The recent evolution of fertility within marriage and consensual union in two Canadian provinces:

Disentangling the Quebec fertility paradox

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Abstract

In developed countries, fertility is usually assumed to be higher within marriage than within consensual union. In Canada, fertility is currently higher in Quebec, where consensual union is widespread, than in the neighbouring province of Ontario, where it is much less common. This paper focuses on this apparent contradiction and is an attempt at disentangling the relation between fertility and the form of conjugal union in Quebec. We introduce two measures: the contribution of each conjugal situation to age-specific fertility rates and the contribution of each form of conjugal situation to the TFR. These measures are similar in construction to the legitimate fertility rates and TFR, but they are weighted by the proportion of women in each conjugal situation at each age, so that their sum is the TFR. Taken together, they represent the average woman of a synthetic cohort who moves across conjugal situations over her life course. They provide "realistic" estimates of conditional completed fertility. Conventional conditional ASFRs and TFR show that fertility is higher within marriage than within consensual union, but the contributions of ASFRs and TFR show that fertility within consensual union contributes about 70% of fertility.

1. Introduction

Quebec is one of the ten provinces of Canada and the only one where most people have French as their mother tongue. The importance of consensual union also singles out Quebec from the rest of the country. Consensual union was already more common in Quebec than in most other provinces in 1981, when the Census questionnaire first collected data on heterosexual consensual relationships, but not much more than in British Columbia or Alberta. However, the gap between Quebec and the rest of Canada was obvious by the 1986 Census, and has become wider since. (Table 1).

Since the mid-1990s, most children born in Quebec are born to women living in a consensual union. Given the spread of consensual union, this does not come as a surprise. Still, something is intriguing. After a few decades during which fertility was lower in Quebec than in neighbouring Ontario, it is now slightly higher. However, conventional wisdom, at least in Canada, is that fertility is lower within consensual union than in marriage. This notion cannot easily be reconciled with fertility being currently higher in Quebec than in Ontario, which leads to a paradox.

This paper is an attempt at disentangling the relation between the conjugal situation and fertility in Quebec. The topic may seem a local oddity, but leads to a methodological problem whose solution may be of broader interest. Most currently available approaches to the comparison of the fertility of marriage and cohabitation use data from biographical surveys and use couples who never cohabited before marriage as benchmark. Inquiring into our topic involves comparing groups defined by a combination of cultural traits. In one of our larger groups, direct marriage has become so marginal that, in extant biographical surveys, there is not a single case among the recent cohorts. Furthermore, the comparison involves other groups whose numbers, in biographical surveys, are too small for any practical purpose.

Unable to use data from biographical surveys, we develop an approach based on census data. We use a decomposition of the total fertility rate in which the TFR is expressed as the sum of a series of TFR conditional on conjugal situation, and the conditional TFR is expressed as the sum of weighted age-specific rates conditional on conjugal situation. Unlike the legitimate or illegitimate TFRs, whose values are typically larger than observed completed fertility, the conditional TFR we use takes values that are "realistic" by design.

We begin with background information on consensual union and fertility within consensual union in Quebec, and we proceed with our hypotheses. We review the current approaches to the comparison of fertility within marriage and cohabitation, we present the measures we are using and we discuss the advantages and disadvantages of using census data for such a comparison. Finally, we present the results and our conclusions.

2. Background

In Canada, consensual union has become a social and a legal institution. A series of rulings of the Supreme Court, changes in status law in the common-law provinces and to status law and the Civil Code in Quebec have progressively reduced the differences between married and unmarried couples. In their dealings with the State and with other parties (employers, insurance companies, etc.), married and unmarried couples are treated in the same way. Legal rights and obligations between parents and

children depend solely on filiation, not on the circumstances of birth. This legal recognition is extended to foreigners: Canadian immigration law handles the same way married couples and couples living in a consensual union. Statistics Canada gathers and publishes information on consensual unions since the mid-1980s, using the terms "common law union" in English and "union libre" in French. The remaining differences between married and unmarried couples are mainly limited to the degree of economic dependence between the two persons who live together, and they are a consequence of competing visions of individual autonomy within the couple rather than a form of discrimination.

This context makes a bit awkward, and probably misleading, referring to such a legal and social institution using the word "cohabitation", which apparently entered demographic vocabulary from early sociological studies of unmarried cohabitation among college students (e. g.: Macklin 1972). The current Canadian context makes more appropriate using the term "consensual union" with the meaning it has in formal demographic terminology[1], and we use it in this fashion in our paper.

