	-	11.2	12.7	12.7	9.5
	-	(0.12)	(0.13)	(0.13)	(0.09)
Poverty gap:					
- LIM	33.0	30.3	30.2	31.8	30.6
	(0.26)	(0.28)	(0.30)	(0.28)	(0.23)
- LIM-08	31.3	30.3	30.3	31.7	31.0
	(0.20)	(0.28)	(0.31)	(0.30)	(0.27)
- MBM	-	32.3	32.1	34.9	35.1
	-	(0.35)	(0.36)	(0.34)	(0.32)
Household type:					
- Single parent family	5.9	5.2	4.7	4.2	3.9
- Single adult of working age	6.6	7.4	7.6	7.5	7.2
- Couple with dependent children	41.8	37.3	36.3	36	34.4
- Other households with dependent children	3.4	3.9	3.8	4.4	4.7
- Household composed of at least one pension-aged person	9.7	10.5	11.1	11.5	13.3
- Multiple working age adults	32.6	35.7	36.5	36.4	36.5

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.

Note: Robust standard errors between brackets. Not available (-). Selected years include the first and last year in our sample, the adjacent years involving the switch in survey instrument, and the anchor year for the fixed LIM (2008).

Table 3: Summary statistics for control variables in selected years

Year	1999	2008	2011	2012	2017
Mean					
- Household size	3.3	3.3	3.3	3.3	3.3
	(0.54)	(0.62)	(0.63)	(0.65)	(0.54)
- Immigrant	26.0	31.7	29.7	33.5	35.7
	(0.16)	(0.18)	(0.19)	(0.19)	(0.15)
- Aboriginal	4.4	6.1	6.6	3.9	4.5
	(0.07)	(0.09)	(0.10)	(0.08)	(0.07)
- Rural	19.9	18.0	18.9	20.6	16.8
	(0.14)	(0.09)	(0.10)	(0.08)	(0.07)
- Homeowner	72.9	73.6	74.4	74.1	72.6
	(0.16)	(0.17)	(0.18)	(0.18)	(0.14)
- Unemployed	22.9	24.7	26.9	28.2	28.3
	(0.16)	(0.18)	(0.19)	(0.19)	(0.15)
Percent					
Highest level of education:					
- High	17.5	24.5	28.2	28.0	32.3
- Middle	66.0	62.7	59.3	62.5	57.8
- Low	16.5	12.8	12.5	9.5	9.9
Number of earners:					
- Multiple earners	55.8	61.3	63.7	62.7	59.1
- One earner	23.7	22.1	20.7	21.0	22.7
- No earner	20.5	16.6	15.6	16.2	18.2

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.

Note: Robust standard errors between brackets. Not available (-). Selected years include the first and last year in our sample, the adjacent years involving the switch in survey instrument, and the anchor year for the fixed LIM (2008). The education category 'Low' involves persons with less than high school graduation whereas the category 'High' includes persons with a university degree or a university certificate.

4. Methods

Empirical framework

This paper analyzes how the risk of poverty has evolved for single parent families and single adults of working age, two of the highest poverty risk groups in Canada, in relation to lower poverty risk groups. Is the advent of poverty reduction on the political agendas in Canada's jurisdictions associated with a decline in the disadvantage of these groups? We adapt the empirical approach outlined by Brady, Finnigan and Hübgen (2017) who study risks of poverty in the United States in comparison to other rich countries. Relying on classic techniques of standardization and decomposition, we study variation in poverty arising from compositional differences and differences in poverty between groups with a high poverty risk characteristic and a reference group (Brady et al. 2017:742). To illustrate in the context of our research, single parenthood is a characteristic associated with a high risk of poverty in Canada. A decrease in the prevalence of single parenthood, a compositional change, exerts a downward pressure on the prevalence of poverty overall (all else equal). A decrease in the percentage point difference of poor single parent families in comparison to that of a lower poverty risk household, also exerts a downward pressure on the prevalence of poverty in Canada (all else equal).

The *prevalence* of a high poverty risk group is measured as the proportion of persons living in a high poverty risk group as a percentage of the total population. The *poverty difference* of a high poverty risk characteristic is measured as a regression coefficient (β) in a Linear Probability Model (LPM) with specification:

$$P_i = \alpha + \sum_{\beta=1}^{2}(x_i) + \sum_{\gamma=1}^{6}(d_i) + \sum_{\delta=1}^{Max}(r_i) + \sum_{\eta=1}^{6}(e_i) + \varepsilon_i$$

where P_i is the poverty statistic (P) for individual i. We measure poverty using two poverty lines, a relative poverty line and an anchored relative poverty line, while calculating for each poverty line the headcount, and the average poverty gap among the poor (see section 3). The high poverty risk groups (x) are dummy variables identifying single parent families (x_1) and single adults of working age (x_2). All specifications further include demographic (d_i) and regional (r_i) control variables.

The demographic controls (d_i) include variables indicating whether an individual lives as a 'couple with dependent children', in an 'other household with dependent children' or a 'household composed of at least one pension-aged person' whereas an individual living in a 'household with multiple working age adults' is part of the reference group. Also included as demographic controls are 'household size' and variables indicating whether at least one member of the household identifies as 'immigrant' or 'Aboriginal'.

A vector of regional variables (r_i) indicates the economic region of the jurisdiction in which an individual lives. This number varies per jurisdiction, counting 76 regions for the whole of

Canada with Ottawa being the reference group. For the provincial level estimates the reference group are those living in the most populous city. For instance, Quebec has 17 economic regions, which means the regression equation holds 16 regional dummy variables with Montreal being the reference group. Prince Edward Island forms 1 economic region; regressions for this jurisdiction thus do not include a regional variable. This vector enables poverty rates to vary with differences in regional economic opportunities for workers and businesses (e.g. a boom or bust in a regionally important industry, regional differences in structural unemployment rates due to growing or declining industries, and the effects of regional shocks to the economy such as wildfires or floods).

The vector of economic variables (e_i) holds information on 6 economic characteristics of the household in which the individual lives: 2 variables indicating the highest level of education being 'Low' or 'Middle', leaving 'High' as the reference group[9]; 2 variables for indicating the number of income earners in the household with '0' or '1', leaving '2 or more' as the reference group; 1 variable indicating whether at least one working age member reported being unemployed for part or the full reference year; and 1 variable indicating 'home ownership'.[10]

Interpretation and identification of policy effects

Regression coefficients β_1 and β_2 reflect the difference in poverty levels between (individuals living in) single parent families or single adults of working age and those of (individuals living in) households with multiple working age adults, conditional on characteristics included as control variables. A positive coefficient or *poverty difference* implies that individuals living in such households experience a statistically significant higher incidence of poverty (headcount) or a deeper average poverty gap. A shrinking poverty difference thus implies that the disadvantage of high poverty risk households is decreasing.

Governments can, and often (say they) try to, play a role in reducing poverty (differences) using an arsenal of economic, social, health, education, and housing policies (see ESDC 2018; Goedemé et al. 2022; Notten and Guio 2019; Notten and Laforest 2016 for examples). Policies that also benefit those with low(er) incomes could potentially help reduce poverty differences: a more inclusive economy, a more effective social safety net, and better public and subsidized services are widely acknowledged systems level examples. While the emphasis differs by jurisdiction, federal and provincial governments' poverty reduction strategies and other poverty reduction policy documents list a broad range of policy interventions occurring in many of these policy areas. As part of poverty reduction, governments intervene in markets (e.g. minimum wage, subsidized housing), reduce barriers to participate in the labour market (e.g. subsidized child care, care leaves) and economy (e.g. social procurement, social credit), support income (e.g. social insurance, social assistance, family allowances, work income tax credits), deliver services (e.g. health insurance, pharma care, kindergarten) and fund service delivery organizations (e.g. education, selected health services, care homes, food banks, child protection). Broadly speaking, many of these interventions can help individuals, including those living in

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[9] The categories are defined as follow: Low: Less than high school degree; Middle: Non-university certificate, less than university degree or university certificate; High: University degree or certificate.
[10] This variable does not distinguish between home ownership with and without a mortgage.

single parent families and as single working-age adults, gain an income through employment, entrepreneurship and/or from government transfers that lifts them and their dependents out of income poverty.

This paper aims to identify the macro-level effect of policies at higher levels of government (federal and provincial) on poverty in Canada and its provinces. The identification of the policy effect is indirect, it follows from the interpretation of changes in the coefficients (β_1 and β_2) over time. The constant and control variables play a crucial role in capturing variation in poverty due to macro-determinants over which Canadian governments have a lower ability of exercising control (e.g. economic or environmental shocks, business cycle) and individual level characteristics that ought not affect the risk of poverty (but sometimes do). The demographic controls (d_i) are included to control for the latter source of variation and as indicated in section 3, due to data gaps in the SLID we unfortunately cannot include a control variable for racialized population groups other than Aboriginal. The constant and the geographic variables (r_i) are intended to pick up variation in poverty levels due to economic shocks (e.g. the 2008 global financial crisis, swings in the price of crude oil or prices of other regionally dominant products), environmental shocks (e.g. wild fires, droughts, floods), the business cycle, and differences in regional economic opportunities more generally.

The economic variables (e_i) are household level characteristics that are well known to have a statistically significant association and an often causally proven relationship with an individual's risk of poverty. Not coincidentally, these are also the relationships that governments try to influence with poverty reduction policies and, be it intended or not, by interventions in the earlier mentioned policy domains more generally. We argue that it would therefore not be appropriate to include these variables in the regression specification. For this reason, vector e_i receives a gray fond color in the above equation. Their exclusion, however, is not without problems as individuals have a certain agency to influence their economic characteristics as well (e.g. upgrading skills, finishing a degree, seeking work, saving money for a down payment, finding child care and so on). How much agency is a longstanding matter of debate as well as a deeply philosophical question, which has been debated for millennia. We therefore also estimate the *poverty differences* for a regression model including these economic variables and share some of the results in this paper.[11] [12] The difference between regression coefficients β_1 and β_2 of the regressions with and without economic variables thus includes a component associated with governments' effects of policies on poverty and a component associated with an individual's agency and choices. Peoples' beliefs regarding the scope of an individual's agency also affect their beliefs on what share constitutes an individual's responsibility and what share would be deemed beyond a person's control.

This paper includes results from two regression models for four dependent variables to obtain four poverty difference β's for two high poverty risk groups in each jurisdiction (11) – year (19)

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[11] We will release a database with all the vetted results of this research publicly available upon publication of this research. For enquiries, please connect with Geranda Notten (gnoten@uottawa.ca).

[12] Table A5 in the appendix lists the percentage of observations lost due to missing information in the regressions including the economic variables. This reflects 13,1 percent of the total sample but varies by survey, year, and province.

combination (2*4*11*19 = 1,672 regressions). For the provincial level estimates we average poverty difference estimates over time (5-year average) to help distinguish long-term trends from year-to-year variability.

In sum, the empirical approach analyzes changes in the statistical relationship between poverty in a jurisdiction and the poverty risk of individuals living in single parent families or as single working age adults. Our research distinguishes itself in its rigor by studying this relationship across Canada's provinces using various definitions of poverty, applying multivariate analyses controlling for other demographic and environmental characteristics, over a period stretching two decades in the past to the present. This approach only indirectly identifies the effect of policies and their effect on poverty reduction. We do not have a control group to establish a strong counterfactual, nor can we exclude the possibility that omitted variables or other measurement issues bias the estimates. The analysis can thus not offer causal or conclusive evidence.

Tables 4 and 5 display the regression results for the LIM-08 headcount (Table 4) and poverty gap (Table 5) indicators for Canada in 1999 and 2017. The LIM results are displayed in Tables A3 and A4 in the appendix. The first set of models only include a constant and the household type dummies (M1); the second set of models reflects our preferred model, which includes additional demographic and regional characteristics (M2); the third set of models further include the economic characteristics of the household (M3). In going from M2 to M3, we lose 11 and 8 percent of observations in 1999 and 2017 due to missing economic information in Table 4, and 15 and 10 percent of observations in 1999 and 2017 in Table 5 (Table A5). Also note that the sample size (N) is much smaller for the poverty gap regressions as they only involve observations with an income below the poverty line. Not surprisingly, the explanatory power increases as more variables are included in the regression, with a large jump between models M2 and M3 (R-squared, last row).[13]

Most coefficients are statistically significant in the headcount regressions, and they all have the expected sign, with positive values for variables that are associated with a higher poverty risk (Table 4). The coefficients of interest are those identifying single parent families and single working age adults; they are positive across all three models, and they have the largest magnitude in comparison to the other household types. The coefficient of 0.411 for single parent families in M1 in 1999 means that the poverty rate among this household type was 41 percentage points higher than that of the reference household in that year all else equal. For this reason, we refer to this coefficient as the *poverty difference*.

