The Québec convergence and Canadian life satisfaction 1985–2008

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Abstract

Self-reported life satisfaction is increasingly measured in surveys around the world by national statistical agencies, the Gallup corporation, and other organisations. In Canada, life satisfaction questions have not, until recently, been asked in a consistent manner over time, but the accumulated set of data since 1985, along with recent surveys with repeated structure, now facilitates an analysis of regional changes over time. Those two and a half decades reveal a significant increase in life satisfaction in the province of Québec as compared with the rest of the country. The scale of this increase in well-being is comparable to the imputed effect of more than a trebling of mean household income. During and prior to this period, Québec has undergone distinct, policy-driven institutional and social changes, representing a natural experiment of sorts. However, there are numerous policy variables which have changed and which differ from other provinces. Certain of these candidate channels can be tested. In particular, data from the full span of Canadian General Social Surveys (GSS) show that changes in the mean and distribution of income cannot explain the shift in well-being. This leaves a significant explanatory task either for policy makers or for proponents of life satisfaction as a measure of welfare.

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1 Introduction

Recent high-level interest and initiatives[1] by national governments towards measuring subjective well-being (SWB) for gauging and guiding their policy indicate and heighten the need for tools to analyze repeated cross-sectional surveys of SWB.

Much of the economic literature on SWB has focused on the extent to which individual and aggregate SWB changes relatively weakly in association with trends in corresponding measures of income. Relatively absent in the debate on this matter are examples of SWB changing dramatically, yet if countries like the U.K. wish to judge or plan public expenditures, regulation, or macroeconomic policy on the basis of SWB, there must be strong enough SWB signals and powerful enough SWB accounting to make sense of changes.

Canada provides a remarkable test case for these requirements because Statistics Canada has been surveying subjective well-being, in various forms, for two decades and because, as described below, one region of Canada has undergone a remarkable increase in reported well-being over that time. In particular, francophones in Québec have undergone a large and significant convergent increase over the last 20 years as compared with the rest of the country. Moreover, these changes occurred in a province that has undergone rapidly changing institutions and norms, in addition to economic shifts. I shall show below that the scale of the shift is large in equivalent income terms and is sustained.

This paper presents the following findings: (1) Québec has undergone a rapid, steady, and significant increase in SWB as compared with the rest of Canada; (2) changes in mean income do not account for the increase in SWB; (3) changes in the distribution of income, combined with concavity of utility, do not account for the increase in SWB; (4) estimates accounting for the steady rise of SWB in Québec in terms of various standard predictors leave a large and significant unexplained component. Implications of these findings for the feasibility and accountability of efforts to supplement national measures of progress with SWB are discussed in the the final sections.

1.1 Background

One main aim of this paper, to compile various Canadian surveys addressing SWB and perform a time-series analysis of mean SWB, was previously attempted by Hill (2004). Hill writes that between 1945 and 2002, "about 160000 [Canadians] have answered questions about their general happiness." Since 2003, Statistics Canada has fielded a 10-point scale life satisfaction question in most cycles of its annual General Social Survey, as well as life satisfaction questions in several other surveys including the large Canadian Community Health Survey, totalling over a third of a million new respondents. In this work I focus on a subset of those surveys, the General Social Surveys, which offer some repeatability of format over time.

Hill (2004) considers only national averages for each survey and year from which data are available, and in looking for secular changes in mean life satisfaction over time, he devises a way to compare the absolute responses from one survey to another, despite the lack of any consistency in the format of the question across surveys. Hill makes a tentative decomposition of changes in national mean SWB into changes in national income,

[1] For example, see UK Office of National Statistics (2011) and Cameron (2010) for Prime Minister Cameron's initiative in the U.K, Stiglitz et al. (2009) for the report commissioned by President Sarkozy of France, OECD (2011) and http://www.oecd.org/progress for the O.E.C.D.'s "Better Life" initiative, and Bernanke (2010) for a speech on well-being by the U.S. Federal Reserve chair.

unemployment, and inflation (as undertaken across countries and within the U.S. and U.K. by Di Tella et al. (2003) and Blanchflower and Oswald (2004)). There are, however, two drawbacks to Hill's method. It relies on strong assumptions about how to equate responses from dissimilar questions, and it provides no regional comparisons.

In the present work I take an entirely different approach. I begin by aggregating reported SWB to provincial means rather than the national ones treated by Hill. The new approach enables a comparison of trends amongst provinces without the need to establish cardinal comparability of responses from one survey to another. This is achieved by normalising individual responses within each national survey and then aggregating to provincial means in order to create time series of mean SWB "z-scores" for each province.

Besides Hill's study, previous work on SWB in Canada has largely focused on one (or a few, but dissimilar) surveys and on models of individual-level satisfaction with life (e.g. Barrington-Leigh, 2008b; Barrington-Leigh and Helliwell, 2008; Burton and Phipps, 2011, 2008; Gee and Veevers, 1990; Helliwell, 2003; Helliwell and Huang, 2010; Helliwell and Putnam, 2004).

Figure 1 shows a comparison of data from the 2003 and 2008 cycles of GSS. The four panels show that provincial means of satisfaction with life[2] (SWL) are positively correlated with mean trust in neighbours and inversely correlated with income. This is true in both survey years. The correlation and geographic variation amongst subjective reports aggregated at the provincial level remains a striking suggestion that a significant part of the role of social and macroeconomic policy in shaping well-being outcomes in Canada remains to be understood (Barrington-Leigh and Helliwell, 2008).

A notable feature of Figure 1 is that Québec is an outlier in terms of its average stated trust. In terms of the relationship evident from these simple scatter plots, which bears out in more detailed regression models, Québec is happier than it "ought" to be, given its level of trust. This anomaly was investigated by Longpré (2009), who looked at individual and neighbourhood characteristics, including Catholicism, local belonging, French ancestry, and linguistic homogeneity, but found no simple account of the Québec difference.

In Section 3, I identify a new Québec "mystery," maybe less to do with the low current trust reports of Québécois than with the evolution of SWL over the last 25 years. I find that at the time of the first GSS cycle in 1985 SWL reports were much lower in Québec than any other province, but that they have fully converged and advanced to a relatively high level in Canada over the period of the first 20 GSS cycles. Indeed, Figure 1 shows that SWL standing in Québec increased significantly even in the five years between Cycles 17 and 22 of the GSS.

Fortin (2010) reviews the economic performance of Québec since 1960 by comparing it to its similarly-sized neighbour, Ontario. Fortin shows that the economic role of the state has grown dramatically in Québec since 1960, not just as compared with an earlier Québec in which the Catholic Church played a larger role, but even as compared with contemporary Ontario. During the period studied in this work, Québec has imposed higher taxes, paid more in interest on Provincial and local debt, and supported more public enterprise than Ontario. Employment rates for both sexes have also been climbing faster than in Ontario. Nevertheless, I will argue that material income changes in Québec are not nearly large enough to account for the extraordinary trajectory of SWL there.

Cultural changes spawned during the so-called Quiet Revolution (La Révolution tran-

[2]Two similar acronyms "SWB" and "SWL" are used throughout. Subjective well-being (SWB) is a more general term, encompassing reports such as momentary happiness, as discussed at the end of Section 2 and in Section 3.2.

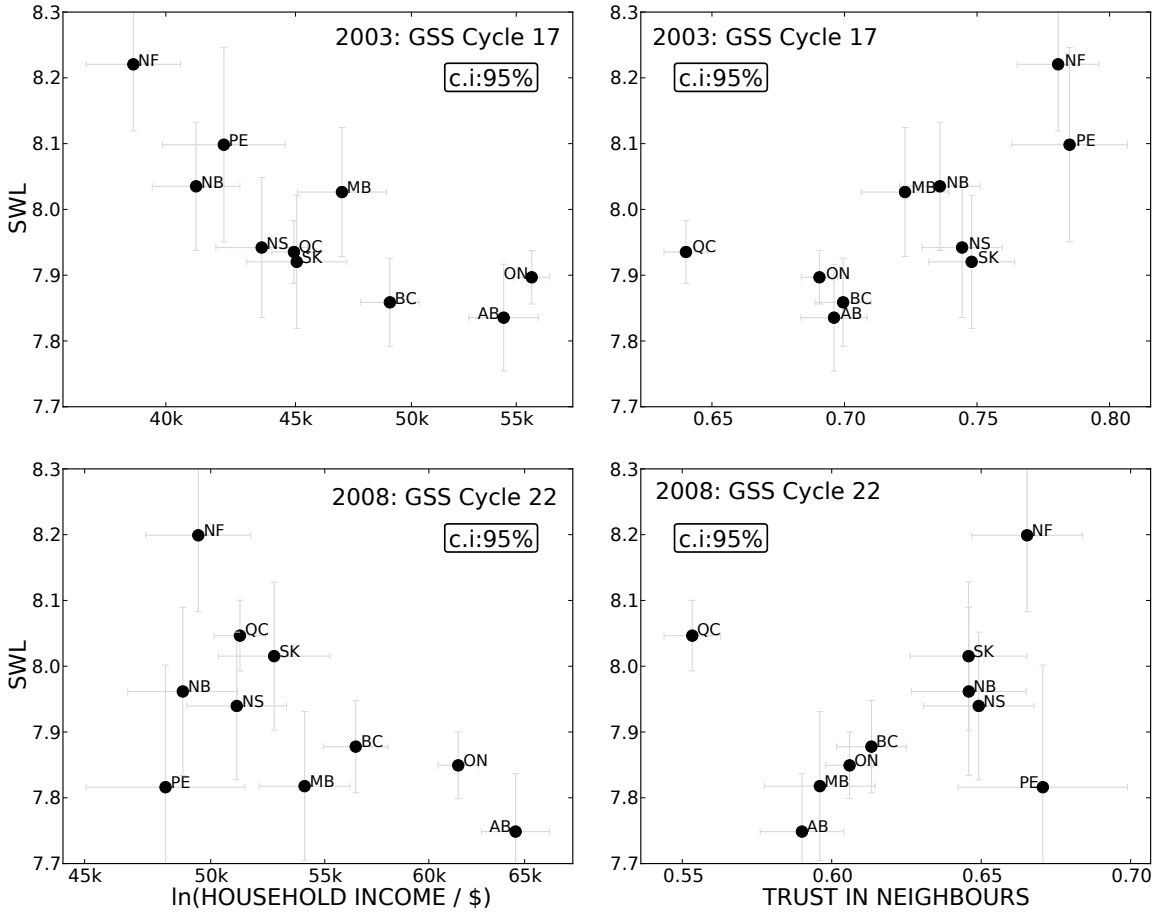


Figure 1: Life satisfaction, income, and trust in neighbours. Provincial means of trust and SWL are from the GSS in 2003 (top panels) and 2008 (lower panels). Income means are from the 2001 and 2006 censuses. Grey lines show 95% confidence intervals.

quille) in Québec are also dramatic.[3] As a highly Catholic province, Québec has had historically high fertility rates, yet by the mid 1990s exhibited one of the lowest fertility rates ever recorded for a human society (Caldwell and Fournier, 1987). Concomitantly, Québec experienced a downturn in religiosity, an increase in divorce, and, after the early 1970s, a rise in suicide rates. According to sociological descriptions, these cultural changes, and the resulting increased incidence of suicide, reflect a shift from collectivist, traditional values to individualistic ones (Krull and Trovato, 1994). In addition, the history of Québec since the first GSS has been one of profound and policy-mediated transformation and struggle — along linguistic lines and related to cultural self-determination and social identity. Are any of these changes the key behind a shift in life satisfaction in Québec? If so, are they measurable and can the connection be shown?

Below, Section 2 describes the data. In Section 3, I examine the pattern of provincial SWL means and regression "residuals" for Québec over time. Section 4 considers income-related and other trends across Canada as possible explanations for the Québec convergence in SWL. Section 5 provides further discussion, including a look at the data on suicide, and Section 6 offers some speculative conclusions.[4]

2 Data

In 2010 Statistics Canada produced a version of the first twenty cycles of its General Social Survey (GSS) with harmonised variable coding in order to simplify time series comparisons. The two primary objectives of the General Social Survey are:

> to gather data on social trends in order to monitor changes in the living conditions and well being of Canadians over time; and to provide information on specific social policy issues of current or emerging interest.[5]

The survey is implemented with a new cross-sectional sample each year, but the theme and to some degree the format of surveys are repeated with a five-year period. Throughout the years, a number of the questionnaires have solicited an assessment of the respondent's overall satisfaction with life, though with almost no consistency in wording until recent years. Table 1 shows the various formats used for SWL questions and responses in both official language versions of each GSS cycle.[6] By my assessment, there is no significant difference in the evolution of the question prompts or response options between the French and English versions of the surveys.[7]

[3] Table A.1 lists the dates of some major cultural–political events in Québec's recent history.

[4] An extensive appendix, available from the author, provides additional details in table form, robustness checks, and supporting information. In fact, you are reading the detailed version of the paper, in which links to extra details in the appendix are built in (and appear in this colour).

[5] As stated on the Statistics Canada website, http://www.statcan.gc.ca.

[6] Throughout the GSS cycles, nearly all respondents provided answers to the SWL and happiness questions when asked. However, a considerable number failed to report household incomes (on the order of a third). Mean reported SWL of this subsample is not statistically different from the overall mean, and analysis of the Québec "effect" carried out on them reveals the same pattern as for those who did report income (see column (2) of Table A.4).

[7] Pierre Fortin has pointed out (personal communication) that in cycles 2, 4, 12, 17, 19, and 20 "your life as a whole" is translated as "la vie en général," which is literally "life in general", rather than "votre vie dans l'ensemble." However, "votre vie" rather than "la vie" was used in cycles 6, 21, and 22, and there is no discernable bias associated with these changes, e.g. comparing cycles 4 and 11 with cycle 6, or cycle 20 with cycles 21 and 22.

Table 1: Detailed wording of satisfaction with life questions, GSS1 to GSS22.

GSS Cycle and variable name	Question used (English and French)	Values
GSS1 (FEELLIFE)	Using the same scale, how do you feel about life as a whole?	1 Very satisfied 2 Somewhat satisfied 3 Somewhat dissatisfied 4 Very dissatisfied 5 No opinion
	Quel sentiment éprouvez-vous à l'égard de la vie en général?	1 Très satisfait 2 Plutôt satisfait 3 Plutôt insatisfait 4 Très insatisfait 5 Sans opinion
GSS2 (LIFE_E3)	How do you feel about your life as a whole right now?	1 Very satisfied 2 Somewhat satisfied 3 Somewhat dissatisfied 4 Very dissatisfied 5 No opinion
	Quel sentiment éprouvez-vous à l'égard de la vie en général en ce moment?	1 Très satisfait 2 Plutôt satisfait 3 Plutôt insatisfait 4 Très insatisfait 5 Sans opinion
GSS4 (DV_N4)	How do you feel about your life as a whole right now? Are you satisfied or dissatisfied?	1 Strongly dissatisfied 2 Somewhat dissatisfied 3 Somewhat satisfied 4 Strongly satisfied 5 Satisfied with statement/not stated as to the degree 7 No opinion
	Quel sentiment éprouvez-vous à l'égard de la vie en général en ce moment? Êtes-vous satisfait ou insatisfait?	1 Très insatisfait 2 Plutôt insatisfait 3 Plutôt satisfait 4 Très satisfait 5 Satisfait avec commentaire/non déclaré quand au degré 7 Sans opinion
GSS6 (DVN2C)	Are you satisfied or dissatisfied with your life in general? Is that somewhat or very?	Satisfied / Dissatisfied / No opinion. Somewhat / very.
	Êtes-vous satisfait(e) ou insatisfait(e) de votre vie en général? Est-ce que c'est plutôt ou très?	Satisfait(e) / Insatisfait(e) / Sans opinion. Plutôt / très.
GSS12 (D7)	Using the same scale, how do you feel about your life as a whole right now?	1 Very satisfied 2 Somewhat satisfied 3 Somewhat dissatisfied 4 Very dissatisfied 5 No opinion
	En utilisant la même échelle, quel sentiment éprouvez-vous à l'égard de la vie en général en ce moment?	1 Très satisfait 2 Plutôt satisfait 3 Plutôt insatisfait 4 Très insatisfait 5 Sans opinion
GSS17, GSS19, GSS20 (LS_Q210)	Using the same scale, how do you feel about your life as a whole right now?	01 Very dissatisfied 02 03 04 05 06 07 08 09 10 Very satisfied 11 No opinion 98 Not stated 99 Don't know
	En utilisant la même échelle, comment vous sentez-vous à l'égard de la vie en général en ce moment?	01 Très insatisfait 02 03 04 05 06 07 08 09 10 Très satisfait 11 Sans opinion 98 Non déclaré 99 Ne sait pas
GSS21, GSS22 (SRH_Q120)	Using a scale of 1 to 10 where 1 means "Very dissatisfied" and 10 means "Very satisfied", how do you/does he/does she feel about your/his/her life as a whole right now?	1: Very dissatisfied; 2; 3; . . . ; 10: Very satisfied

Continued on next page

GSS Cycle and variable name	Question used (English and French)	Values
	À l'aide d'une échelle de 1 à 10, où 1 signifie 'Très insatisfait(e)' et 10 signifie 'Très satisfait(e)', quel sentiment éprouvez-vous/éprouve-t-il/éprouve-t- elle en général à l'égard de votre/sa vie?	1: Très insatisfait(e); 2; 3; . . . ; 10: Très satisfait(e)

On the other hand, there is great variation from one year to the next. Not only are there slightly different wordings over time, but the response options vary from a two-question binary choice sequence (GSS6) to a four-point scale (GSS2, GSS4, GSS11-12) to a ten-point scale (GSS17, GSS19-22).[8] Even within similar response option scales, there are qualitative differences in the distribution of responses and very significant differences in the survey means of responses. For instance, the ten and 11-point scale distributions can be either unimodal (GSS17, GSS19-20) or bimodal (GSS21-22), and the survey means for Canadians of age 15 and older vary by as much as $\sim$0.24, or $\sim$15% of the standard deviation, amongst surveys with the ten-point scale.[9] These inconsistencies across surveys likely reflect framing and priming effects as well as possibly real changes in circumstances and expectations from year to year. They thus also represent cautionary evidence against comparing cardinal means of SWB from year to year in repeated cross-sections, and support the approach taken below which allows arbitrary differences amongst survey cycles.

Given the lack of systematic differences between the French and English wordings, I will treat responses in the two languages as from a single pool, while tending to avoid comparing one survey's cardinal responses to another survey's. Instead, in order to compare SWL from dissimilar surveys over time, I use the national mean and standard deviation in each year as an evolving reference with which to normalize all responses.

There are other SWB questions which have been asked on multiple GSS cycles. Although SWL is the measure of primary interest as an overall indicator of the subjective quality of life, other SWB questions address mood (happiness) and another form of life evaluation phrased as living a "happy life." These data are also featured below.

In most cycles of the GSS, the sample population is residents of the ten provinces aged 15 and over not living in an institution. However, for cycles 16 (2002) and 21 (2007), the population is restricted to those aged 45 and older. In addition, some cycles included supplements, such as an elderly (age$\geq$65) or provincial oversample. However, these oversamples are taken into account in computing population weights and therefore should not bias point estimates to follow.

[8] Other surveys covering Canada use still other systems. While the SSHRC-funded Equality, Security, and Community survey used a 10-point SWL scale, a five-point scale was used for Statistics Canada's Ethnic Diversity Survey (2002) and Canadian Community Health Survey (annual) and an 11-point scale is used in Gallup's World Poll. This 11-point, zero-to-ten scale will likely become standard in future Statistics Canada surveys sampling SWL. A comparison of response distributions for all these surveys are available from the author.

[9] Also common across these surveys are focal point enhancements, typically at the bottom, middle, and top values of the scale, in the ten and 11-point scales. The non-ambiguity of the centre-point in an 11-point zero-to-ten scale has been one argument for preferring such a scale in future surveys (Helliwell and Barrington-Leigh, 2010).

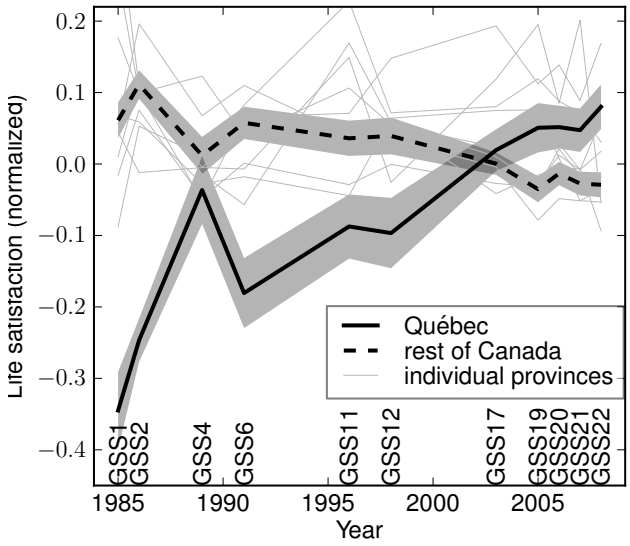


Figure 2: Life satisfaction by year (in/outside Québec). Responses have been normalized for each survey for better comparability across surveys. The ordinate shows z-scores in the national distribution for each year.

3 The rise of subjective well-being in Québec

This section relates the basic evidence of rising well-being in Québec.

3.1 Life satisfaction

Figure 2 presents the provincial time series derived from GSS cycles in which SWL was assessed. Each thin line shows the difference between one of nine province's annual mean SWL and the national mean for each year. The vertical axis is scaled to units of standard deviation of the national distribution of SWB responses for each year. The time series for the tenth province, Québec, is shown by a heavy solid line, along with a 95% confidence band.[10] A stand-out feature of this graph is that, with the exception of data from GSS Cycle 4 in 1989, respondents in Québec report initially much lower SWL than any other province, but this difference decreases nearly monotonically and eventually reverses somewhat.

Motivated by this finding, Figure 2 also shows with a dashed line the mean for all respondents outside Québec. The 95% confidence interval is again depicted by a shaded envelope. This mean is, naturally, dominated by respondents from the other large provinces: Ontario, British Columbia, and Alberta. The size and significance of the trend and the difference reversal are clearer when comparing the two bold curves. The initial difference between Québec and the rest of Canada is striking. In 1985, respondents from Québec reported being "Somewhat satisfied" or "Plutôt satisfait(e)" 83% more often than they reported being "Very satisfied" or "Très satisfait(e)". By contrast in the rest of Canada, the pattern was reversed and 27% more respondents chose "Very satisfied" or "Très satisfait(e)"

[10]The standard errors of the mean shown here are calculated analytically assuming a continuous distribution. However, bootstrap estimates of the errors for discrete distributions of responses produced nearly identical values.

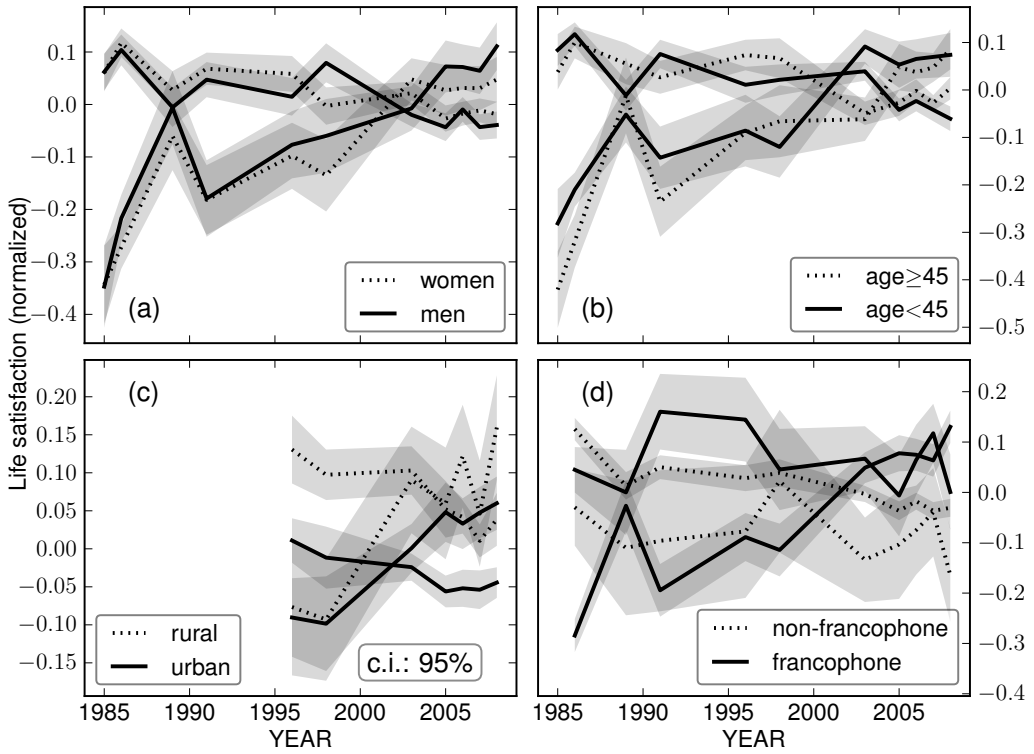


Figure 3: Life satisfaction by year and demographic subgroup. Evolution of life satisfaction with the sample split along four demographic variables. In each panel, the two bottom lines in the earliest years show Québec means, while the top two show means for the rest of Canada. Responses have been normalized for each survey for better comparability across surveys. The ordinate shows z-scores in the national distribution for each year.

as compared with "Somewhat satisfied" or "Plutôt satisfait(e)."

Naturally, this large difference in SWL may be due primarily to some specific subset of the Québec population, which would imply an even higher specific effect on those affected. Figure 3 shows the results of splitting the sample along various demographic lines to test hypotheses about who and what accounts for the large trend in SWL differences.

Krull and Trovato (1994, p. 1121) argued that since the 1950s, "modernization in Quebec has been more detrimental to men than to women." Figure 3(a) shows SWL trajectories separately for men and women in order to address the possibility that men (or young men in particular) account for the trend. It is clear from these, and maybe surprising given the shifting gender roles accompanying the Quiet Revolution, that the rise in SWL in Québec is not gender dependent.

It might also seem likely that, for a variety of possible causes, the trend would differ for generations born before and after the Quiet Revolution or for Québécois of different ages. Figure 3(b) splits the sample by age to show that a rising trend exists in the relative SWL of Québécois regardless of their being more or less than 45 years old at the time of the interview. Although age and cohort effects remain entangled in both cases, a similar

splitting based on cohort (not shown) reveals a uniform effect for respondents born before or after 1965.[11]

A third subdivision of the sample is shown in Figure 3(c). Though a record of whether the respondent's dwelling is urban or rural is not available prior to Cycle 11 of the GSS, the indication is that in recent years there has not been a large discrepancy in SWL between rural and urban dwellers in Québec— unlike for the rest of Canada — and that the rising trend is evident, independently, in both rural and urban groups.

On the other hand, Figure 3(d) shows that the francophone population fully accounts for the observed province-level time trend.[12] The minority anglophone and allophone populations, combined, appear to have no significant trend for normalized SWL. This observation remains tentative, given that the small samples of non-francophone Québec respondents and of francophone non-Québec respondents result in poorly-constrained SWL means for these subsets.[13] Nevertheless, one can confidently state from these plots that this non-francophone subpopulation does not have a large effect on the Québec mean SWL trend.

3.2 Other measures of SWB

Happy life Five cycles of the GSS have included a question assessing happiness in the respondent's life, in general. This provides an intermediate measure of sorts between a cognitive and all-encompassing evaluation of life (SWL) and the shorter timescale and narrower scope of momentary affect questions.[14]

Figure 4 shows that this alternate measure presents a similar pattern after 1990 to that of the SWL data in Figures 2–3. In this case, the data are shown without normalisation, as the absolute response values portray a coherent pattern.[15] For the "happy life" question, the disparity between Québec and the rest of Canada, or indeed any other province, is even more stark (Figure 4a). Moreover, francophones and non-francophones alike in Québec show the rising trend in SWB (Figure 4b). Also, there is a slightly smaller Québec discrepancy for the younger (<45 years old) population than the older (not shown).

[11] More details, available from the author, show that SWL standing has increased for all ages in Québec. Changing age and cohort profiles are discussed in more detail in Section A.2 of the Appendix. See Figures A.9 and A.10 and Figures **??** and **??**.

[12] Data from GSS cycle 1 are missing from this plot because neither the interview language nor the native language of the respondent was recorded in that survey. The measure used for the remaining cycles is an indicator of whether French was a childhood first language for the respondent.

[13] The proportion of Québec respondents who are francophone varies from 85% in Cycle 2 (1986) to 80% in Cycle 22 (2008).

[14] Two versions of this question have been used. In 1991, a question with 4-point response scale was worded *"Would you describe yourself as usually..."* or *"Vous décririez-vous comme une personne..."* with responses *"Happy and interested in life?"* / *"Somewhat happy?"* / *"Somewhat unhappy?"* / *"Very unhappy"* in English and *"Heureuse et intéressée par la vie? / Quelque peu heureuse?"* / *"Quelque peu malheureuse?"* / *"Très malheureuse?"* in French. In 1996, a 5-point scale question was introduced but has been consistent over all years since. Its wording is *"Would you describe yourself as being usually..."* or *"Vous décririez-vous comme étant habituellement..."* with responses *"Happy and interested in life?"* / *"Somewhat happy?"* / *"Somewhat unhappy?"* / *"Unhappy with little interest in life?"* / *"So unhappy that life is not worthwhile?"* in English and *"heureux(se) et intéressé(e) à vivre?"* / *"plutôt heureux(se)?"* / *"plutôt malheureux(se)?"* / *"malheureux(se) et peu intéressé(e) à vivre?"* / *"si malheureux(se) que la vie ne vaut pas la peine d'être vécue?"* in French. For comparability, the responses are indexed and scaled to a 0–1 range representing unhappy to happy.

[15] In a version of Figure 4(a) that showed annually-normalized values, both bold lines would be monotonic.

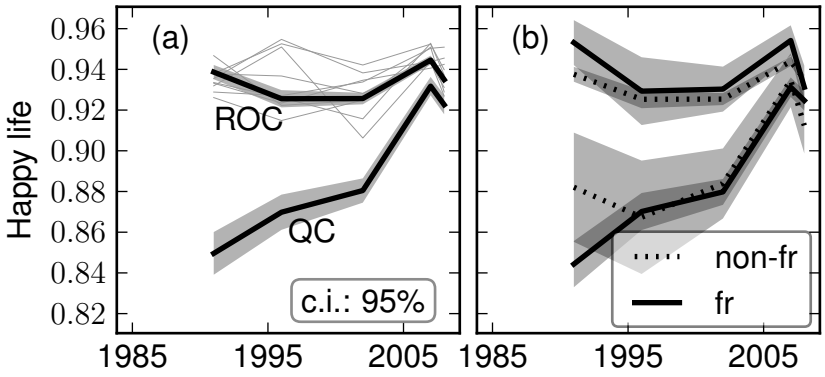


Figure 4: Mean response to the "happy life" question by year (in/outside Québec). **(a)** Solid lines show overall means, from Cycles 11, 16, 21, and 22 of the GSS, for Québec (QC) and the rest of Canada (ROC). The thin lines show individual provincial trends. **(b)** The same sample split by first language into francophone (fr) and non-francophone. Responses have *not* been normalized; the plots show weighted means of raw response values after only rescaling the 4 and 5 point responses to a consistent 0–1 range. Shaded regions show 95% confidence intervals.

Happiness Measures of more momentary happiness, available in 12 cycles, reveal similar patterns to the "happy life" question, except that in the earliest years Québec respondents reported similar values to those from outside Québec.

To summarise the various measures of SWB, it is clear from consulting the question wordings (Table 1) that the trend of SWL in Québec continues more or less coherently across several changes in the wording of survey questions, as well as several changes in the response scale offered. Moreover, it is reflected in other, more affective, SWB measures, meaning that it cannot be an artifact of a single mismatched translation.

3.3 Pooled estimates of individual SWL

Differences amongst regions and changes over time can be quantified in a unified manner by modeling individual SWL for a pooled sample of respondents from all available cycles of the GSS. Reduced form equations for SWB are sometimes used as a kind of direct estimate of a utility function. Stevenson and Wolfers (2008) use coefficients on geographic indicator (dummy) variables in simple estimates of SWB less boldly, simply as a means to quantify the differences to be explained. To begin in the latter vein, I begin by estimating a simplified version of the following equation,

$$\mathrm{Z}^{\mathrm{SWL}}_{\mathrm{i,y}} = \alpha_y + \delta_y q_i + \theta \log(Y_i) + \beta X_i + \varepsilon_i \tag{1}$$

in which $Z^{\mathrm{SWL}}_{\mathrm{i,y}}$ is the normalised SWL report for individual i who responded in cycle (year) y from Québec (q_i=1) or outside Québec (q_i=0). The α_y are fixed offsets for each GSS cycle, and the set of coefficients δ_y capture the effect of indicators q_i for whether individual i was a resident of Québec in year y. When household income Y_i and other individual attributes and circumstances X_i are all excluded, the estimated values for δ_y reproduce the difference in means between the two bold curves in Figure 2.

By bringing additional individual characteristics X and Y into the model (1), we can check whether some simple demographic and income changes account for the shift in subjective well-being. However, increasingly rich sets of controls are available for increasingly few years of the GSS, due to the changing nature of the surveys. I begin such a progression by incorporating an income measure.[16] The baseline model includes the respondents' self-reported income, along with an indicator for being in the top income category,[17] a full set of indicators for household size, and controls for gender, a quartic in age,[18] and three measures of marital status. Nationwide price increases are accounted for by the α_y yearly indicators.[19]

Incorporating income into an estimate of individual SWL makes it possible to calculate the magnitude of other coefficients in terms of income changes associated with equivalent levels of life satisfaction. In equation (1) such *compensating differentials* of income for the difference between living inside and outside Québec are calculated as the ratio of coefficients δ/θ. The estimated evolution of this ratio for the baseline version of model (1) is depicted by the "income and demographics" solid line in Figure 5. Due to the near constancy of the estimates of θ over time, this measure of the magnitude of convergence of SWL in Québec since 1985 portrays a picture closely resembling that of the estimated evolution of the raw coefficient, δ (not shown).

Using the values shown, a conservative estimate of the compensating differential of log income for living in Québec in 1985 is -1.28, the 95% confidence interval upper bound, i.e. nearly two standard errors smaller than the point estimate (-1.55) of the coefficient ratio for the Québec indicator in this specification.

This implies that the differential income to compensate for living in Québec in 1985 would be to receive an income boost of $\exp(1.28) - 1 \approx 2.58$ times the (geometric) mean household income.[20] Moreover, over the period ending in 2008, this differential reverses to reach a significantly positive benefit (or unexplained effect) of Québec residence, evaluated

[16] The model represented in column (2) of Table A.3.

[17] In 1985 (GSS1), continuous values were accepted for household income. Thereafter, the top category for household income varies from ≥$60k in 1986 to ≥$100k since 1998. The fraction of respondents who chose the top category was 7% in 1986 but has grown in recent years to ∼22% as a result of the top bracket not increasing with nominal income growth. Including a single dummy variable to indicate that the top category was chosen, or including a separate such dummy for each year, does not significantly change the tightly constrained estimated coefficient on log(income). Results shown here include a single dummy for the top category.

[18] The data exhibit the following average life course pattern of SWL: (Figures A.9 and A.10) from a high point in youth, unconditional means of SWL decrease gradually until middle age and then increase more rapidly towards retirement age, where they level off and decline again in old age. The literature commonly describes a ∪-shaped quadratic dependence of SWL on age when controlling for other individual characteristics (Blanchflower and Oswald, 2008, and references therein). While a quadratic specification is canonical, a quartic may be more appropriate in some societies with high life expectancy. Including a quadratic for age, rather than a quartic, does not change any coefficients in Equation 1 except for the one on "widowed." Because the means exhibiting the life course pattern described above are unconditional (except on age), the cautionary note on interpreting age coefficients in cross-sections given by Frijters and Beatton (2008) does not apply; indeed these data refute their findings.

Reported affect, by contrast, remains relatively constant throughout the life course, though there is a hint (in Figures A.27 and A.28) of a slight decrease with age inside Québec. Subjective reports of health, not surprisingly, follow a much simpler steady decline with age.

[19] The estimates for the residual SWL effect (in annual z-score units) of living in Québec, δ_y, are shown in **??** as the "income and demographics" model.

[20] Based on the 1986 Census, in which 29,276 Québec households were in the "long-form" sample, there were an estimated 2.35 million households altogether in Québec, averaging 2.716±.009 members each and with a mean "total household income" of $30,615±144 in contemporary currency.

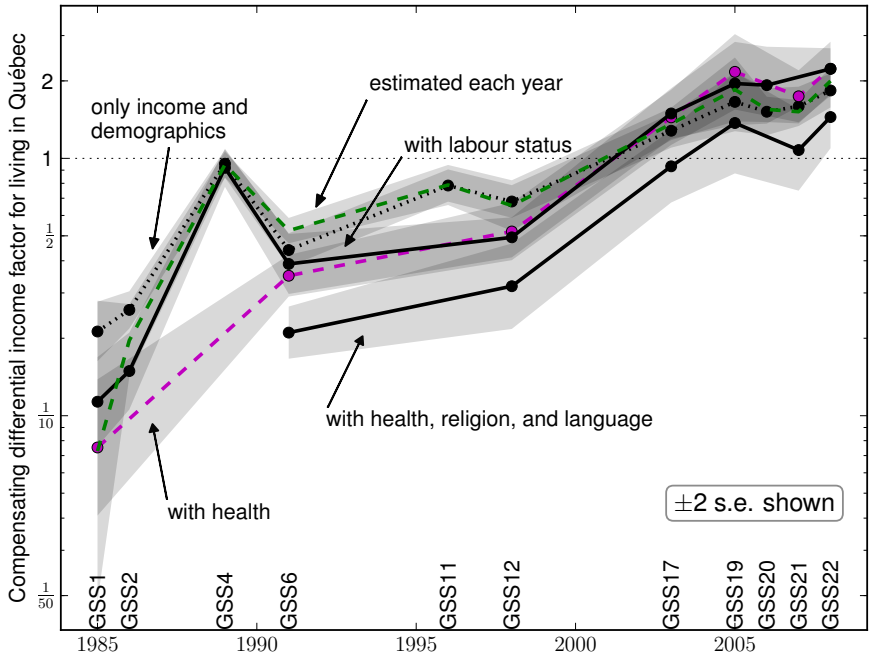


Figure 5: Unexplained Québec component of SWB: compensating differential . Detailed estimates are shown in Table A.3.

as an income increase of a factor of at least 58% over and above actual income.[21] While these values will sound extraordinarily large to readers not familiar with the literature on the role of non-material-consumption factors in accounting for subjective well-being, it is important to emphasize the magnitude of well-being differences that is to be explained in this paper.

Incorporating other individual controls that are often used in SWL accounting and that are available in multiple cycles of the GSS, Figure 5 shows estimated trends for models including — in addition to the baseline model controls — self-reported health, religiosity, first language, and labour status.[22] These estimates show effects at least as strong as those of the parsimonious specification.[23]

Lastly, an alternative formulation based on absolute response values of SWL — i.e., without normalizing responses each year — is obtained by carrying out estimates of (1) separately for each cycle of the GSS and then comparing compensating differential estimates over time. Estimates using this approach agree closely with the pooled estimates; in other words the coefficient on log(income) is fairly consistent over cycles of the GSS. Such estimates are shown as the "each year" line in Figure 5.

4 Does income growth explain the rise of Québec's SWB?

If the estimates above are taken seriously, the magnitude and significance of the geographic and temporal differences in SWB that form the "Québec convergence" present a mystery of the first order.

Consider a consumption-based utility depending on individual private consumption, status or rank in the distribution of others' consumption, and tax-funded public goods,[24]

$$u_i = u\left(c_i, F(c_i), g\right). \tag{3}$$

Can such a description be consistent with the findings, above, on SWB and self-reported income when the relevant consumption in (3) relates primarily to market or market-mediated circumstances?

Changes in the individual nominal incomes reported in the GSS might not capture the bulk of the benefits of general income growth in Québec due either to price changes

[21] Again, this is using a 95% confidence lower bound; $0.58 \approx \exp(0.61 - 2\sigma) - 1$.

[22] As detailed in Table A.3, labour status measures include paid work hours and indicators for employed, unemployed, domestic, student, illness (unable to work), and retired statuses.

One other check on the robustness of the convergence is needed in light of the fact that many respondents in the GSS did not report incomes. Table A.4 includes an estimate for all individuals who did not report a household income, and it shows a similar rise for Québec.

[23] A similar plot of the estimated raw coefficients δ shows even more consistency across all the models except for the one including religion and language. Some of the variation across models shown in Figure 5, then, is due to a small reduction in the coefficient θ when health or labour status is controlled for.

[24] More generally, one might consider households to have preferences over the entire distribution of incomes:

$$u_i = u\left(c_i, f(c), g\right). \tag{2}$$

Two prominent cases in the literature of a simplified dependence on others' consumption are a dependence on the mean consumption $\bar{c}$ as a reference level (e.g., Barrington-Leigh, 2008a; Eaton and Eswaran, 2009) or a dependence on the individual's position in the income distribution $F(c_i)$ (e.g., Hopkins and Kornienko, 2004), rather than the more general functional in Equation 2. Below I address these simpler relative income cases, which in reduced form include the possibility of status-based allocation of non-market goods (Frank, 1985), but I cannot reject or easily test for the more general formulation, which encompasses possibilities like inequality aversion.

or to an increased role for tax-funded public goods. Nevertheless, it is clear from the magnitude of the compensating differential estimates that any such explanation will need to involve large magnitudes as well. The present section addresses the possibilities that (a) prices have stayed lower in Québec, (b) the *quantity* of government spending has risen more in Québec, or that (c) concavity of $u(\cdot)$ in c_i, combined with a changing distribution in Québec, is sufficient to account for the changes in SWL.

4.1 Household income

According to the simple model in Section 3, increasing private income in Québec cannot account for the rise in SWL; however it is worth checking whether incomes have even increased there, as compared with the rest of Canada. Figure 6 shows the mean real adjusted after-tax income for each province and for a population-weighted average of provinces outside Québec, for the period before and during the first 22 cycles of the GSS.[25] These data show that during the period of increase of SWL in Québec, incomes were not climbing faster than, nor even keeping up with, the rest of Canada.[26]

These incomes reflect national-level inflation corrections but are not adjusted for the possibility of a changing relative purchasing power between Québec and other provinces. It is difficult to compare overall price levels across provinces for a number of reasons, summarised, for instance, by Statistics Canada (2008). Typically, Statistics Canada generates consumer price comparisons across major cities each year but at the provincial level only provides price comnparisons *within* a region over time.

Figure A.39 shows the evolution of prices for all-inclusive consumption baskets in each province, starting in 1985. Since 1985, price levels in Québec have risen as fast as in the rest of Canada until the mid-1990s, after which inflation has been slightly higher in Ontario and the western provinces. In terms of timing, this is not consistent with an explanation based on purchasing power for a rise of SWL beginning after 1985.[27]

4.2 Income distribution

Rousseau (2009) examined the lack of growth in mean happiness in the U.S.A. over several decades of mean income growth. He found that the constancy of well-being could be simply explained through the concavity of the individual happiness function $u(c_i)$ combined with an increase in inequality that has accompanied the growth in mean income. That is, very classical individual utility functions were sufficient to explain the mean statistics when

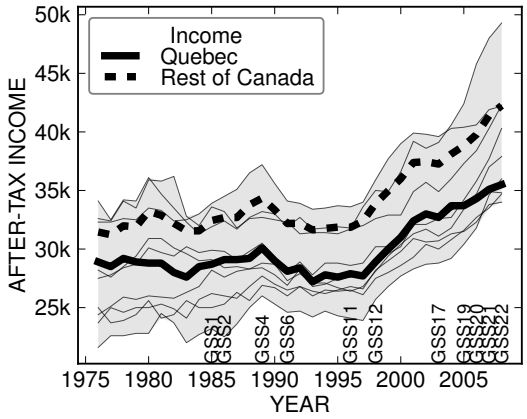
[25] These values are derived by Statistics Canada from its Survey of Consumer Finances and its Survey of Labour and Income Dynamics.

[26] The pattern shown in Figure 6, which is based on labour survey incomes, also holds if self-reported incomes from the SWL respondents in the GSS are used for calculating the provincial means.

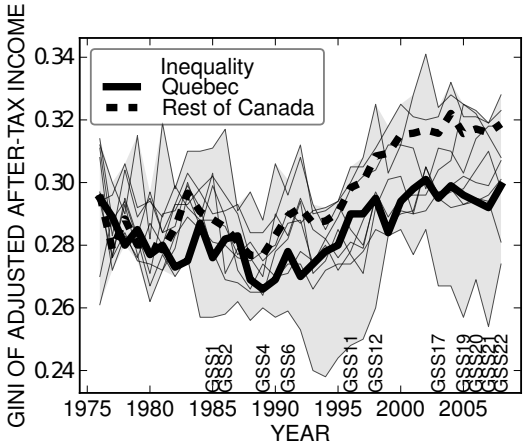
[27] In order to evaluate the magnitude of the price effect on SWL, Equation 1 can be modified to include the within-province inflation adjustments π_p to household income, along with a set of provincial indicators in order to account for any initial cost of living differences across provinces p in 1985:

$$\mathrm{Z}^{\mathrm{SWL}}_{\mathrm{i,y,p}} = \gamma_p + \alpha_y + \delta_y q_i + \theta \log\left(\frac{Y_i}{\pi_p}\right) + \beta X_i + \varepsilon_i \tag{4}$$

Under this specification, the size and significance of the estimated trend in Québec effects δ_y appear nearly unchanged, reflecting the small scale of the price correction as compared with the values of compensating differentials estimated earlier. These raw estimates of δ_y are shown as the top line, labeled "with income deflators," in Figure 7 on page 16. Due to the normalisation of inflation indices, there is an arbitrary vertical offset in this line. These estimates are tabulated in Table A.4.



(a) Mean after-tax real income in 2008 constant dollars, adjusted for household size. Source: CANSIM Table 202-0706, derived from Statistics Canada's Survey of Consumer Finances and Survey of Labour and Income Dynamics.



(b) Gini coefficient of adjusted after-tax income. Source: CANSIM Table 202-0709, derived from Statistics Canada's Survey of Consumer Finances and Survey of Labour and Income Dynamics.

Figure 6: Income and inequality across Canada, 1975–2008. The dashed line shows the population-weighted mean for all provinces other than Québec. Individual provinces, shown in thin light lines, span the gray shaded regions.

the full income distribution was taken into account. Given that income inequality, as measured by Gini coefficients,[28] has decreased in Québec relative to the rest of Canada (see Figure 6b), is it possible that a purely individualistic, income-based explanation could also hold for the growth in well-being there?

A way to assess this question decisively is to look at the distribution of well-being across the income distribution. Given that mean incomes in Québec have not risen compared with the rest of Canada's, and under the assumption of a classical, concave increasing dependence of SWB on income, Québec's becoming relatively happier due to a redistribution of income would require that its wealthiest segment became relatively less happy as compared with the rest of Canada. That is, the relative increase in mean SWB in Québec would need to reflect a relative improvement for the high-marginal-utility-of-income population at the expense of low-marginal-utility households.

I test this hypothesis by restricting the estimate of Equation 1 to the top and bottom 20% of the income range within Québec and outside Québec for each year. Support for the concavity explanation would take the form of a decreasing coefficient on an indicator variable for the top quintile in Québec, combined with a more strongly increasing one for the bottom quintile. The results (see Figure 7) show on the contrary that both high and low income Québécois experienced gains in SWL and, especially for some earlier years when the Québec gains in SWB were greatest, the high income households gained most.

Organising the data by income quantile can be used to assess crudely the shape of the $u(c_i)$ curve. Figure 8 shows a remarkably consistent relationship between income rank and

[28] Due to the categorical nature of the income measure in GSS surveys and in particular the increasingly important upper bound, Gini indices calculated from GSS data are generally decreasing over time, in contrast to the more detailed estimates based on the Labour Force Survey. This makes it difficult to compare changing SWB distributions to the counterfactual ones obtained using fixed model coefficients but evolving (sampled) income and demographic distributions.

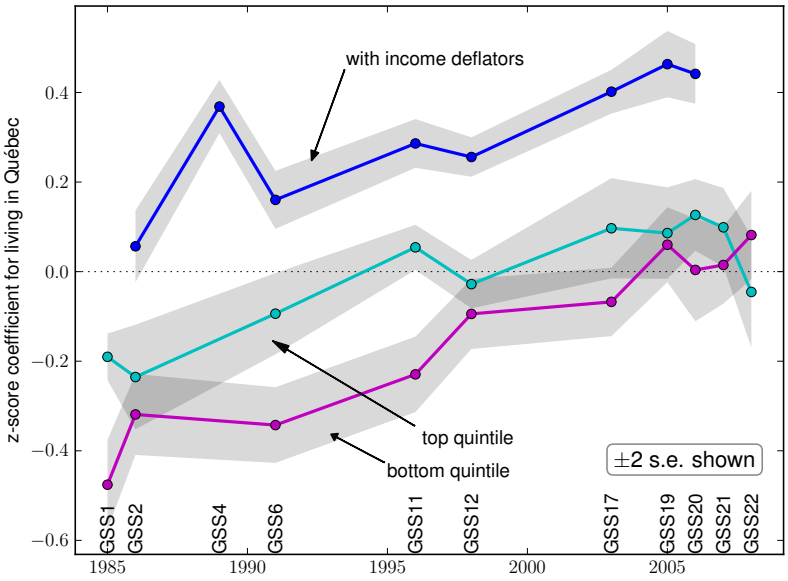


Figure 7: Further estimates of Equation 1: quintiles and price deflators. The model with income deflators (see footnote 27) is shown with an arbitrary vertical offset. The detailed estimates are shown in Table A.4.

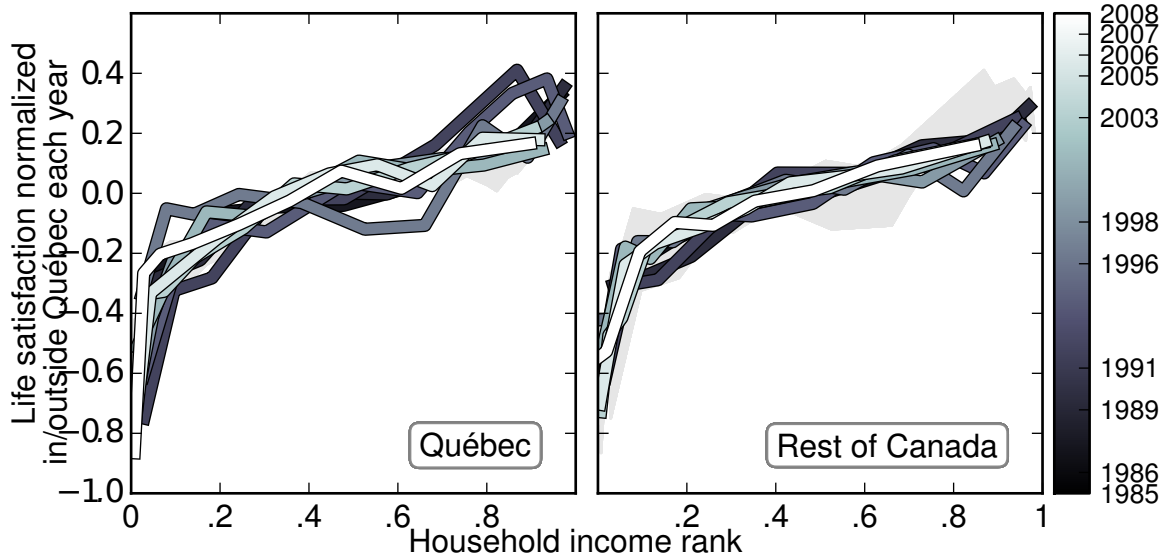


Figure 8: Distribution of SWL (normalised) by year and income rank. Annual distributions of life satisfaction by household income rank. Each line shows the distribution for one year (indicated by shade), separately normalised within Québec (left panel) and outside Québec (right panel). In each plot, a lightly shaded region in the background shows an underlay of the range of distributions from the other plot.

SWL within and outside Québec, as well as over time. Here, in order to compare pure distributional properties, the yearly normalisation of SWL is carried out separately for Québec and the rest of Canada. These estimates again tend to refute an individual consumption and income redistribution mechanism as an explanation for the relative increase of SWB in Québec.

