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**Children born into vulnerability:
Challenges encountered in a Quebec
longitudinal survey**

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Children born into vulnerability: Challenges encountered in a Quebec longitudinal survey

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Abstract

Growing Up in Québec is a longitudinal population survey that began in the spring of 2021 at the Institut de la statistique du Québec. Among the children targeted by this longitudinal follow-up, some will experience developmental difficulties at some point in their lives. Those same children often have characteristics associated with higher sample attrition (low-income family, parents with a low level of education). This article describes the two main challenges we encountered when trying to ensure sufficient representativeness of these children, in both the overall results and the subpopulation analyses.

Keywords: *Growing Up in Québec*, longitudinal study, socioeconomic poverty, Zoom platform.

1. Introduction

1.1 Background

The *Growing Up in Québec* study, also known as the *Québec Longitudinal Study of Child Development*, is the second edition of a longitudinal study that started at the Institut de la statistique du Québec (ISQ) in 1998. The first edition identified factors associated with the development of vulnerable children. As noted by Desrosiers and Ducharme (2006) and others, children from economically disadvantaged families or whose mothers had a low level of education are more likely than others to have delayed vocabulary acquisition in kindergarten. For the second edition, the survey partners and the ISQ project team chose to study over time, a subpopulation of children with risk factors associated with various aspects of their development. For some children, the situation at birth (Berns 2012) undermines the achievement of the main survey outcomes, namely educational success, social adjustment, and overall well-being. Therefore, an indicator that includes children whose development is likely to be compromised was created based on certain characteristics observed at birth. The overrepresentation of these children in the sample addresses the concern of the partners who want to have enough vulnerable children on which to conduct analyses over time.

This article first covers the main aspects of the survey methodology as well as two of the challenges associated with the decision to increase the share of vulnerable children in the sample. The first of these challenges is designing an indicator based on the information available in the frame. The second is collecting data from a subgroup of children with characteristics associated with a lower participation rate. The future challenges for the next stage of the survey are described in the conclusion.

1.2 Overview of the survey methodology

Growing Up in Québec is a probabilistic survey that targets children born between October 1, 2020, and September 30, 2021, and living in Quebec.² The *Registre des événements démographiques* (vital statistics registry), which lists births in Quebec, was used as the initial survey frame. Administrative information obtained through Retraite Québec's Family Allowance Program was added to the frame. This program, designed to provide financial assistance to Quebec

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² Excluding some health regions.

families, is also a source of economic data. A random sample of children was selected from the final frame using a multi-stage survey design. The sample consists of 8,391 children, 4,703 of whom participated in the first iteration of the survey, with the target of 4,500 participants. To properly distribute the sample by birth month, seven separate samples corresponding to seven collection periods between May 3, 2021, and March 25, 2022, were prepared. The first data collection was held when the children were about 5 months old; they will be surveyed annually or biennially until they reach adulthood. A pilot survey preceded the main survey and validated the processes and assumptions, particularly those related to the response rate (Fontaine et al. 2022).

2. First challenge: the concept of socioeconomic poverty (SEP)

2.1 Building a socioeconomic poverty indicator

A number of aspects were factored in when building the vulnerability indicator, including the number of dimensions, the data sources available, and the ease of creating the indicator before each of the seven sample selections.

Two dimensions were chosen to create the indicator: a social dimension (mother's education) and an economic dimension (net family income), hence the name "socioeconomic poverty" indicator. These two dimensions were measured at the child's birth and were available in the frame; the number of years of the mother's schooling is indicated in the declaration of live birth, while net family income³ is used to calculate the amount of the Family Allowance Program benefit.

A child was considered to be in socioeconomic poverty at birth if

- the mother had 11 years of schooling or less, the equivalent of a high school diploma in Quebec;
- or
- the family's adjusted net income⁴ was among the lowest in relative terms, i.e., it was in the bottom 12% of the income distribution.

