Socioeconomic risk and the longitudinal child lifetime prevalence of child protection involvement

Tonino Esposito [a,*], Johanna Caldwell [b], Martin Chabot [c], Anne Blumenthal [d], Nico Trocmé [e], Sonia Hélie [f], Barbara Fallon [g], Stéphanie Précourt [c]

[a] *Canada Research Chair in Social Services for Vulnerable Children, Université de Montréal, School of social work – FAS, 3150, Jean-Brillant, Montreal, QC H3T1J7, Canada*
[b] *Research Assistant for the Canada Research Chair in Social Services for Vulnerable Children School of Social Work, Université de Montréal*
[c] *Research Associate for the Canada Research Chair in Social Services for Vulnerable Children, School of Social Work, Université de Montréal, Canada*
[d] *School of Social Work, University of Michigan, United States of America*
[e] *School of Social Work, McGill University, Canada*
[f] *Institut universitaire Jeunes en difficulté (CIUSSS-CSMTL), School of Social Work, Université de Montréal, Canada*
[g] *Factor-Inwentash Faculty of Social Work, University of Toronto, Canada*

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ABSTRACT

Background: North American studies find that geographic indicators of disadvantage, such as concentrated poverty, significantly increase the risk of child protection involvement. Despite having one of the most extensive family support systems and progressive income redistribution policies in North America, the Canadian province of Québec still faces geographic variations in socioeconomic conditions that remain a major risk factor for child protection involvement.
Objective: This study asks how child protection involvement is distributed across socioeconomically distinct geographic areas of the province. Drawing from prior literature, we hypothesize that the highest level of child protection involvement across childhood (age 0–17) is found in the lowest socioeconomic areas.
Participants & setting: This is a population-based prevalence study using administrative child protection data spanning the years 2000 to 2017 across Québec.
Methods: We constructed cumulative risk life tables of first instances of child protection events (report confirmation, compromised security or development, and out-of-home placement). Prevalence rates were mapped onto 10,650 Census dissemination areas divided into three tiers according to a validated socioeconomic status (SES) index.
Results: The highest childhood prevalence of confirmed child protection reports, finding of compromised security or development, and out-of-home placement was found in the lowest SES areas. Rates in low SES areas can be over twice the rates in high SES areas.
Conclusions: Area-level socioeconomic vulnerability remains a robust predictor of child protection involvement even in a socially progressive context. Our findings underscore that without targeted pediatric and family services, as well as poverty-alleviation programs for high-need families in

high-need areas, even well-intentioned systems may fall short of reaching the families most in need.

1. Introduction

When concerns about the basic safety or wellbeing of a child arise, child protection authorities may be asked to assess whether these concerns meet the standards set by local legislation. As an exceptional intervention, child protection systems often function as a last resort when other sources of support are insufficient or unavailable. North American research suggests disproportionate child protection intervention stemming from a lack of resources within or around families (Cancian, Yang, & Slack, 2013; Fauske, Kojan, & Storhaug, 2018; Font & Maguire-Jack, 2020; Garbarino, 2017; Rothwell et al., 2018; Rothwell & de Boer, 2014; Trocmé, Kyte, Sinha, & Fallon, 2014). Families experiencing socioeconomic risk may also face a higher risk of child protection involvement due to several overlapping and accumulating problems, such as inadequate housing, food insecurity, limited access to childcare, under resourced schools, limited access to health and social services, high unemployment, and transportation challenges (Chandler, Austin, & Shanahan, 2020; Dworsky, 2014; Shdaimah, 2009), all of which are spatially patterned across geographies. Importantly, examining child protection risk through a geographic lens acknowledges the role of the broader social, economic, physical, and policy environments surrounding children and their families (Caldwell, Delaye, & Esposito, 2021; Hyslop & Keddell, 2018). Prior empirical literature supports this conceptualization of risk, finding that socioeconomic indicators measured beyond individual families contribute to child protection involvement risk (e.g., Bywaters, Skinner, Cooper, Kennedy, & Malik, 2022; Coulton, Crampton, Irwin, Spilsbury, & Korbin, 2007; Maguire-Jack & Font, 2017; Mason et al., 2019).