Note that several relevant and plausible hypotheses involving Québec's low income inequality are at once refuted by the qualitative findings, above. A model in which utility over income depends concavely on the difference between own income and the mean income in or outside Québec would, in order to explain the observed rise of Québec SWB, also require that the SWB of Québec's highest income contingent lost ground compared with the rest of Canada's. Alternatively, in a model in which income rank, or ordinal status, is a direct determinant of well-being, distributional changes in income do not have a direct (static) effect on the mean or distribution of SWB. Indeed, even for the case of more subtle effects of changes in inequality of the structure of rewards and the distribution of endowments in a world in which pure rank matters (Hopkins and Kornienko, 2010), most outcomes involve a decrease in welfare for the wealthiest when inequality decreases. This is contrary to the findings shown in Figure 7.

If the changing nature of the income distribution in Québec towards increased equality (relative to the rest of Canada) is related to the phenomenon of rising relative SWL, it appears not to be occuring through the concave-utility channel identified by Rousseau (2009) for the USA, nor through one acting on relative preferences.

4.3 Financial satisfaction

Some GSS cycles have asked questions on satisfaction with narrower domains than life as a whole. A particularly strong line of evidence that financial factors are not driving Québec's rise in SWB could come from another subjective response. Respondents' *satisfaction with finances* was recorded seven times between 1985 and 2006. [29] These data are sparse in the middle years of the study period, but show no rise over time in Québec until after 1998. This corroborates a limited role for income in the changing SWL of Québec, at least in the earlier years. Thus, not only have objective incomes not risen especially fast in Québec, but there is no sign of subjective satisfaction with finances having changed the way SWL has.[30]

4.4 Public goods

Another possibility raised above relates still to the quantity of economic activity growing in Québec but through a public good channel rather than through private expenditure. Taxation and government spending tend to be higher in Québec, per capita, than in other provinces. As for other such province-level variables, it is not feasible to test statistically any detailed hypotheses about the relationship between aggregate spending and changes in relative well-being. However, an inspection of the evolution of total per-capita government spending, displayed in Figure 9, shows that public spending in Québec has led the national

[29] The normalized, self-reported "satisfaction with finances" in Québec is shown in Figure A.40.

[30] Interestingly, the age profiles of satisfaction with finances differ between Québec and the rest of Canada, and the difference is relatively constant over 20 years. As shown in Figures A.42 and A.43, satisfaction is relatively constant over the life course in Québec, but sharply increasing in the rest of Canada.

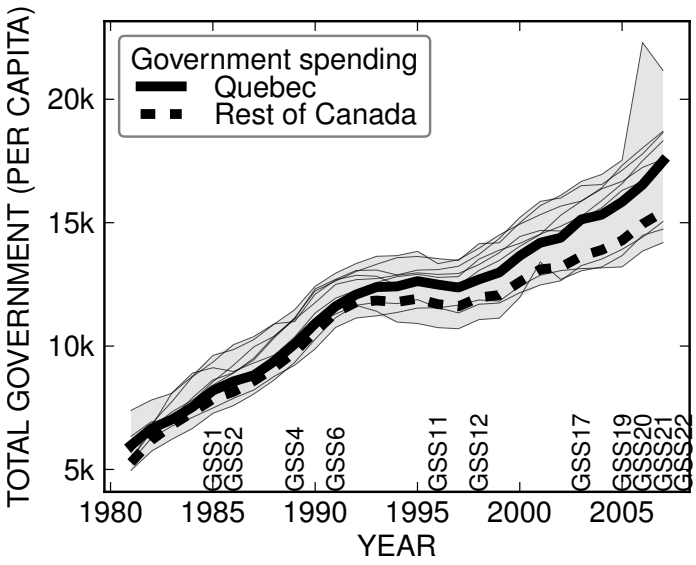


Figure 9: Total per capita government expenditure by province . Total expenditure is the sum of local, provincial, and federal governments' expenditures. Data come from Statistics Canada's CANSIM table 384-0004.

average and has increased relative to other provinces only since 1992.[31] It also remains well within the range of other provinces. Thus, the quantity of public spending since 1981, whose well-being effects are likely to lag outlays, does not appear to be a candidate for explaining the early part of the rise of SWB in Québec. Naturally, the *nature* of public spending policies may be different and could be related to the differential performance of SWB.

4.5 Other explanatory factors

If income growth and redistribution were not the cause of the improved lives of Québécois, what was? Below, with reference to data presented in the Appendix, I briefly assess the trajectories of several other economic and social variables which may be considered likely candidates based on modeling SWB at individual and aggregate levels.

4.5.1 Labour status

It is well established and not surprising that unemployment has an effect on life evaluations well beyond that due to the associated income loss. Individual-level effects of unemployment and work hours were already incorporated into estimates shown in Figure 5. Figure A.64 shows that the **unemployment rate** in Québec has generally remained uniformly above the Canadian average during the period of interest; similarly, Québec's **employment rate** has remained below Canada's (Figure A.65). In both cases, there has been some convergence beginning only in the late 1990s. On the other hand, according to the GSS (see **paid work hours** in Figure A.69), employed Québec workers are working

[31] There is an even stronger relative increase in Québec's provincial and local spending as compared with those in other parts of Canada (see Figure A.38 in the Appendix) but this reflects Québec's tendency to opt out of federal spending programs, with compensation, in order to direct its own policy in areas it considers to be provincial jurisdiction — i.e., to substitute federal for provincial spending.

nearly two hours less per month than the rest of Canada,[32] but were working a more similar number of hours in 1989-1990.

Following this theme of inquiry, some GSS cycles asked about satisfaction with one's job and about satisfaction with one's time outside work. **Job satisfaction** has risen in Québec but only since the late 1990s (Figure A.47), when francophone respondents made gains. Otherwise, no large differences are evident between gender or age subgroups within Québec. By contrast, **satisfaction with time outside work** in Québec shows large differences from the rest of Canada for at least three cycles and, with the exception of age groups, is also highly consistent across subgroups. Overall, the trend (evident in Figure A.57) is a decreasing satisfaction with time use until the mid 1990s, and an increasing one thereafter.

4.5.2 Health

Until 1998, young female Québécoises gave slightly less positive self-reports on the status of their health than their non-Québec counterparts, but for other groups there is reasonable consistency, suggesting again that not all subjective assessments follow the trend that SWL does, and indeed therefore that aspects of life other than health are underlying the SWL discrepancy (see also Figure 5).

4.5.3 Religion

The changing roles of religion and religious institutions is a salient, or central, feature of the social changes associated with the Quiet Revolution, in which the pervasive role of the church was largely overturned within less than a generation. In general, participation in religious activities is associated around the world with higher SWL for both the participant and others nearby (Bergan and McConatha, 2001; Clark and Lelkes, 2009; Ferriss, 2002; Helliwell, 2003; Helliwell et al., 2010).[33] The situation in Québec represents an interesting case of a cultural shift away from religious attendance without the corresponding decrease in well-being that one might predict from a simplistic extrapolation of such cross-sectional patterns.

The declining frequency of attendance at religious institutions in Québec was already on par with the rest of Canada by the time of GSS Cycle 1 (Figure A.81), though it continued to fall in subsequent years, and faster than in the rest of Canada, and faster for francophones than others, both within and outside Québec (Figures A.82 to A.86). It is interesting to note that there is a steep decline in religious attendance, up to the mid-1990s, amongst francophones outside Québec, possibly the sign of a delayed transmission of the Quiet Revolution beyond Québec's borders.

Age profiles of religous attendance show that from their mid-twenties onwards until beyond retirement age, the religious attendance of Québécois increases steadily, altogether by a factor of more than ten — that is, from less than once per year to more than once per month (Figure A.87). Through the GSS years, attendance at nearly all ages has dropped by a fairly uniform factor of three. Organising the data by cohort (Figure A.89) reveals that this trend has occurred predominately across cohorts rather than within them; that is, habits formed early in life tend to persist throughout it.

[32] Figure A.71 shows that this shift may be especially prominent for men.

[33] See, however, Gee and Veevers (1990) who give mixed results for Canada using GSS cycle 1, and note that Helliwell et al. (2010) did not find effects from religiosity or religious participation in North America or Europe.

By contrast, in the rest of Canada young adults start out with a higher frequency of attendance and the elderly exhibit a lower frequency than in Québec, with the rates falling — also fairly uniformly in age — only recently, and by a factor of less than three. As a consequence, the inter-generational trend, or heterogeneity, in religious attendance patterns is much stronger in Québec than outside Québec, and has remained so for all annual samples since 1985.

Religious behaviour is a dimension on which Québec and its Quiet Revolution stand out. However, overall, it is hard to see how the features of religious life in Québec noted here could account for an increase in SWL in light of the existing literature.

4.5.4 Social capital

A prominent family of findings in the SWB literature is that subjective and objective measures of social engagement and linkages are associated with higher SWL at the individual and macro level, above and beyond effects mediated through productivity and employment (Dolan et al., 2008; Helliwell and Barrington-Leigh, 2010, 2011; Helliwell and Putnam, 2004; Helliwell and Wang, 2010; Powdthavee, 2008; van der Horst and Coffé, 2011). These measures relate to civic participation; social networks; trust in, and engagement with, institutions, neighbours, family, colleagues, and fellow citizens; and fellow-feeling as indicated by social identity or sense of belonging (see, especially, Helliwell and Barrington-Leigh, 2011) with one's locale. In light of the rise of secular and civic institutions in regulating behaviour and social norms in Québec, one might anticipate changes in characteristics of the social fabric as part of the Quiet Revolution. Unfortunately, repeated relevant measures are scarce over the GSS cycles.

In three cycles, respondents were asked about their attitude towards police as one way to gauge the role and reputation of public institutions. Responses regarding the general **approachability of police** have changed little outside Québec over 1993-2004, with ratings below 85% in western provinces and above 85% in eastern provinces.[34] Within Québec, on the other hand, they have increased for both sexes from values significantly less than to those typical of the rest of Canada (Figure A.93).[35]

GSS respondents have also been asked about their **safety walking alone at night**, possibly serving as a measure of security and trust of fellow citizens. Québécois reported the lowest levels of safety in the country, though only slightly lower than in the other big provinces (Figure A.96). The difference appears to be due to the relative insecurity of both women and older respondents in Québec; these are also the same populations who feel less safe everywhere else (Figures A.96 to A.106). This measure of safety is on the rise throughout Canada during the years with data, between 1993 and 2004, until a decline in 2003, but again offers no clues to the differential trends in SWL.

Measures of social identity, elicited by asking to what extent a respondent feels they belong to their locale,[36] have high correlations with SWL but have only been measured in

[34] The question in English was "What kind of job is local police force doing re: being approachable and easy to talk to?" with answers "Good Job", "Average Job", and "Poor Job", coded to 0–1. Another question, on the respondents' "confidence in police," was asked in some more recent surveys, as reflected in Table ?? on page ??.

[35] Both inside and outside Québec, respondents' estimate of the approachability of police increases with age after age 20. Interestingly, this trend continues at all ages and appears to be invariant over time (Figure A.94).

[36] The community question, for example, is worded "How would you describe your sense of belonging to your local community? Would you say it is: very strong / somewhat strong / somewhat weak / very weak."

recent years. In those recent years, Québécois feel a relatively similar **sense of belonging** to their local community, a stronger connection to their province, and a much weaker connection to Canada (Figures A.107 to A.112). Across Canada, older respondents feel more affiliation with their province and country. This topic is taken up in more detail by Helliwell and Barrington-Leigh (2011).

5 Discussion

Québec has undergone dramatic changes in the social context and cultural norms that affect identities and social interactions, as well as in market participation and economic production and in the level and scope of government provision. These changes have not been completely aligned with the pace and nature of shifting norms across the rest of North America, which makes them interesting and useful for analysis.

By what quantitative measures other than SWB does Québec stand out, according to the evidence presented so far? The employment rate in Québec has climbed somewhat towards the national average, but only in the latter half of the period of SWB convergence. The average number of hours worked by the employed in Québec started low and has decreased fairly steadily since 1990. Household incomes have stayed low. If productivity changes are to explain Québec's shift in SWB standings, it appears they cannot do so quantitatively through normal channels of buying power or leisure time. Similarly, the impact of government-funded public goods, if measured by contemporary expenditures alone, cannot account for Québec's rise in well-being. During the same period, redistributive policy in Québec has slowed the rise of the Gini inequality index for after-tax household income: beginning at the Canadian average, Québec now stands out from the other large provinces as considerably more equitable. Indeed, by 2008, the gap between the rest of Canada and Québec was more than a fifth of the difference between Canada and Sweden, the lowest-Gini nation according to the World Income Inequality Database. It is difficult to say how this might affect individual lives or social liens in ways not captured by intermediate measures from the GSS.

Data needed to assess these characteristics of society and individual lives remain relatively scarce. Most of the variables which are most significant in individual-level and aggregated cross-sectional analysis of SWL in certain recent cycles of the GSS (Helliwell and Barrington-Leigh, 2010) are not available for most of the first two decades of the GSS. It may be that factors which have mattered most for changing life in Québec have simply not been well measured in this period. For instance, social harmony across linguistic lines has likely improved drastically as a result of Bill 101 securing francophone linguistic rights, the series of referenda on Québec sovereignty, and the formation and rise of the Bloc Québecois federal party, all within the period 1977-1995. Similarly, the impact of Québec's strong social support system and public infrastructure may be difficult to evaluate through expenditures alone and without account of appropriate lags.

One other piece of evidence that could shed light on the evolution of well-being in Québec is suicide data. Figure 10 shows suicide rates in Ontario and Québec for all ages but separated by gender. These data show, most notably, a dramatic rise in completed male suicides in Québec during the Quiet Revolution and, since 2000, a sharp decrease in this rate. While suicide rates for females are lower and have a less dramatic rise in both provinces, it should be noted that the pattern across genders for attempted suicides is

For the analysis in this work these options are coded to a numerical 0 to 1 scale.

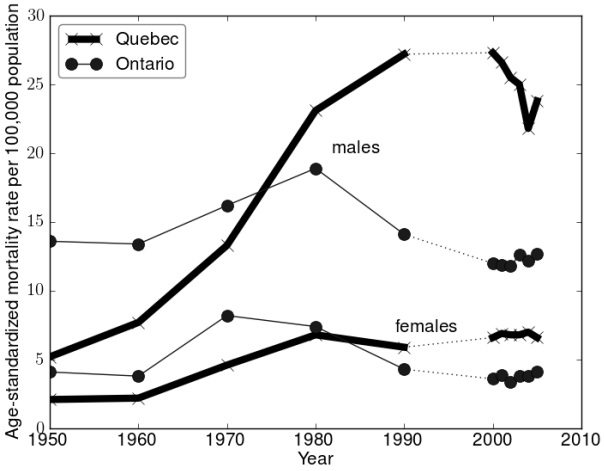


Figure 10: Suicide rates in Québec and Canada, 2000–2005 . Source for years $\leq$ 1990: *Suicide in Canada (1994)*, Mental Health Division, Health Services Directorate, Health Canada Tables 2.1 and 2.2. Source for years $\geq$ 2000: Statistics Canada, Table 102-0552 – *Deaths, by selected grouped causes and sex, Canada, provinces and territories, annual*.

typically quite different than for successful ones. Although Figure 10 shows an increase in the 1960's and 1970's in Ontario as well as Québec, the data nevertheless suggest the possibility that the convergence of life satisfaction during the 1990s, observed and investigated in the present work, may represent a *recovery* by Québec from the conditions associated with the peak in its suicide rates, rather than an improvement of SWL from a long-term, lower baseline in Québec.

Krull and Trovato (1994, p. 1138) find that the pattern of gender-differences in suicide in a changing Québec supports the more general finding, dating to the early insights of Durkheim, that a high degree of social integration and regulation is protective against suicide, and *vice versa* (Cutright and Fernquist, 2000; Durkheim, 1897; Helliwell, 2007). Krull and Trovato (1994) contrast the period in Québec from 1931–1956 with that of 1961-1986 as a transition from one characterised by "high integration" and "low individualism" to one of "low integration" and "high individualism," in which religion, divorce, and childlessness become significant predictors of male and female suicide rates.

If a transition towards individualism posed difficulties for Québécois, it may be possible that institutions have been able to adapt to replace the missing supports and hence forge a recovery both in mean SWB and in protection for the most vulnerable of all, as seen after ∼2000 in Figure 10.

I find a different description more compelling. The reduction in religious involvement and rigid marriage institutions in Québec and the increase in the role of government in providing social supports, simultaneous with an increase in suicides and mean life satisfaction, brings to mind the case of some Scandinavian countries which also exhibit seemingly paradoxical incidences of high SWL and high suicide rates. Helliwell (2007) fully accounts for Sweden's high SWL and simultaneously high suicide rate through a combination of predicted effects of Sweden's low religiosity, high divorce rate, and high perceived quality of government.[37] Perhaps Québec has undergone a "Scandinavianisation" on these same dimensions that have previously been analysed in cross-section amongst countries? If so, maybe Québec is benefiting from the broader set of social-democratic policies that have accompanied such a shift, and that have been so successful for SWL in Scandinavia. Indeed, the last two decades have left Québec with a mean SWL greater than the rest of Canada's by enough to place it at the highest level amongst Scandinavian nations.[38]

6 Conclusions

The main contributions of this study are (1) to transform subjective well-being measures taken from successive cross-sectional surveys in order to make them commensurable across provinces and over time; (2) to present evidence of the "Québec convergence" — a dramatic rise of subjective well-being over two decades throughout the Québec population; and (3) to assess the possible causes of this rise. Real income growth, unemployment, and changing income distributions are all important factors in accounting for individual SWL but, acting at the individual level, were found not to be explanations for the convergence.

[37] That is, Helliwell finds that an internationally-estimated model accounts well for Sweden's case. The expected effects of Sweden's divorce norms, low religiosity, and perceived government quality give it a high mean SWL and high suicide rate.

[38] In GSS 22, Québec's mean SWL is ∼.172 above the rest of Canada's, while in the fifth wave of the World Values Survey, the highest mean SWL in Scandinavia is Norway's, which is ∼.195 above Canada's.

A dual challenge

The economic scale of the SWL convergence in Québec poses a dual challenge for policy and research. It presents difficulties both for the thesis that changes in income account for much of the variation in well-being and for the thesis on the other hand that changes in subjective well-being can be meaningfully and quantitatively related to policy-mediated changes in the circumstances of those who are evaluating their lives.

The former claim underlies a broad income-growth orientation amongst policy makers and institutions, and the latter claim underlies the interest in and advocacy for increased attention to subjective measures of well-being. If the statistically and economically significant shifts in the SWB of Québécois do not reflect the kind of welfare which society regards as a worthy objective, then SWB measurements must be subject to a massive and previously unreported cultural or other spurious bias. Given the Québec trend's multi-decadal time scale and consistency across SWB measures and languages, this seems unlikely.

Hypotheses

Regardless of these debates, the Québec convergence may represent evidence of the power of social policies and shifts in social institutions to produce sizable enhancements to SWL, independent of economic shifts. In light of the findings in this study, the following developments remain as candidates for policies that may account for improved life evaluations in Québec.

First, Québec has undergone a shift, as compared with the rest of Canada, towards a more Nordic set of institutions, including low after-tax income inequality, low religiosity, less formal marriage, and strong family and social supports provided by the government. This set of policies, or others that have come packaged with them, may generate broadly-felt benefits, due for instance to security of various forms or to reduced status-related stress. They do not appear to benefit preferentially respondents from a particular part of the income distribution.

Secondly, Québec has made progress in what may be described as self-determination. Relative to the early 1980s, recognition and supports for cultural identities are more secure and are reflected in political and legal institutions. Although the GSS data are mostly silent on the matter, it may be that Québécois are now more at peace with their government, their identities, and with each other, including across linguistic and religious lines.

Both of the hypotheses above are subject to the observation that benefits have accrued broadly, for instance across linguistic and gender lines and across the income distribution, suggesting changes in the social fabric.[39] The relatively low levels of trust expressed in Québec (see Figure 1) remain a mystery in this picture, since high trust is typical of Scandinavia and other high-SWB countries, and is strongly predictive of high SWB at the individual level both within Québec and in the rest of Canada.

[39] Recognition of the importance of social capital and "emergent" macro-scale social conditions, which are likely to have been in flux during and since Québec's Quiet Revolution is a trend in diverse fields, including psychology (Haslam, 2004), health, architecture, urban planning, and development policy (Côté and Healy, 2001) and may come to have a profound effect on the evaluation of macroeconomic outcomes (Helliwell and Barrington-Leigh, 2010; Stiglitz et al., 2009).

Policy implications

For either of the dual challenges to be resolved, more data are likely to be a key asset. Hill (2004) concludes that SWB data are of much poorer quality in Canada than in the U.S.A. or Europe and that "Statistics Canada should make its proper and consistent collection a priority". Since his writing, Statistics Canada has come a long way towards casting Canada as a leader rather than a laggard in SWB assessment, but many other countries are prioritising this approach as well. The rejection of income-related causes — including status effects — for Québec's increasing SWL lends support to this growing trend of governments exploring broader headline measures of welfare than income-oriented growth. In addition, the present work suggests that even in mainline social surveys there are gaps in thematic coverage if we are to be able to explain shifts and differences in SWL. It is important that countries hoping to make progress in enhancing properly-measured welfare will have in hand in another two decades sets of consistent and regular measures of all the subjective and objective, social and individual factors which are found to be significant determinants of subjective well-being.

Until further analysis is able to unpack the policy changes responsible for Québec's upward trend in SWL — as well as for other cross-sectional differences amongst differing policy regimes around the world — highly specific policy implications will remain elusive. Instead, one may consider the approach of a more qualitative grouping of policy orientations. Those states which have been especially successful in generating highly-rated life experiences may serve as general, albeit not monolithic, models of successful policies. At the very least, the findings reported here lend some general support for the features that make the Québec policy environment special in Canada.

Finally, it is important to remember that most of the central phenomenon described herein was a convergence from below, and that the smaller provinces in Canada still generate the highest reports of SWL (Figure 1). It will be of utmost interest to see whether Québec continues its upward trajectory in SWL, or at least retains its position above the other large provinces.

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A Appendix

The following pages include supplementary figures and tables that are not recommended for printing. The figures, in particular, are most conveniently viewed electronically in a way that allows flipping through from one page to the next, keeping the plot axes aligned.

1960	Jean Lesage elected premier
1960-1966	Lesage policies launch the Quiet Revolution
1970	October Crisis
1977	Bill 101
1980	Referendum on sovereignty-association
1982	Canada Act Constitution
1987-1992	Meech Lake Accord to Charlottetown Accord
1993	Formation of the Bloc Québecois federal party
1995	Second referendum on sovereignty

Table A.1: Major events in Québec's recent history

Year	GSS Cycle	Population	Subject
1985	**Cycle 1**		Health and Social Support
1986	**Cycle 2**		Time Use, Social Mobility and Language Use
1988	Cycle 3		Personal Risk
1989	**Cycle 4**		Education and Work
1990	Cycle 5	oversamples: age$\geq$ 65; ON	Family and Friends
1991	**Cycle 6**	oversample: age$\geq$ 65	Health
1992	Cycle 7		Time Use
1993	Cycle 8		Personal Risk
1994	Cycle 9		Education, Work and Retirement
1995	Cycle 10		The Family
1996	Cycle 11	oversamples: age$\geq$ 65; QC	Social and Community Support
1998	**Cycle 12**		Time Use
1999	Cycle 13		Victimization
2000	Cycle 14		Access To and Use of Information Communication Technology
2001	Cycle 15		Family History
2002	Cycle 16	age$\geq$ 45	Aging and Social Support
2003	**Cycle 17**		Social Engagement in Canada
2004	Cycle 18		Victimization
2005	**Cycle 19**		Time Use
2006	**Cycle 20**		Family Transitions
2007	**Cycle 21**	age$\geq$ 45	Family, Social Support and Retirement
2008	**Cycle 22**		Social Networks

Table A.2: Statistics Canada Social Survey Cycles 1–22. The sample populations are non-institutionalised Canadians in the ten provinces and of age $\geq$ 15, except as noted in the table. Bolded entries are those with questions explicitly about satisfaction with life "in general" or "as a whole."

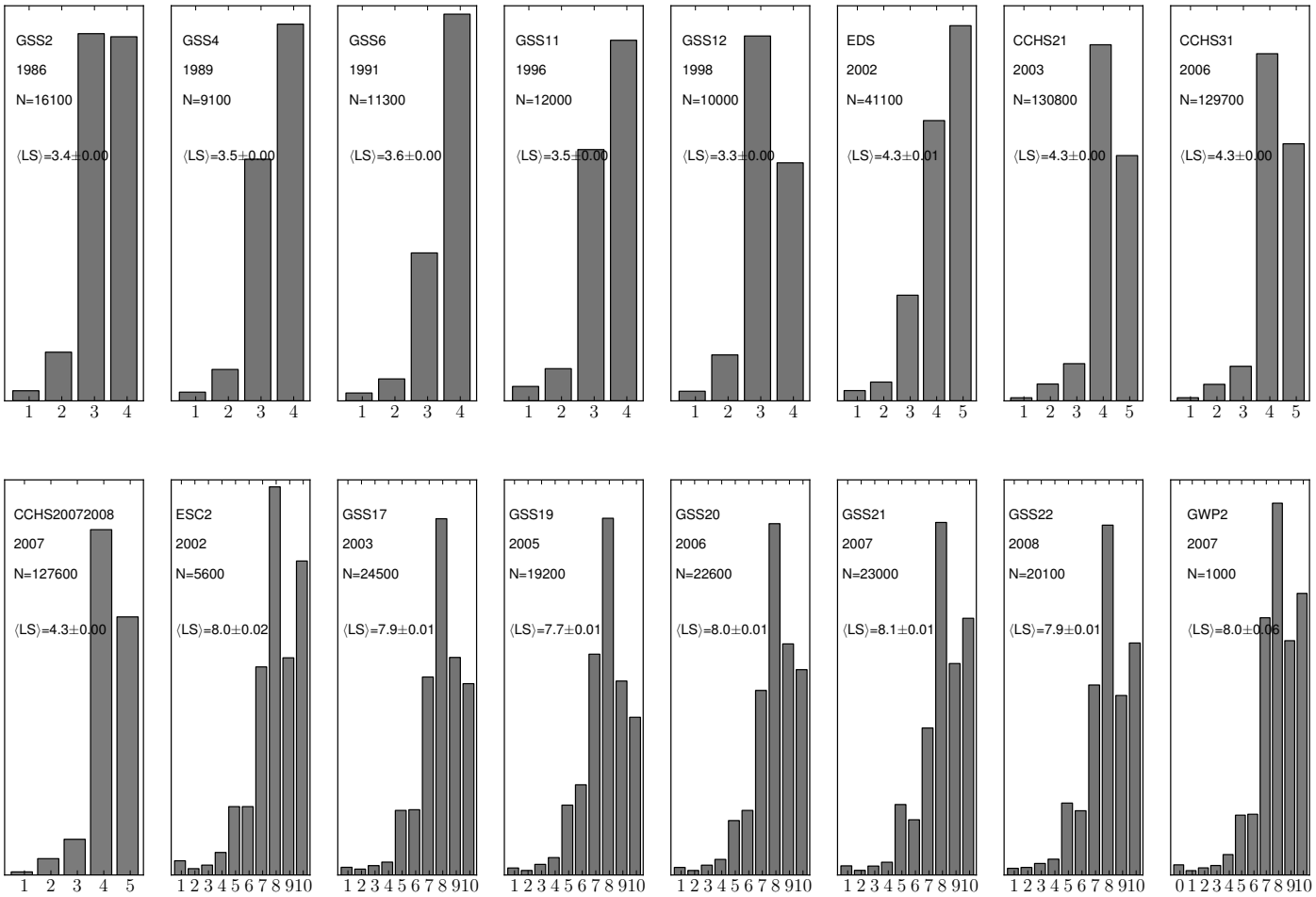

Figure A.1: Histograms of SWL responses in Canadian household surveys. Histograms of responses to the SWL questions from a number of Statistics Canada national surveys, from the Equality, Security and Community (ESC) Wave 2 survey, and from the Canadian sample of Wave 2 of Gallup's World Poll (GWP)

A.1 Pooled individual models

Table A.3: Pooled individual model of SWL. Estimates of the Québec yearly indicator coefficients and their compensating differentials (comp. diff's) are plotted in in **??** and **??**, respectively. Supplementary estimates are in **??**.

Significance: **0.1%†** **1%⋆** ***5%*** *10%+*

	(1)	(2)	comp. diff's (2)	(3)	comp. diff's (3)	(4)	comp. diff's (4)	(5)	comp. diff's (5)
Québec(1985)	**−.38†**	**−.37†**	**−1.55†**	**−.37†**	**−2.6†**			**−.37†**	**−2.2†**
	(.025)	(.029)	(.14)	(.031)	(.31)			(.028)	(.20)
Québec(1986)	**−.34†**	**−.33†**	**−1.36†**					**−.32†**	**−1.90†**
	(.031)	(.025)	(.085)					(.027)	(.18)
Québec(1989)	***−.043***	−.012	−.048					−.014	−.084
	(.017)	(.016)	(.064)					(.015)	(.087)
Québec(1991)	**−.18†**	**−.20†**	**−.82†**	**−.15†**	**−1.05†**	**−.22†**	**−1.56†**	**−.16†**	**−.94†**
	(.026)	(.021)	(.076)	(.018)	(.095)	(.016)	(.12)	(.022)	(.14)
Québec(1996)	**−.12†**	**−.059†**	**−.24†**						
	(.015)	(.017)	(.074)						
Québec(1998)	**−.15†**	**−.093†**	**−.39†**	**−.094†**	**−.65†**	**−.16†**	**−1.14†**	**−.12†**	**−.71†**
	(.004)	(.016)	(.075)	(.014)	(.13)	(.017)	(.20)	(.014)	(.091)
Québec(2003)	**.033⋆**	**.060⋆**	**.25⋆**	**.053⋆**	**.37⋆**	−.010	−.071	**.068†**	**.40†**
	(.012)	(.019)	(.077)	(.020)	(.13)	(.023)	(.17)	(.020)	(.12)
Québec(2005)	**.10†**	**.12†**	**.51†**	**.11†**	**.77†**	.045	.32	**.11†**	**.67†**
	(.022)	(.035)	(.13)	(.030)	(.17)	(.036)	(.23)	(.033)	(.19)
Québec(2006)	**.077⋆**	**.10†**	**.42†**					**.11†**	**.65†**
	(.023)	(.028)	(.11)					(.030)	(.18)
Québec(2007)	**.080†**	**.11†**	**.47†**	**.080†**	**.56†**	.011	.074		
	(.014)	(.024)	(.090)	(.022)	(.12)	(.027)	(.19)		
Québec(2008)	**.10†**	**.15†**	**.61†**	**.12†**	**.80†**	***.053***	**.37⋆**	**.14†**	**.80†**
	(.010)	(.020)	(.078)	(.019)	(.12)	(.023)	(.14)	(.018)	(.094)
ln(household income)		**.24†**		**.14†**		**.14†**		**.17†**	
		(.010)		(.012)		(.011)		(.006)	
HH income >100k$/yr		***.045***	***.18***	.016	.11	.019	.13	**.064⋆**	**.38⋆**

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	(1)	(2)	comp. diff's (2)	(3)	comp. diff's (3)	(4)	comp. diff's (4)	(5)	comp. diff's (5)
		(.021)	(.090)	(.018)	(.12)	(.017)	(.12)	(.020)	(.12)
age/100		*−1.59*$^{+}$		**−2.3**†		**−2.2**†		**−4.7**†	
		(.86)		(.57)		(.56)		(.67)	
(age/100)^2		**−12.0***		***−6.3***		***−6.5***		***2.4***	
		(4.1)		(2.7)		(2.7)		(1.06)	
(age/100)^3		**34.0**†		**23.1**†		**23.4**†		**9.3**†	
		(7.2)		(4.7)		(4.7)		(2.2)	
(age/100)^4		**−22.1**†		**−15.7**†		**−15.8**†		**−8.1**†	
		(4.0)		(2.6)		(2.6)		(1.55)	
male		**−.054**†	**−.22**†	**−.049**†	**−.34**†	**−.046**†	**−.32**†	−.020	−.12
		(.010)	(.046)	(.005)	(.051)	(.005)	(.052)	(.013)	(.078)
(as) married		**.30**†	**1.23**†	**.26**†	**1.81**†	**.26**†	**1.81**†	**.30**†	**1.74**†
		(.023)	(.10)	(.016)	(.16)	(.016)	(.15)	(.025)	(.18)
sepa-		**−.077***	**−.32***	**−.12**†	**−.83**†	**−.12**†	**−.83**†	**−.089***	**−.52***
rated/divorced		(.025)	(.11)	(.026)	(.19)	(.026)	(.20)	(.028)	(.16)
widowed		**.076**†	**.31**†	**.041**†	**.29**†	**.039**†	**.27**†	.005	.031
		(.018)	(.072)	(.006)	(.037)	(.006)	(.038)	(.025)	(.15)
health				**1.23**†	**8.5**†	**1.23**†	**8.6**†		
				(.034)	(.85)	(.033)	(.83)		
student								**.21**†	**1.26**†
								(.038)	(.22)
employed								**.17**†	**.98**†
								(.043)	(.26)
domestic								**.22**†	**1.27**†
								(.048)	(.28)
unemployed								**−.25**†	**−1.45**†
								(.053)	(.30)
retired								**.32**†	**1.86**†
								(.038)	(.24)

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	(1)	(2)	comp. diff's (2)	(3)	comp. diff's (3)	(4)	comp. diff's (4)	(5)	comp. diff's (5)
francophone						**.080**†	**.56**†		
						(.010)	(.10)		
paid work hours								**−.002**†	**−.011**†
								(.0004)	(.002)
illness								**−.60**†	**−3.5**†
								(.083)	(.50)
godParticipate						**.063**†	**.44**†		
						(.014)	(.080)		
HH size controls	✓	✓		✓		✓		✓	
obs.	178968	137347	137347	90284	90284	82974	82974	87323	87323
R^2(adj)	.002	.057	.057	.152	.152	.153	.153	.061	.061
$N_{clusters}$	10	10	10	10	10	10	10	10	10

Table A.4: Pooled individual model of SWL: supplementary estimates. Estimates of the Québec yearly indicator coefficients are shown in ??.

Significance: **0.1%**† **1%*** ***5%*** *10%*$^{+}$

	(1) with income deflators	(2) No income response	(3) top quintile	(4) bottom quintile
Québec(1985)		**−.28**†	**−.19**†	**−.48**†
		(.047)	(.027)	(.051)
Québec(1986)	.057	**−.20**†	**−.24**†	**−.32**†
	(.041)	(.050)	(.060)	(.046)
Québec(1989)	**.37**†	.007		
	(.030)	(.067)		
Québec(1991)	**.16**†	.071	***−.094***	**−.34**†
	(.033)	(.064)	(.046)	(.043)
Québec(1996)	**.29**†	*−.11*$^{+}$	***.054***	**−.23**†
	(.028)	(.057)	(.026)	(.043)
Québec(1998)	**.26**†	**−.18***	−.028	***−.094***
	(.022)	(.056)	(.028)	(.040)
Québec(2003)	**.40**†	***.095***	*.097*$^{+}$	*−.068*$^{+}$
	(.025)	(.043)	(.057)	(.039)
Québec(2005)	**.46**†	**.17**†	*.086*$^{+}$	.060
	(.038)	(.043)	(.052)	(.043)
Québec(2006)	**.44**†	**.12***	**.13***	.004
	(.034)	(.044)	(.041)	(.059)

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	(1) with income deflators	(2) No income response	(3) top quintile	(4) bottom quintile
Québec(2007)		***.10***	***.099***	.015
		(.042)	(.045)	(.044)
Québec(2008)		.079	−.045	.082
		(.051)	(.063)	(.050)
ln(household	**.25**†		−.074	**.18**†
income)	(.009)		(.085)	(.029)
HH income	***.044***		***.13***	
>100k$/yr	(.021)		(.058)	
age/100	−1.59	**−10.2**†	**−7.8**†	2.7
	(1.36)	(2.5)	(1.56)	(3.3)
$(age/100)^2$	***−12.6***	***20.3***	***12.2***	**−33.2***
	(5.9)	(8.7)	(5.0)	(12.0)
$(age/100)^3$	**35.0**†	−15.0	−2.4	**69.4**†
	(9.9)	(12.6)	(8.0)	(17.5)
$(age/100)^4$	**−22.6**†	3.1	−4.3	**−40.9**†
	(5.4)	(6.3)	(4.6)	(8.6)
male	**−.056**†	**−.044***	−.012	**−.092**†
	(.007)	(.016)	(.012)	(.016)
(as) married	**.29**†	**.38**†	**.25**†	**.23**†
	(.020)	(.029)	(.055)	(.013)
sepa-	**−.082***	**−.12***	.002	**−.13**†
rated/divorced				

Continued on next page

	(1) with income deflators	(2) No income response	(3) top quintile	(4) bottom quintile
	(.027)	(.046)	(.049)	(.024)
widowed	*.042*$^{+}$	**.14**†	−.043	.040
	(.024)	(.039)	(.15)	(.029)
d(ON)	**.33**†		.019	**−.14**†
	(.025)		(.034)	(.038)
d(NF)	**.50**†		***.068***	**.13**†
	(.025)		(.034)	(.038)
d(PE)	**.45**†		***.064***	.056
	(.024)		(.031)	(.038)
d(NS)	**.43**†		.038	−.062
	(.025)		(.033)	(.038)
d(NB)	**.48**†		**.12**†	.025
	(.024)		(.035)	(.038)
d(MB)	**.39**†		−.0005	***−.083***
	(.024)		(.033)	(.039)
d(SK)	**.38**†		.004	−.026
	(.024)		(.034)	(.037)
d(AB)	**.33**†		.003	***−.091***
	(.025)		(.034)	(.038)
d(BC)	**.33**†		.013	*−.065*$^{+}$
	(.024)		(.033)	(.038)

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	(1) with income deflators	(2) No income response	(3) top quintile	(4) bottom quintile
Province dummies	✓		✓	✓
HH size controls	✓	✓	✓	✓
price corrected within PR	✓			
obs.	103630	41621	19863	34322
R^2(adj)	.059	.032	.019	.055
$N_{clusters}$	10		10	10

A.2 Age and cohort profiles

Because age and cohort dependence are often entangled and are each salient parts of any cultural transformation, the following Appendix sections contain figures which portray age and cohort profiles throughout the GSS years for feature variables. The plots are paired, showing data separately from respondents in Québec and from those outside. Smaller samples give lower precision for the Québec sample. Cohort plots show data pooled from respondents from multiple surveys, so I only show data in this cohort format for responses that have not been normalised within each survey.

The age profiles of job satisfaction do not show discernible peculiarities for Québec. Respondents give relatively constant reports during most of their working lives, with higher values after age 55 and for those who are working beyond normal retirement age — apparently, mostly by choice. The pattern of satisfaction with other time, by contrast, shows a great deal of structure, with a strong minimum in the mid-life years when SWL has its minimum, suggesting that the confluence of multiple responsibilities at home and work may peak then and play a strong role in overall SWL. Interestingly, this strong pattern does not appear in the earlier cycles of the GSS, and it may be attenuated somewhat outside Québec.

A.3 Well-being

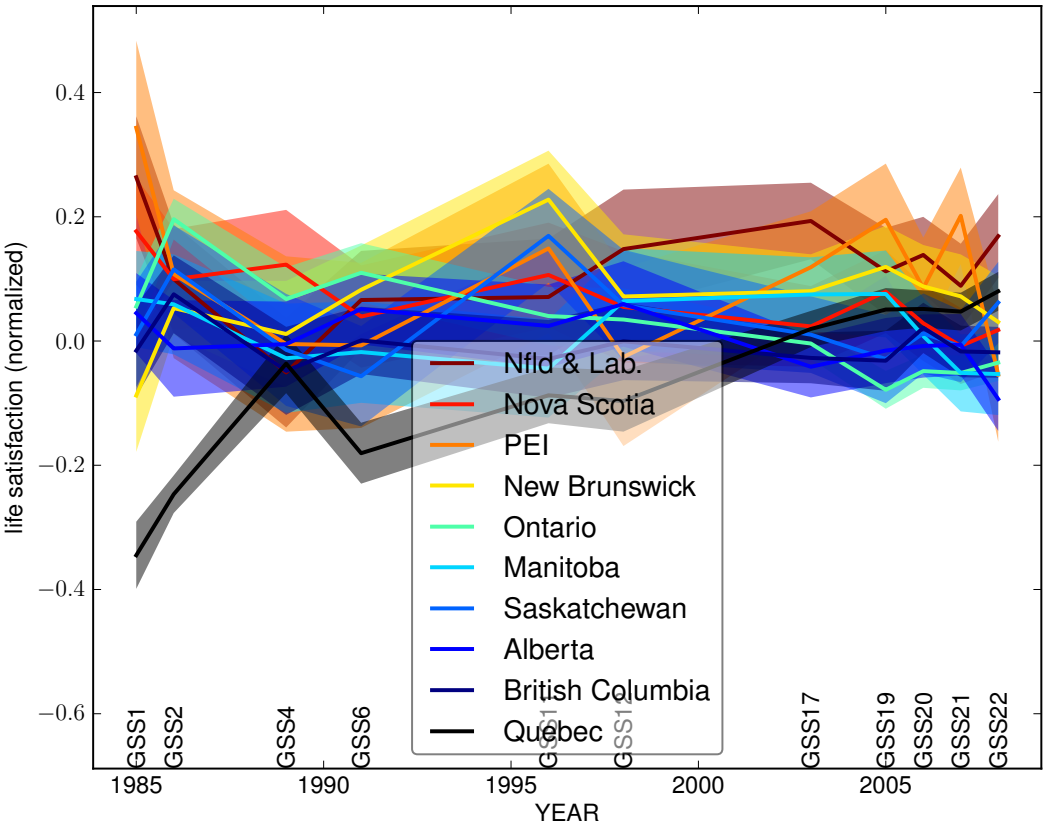

Figure A.2: Life satisfaction (by Province) .

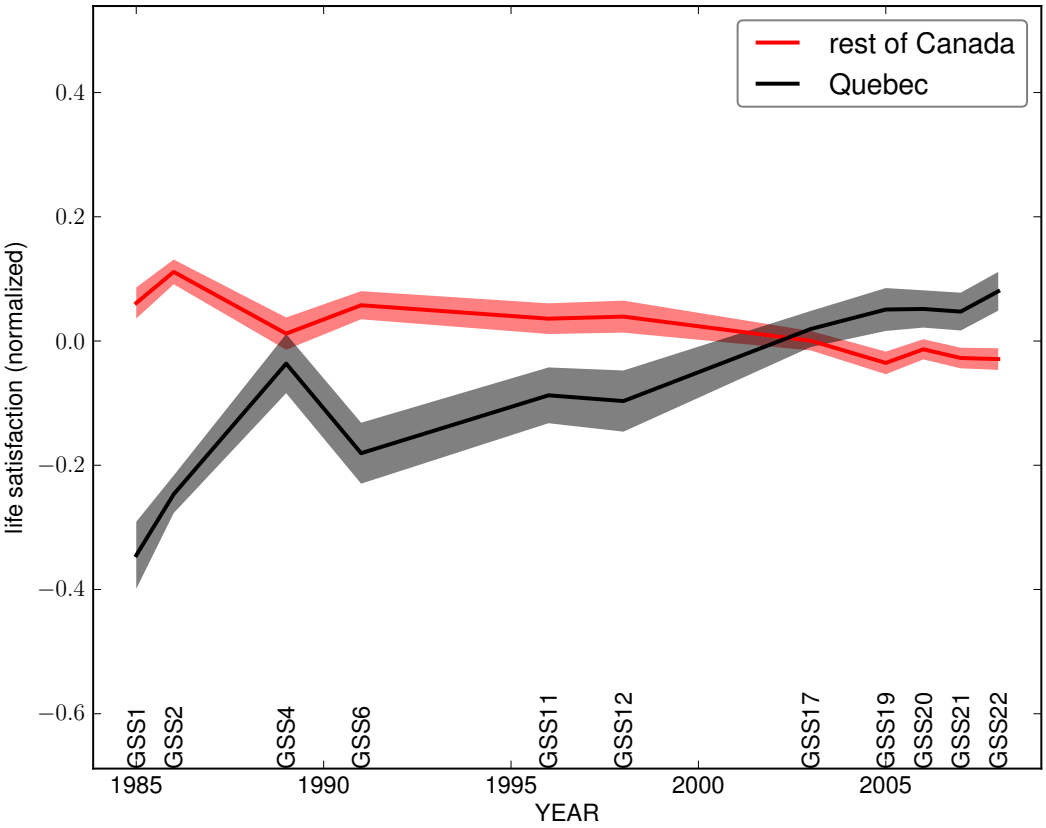

Figure A.3: Life satisfaction (in/outside Québec) .

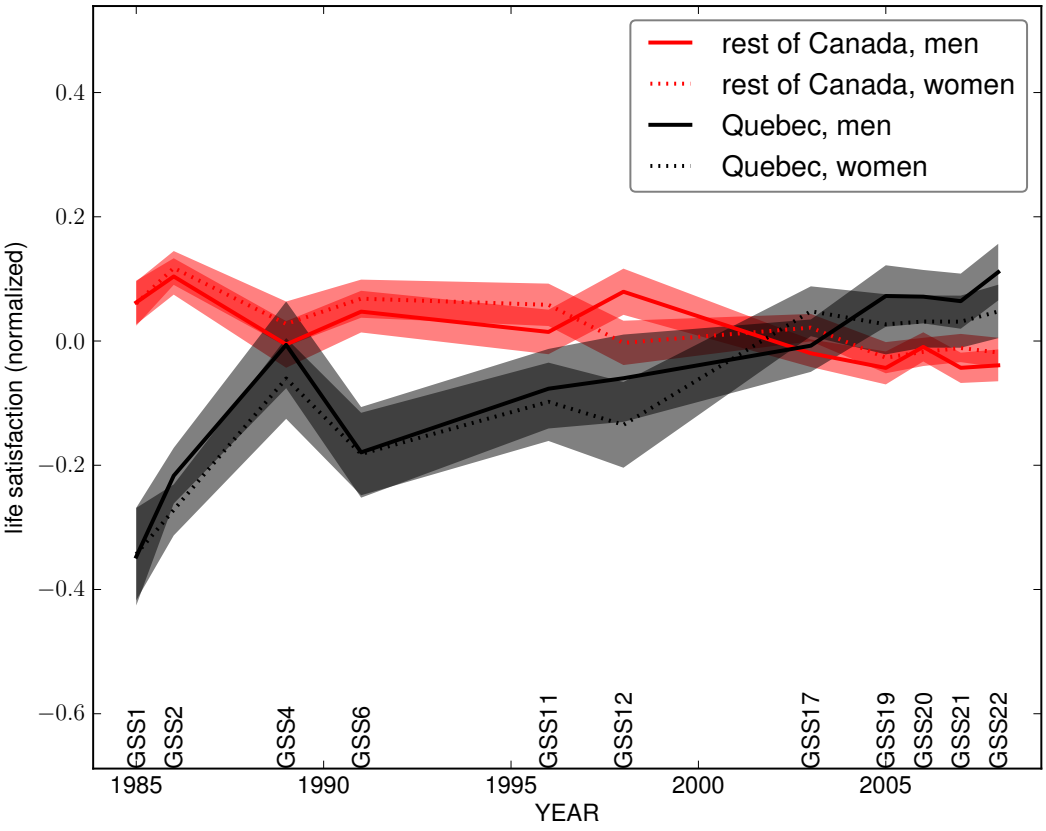

Figure A.4: Life satisfaction (in/outside Québec, by gender) .

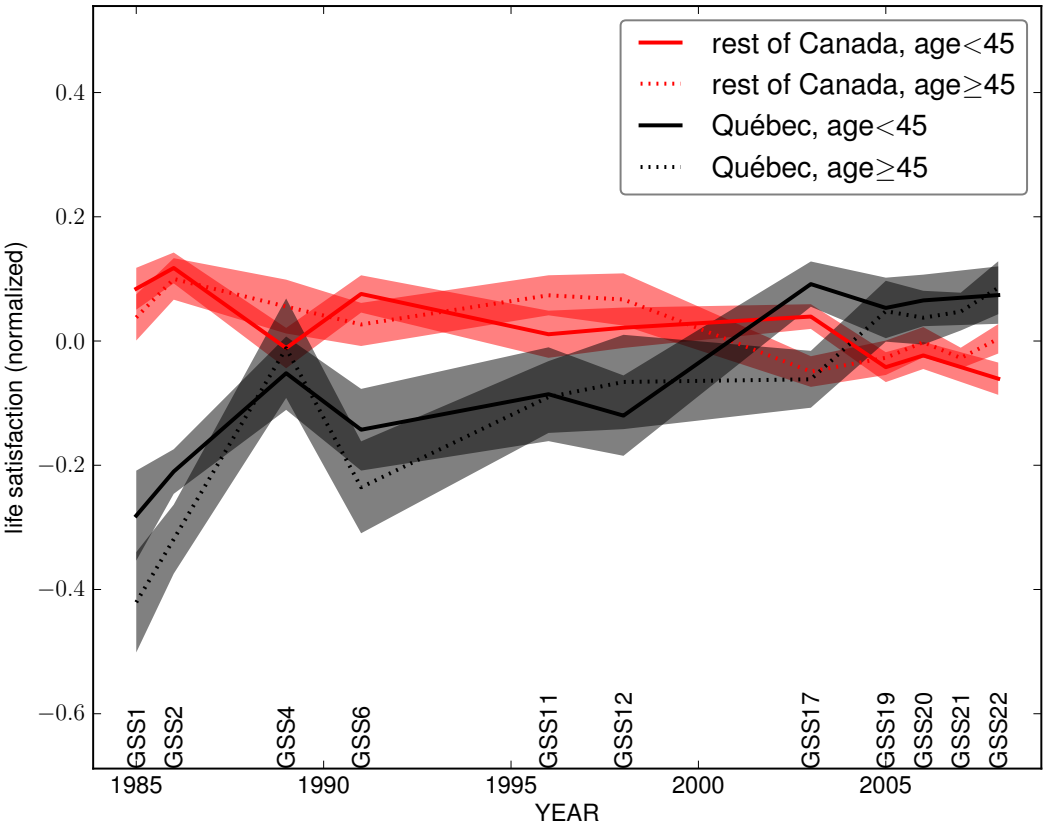

Figure A.5: Life satisfaction (in/outside Québec, by age group) .

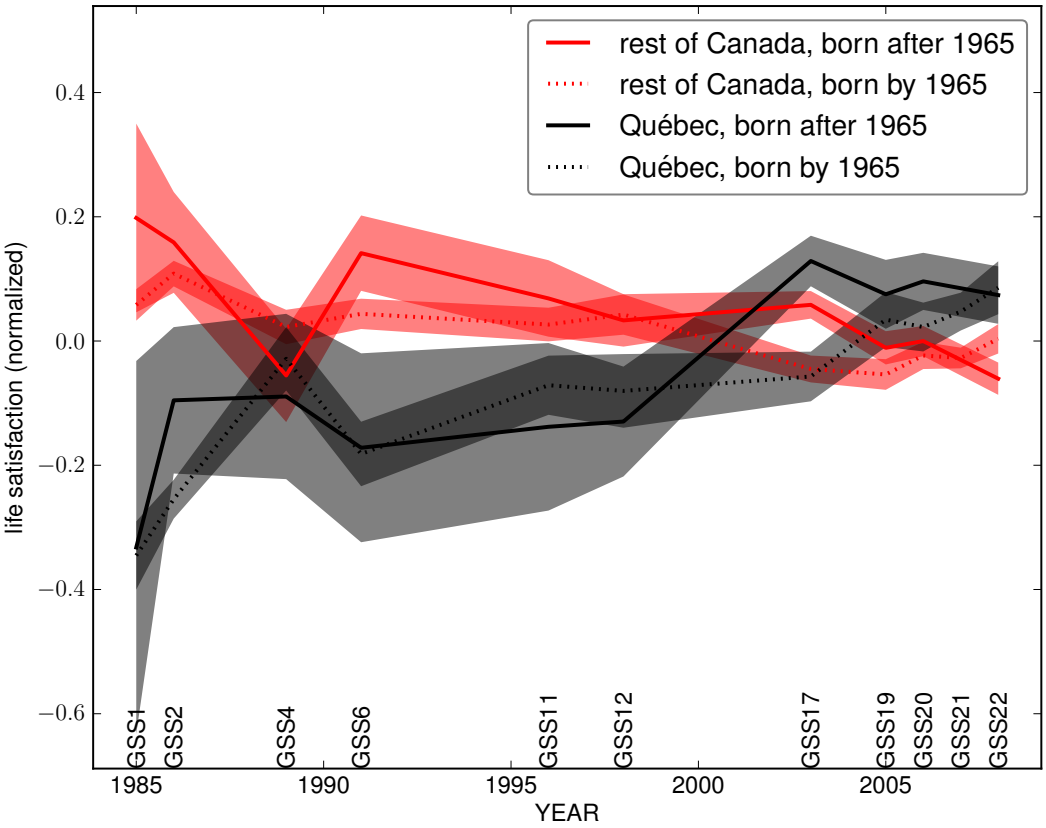

Figure A.6: Life satisfaction (in/outside Québec, by cohort) .