Since the low-income cut-offs do not factor in net income (Statistics Canada 2016), another approach had to be developed. Therefore, a low-income rate was estimated using Quebec data from Statistics Canada's Canadian Income Survey for a subpopulation of census families comprising a couple and at least one child aged 0 to 2. This rate, estimated at 12%, was then applied to the income distribution.

At the provincial level, the proportion of children in SEP in the target population was 34%, with the proportion varying from 20.7% to 59.7%, depending on the regional county municipality (regions within the health regions). Contrary to what might be expected, the regions with a higher proportion of children in SEP are located outside major urban centres, such as the Gaspé Peninsula, rather than in urban centres (Montréal, Québec City), where there are proportionally more births. This illustrates a trade-off that was necessary in the sample design to reconcile the expected precision targets at the provincial level and for the subpopulation of children in SEP. An oversample with a percentage of children in SEP estimated at 40% was chosen for the main survey.

2.2 Evaluation of the socioeconomic poverty indicator

2.2.1 Bivariate analyses

To verify the composition of the subgroup of children in a SEP situation in terms of key measures of child development at 5 months of age, association tests were conducted (see table 2.2.1). A significant association was detected between the SEP indicator and all but one of the key measures. The subgroup in SEP also had a smaller proportion of children who had a characteristic related to proper development at 5 months of age, which was sought.

Table 2.2.1

³ The sum of the parents' net income or the single parent's net income.

⁴ The adjustment involves dividing the income by the square root of the family's approximate size.

Weighted proportion of children by key measure in the first iteration of the survey, by socioeconomic poverty indicator status

Key measure indicating proper child development at 5 months of age	Weighted proportion of children	
	SEP	Non-SEP
An adult in the home has already read or shown pictures to the baby	74.2%	87.0%
The baby has had a hearing test since birth	58.3%	64.4%
The baby's health is generally excellent or very good*	92.2%	93.3%
The baby has had little exposure to smoke from tobacco products in the home since birth	96.9%	99.1%
The baby received mother's milk at least once at the hospital or birthing centre	82.2%	91.9%

Note: Preliminary data. The asterisk (*) indicates a non-significant association test at the theoretical threshold of 5%.

2.2.2 Multivariate analyses

Using a principal component analysis, the five key measures in table 2.2.1 were compared to determine whether it was possible to summarize the information into one principal component associated with the SEP indicator. This principal component, the concept of poverty, was measured indirectly using data collected in the survey when the child was 5 months old. Of the three principal components, the first one accounted for 54% of the variance and its average factor scores differed between the children born into SEP and the other children (results not presented). The scores for the subgroup of children born into SEP were characterized by values indicating poorer child development at 5 months of age. As such, the indicator was used to combine children born into SEP and children with characteristics associated with potential developmental difficulties.

3. Second challenge: Data collection

3.1 Changes to the initial strategy

The main survey was to be launched in May 2020. However, the outbreak of the COVID-19 pandemic, which occurred in the winter of 2020 in Quebec, disrupted the launch. Since home visits were planned, but major public health restrictions were put in place in Quebec, the start of data collection was postponed for one year. As the restrictions continued, a change in the primary collection method was required. However, it was important for the interview to be conducted by an interviewer so that they could establish a relationship with the family, answer their questions, and provide the necessary explanations in order to establish a successful, long-term collaboration. It was therefore decided that the interviews would be conducted by phone rather than in person.

However, the estimated length of the interview exceeded ISQ standards for telephone collection. Despite some adjustments, the estimated length was 75 minutes. To limit a potential decrease in the response rate that a change in the primary collection method could have caused, the ISQ decided to add another collection method. The choices were very limited (online or paper questionnaire). The disadvantage of those two options was that the family would have no contact with the interviewer during the first iteration.

Throughout 2020, teleworking expanded in Quebec due to the public health measures deployed in the province (<https://www.inspq.qc.ca/covid-19/donnees/ligne-du-temps>). Many employers, including the Quebec government, asked their staff to use video conferencing platforms, such as Teams or Zoom. Families with school-aged children also had to familiarize themselves with this means of communication so the children could attend school remotely while the schools were closed. It was in this context that the idea of conducting interviews by video conference with an ISQ interviewer came about within the project team.