The poverty differences do not change a lot between M1 and M2 for the two high poverty risk households whereas they decrease substantially for M3. Individuals' economic characteristics have a strong and large association with their risk of poverty, and individuals living in these high poverty risk households have less favourable economic characteristics in comparison to the reference household. For single parent families, the poverty difference in 2017 is smaller than it is for 1999 in each model; this is also the case for single working age adults although the

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[13] In lieu of the regional dummies we also tested the dummy variable indicating rural residence (results not shown here). The regional dummies are often statistically significant and offer a far more fine-grained control for regional circumstances.

difference is quite small for M3 and thus likely not statistically significant. These results offer a first indication that the disadvantage of these two high poverty risk households has been getting smaller over time, at least, when measuring poverty headcounts using an absolute poverty line.

Several coefficients are not statistically significant for the poverty gap regressions (Table 5), suggesting that those variables explaining poverty risk are not equally relevant in explaining the depth of poverty. Surprisingly, home ownership is associated with a somewhat larger poverty gap as do higher levels of education. While home ownership is strongly associated with a lower risk of falling into poverty, the risk is not zero. Possible explanations for the deeper poverty gap could be that the low-income of individuals living in households with such characteristics is relatively recent and/or expected to be temporary and/or that lower housing costs free up more income for other expenses and/or (part of) consumption is financed out of other assets or savings. The poverty differences for single parent families are not statistically significant in the 1999 models whereas they are statistically significant and negative in the 2017 models. Thus, not only is the poverty gap of single parent families comparable to that of the reference group, but it also has become smaller in 2017. For single working age adults, the poverty difference is positive across all models (albeit not significant in 2017 for M3) and it also shows a decline. Thus, also for the poverty gap, poverty differences have improved for these two household types.

Table 4: Regression results for headcount (LIM-08) in Canada (1999 and 2017)

Coefficient	Headcount LIM-08					
	M1-1999	M1-2017	M2-1999	M2-2017	M3-1999	M3-2017
Single parent family (β_1)	0.411***	0.182***	0.413***	0.197***	0.180***	0.079***
Single working age adult (β_2)	0.307***	0.225***	0.293***	0.188***	0.073***	0.060***
Household with at least one elderly member (d_1)	0.098***	0.039***	0.087***	0.016***	-0.250***	-0.143***
Couple with dependent children (d_2)	0.038***	-0.010**	0.055***	0.029***	0.066***	0.034***
Other households with dependent children (d_3)	0.089***	-0.028***	0.106***	0.025***	0.039**	0.009
Multiple working age adults	Reference	Reference	Reference	Reference	Reference	Reference
Household size (d_4)			-0.009***	-0.022***	0.012***	-0.013***
At least one immigrant member (d_5)			0.040***	0.037***	0.034***	0.024***
At least one Aboriginal member (d_6)			0.085***	0.065***	0.023**	0.01
Economic region dummies ($\sum_{\delta=1}^{Max}(r_i)$)	No	No	Yes	Yes	Yes	Yes
Homeowner (e_1)					-0.159***	-0.100***
High education					Reference	Reference
Middle education (e_2)					0.047***	0.015***
Low education (e_3)					0.135***	0.077***
At least one unemployed member (Part/full time) (e_4)					0.088***	0.065***
≥2 earners					Reference	Reference
1 earner (e_5)					0.192***	0.084***
No earner (e_6)					0.502***	0.446***
Constant	0.119***	0.078***	0.123***	0.113***	0.049***	0.096***
N	78109	97184	78109	97184	69801	89130
R-squared	0.082	0.051	0.101	0.072	0.29	0.273

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.
Note: * p<0.05, ** p<0.01, *** p<0.001

Table 5: Regression results for poverty gap (LIM-08) in Canada (1999 and 2017)

Coefficient	Poverty gap LIM-08					
	M1-1999	M1-2017	M2-1999	M2-2017	M3-1999	M3-2017
Single parent family (β_1)	-0.004	-0.070***	0.011	-0.034**	-0.013	-0.054***
Single working age adult (β_2)	0.120***	0.093***	0.089***	0.047**	0.055***	0.017
Household with at least one elderly member (d_1)	-0.209***	-0.213***	-0.225***	-0.246***	-0.289***	-0.263***
Couple with dependent children (d_2)	-0.082***	-0.091***	-0.037***	-0.021	-0.014	-0.021
Other households with dependent children (d_3)	-0.054**	-0.107***	-0.026	-0.060**	-0.032	-0.050*
Multiple working age adults	Reference	Reference	Reference	Reference	Reference	Reference
Household size (d_4)			-0.021***	-0.037***	-0.018***	-0.039***
At least one immigrant member (d_5)			-0.009	0.004	-0.012	-0.022*
At least one Aboriginal member (d_6)			0.015	0.002	0.017	-0.01
Economic region dummies ($\sum_{\delta=1}^{Max}(r_i)$)	No	No	Yes	Yes	Yes	Yes
Homeowner (e_1)					0.037***	0.040***
High education					Reference	Reference
Middle education (e_2)					-0.047***	-0.060***
Low education (e_3)					-0.056***	-0.080***
At least one unemployed member (Part/full time) (e_4)					0.023***	0.028***
≥2 earners					Reference	Reference
1 earner (e_5)					0.064***	0.032**
No earner (e_6)					0.214***	0.183***
Constant	0.349***	0.353***	0.414***	0.393***	0.337***	0.337***
N	15488	9555	15488	9555	13115	8557
R-squared	0.134	0.138	0.159	0.184	0.213	0.235

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.
Note: * p<0.05, ** p<0.01, *** p<0.001

Figure 1: Headcount poverty differences in Canada, 1999-2017, by regression model and poverty line
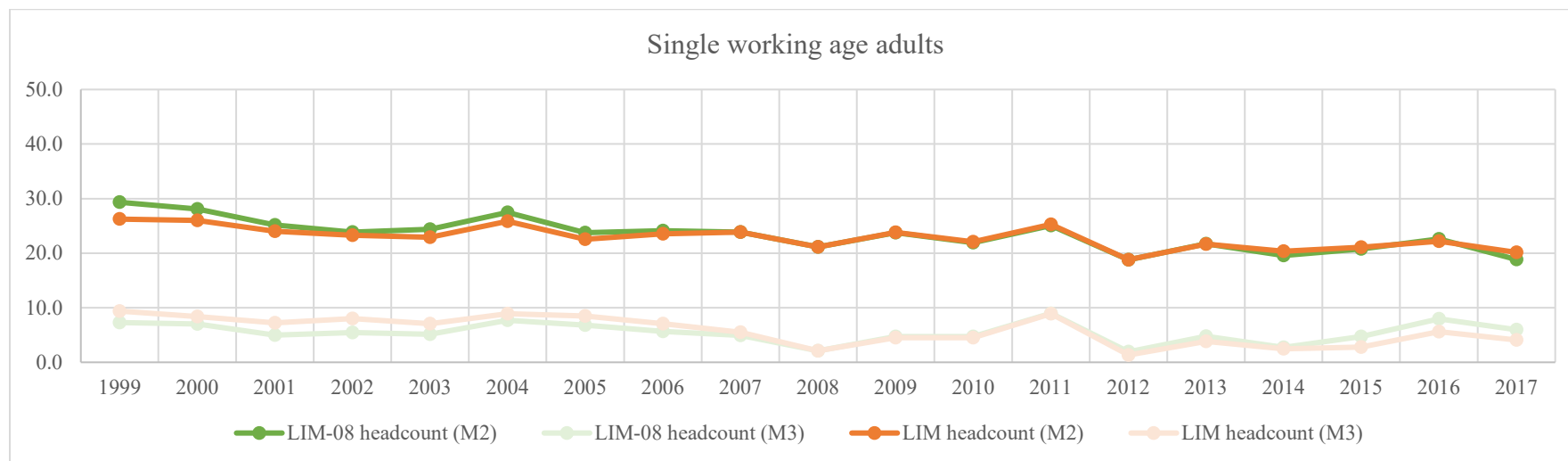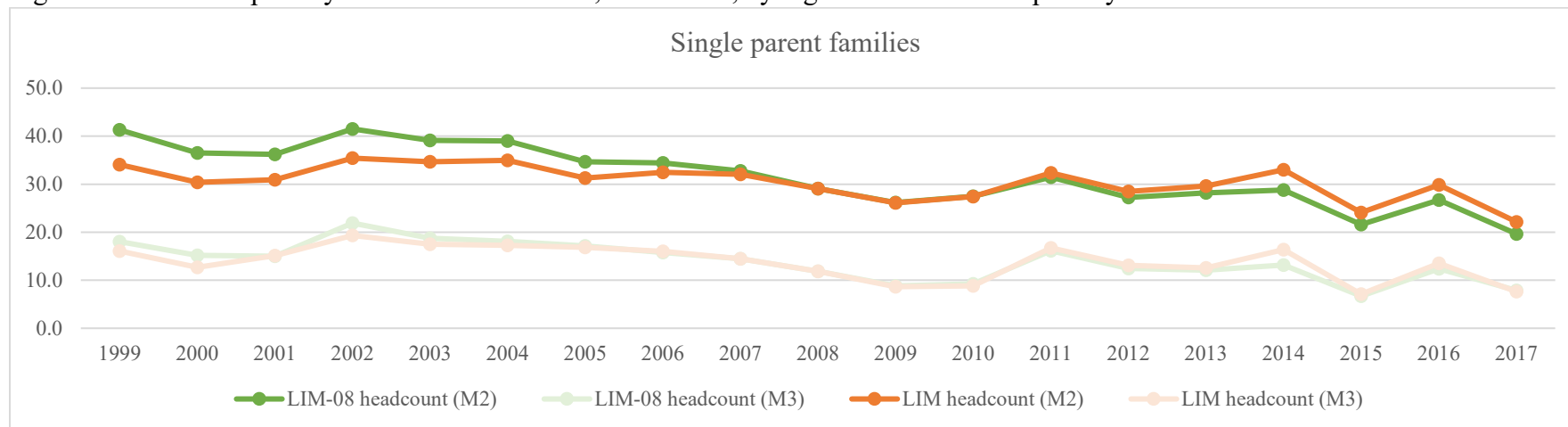
Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.

Note: To facilitate comparison across panels, we use a common scale. The poverty difference is the regression coefficient of a variable identifying single parent families / single working age adults in a Limited Probability Model controlling also for other demographic and geographical characteristics, estimated for each jurisdiction – year combination (Model 2, see section 4).

Figure 2: Poverty gap differences in Canada, 1999-2017, by regression model and poverty line

Single parent families

Single working age adults

Note: To facilitate comparison across panels, we use a common scale. The poverty difference is the regression coefficient of a variable identifying single parent families / single working age adults in a Limited Probability Model controlling also for other demographic and geographical characteristics, estimated for each jurisdiction – year combination (Model 2, see section 4).

5. Results

Over the past two decades, narratives of poverty reduction increasingly entered the political agendas of Canada's provincial and federal governments. Our interest is in finding out whether there is evidence that the many ways those narratives have been put into action have benefitted those living in household types experiencing very high poverty rates, namely single parent families and single working-age adults. We analyze the poverty differences, obtained from the regressions outlined in Section 4, at a national and then at a provincial level. As robustness checks, we review demographic trends in the population share of all household types (prevalence) and poverty trends of the reference household and the other household types.