To reflect our conceptualization of risk beyond individual families or households, we rely on aggregate geographic units of analysis in this study. We use the terms "geography" and "area" in this paper to refer to physically bounded spaces measurable by Census data, which align with measures of socioeconomic status used in the methodology for this article. We do not rely heavily on the term "neighborhood" as we do not measure social connections or other factors that are important in operationalizing this concept.

Child protection authorities may be called upon when there are no appropriate supports available to meet a family's needs (Keddell, 2022). Prior analyses drawing from administrative data in Québec – the focus of this study – demonstrate that area-level socioeconomic factors contribute to disproportionate risk of child protection involvement (Esposito et al., 2013; Esposito et al., 2014a; Esposito et al., 2014b; Esposito et al., 2017; Esposito et al., 2021). Child protection intervention is associated with challenges extending into adulthood related to negative physical health, mental health, and financial outcomes (Afifi et al., 2014; Barker et al., 2014; Bell, Foulds, Horwood, Mulder, & Boden, 2019; Bunting et al., 2018; Felitti et al., 1998; Font, 2017; Hanson, Knodt, Brigidi, & Hariri, 2015; Hussey, Chang, & Kotch, 2006; Kisely et al., 2018). Despite this clear public health and societal challenge and increasing calls from stakeholders to improve preventative support for families, a lack of specificity about the etiology of socioeconomic mechanisms of child protection risk has limited policy and practice improvements in Canada and elsewhere (Afifi, 2011; Delaye & Sinha, 2017; Isokuortti, Aaltio, Laajasalo, & Barlow, 2020; Roygardner, Hughes, & Palusci, 2020; Trocmé & Chamberland, 2003).

A recent study of the prevalence of child protection involvement found that 16.4 % of all children in Québec were subject to a confirmed report of child protection concern before the age of 18, that substantiated concerns regarding compromised security or development were found for 10.1 % of children, and that 5.5 % of all children were removed from their home due to these concerns (Esposito et al., 2023). These figures are similar to childhood prevalence studies in the United States that showed 12.5 % of children experienced a substantiated report and 5.9 % of children were removed from their homes (Wildeman et al., 2014; Wildeman & Emanuel, 2014). In the U.S. prevalence rates were found to be much higher for African-American and Indigenous children. While such findings are not easily comparable given different risk thresholds across jurisdictions, they point to the need to expand ecological studies examining child protection prevalence across childhood.

The present study contributes to the evidence base by analyzing how geographic area-level socioeconomic risk correlates with the childhood (age 0–17) prevalence of child protection involvement, providing more comprehensive findings than are possible with period-specific incidence studies. By approaching this question through a prevalence methodology, this study captures risk of child protection involvement for children both across the course of childhood and across socioeconomically varied geographies.

Québec is a novel jurisdiction in which to study this question given its uniquely progressive policies. Québec spends more on child and family services than any other province in Canada (Statistics Canada, 2018), including subsidized childcare, social pediatric services for high-needs families, housing subsidies, subsidized dental services, and drug prescription subsidies (Fréchet, Hamzaoui, & Tran, 2020; Kurnaz & Yip, 2022; Macdonald, 2018; Retraite Québec, 2022). The province also has one of the lowest level of after-tax and transfer income inequality in North America due to progressive tax rates and child tax benefits. Within this context, our research extends the current understanding by emphasizing the importance of spatial equity in the availability and accessibility of family support services. Here, equality refers to distributing services evenly across the population, while equity emphasizes distributing the effects of these services equitably, considering varying strengths and needs within the population (Bennett, 1983; Truelove, 1993, p. 21). These insights prompt inquiries into how child protection risks are distributed across territories and their implications for the availability, accessibility, and suitability of resources and services for high-risk families, as well as other factors that may contribute to differential risks of child protection involvement across different geographies. Spatial inequities can exacerbate the challenges faced by families in low socioeconomic brackets, even in a jurisdiction such as Québec that offers universal health and social services. This theoretical framework underscores the need for targeted approaches to family support, hypothesizing that merely having services available is insufficient if they are not accessible to the families that need them most.

2. Methods

This population study provides estimates of childhood prevalence of involvement in the child protection system in Québec, a province that is home to approximately one quarter of the Canadian population. We hypothesized that the highest level of child protection involvement across childhood (age 0–17) would be found in the lowest socioeconomic areas. Analyses of administrative child protection data were conducted using MPlus version 8.10 to estimate prevalence and cumulative risk of child protection involvement by age, which were then analyzed according to geographic clustering of socioeconomic risk. These secondary analyses of data were approved for the purposes of understanding the service trajectories of all children involved with the child protection system in the province of Québec (Research Ethics Committee, Centre Jeunesse de Montréal – Institut Universitaire: #140402).