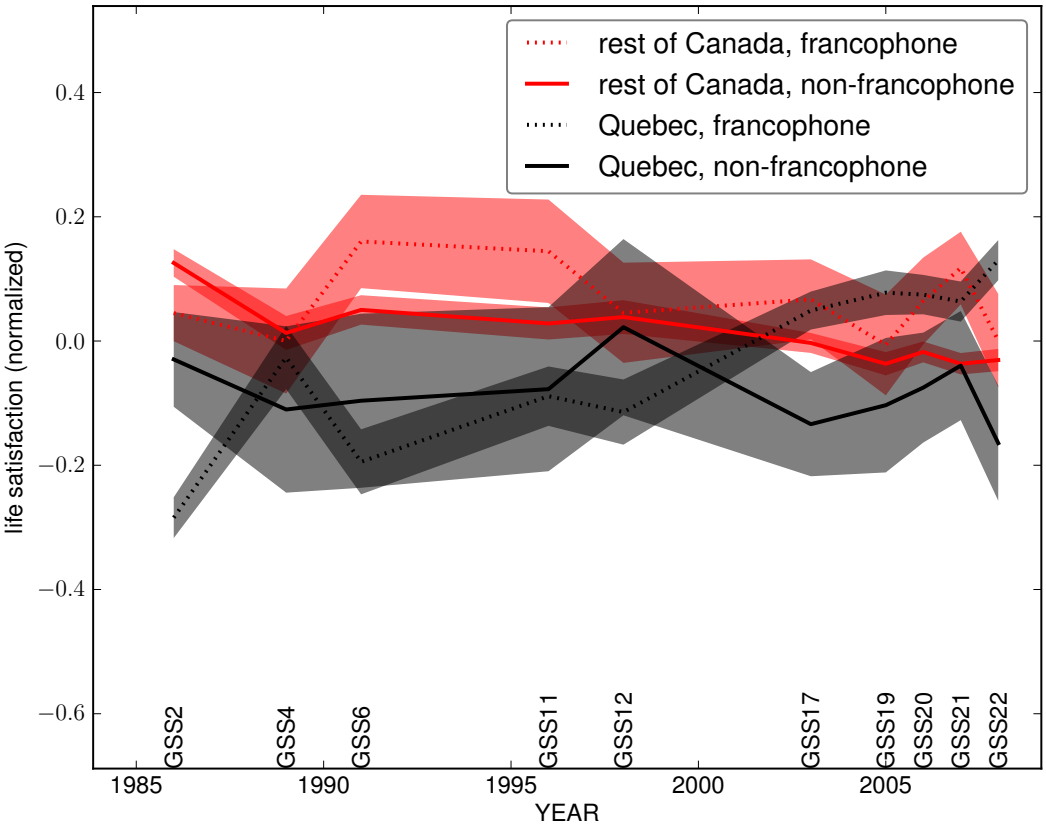

Figure A.7: Life satisfaction (in/outside Québec, by first language) .

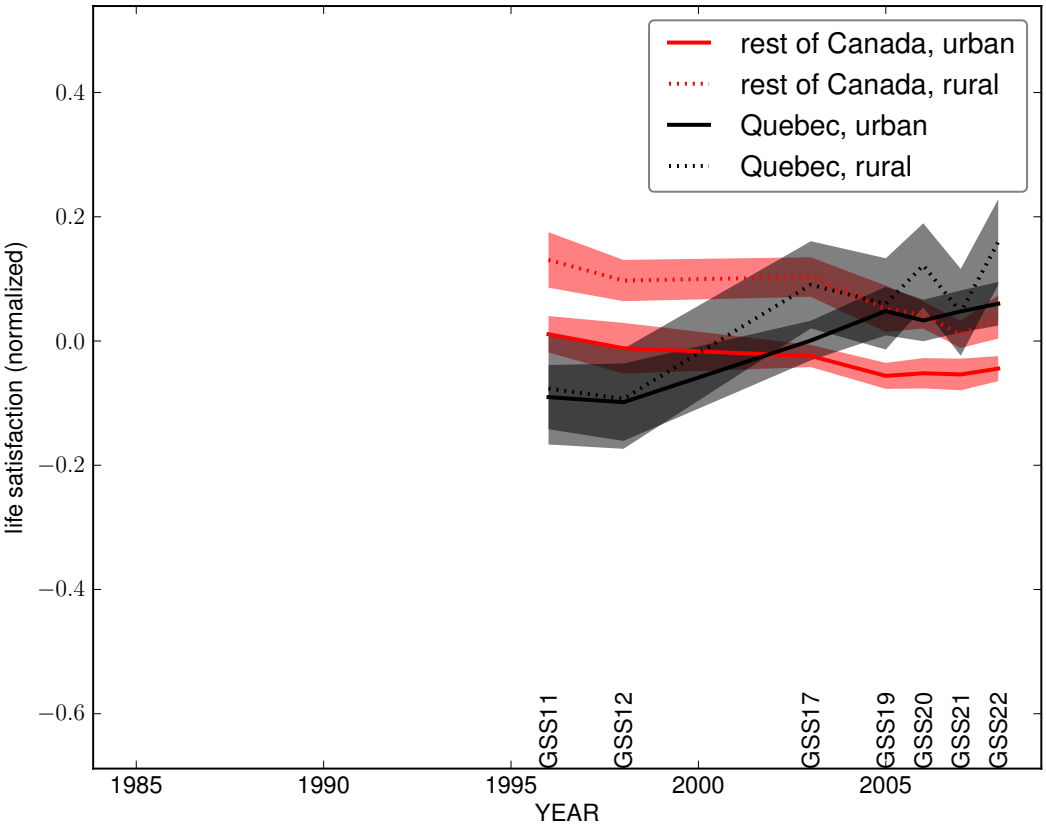

Figure A.8: Life satisfaction (in/outside Québec, by urban/rural) .

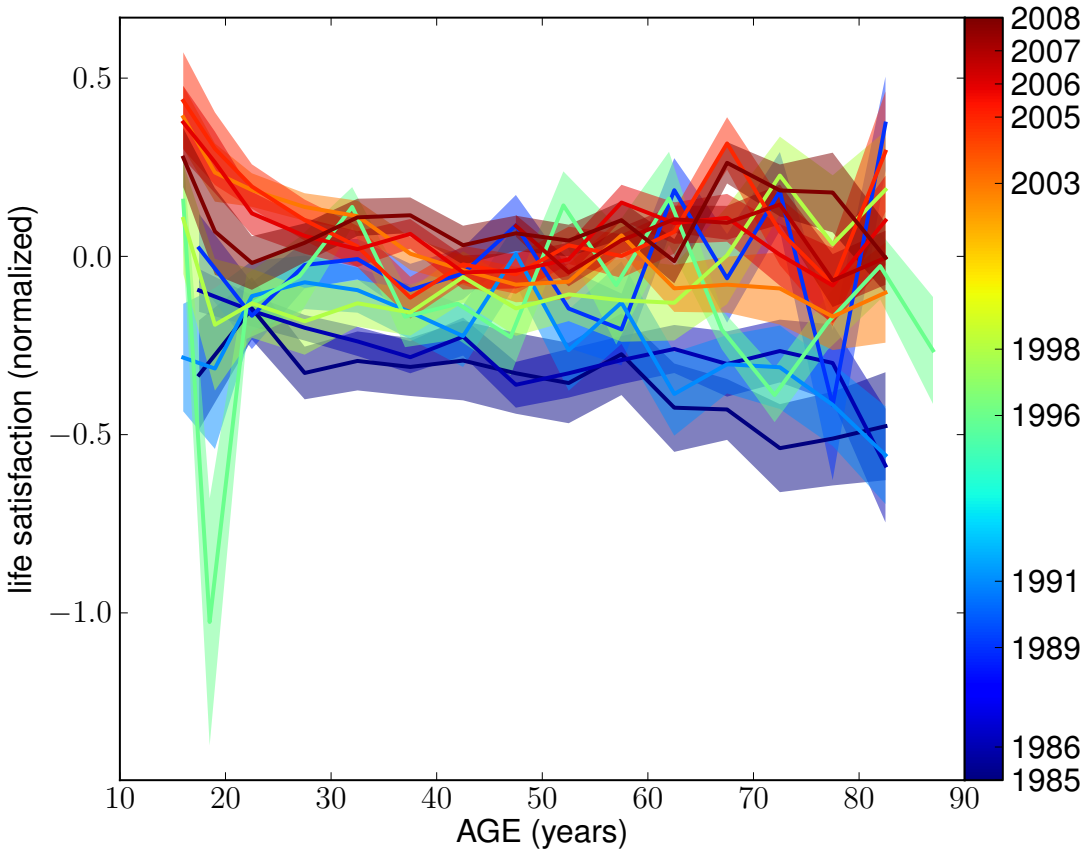

Figure A.9: Age profiles:
Satisfaction with life in Québec.

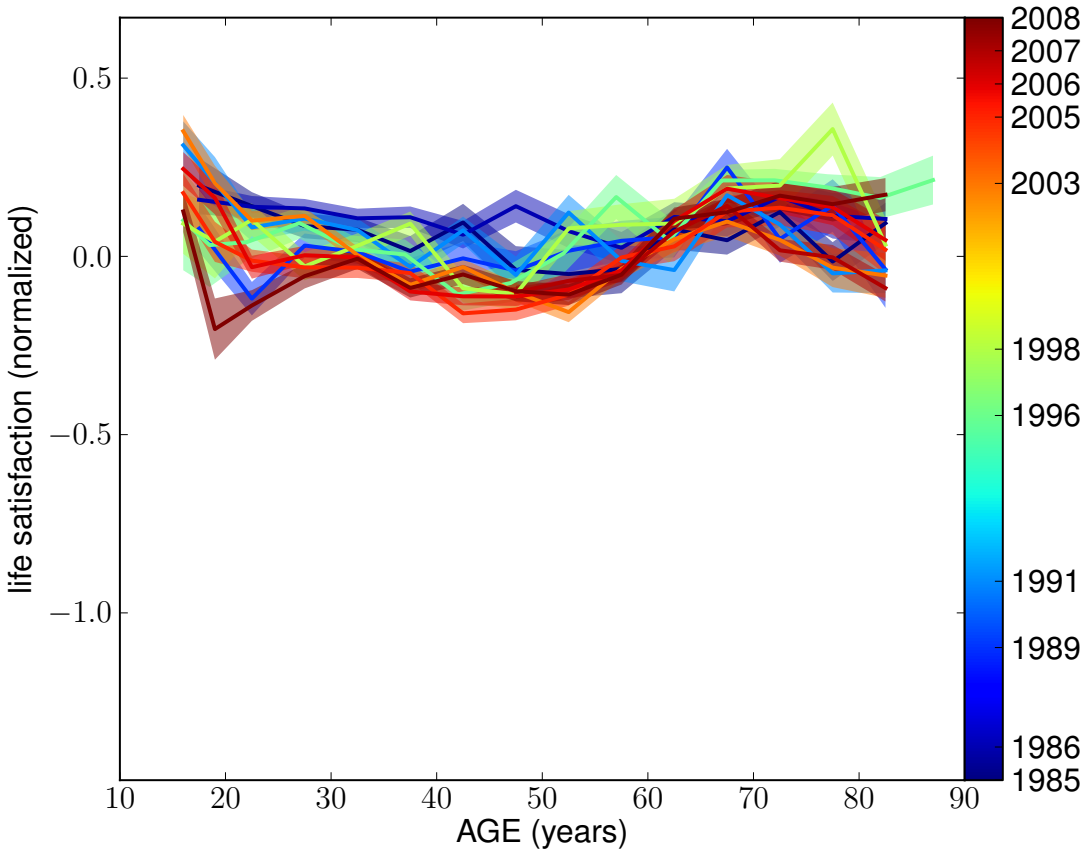

Figure A.10: Age profiles:
Satisfaction with life outside Québec.

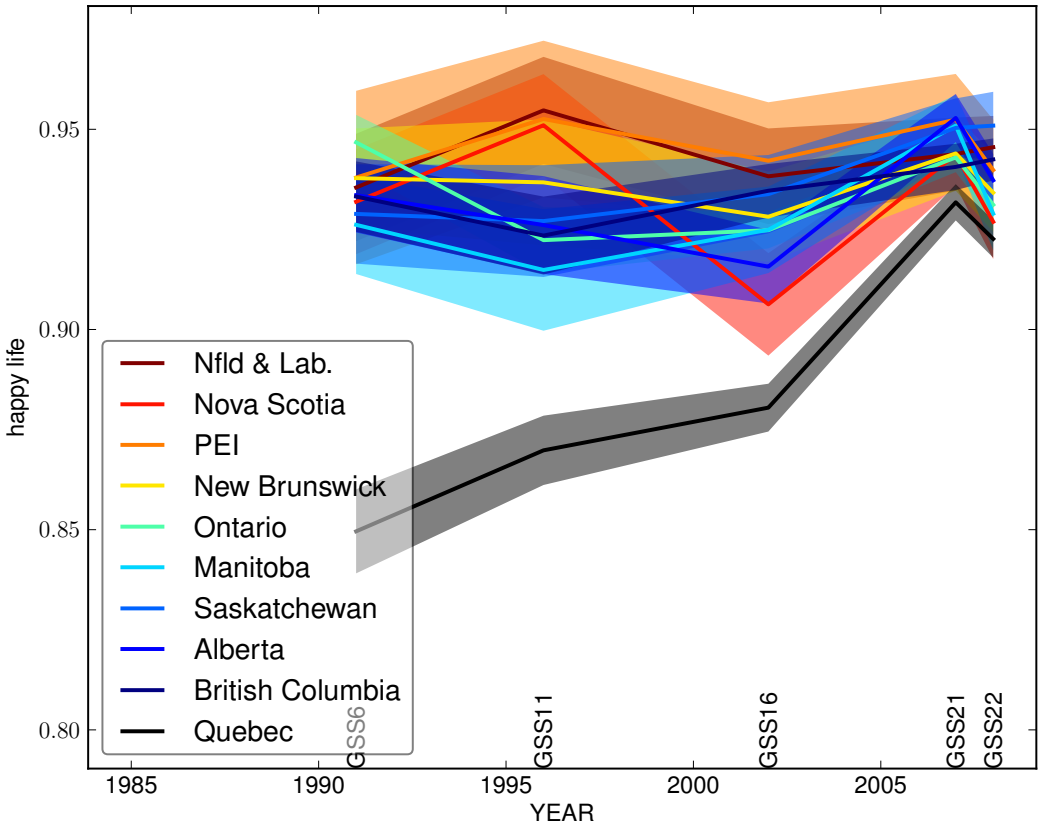

Figure A.11: Happy life (by Province) .

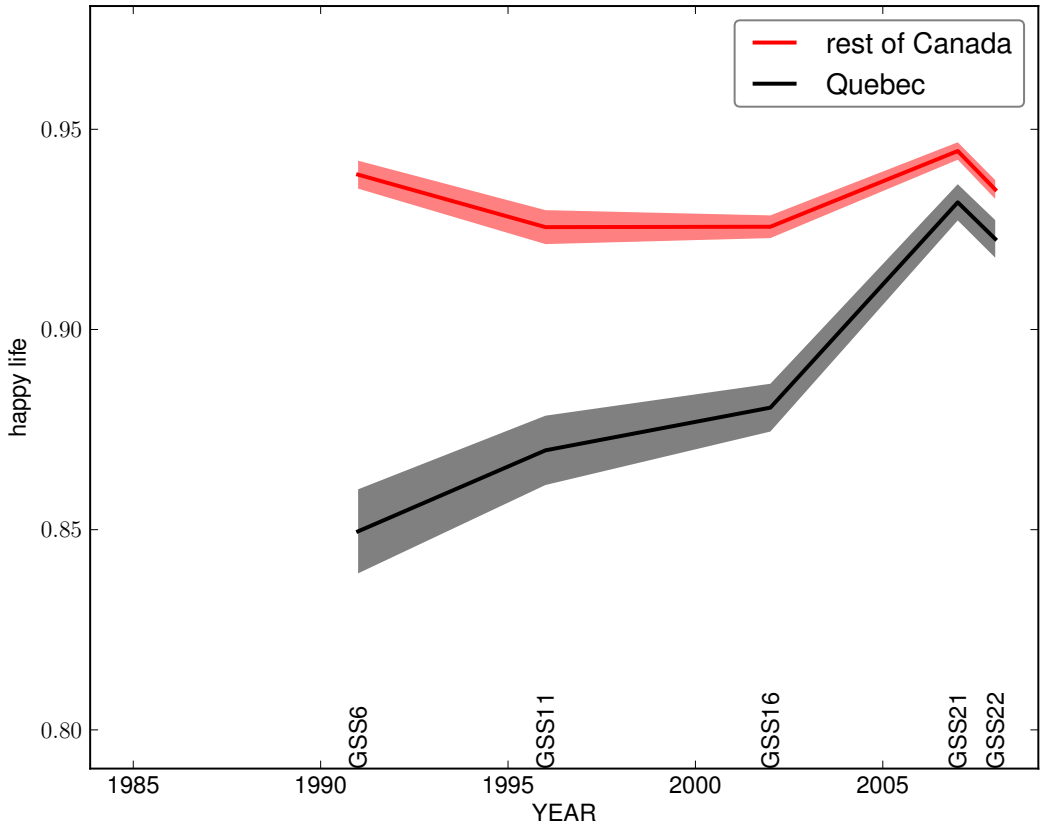

Figure A.12: Happy life (in/outside Québec) .

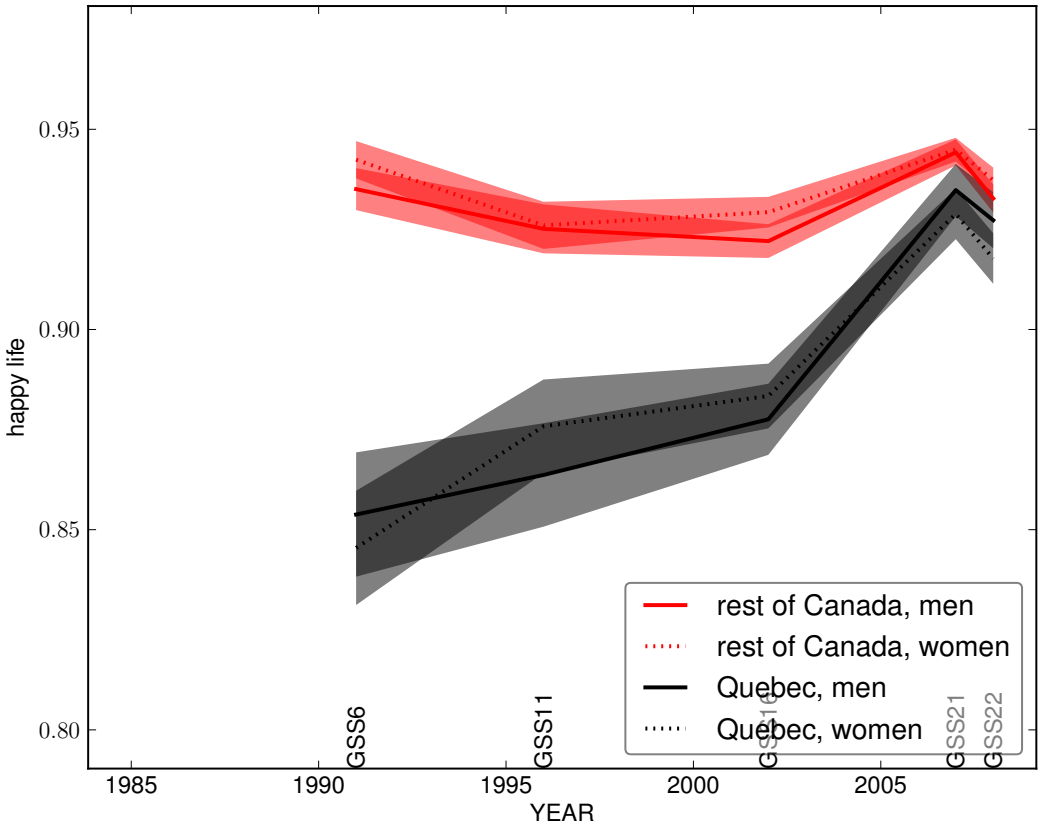

Figure A.13: Happy life (in/outside Québec, by gender) .

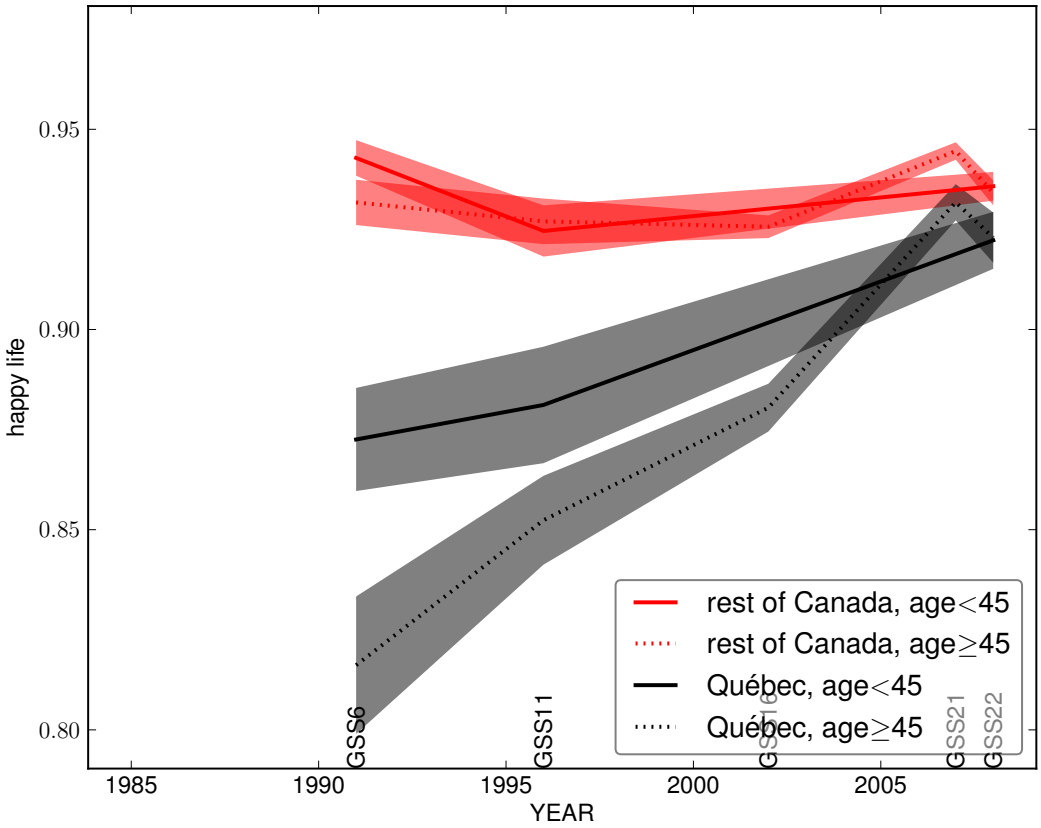

Figure A.14: Happy life (in/outside Québec, by age group) .

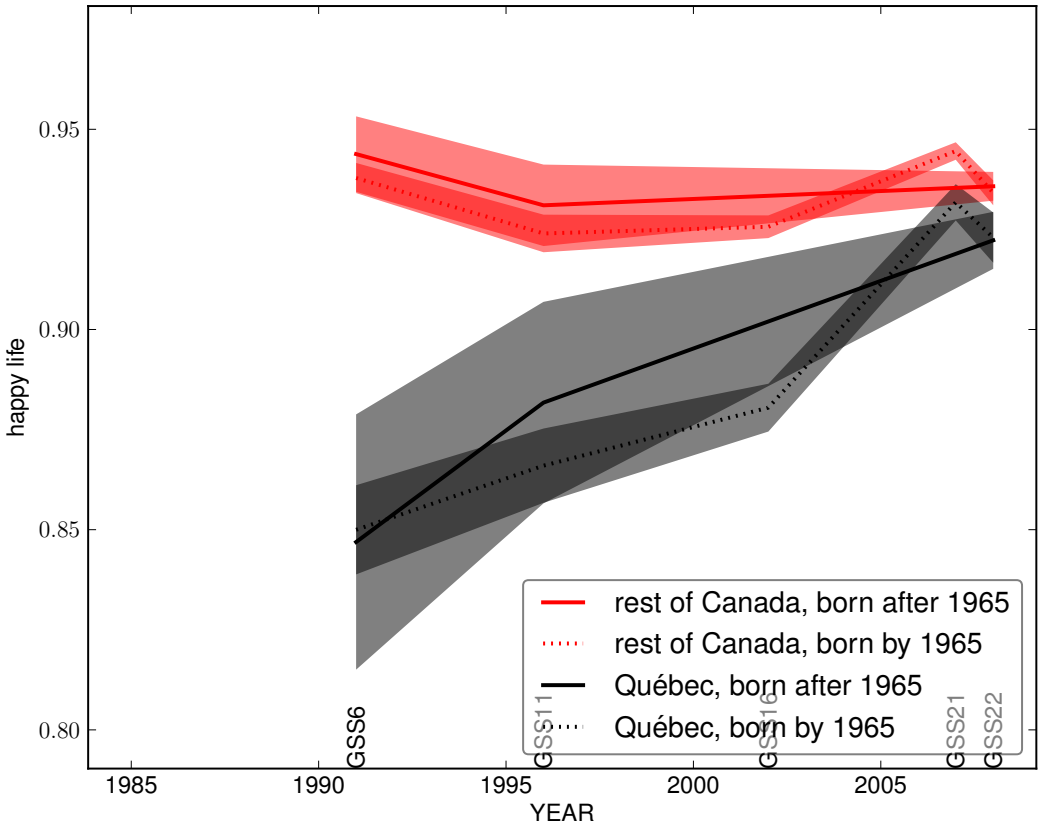

Figure A.15: Happy life (in/outside Québec, by cohort) .

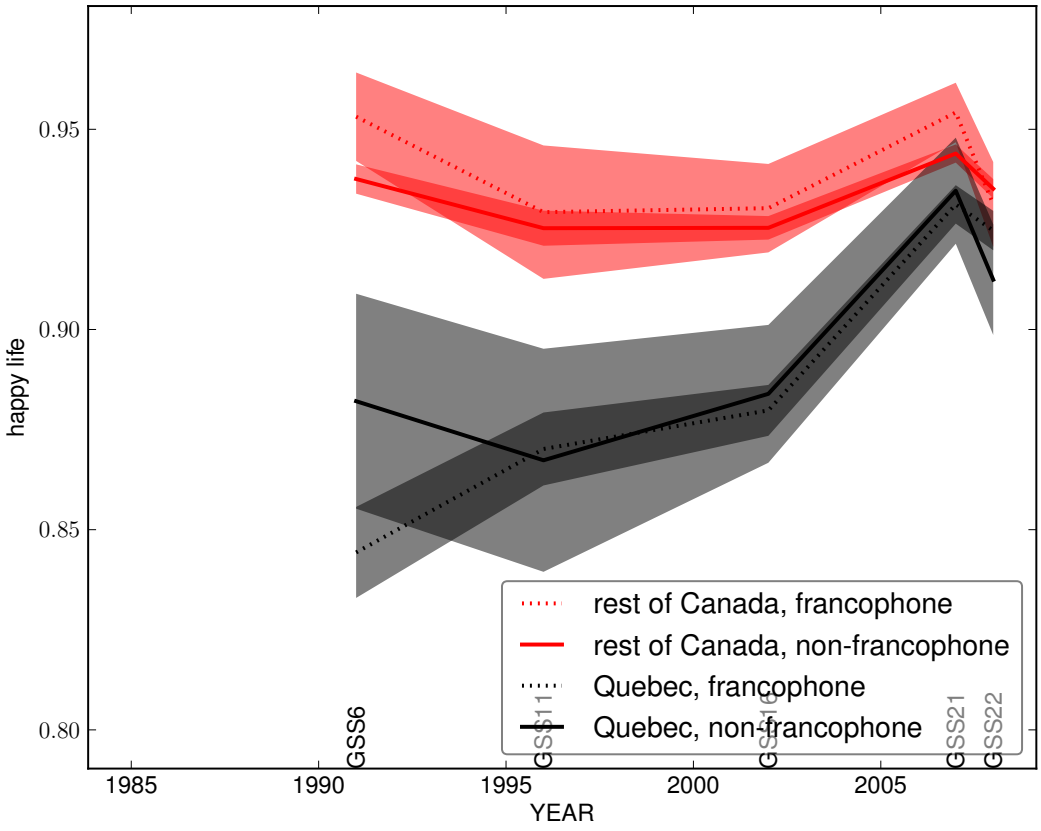

Figure A.16: Happy life (in/outside Québec, by first language) .

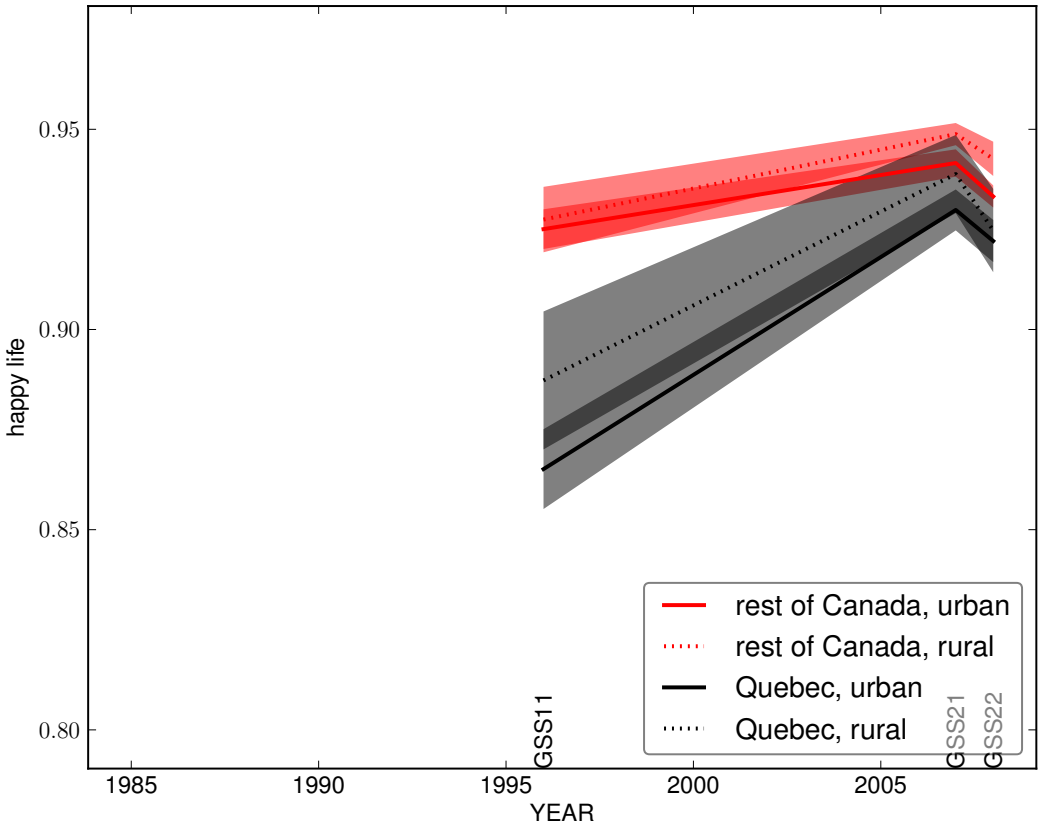

Figure A.17: Happy life (in/outside Québec, by urban/rural) .

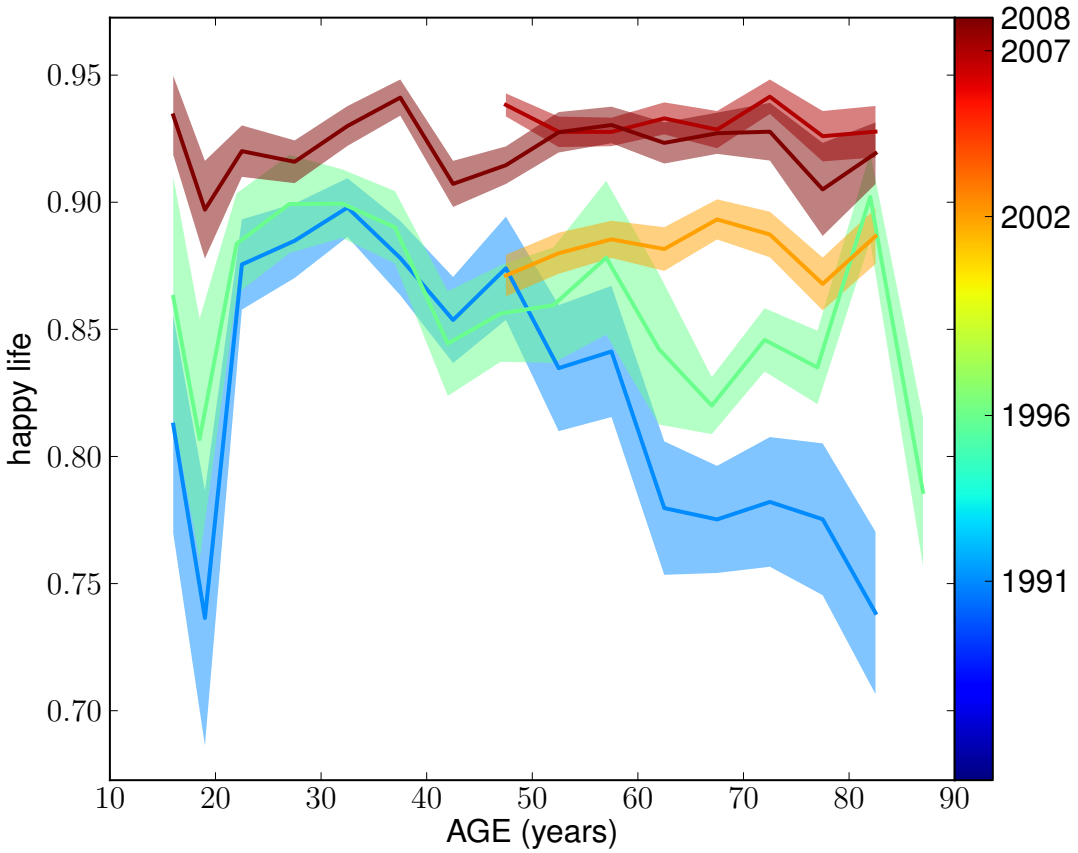

Figure A.18: Age profiles:
Happy life in Québec.

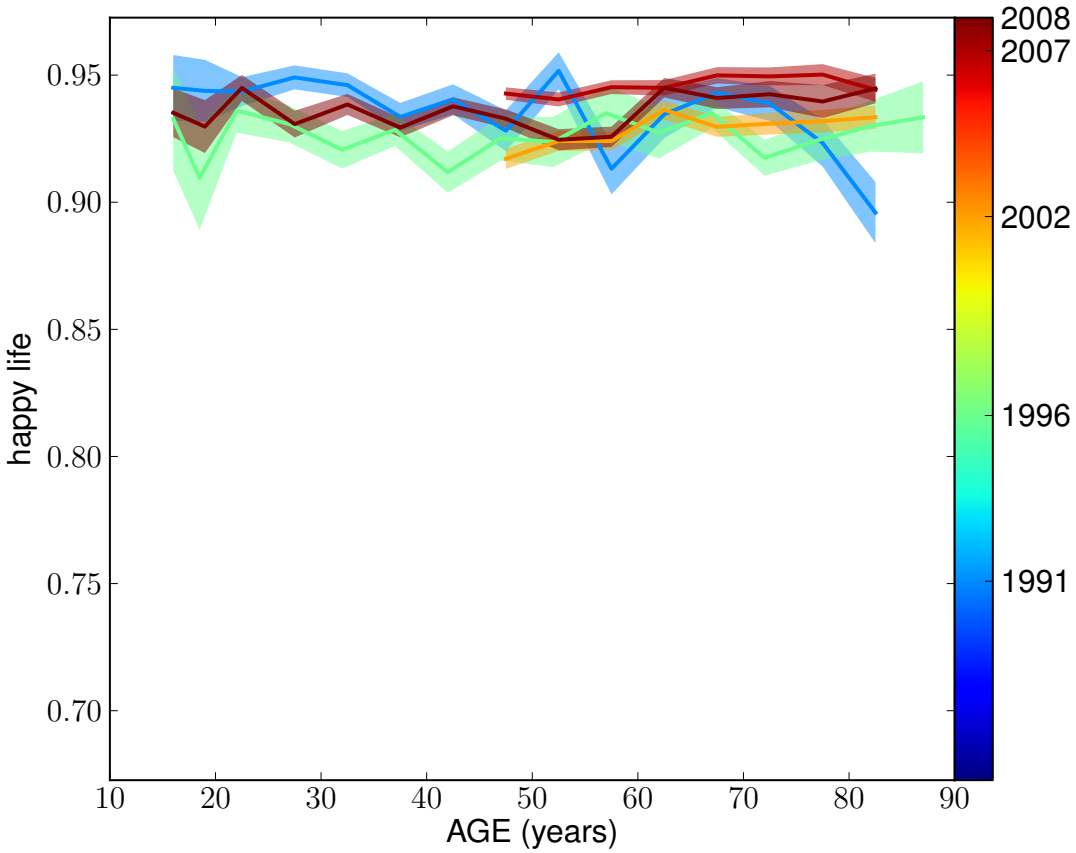

Figure A.19: Age profiles:
Happy life outside Québec.

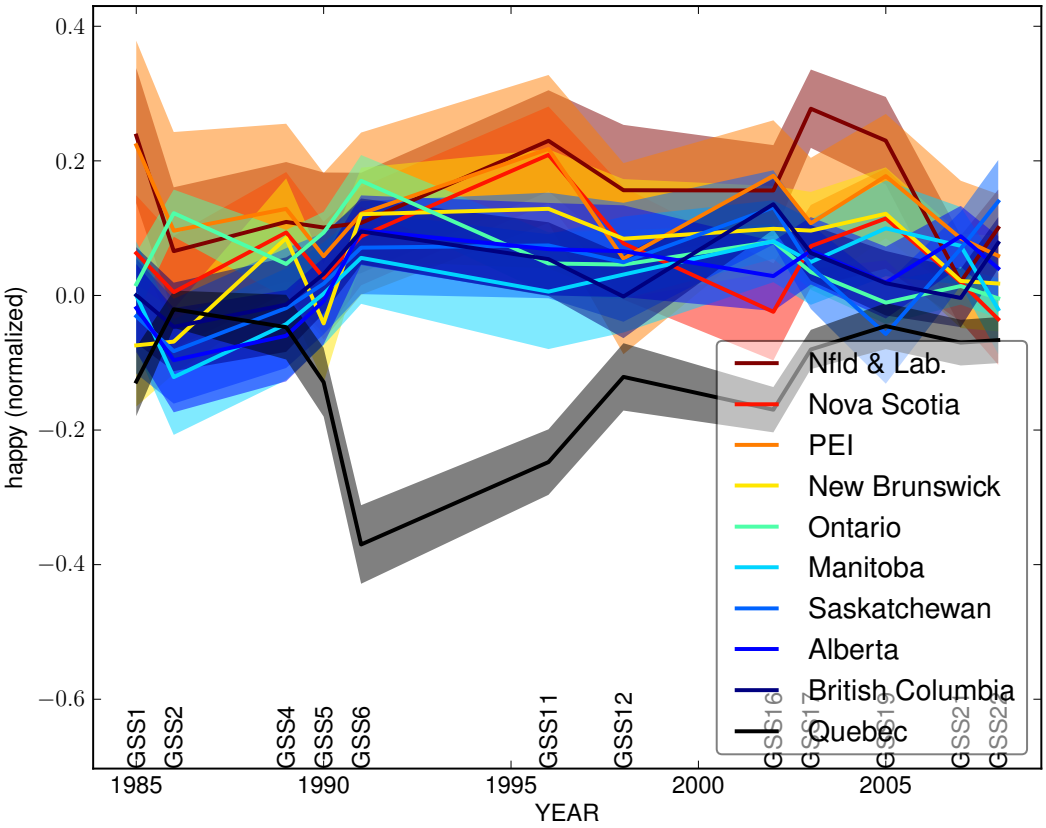

Figure A.20: Happiness (by Province) .

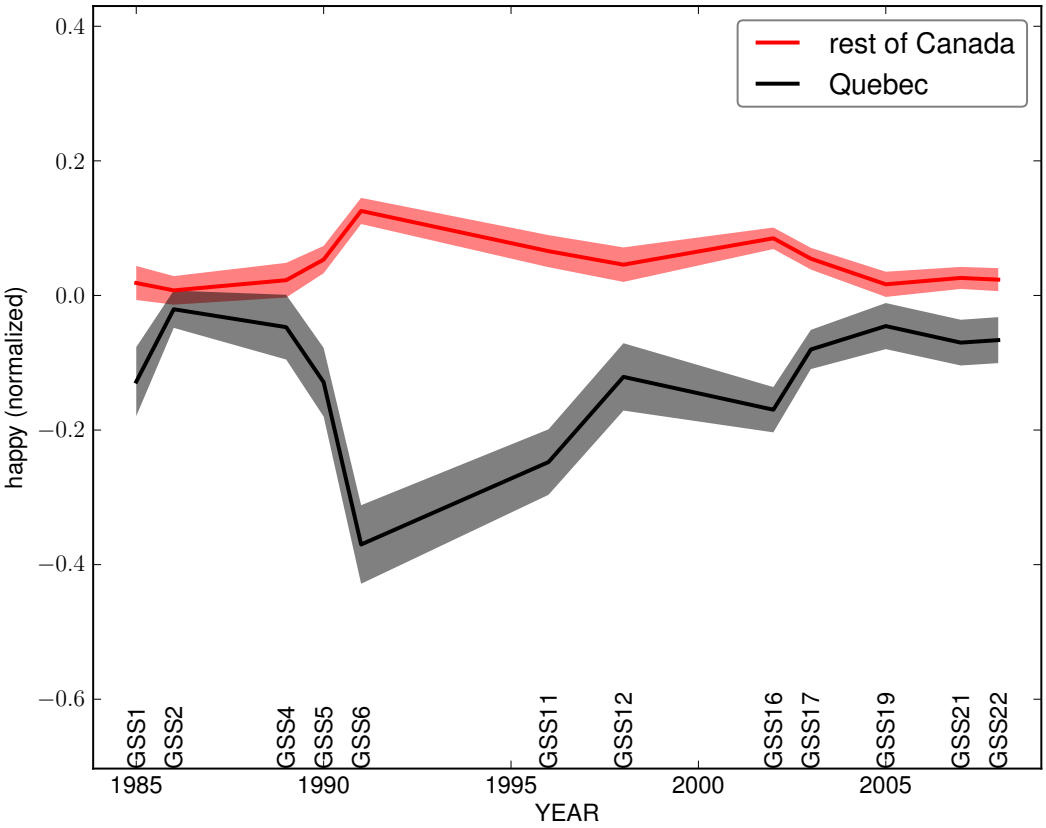

Figure A.21: Happiness (in/outside Québec) .

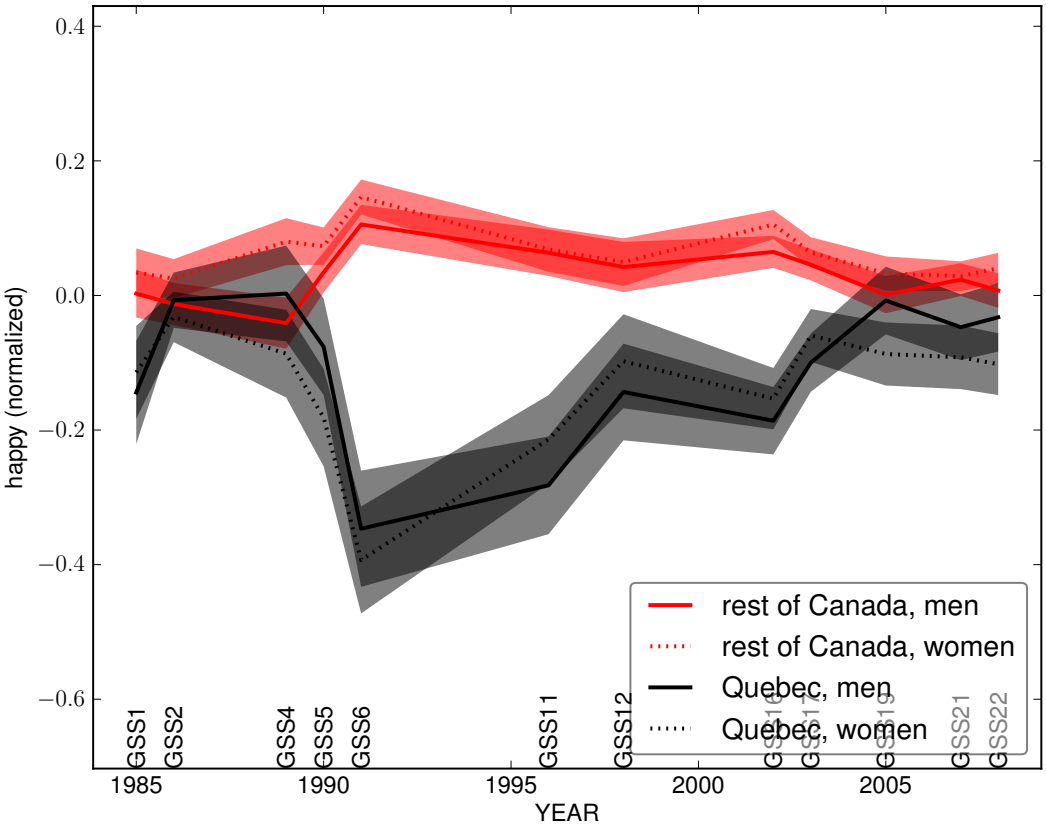

Figure A.22: Happiness (in/outside Québec, by gender) .

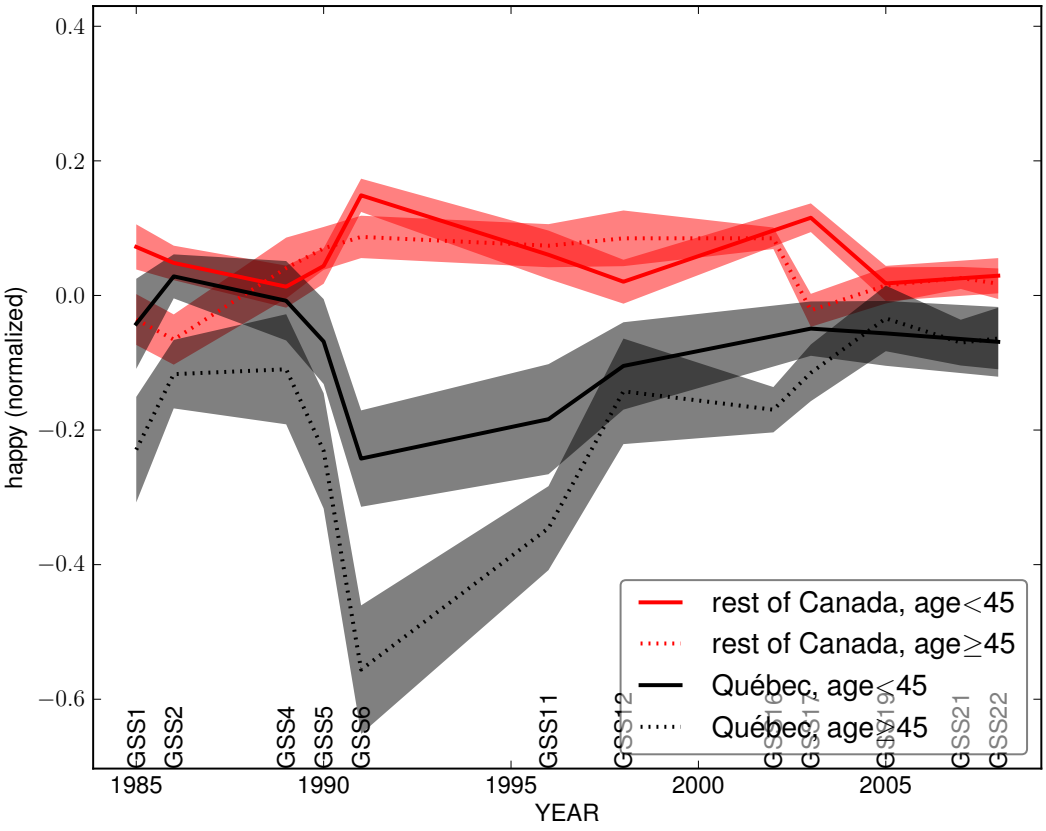

Figure A.23: Happiness (in/outside Québec, by age group) .

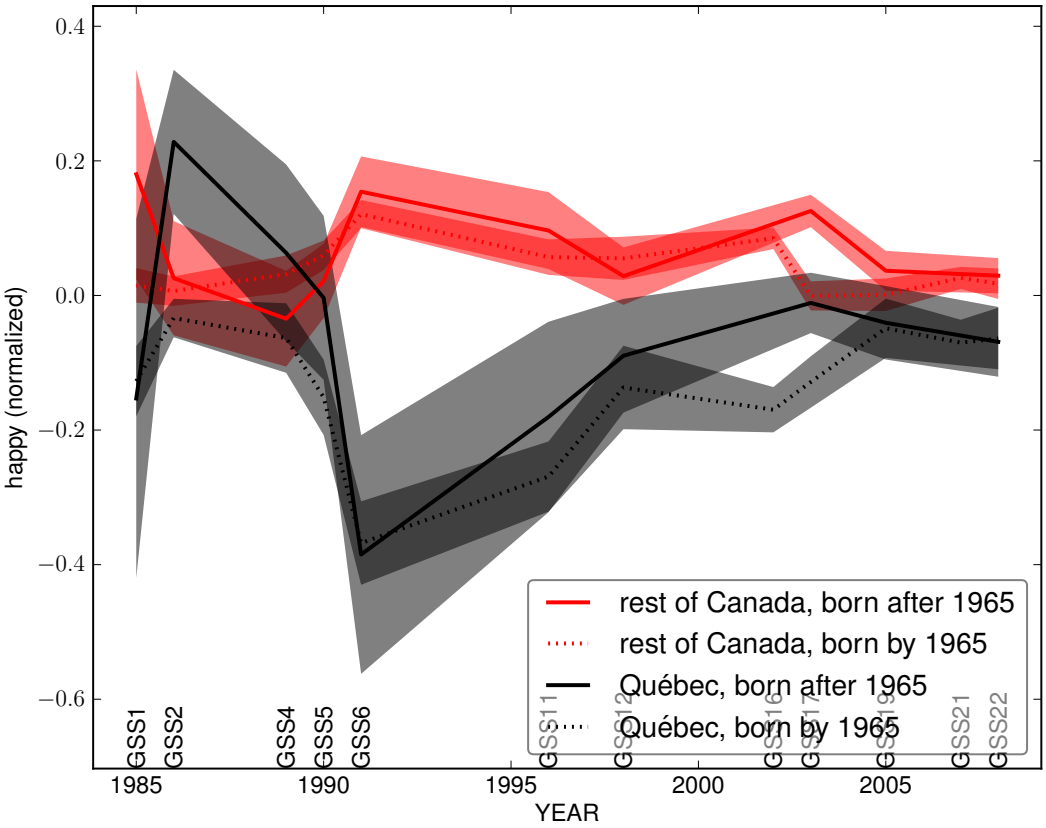

Figure A.24: Happiness (in/outside Québec, by cohort) .