Figures 1 and 2 summarize the evolution of poverty differences, our metric for measuring the disadvantage of persons living in high poverty risk households, for Canada from 1999 to 2017. As a reminder, the *poverty difference* is a coefficient identifying such a household in a multivariate regression. Displayed in dark colors are the poverty differences estimated using the preferred regression model (M2), which includes only demographic and regional variables. Displayed in light colors are the poverty differences based on the regression model that also includes the economic variables (M3). The first dark green dot for Canada in Figure 1 shows that, in 1999, single parent families in Canada had a LIM-08 poverty rate that was 41 percentage points higher than those living in the reference household whereas the poverty rate for single working age adults was 29 percentage points higher.[14] The reference household consists of multiple adults, none of which are older than age 65. This household type is a suitable reference because it is very common (Table 2) and its average poverty levels are closest to the Canadian average (Table 7).[15]

Figure 1 shows that the poverty headcount differences gradually trend downwards for individuals living in both household types and for both poverty methods, albeit with considerably stronger declines for persons living in single parent families and for the LIM-08 estimates. An interesting finding because, at a population level, poverty headcount rates declined for the LIM-08 while they remained relatively stable for the LIM (see Section 3 and Note A1). This suggests that persons living in these high poverty risk households saw larger poverty reductions for the LIM (in percentage points). We analyze this in more detail below. The light-colored lines in Figure 1 also show a downward long-term trend for the poverty differences estimated by using the model that also includes the economic variables (M3). Given that many policies touted under the umbrella of poverty reduction (also) aimed to facilitate / remove barriers to employment, and employment status is strongly associated with the economic characteristics of the household, we prefer the poverty differences estimated excluding these economic characteristics.

Poverty gap differences fluctuate across years and over a smaller value range (Figure 2). For single parent families in 1999, the LIM-08 poverty gap difference was only 1 percentage point

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[14] The point estimates are rescaled by 100 to reflect percentages.

[15] We prefer this household type as a reference household over 'Couples with dependent children' because the past two decades have seen considerable changes in family policies. This means that our regression models also include a coefficient for couples with dependent children, whose evolution would be interesting to analyze in comparison to that of other household types with dependent children.

whereas the LIM gap was 6 percentage points lower (M2). Thus, depending on the poverty method, single parent families in poverty either experience a comparable poverty gap or a smaller poverty gap than poor reference households. The long-term trend for the LIM-08 poverty gap difference suggests a modest improvement of 4 percentage points for single parent families whereas that of the LIM suggests a modest deterioration of 5 percentage points. For single working age adults, poverty gap differences are positive for both poverty methods signalling that, in addition to having a higher chance of being poor, the average income shortfall is also deeper than that of the reference household (respectively 9 and 5 percentage points for the LIM-08 and LIM in 1999). Over time, this gap narrowed about 4 percentage points for the LIM-08 while it remained approximately constant for the LIM. The results thus suggest a modest improvement in the LIM-08 poverty gap difference for both groups with no change (single working age adults) or a modest deterioration (single parent families) for the LIM. There is, however, considerably more uncertainty around the identified trends in poverty gap differences than for headcount poverty differences. This is because of the much smaller sample sizes available for poverty gap estimations and the smaller magnitude of long term change relative to a considerably sized poverty gap for the reference household (Table 7, discussed as part of the robustness checks below).

Poverty differences in the provinces

Provincial (changes in) poverty differences often mirror Canadian trends, albeit at different magnitudes and, in certain cases, provincial trends deviate. Such differences between provinces are possible given the shared federal-provincial jurisdiction in the policy domains affecting poverty most.[16] We analyze trends in provincial poverty differences by averaging poverty differences over 5 years, thus comparing 1999-2004 and 2013-2017 (Figures 3 and 4). Averaging helps smooth year-to-year variability due to the smaller sample size and thereby facilitates identifying long-term trends. By construction, 5-year averaging leads to a smaller change as the gap between the first and last observation(s) in the data shrinks from 17 to 8 years. Figures 3 and 4 show that the national trends in poverty differences described above are also present in the national 5-year averages. Despite using 5-year averages, some poverty gap differences still display considerable variability between estimates of adjacent periods (see Figures A7 and A8). When analyzing trends in poverty gap differences, we therefore exclude Newfoundland and Labrador and Prince Edward Island.

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[16] In estimating these poverty differences, our aim has been to control for the poverty effects of other macro-level factors such as the business cycle and regional economic and environmental changes (see Section 4).

Figure 3: Single parent families, poverty difference (averaged over 5 years), by jurisdiction
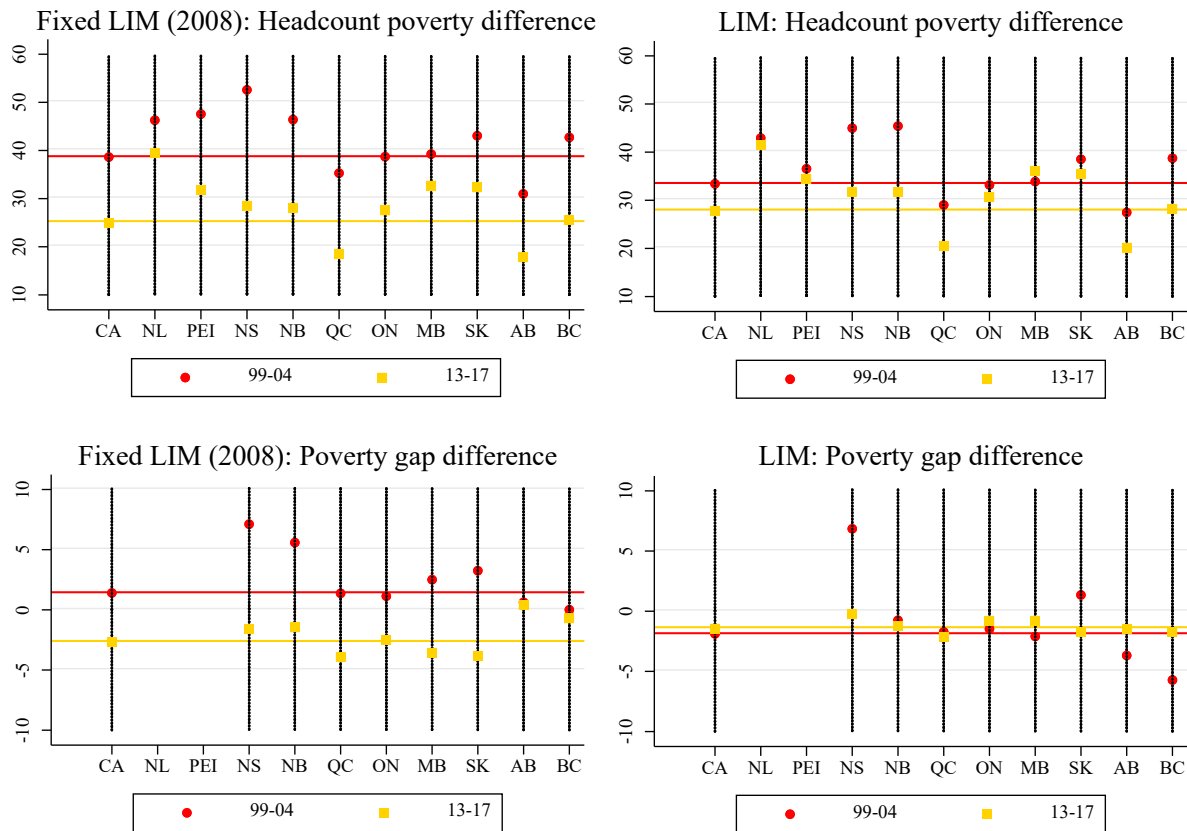
Fixed LIM (2008): Headcount poverty difference

LIM: Headcount poverty difference

Fixed LIM (2008): Poverty gap difference
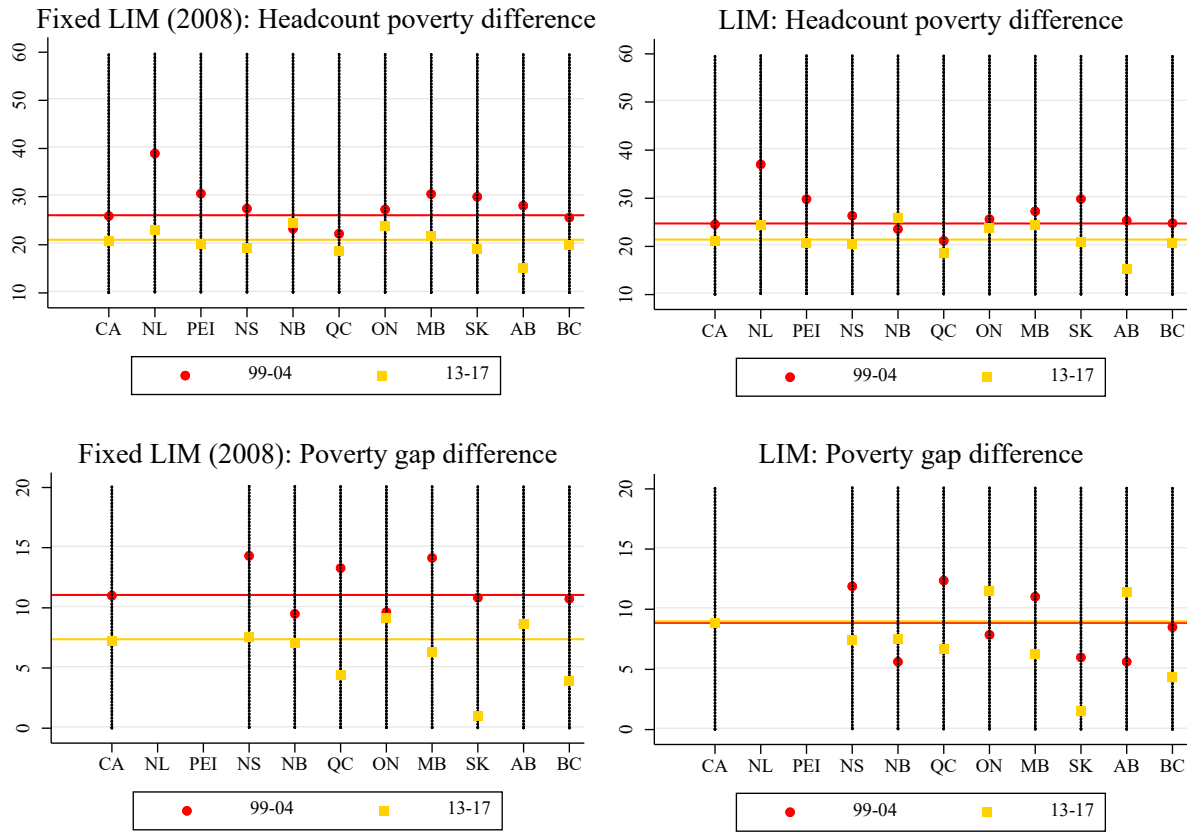
LIM: Poverty gap difference

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.
Note: To facilitate comparison across Figures 3 and 4, we use a common scale for headcount poverty differences and one for poverty gap differences. The poverty difference is the regression coefficient of a variable identifying single parent families in a Limited Probability Model controlling also for other demographic and geographical characteristics, estimated for each jurisdiction – year combination (Model 2, see section 4). Given small samples sizes, we report poverty gap differences for the eight largest provinces only.

Figure 3 reiterates the finding from Figures 1 and 2 that poverty differences for single parent families declined for three out of four poverty measures for Canada as a whole. The deterioration in the LIM poverty gap difference is minuscule compared to the 5-percentage point deterioration in Figure 2 and reiterates the importance exercising caution when interpreting poverty gap differences. Table 6 summarizes the observed trends by province between 1999-2004 and 2013-2017. For the LIM-08, poverty headcount differences for single parent families unambiguously declined across provinces, whereas for the LIM they only declined for five provinces. The LIM-08 declines are on par or higher than the national decline of 12 percentage points in Nova Scotia, New Brunswick, Quebec, and British Columbia. Gains are smallest in Newfoundland and Labrador and Manitoba (5 percentage points). For the LIM, only Nova Scotia, New Brunswick and British Columbia achieved a decline larger than the national average of around 5 percentage points whereas there was no change in Newfoundland and Labrador, Prince Edward Island, Ontario, Manitoba, and Saskatchewan.

