

Inequality in infant mortality and total fertility between Francophones and Anglophones of Quebec

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Introduction



Anglophones generally have favourable health, but when the socioeconomic conditions are accounted for:

Deprived Anglophones are disadvantaged for:

- Small-for-gestational-age at birth (Auger et al. 2013)
- Stillbirth (Auger et al. 2015)

Objectives



- To assess inequality between Francophones and Anglophones for other indicators of maternal-infant health, including trends over time
- Focus on infant mortality and total fertility
- Focus on socioeconomicly disadvantaged Anglophones

Methods - Data



- Death registration certificates
 - 1989-2012
- Birth registration certificates
 - 1989-2012
- Census
 - Women aged 15-49 years
 - 1991, 1996, 2001, 2006

Methods - Variables



- Langue spoken at home
 - Reported on birth and death registration certificates
- Material deprivation
 - Based on postal code of residence and data from the Census
 - Proportion of individuals with no high school diploma, employment rate, and mean personal income

Methods - Analysis

- Infant mortality rate (per 1,000): $\frac{\text{Infant deaths}}{\text{Births}} * 1,000$
- Total fertility rate (Total number of children a woman has on average):
$$\sum_{i=15-19}^{45-49} \left(\frac{\text{Births}_i}{\text{Women}_i} * 5 \right) \quad i = \text{age group of the mother at birth}$$
- Rate ratio: $\frac{\text{Rate}_{\text{English poor}}}{\text{Rate}_{\text{French wealthy}}}$
- Rate difference: $\text{Rate}_{\text{English poor}} - \text{Rate}_{\text{French wealthy}}$

Results – Infant Mortality

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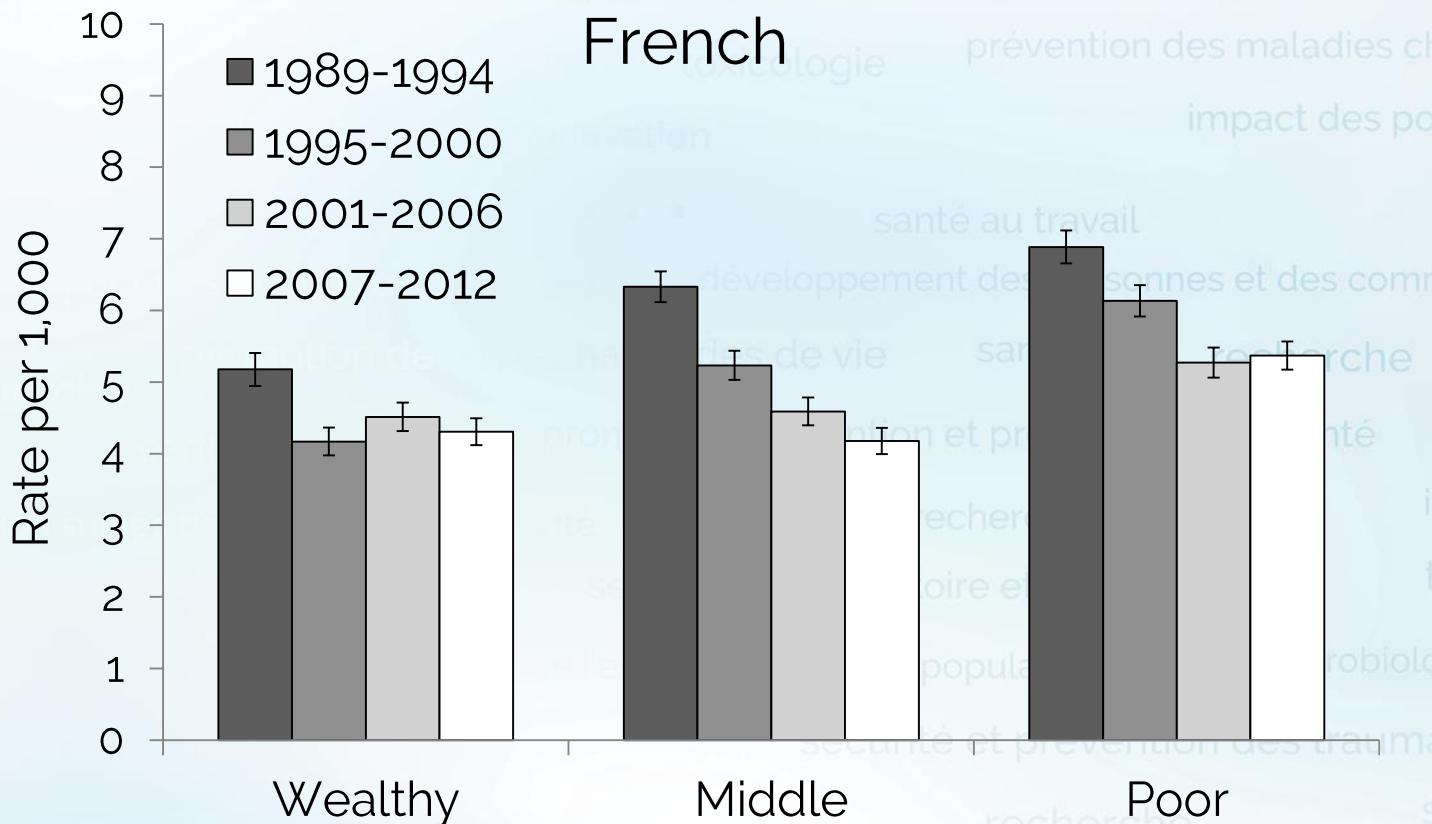
Results – Infant mortality