There are many advantages to this administration method, including visual contact with the parents and the child, and a small potential measurement gap (between Zoom and the phone method during the first iteration, and between Zoom during the first iteration and the in-person interview during the other iterations). To meet ISQ's IT security requirements, the Zoom platform was chosen, hosted directly on ISQ servers. To use this method, the family had to

already be comfortable with this platform and have the necessary computer equipment since ISQ does not provide technical support.

Although it was preferable to use Zoom rather than the telephone mode alone to get a better response rate, there were still some questions about the reaction and buy-in of the families of children in a SEP situation. Zoom could be an interesting option for families who familiarized themselves with video conferencing during the pandemic (for example, for work or to keep in touch with family members abroad), but Internet access is required to use the platform. However, proportionally fewer households with characteristics associated with the SEP indicator have access to the Internet (https://statistique.quebec.ca/en/document/internet-access/tableau/proportion-of-households-with-a-high-speed-internet-connection-out-of-all-connected-households-by-selected-socioeconomic-characteristics-quebec-2012-and-2016#tri_de_temps_refrn=192). Despite these uncertainties, ISQ nevertheless proceeded with video conferencing.

3.2 Collection results

3.2.1 Participation rate for children in a SEP situation

The first two collection periods coincided with the easing of public health measures in Quebec and many parents returning to work. This may partly explain the response rates observed (see table 3.2.1), which are below the 45% target set for children in a SEP situation. It was more difficult to make appointments with the parents and to keep the appointments on the scheduled date, but rates of 41% and 42% were obtained despite the collection period being extended and the sample size being reduced for the second collection period to ensure a more reasonable interviewer workload.

Table 3.2.1

Weighted overall response rates for children born into a SEP situation for the seven collection periods of the first iteration

Scheduled collection dates by collection period	Response rate	Sample
May 3 to June 13, 2021	41%	483
May 31 to July 11, 2021	42%	366
September 7 to October 17, 2021	46%	507
October 4 to November 14, 2021	45%	511
November 1 to December 12, 2021	49%	507
January 10 to February 20, 2022	47%	524
February 11 to March 25, 2022	44%	523

Note: Preliminary rates as of November 3, 2022.

The summer break in the data collection was used to reflect and agree on the adjustments to make in the third collection period.⁵ For a random subset of children born into a SEP situation who were living in urban areas, a visit to present the survey was planned when no phone contact had been made with the family after five attempts.⁶ The visit was mentioned in a letter sent to families who had not been reached by phone. Then, a draw for participants was announced, and a \$150 gift card was awarded to the winners. For equity reasons, all the children were eligible for the draw, even though its main objective was to achieve the desired participation rate, which was more difficult to achieve among children born into a SEP situation.

The desired response rate (45%) was reached or exceeded for four of the last five collection periods. Given that a number of adjustments were made simultaneously in the third collection period, it is impossible to specify which

⁵ For the third collection period, the initial work to prepare the sample began in late July 2021.

⁶ This measure was extended to all children born into a SEP situation living in an urban area as of the fourth collection period. In non-urban areas, a visit to present the survey was planned for all children in a SEP situation if the distance between the child's home and the interviewer's home was reasonable.

strategy contributed the most to this increase. The timing of collection (between September 2021 and March 2022) may also have played a role, particularly since public health measures were once again tightened during that period.

3.2.2 Impact of introducing an additional method

The additional method implemented helped us to reach and even exceed the target number of participants. In total, 24% of participants (1,134 participants, see table 3.2.2-1) opted to complete the main questionnaire via Zoom. This proportion is slightly lower for children in a SEP situation at birth (19%, or 293 participants). Naturally, if only the telephone method had been proposed, some of the participants who chose Zoom would probably have participated in the survey anyway. Therefore, the actual net gain is likely fewer than 1,134 participants. That said, there is every reason to believe that there are still advantages to using the mixed method. In addition, the fact that interviewers can establish a more friendly rapport through Zoom may have contributed to retaining some families for the other collections planned for the longitudinal follow-up. Therefore, this initial experience proved conclusive given the survey objectives.