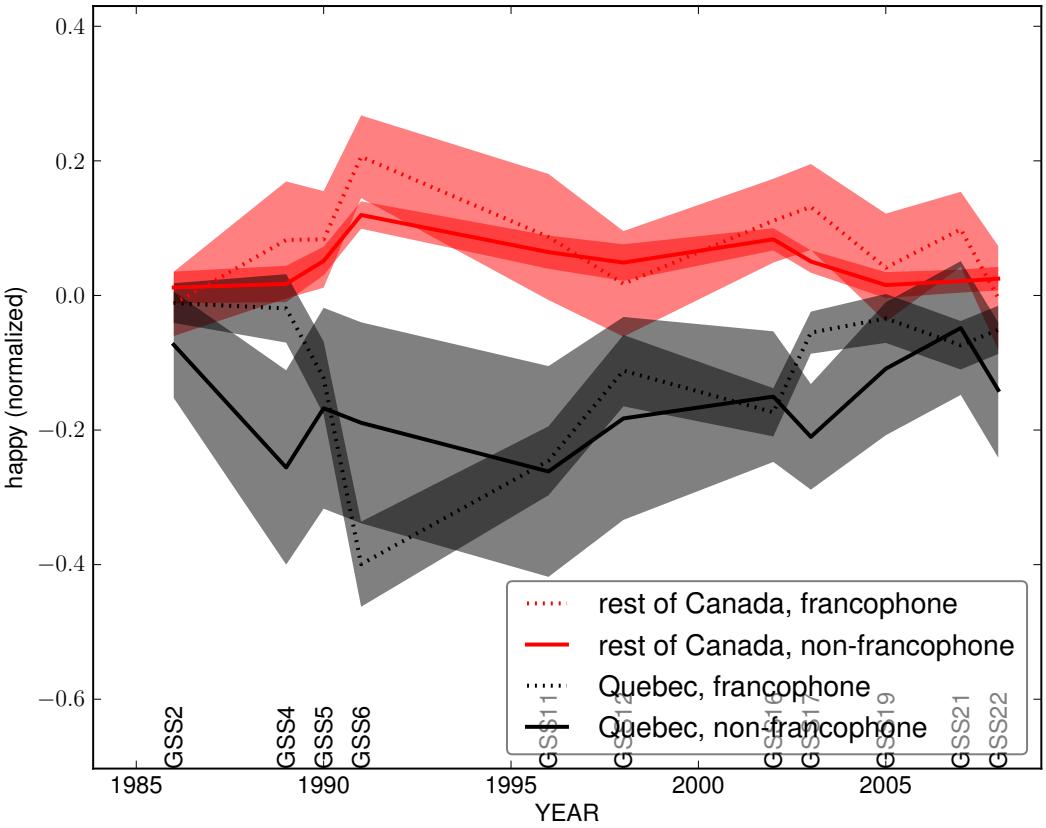

Figure A.25: Happiness (in/outside Québec, by first language) .

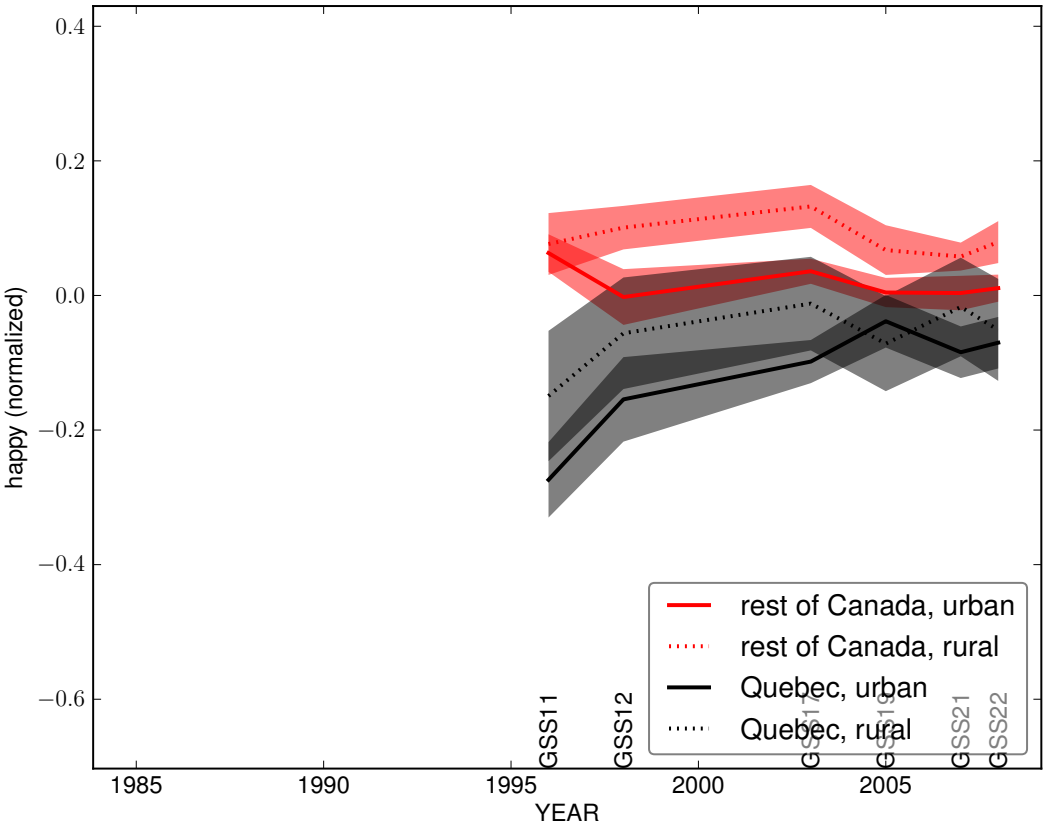

Figure A.26: Happiness (in/outside Québec, by urban/rural) .

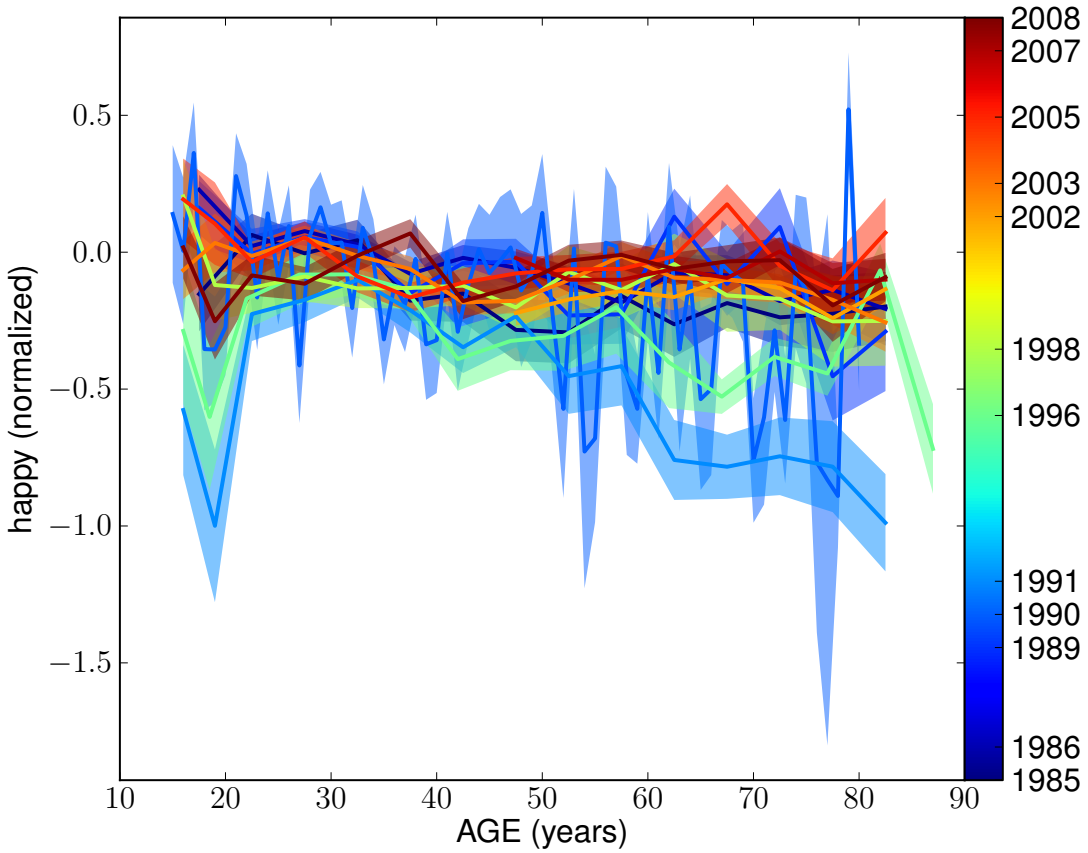

Figure A.27: Age profiles: Happiness in Québec.

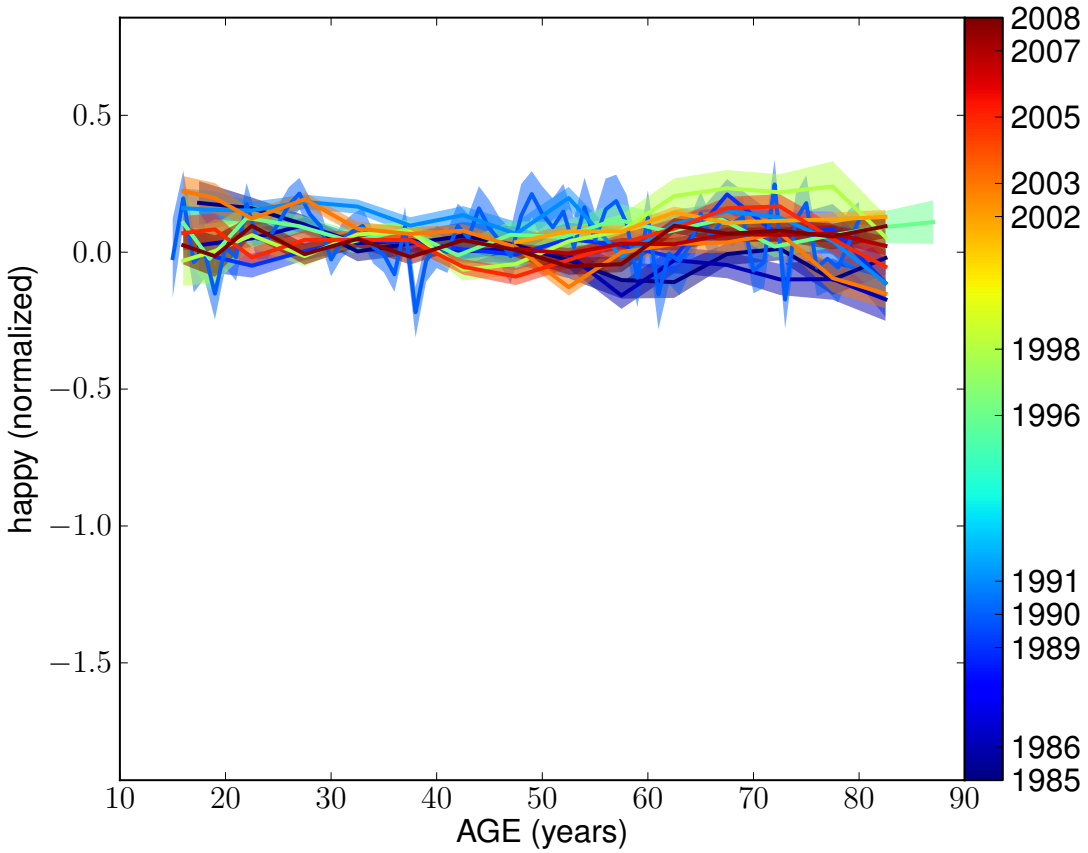

Figure A.28: Age profiles:
Happiness outside Québec.

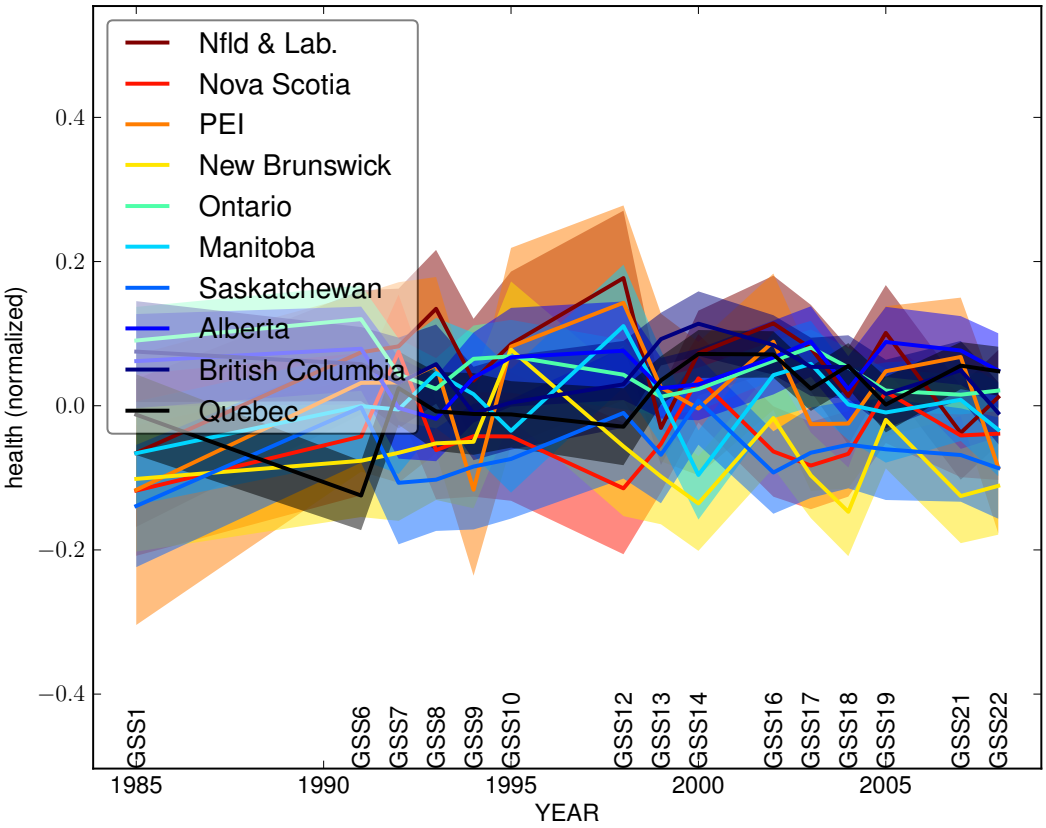

Figure A.29: Health (by Province) .

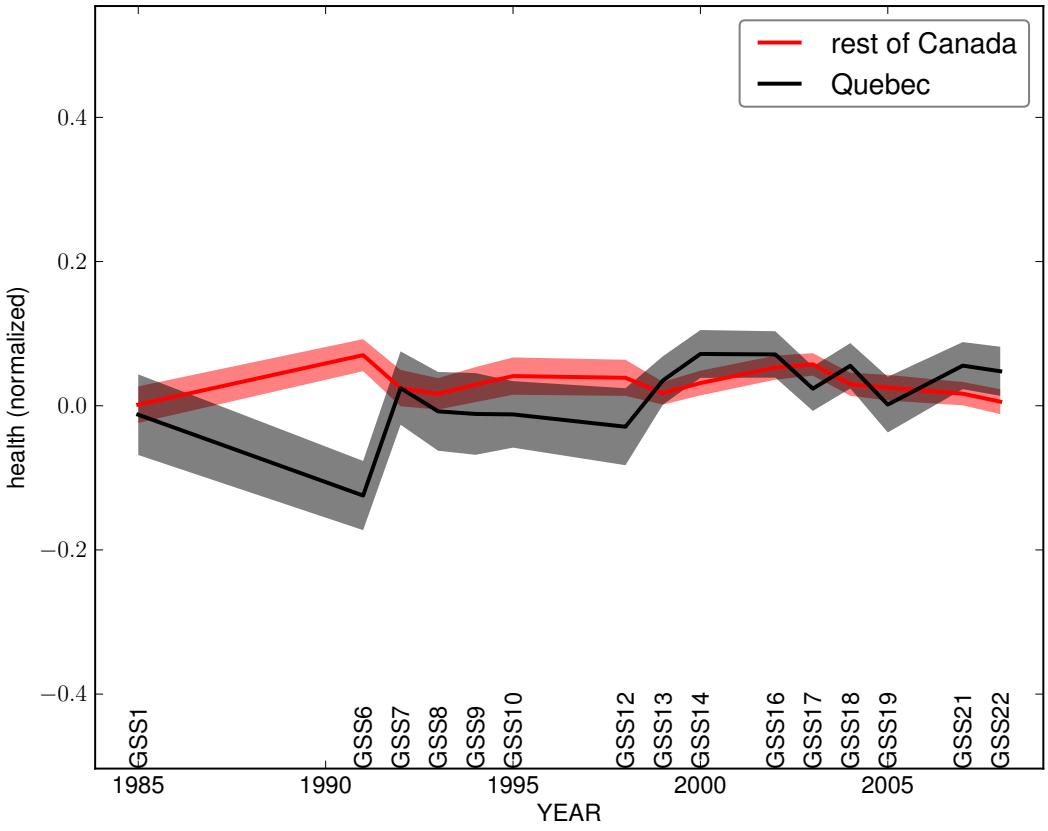

Figure A.30: Health (in/outside Québec) .

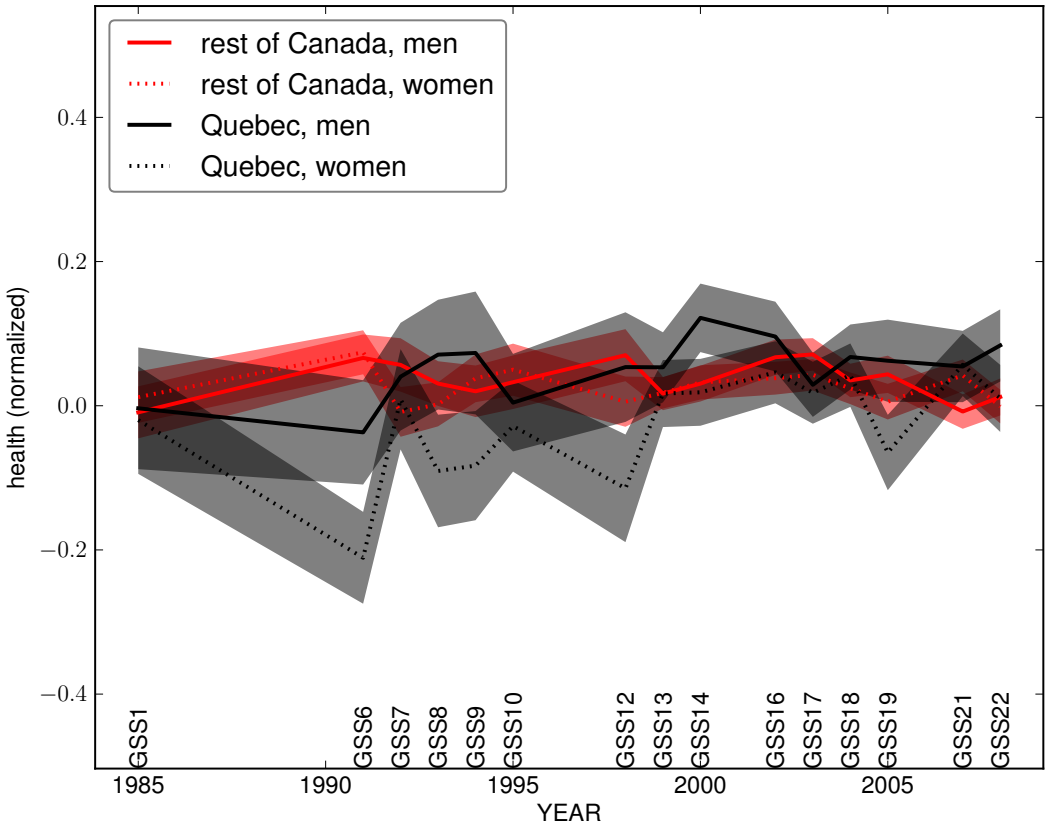

Figure A.31: Health (in/outside Québec, by gender) .

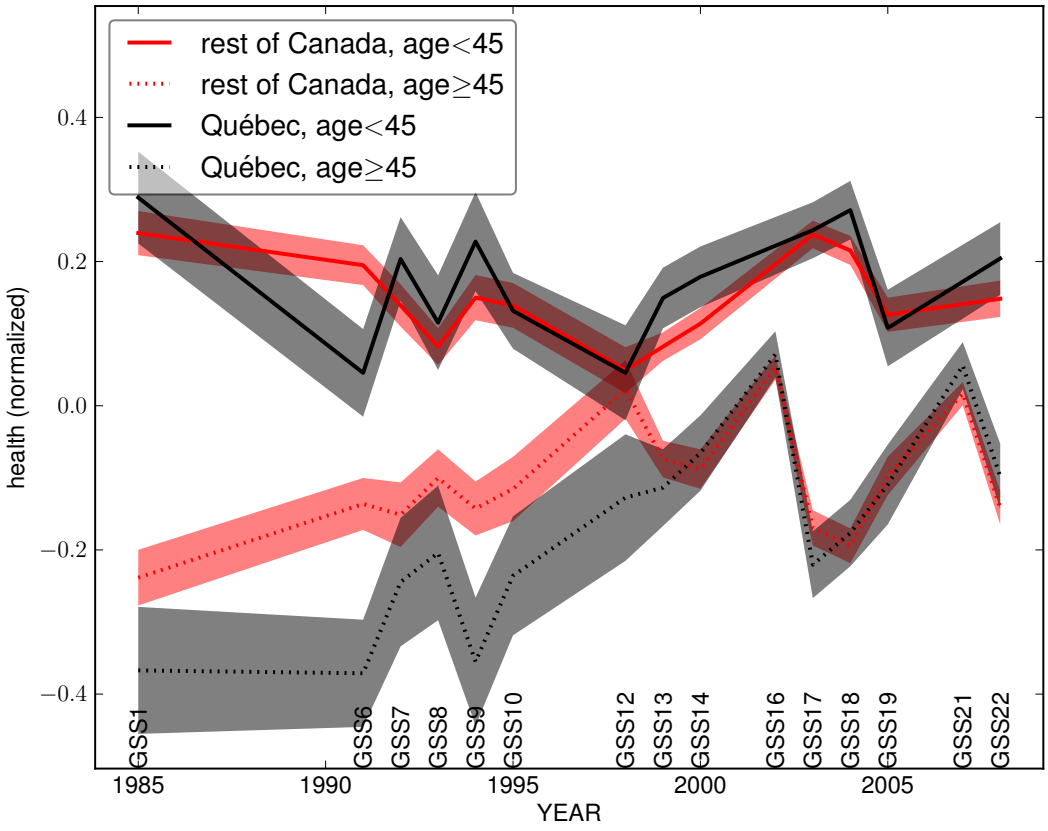

Figure A.32: Health (in/outside Québec, by age group) .

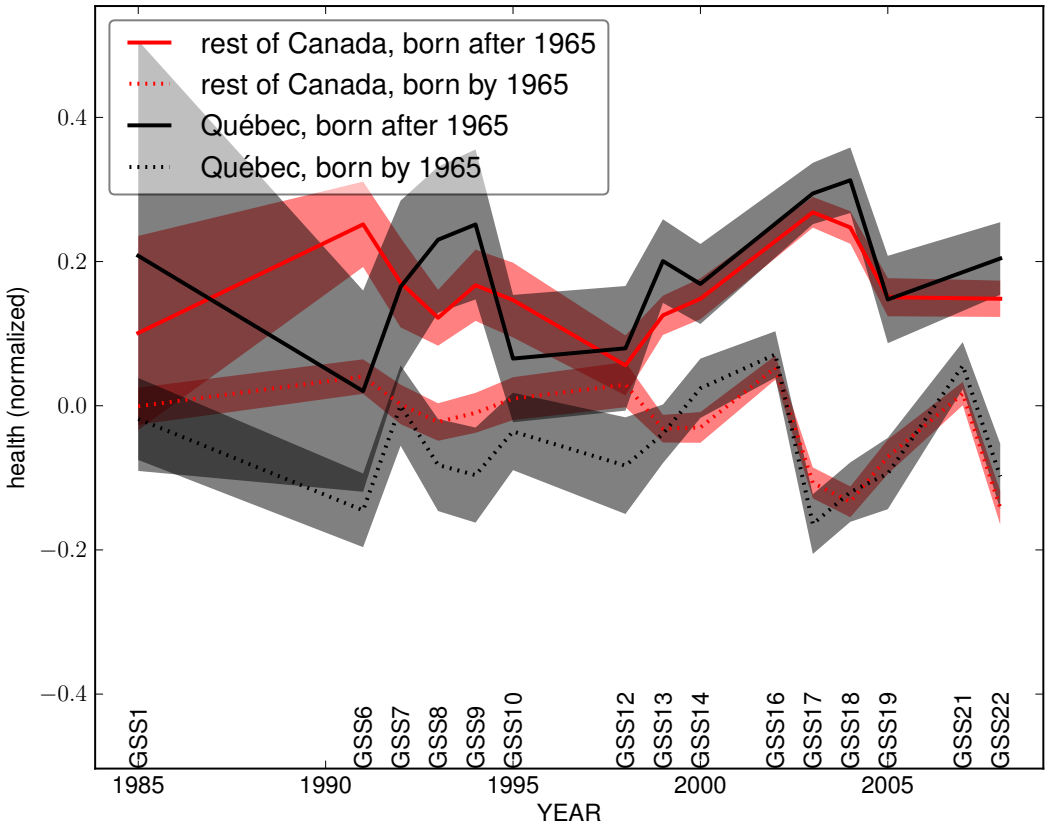

Figure A.33: Health (in/outside Québec, by cohort) .

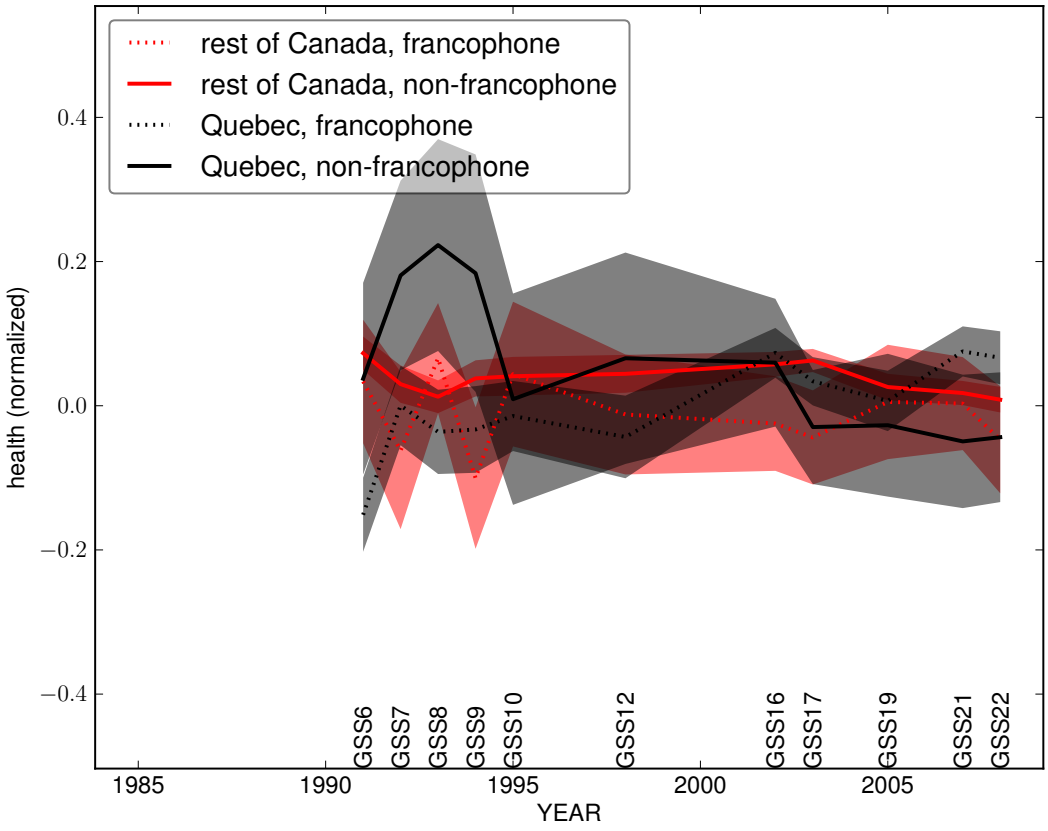

Figure A.34: Health (in/outside Québec, by first language) .

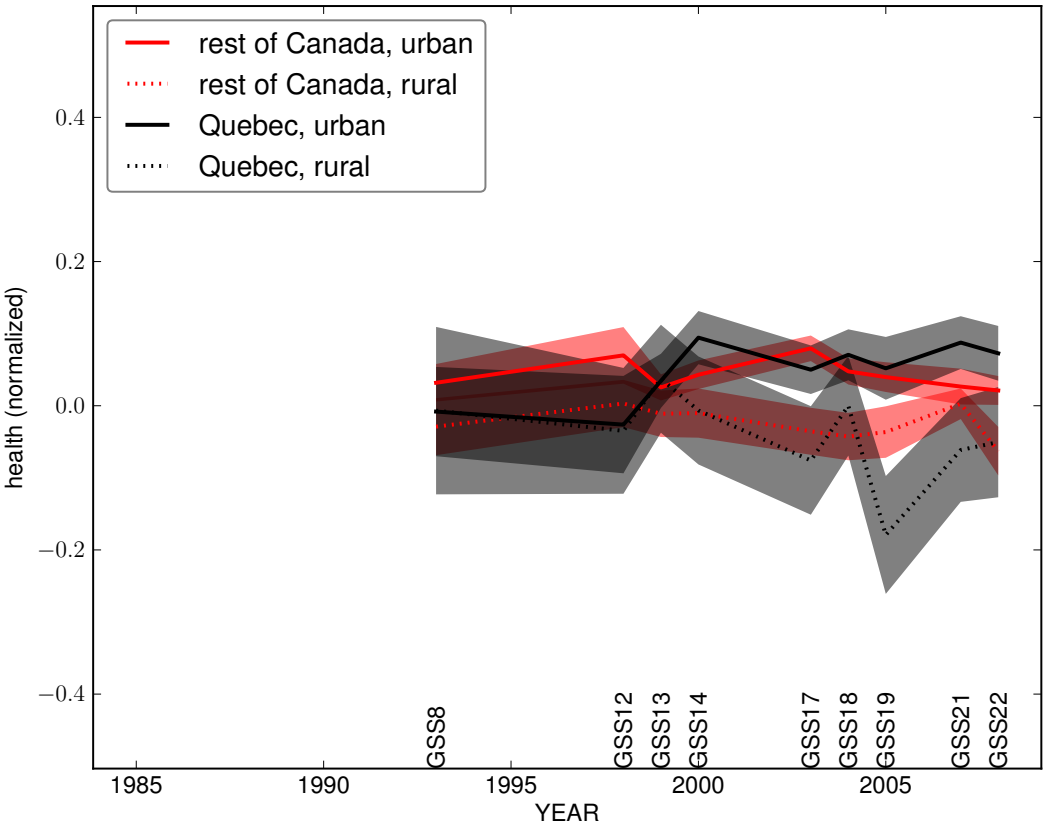

Figure A.35: Health (in/outside Québec, by urban/rural) .

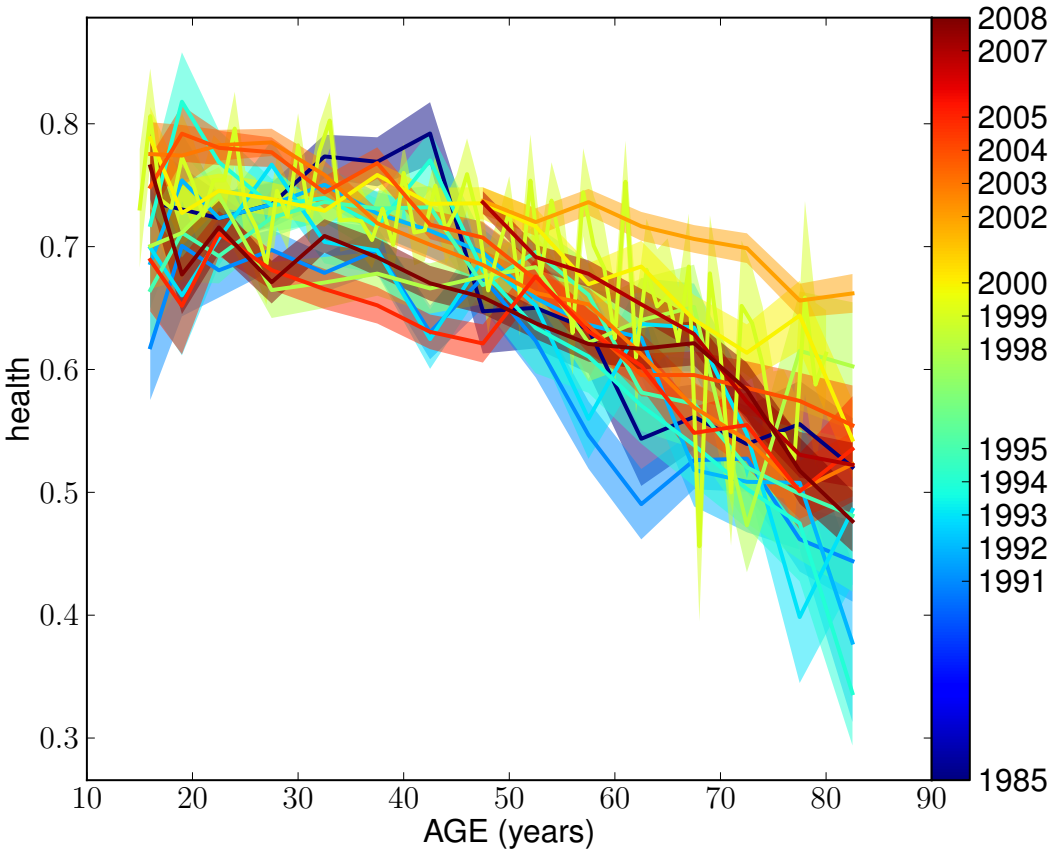

Figure A.36: Age profiles: Health in Québec.

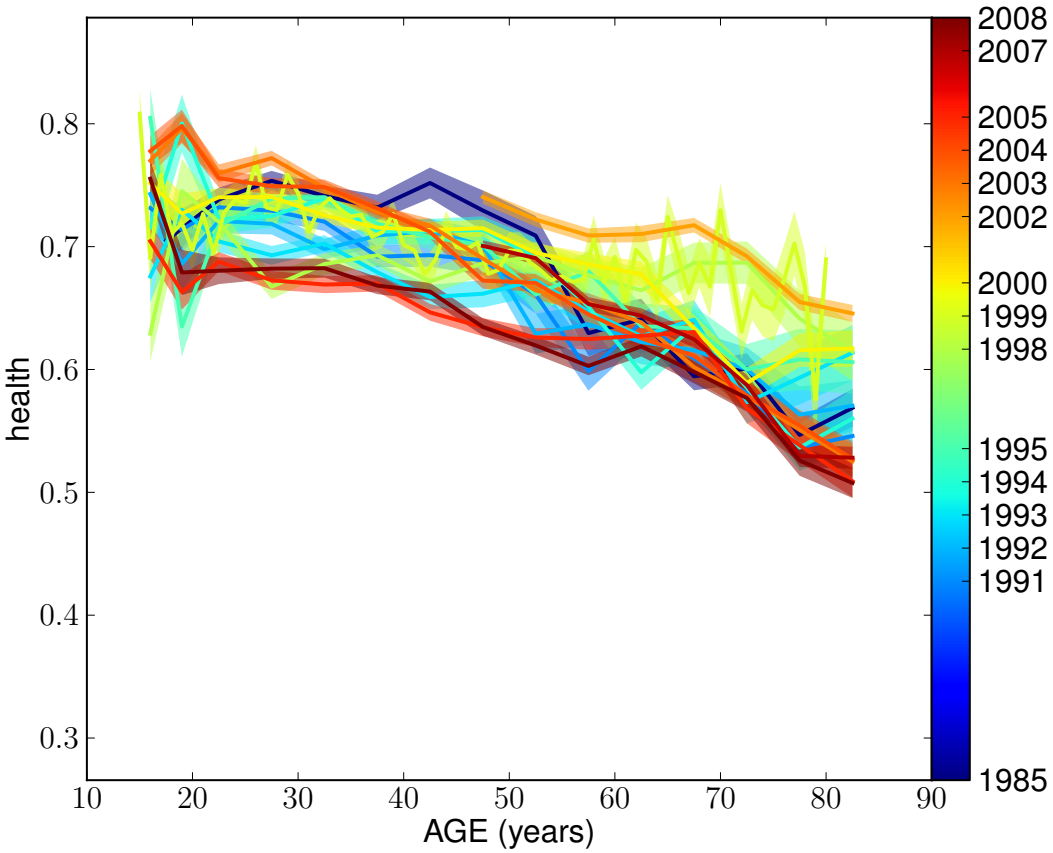

Figure A.37: Age profiles:
Health outside Québec.

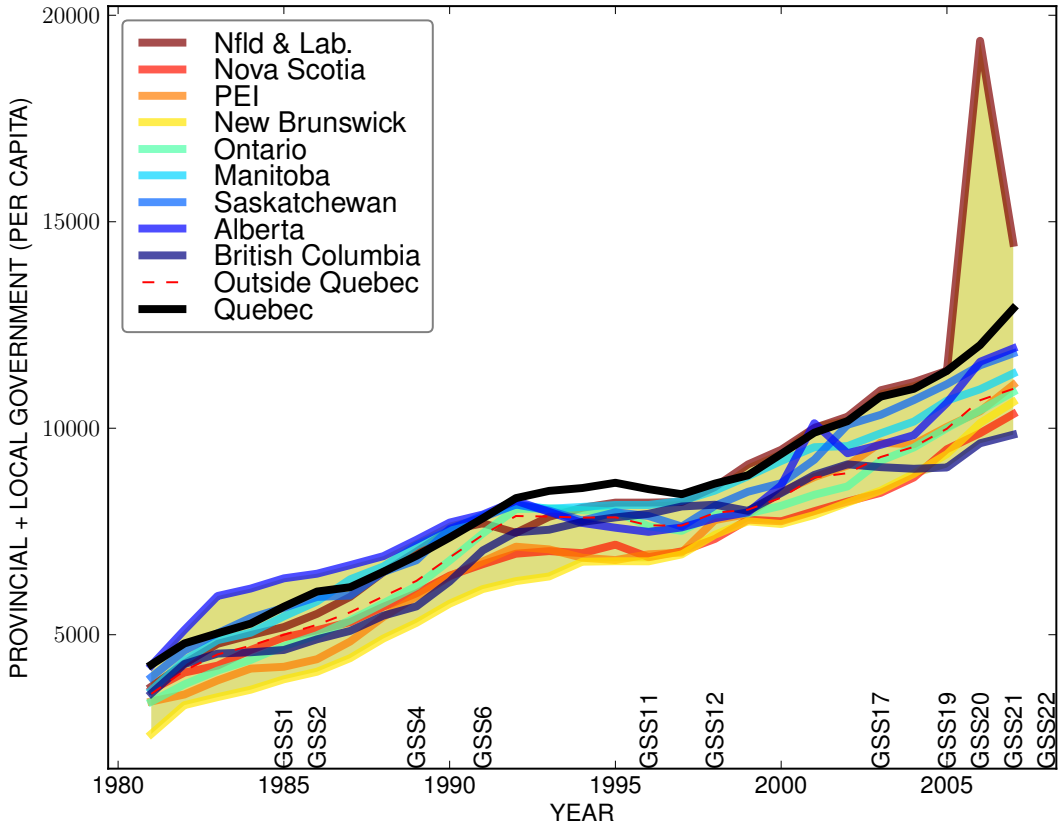

Figure A.38: Provincial and local government expenditures . comments

A.4 Spending, finances, employment

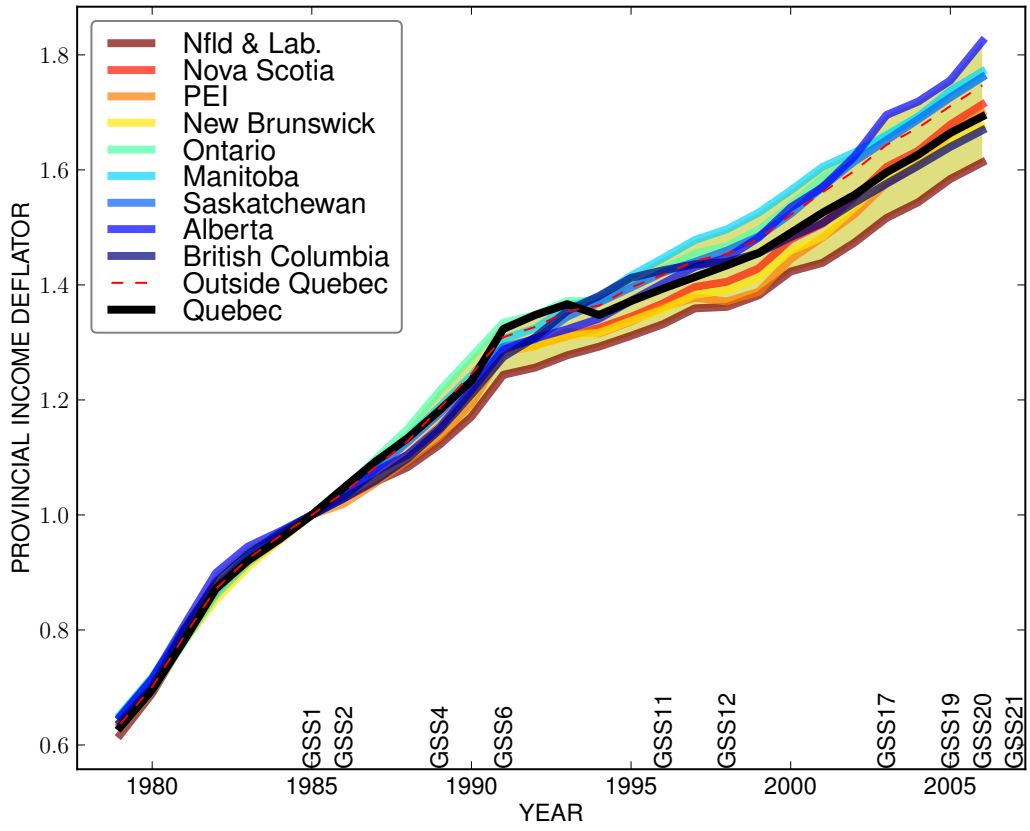

Figure A.39: Price effects within provinces. . Income deflators within each province, scaled to 1985, the year of GSS1. Dispersion across provinces is less than 14% and only a few percent between Québec and the rest of Canada.

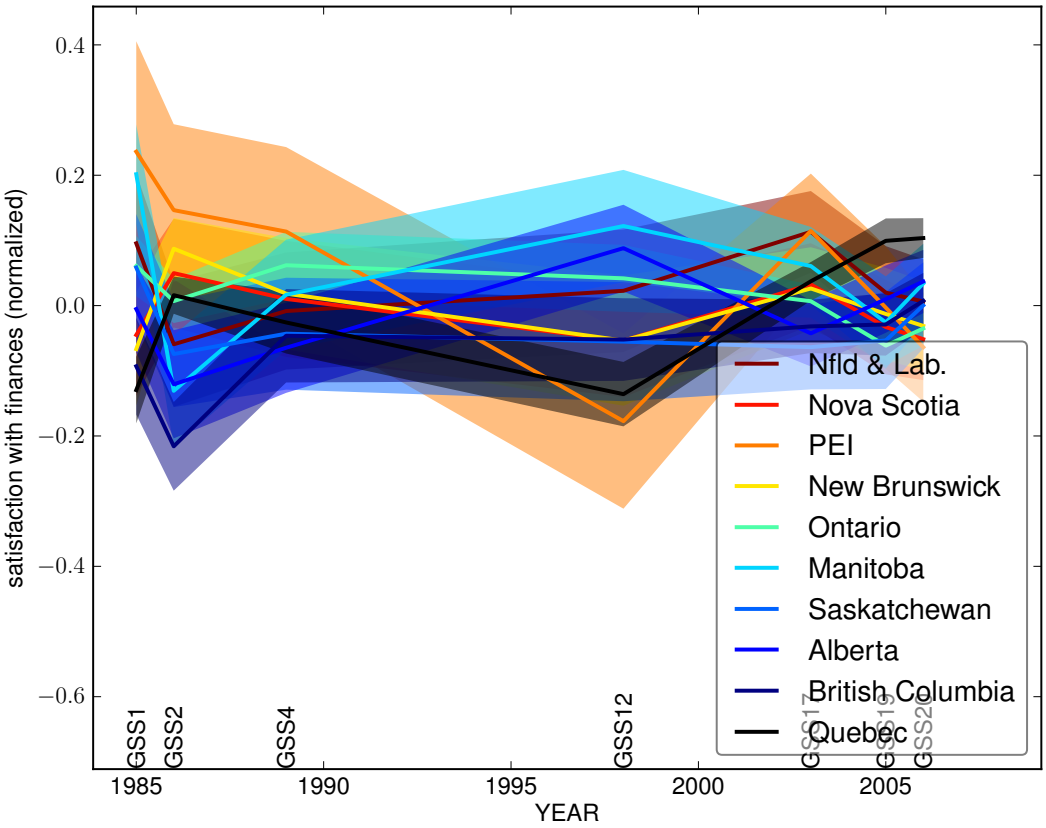

Figure A.40: Satisfaction with finances by province.

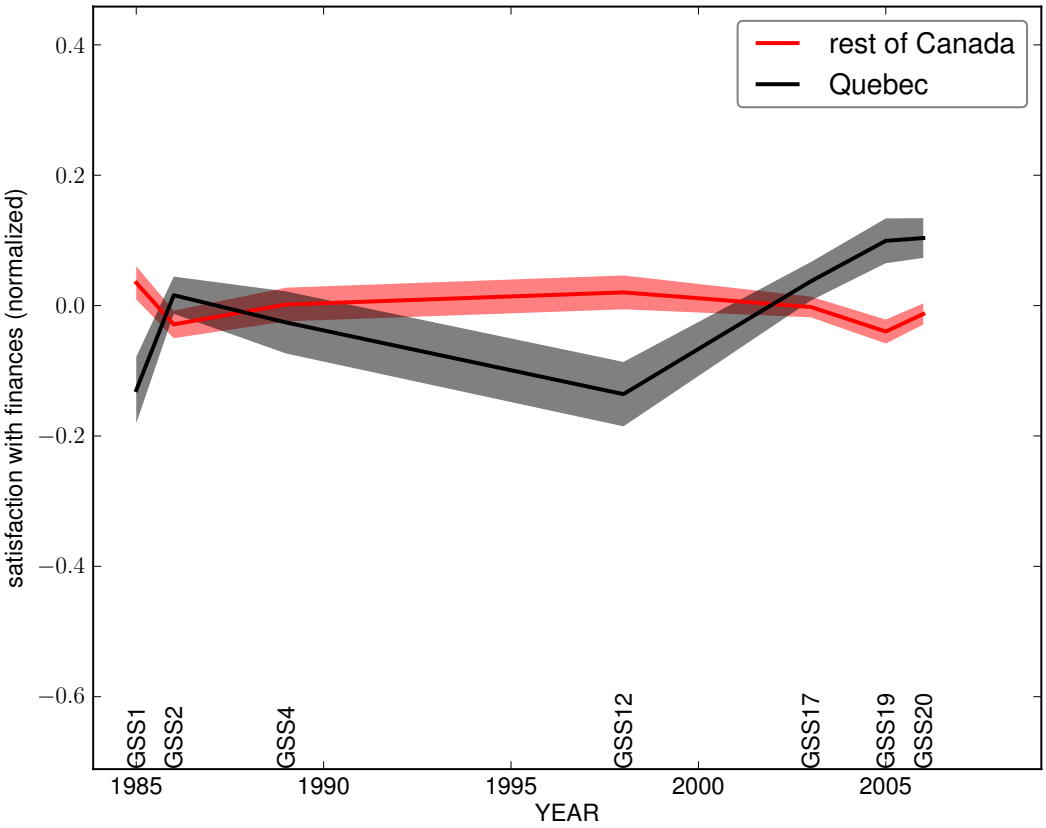

Figure A.41: Satisfaction with finances in and outside Québec.

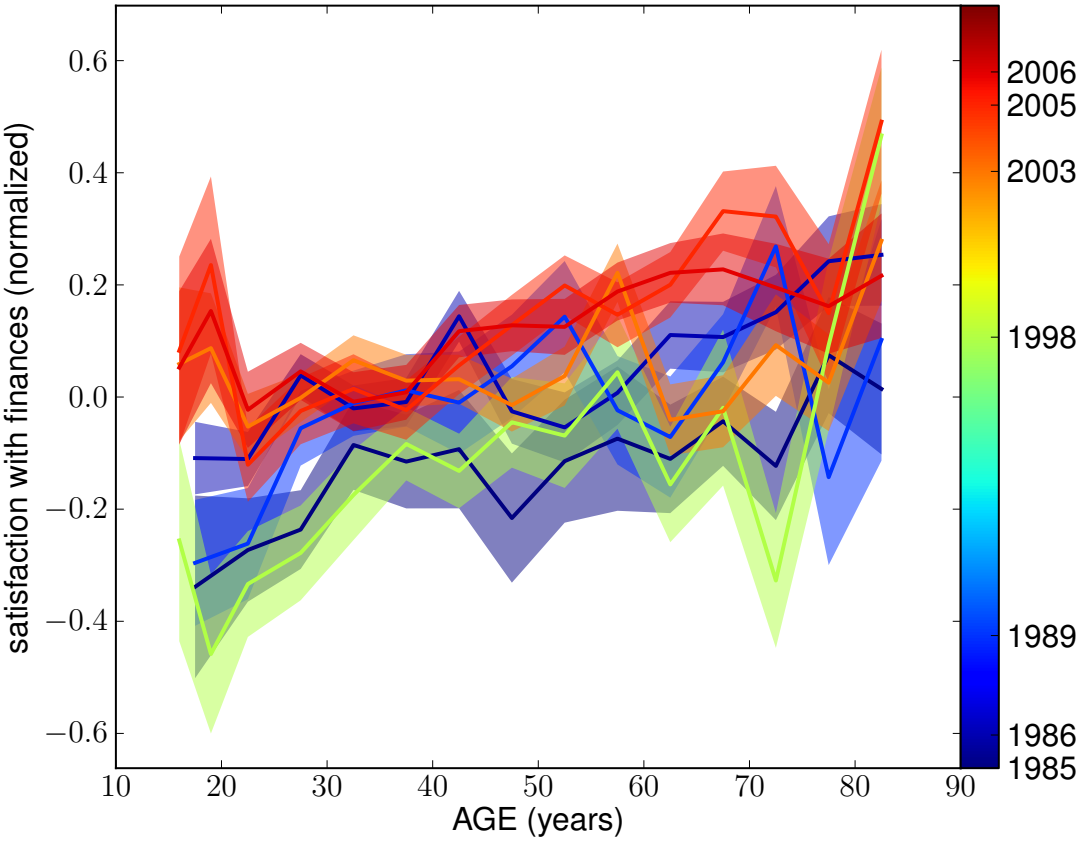

Figure A.42: Age profiles:
Satisfaction with finances in Québec.

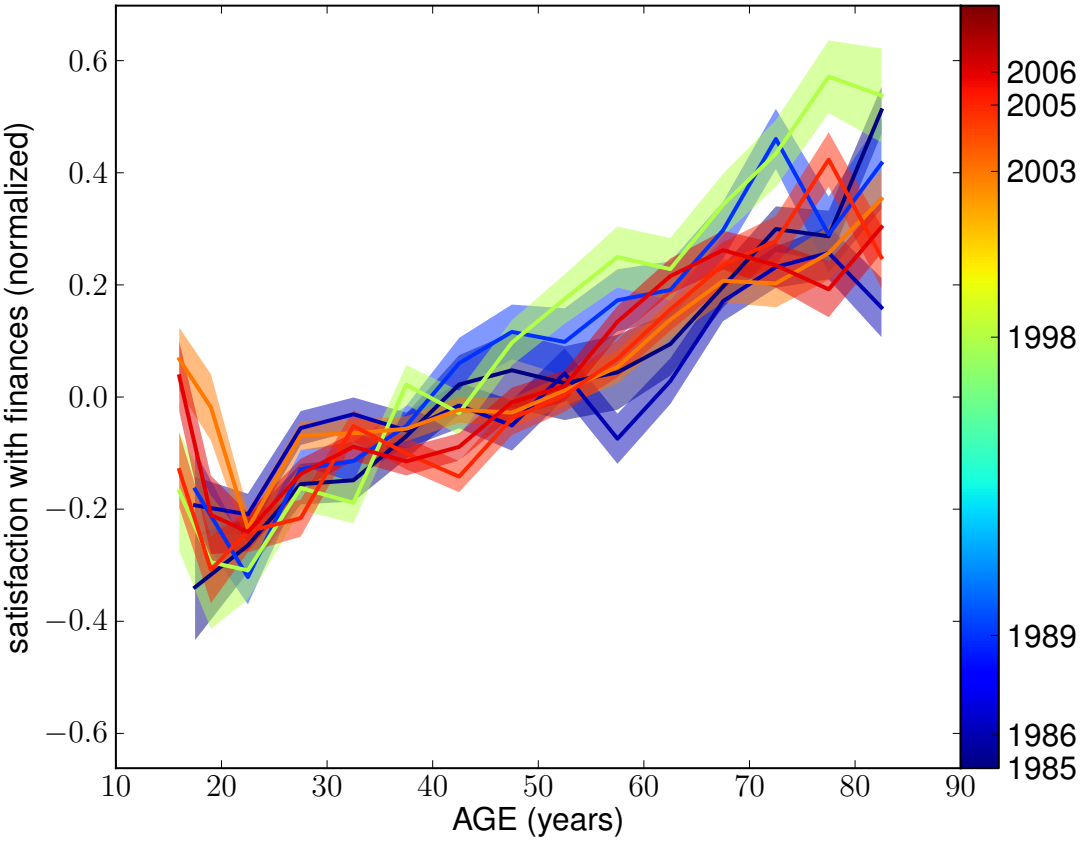

Figure A.43: Age profiles:
Satisfaction with finances outside Québec.