Table 1: Infant mortality rate according to language spoken at home

	Rate per 1,000				Rate Difference
	1989- 1994	1995- 2000	2001- 2006	2007- 2012	2007-2012 vs 1989-1994
French	6.2	5.2	4.8	4.6	-1.6
English	6.4	5.8	4.4	4.6	-1.8

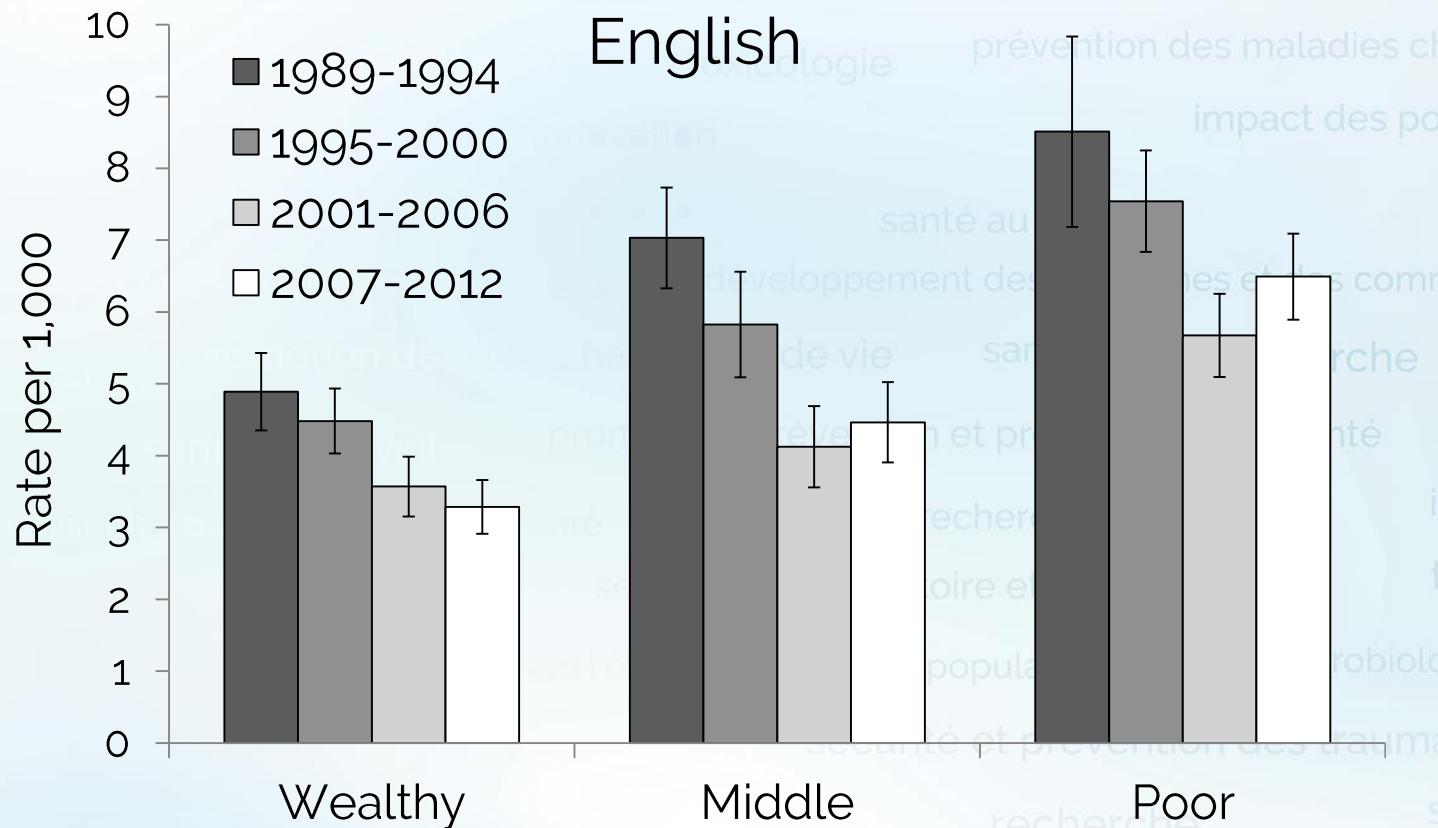
Results – Infant mortality

Figure 1: Infant mortality rate for Francophones according to material deprivation



Results – Infant mortality

Figure 2: Infant mortality rate for Anglophones according to material deprivation



Results – Infant mortality

Table 2: Relative inequality in infant mortality by language and material deprivation

	Rate Ratio (95% Confidence Interval)	
	1989-1994	2007-2012
French		
Wealthy	Reference	Reference
Poor	1.3 (1.2-1.5)	1.2 (1.1-1.4)
English		
Wealthy	0.9 (0.8-1.1)	0.8 (0.6-1.0)
Poor	1.6 (1.4-2.0)	1.5 (1.2-1.8)

Results – Infant mortality

Table 3: Change in language distribution over time

	Proportion of births 1989-1994	Proportion of births 2007-2012	Difference in proportion