Table 3.2.2-1

Sample and participation by collection method, total and for children born into SEP

	Sample	Number of interviews conducted		
		Phone	Zoom	Total
Total	8,391	3,559	1,134	4,703
SEP	3,421	1,219	293	1,517

Note: Some interviews were started in one method and completed in another. These are not included in the table. Therefore, the total of the “Zoom” and “Phone” columns do not correspond to the “Total” column.

When survey questionnaires can be completed using two different methods, measurement errors may be introduced into the results. To check for errors, the first step was to characterize the participants based on the collection method chosen. It was determined that there were proportionally fewer children for whom the questionnaire was completed via Zoom among those from low-income households and among those whose mothers were young (under age 25) or did not have a high school diploma. This means that a greater proportion of the more advantaged participants chose Zoom.

Knowing that the socioeconomic profile of participants differs depending on the collection method and that the method was not randomly assigned, logistic regression analyses⁷ were carried out to test the interaction between the collection method and the SEP indicator for five key measures, taking the participants’ characteristics into account (see table 3.2.2-2 for the test results).

For each model, no significant interaction was detected at the theoretical threshold of 5%. This means that introducing the additional method likely did not significantly affect the comparison between the children born into a SEP situation and the others, even though its assignment was not randomly selected. Further checks are forthcoming, but these initial findings are encouraging and indicate that the gains in the overall response rate are not at the expense of the quality of the child development measures.

Table 3.2.2-2

Threshold observed for the test of interaction between the collection method and the SEP indicator

Key measure indicating proper child development at 5 months of age	Observed threshold of the Satterthwaite adjusted chi-squared test of the interaction
An adult in the home has already read or shown pictures to the baby	0.227
The baby has had a hearing test since birth	0.175
The baby’s health is generally excellent or very good	0.832

⁷ RLOGIST procedure of the SUDAAN software using the preliminary survey data and factoring the complex survey design into estimating the variance using the Taylor linearization method.

The baby has had little exposure to smoke from tobacco products in the home since birth	0.817
The baby received mother's milk at least once at the hospital or birthing centre	0.219

4. Challenges ahead and conclusion

During this second year of collection, it was possible to return to the originally planned collection method: in-home visits. This method is offered first, but the Zoom and phone methods are still available if a home visit is impossible. During the first two collection periods, nearly 9 in 10 participants did their main interview during an in-home visit. Furthermore, the vast majority of participants who chose Zoom during the first collection year did their interview in person. For children born into a SEP situation, the second collection period is still presenting challenges, such as reaching the parents or convincing them to book an appointment for an in-home interview. Close monitoring of the results and adjustments throughout the collection year are planned to maintain good results during data collection. In conclusion, the efforts made during the survey design and the first year of collection will ensure that the subgroup of vulnerable children is fairly represented in the results and analyses.

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Bibliography

Berns. R. M. 2012, *Child, Family, School, Community: Socialization and Support 9th Edition*, CA: Wadsworth.

Desrosiers, H. and A. Ducharme. 2006, "Starting school on the right foot: Factors associated with vocabulary acquisition at the end of kindergarten, Québec Longitudinal Study of Child Development (QLSCD 1998-2010)," Vol. 4(1), Québec: Institut de la statistique du Québec.

Fontaine, C., M.T. Tu, H. Desrosiers, D. Provençal, N. Illick, and B. Perron. 2022, "Growing Up in Québec: the experience of a pilot study," *Longitudinal and Life Course Studies* (published online before printing, 2022), Consulted on November 8, 2022, DOI: 10.1332/175795921X16562384510850.

Statistics Canada. 2016, "Low Income Lines: What they are and how they are created," Ottawa: Statistics Canada.