Despite many aspects of the legal treatment of consensual union being the same in all of Canada, consensual union is more widespread in Quebec than in the rest of Canada. Research shows that it also has a different social meaning in Quebec than elsewhere in Canada. Kerr, Moyser, and Beaujot (2006) established that in Quebec, living in a consensual union is not associated with low income the way it is in the rest of Canada or typically is in the USA. Stalker and Ornstein (2013) reported that outside Quebec, unmarried parents of pre-school children are predominantly young and poor, whereas in Quebec, they are far more diverse and less different from married parents. Other studies have shown that in Quebec, marriage and consensual union do not differ in some of their outcomes in the way they do, or are assumed to do, in the rest of Canada. For instance, Laplante and Flick (2010) showed that while in Ontario, married people are prone to be in better health than people living in a consensual union, there is little difference between the two groups in Quebec. Lardoux and Pelletier (2012) showed that for boys, there is no association between school success and having parents living in a consensual union, whereas for girls, the association is positive (sic).

Many studies on the diffusion of consensual union in Quebec acknowledged or emphasized its relation with language without exploring further the relation (e.g. Turcotte and Bélanger 1997; Pollard and Wu 1998; Ravanera, Rajulton, and Burch 1998; Turcotte and Goldscheider 1998; Bélanger and Turcotte 1999; Wu 2000). However, some have explored the matter further and clearly stated that within Quebec, consensual union is concentrated among the native French-speaking (Lachapelle 2007; Laplante, 2013) and that the reasons why it is so have to do with historical, social, legal and cultural factors rather than with education or economic factors (Le Bourdais and Lapierre-Adamcyk 2004; Laplante 2006; Laplante, Miller, and Malherbe 2006). We follow the latter line and focus our study of fertility within marriage and consensual union on the differences between groups defined by characteristics related to culture. The renewed interest for culture in demography (Bachrach 2013)

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[1] See, for instance, the *Multilingual demographic dictionary, 2nd ed.* (Liège: Ordina: 1982)*,* or the *Population Multilingual Thesaurus, 3rd ed.* (Population Information Network, Paris: CICRED: 1993).

provides an opportunity for a detailed examination of the relation between demographic behaviour and cultural attributes.

Among the groups that make the Quebec population besides the French-speaking majority—i. e. the native English-speaking, internal migrants and immigrants—consensual union is no more common than in the rest of Canada (see Tables 2 and 3). The social significance of this difference should not be underestimated: as found in a more general context (López-Gay et al. 2013), it even shapes space. Within the Montreal metropolitan area—the most populated area of the province—immigrants, internal migrants and native English-speaking tend to locate towards the middle, with high concentration in the western part of the Island of Montreal. Consequently, the spatial distribution of families with children in which parents are living in a consensual union closely matches the spatial distribution of French as the main language spoken at home (see Figures A1 and A2 in the Appendix).

A rather obvious consequence of the importance of consensual union in Quebec is that since the mid-1990s, more than half of children are born to unmarried parents (see Figure 1). A more intriguing consequence is that, since the beginning of the diffusion of consensual union in Quebec, the increase in the proportion of women in their reproductive years who live in a consensual union seems completely unrelated to the evolution of fertility as measured by the total fertility rate (TFR). Even more intriguing, from the mid-1980s, when consensual union started to become widespread, until the late 2000s, the TFR of Quebec does not seem to behave very differently from the TFR of Ontario, whereas it had been decreasing since the late 1950s (see Figure 2). Furthermore, since the late 2000s, age-specific fertility rates have increased in Quebec much in the same way they have in the rest of Canada (Statistics Canada 2012) and in other developed countries (Goldstein, Sobotka, and Jasilioniene, 2009), but are now higher than in Ontario. The rise in both Quebec and Ontario TFR could be largely a consequence of the decline in the pace of fertility postponement, as Bongaarts and Tobotka (2012) suggested it is in Europe, but the Quebec TFR not being lower than that of Ontario remains at odds with conventional wisdom. Evidence points to the fact that, in Quebec, the high level of consensual union has little or no negative effect on fertility.

The lack of strong differences between the evolution of fertility in Quebec and Ontario runs contrary to what has long and is still being taken for granted, at least in Canada: fertility is supposed to be lower within consensual union than within marriage. In her study of Quebec's women reproductive life, Rochon (1989) finds that within age groups, women who live or have lived in a consensual union have fewer children, on average, than women who are married or have been married. According to Caldwell (1991) and Caldwell, Stiehr, Modell, and Del Campo (1994), the high proportion of consensual unions among Quebec women born between 1952 and 1956 and the instability of their chosen form of union explained their high level of childlessness. Dumas and Bélanger (1998) concluded that fertility is lower within consensual union than within marriage. Krull and Trovato (2003) found that low marriage rates among Quebec women were a key factor of Quebec low fertility in the 1990s. Lapierre-Adamcyk and Lussier (2003) also found that the overall impact of consensual union in Quebec is to reduce fertility. Caron-Malenfant and Bélanger (2006: 88) reported results in which fertility is lower for women living in a consensual union than for married women, as did

more recent research (St-Amour 2013). If common wisdom holds, given the importance of consensual union in Quebec, its TFR should be lower than that of Ontario.