French			
Wealthy	24.7	25.2	0.5
Poor	29.0	27.2	-1.8
English			
Wealthy	4.8	4.7	-0.1
Poor	2.5	3.6	1.1

Results Total Fertility

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Results – Fertility

Table 1: Francophones vs. Anglophones

	Total Fertility Rate (95% Confidence Interval)	Mean Maternal Age, years
French		
1989-1993	1.61 (1.60, 1.62)	27.5
1994-1998	1.56 (1.55, 1.57)	27.9
1999-2003	1.45 (1.44, 1.47)	28.5
2004-2008	1.61 (1.60, 1.62)	29.3
English		
1989-1993	1.43 (1.40, 1.46)	29.2
1994-1998	1.44 (1.43, 1.45)	29.5
1999-2003	1.55 (1.52, 1.58)	30.0
2004-2008	1.73 (1.70, 1.77)	30.8

Results – Fertility

Table 2: Reversal in total fertility over time

	Total Fertility Rate
1989-1993	
English	1.43 (1.40, 1.46)
French	1.61 (1.60, 1.62)
Difference (English – French)	-0.18 (-0.21, -0.15)
2004-2008	
English	1.73 (1.70, 1.77)
French	1.61 (1.60, 1.62)
Difference (English – French)	0.12 (0.09, 0.17)