Figure 4: Single working age adults, poverty difference (averaged over 5 years), by jurisdiction

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.
Note: Note: To facilitate comparison across Figures 3 and 4, we use a common scale for headcount poverty differences and one for poverty gap differences. The poverty difference is the regression coefficient of a variable identifying single working age adults in a Limited Probability Model controlling also for other demographic and geographical characteristics, estimated for each jurisdiction – year combination (Model 2, see section 4). Given small samples sizes, we report poverty gap differences for the eight largest provinces only.

In six of Canada's eight largest provinces, the LIM-08 poverty gap differences of single parent families declined with only Quebec and Saskatchewan recording declines comparable to the 5-percentage point national decline. In Alberta and British Columbia, the LIM-08 poverty gap difference of single parent families did not change. For the LIM, only Nova Scotia and (possibly) Saskatchewan show a decline, there is no change in four provinces, whereas in British Columbia and (possibly) Alberta the poverty gap increases to about the same gap as poor reference households. Interestingly, the 1999-2004 poverty gap differences for single parent families varied considerably across provinces whereas they converged to a similar level in 2013-2017, especially for the LIM.

In sum, proportionately more single parent families were able to escape or avoid poverty due to increases in purchasing power, whereas in some provinces such families' income also improved relative to that of the Canadian median. For those remaining or entering poverty, however, the

situation improved somewhat in absolute terms in certain provinces and was otherwise comparable or a bit better than that of the average poor person in Canada.

Table 6: Summary of trends in poverty differences between 1999-2004 and 2013-2017

	Poverty headcount difference		Poverty gap difference (8 largest provinces only)	
	LIM-08	LIM	LIM-08	LIM
Single parent families				
Decrease	CAD NL, PEI, NS, NB, QC, ON, MB, SK, AB, BC	CAD NS, NB, QC, AB, BC	CAD NS, NB, QC, ON, MB, SK	NS, SK
No Change		NL, PEI, ON, MB, SK	AB, BC	CAD NB, QC, ON, MB, SK
Increase				AB, BC
Single working age adults				
Decrease	CAD NL, PEI, NS, MB, SK, AB, BC	CAD NL, PEI, NS, SK, AB, BC	CAD NS, NB, QC, MB, SK, BC	NS, QC, MB, SK, BC
No Change	QC, ON, NB	NB, QC, ON, MB	ON, AB	CAD
Increase				NB, ON, AB

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.
Note: See Figures 3 and 4 for point estimates of the 1999-2004 and 2013-2017 poverty differences. We only mention poverty gap differences for the eight largest provinces.

For single working age adults, the LIM-08 headcount poverty differences decreased in seven of the nine analyzed provinces, with the largest decreases in Newfoundland and Labrador (15 percentage points), Saskatchewan, and Alberta (10 percentage points) (Figure 4, Table 6). There was not much change in New Brunswick, Quebec, and Ontario. Albeit with smaller declines, the picture is very similar for the trend in LIM poverty headcount differences, except that Manitoba now joins the provinces where the poverty difference remained unchanged.

Focusing on the eight largest provinces for the poverty gap differences, long term changes deviate across provinces. LIM-08 and LIM poverty gap differences both get smaller in Nova Scotia, Quebec, Manitoba, Saskatchewan, and British Columbia while they remain the same (LIM-08) or rise (LIM) for Ontario and Alberta. In New Brunswick the LIM-08 poverty gap difference declines a bit whereas it rises a bit for the LIM.

Figure 5: Poverty difference in 2017, percentage points

Note: The poverty difference is the regression coefficient of a variable identifying single parent families / single working age adults in a Limited Probability Model (Model 2, see section 4). The confidence interval is based on robust standard errors.[17]

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[17] We are planning to estimate bootstrapped standard errors, which will likely yield broader intervals for smaller provinces due to clustering of sampling design.

In sum, in seven of ten provinces proportionately more single working-age adults were able to escape or avoid poverty due to increases in purchasing power and in six of those provinces the income gains were larger than those at the median. For those remaining or entering poverty, however, the trend varied by province and poverty measure with both absolute and relative gains in five provinces and deterioration or stagnation in three.

Notwithstanding, Figure 5 shows that single parent families and single working age adults continue to have a substantially higher risk at experiencing poverty than any other household type in 2017. Single working age adults furthermore experience deeper poverty gaps than the average poor person in Canada.

Robustness check: Poverty trends and prevalence by household type

Canadian poverty trends are influenced by changes in the composition of its population (prevalence) and changes in the poverty levels of such population characteristics. Moreover, the poverty differences of the two high poverty risk groups are estimated relative to the poverty rate of individuals living in the reference household. Table 7 summarizes the 1999-2017 trends in poverty and prevalence of all household types for Canada.[18] It provides evidence that neither a change in the prevalence of household types or a change in the poverty rate of the reference household play a significant role in explaining the advances made in the poverty disadvantage of single parent families and single adults of working age.

As for the prevalence of the high poverty risk households and the reference household, Table 7 shows that these two household types comprise relatively small shares of the Canadian population, implying that the influence of these household types on overall poverty levels can only be modest. Moreover, the population share of single parent families (3.9 percent in 2017) has declined by 2 percentage points since 1999 whereas that that of single working age adults (7.2 percent in 2017) increased only by 0.6 percentage points. In contrast, adults living in the reference household comprise more than one-thirds of the Canadian population and their prevalence rose by close to 4 percentage points since 1999, thereby increasing this group's weight in influencing Canada's poverty rate. In sum, while the decrease in the prevalence of single parent families may have contributed somewhat to changes in overall Canadian poverty levels, this influence is likely very modest at best.

As for poverty trends, Table 7 indicates that both the poverty rates and trends of the reference household are similar to the Canadian average (shown in the last two rows). Thus, the often-favourable downward trend in poverty differences of single parent families and single adults of working age are not a result of a deterioration in the poverty rates of the reference household. Table 7 further reiterates several findings discussed earlier. Single parent families have a much higher risk of poverty but, when they are poor, their income shortfalls are either comparable or somewhat lower to that experienced by poor Canadians on average. Single working age adults are the highest poverty risk household type in this cross-tabulation and, when poor, they experience far higher poverty gaps than poor Canadians on average. Since 1999, poverty headcounts have declined (in percentage points) for both household types for both the LIM and

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[18] All trends described here reflect long term terms.

LIM-08. Relative to the Canadian average, these improvements have been much stronger as well, with three out of four poverty measures suggesting an improvement in the relative position of single parent families and single working age adults. Changes in poverty gaps are considerably smaller in magnitude, compared to changes in headcount rates and the relatively high average poverty gap in the population and reference household. The strongest change being the reduction in LIM-08 poverty gap for single parent families.

Table 7: Poverty and prevalence in Canada in 2017 (percent) and change since 1999 (percentage points), by household type

	Headcount		Poverty gap		Prevalence
Household type	LIM	LIM-08	LIM	LIM-08	
Single parent families	30.1 (-11.8)	26.0 (-27.8)	30.6 (+0.6)	28.2 (-6.3)	3.9 (-2.0)
Single working age adults	33.0 (-3.2)	30.3 (-12.4)	45.8 (+1.1)	44.5 (-2.4)	7.2 (+0.6)
Couple with children	8.9 (-0.3)	6.9 (-8.8)	26.2 (-1.8)	26.2 (-0.5)	34.4 (-7.4)
Other households with children	6.3 (-4.8)	5.0 (-15.8)	25.8 (-9.6)	24.6 (-4.9)	4.7 (+1.3)
Household with at least one elderly person	18.4 (+11.4)	11.8 (-10.0)	15.5 (+3.0)	14.0 (0.0)	12.3 (+3.6)
Multiple working age adults (Reference household)	9.3 (+1.2)	7.8 (-4.1)	35.2 (-2.1)	35.3 (+0.4)	36.5 (+3.9)
Canada	12.7 (+0.3)	10.2 (-9.0)	30.6 (-2.4)	31.0 (-0.3)	100

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.
Note: Percentage point change from 1999 between brackets.

6. Discussion

We now discuss our findings considering the evidence provided in this paper and the Canadian literature. Our results complement those of studies evaluating single programs by measuring, albeit indirectly, the effect of longer-term, cumulative effects of a broad set of policy actions taken by multiple levels of government. Federal, provincial, and municipal policies together form the social safety net, and it is this complex system that helps or hinders persons to escape or avoid poverty. This is particularly relevant for the households we study here, as they are more likely face multiple barriers and are thus less likely to benefit from a single initiative alone (Falvo and Jadidzadeh 2020; Fleurbaey 2018; Herd et al. 2020).

Single parent families and poverty reduction policies

This study contributes the new insight that the disadvantage of single parent families has become considerably smaller in Canada over the past two decades and that this improvement is real in that it is not driven by a deterioration of the poverty risk of the reference household or by a demographic trend. It is likely that family friendly policies have played a substantive role reducing the poverty disadvantage of single parent families.

One causal pathway well known to reduce poverty by public policy is through increases in the generosity of child benefits and related tax credits. The federal government and many provincial governments have indeed increased the amount of child benefits, albeit with differences in generosity, timing, and program design (universal or income-tested, additional supports for single parents or not) (Baker et al. 2021; Battle 2015; Van den Berg et al. 2017). Several studies evaluating the effects of single program changes, including but not exclusively the introduction of the Canada Child Benefit (CCB) in 2016, offer evidence that these income transfers led to reduced income poverty, higher spending and improved outcomes in food security (Baker et al. 2021; Brown and Tarasuk 2019; Najjarrezaparast and Pendakur 2021; Tarasuk et al. 2019).

We should note that even though the CCB is the most recent and most generous change in income support for parents, it builds on a much longer-term trend wherein provincial policies also have and continue to play an important role. Figures A7 and A8 in the appendix illustrate this by showing the change in poverty difference between 2011-2015 and 2013-2017. Whereas the poverty difference for single parent families shifts down visibly between those years in all provinces, the shift only reflects a small portion of the overall downward shift between 1999 and 2017 (Figure A7) whereas for single working age adults there is no such effect (Figure A8). A related but distinct hypothesis emerges regarding the role that the CCB may have played in the observed convergence of poverty gap differences of single parent families across provinces (Figure 3). The tax-administered and income-tested CCB is considerably more generous towards poor families with children than previous federal child benefit programs (Battle 2015) and may thereby dampen cross-provincial differences in generosity of the provincial income support programs for single parent families (social assistance, child benefits, or otherwise).

The second pathway that governments aiming to reduce poverty try to influence is by reducing barriers to employment for parents with young children. More affordable access to expanded childcare options for children under age 6 facilitate labour market participation and/or education for parents and especially those who are single. Such options have taken different forms across provinces with, for instance, very significant increases in affordability and access to childcare in Quebec since the early 2000s and the roll out of full-time kindergarten in Ontario around 2010. There is debate on whether the strong rise in female labour market participation and its associated poverty reductions in Quebec can be attributed to the reforms in childcare and other family friendly policies or whether another explanation needs to be sought (Lacroix 2019; Van den Berg et al. 2017). In contrast to income supports, it is more challenging to establish causal evidence for poverty reduction through the longer pathway of increased income through employment. A different but relevant question is whether more generous income supports, albeit contributing to reducing income poverty, work as a disincentive to work for primary caretakers, potentially increasing the risk of poverty in the long term. A recent study evaluating the impact of the CCB finds no evidence that single mothers reduced their labour supply (Baker et al. 2021).

A strong economy and the improvements in employment and business opportunities it offers can help, but only in as much as single parents can seize such opportunities by gaining access to affordable, reliable, quality childcare while working. Given that the model used to estimate poverty differences already controls for economic regions, a favourable regional economy can only contribute to changes in estimated poverty differences when single parents disproportionately seize those employment opportunities compared to other working age adults in that region. Unlike for single adults of working-age (see discussion below), this is not a very plausible mechanism for explaining the improvement in poverty differences of single parent families.

Another explanation consistent with the evidence presented in this paper, is that single parents are increasingly avoiding becoming single-family households by forming a household with another adult who is not their partner (e.g. a relative or someone else). The share of "Other households with dependent children" is of comparable magnitude as that of single parent families and has grown by 1.3 percentage points against the backdrop of an ageing population in which all other households with dependent children have experienced a declining population share (Table 7). "Other households with dependent children" have poverty levels comparable to couples with dependent children indicating a much lower poverty risk than single parent families (Table 7). However, for this factor to play a role in explaining a decrease in the poverty difference of single parent families, those would-be single parents forming multi-adult households would need to have a higher poverty risk than those who live as single parent households. Such an analysis would be interesting but falls beyond the scope of this paper.