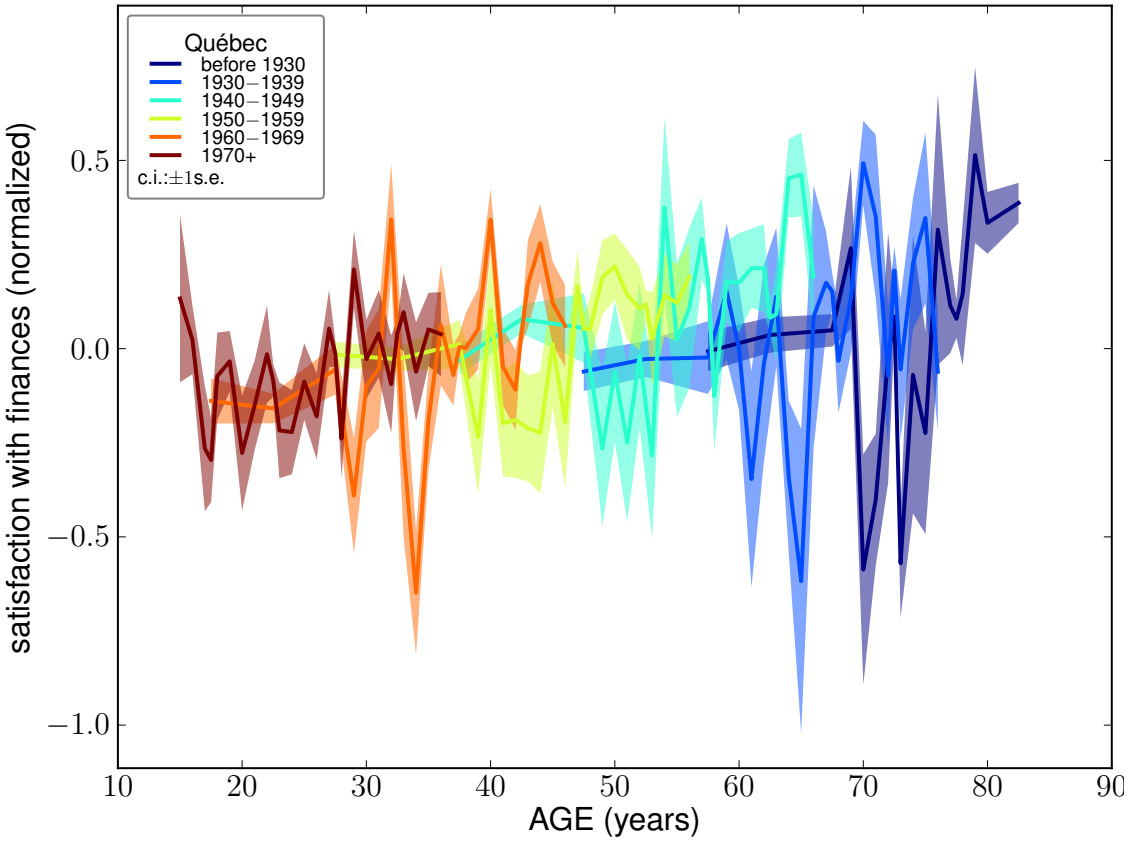

Figure A.44: Cohort profiles:
Satisfaction with finances in Québec.

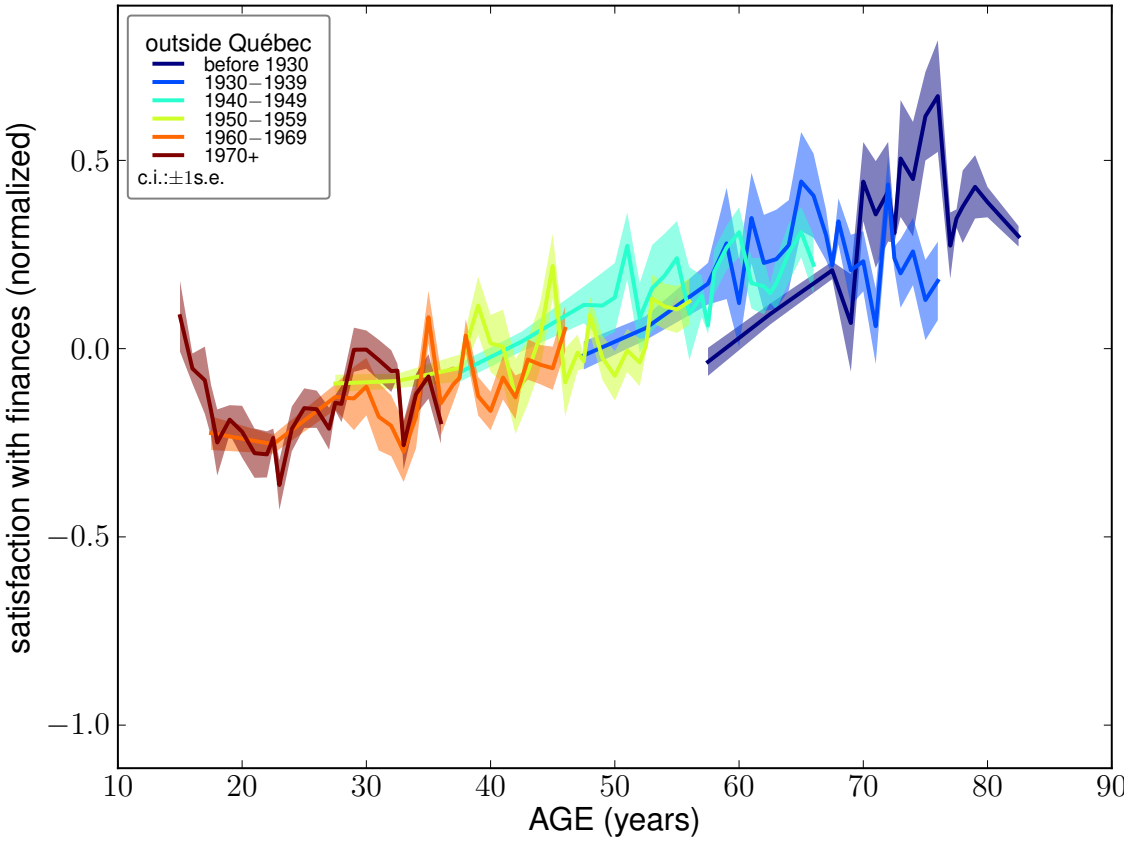

Figure A.45: Cohort profiles:
Satisfaction with finances outside Québec.

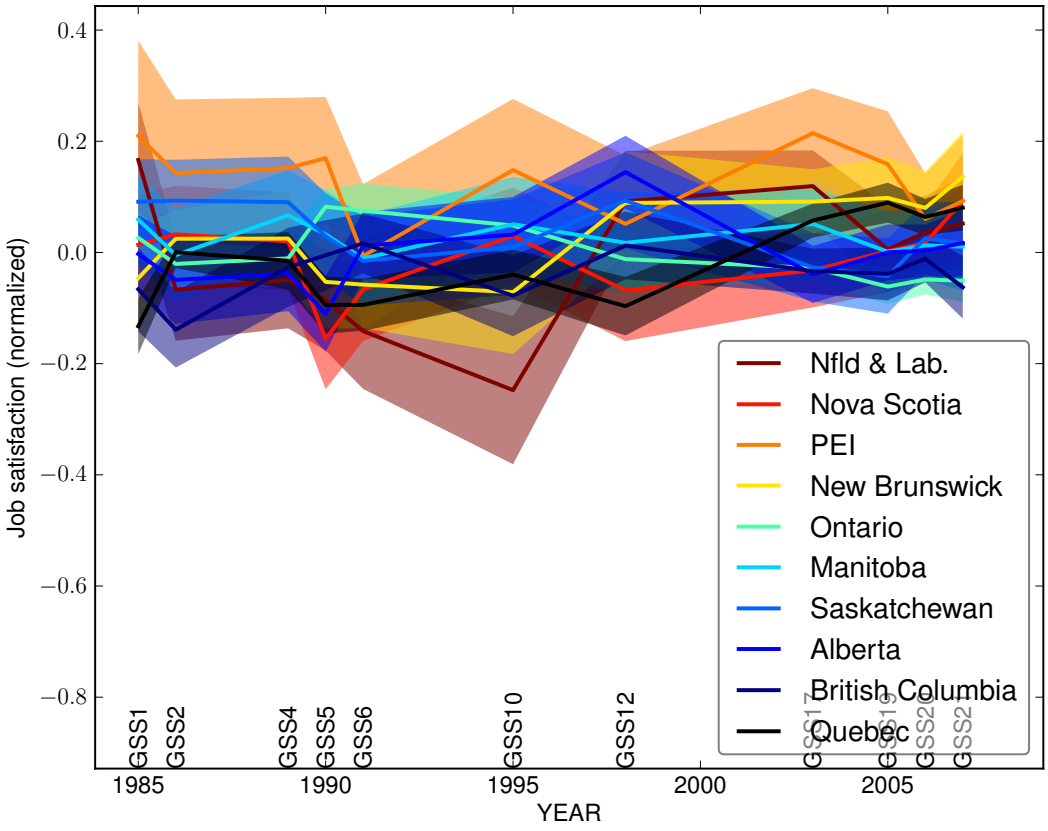

Figure A.46: Satisfaction with job (by Province) .

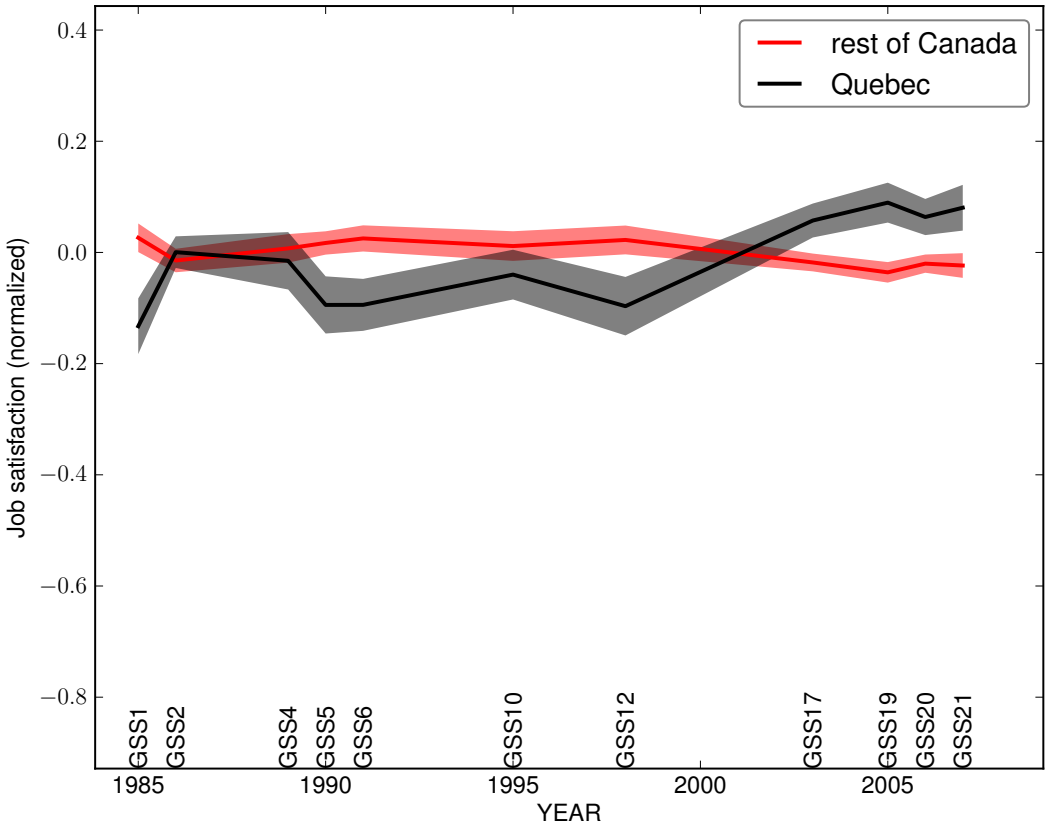

Figure A.47: Satisfaction with job (in/outside Québec) .

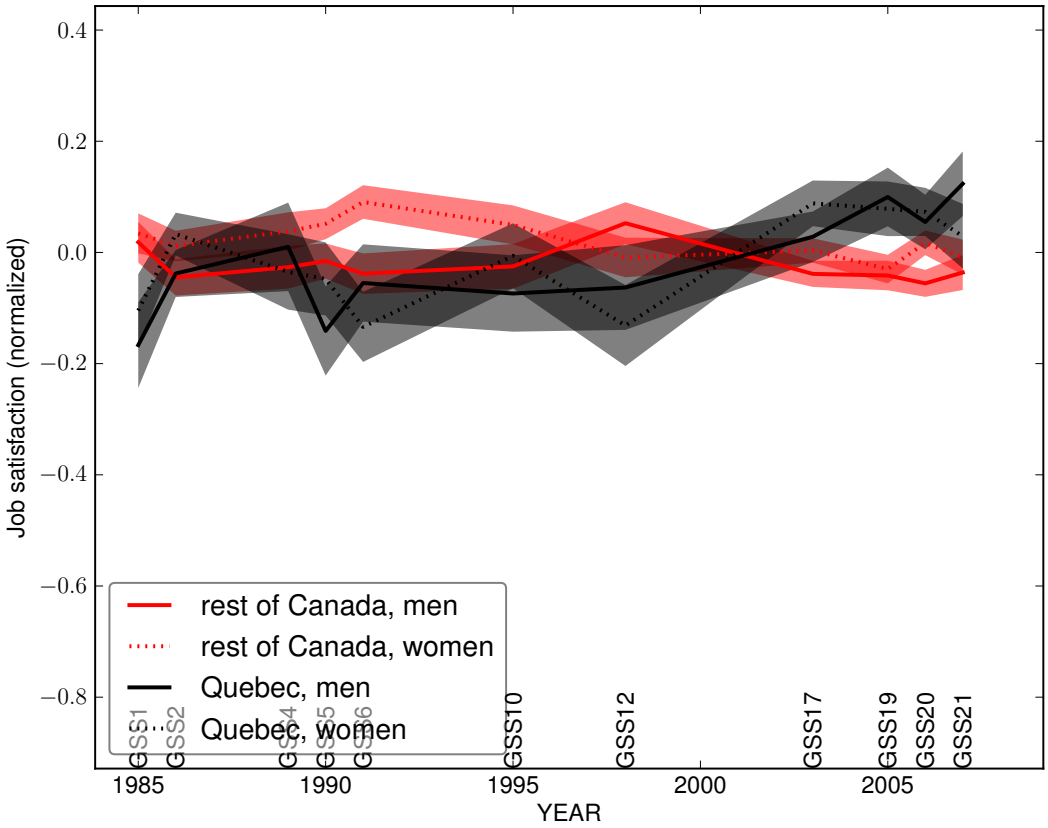

Figure A.48: Satisfaction with job (in/outside Québec, by gender) .

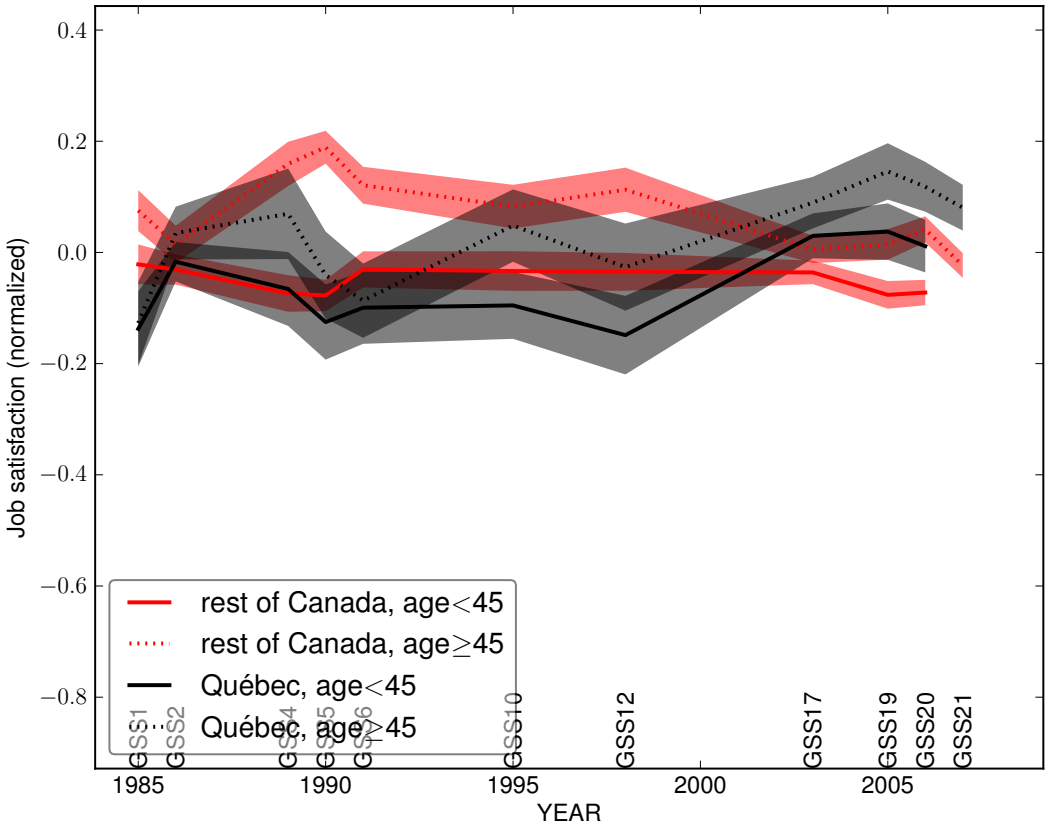

Figure A.49: Satisfaction with job (in/outside Québec, by age group) .

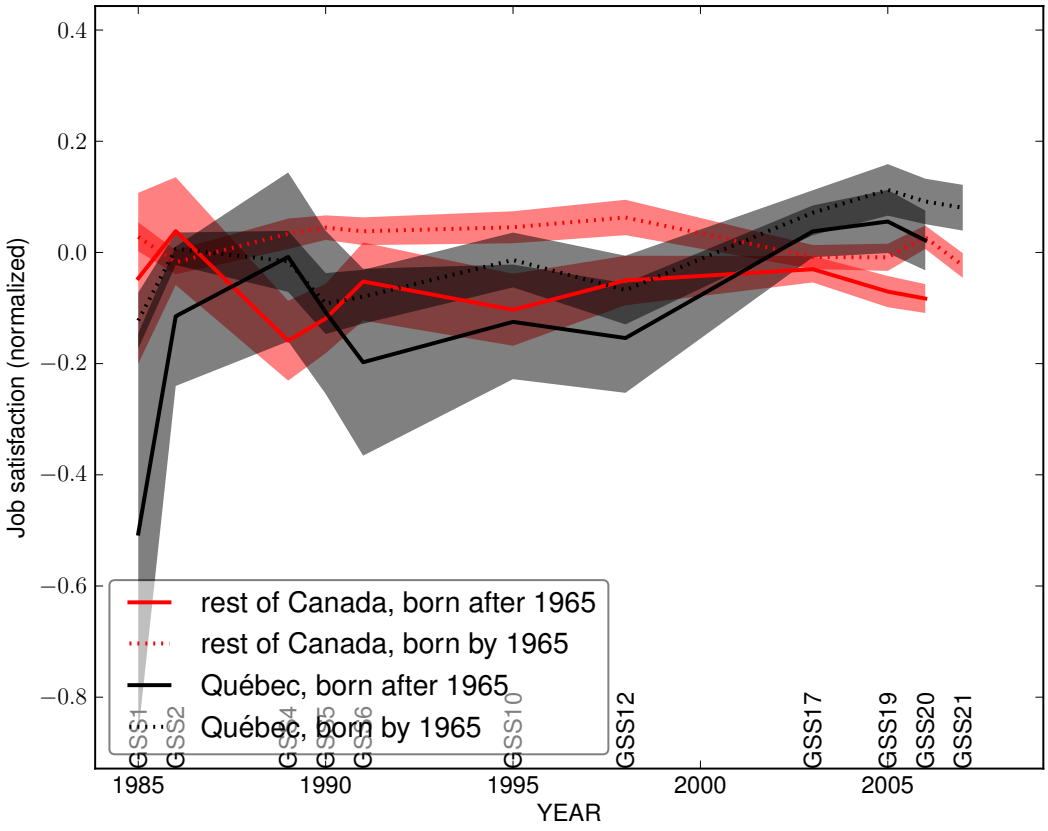

Figure A.50: Satisfaction with job (in/outside Québec, by cohort) .

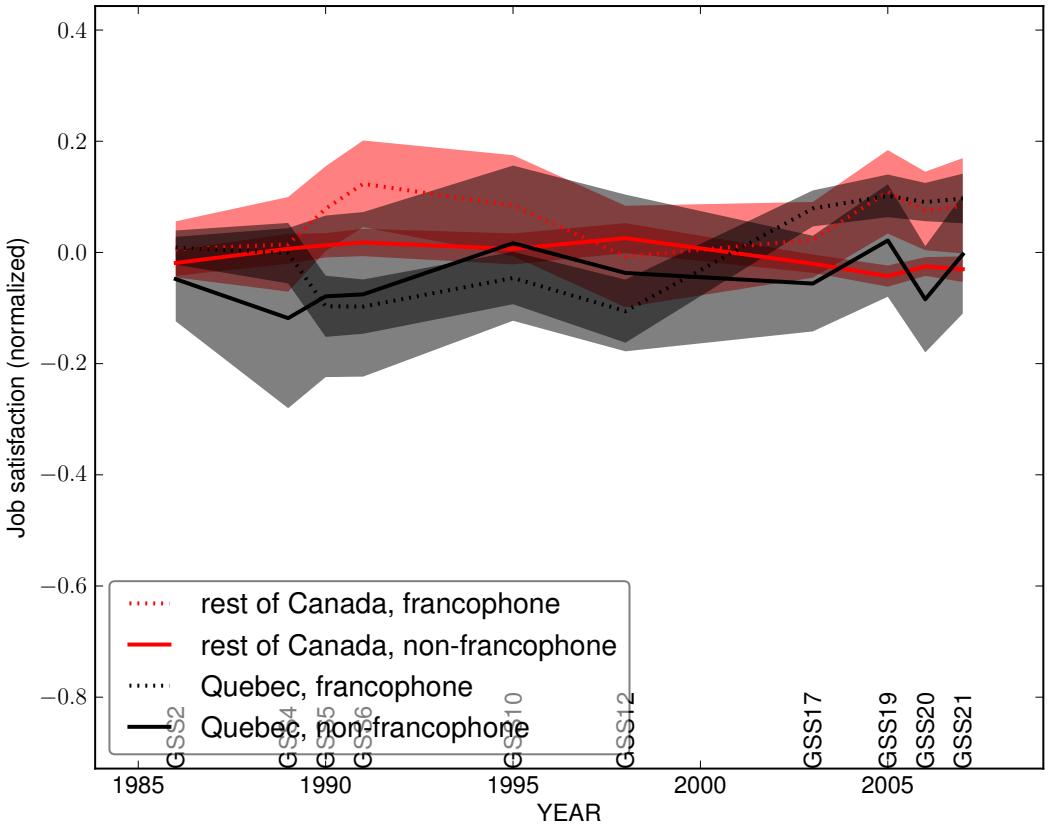

Figure A.51: Satisfaction with job (in/outside Québec, by first language) .

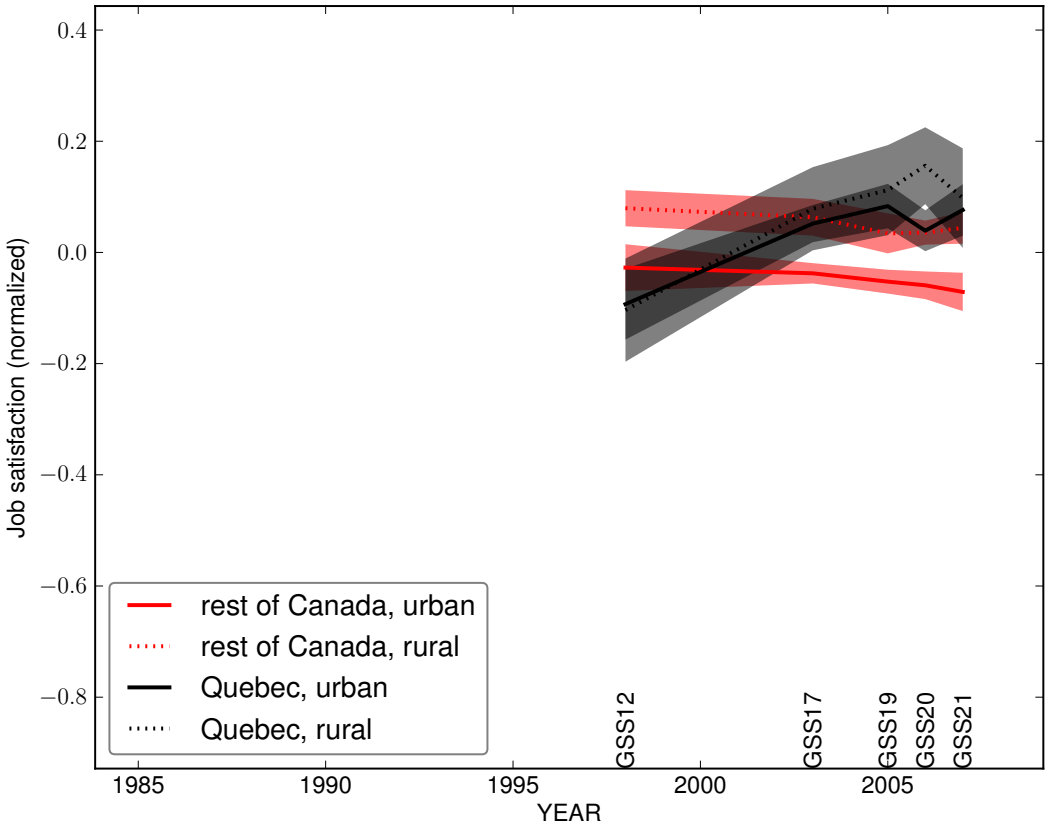

Figure A.52: Satisfaction with job (in/outside Québec, by urban/rural) .

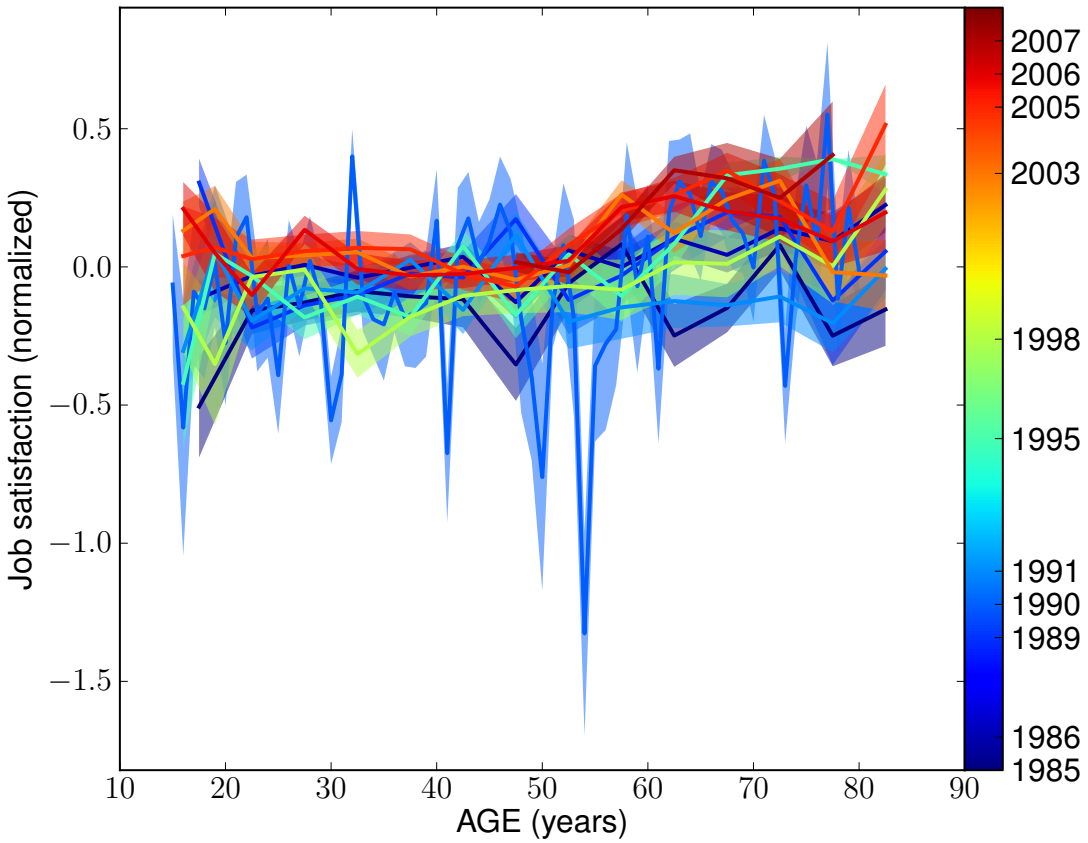

Figure A.53: Age profiles:
Satisfaction with job in Québec.

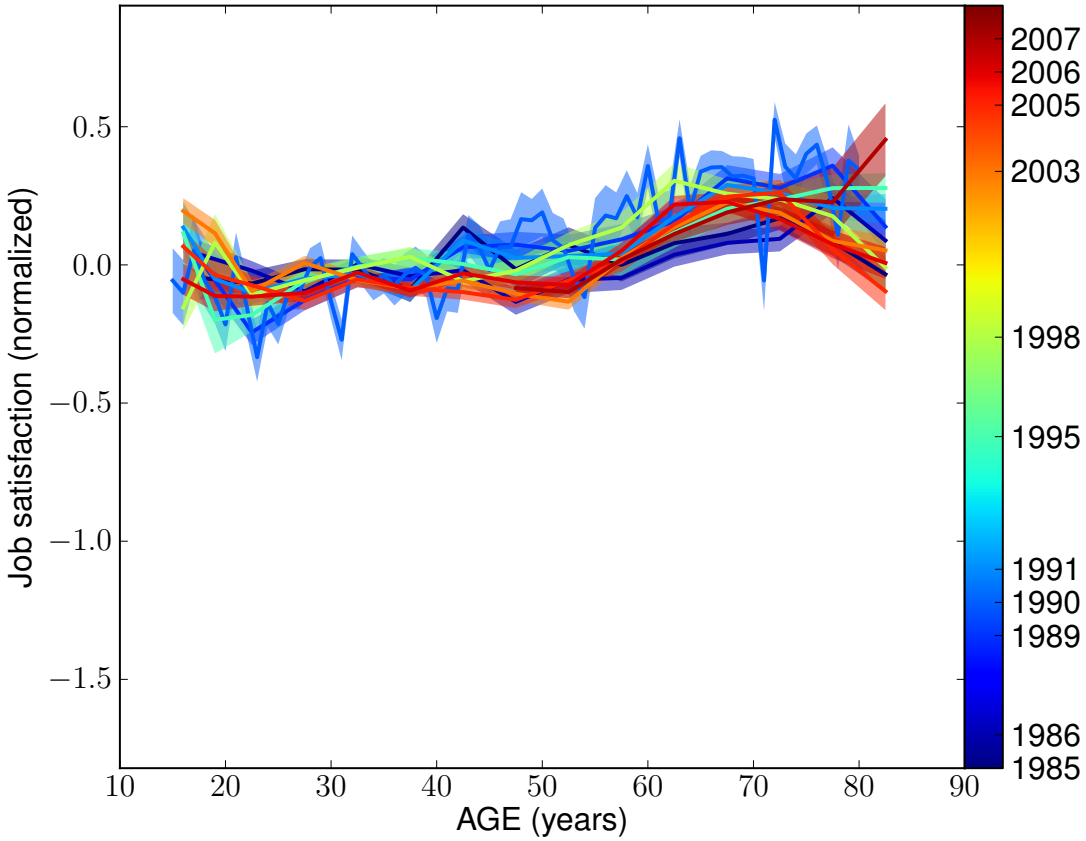

Figure A.54: Age profiles:
Satisfaction with job outside Québec.

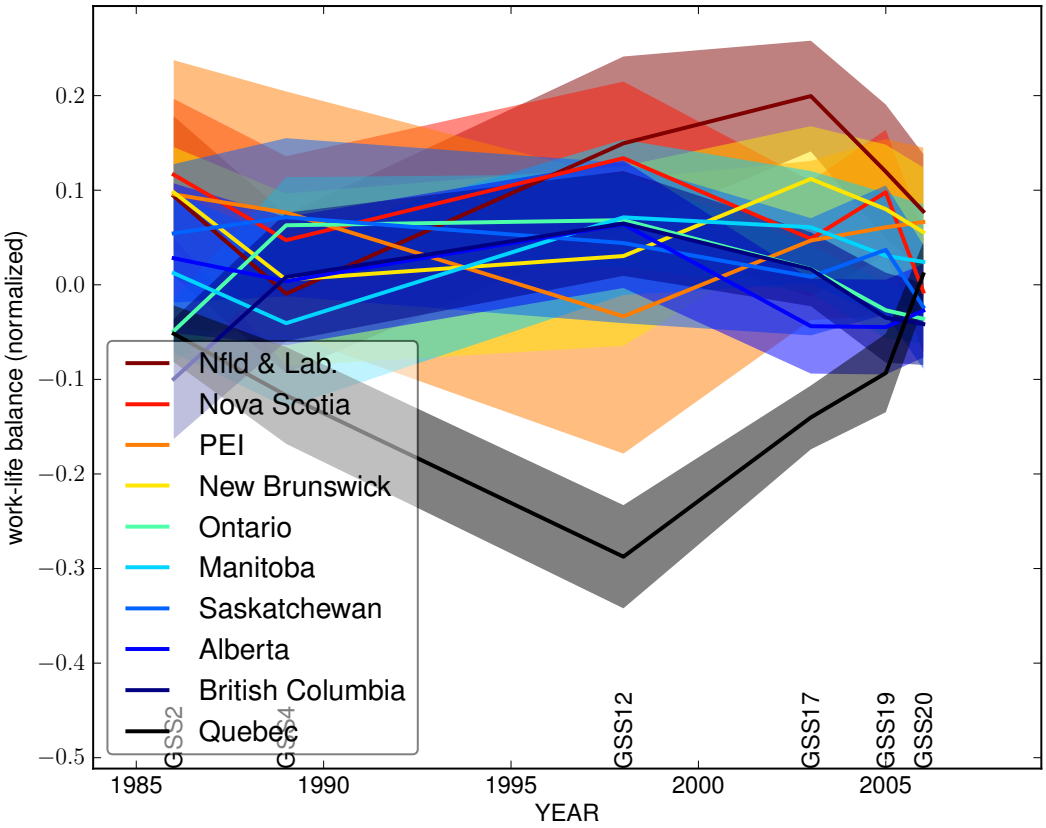

Figure A.55: Satisfaction with work/life balance (by Province) .

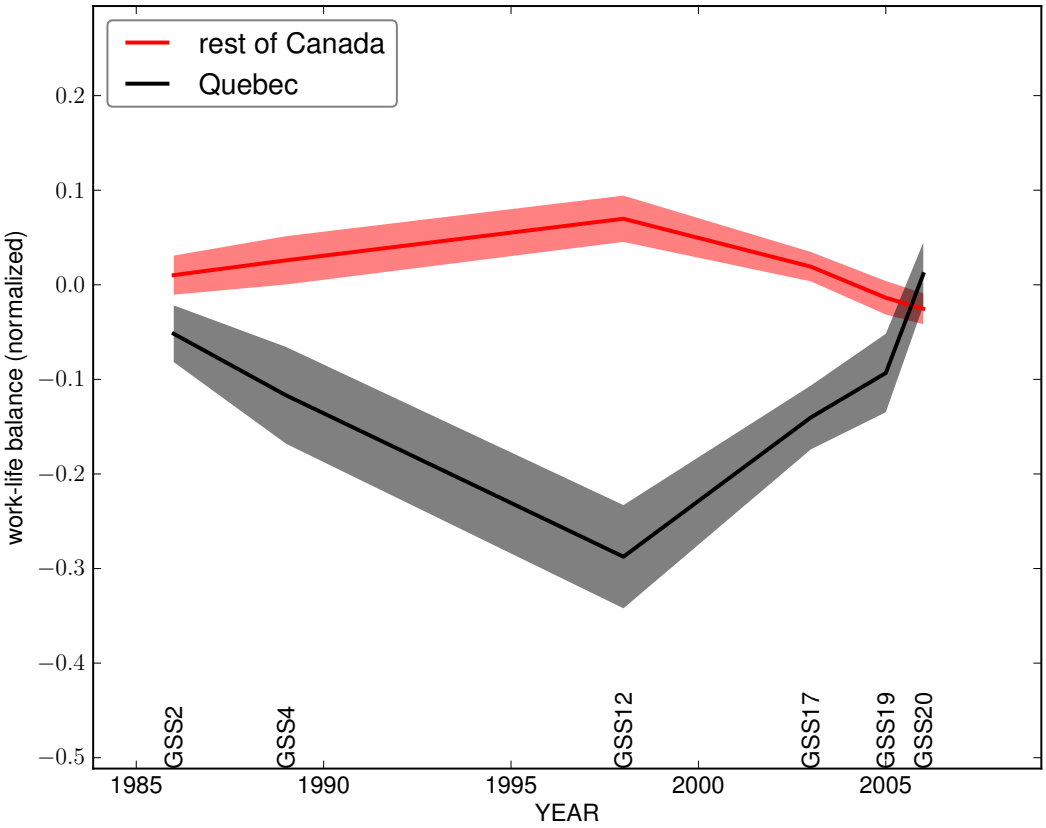

Figure A.56: Satisfaction with work/life balance (in/outside Québec) .

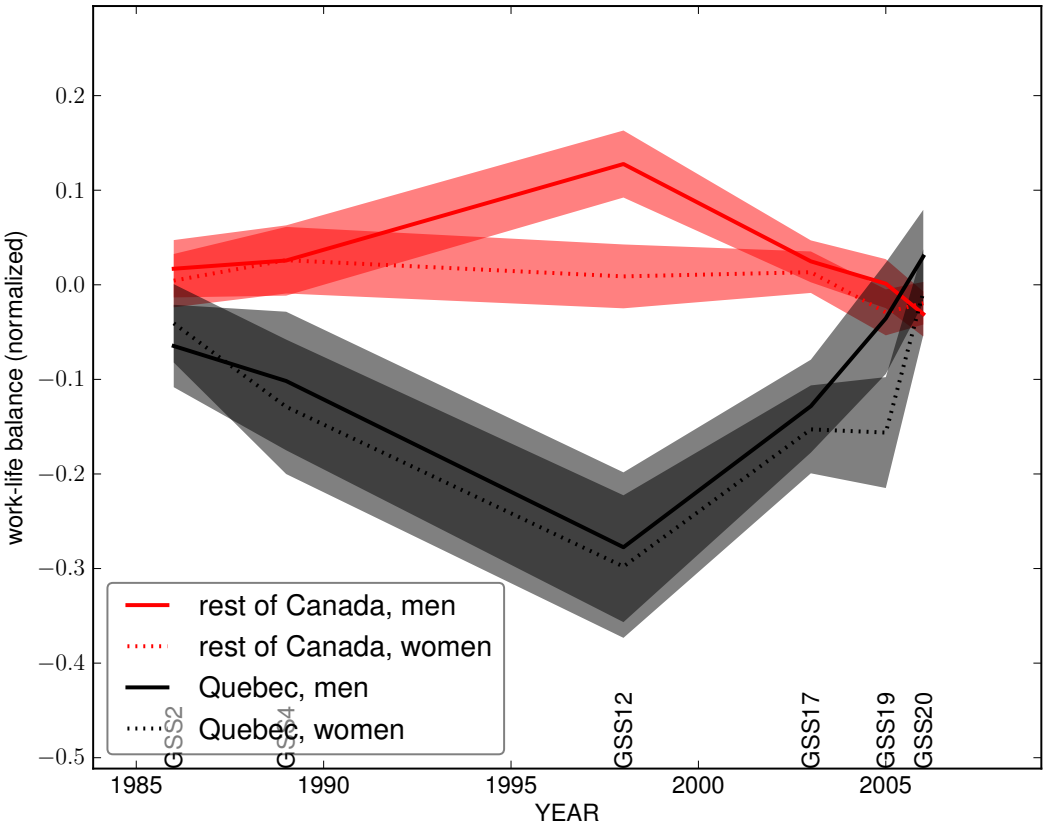

Figure A.57: Satisfaction with work/life balance (in/outside Québec, by gender) .

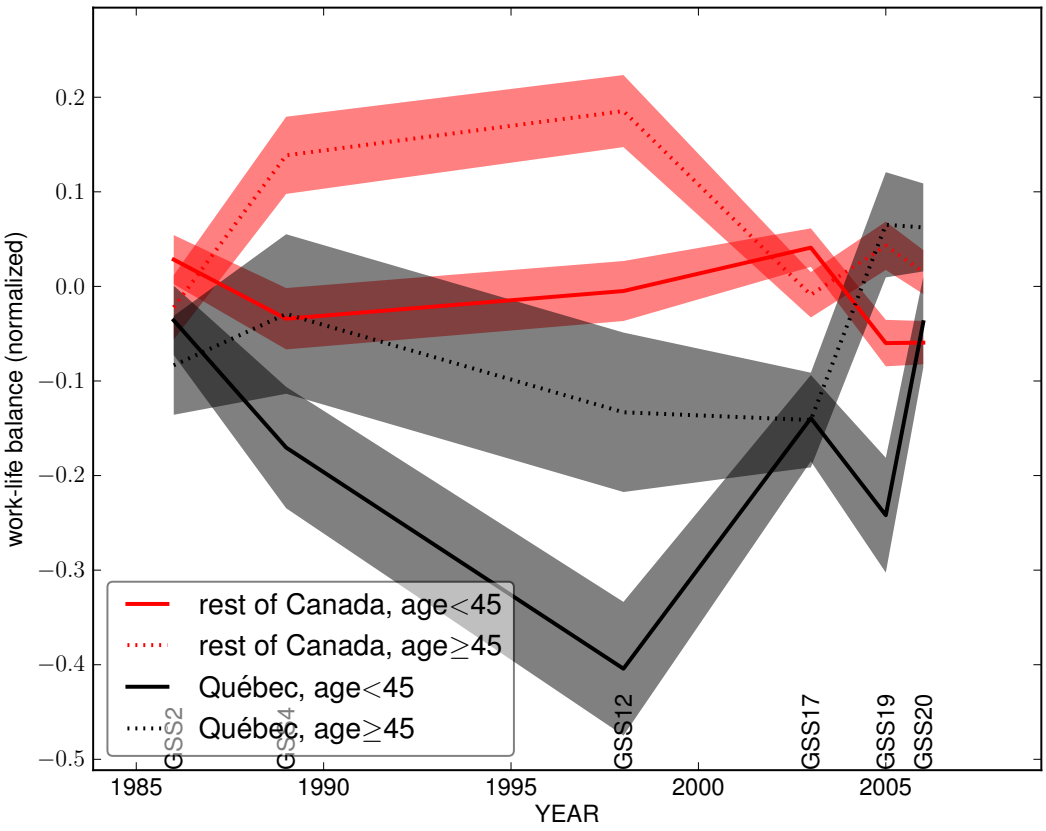

Figure A.58: Satisfaction with work/life balance (in/outside Québec, by age group) .

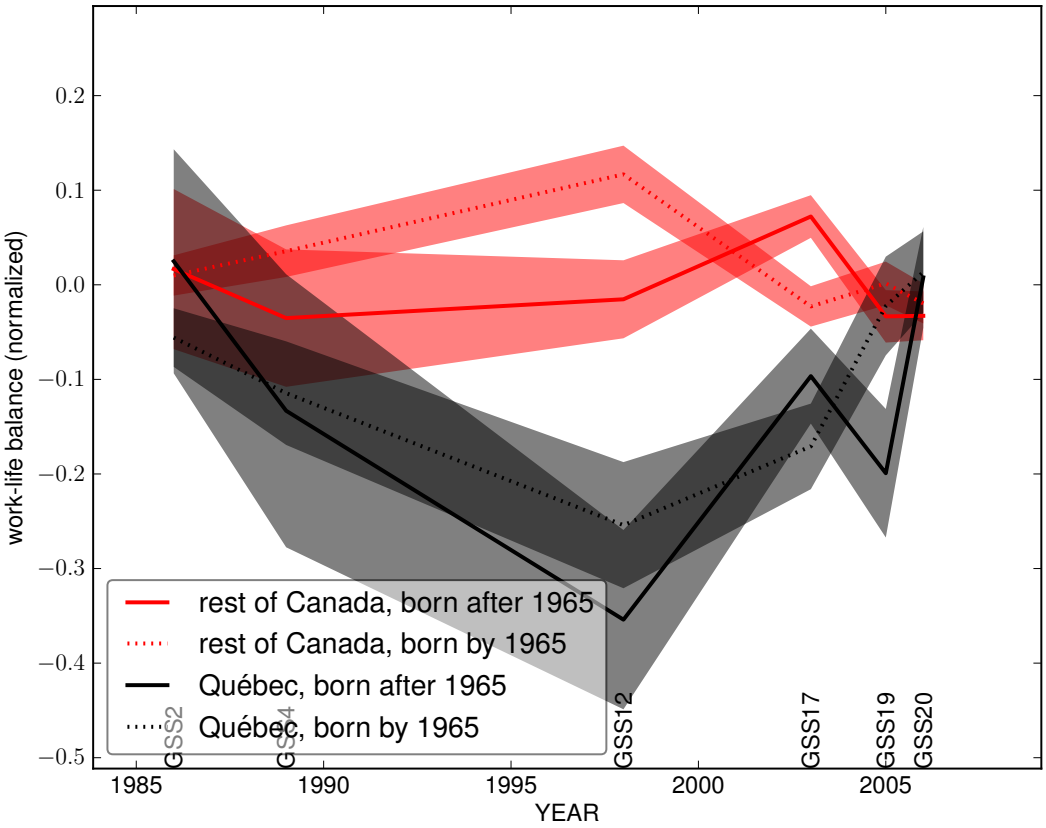

Figure A.59: Satisfaction with work/life balance (in/outside Québec, by cohort) .

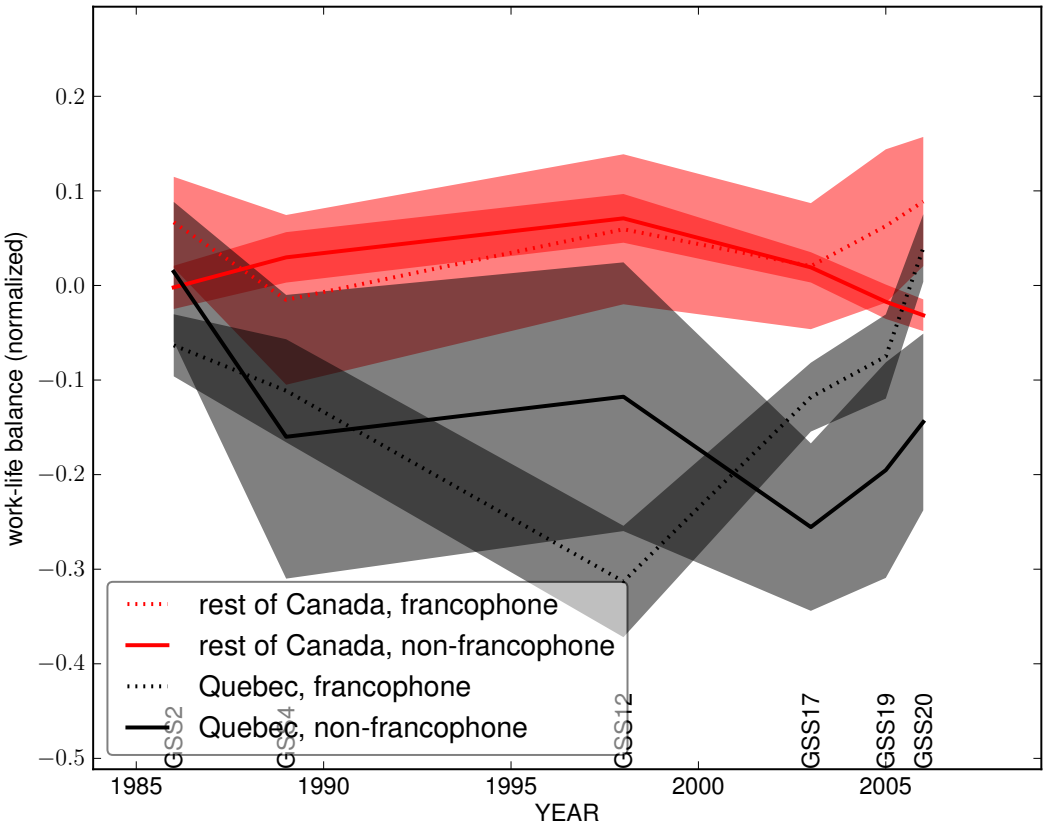

Figure A.60: Satisfaction with work/life balance (in/outside Québec, by first language)
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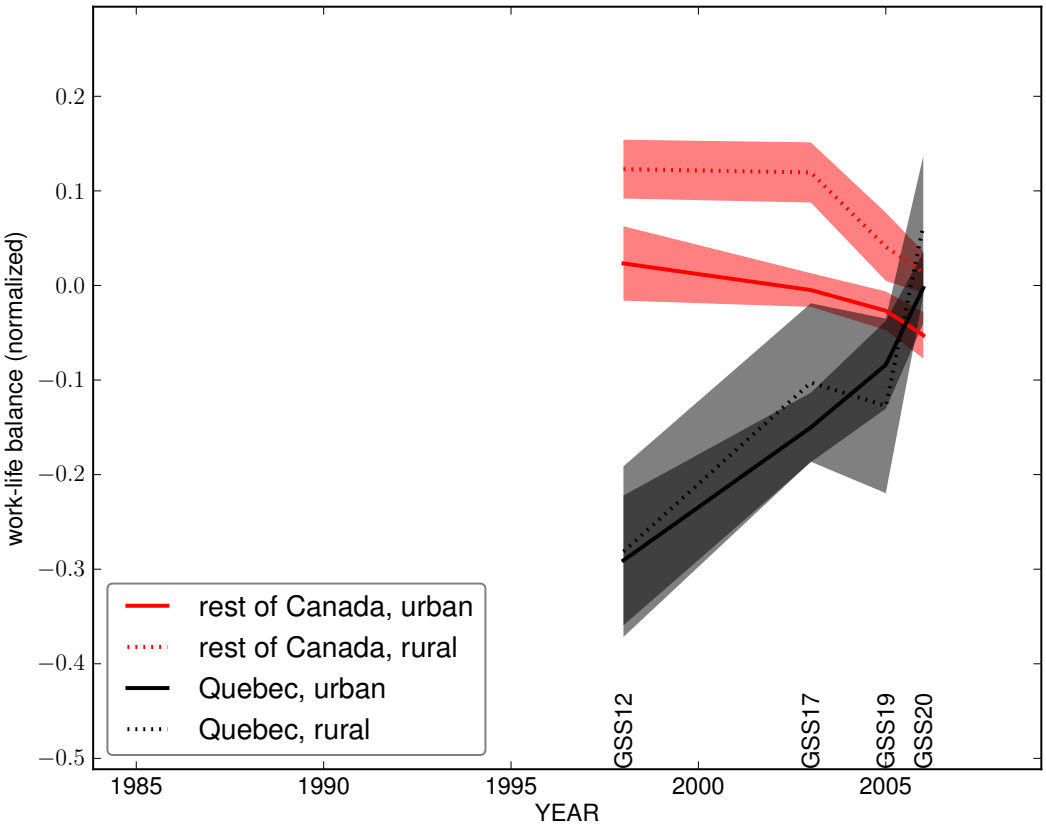

Figure A.61: Satisfaction with work/life balance (in/outside Québec, by urban/rural)
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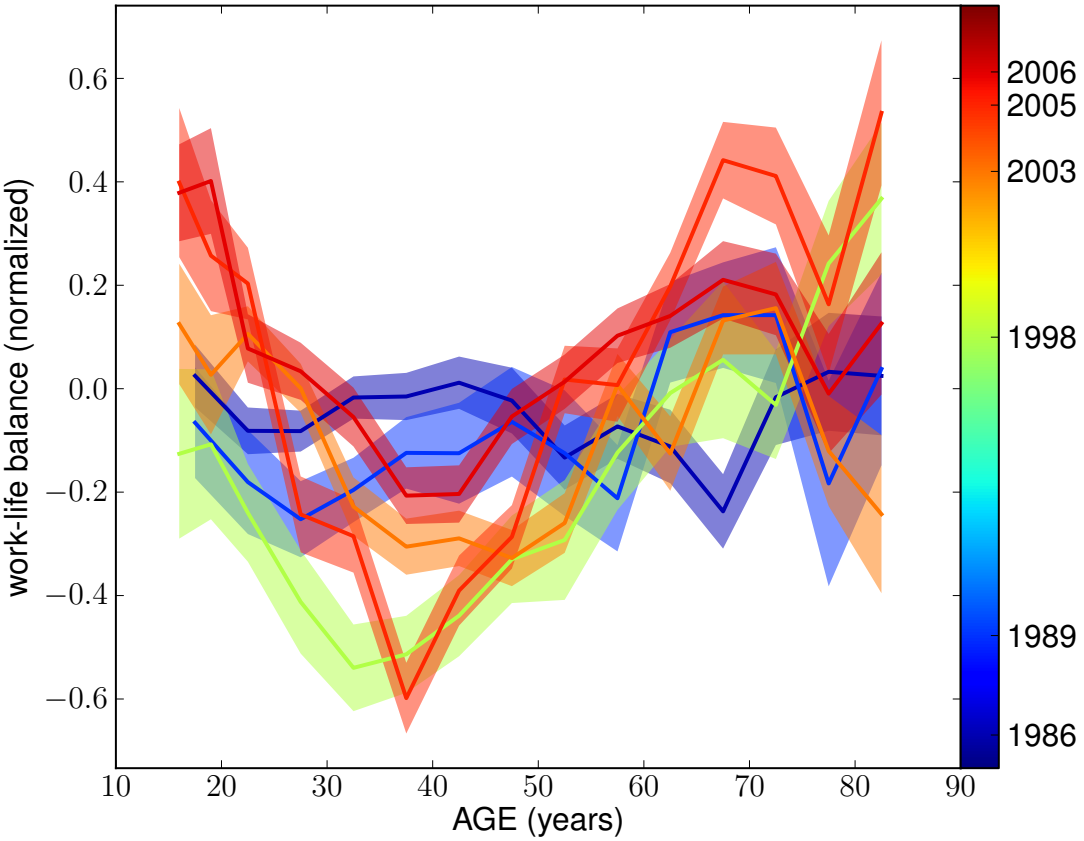

Figure A.62: Age profiles:
Satisfaction with work/life balance in Québec.