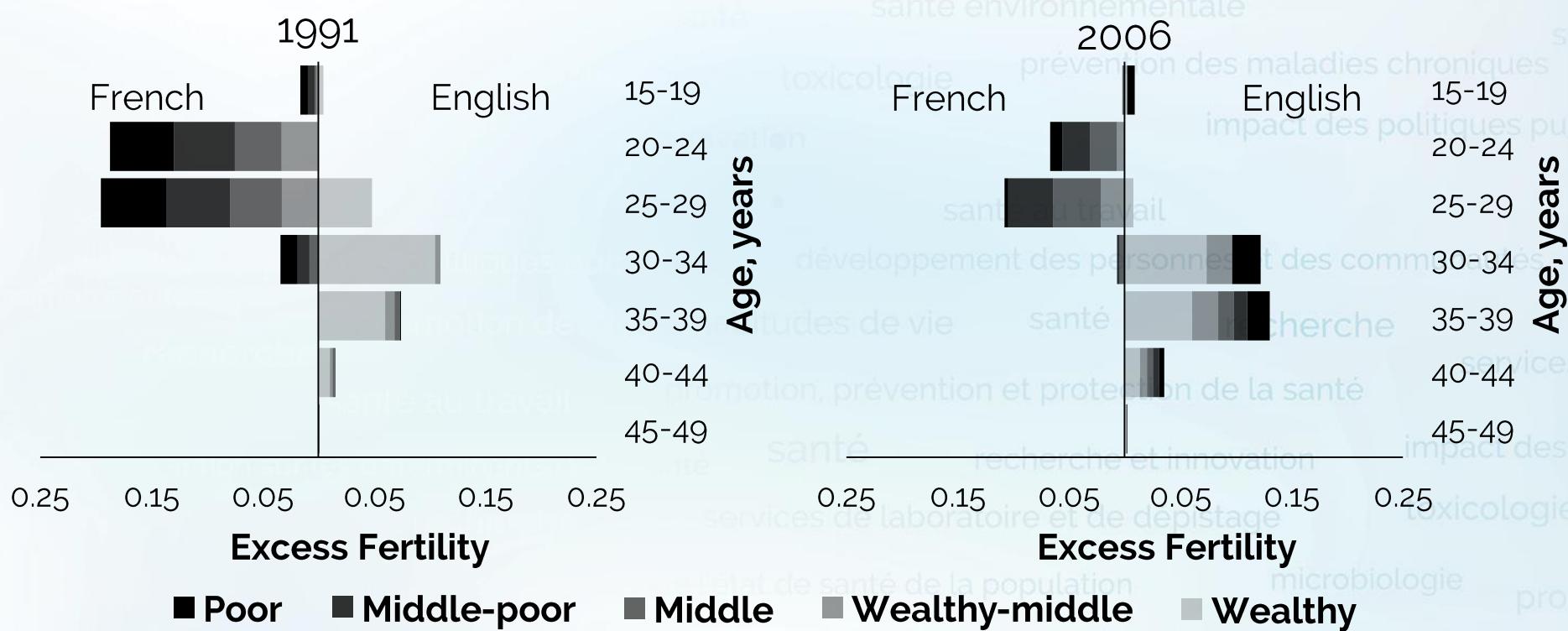
Results – Fertility

Table 3: Excess fertility according to material deprivation

Material deprivation	French		English	
	1989-1993	2004-2008	1989-1993	2004-2008
Poor	0.33	0.31	0.19	0.36
Middle-poor	0.35	0.33	0.22	0.28
Middle	0.34	0.34	0.25	0.28
Wealthy-middle	0.32	0.33	0.27	0.36
Wealthy	0.26	0.30	0.49	0.46
Total fertility rate	1.61	1.61	1.43	1.73

Results – Fertility

Figure 1: Decomposition of total fertility



Conclusion



Trends in inequality in infant mortality and total fertility suggest that socioeconomically disadvantaged Anglophones may be an emerging vulnerable group in Quebec.

- Poor Anglophones slowing the decrease in infant mortality
- Poor Anglophones have higher total fertility over time

Limits (1)



- Material deprivation is an area-based marker of socioeconomic status, and may mask individual variation
- Infant mortality rate and total fertility rate are ecologic indicators, limiting inference to individuals
- The value of total fertility as a marker of reproductive health depends on surrounding circumstances

Limits (2)



- Errors in registration of variables
- Language was drawn from different sources, which may affect the comparability of language groups
- Language is a cultural marker that may not adequately reflect ethnicity

Questions?

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