Concerns reported to the Québec child protection system are processed according to the nature and scope of the concern and what services or interventions may be necessary to "protect children whose security or development is or may be in danger" (Youth Protection Act, 2007). The provincial Youth Protection Act (YPA) articulates these concerns as follows: abandonment, psychological ill-treatment, sexual abuse, physical abuse, serious behavioral disturbance, and neglect (Youth Protection Act, 2007). The inclusion of serious behavioral disturbances, beyond child maltreatment, is unique to Québec. It is also noteworthy that the threshold for investigation in Canadian jurisdictions may be lower than in the United States (Fallon et al., 2012). Reports are screened and those that meet the YPA criteria are retained for further investigation. Confirmed reports ("Facts Founded;" FF) are then further assessed to determine if the child is in need of protection services ("Security or Development Compromised;" SDC), and whether these services can be provided on a voluntary basis or should be enforced by court order. In other jurisdictions, "substantiation" is used to reflect the point in a case trajectory where concerns regarding a child are founded after an investigation. We use confirmed reports ("Facts Founded") and SDC in this article to reflect the specific legislation and practice landscape in Québec. In circumstances when a child's security and development is considered to be at significant risk with the child remaining in the home, authorities may consider out-of-home placement (Ministère de la Santé et des Services Sociaux, 2019). Fig. 1 highlights these stages of involvement in the child protection system after a report is made. If the report does not move forward in this trajectory, the intervention will end and referrals may be made to other services.

We obtained data for these analyses from multiple sources. Annual child population estimates for Québec came from the Ministry of Health and Social Services (Ministère de la santé et des services sociaux; MSSS) and are based on Canadian Census data. Administrative child protection data reflect clinical worker data entries and were drawn from the MSSS through a data sharing agreement. These anonymized data include: a unique child identifier, child age, and service trajectories within child protection (Fig. 1). Using postal codes, we merged the administrative data with the Census data to examine socioeconomic factors related to child protection involvement.

A latent socioeconomic status (SES) construct was created using data from 10,650 Census dissemination areas (DAs). The DA is the smallest unit of Census population data available, representing between 400 and 700 individuals. In a city, a DA could be a large apartment building, townhouse complex, or city block, while DAs in rural areas span a much larger geographic footprint. Thus, DAs aggregate hundreds of households and can represent micro neighborhoods and regions depending on their population density. The SES construct we used is a model of the relationship among the following five observed variables of economic and social constructs: individual income, family income, household income, unemployment, and parents' education level (Bartholomew, Knott, & Moustaki, 2011). This construct was developed based on prior development of a material and social deprivation index in Québec (Pampalon et al., 2012), which used Census data from all DAs in the province; it has since been validated through principal component analysis and used in studies of child and family services in the province (Esposito, Chabot, et al., 2021; Esposito, Roy, Chabot, & Trocmé, 2017). Principal component analysis of five indicators (individual, family and household income, unemployment and parents level of schooling) were combined into a single construct, then standardized using logarithmic function base 10, representing a normally distributed socioeconomic vulnerability "score" for each dissemination area in Québec (N = 10,650). Sample adequacy (Kaiser-Meyer-
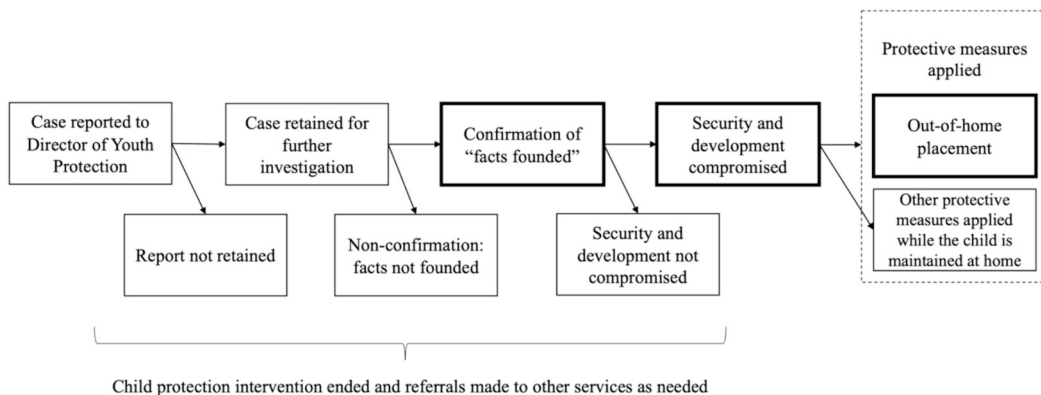