Discussion: Single working age adults and poverty reduction policies

Several recent studies argue that single working age adults have long been sidelined in social policy-making (Falvo 2020; Herd et al. 2020; Hillel 2020; Noël 2020; Tabbara et al. 2022). This research contributes new evidence, finding that since 1999 proportionately more single working age adults avoided or escaped poverty as their purchasing power increased in seven provinces, and in six of those provinces their income also rose by more than that of half the median income (Table 6). The improvement is real in that it is not driven by a deterioration of the poverty risk of the reference household or by a demographic trend. Nonetheless, our research also reaffirms that single working age adults still have the highest poverty risk of all household types and, for those who are poor, their poverty gaps are deeper than average.

Raises in minimum wages by several provinces and two consecutive federal work-income tax credit programs[19] targeted at low-income earners are initiatives that may have disproportionately benefitted some single working age adults (Loopstra et al. 2015; Tarasuk et al. 2019). This is much less likely the case for those singles relying on provincial social assistance programs as increases in benefits, the lowest among recipients, and maximum allowable earnings have been occasional and very modest (with the exception of Newfoundland and Labrador and New

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[19] The Working Income Tax Benefit (WITB) was available from 2007 to 20118 and was replaced by the Canada Workers Benefit (CWB) in 2019.

Brunswick) and were accompanied by a long-term decline in provinces' caseloads (Béland and Daigneault 2015; Hillel 2020; Noël 2020; Tabbara et al. 2022).

Unlike single parent families, our provincial patterns in poverty differences for single working age adults suggest that a strong economy and the improved employment and business opportunities it offers, disproportionately allow singles to seize such opportunities (relative to individuals in the reference household, which consists of multiple working-age adults). Among those provinces in which the poverty headcount differences declined for single working adults are those where natural resources heavily influence the strength of the overall economy (Newfoundland and Labrador, Saskatchewan, Alberta, and British Columbia). In provinces more reliant on a manufacturing sector in decline, such as Quebec and Ontario, the status quo did not change much in terms of headcount poverty differences and even worsened in poverty gap differences. This paper thus adds insight that it is single working age adults who disproportionately benefit from the economic fortunes of resource rich provinces (Corak 2016).

Thus, singles are likely better able to take advantage of tight labour markets, but they have much less of a safety net in less favourable economic times. Raising social assistance rates for singles would contribute to reduced poverty gap differences. For headcount poverty differences to go down, however, such rates would need to be raised by a lot and / or be accompanied by substantive increases in maximum allowable income before benefit claw backs kick in and / or eligibility to complementary programs such as Medicare is lost (Hillel 2020). Such increases in generosity will likely be accompanied by a rise in social assistance caseload. Research covering the 1989-2017 period finds that a 1 percent rise in the value of social assistance benefit levels for single adults will increase the social assistance caseload by 0.46 percent (Falvo and Jadidzadeh 2020). A better future for this group thus requires a radical deviation from past social policymaking and one that involves coordination across federal-provincial governments (Stevens and Simpson 2017).

7. Concluding discussion

This paper sought to answer the question whether the disadvantage of single parent families and single working age adults as the highest poverty risk household types in Canada has been reduced over the past two decades, a period during which poverty reduction gradually gained prominence on provincial and federal political agendas. Focusing on these groups represents a stronger test because in spite of a broadly shared moral imperative to help those who need it most, achieving poverty reduction among high risk groups is more difficult and costlier and yields fewer electoral gains (Aaberge et al. 2021; Falvo and Jadidzadeh 2020; Fleurbaey 2018; Goedemé et al. 2022; Herd et al. 2020; Noël 2020). Our research design therefore only registered percentage point poverty reductions when they were larger than those experienced by individuals in the reference household and conditional on changes in regional and individual demographic characteristics. Moreover, the use of absolute and relative poverty thresholds allowed us to assess inclusion gains in terms of purchasing power and relative to median income, with the latter being more challenging to achieve than the former. Including a measure for the poverty gap also meant that our analysis could pick up on government actions that only or largely benefit those who are least poor (Aaberge et al. 2021; Goedemé et al. 2022). Finally, where it may be

hard for single program evaluations to pick up small impacts for small groups, this research assesses the cumulative effect of government actions to include high poverty risk groups (Notten and Laforest 2016).

We find that Canada's societies have become more inclusive towards these high poverty risk groups in the sense that proportionately more individuals from these groups have been able to escape or avoid poverty. For those in poverty, however, the situation is not much better than before. The improvement occurred against a backdrop of substantive declines in absolute poverty headcounts with relatively little change in relative poverty headcounts and poverty gaps (absolute and relative) for Canada as a whole. Improvements for single parent families have been strong and widespread, whereas improvements for single adults of working age have been smaller and concentrated in provinces experiencing stronger economic growth. This study contributes evidence supporting the claim that governments prioritize the inclusion of families with dependent children while the inclusion of single working age adults is largely left to the fortunes of the economy. Notwithstanding the progress documented, poverty rates of these high poverty risk groups remain far above Canada's average and single working age adults remain experiencing deeper than average poverty gaps.

While offering a uniquely thorough answer to the research question, this paper does not provide causal evidence of the relationship between poverty and a more effective policy environment in terms of poverty reduction. The regression model estimating the poverty differences controlled for associations with demographic, cyclical, and economic region characteristics while enabling the indirect measurement of poverty reduction via policies facilitating the income-generating capacities of high-risk households and/or more and more generous income transfers from governments. In addition to capturing changes in poverty affecting policies, we cannot exclude that estimated (changes in) poverty differences could also involve an endogenous component over which households had (some) control and/or effects from the economy not captured by our control variables. Unlike outcome based poverty indicators, the income poverty estimates in this paper are less likely to capture the effects of policies that reduce the need for out-of-pocket spending of households (Notten 2015; Notten and Kaplan 2021). The robustness checks of averaging changes in poverty differences over 5 years, albeit confirming the direction of effects, also caution against taking provincial level estimates at face value, particularly in terms of poverty gaps.

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9. Appendix

Note A1: Poverty trends in Canada and the provinces

For Canada, the percentage of persons in absolute poverty declined considerably whereas its evolution for relative poverty remains relatively unchanged (headcount). The percentage of income shortfall of those with an income below the poverty is at a higher level for the MBM but with similar trends all poverty methods (poverty gap). Figures A1 and A2 illustrate these trends. There is no association between poverty trends and changes in the unemployment rate of males aged 25-44 (Figure A1).

The LIM-08 and MBM track changes in purchasing power over time.[20] Purchasing power improves when income growth exceeds that of inflation (an absolute improvement). In 1999, 19 percent of Canadians had an income below the 2008 relative threshold adjusted for inflation (LIM-08) whereas in 2017 only 10 percent did (Figure A1). The MBM headcount trend, only available as of 2006, tracks that of the LIM-08 rather closely. The LIM is a relative poverty method, in which the poverty line is set relative to the typical Canadian (median income). If the income of the middle person rises, the threshold also rises. Whether this leads to a change in the percentage of poor depends on what happens with low(er) incomes. If the incomes of those with a low(er) income grow with less than the income of the typical Canadian, the number of poor increases. Relative poverty methods such as the LIM are therefore also seen as tracking income inequality between that of the typical Canadian and those with an income around half of that (Notten and De Neubourg 2011).

For those under the poverty line, the poverty gap measure indicates how much income, on average, is needed to lift a poor person above the poverty line. In 2017, both LIM and LIM-08 methods registered a poverty gap around 31 percent, whereas the MBM method listed a gap of around 35 percent (Figure A1). Despite somewhat different levels of average poverty depth, trends are very similar between the three methods.

At a provincial level, the LIM-08 shows large absolute reductions in headcounts everywhere, with some provinces seeing particularly steep reductions (Newfoundland and Labrador and Saskatchewan) and Ontario seeing a relatively modest reduction (Figure A2). For the LIM, headcount trends differ across provinces with improvements in Newfoundland and Labrador, Saskatchewan and Alberta, a deterioration in Ontario and relatively little change for the other provinces. Trends in poverty gap trends are largely stable across provinces, except in Newfoundland and Labrador, where the gap declines (Figure A3). Considerable year-to-year fluctuations in the poverty gap, especially for smaller provinces, suggest that one should be concerned about the smaller sample size used to calculate this poverty measure.

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[20] Being an anchored relative poverty line, the LIM-08 is a hybrid between an absolute and relative poverty method. The poverty line in the anchor year is a relative poverty line. Over time, however, its inflation updating mechanism means that it tracks changes in purchasing power over time. In Canada in 2008, the MBM headcount rate was only 1.5 percentage point lower that the LIM and LIM-08 rates. This small difference indicates that our anchored poverty line was, on average, at a similar income level as that of Canada's minimum standard poverty lines in 2008, which vary with regional price levels.

National poverty statistics above hide considerable variety in the level and trends for different household types (Figure A4). The poverty headcount rates for single parent families and working age adults are well above those of the other household types. The poverty gap rates for single parent families are similar to that of the Canadian average whereas those for single working age adults are around 18 percentage points higher than average. The poverty headcount trends for both groups are down but the declines are more pronounced for single parent families. Only the anchored LIM poverty gap trends down for single parent families. The trend for elderly households is also striking with declining headcounts in an absolute sense (LIM-08) accompanying rising headcounts in a relative sense (LIM). The poverty gap remains constant in an absolute sense whereas it rises in a relative sense. Figures A5 and A6 finally show the provincial trends for all household types and illustrate the considerable variation in poverty levels across provinces. They also show considerable year-to-year fluctuations in poverty estimates, especially for smaller provinces.

Figure A1: Poverty trends in Canada, various poverty lines (Percent, 1999-2017)
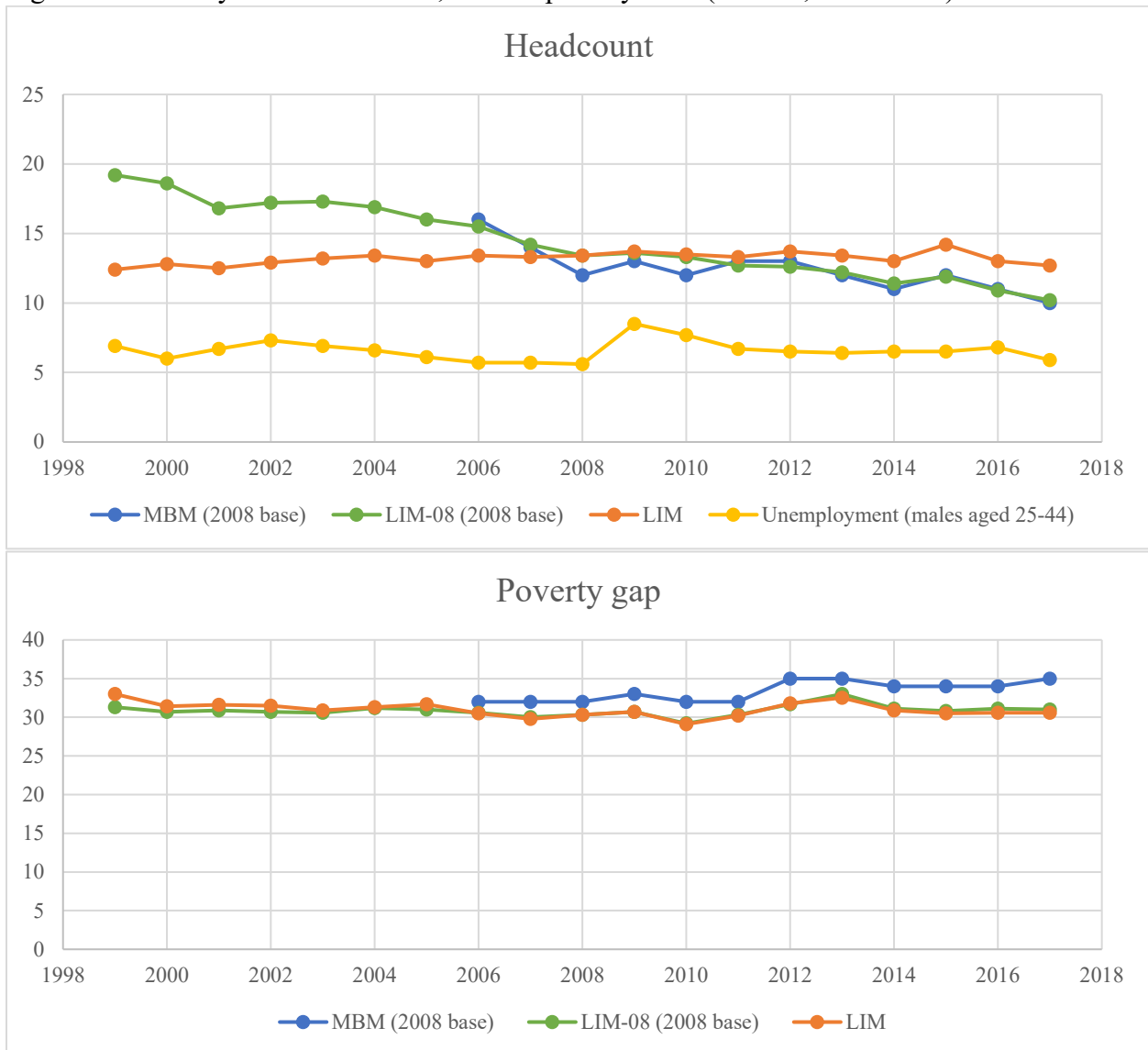
Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.