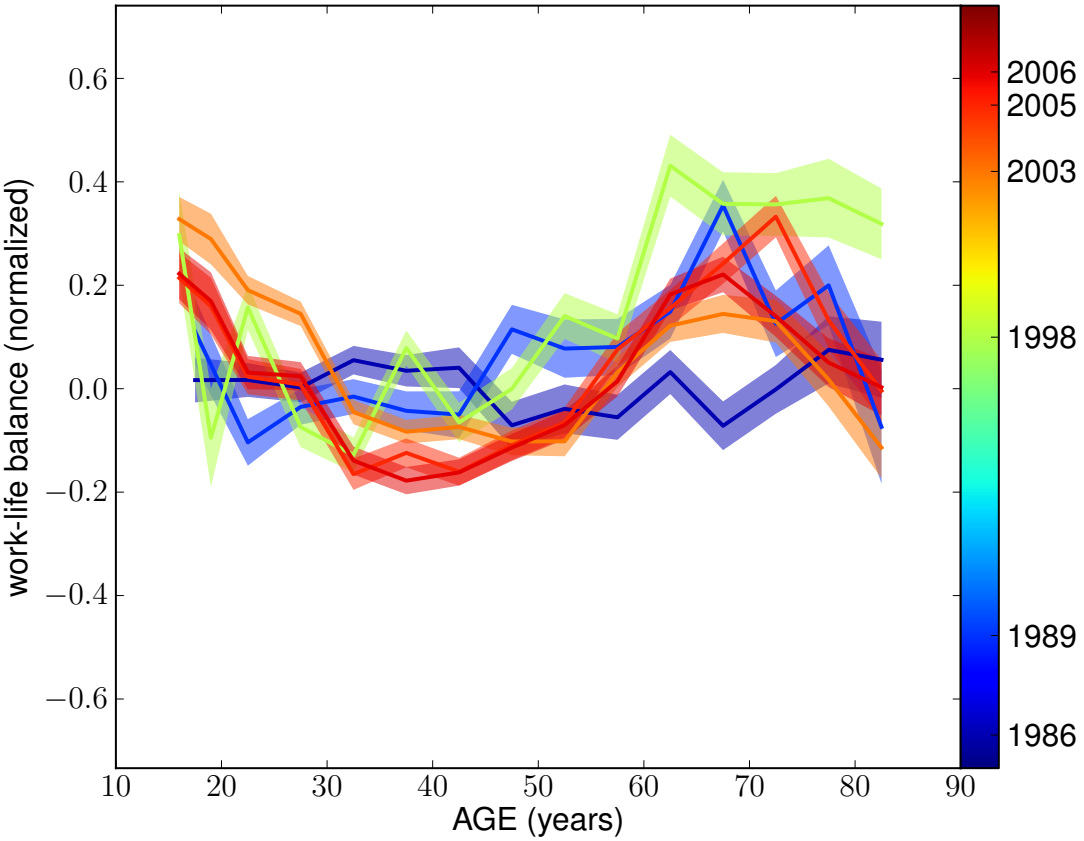

Figure A.63: Age profiles:
Satisfaction with work/life balance outside Québec.

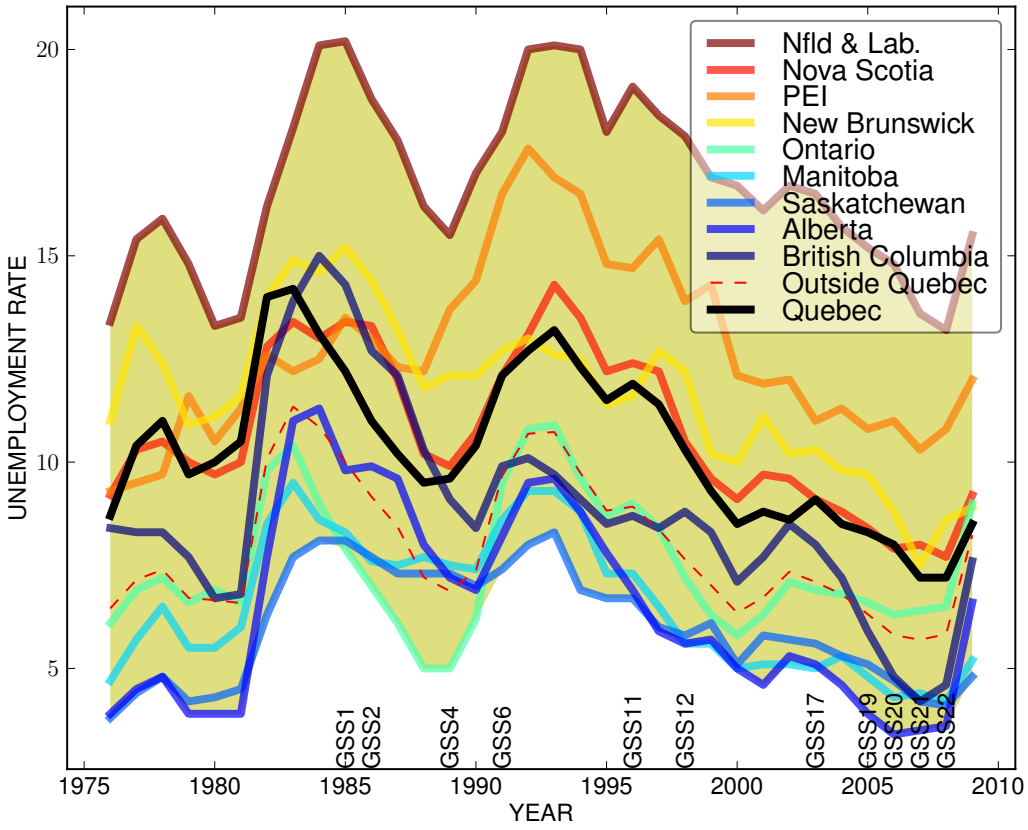

Figure A.64: Unemployment rate .

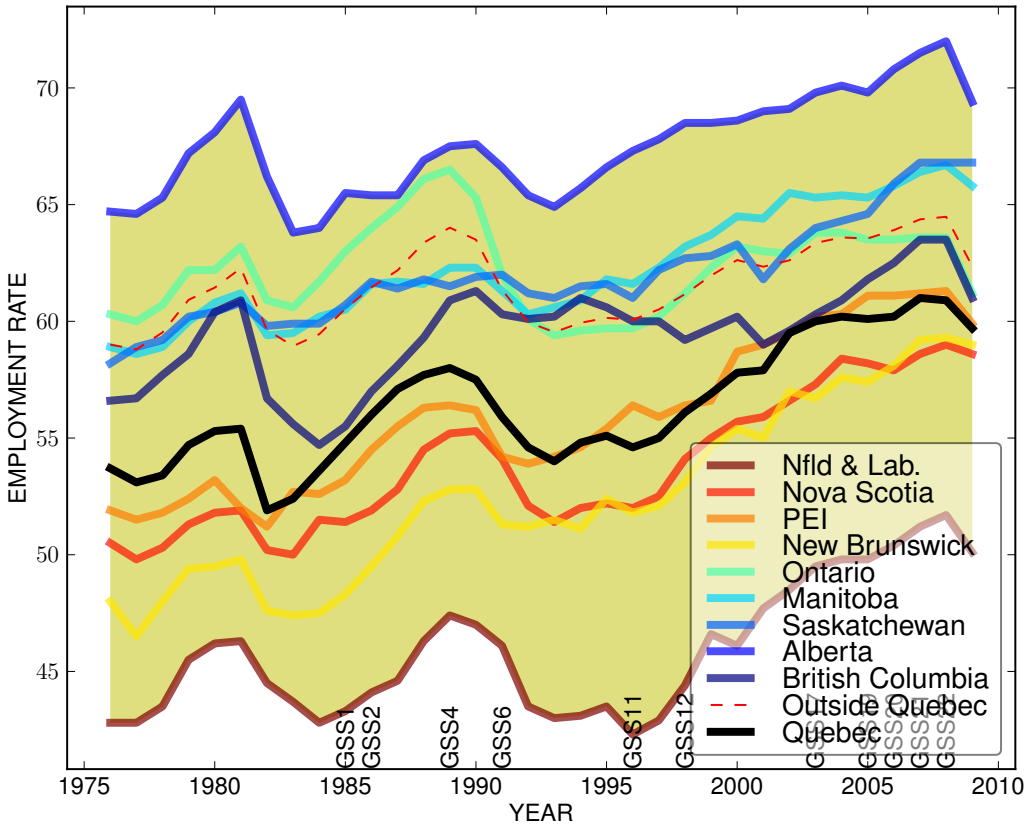

Figure A.65: Employment rate .

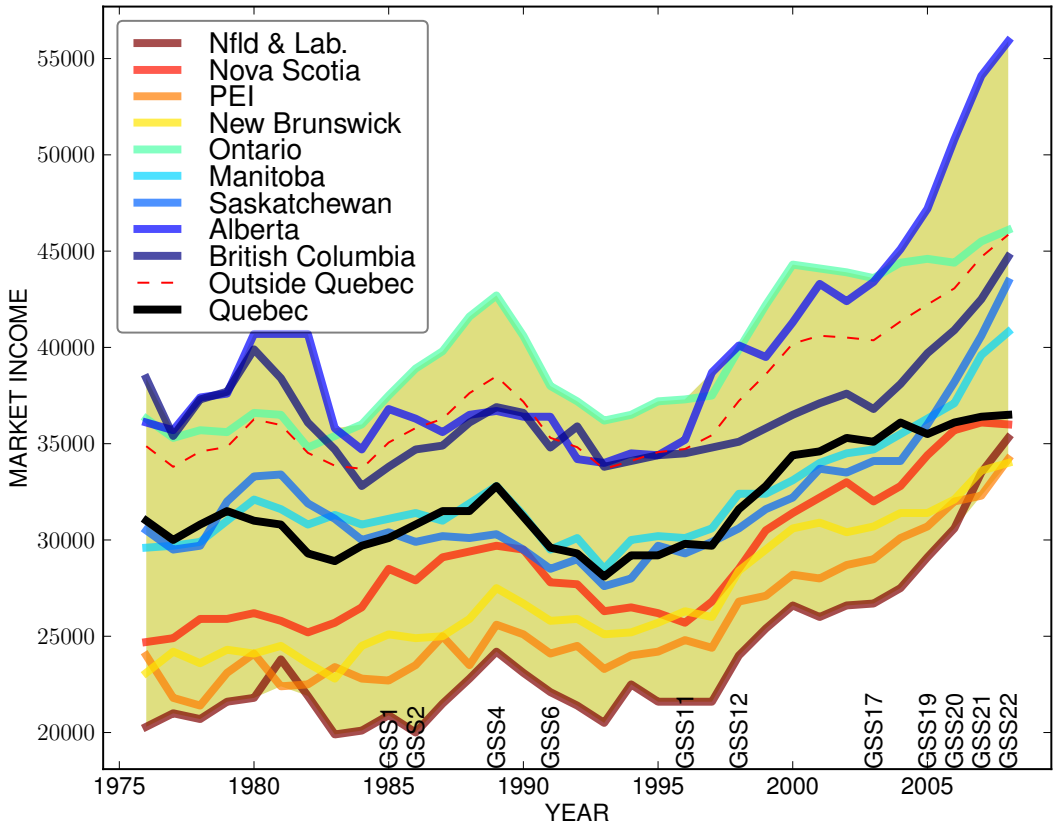

Figure A.66: Market income .

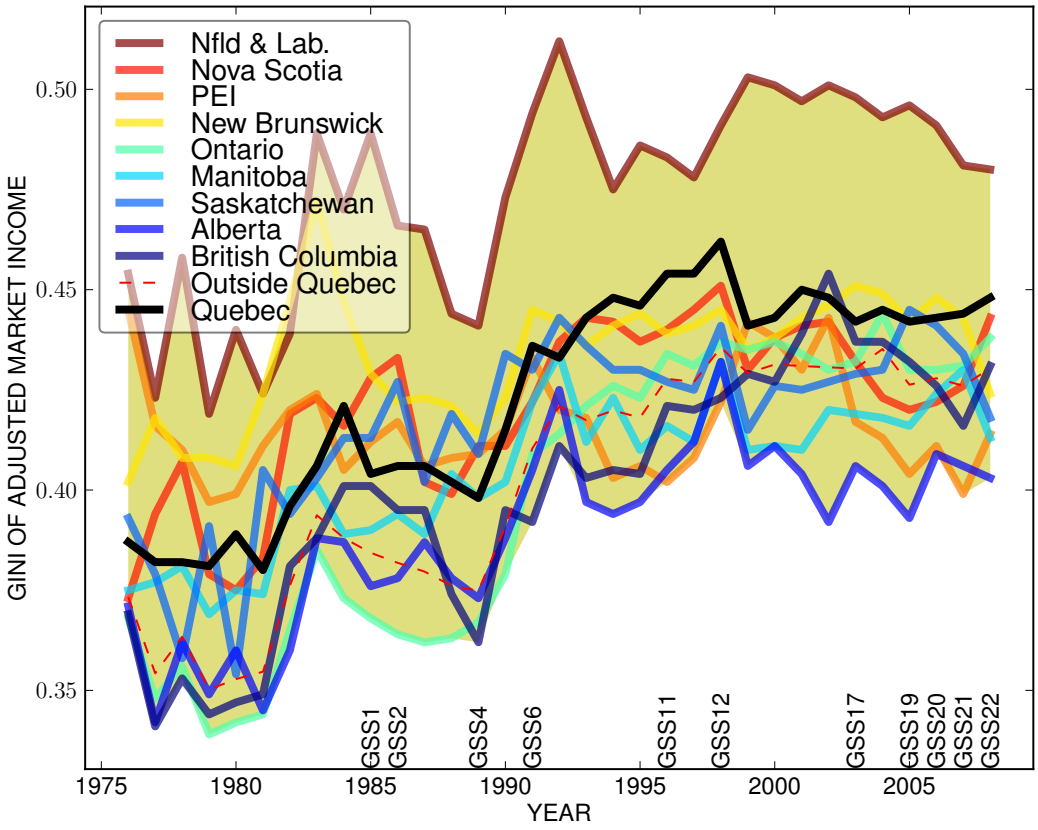

Figure A.67: Gini coefficient of adjusted market income .

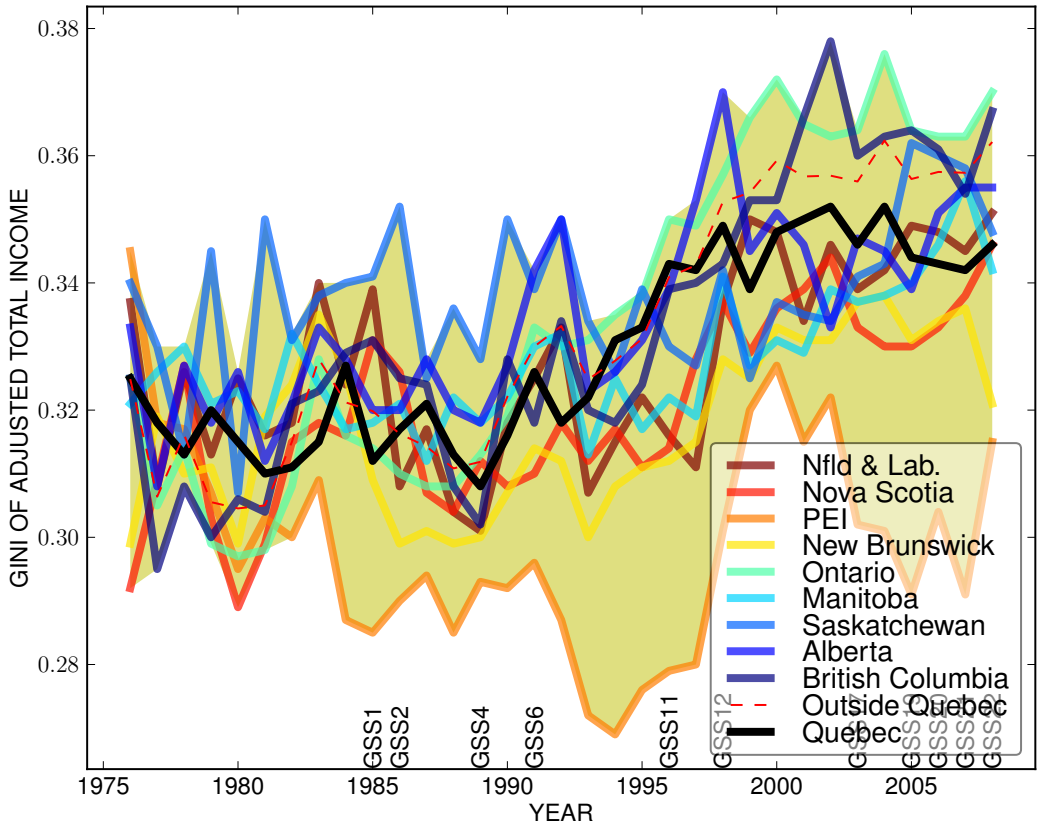

Figure A.68: Gini coefficient of adjusted total income .

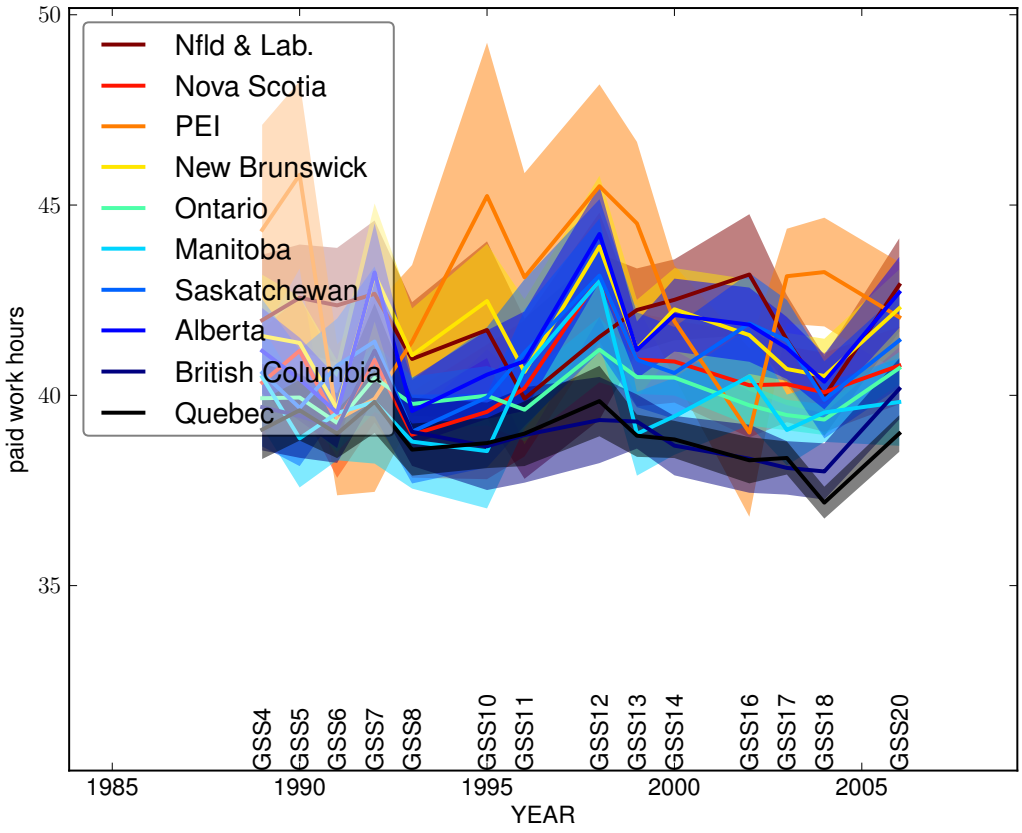

Figure A.69: Paid work hours (by Province) .

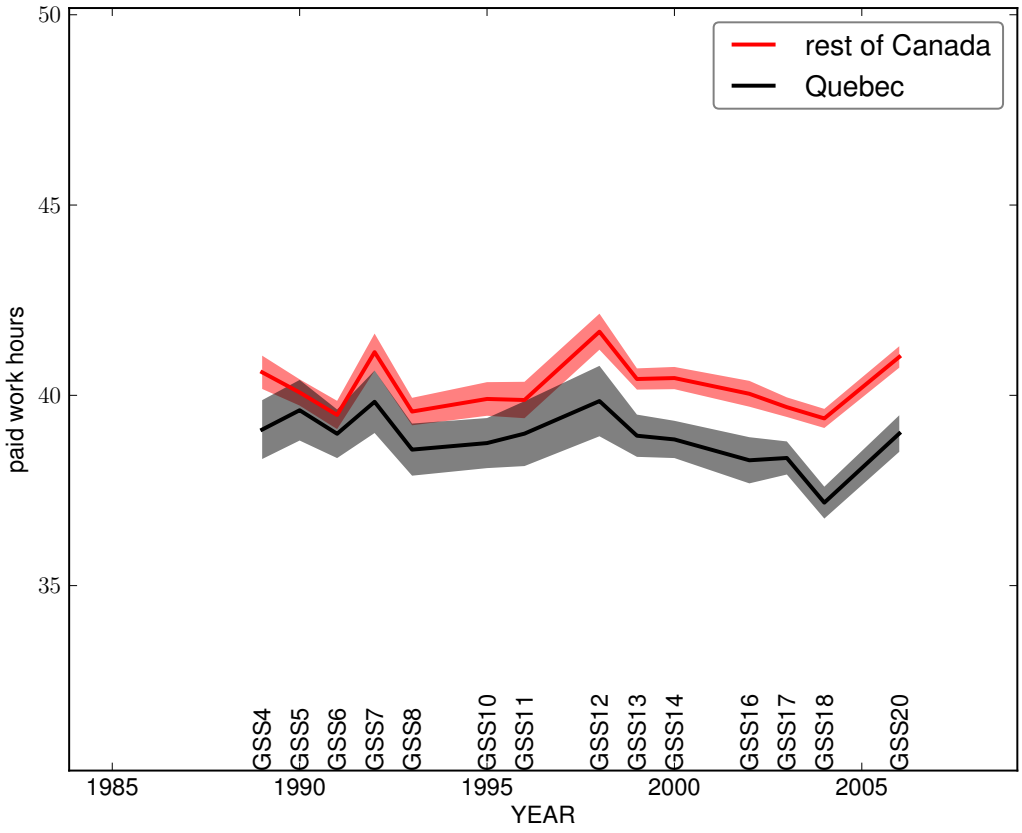

Figure A.70: Paid work hours (in/outside Québec) .

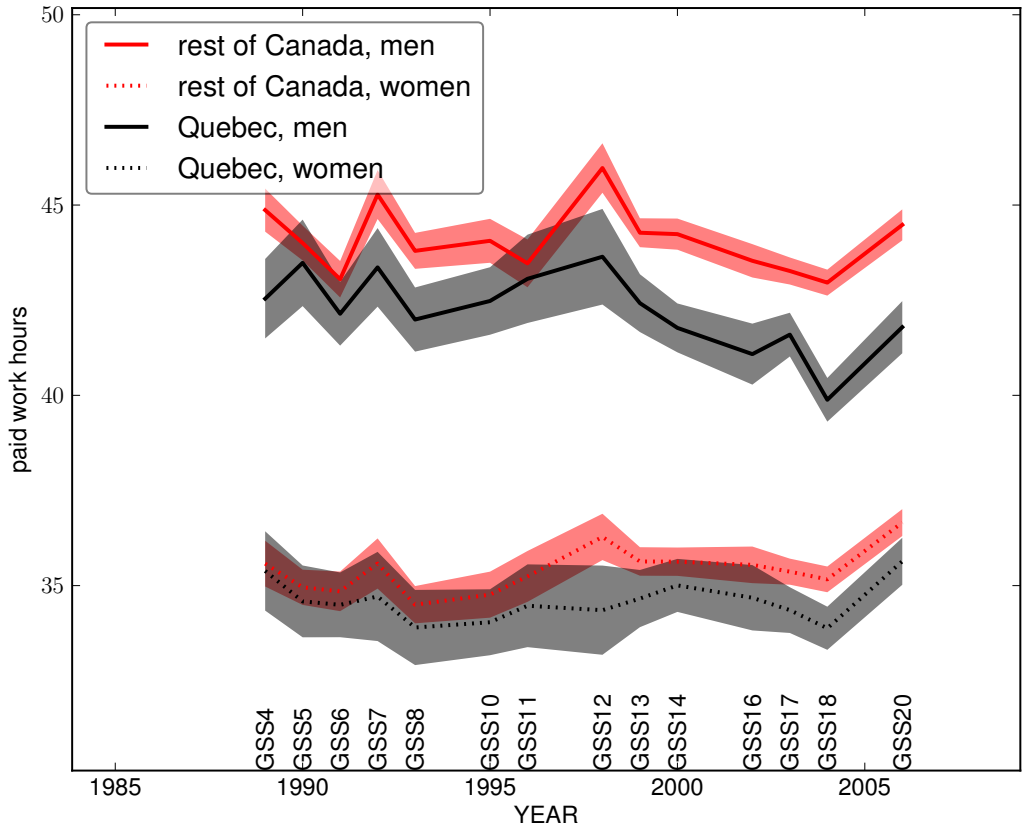

Figure A.71: Paid work hours (in/outside Québec, by gender) .

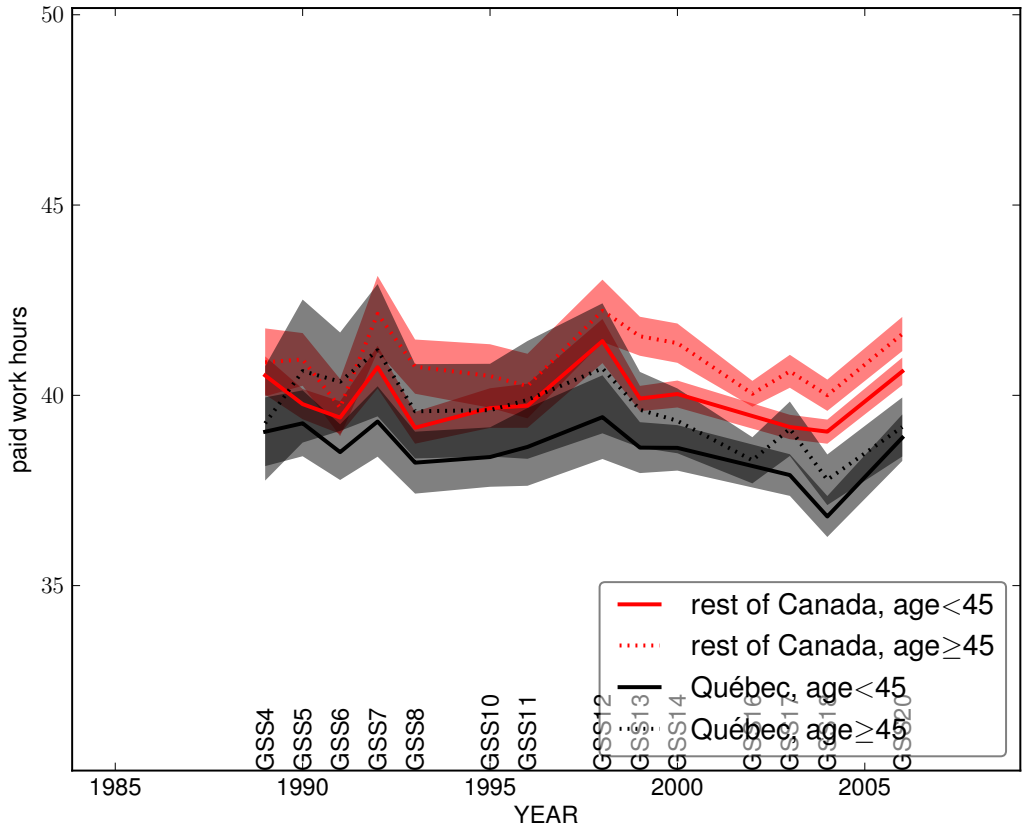

Figure A.72: Paid work hours (in/outside Québec, by age group) .

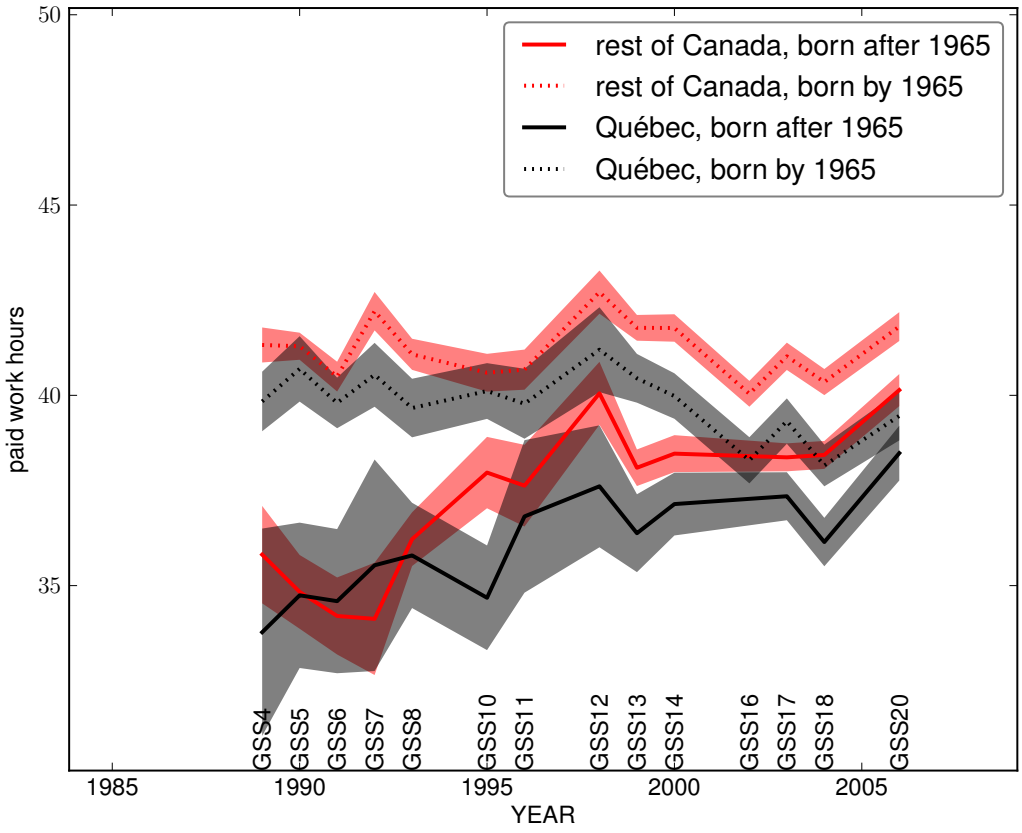

Figure A.73: Paid work hours (in/outside Québec, by cohort) .

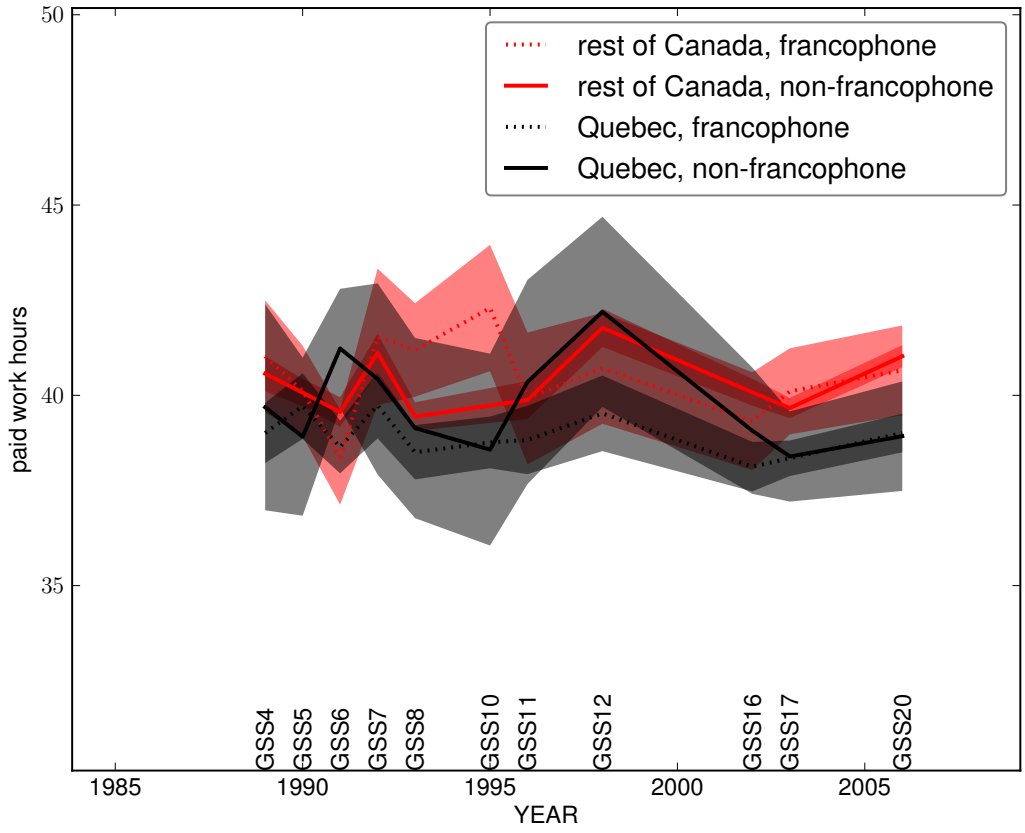

Figure A.74: Paid work hours (in/outside Québec, by first language) .

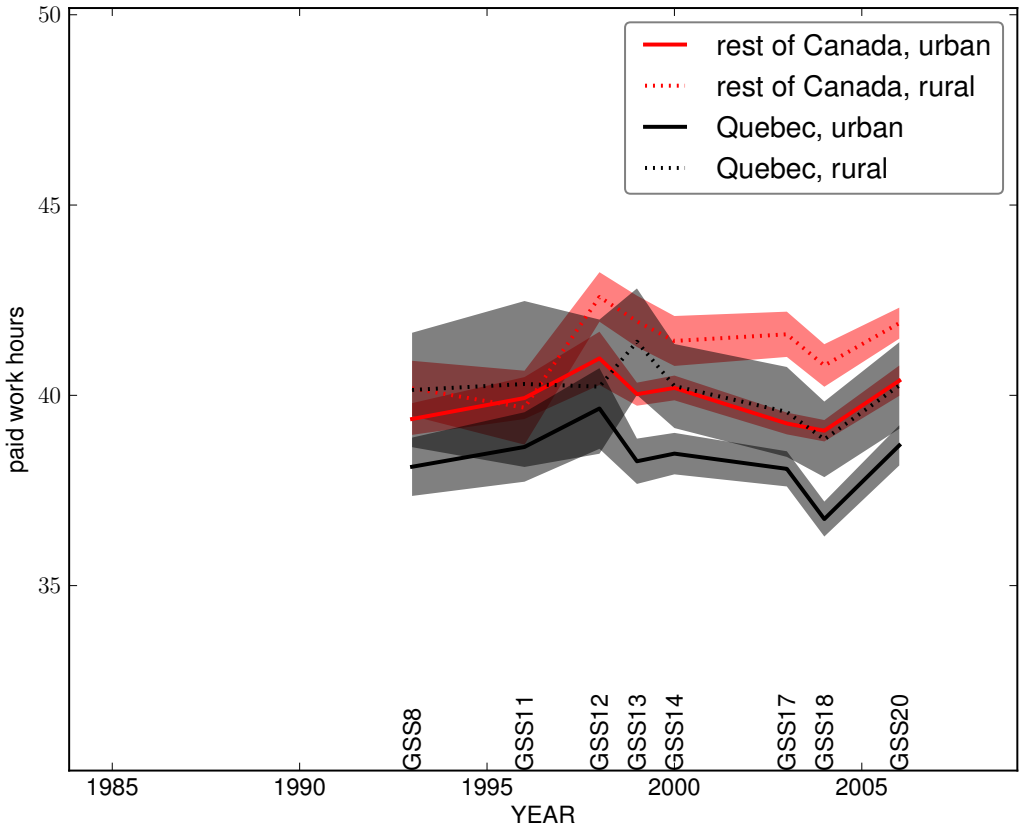

Figure A.75: Paid work hours (in/outside Québec, by urban/rural) .

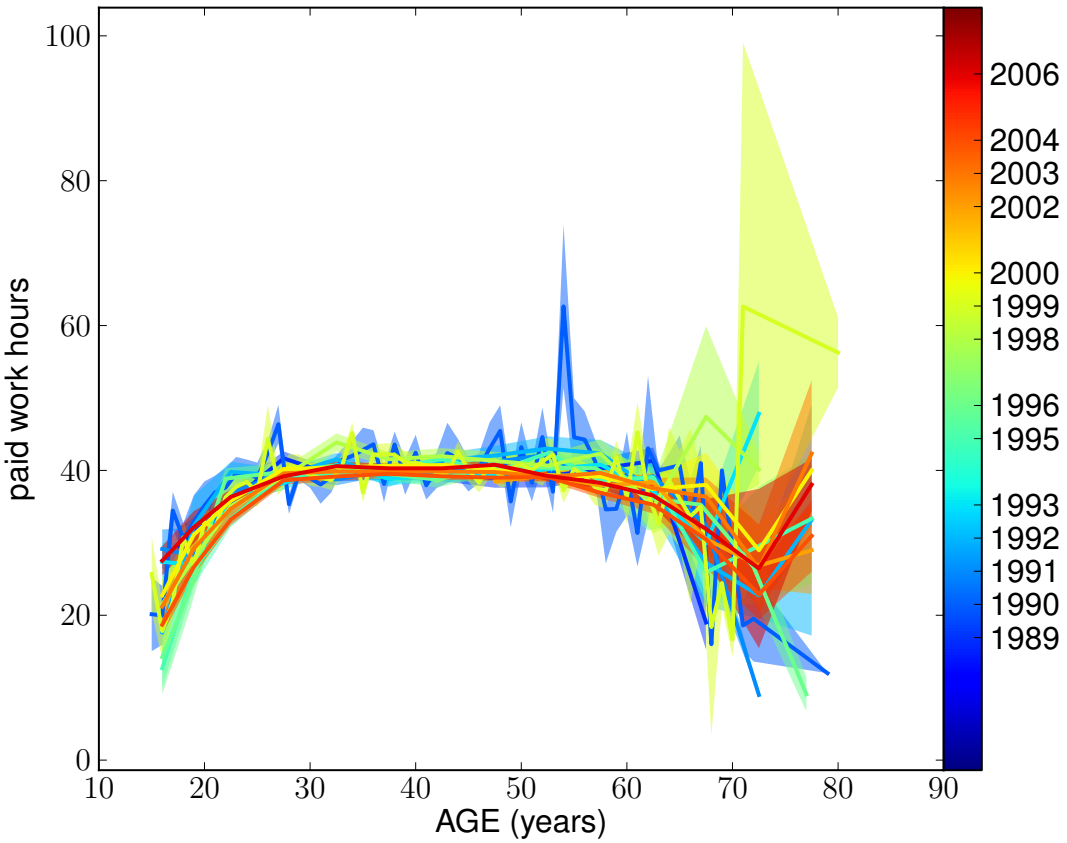

Figure A.76: Age profiles:
Paid work hours in Québec.

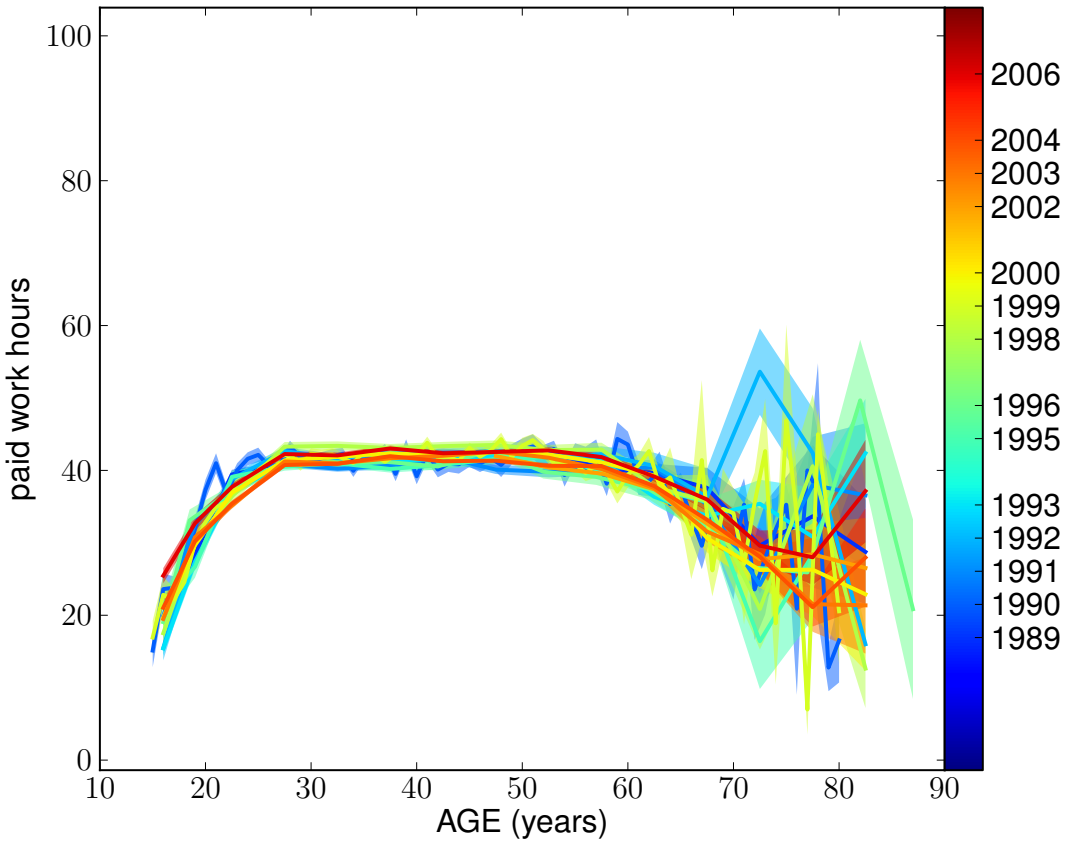

Figure A.77: Age profiles:
Paid work hours outside Québec.

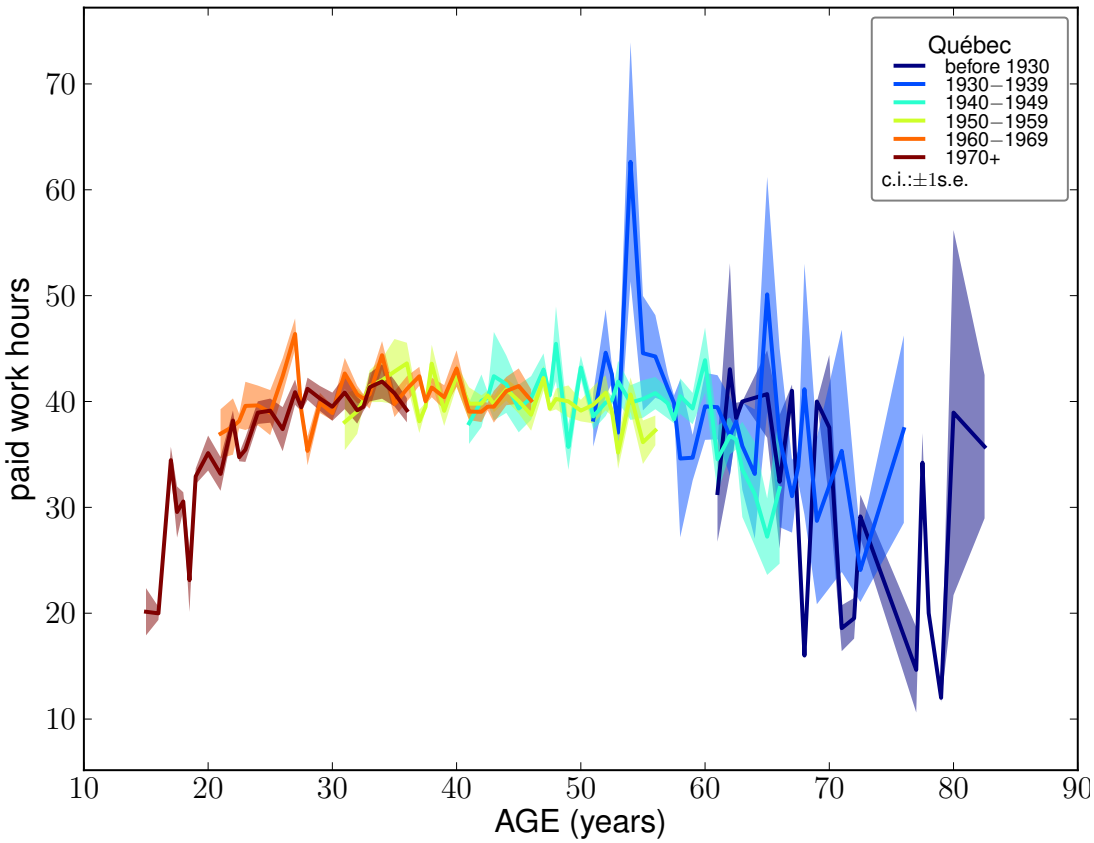

Figure A.78: Cohort profiles:
Paid work hours in Québec.

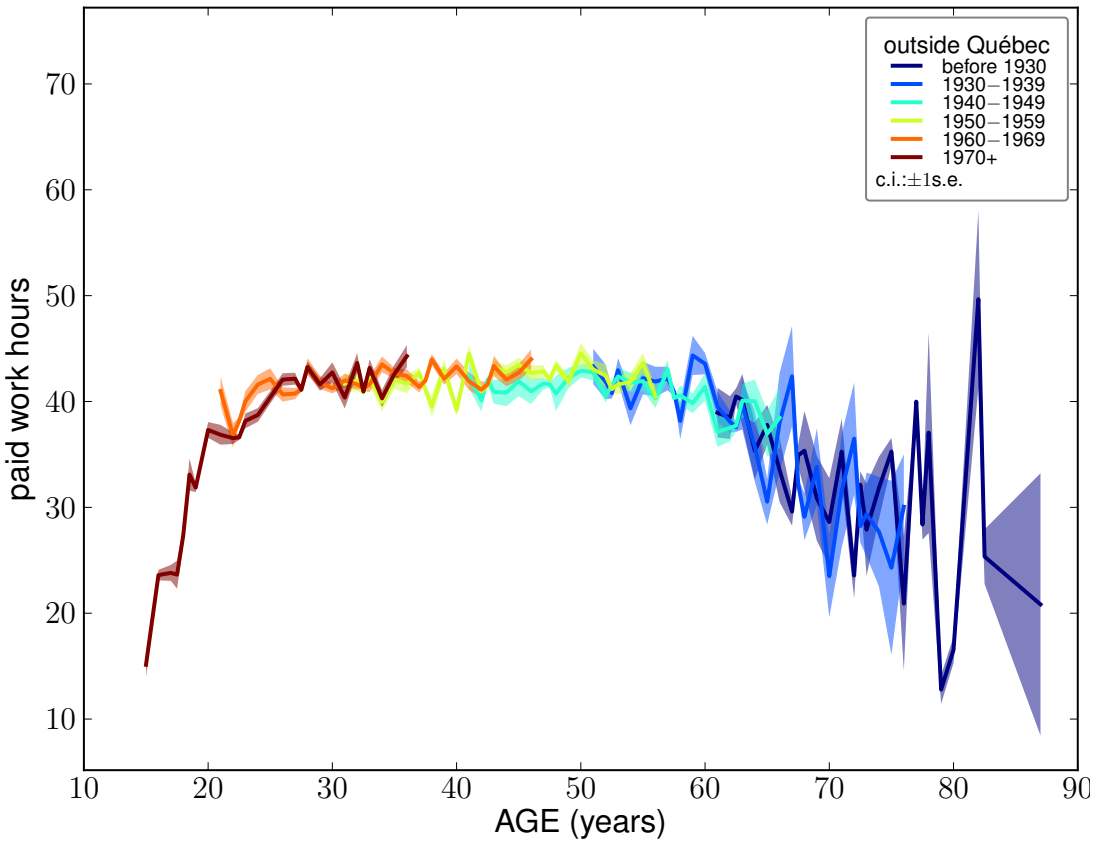

Figure A.79: Cohort profiles:
Paid work hours outside Québec.