Fig. 1. Overview of decision points following a child protection report in Québec.
Note: Bolded boxes indicate stages of focus in the present study.

Olkin = 0.912) and Barlett's test of sphericity (P < .000) reveal strong index fit.

We grouped the DAs by the SES index into three tiers. The SES tiers are not defined according to a standard definition of low income, middle class, or affluent families, but rather division of all dissemination areas into equal thirds according to the distribution of the SES index according to "low," "middle," and "high" SES tiers. By aggregating Census DAs into three tiers, we could look at broad trends across areas with different SES scores. As a unit of analysis, the SES tiers can uncover patterns of variation in child protection involvement that inform more granular research questions regarding possible explanatory mechanisms. Table 1 provides descriptive statistics regarding of the SES index values per tier.

Child protection administrative data were used to find global rates of lifetime prevalence of confirmed child protection concerns and out-of-home placement within each tier. We estimated childhood prevalence of confirmed reports, cases of SDC open for on-going protective services, and placement in out-of-home care. To determine estimates of lifetime prevalence of these occurrences (age 0–17), we used cumulative risk life table analyses. Our analysis is based on data from all children observed for up to 17 years, making our estimates less biased and easier to interpret compared to child protection lifetime prevalence estimates based on a synthetic cohort life table approach. Synthetic cohort single decrement life tables, a common approach to prevalence estimates (Finkelhor, Shattuck, Turner, & Hamby, 2014; Steensma, Choi, Loukine, & Schanzer, 2018; Wildeman et al., 2014), assume that an event can only happen once during the study period. However, for many children, child protection involvement can occur more than once during childhood, duplication which is not controlled for using synthetic cohorts that overestimate prevalence. Our approach using a full population dataset allowed us to provide calculations of cumulative prevalence rates that include only the initial instance of a child's involvement in the child protection system. We estimated cumulative risk according to age to be able to demonstrate the likelihood of initial involvement with the child protection system throughout childhood.

3. Results

Results show that rates of child protection involvement across childhood are not homogenous across socioeconomically distinct geographic areas. The linear relationship in Fig. 2 demonstrates that in areas with the lowest SES status, children experience the highest rates of a first instance of all three measured stages of child protection involvement. About 204 per 1000 children in these areas were the subject of at least one confirmed report, 131 per 1000 children required an ongoing child protection service after a finding of SDC, and 73 per 1000 children were placed outside their home. These rates translate to an average of 1.9 times higher than children living in areas with the highest SES status, with placement rates being more than double in the low SES areas. Children living in areas with the highest SES status are the least likely to experience a report having facts founded, security or development compromised, or out-of-home placement, while the middle tier areas fell in the middle, almost exactly at the average.

Broken down by age at first involvement with the system, the results reflect prior findings: prevalence rates of child protection involvement are generally higher for very young children and for teens. Our findings show that the socioeconomic disparity is most extreme for young children: before turning one, infants living in the poorest areas of Québec are over three times as likely to experience placement outside their home than are infants of the same age living in areas with the highest socioeconomic resources. Fig. 3 shows cumulatively highest rates of involvement across the course of child protection involvement at all ages for those living in the lowest SES tier geographies.

The extent of the disparities in child protection involvement across the three tiers warrants attention. When compared to the average, prevalence of confirmed child protection reports, findings of compromised security or development, and out-of-home placement are consistently higher in the lowest SES geographies (see Figs. 3 and 4).

The ratio between high and low SES tiers further illustrates this disparity: rates of child protection intervention for children in the poorest third of the province are close to double that of those in the most affluent areas at each point of child protection intervention: 1.73× for facts founded; 1.92× for compromised security and development; and 2.16× for placement. The disparities increase with more significant child protection decisions (i.e., the disparity for placement is higher than that for SDC, which is higher than that for FF).