Figure A2: Poverty headcount, by poverty line and jurisdiction (1999-2017)
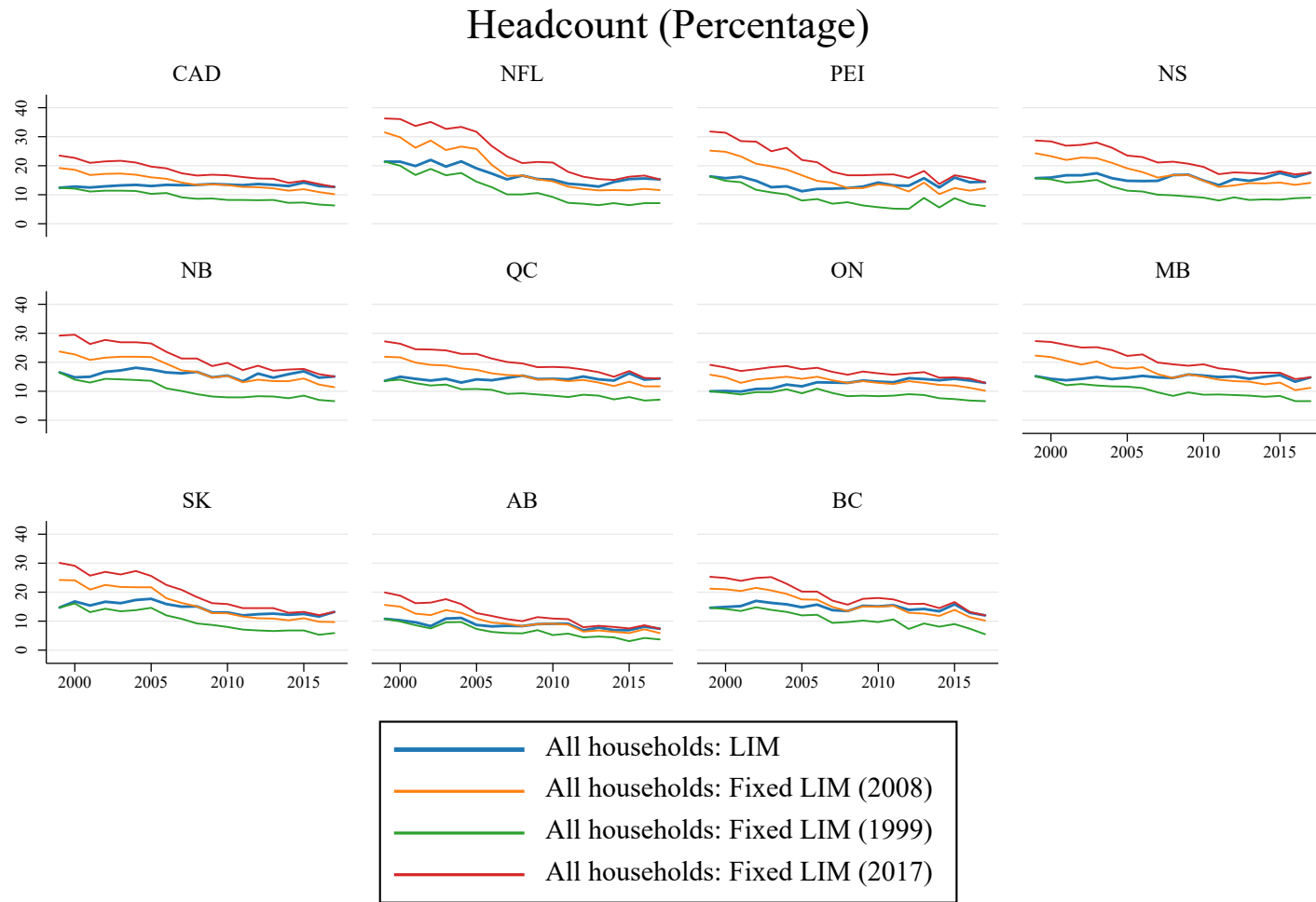
Headcount (Percentage)

All households: LIM
All households: Fixed LIM (2008)
All households: Fixed LIM (1999)
All households: Fixed LIM (2017)

Graphs by Jurisdiction

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.

Figure A3: Poverty gap, by poverty line and jurisdiction (1999-2017)
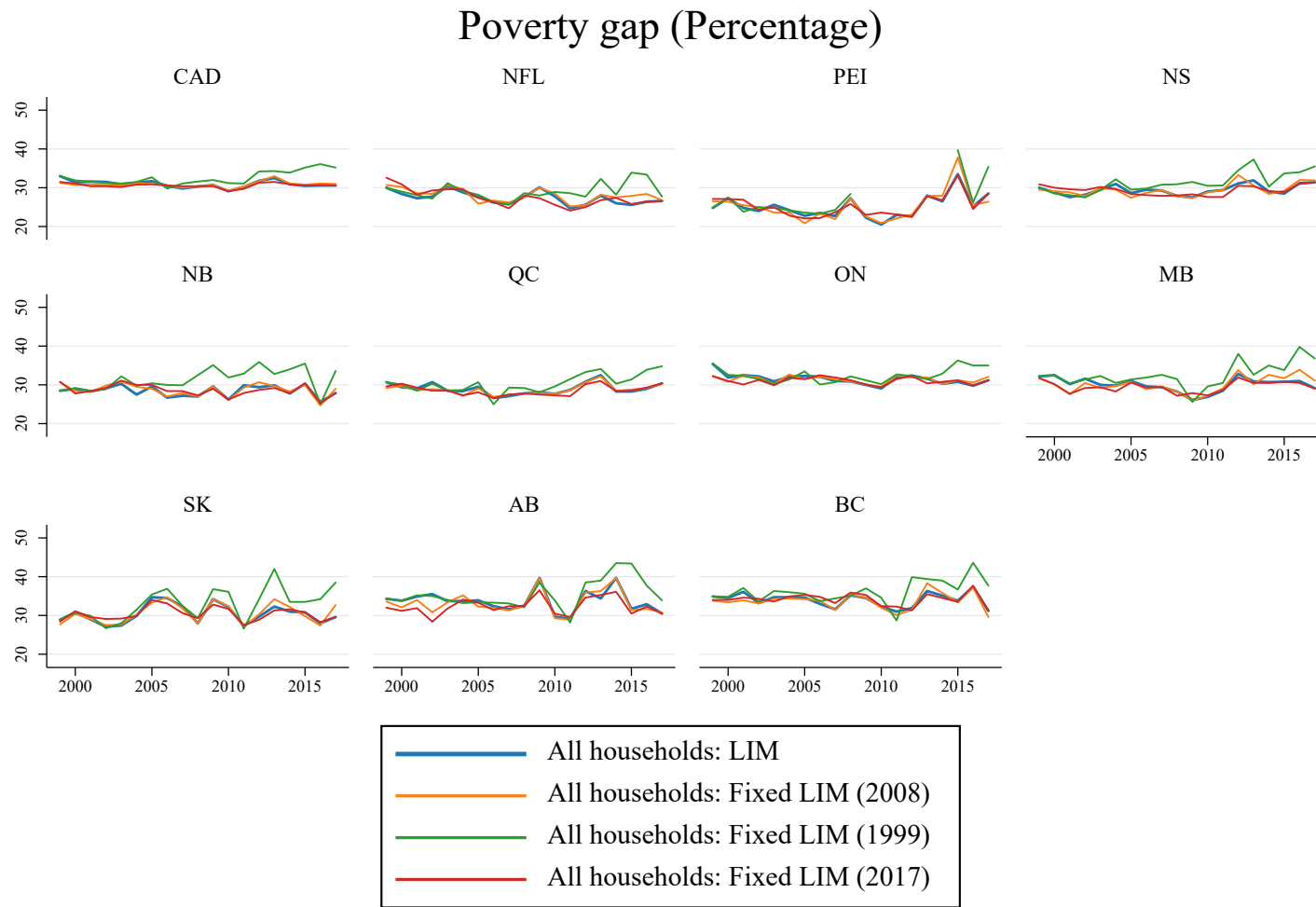
Poverty gap (Percentage)

All households: LIM	
All households: Fixed LIM (2008)	
All households: Fixed LIM (1999)	
All households: Fixed LIM (2017)	

Graphs by Jurisdiction

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.

Figure A4: Poverty trends in Canada by household type (percentage)
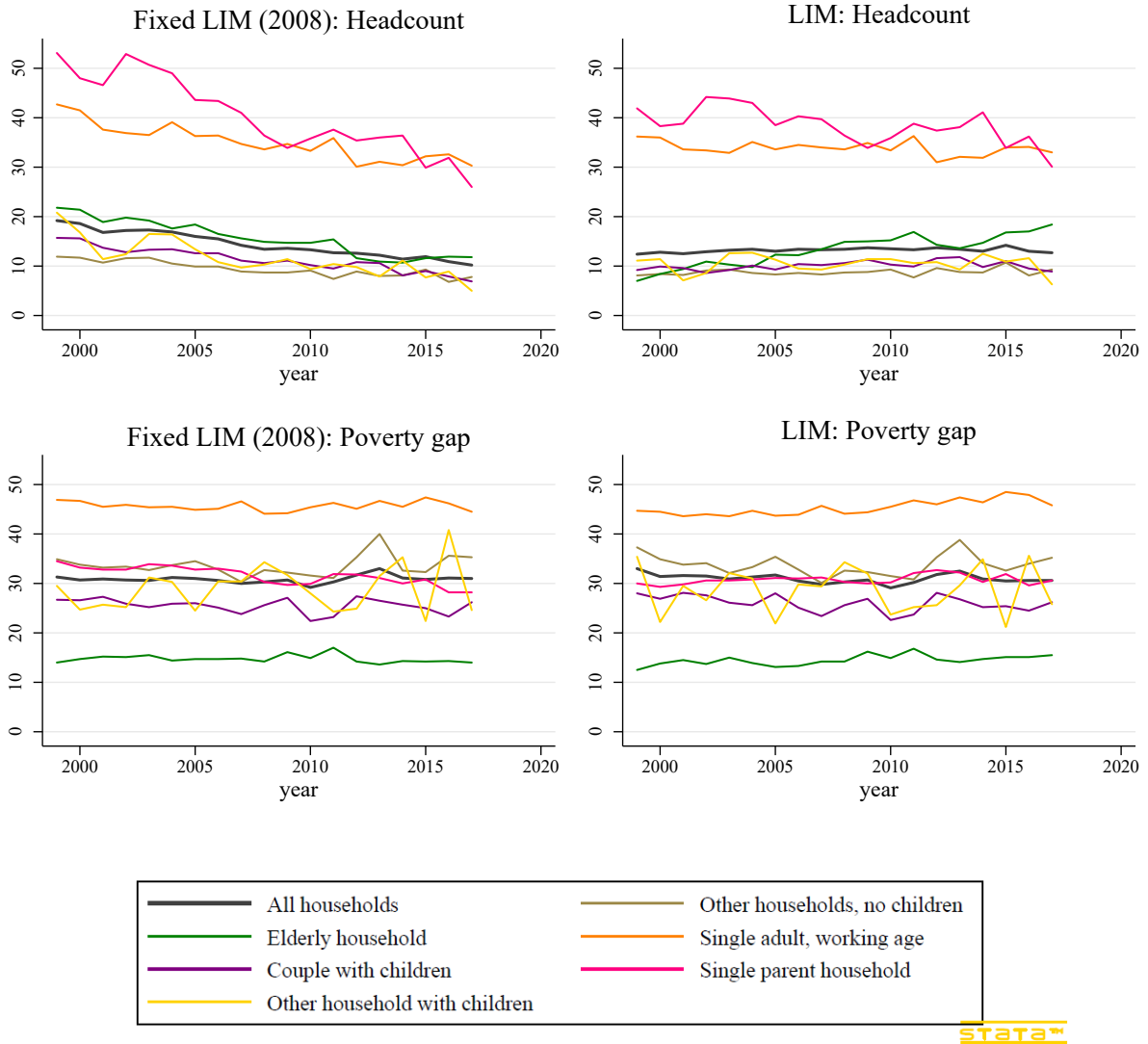
Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.