A.5 Religious attendance

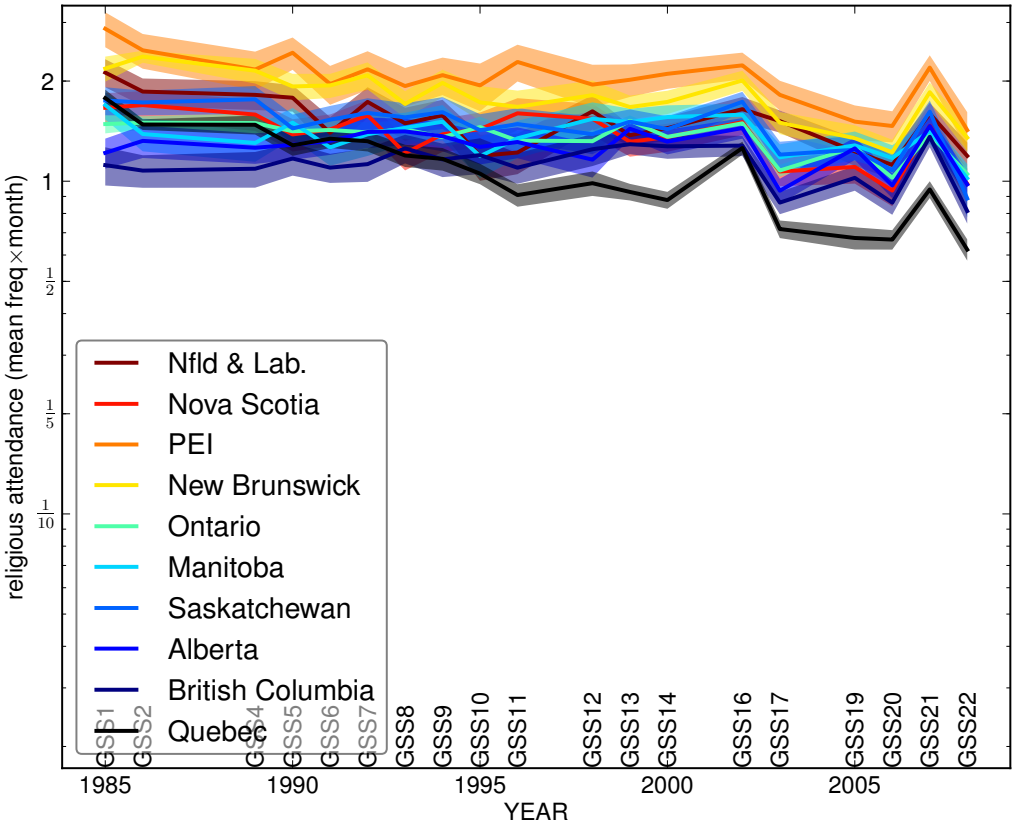

Figure A.80: Religious attendance (by Province) .
Log of annual frequency of attendance.

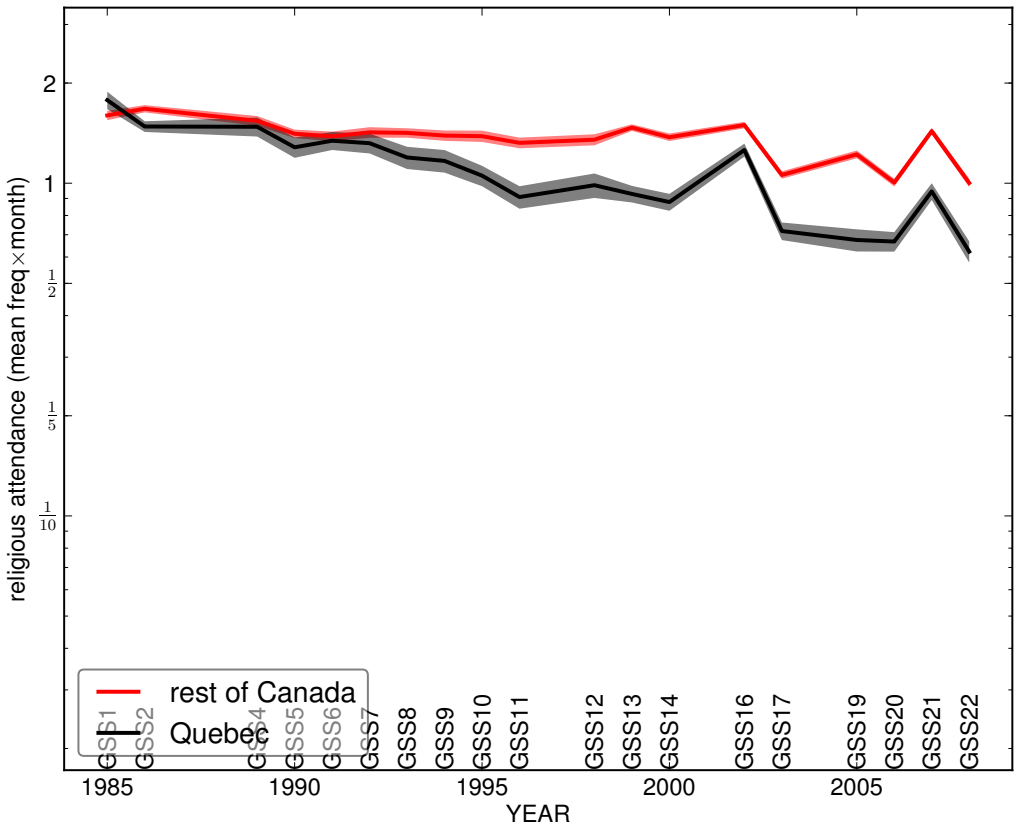

Figure A.81: Religious attendance (in/outside Québec) .
Log of annual frequency of attendance.

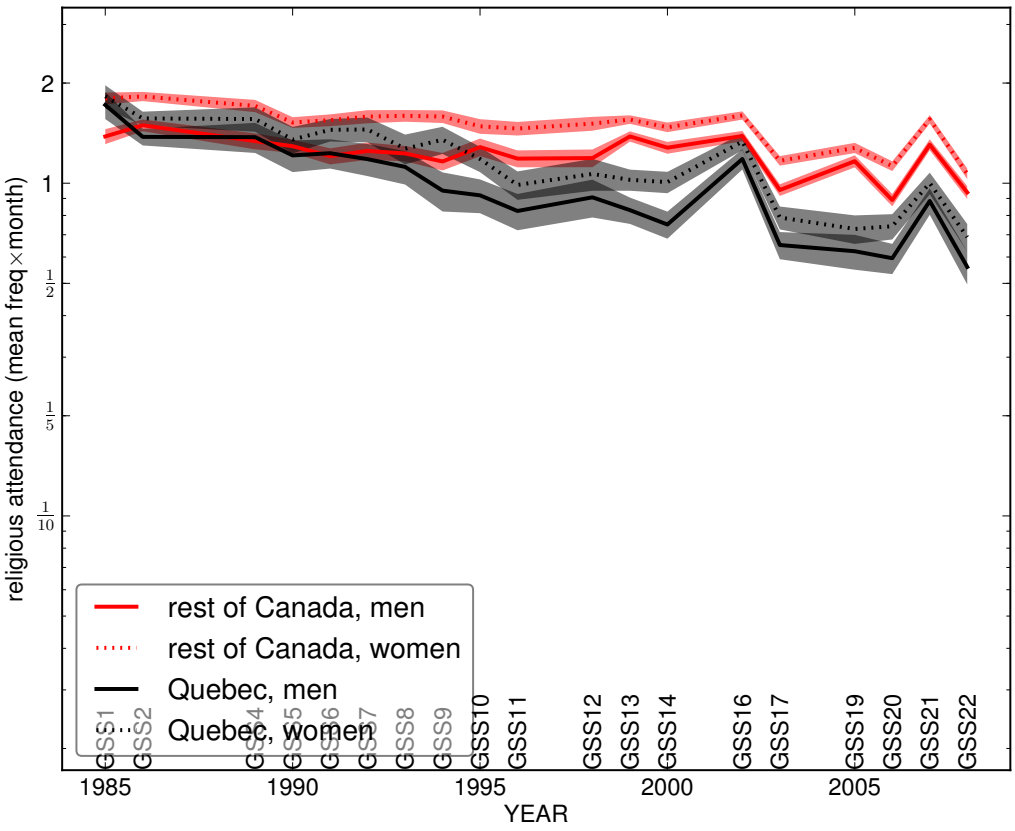

Figure A.82: Religious attendance (in/outside Québec, by gender) .
Log of annual frequency of attendance.

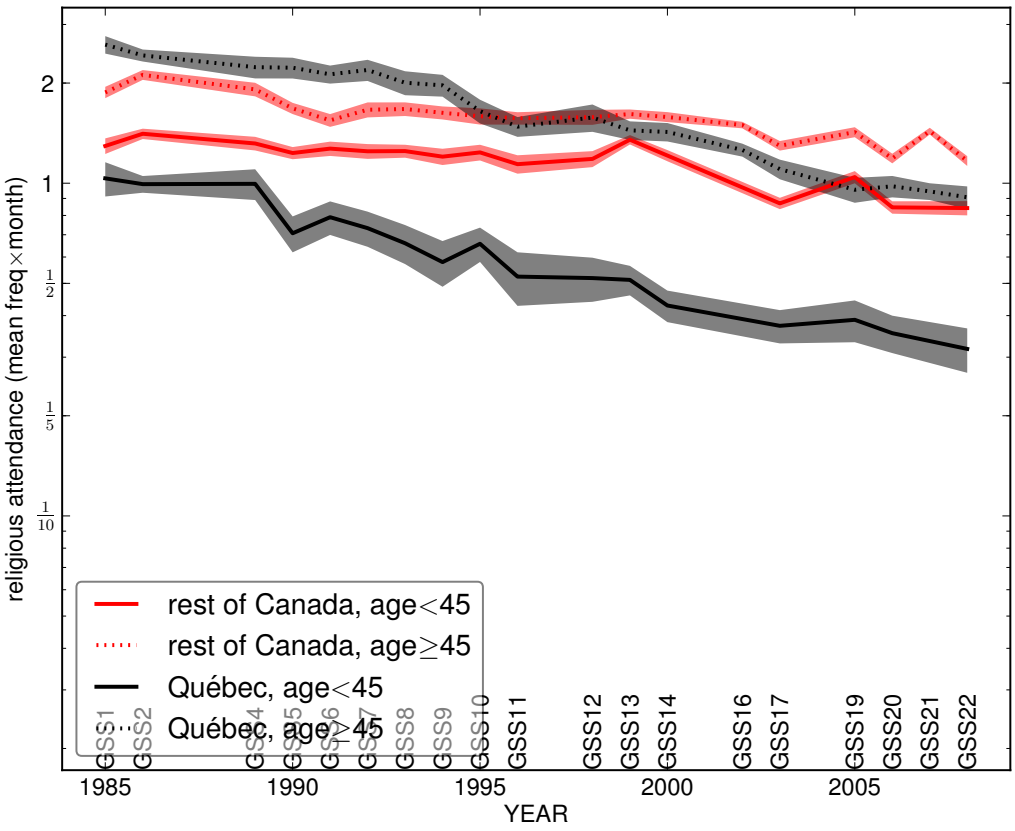

Figure A.83: Religious attendance (in/outside Québec, by age group) .
Log of annual frequency of attendance.

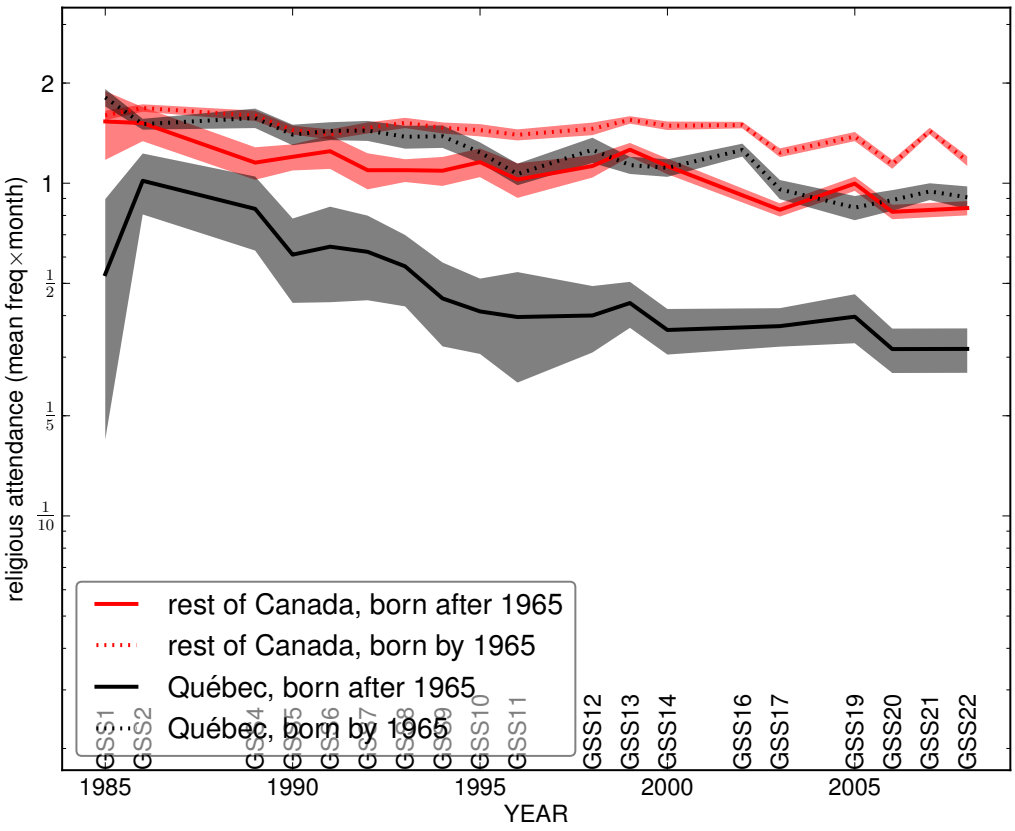

Figure A.84: Religious attendance (in/outside Québec, by cohort) .
Log of annual frequency of attendance.

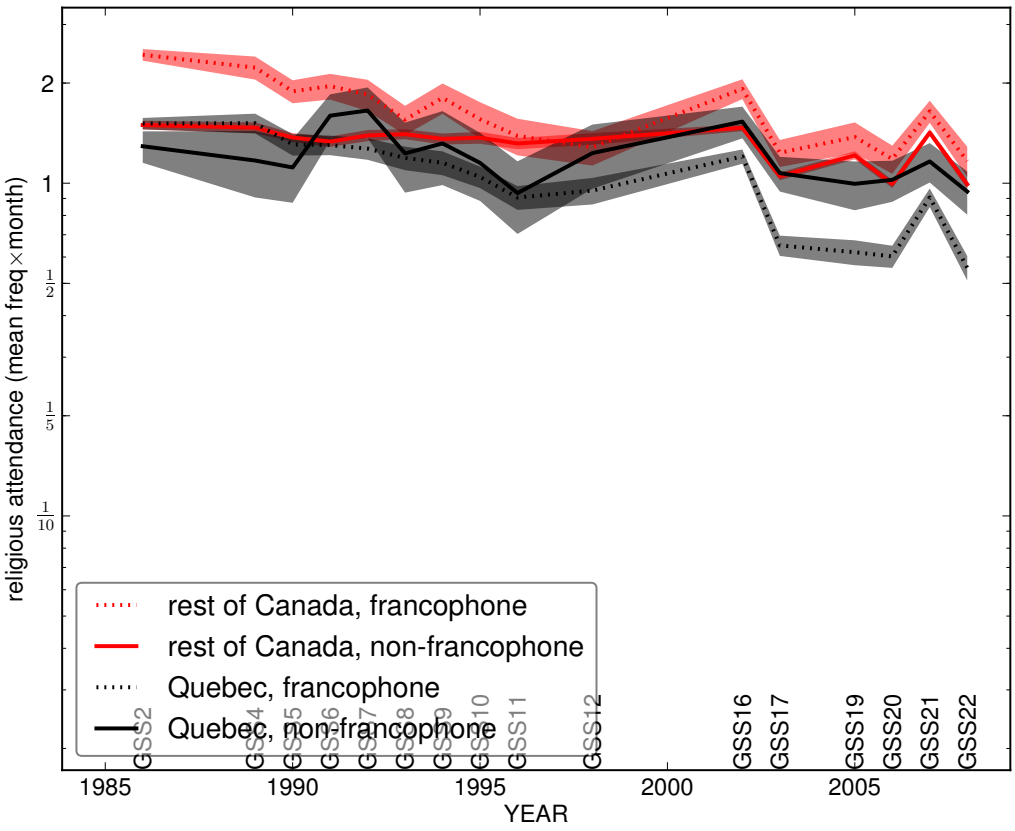

Figure A.85: Religious attendance (in/outside Québec, by first language) .
Log of annual frequency of attendance.

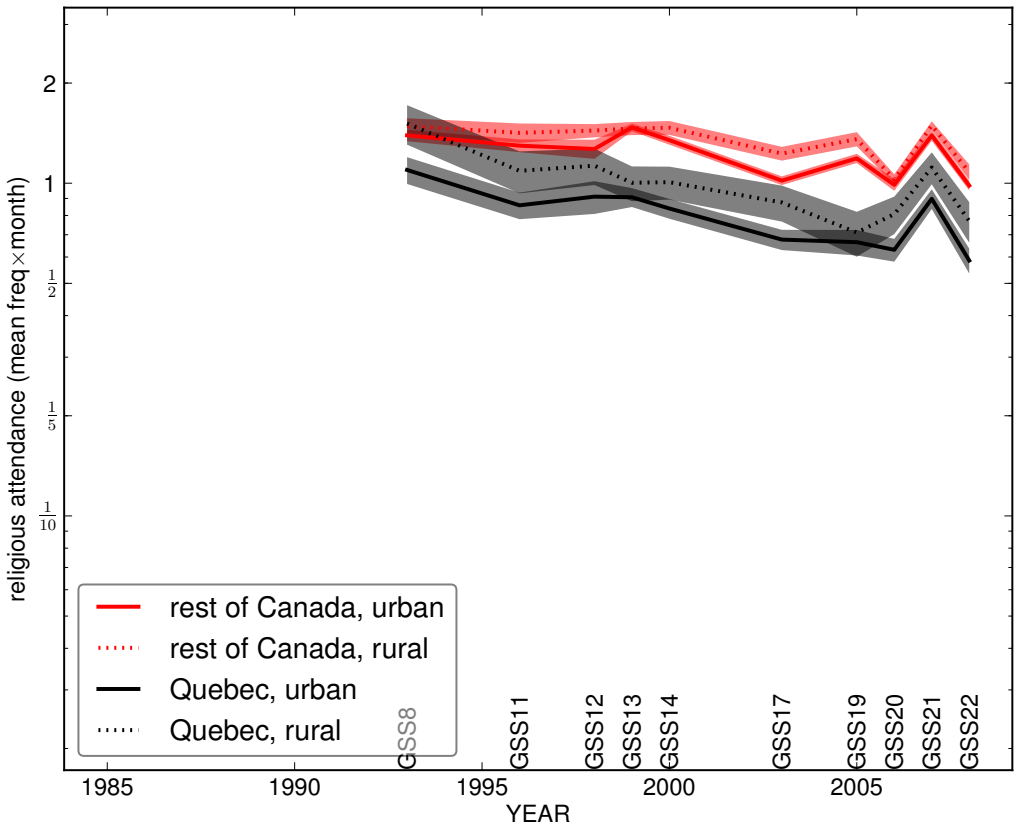

Figure A.86: Religious attendance (in/outside Québec, by urban/rural) .
Log of annual frequency of attendance.

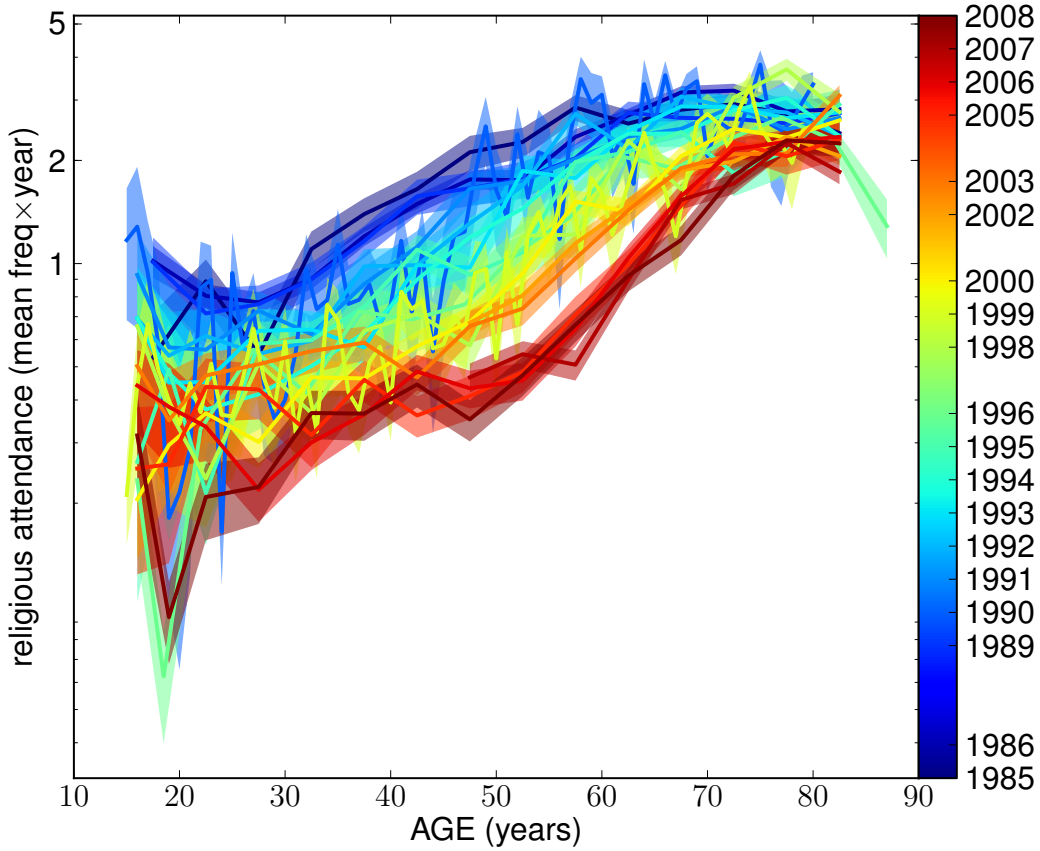

Figure A.87: Age profiles:
Religious attendance in Québec.

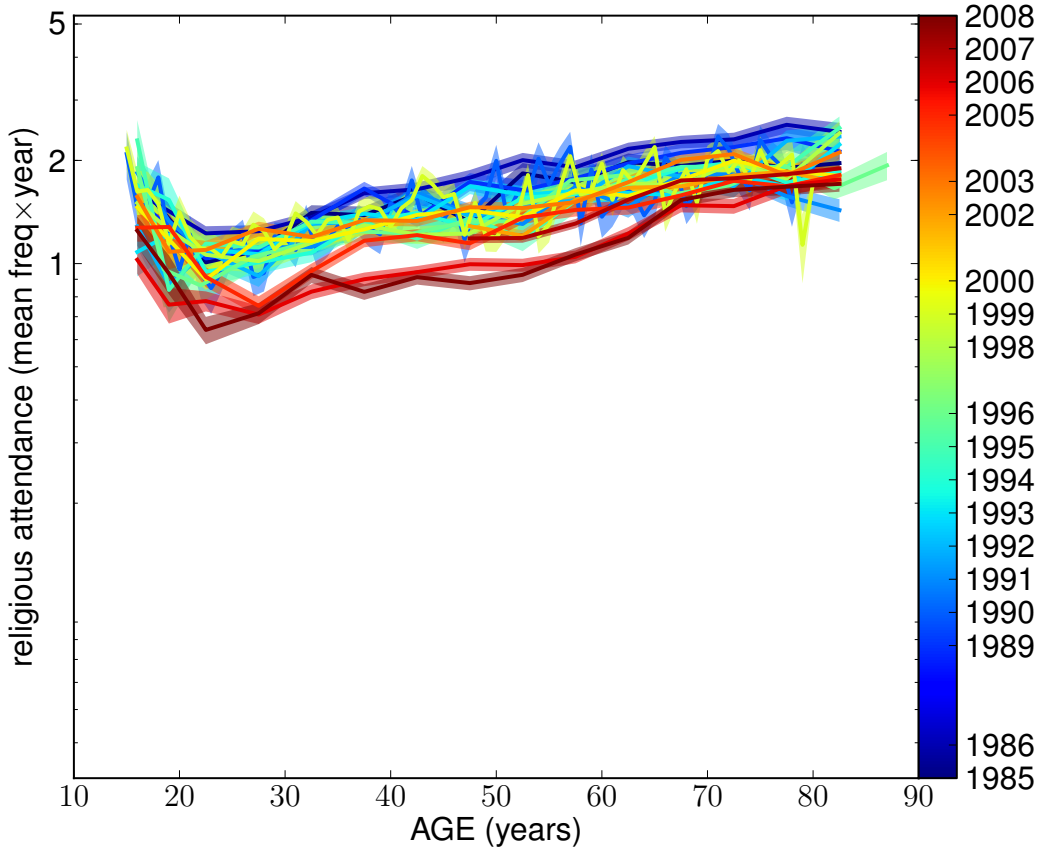

Figure A.88: Age profiles:
Religious attendance outside Québec.

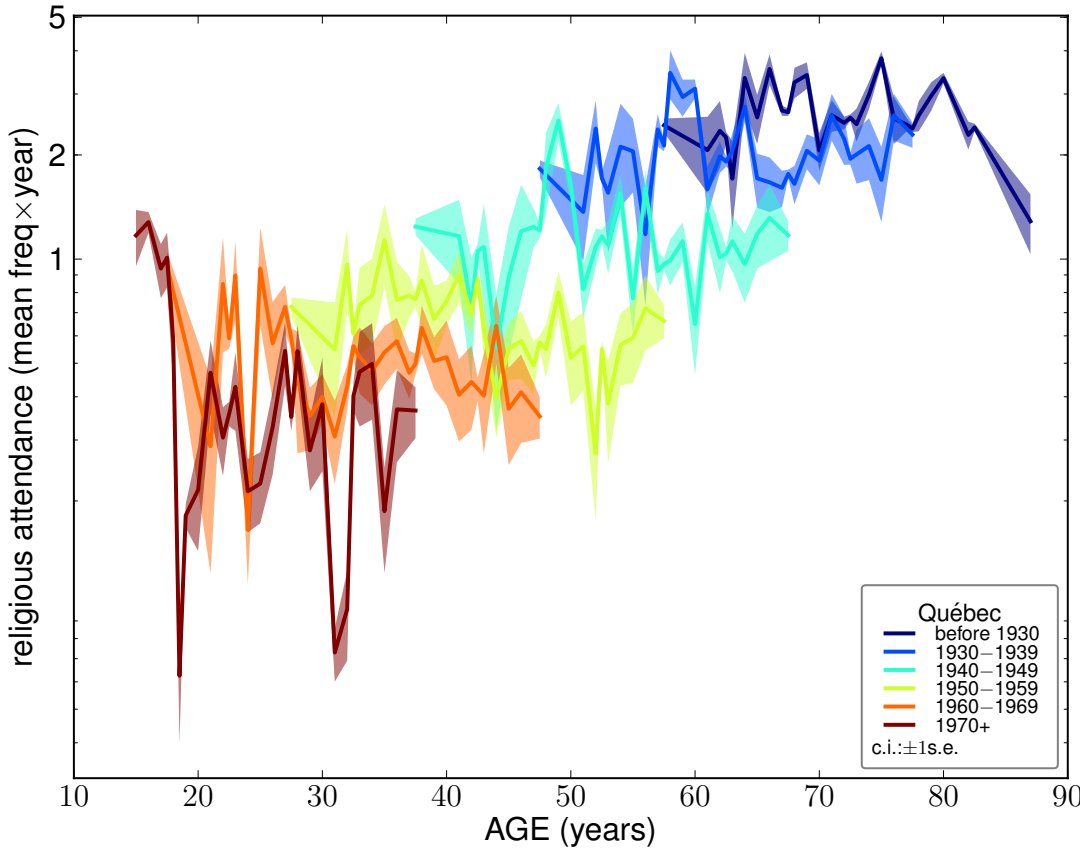

Figure A.89: Cohort profiles:
Religious attendance in Québec.

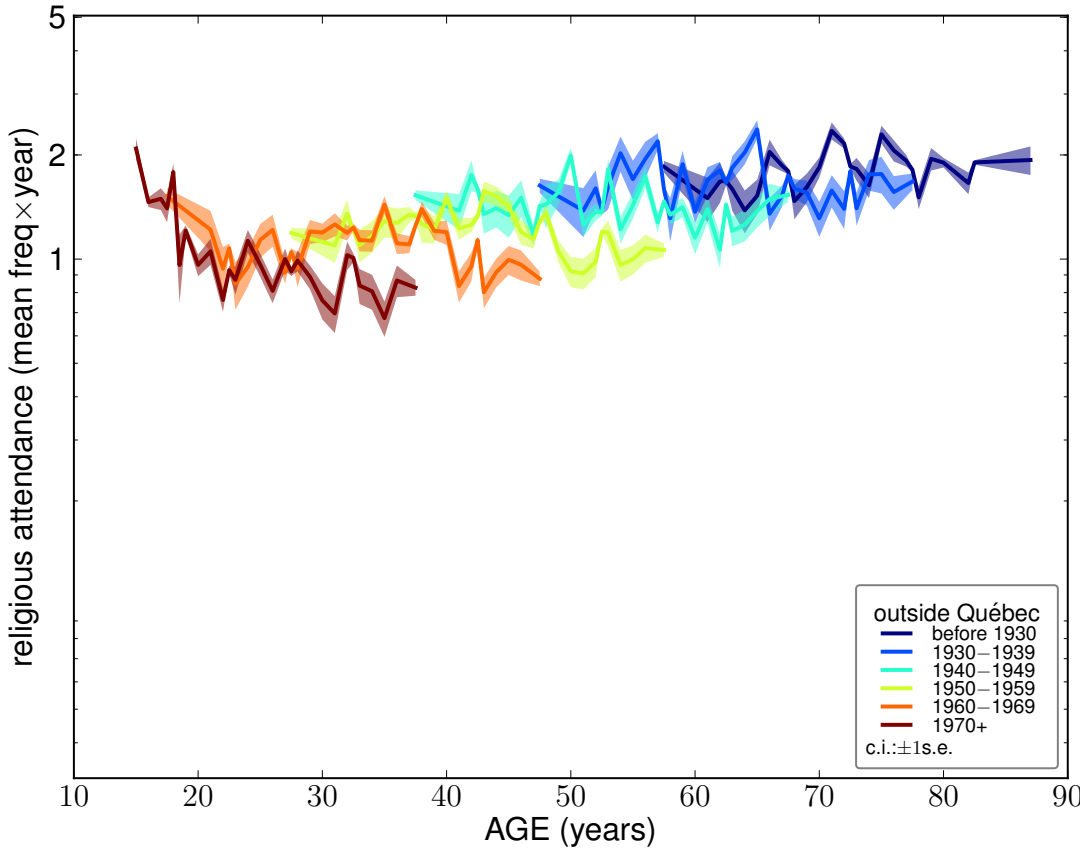

Figure A.90: Cohort profiles:
Religious attendance outside Québec.

A.6 Police

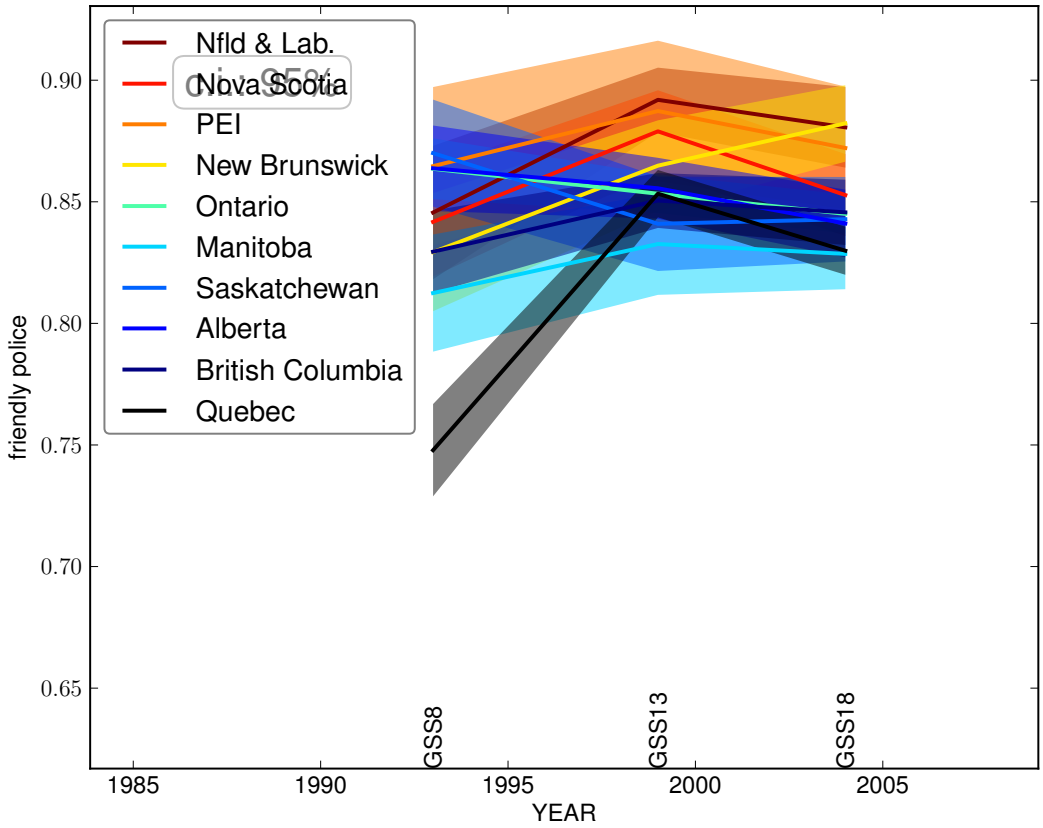

Figure A.91: Friendly police? (by Province) .

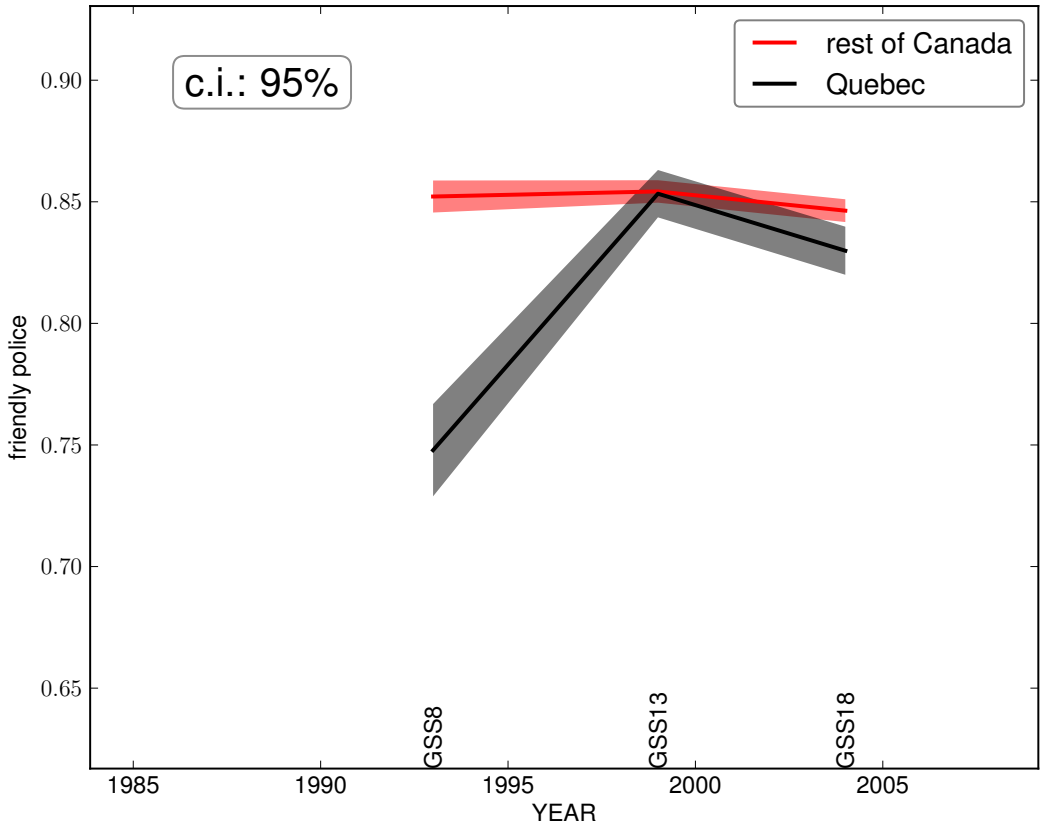

Figure A.92: Friendly police? (in/outside Québec) .

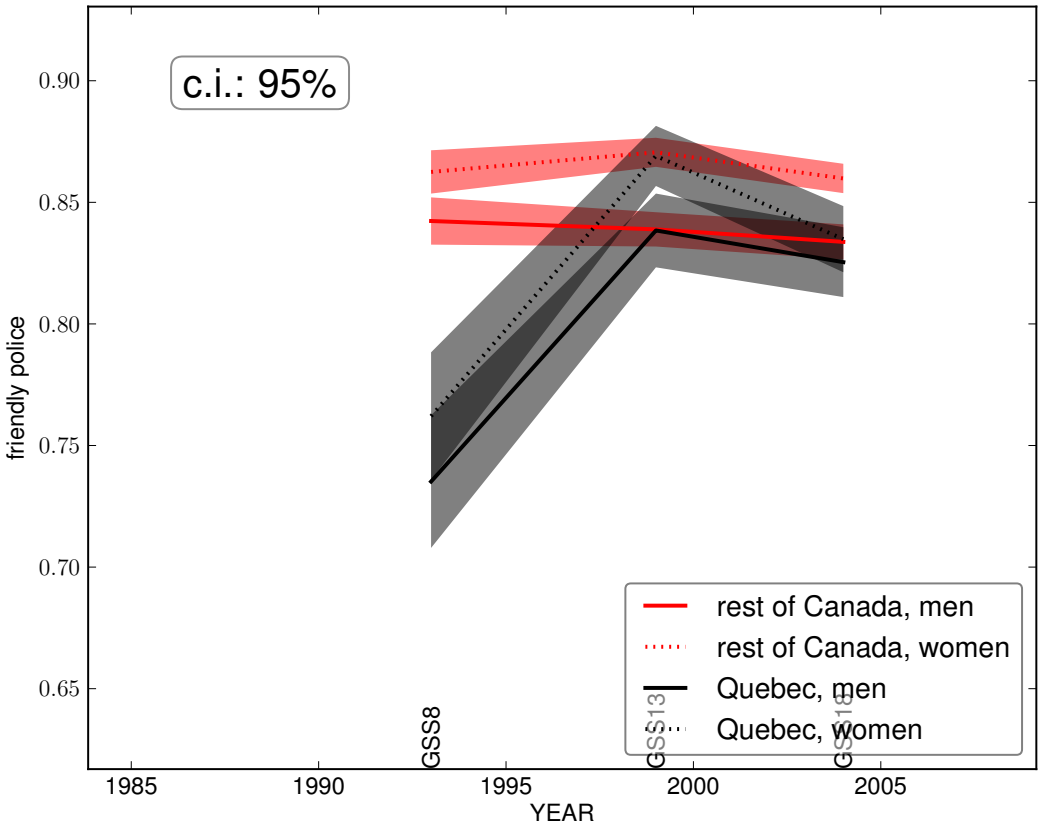

Figure A.93: Friendly police? (in/outside Québec, by gender) .

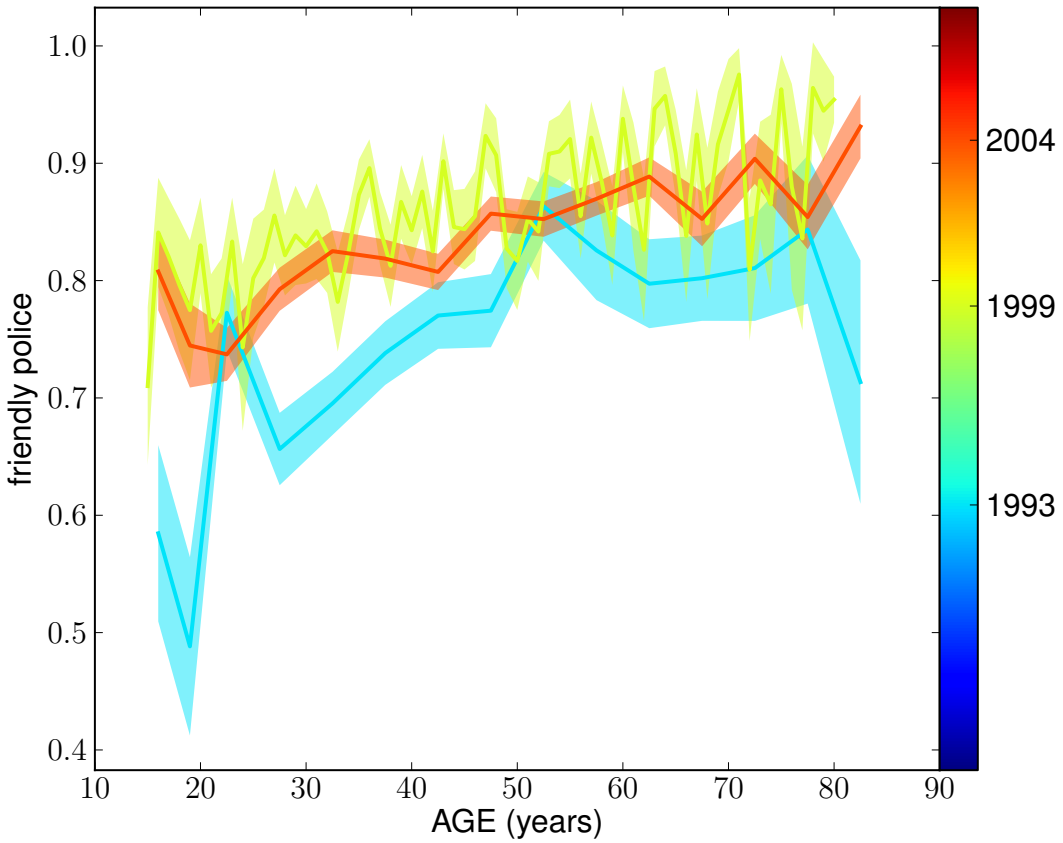

Figure A.94: Age profiles: Friendly police? in Québec.

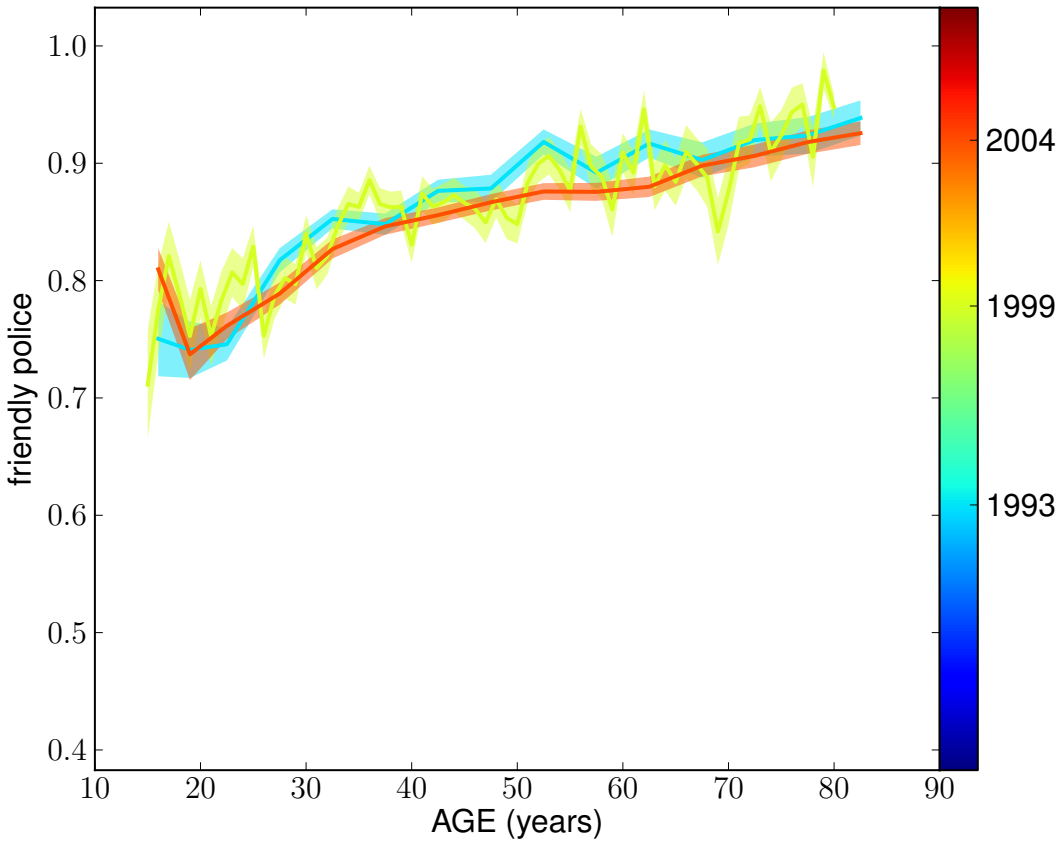

Figure A.95: Age profiles:
Friendly police? outside Québec.

A.7 Safety

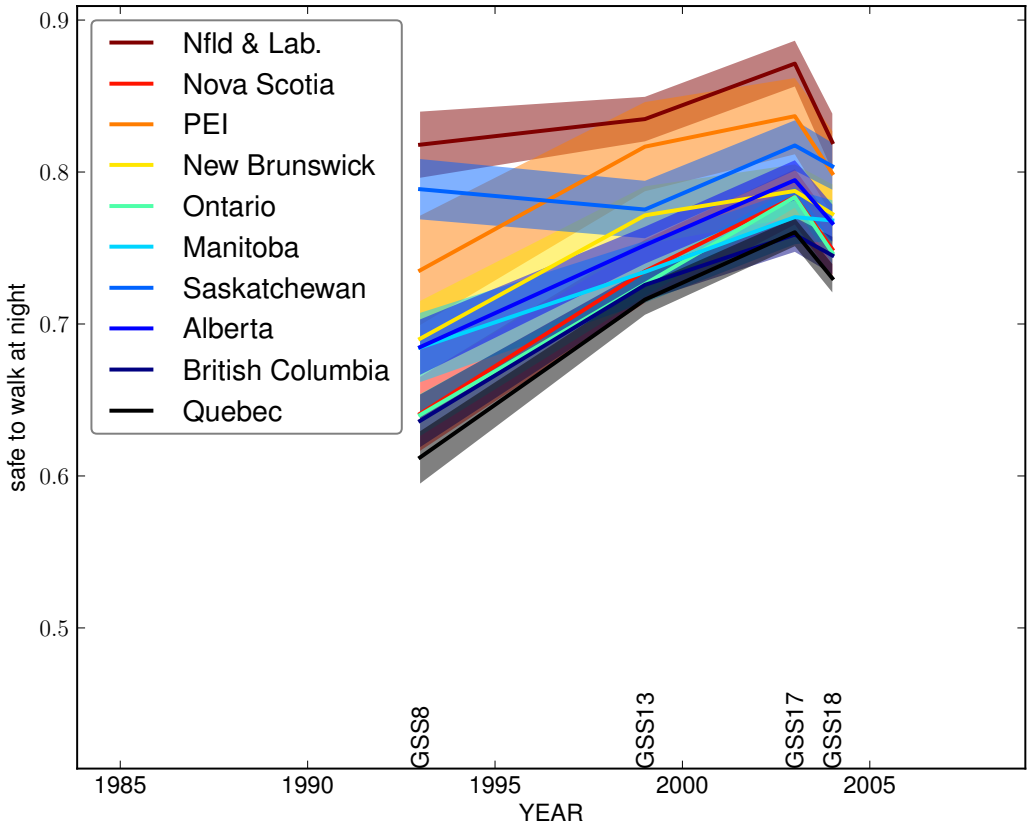

Figure A.96: Safe to walk alone at night? (by Province) .

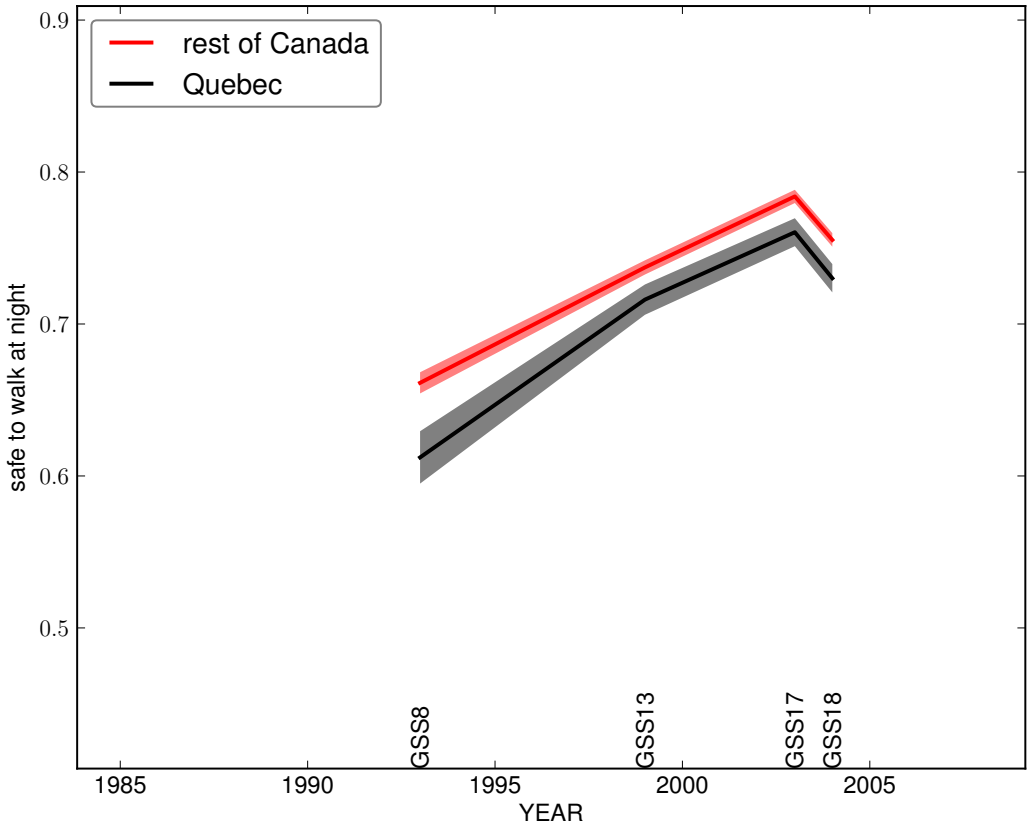

Figure A.97: Safe to walk alone at night? (in/outside Québec) .

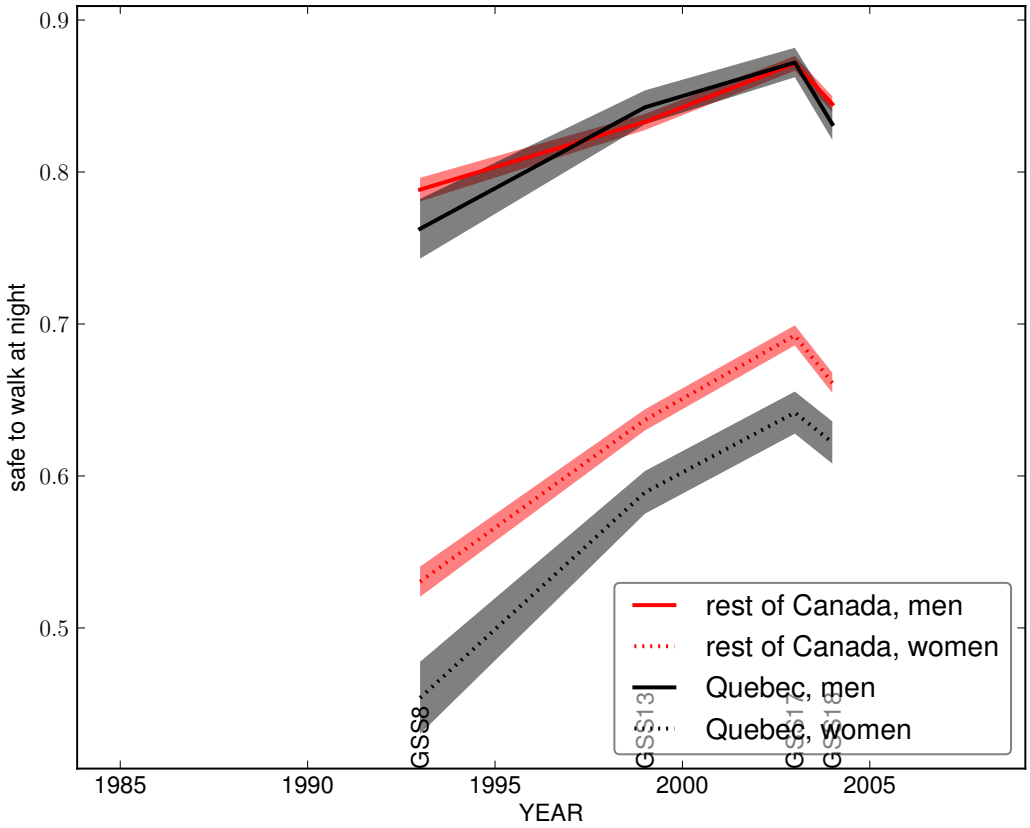

Figure A.98: Safe to walk alone at night? (in/outside Québec, by gender) .