4. Discussion

Our results reflect prior findings in Québec and in other jurisdictions, showing that the risk of involvement with child protection system is higher in areas with lower socioeconomic resources. The analyses suggest that prevalence of involvement with the child protection system in Québec has a linear relationship with area level measures of socioeconomic resources. Children living in areas with the lowest socioeconomic resources consistently had the highest levels of child protection involvement across reports with facts founded, findings of compromised security or development, and out-of-home placement (refer to Figs. 2–4). This finding adds to mounting evidence from prior Canadian studies showing a correlation of socioeconomic challenges with disproportionate risk of child

Table 1
Description of socioeconomic status index by geographic area tiers.

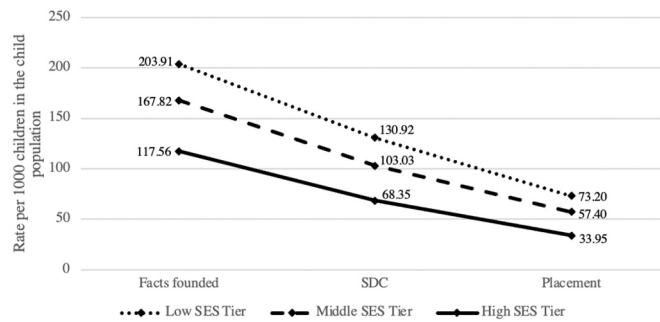|	Average SES index value	Median SES index value	Standard deviation
Low SES tier	−0.06996	−0.06500	0.034113
Middle SES tier	−0.00040	0.00100	0.01640
High SES tier	0.07084	0.06500	0.036136

Fig. 2. Prevalence of child protection involvement age 0–17 in Québec as rate per 1000 children in the child population, by geographic area socioeconomic status tiers (2000–2016).

protection involvement (Boatswain-Kyte, Esposito, & Trocmé, 2020; De la Sablonnière-Griffin, Sinha, Esposito, Chabot, & Trocmé, 2016; Esposito et al., 2013; Esposito et al., 2014a; Esposito et al., 2021; Esposito et al., 2022; Esposito, Chabot, et al., 2021; Esposito, Chabot, Rothwell, Trocmé, & Delaye, 2017; Hélie, Collin-Vézina, Turcotte, Trocmé, & Girouard, 2017), and demonstrates a need for more strategies to target services to high need families and geographies.

While the pattern of socioeconomic risk correlating with child protection involvement is longstanding, this is the first prevalence study confirming this relationship across the full span of childhood and across aggregated geographies. Because the findings here only draw from data on children's first instance experiencing these child protection events, results should be interpreted as an underestimation of the extent of child protection involvement in many children's lives throughout childhood, given prior findings of multiple or lengthy child protection involvement for some families in North America (Esposito et al., 2014a, 2014b; Esposito, Chabot, et al., 2021; Hélie, Laurier, Pineau-Villeneuve, & Royer, 2013; Hélie, Poirier, & Turcotte, 2014; Jonson-Reid et al., 2019; White, Hindley, & Jones, 2015).

Results of this study undergird the conceptualization of risk as manifesting beyond individual families, reflecting the concept of spatial equity as an important independent dimension of stratification (Sharkey, 2008). Variations in family needs and socioeconomic vulnerabilities at the geographic level all underscore the need to assess equitable outcomes in policy planning. For example, our finding that 13 % of the child population in the lowest SES areas of Québec will be the subject of at least one finding of SDC, and that over half of those children will be removed from their home at some point, should prompt policymakers to consider more extensive preventative solutions in these areas. Ensuring efficient implementation of supports addressing income, employment, physical and mental health, substance use, family violence, and other family challenges can support prevention efforts. From a policy perspective, the findings indicate that the highly progressive income redistribution efforts and targeted family support services currently in place at the provincial level may not be fully meeting their goals of reducing inequality. In other words, the effects of concentrated poverty in aggregated geographies may increase child protection risk despite the policies in Québec meant to alleviate challenges related to poverty for some families (Sharkey & Faber, 2014). Families who may benefit the most from existing services may encounter barriers to accessing them. High involvement in child protection correlated with socioeconomic vulnerability in Québec suggests that family challenges have persisted despite the apparent availability of numerous services and benefits. As an example of how this data can be applied in practice, community-level social pediatrics clinics in Québec have used SES data to map pockets of poverty in certain geographies to allocate local and mobile services in those areas (Esposito, Roy, et al., 2017). Efforts to provide family support ought to consider how socioeconomic need can vary across geographic areas to better target actual need. Further, allocation of services ought to consider not only proximity to families in situations of vulnerability, but availability (e.g., opening hours), accessibility (e.g., via public transit), and appropriateness (e.g., cultural salience) of these services. Our findings stress that without targeted support, even the most well-intentioned systems may fail to reach the families most in need.