Figure A5: Poverty trends Single parent families by province (percentage)
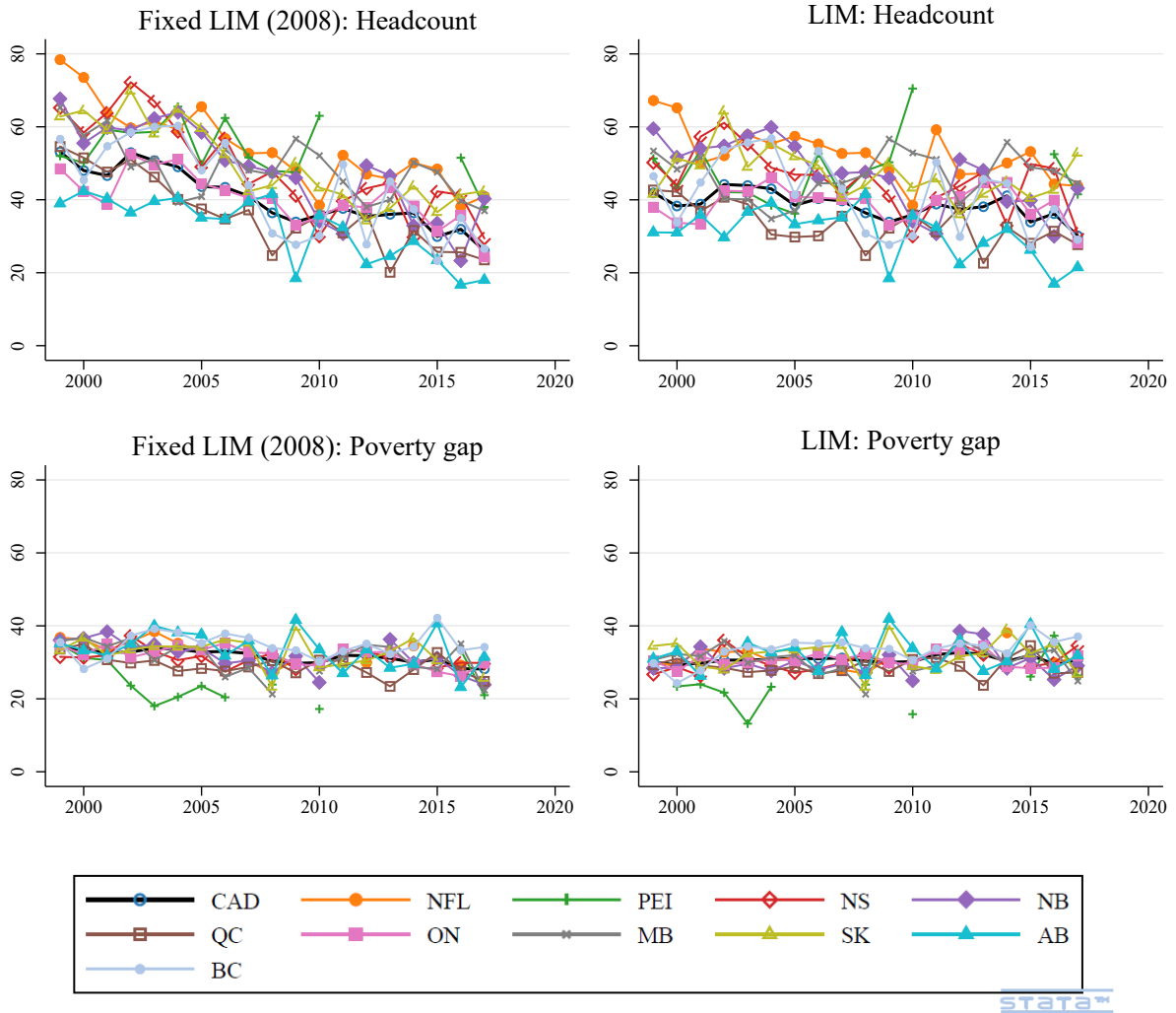
Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.
Note: We excluded datapoints based on fewer than 100 observations from the graphs. This is particularly an issue in Prince Edward Island.

Figure A6: Poverty trends Single working age adults by province (percentage)

Note: We excluded datapoints based on fewer than 100 observations from the graphs. This is particularly an issue in Prince Edward Island.

Table A1: Poverty reduction strategies by federal and provincial governments

	CA	NFL	PEI	NS	NB	QC	ON	MB	SK	AB	BC
1999	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	1	0	0	0	0	0
2001	0	0	0	0	0	1	0	0	0	0	0
2002	0	0	0	0	0	1	0	0	0	0	0
2003	0	0	0	0	0	1	0	0	0	0	0
2004	0	0	0	0	0	1	0	0	0	0	0
2005	0	1	0	0	0	1	0	0	0	0	0
2006	0	1	0	0	0	1	0	0	0	0	0
2007	0	1	0	1	0	1	0	0	0	0	0
2008	0	1	0	1	1	1	1	1	0	0	0
2009	0	1	0	1	1	1	1	1	0	0	0
2010	0	1	1	1	1	1	1	1	0	0	0
2011	0	1	1	1	1	1	1	1	0	0	0
2012	0	1	1	1	1	1	1	1	0	1	0
2013	0	1	1	1	1	1	1	1	0	1	0
2014	0	1	1	1	1	1	1	1	0	1	0
2015	1	1	1	1	1	1	1	1	1	1	0
2016	1	1	1	1	1	1	1	1	1	1	0
2017	1	1	1	1	1	1	1	1	1	1	1

Note: Yes = 1 and No = 0.

Table A2: Economic region control variable, by province (Provincial share, percent)

		1999	2008	2011	2012	2017
NFL	Avalon Peninsula	47	49	55	52	56
	South Coast - Burin Peninsula	9	7	6	8	5
	West Coast - Northern Peninsula - Labrador	21	23	17	19	18
	Notre Dame - Central Bonavista Bay	23	21	22	21	21
PEI	Prince Edward Island	100	100	100	100	100
NS	Halifax	39	42	45	44	47
	Cape Breton	17	16	12	12	13
	North Shore Nova Scotia	17	17	17	17	14
	Annapolis Valley	15	11	12	14	14
	Southern Nova Scotia	12	14	14	13	11
NB	Moncton - Richibucto	24	26	27	26	29
	Campbellton - Miramichi	23	18	21	21	20
	Saint John - St. Stephen	24	25	23	25	21
	Fredericton - Oromocto	19	19	19	16	20
	Edmundston - Woodstock	10	12	10	11	10
QC	Montréal	25	24	26	24	25
	Gaspésie - Îles-de-la-Madeleine	1	1	1	1	1
	Bas-Saint-Laurent	3	2	2	2	2
	Québec City	9	9	9	9	9
	Chaudière - Appalaches	7	5	5	5	5
	Estrie	3	4	4	4	4
	Centre-du-Québec	3	4	3	3	2
	Montérégie	17	17	17	19	19
	Laval	4	6	6	5	5
	Lanaudière	5	5	6	6	6
	Laurentides	6	8	5	7	7
	Outaouais	4	5	5	5	5
	Abitibi - Témiscamingue	2	2	2	2	2
	Mauricie	4	3	3	3	3
	Saguenay - Lac-Saint-Jean	4	4	4	4	3
	Côte-Nord du Québec	1	1	1	1	1
	Northern Quebec	0.9	0.2	0.1	0.1	0.1
ON	Toronto	41	45	46	46	48
	Ottawa	10	11	11	11	10
	Kingston - Pembroke	4	3	4	3	3
	Muskoka - Kawarthas	3	3	3	3	2
	Kitchener - Waterloo - Barrie	9	8	9	10	9
	Hamilton - Niagara Peninsula	12	11	10	10	10
	London	5	5	5	5	5

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.
Note: Rounded to nearest digit.

Table A2 (Continued): Economic region control variable, by province (Provincial share, percent)

		1999	2008	2011	2012	2017
ON	Windsor - Sarnia	5	5	5	4	4
	Stratford - Bruce Peninsula	2	3	2	2	2
	Northeastern Ontario	5	4	4	4	4
	Northwestern Ontario	3	2	1	1	1
MB	Winnipeg	55	61	60	59	60
	Southeastern Manitoba	7	8	9	8	10
	South Central Manitoba	5	6	5	5	7
	Southwestern Manitoba	10	9	9	11	8
	North Central Manitoba	6	4	3	4	4
	Interlake	8	6	7	7	7
	Parklands	4	3	3	2	2
	Northern Manitoba	5	3	4	2	3
SK	Regina - Moose Mountain	28	28	29	36	33
	Swift Current - Moose Jaw	10	12	11	9	10
	Saskatoon - Biggar	31	31	34	29	34
	Yorkton - Melville	8	8	9	7	7
	Prince Albert	18	20	16	18	16
	Northern Saskatchewan	5	1	1	1	1
AB	Calgary	31	36	36	37	38
	Lethbridge - Medicine Hat	8	7	8	6	8
	Camrose - Drumheller	7	7	5	6	5
	Banff - Jasper - Rocky Mountain House	3	3	3	2	1
	Red Deer	5	4	5	7	6
	Edmonton	35	34	34	33	34
	Athabasca - Grande Prairie - Peace River	8	7	6	6	6
	Wood Buffalo - Cold Lake	4	3	3	3	3
BC	Lower Mainland - Southwest	57	60	61	61	63
	Vancouver Island and Coast	19	19	18	18	16
	Thompson - Okanagan	12	11	12	11	12
	Kootenay	5	3	3	3	3
	Cariboo	5	4	3	4	3
	North Coast British Columbia	1	1	1	2	1
	Nechako	1	1	0.5	1	1
	Northeast British Columbia	1	1	1	2	1

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.

Note: Rounded to nearest digit.