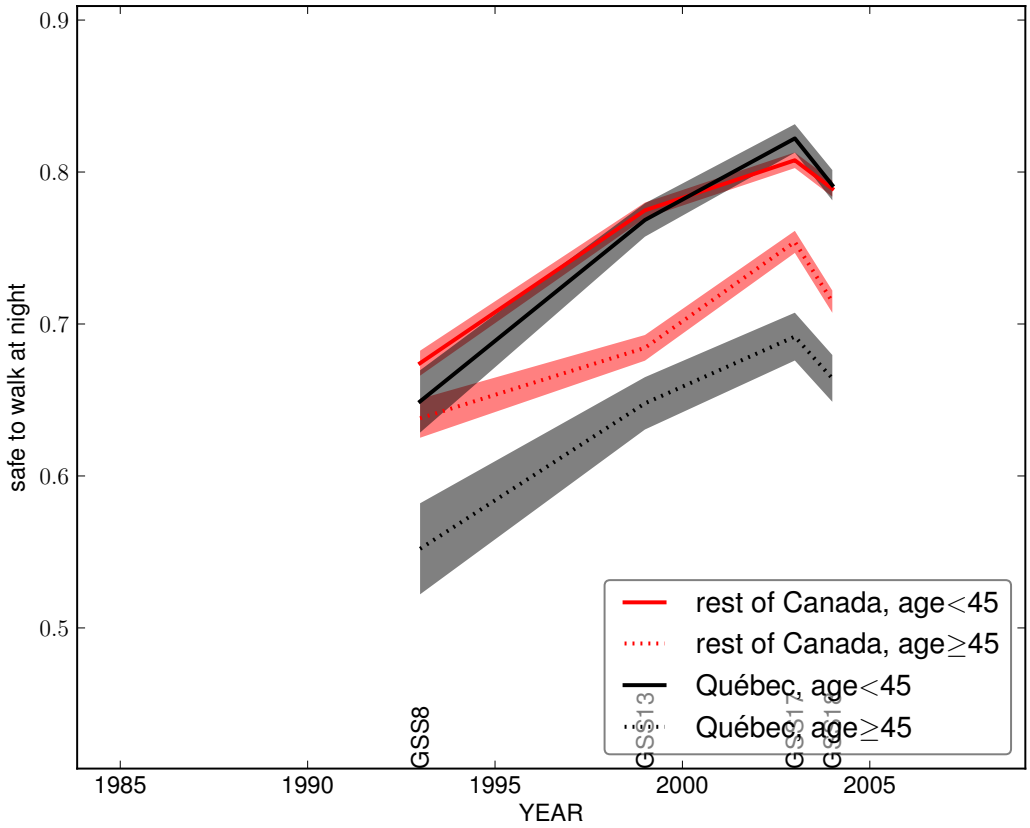

Figure A.99: Safe to walk alone at night? (in/outside Québec, by age group) .

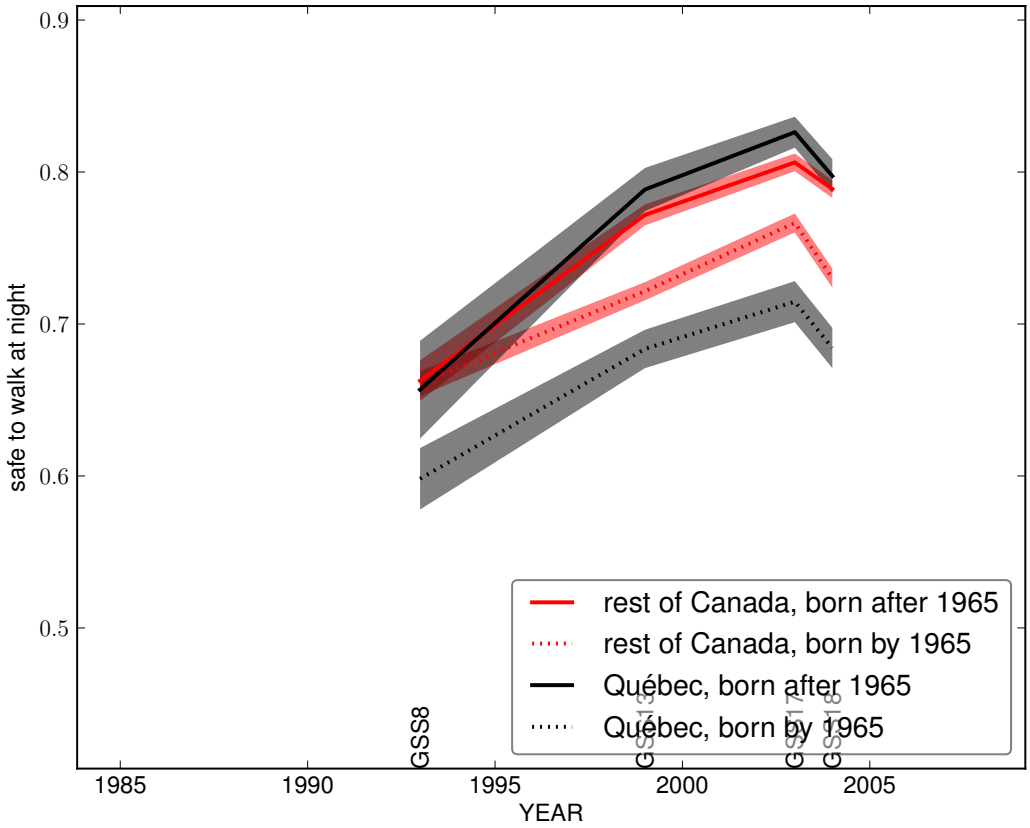

Figure A.100: Safe to walk alone at night? (in/outside Québec, by cohort) .

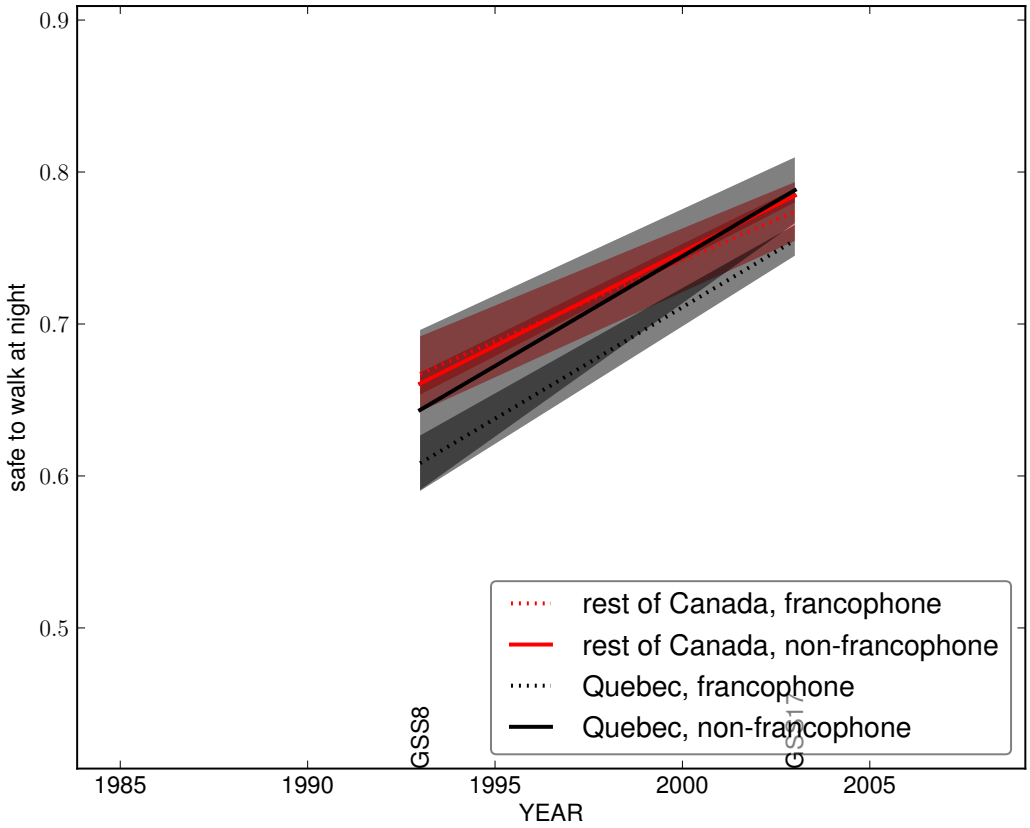

Figure A.101: Safe to walk alone at night? (in/outside Québec, by first language) .

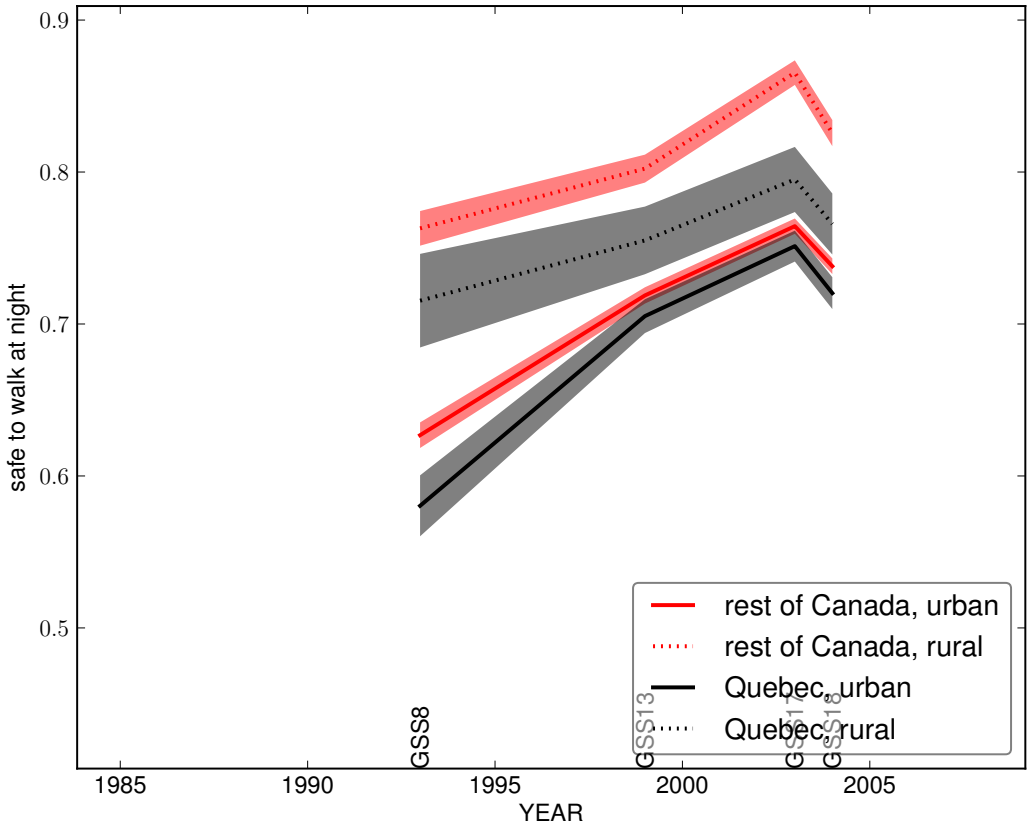

Figure A.102: Safe to walk alone at night? (in/outside Québec, by urban/rural) .

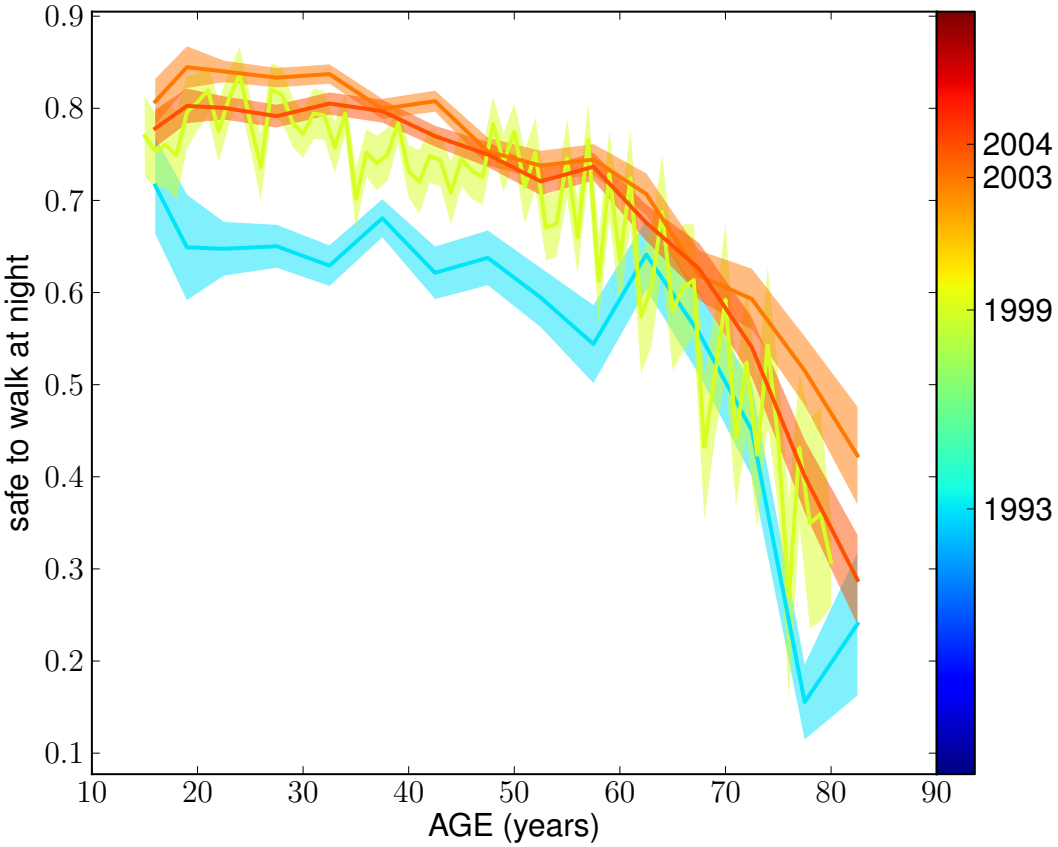

Figure A.103: Age profiles:
Safe to walk alone at night? in Québec.

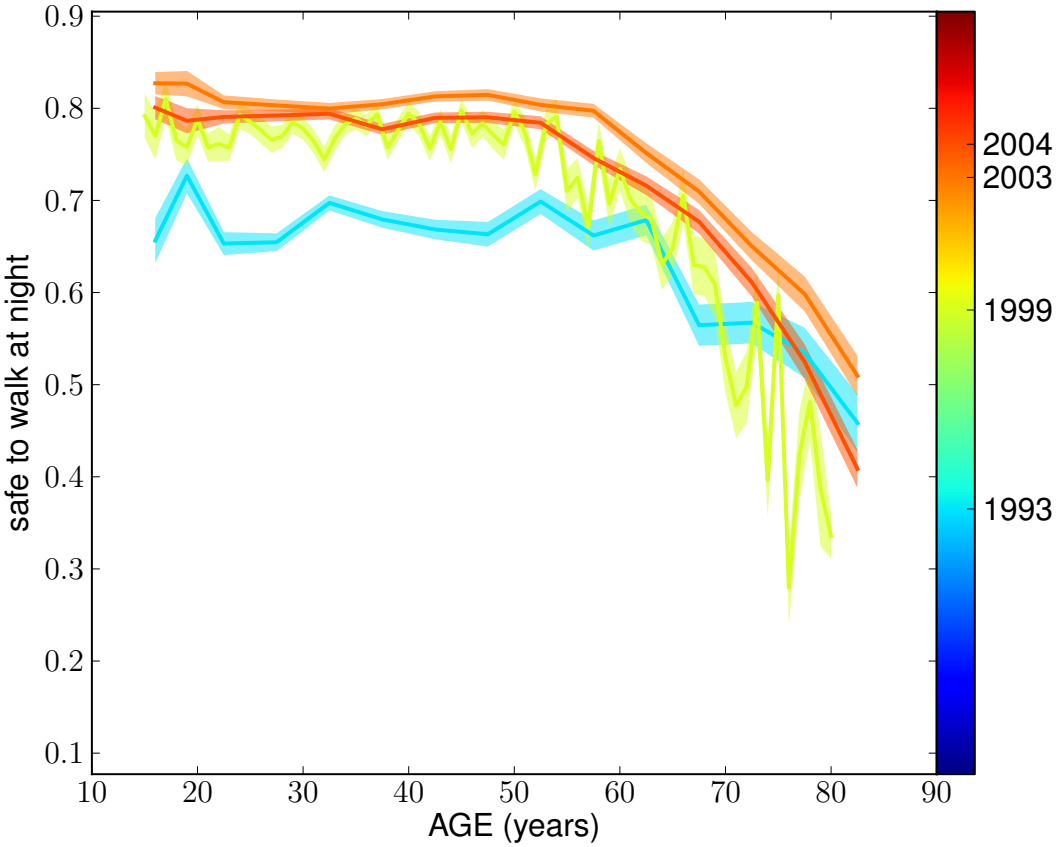

Figure A.104: Age profiles:
Safe to walk alone at night? outside Québec.

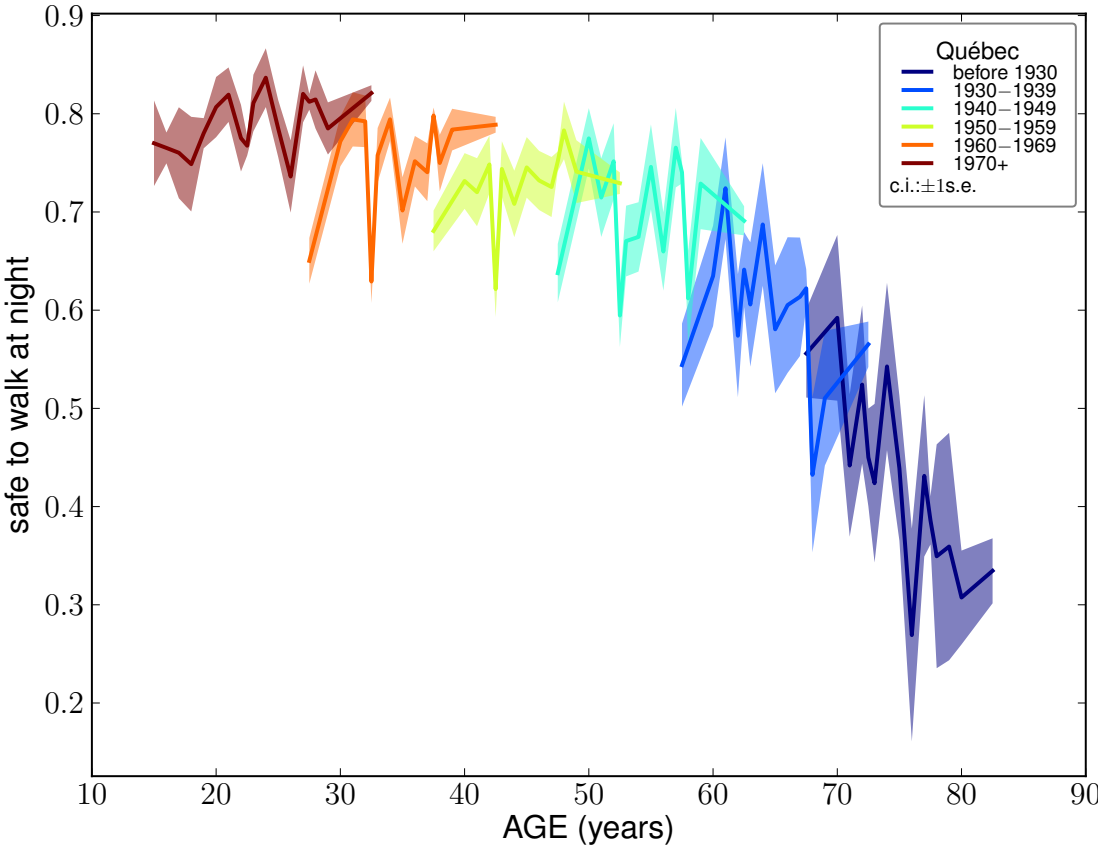

Figure A.105: Cohort profiles:
Safe to walk alone at night? in Québec.

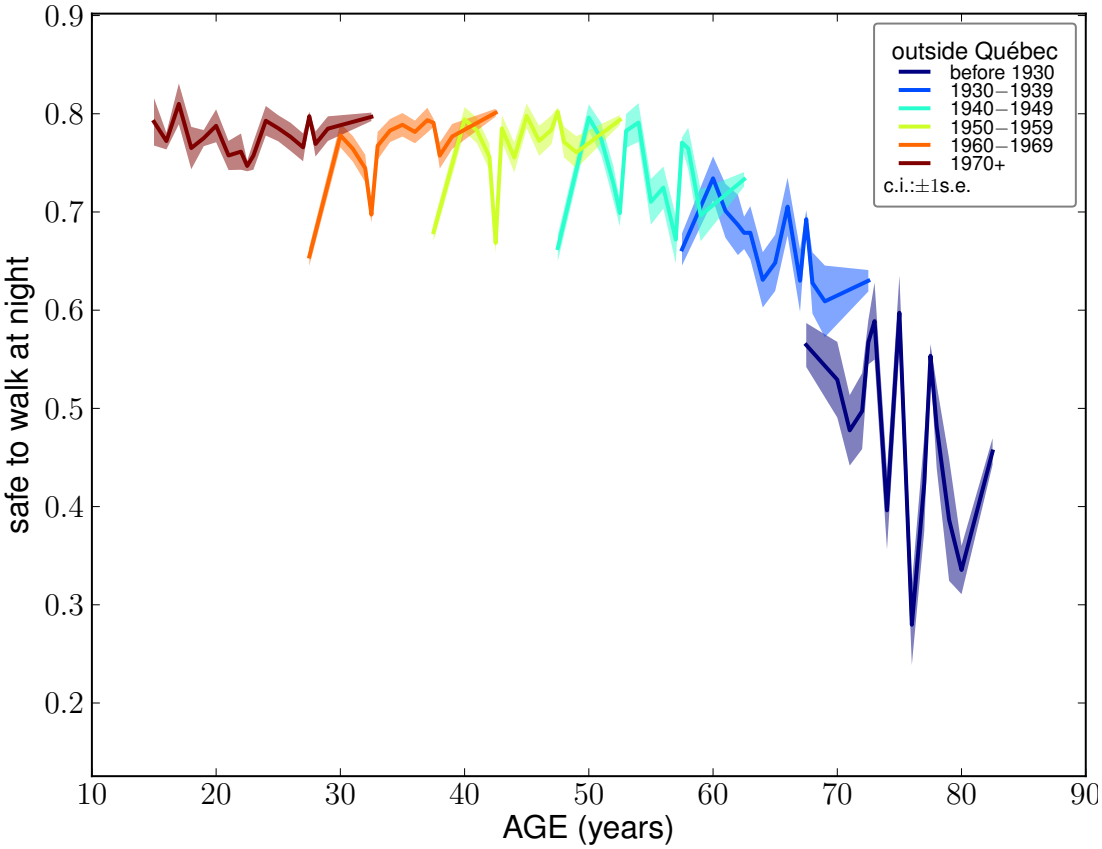

Figure A.106: Cohort profiles:
Safe to walk alone at night? outside Québec.

A.8 Local belonging

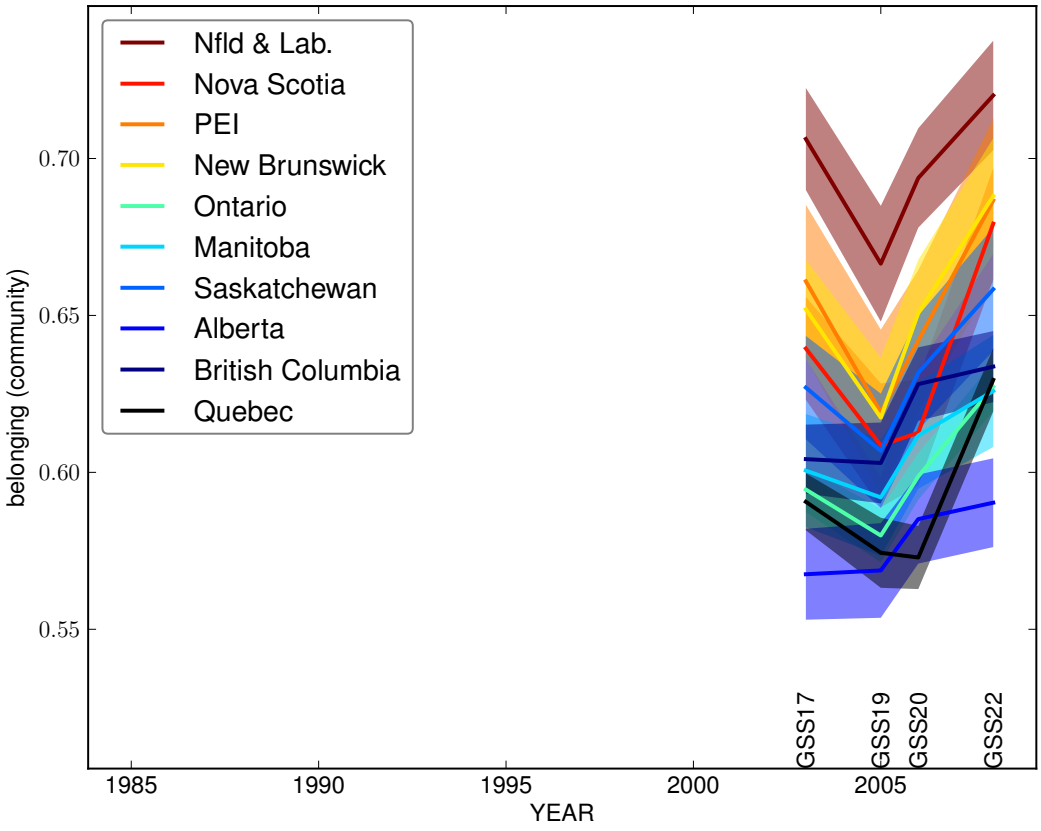

Figure A.107: Local social identity (by Province) .

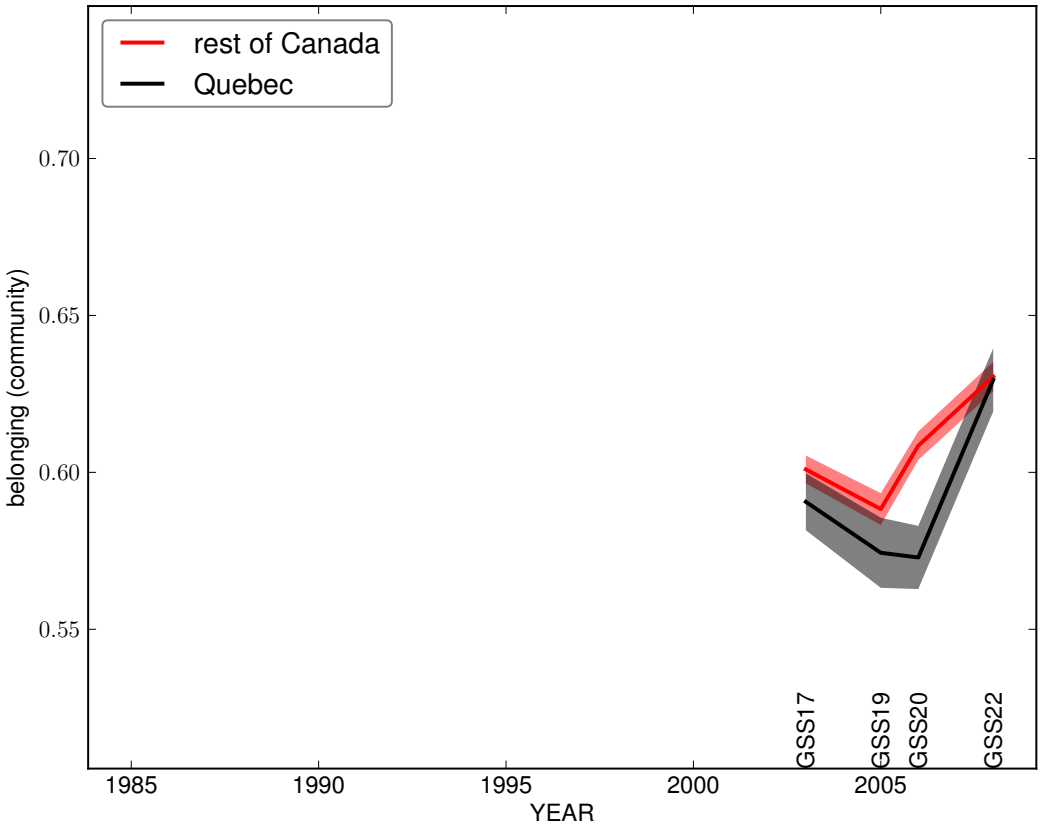

Figure A.108: Local social identity (in/outside Québec) .

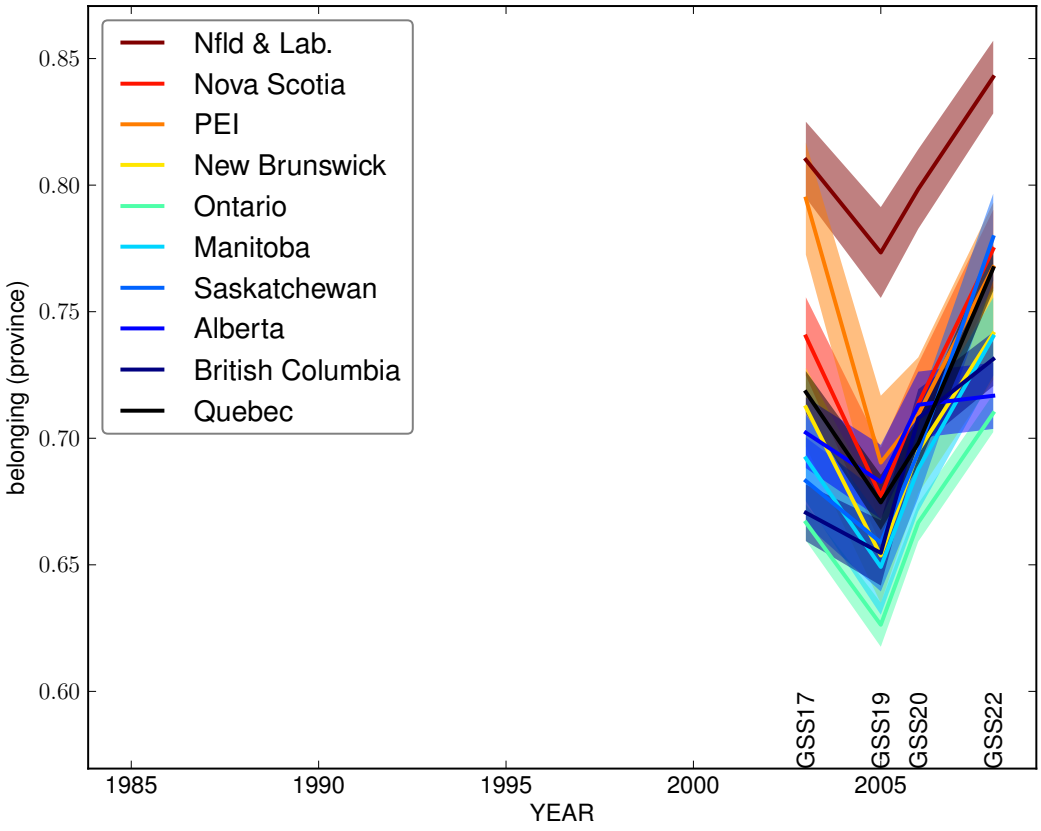

Figure A.109: Provincial social identity (by Province) .

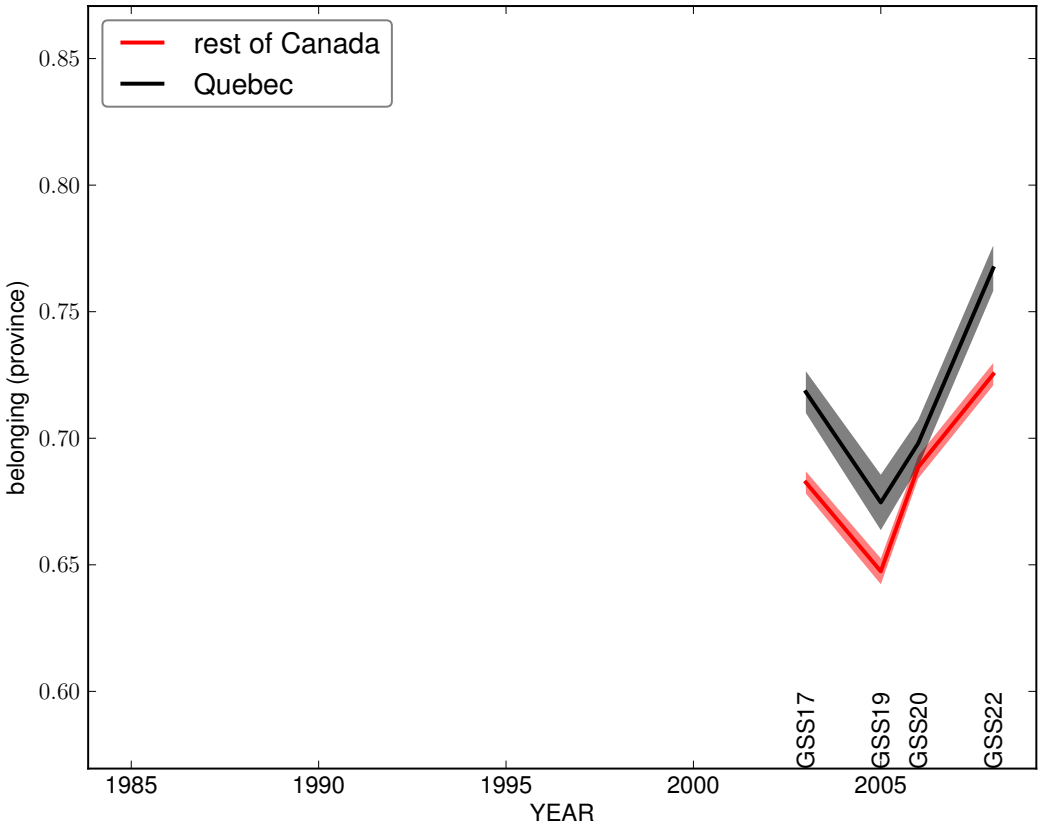

Figure A.110: Provincial social identity (in/outside Québec) .

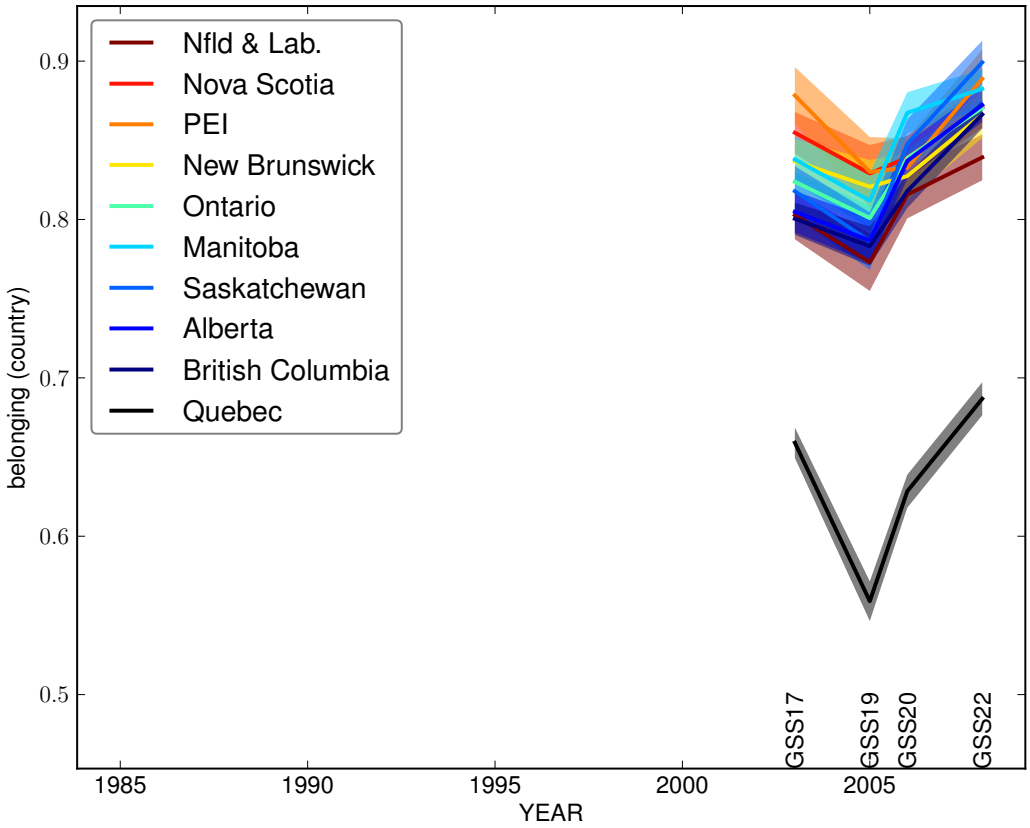

Figure A.111: Federal social identity (by Province) .

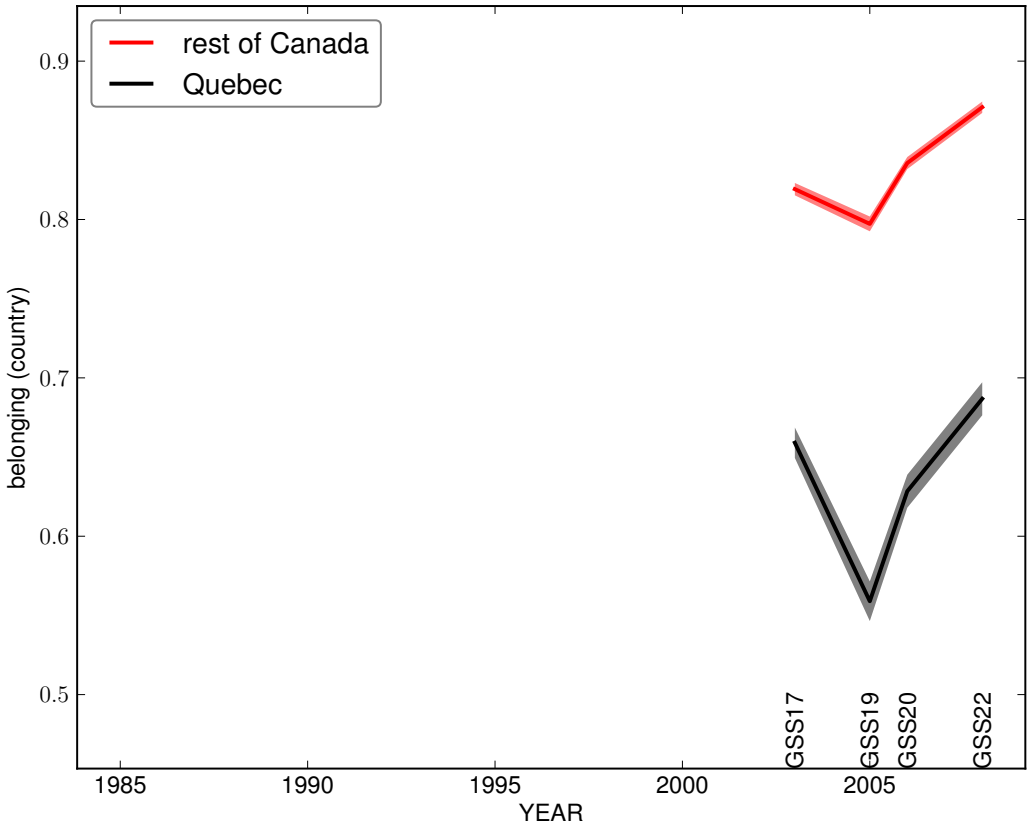

Figure A.112: Federal social identity (in/outside Québec) .

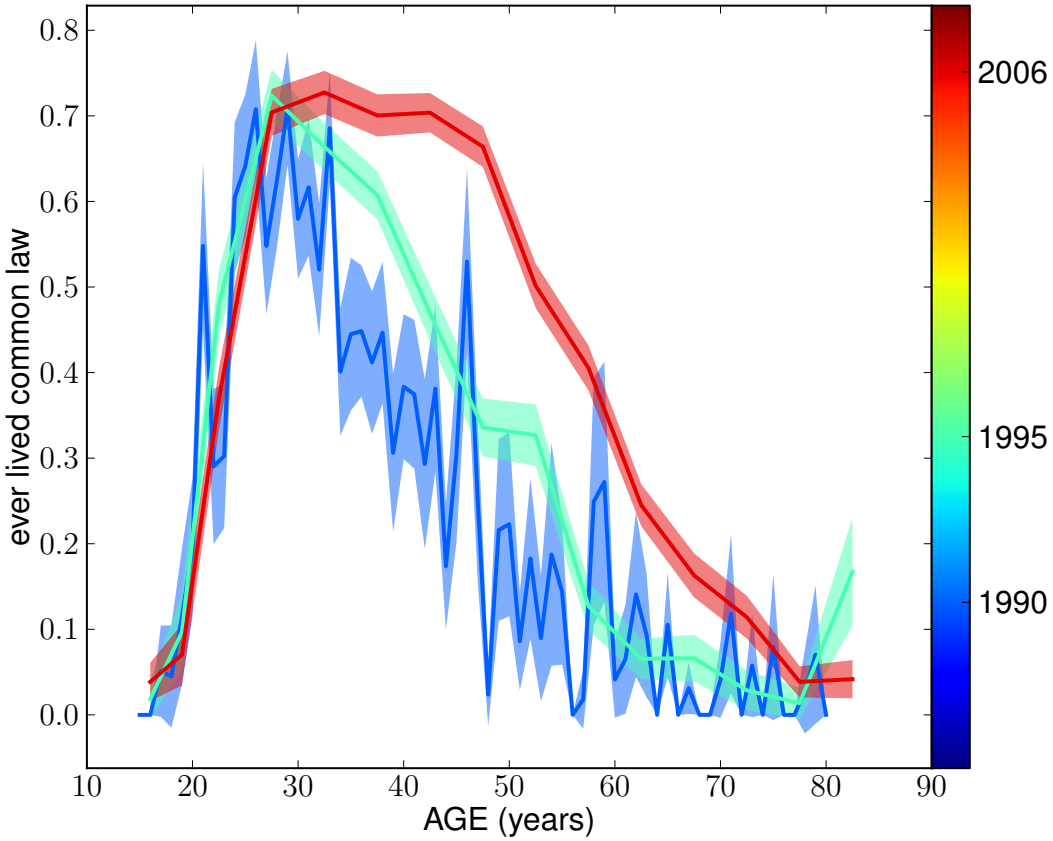

Figure A.113: Age profiles:
Ever lived common law? in Québec.

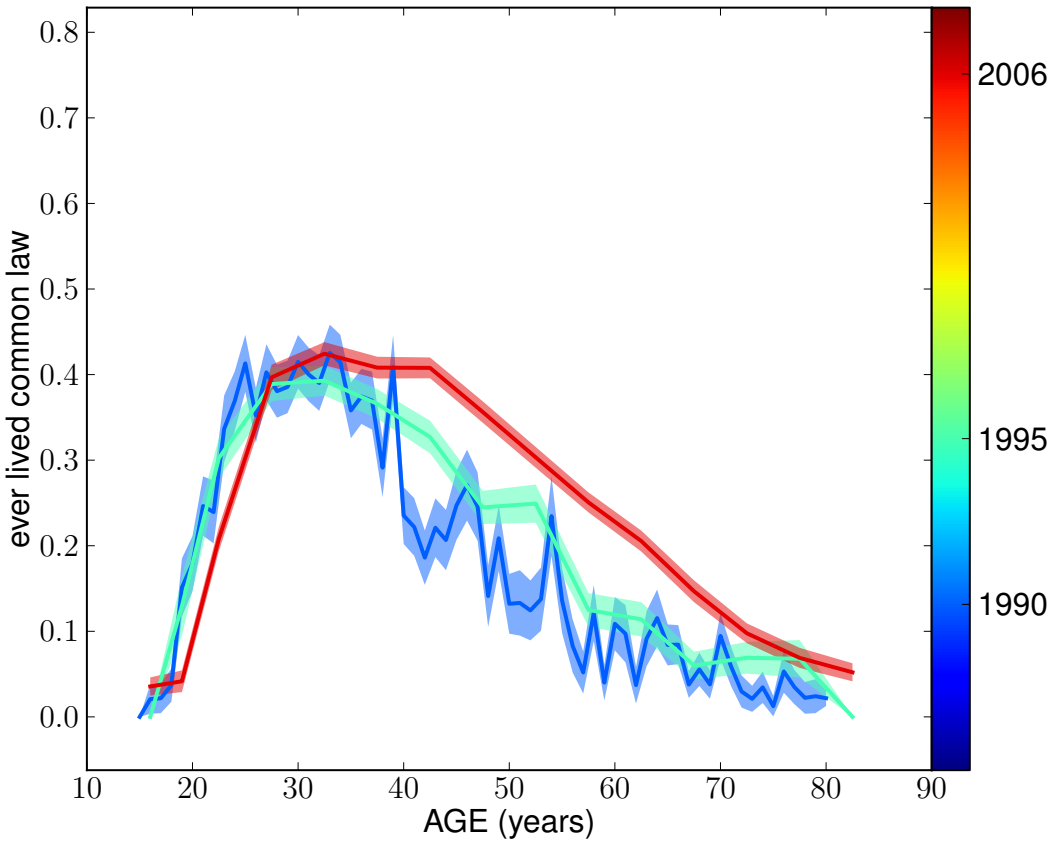

Figure A.114: Age profiles:
Ever lived common law? outside Québec.

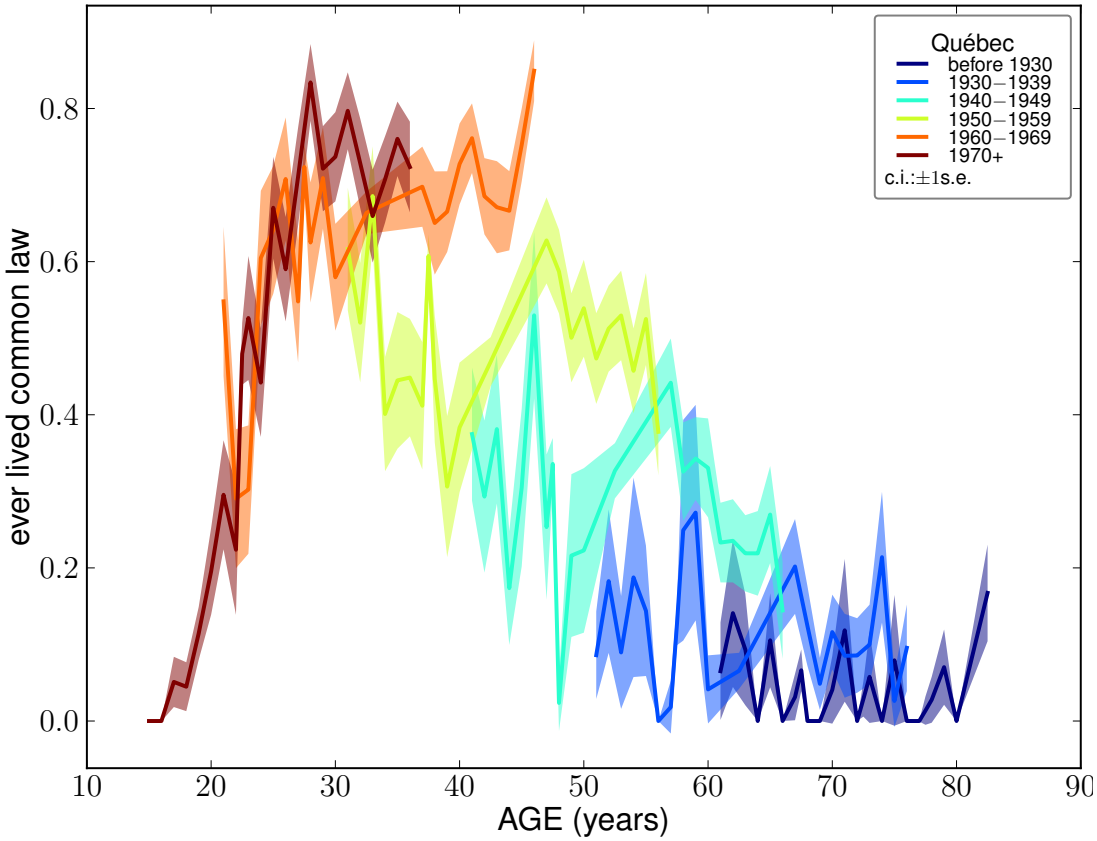

Figure A.115: Cohort profiles:
Ever lived common law? in Québec.

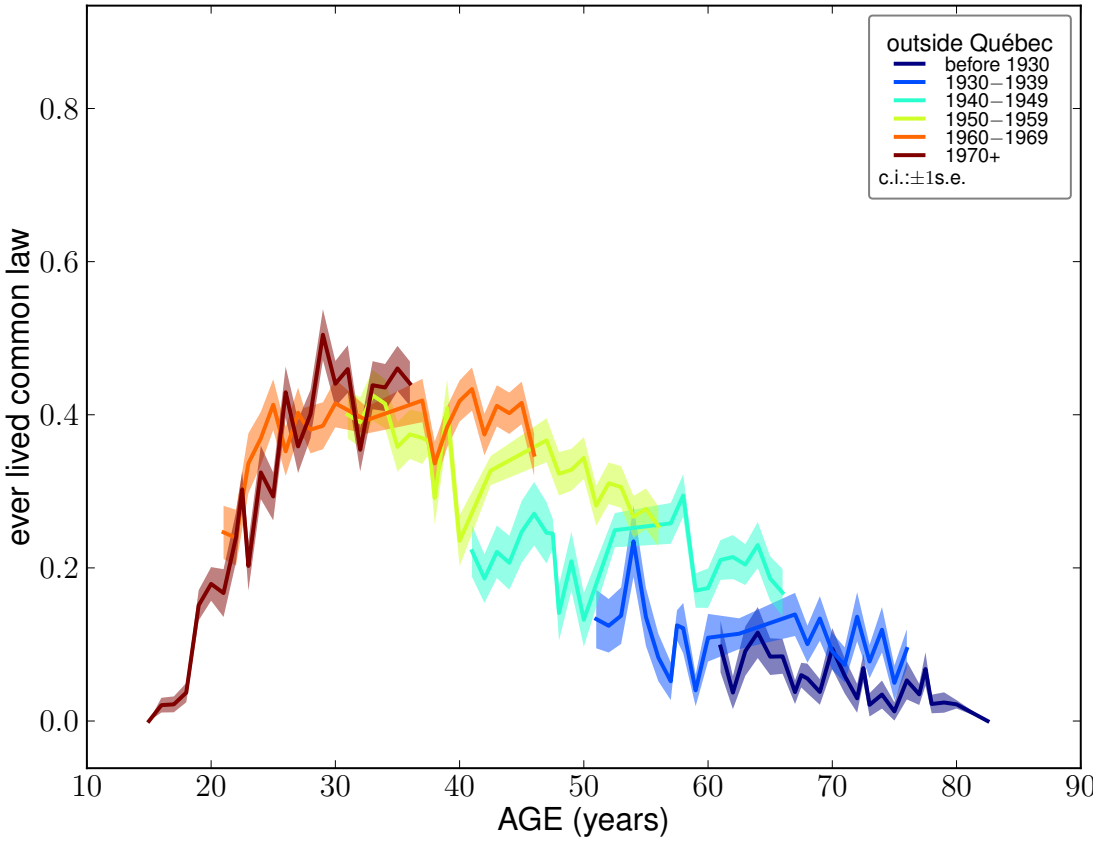

Figure A.116: Cohort profiles:
Ever lived common law? outside Québec.