This article aims to inspire empirical research into local mechanisms contributing to disparities in child protection across socioeconomic geographies, with the goal of minimizing child protection involvement. Further investigation into the role of formal and informal supports across different geographies would bolster this effort. While this article discusses spatial equity conceptually using broad geographical tiers to examine inequities, this approach lays the groundwork for more detailed studies on service uptake, referrals, and client assessments in localized areas. In Québec, across Canada, and in other jurisdictions with a universal health and social services paradigm, adopting a spatial equity lens can illuminate persistent social inequities despite robust social safety nets intended to be universally accessible. This approach can also serve as a model for jurisdictions with less comprehensive social safety nets in effectively designing and implementing universal services. In empirical studies examining unequal outcomes across geographies, researchers should not assume the accessibility, appropriateness, or efficacy of services proximal to families, nor should they assume families face equal risks of challenges leading to child protection reports. Further research should identify the protective factors of areas with low socioeconomic status and low child protection involvement based on dimensions of health, social, economic, education, safety, transportation, recreational spaces, and prevention services spending and compare those factors with geographies experiencing similar SES vulnerability and high child protection involvement. Advanced research methods, like multilevel modeling, can incorporate variables beyond individual effects on child protection outcomes (see: Esposito et al., 2022). Through a spatial equity lens, implementation research and program evaluation can highlight where universal programs succeed and where gaps persist in achieving
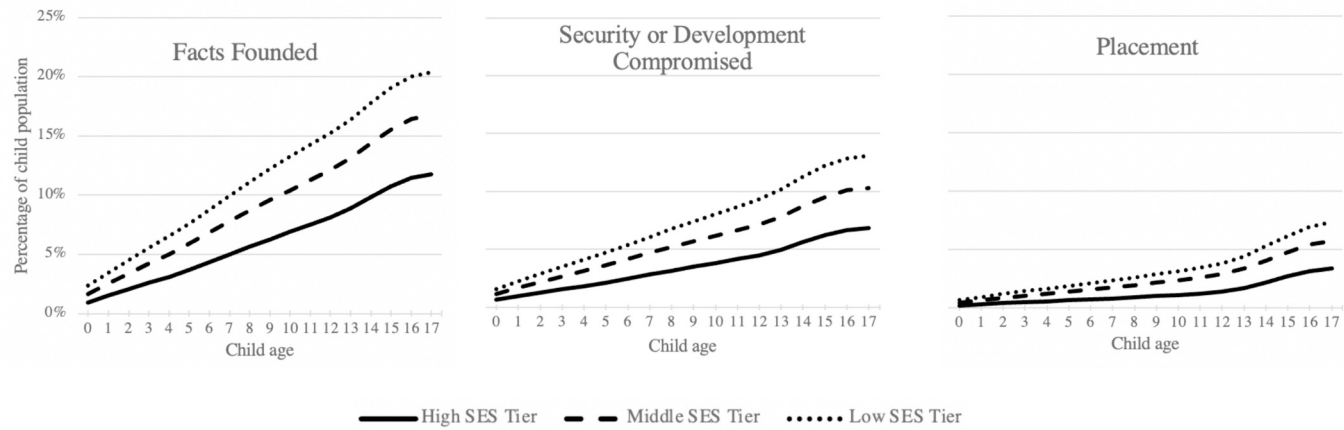
Fig. 3. Cumulative risk of child protection involvement age 0–17 as percentage of child population in Québec by geographic area socioeconomic status tiers (2000–2016).
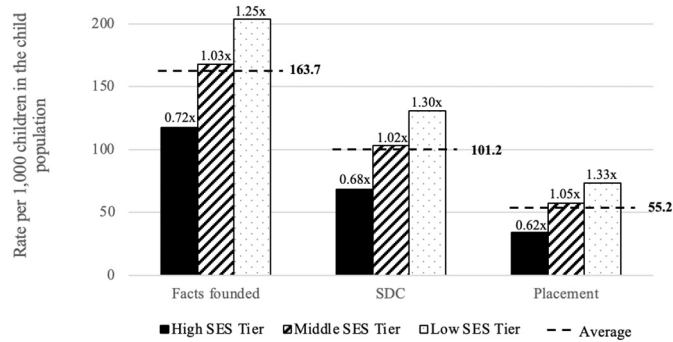
Fig. 4. Disparity in child protection involvement age 0–17 across geographic area socioeconomic status tiers in Québec (2000–2016). Notes: The average rates here are subject to rounding error. The ratios reflecting the rate difference between highest SES and lowest SES tier are as follows: 1.73× for facts founded; 1.92× for compromised security and development; and 2.16× for placement.