Table A3: Regression results for headcount (LIM) in Canada (1999 and 2017)

Coefficient	Headcount LIM					
	M1-1999	M1-2017	M2-1999	M2-2017	M3-1999	M3-2017
Single parent family (β_1)	0.338***	0.207***	0.341***	0.222***	0.161***	0.076***
Single working age adult (β_2)	0.281***	0.237***	0.262***	0.202***	0.094***	0.041***
Household with at least one elderly member (d_1)	-0.011*	0.091***	-0.024***	0.066***	-0.307***	-0.143***
Couple with dependent children (d_2)	0.011***	-0.004	0.030***	0.035***	0.045***	0.038***
Other households with dependent children (d_3)	0.030**	-0.030***	0.048***	0.024**	0.008	-0.001
Multiple working age adults	Reference	Reference	Reference	Reference	Reference	Reference
Household size (d_4)			-0.011***	-0.023***	0.004**	-0.010***
At least one immigrant member (d_5)			0.026***	0.046***	0.020***	0.031***
At least one Aboriginal member (d_6)			0.070***	0.088***	0.023**	0.022***
Economic region dummies ($\sum_{\delta=1}^{Max}(r_i)$)	No	No	Yes	Yes	Yes	Yes
Homeowner (e_1)					-0.100***	-0.126***
High education					Reference	Reference
Middle education (e_2)					0.017***	0.022***
Low education (e_3)					0.074***	0.127***
At least one unemployed member (Part/full time) (e_4)					0.066***	0.069***
≥2 earners					Reference	Reference
1 earner (e_5)					0.130***	0.116***
No earner (e_6)					0.479***	0.486***
Constant	0.081***	0.093***	0.110***	0.121***	0.052***	0.103***
N	78109	97184	78109	97184	69801	89130
R-squared	0.093	0.051	0.11	0.073	0.284	0.292

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.
Note: * p<0.05, ** p<0.01, *** p<0.001

Table A4: Regression results for poverty gap (LIM) in Canada (1999 and 2017)

Coefficient	Poverty gap LIM					
	M1-1999	M1-2017	M2-1999	M2-2017	M3-1999	M3-2017
Single parent family (β_1)	-0.073***	-0.046***	-0.059***	-0.011	-0.046***	-0.029**
Single working age adult (β_2)	0.074***	0.106***	0.051***	0.060***	0.041**	0.033**
Household with at least one elderly member (d_1)	-0.248***	-0.196***	-0.253***	-0.225***	-0.251***	-0.244***
Couple with dependent children (d_2)	-0.093***	-0.089***	-0.057***	-0.017	-0.030*	-0.015
Other households with dependent children (d_3)	-0.018	-0.094***	-0.008	-0.038*	-0.045	-0.031
Multiple working age adults	Reference	Reference	Reference	Reference	Reference	Reference
Household size (d_4)			-0.015***	-0.035***	-0.018***	-0.036***
At least one immigrant member (d_5)			-0.017	0.005	-0.02	-0.016
At least one Aboriginal member (d_6)			0.001	0	0.023	-0.02
Economic region dummies ($\sum_{\delta=1}^{Max}(r_i)$)	No	No	Yes	Yes	Yes	Yes
Homeowner (e_1)					0.063***	0.032***
High education					Reference	Reference
Middle education (e_2)					-0.044**	-0.055***
Low education (e_3)					-0.068***	-0.079***
At least one unemployed member (Part/full time) (e_4)					0.018*	0.034***
≥2 earners					Reference	Reference
1 earner (e_5)					0.028**	0.021*
No earner (e_6)					0.134***	0.189***
Constant	0.373***	0.352***	0.402***	0.404***	0.360***	0.348***
N	9734	12350	9734	12350	8593	10496
R-squared	0.096	0.154	0.131	0.204	0.149	0.26

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.
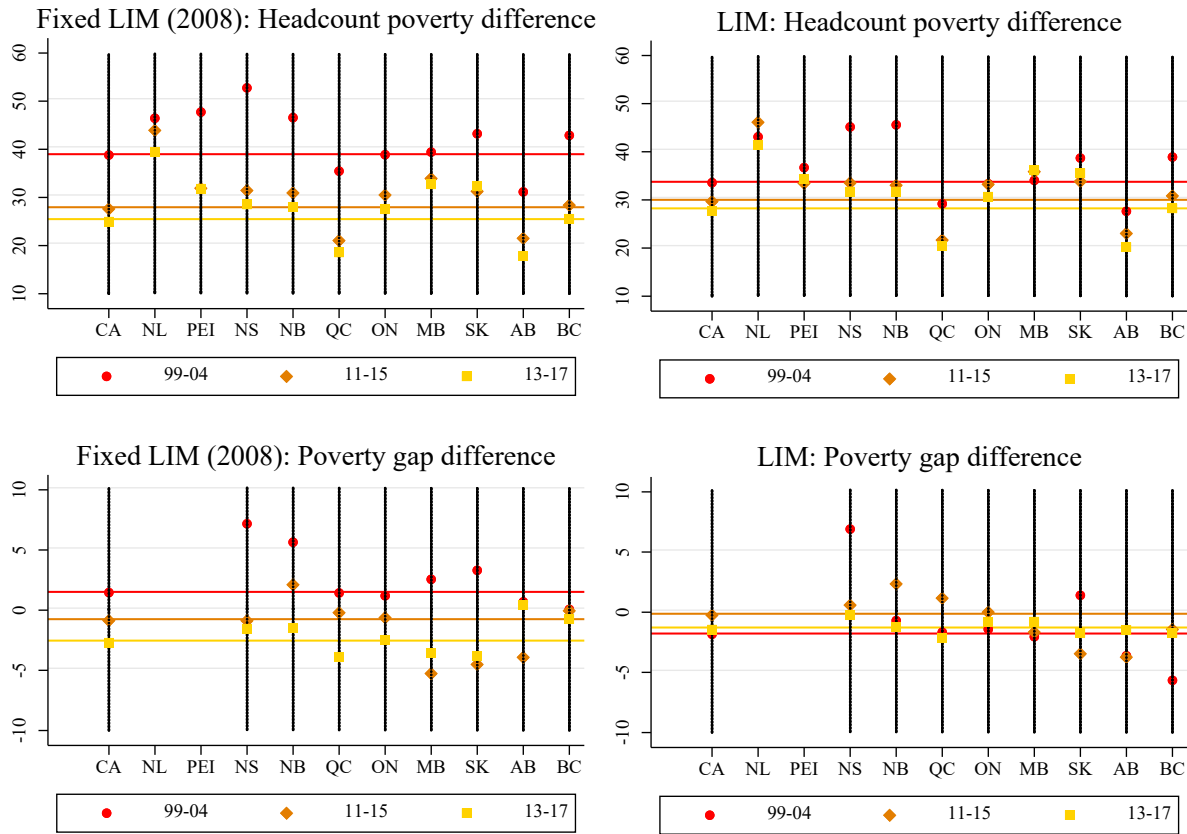
Note: * p<0.05, ** p<0.01, *** p<0.001

Table A5: Missing observations in regression model including economic variables (Percent)

	CAD	NFL	PEI	NS	NB	QC	ON	MB	SK	AB	BC
1999	11	6	9	12	9	10	12	10	12	10	10
2000	17	12	16	17	16	16	18	18	20	17	17
2001	16	9	14	16	15	16	17	16	17	14	17
2002	16	13	12	14	14	14	18	16	18	13	20
2003	17	13	16	18	17	16	17	19	17	16	20
2004	17	13	13	17	15	16	18	17	17	15	20
2005	12	10	10	12	11	12	13	13	13	9	13
2006	16	12	12	13	13	15	17	19	19	16	19
2007	16	15	14	16	14	15	18	19	17	16	18
2008	14	11	13	13	12	13	14	15	15	15	17
2009	17	15	18	17	18	16	18	17	19	16	20
2010	19	17	19	15	17	18	20	18	18	18	21
2011	15	12	15	14	12	14	15	16	16	14	17
2012	7	6	9	8	8	7	7	7	7	4	9
2013	7	7	7	7	7	8	7	7	8	4	7
2014	7	7	6	8	9	8	7	7	7	5	8
2015	8	9	9	9	10	9	7	7	7	5	8
2016	8	6	8	9	9	9	8	7	7	5	8
2017	8	9	8	9	10	9	8	8	7	5	9

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.

Note: Missing observations in comparison to the default model holding demographic and geographic variables only. Total missing observations: 173,395 (out of 1,321,309 or 13.1 percent)
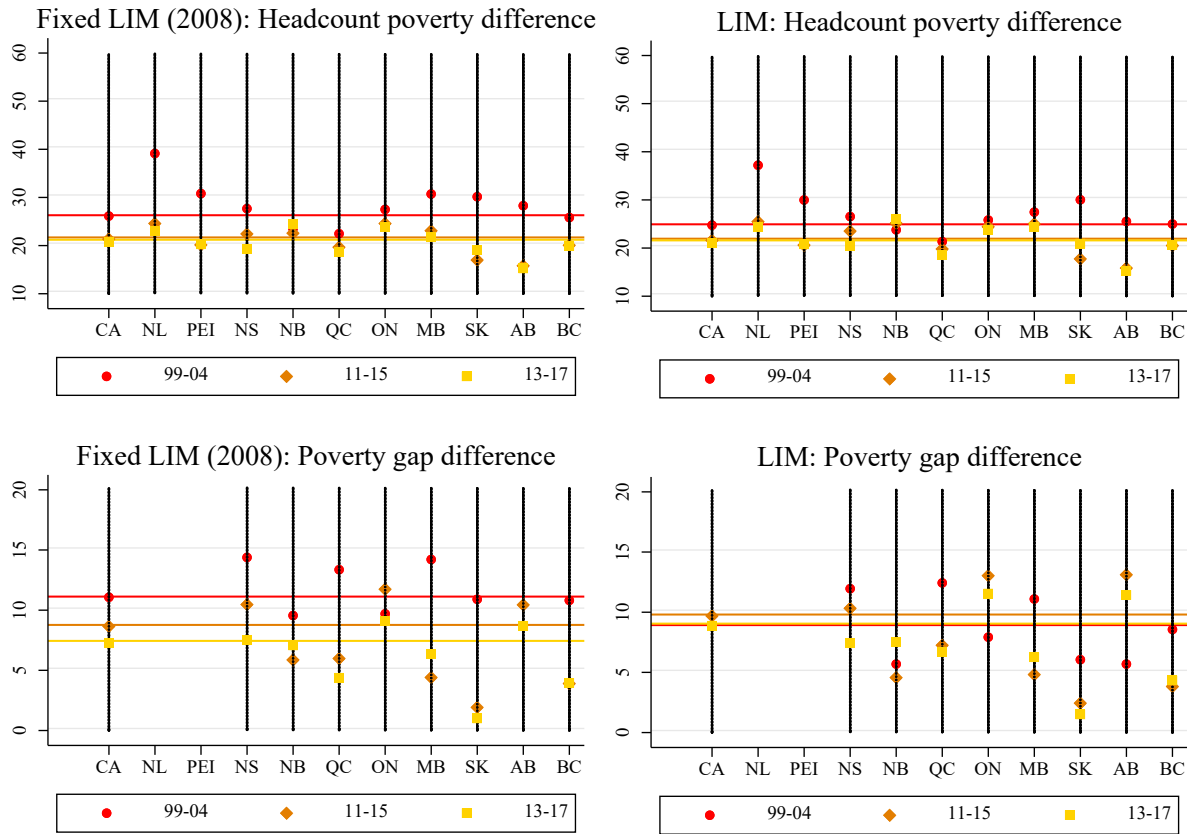
Figure A7: Single parent families, poverty difference (averaged over 5 years), by jurisdiction

Fixed LIM (2008): Headcount poverty difference

LIM: Headcount poverty difference

| ● | 99-04 | ◆ | 11-15 | ■ | 13-17 |

Fixed LIM (2008): Poverty gap difference

LIM: Poverty gap difference

| ● | 99-04 | ◆ | 11-15 | ■ | 13-17 |

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.
Note: To facilitate comparison across Figures 3 and 4, we use a common scale. The poverty difference is the regression coefficient of a variable identifying single parent families in a Limited Probability Model controlling also for other demographic and geographical characteristics, estimated for each jurisdiction – year combination (Model 2, see section 4). We only report poverty gap differences for the eight largest provinces.

Figure A8: Single working age adults, poverty difference (averaged over 5 years), by jurisdiction

Fixed LIM (2008): Headcount poverty difference

LIM: Headcount poverty difference

● 99-04   ◆ 11-15   ■ 13-17

Fixed LIM (2008): Poverty gap difference

LIM: Poverty gap difference

● 99-04   ◆ 11-15   ■ 13-17

Source: SLID (1999-2011) and CIS (2012-2017). Authors' calculations.

Note: To facilitate comparison across Figures 3 and 4, we use a common scale. The poverty difference is the regression coefficient of a variable identifying single working age adults in a Limited Probability Model controlling also for other demographic and geographical characteristics, estimated for each jurisdiction – year combination (Model 2, see section 4). We only report poverty gap differences for the eight largest provinces.