positive outcomes for children and families. Such findings can enhance the impact of service referrals once children are involved in child welfare and improve the effectiveness of prevention services.

A crucial next step will be to explore what other indicators measurable at the area level may relate to the socioeconomic findings in this study. For example, we are designing a follow-up study examining child protection prevalence rates across child population density tiers to cross-tabulate these patterns with area level socioeconomic findings from this study. That analysis could inform discussions of barriers to accessing formal services and informal social support, a lack of which can exacerbate family challenges in the context of socioeconomic risk. Future childhood prevalence studies using multiple decrement life table methods that examine the recurrence of child protection involvement (e.g., multiple instances of SDC or placements) would continue to deepen the picture of child protection involvement and validate past findings on chronic family needs and neglect-driven cases in this jurisdiction (Esposito et al., 2022; Esposito et al., 2023; Esposito, Caldwell, et al., 2021; Esposito, Chabot, et al., 2017; Esposito, Chabot, et al., 2021; Hélie et al., 2017). Comparative research could also look at differences in eligibility criteria and thresholds for intervention that may lead to variation in prevalence rates in different jurisdictions.

There are several study limitations that should be noted. First, the geographic area are broad groupings of Census dissemination areas: while the DAs themselves are quite granular, with each representing no more than 700 people each, the aggregation of DAs into tiers functions to illustrate general trends across the tiers, rather than granularities at the DA level. As the SES index relates to the geographic area rather than individual families, the findings do not reflect the existence or extent of inequality within geographic areas. Second, as this study is based on administrative data, it does not include self-report measures which means prevalence estimates here are likely low as the data do not represent unreported cases. Finally, data on child ethnicity is not reliable in the child protection data across the province, and subsequently was not included in the present analysis. While this lack of reliable data on race and ethnicity in our dataset means this was not a meaningful aspect of our analysis, the findings on variation in prevalence rates across geographies correspond to how structural inequalities and socioeconomic disadvantages are spatially patterned by race and ethnicity, given residential segregation.

5. Conclusion

The findings of this prevalence study amplify previous analyses showing clearly disparate involvement in child protection across socioeconomic areas, with those in the most socioeconomically vulnerable areas experiencing above-average risk of child protection intervention. The results suggest that child protection intervention (defined as a confirmed child protection report, which may be followed by a subsequent finding of compromised security or development and eventual out-of-home placement) is by no means exceptional, affecting on average one in six children across their lifetime, and over one in five children living in areas with low socioeconomic resources. By illustrating how common it is for children in Québec's poorest geographies to experience child protection intervention despite high levels of support for poor families, this study suggests that universal poverty reduction policies in the province may not be efficiently implemented to reach the families for whom they are most needed. The findings of this study can inform targeted and equitable policy solutions that consider the diverse needs of families clustered in low SES areas to reduce the risk of child protection involvement across childhood.

CRediT authorship contribution statement

Tonino Esposito: Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Johanna Caldwell:** Writing – review & editing, Writing – original draft, Formal analysis. **Martin Chabot:** Software, Data curation. **Anne Blumenthal:** Writing – review & editing, Writing – original draft, Formal analysis. **Nico Trocmé:** Writing – original draft. **Sonia Hélie:** Writing – original draft. **Barbara Fallon:** Writing – original draft. **Stéphanie Précourt:** Writing – review & editing.

Data availability

The authors do not have permission to share data.

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