The recent rise in Quebec fertility also made obsolete the notion that immigration was a key factor in explaining the difference in fertility between the two provinces. Gauthier (1989) tried to make the case for that explanation, basing it on estimations of immigrant women fertility that showed it higher than that of native women. True, immigration was and is still higher in Ontario than in Quebec: according to the 2011 National Household Survey (Statistics Canada 2013), the proportion of the foreign-born is 28.5% in Ontario and only 12.6% in Quebec. However, recent research shows that fertility among immigrant women, usually estimated using census data and the TFR, is overestimated as most immigrant women delay the birth of their next child after their landing in their new country. Because of this delay, the TFR systematically overestimates immigrants' completed fertility (Toulemon 2004, 2006; Toulemon and Mazuy 2006). Other research shows that this result holds for Quebec (Street and Laplante forthcoming).

The Quebec fertility rise fostered interest in explanations of a different nature. Beaujot and Wang (2010) and Beaujot, Du and Ravanera (2013) focused on the economic factors involved in the decision to have a child. They acknowledged the rise in fertility that occurred in Quebec and stressed the role that the family policy developed in Quebec by successive governments since the end of the 1980s and roughly inspired by the Nordic model—mainly subsidized low cost child care and parental leaves more flexible and generous than in the rest of Canada—may have played in that rise. They mentioned that consensual union is more common in Quebec than in Ontario, but do not discuss its relation with fertility, and do not notice that their explanation implies that fertility should be the same within consensual union and marriage.

The commonness of consensual union and fertility within consensual union are two related, but different questions. Although it may seem straightforward to suppose fertility within consensual union to be similar to that of marriage where consensual union is widespread and an accepted form of family living, it is not necessarily the case. In Latin American countries, for instance, fertility within marriage and consensual union have been similar for several decades, even before the spread of consensual union (Esteve, Lesthaeghe, and López-Gay 2012; Laplante et al. 2013). Fertility may be higher within consensual union than in marriage if women who live in consensual unions have limited access to contraception because of poor education or lack of resources (Verdugo Lazo 1994).

We know from Table 3 that overall, consensual union is more common among French-speaking Quebecers than among other Canadians: the proportion of women aged 15–49 living in a common-law union is 32.4% among the Quebec French-speaking, about the same among the English-speaking in Quebec (10.8%) and in Ontario (10.5%), and not much higher among the Ontario French-speaking (13.2%). However, a detailed analysis of the evolution of the formation of the first union through marriage or consensual union showed that entering into the first union through consensual union has become more common among the Quebec English-speaking Protestants than among the Ontario English-speaking Protestants, and more common among the Ontario French-speaking Catholics than among the Ontario English-speaking Catholics (Laplante 2013). Despite the differences between French-speaking Quebecers and other groups in the commonness of consensual un-

ion, some structural factors may favour the dissemination of norms or patterns common among the French-speaking Quebecers to other groups. Two such factors are of special interest: law and language.

The spread of consensual union in Quebec is related, among other things, to an amendment to the Civil code enacted at the end of the 1980s that entrenched a very strict definition and a very strict enforcement of community property within marriage, even for spouses who chose the separation of property matrimonial regime (sic). In Quebec, the main difference between the two forms of conjugal union is located in the presence or absence of economic dependence within the couple. Marriage strictly enforces a high level of economic dependence between the spouses, especially after breakdown, whereas consensual union leaves to the partners all decisions regarding their level of economic dependence while they live together and does not impose any obligation after breakdown. Despite large differences in legal systems, it would not be exaggerated to describe marriage, as it exists in Quebec law, as related to the conception of marriage that prevails in UK law, whereas consensual union, as it exists in Quebec law, more akin to the principles that prevail in Swedish family law since the 1970s. In Ontario, as in all common law Canadian provinces, the level of economic dependence within the couple is not so different between marriage and consensual union, and is actually more a continuum with room for tailored arrangements for individual couples whether married on living in a consensual union (Laplante 2013). All Quebec residents are subject to the provisions of the Civil code and, in theory, non-French-speaking Quebecers could well react to this legal framework as do the French-speaking, and shy away from marriage.

However, language creates channels and boundaries of its own. In advanced societies, the mass media—from books to television—are central in the dissemination of norms or patterns. French-speaking Canada and English-speaking Canada are very different in their relation to the mass-media. Sharing a common language with the USA, English Canada is a heavy consumer of American cultural products. This is especially striking for television: American networks are broadly available all across Canada and moreover, on a typical week, audience reports show that except for news and some sports, all of the top 30 television programs watched in English-Canada on Canadian stations are from the US (see Table A1 in the Appendix for an example). However, on a typical week, audience reports show that almost all of the top 30 programs watched by the French-speaking Quebec audience on Canadian stations are produced in Quebec and, of course, in French (Table A2). Most of these programs are drama or sitcoms of various styles and genres with stories located in Quebec and characters who are French-speaking Quebecers. Other programs are talk-shows with gossip content. This local production, as well as that of written fiction and women's magazines, disseminates and reinforces ideas and patterns—or sets of norms, beliefs and attitudes—about family life and conjugal life that evolve with little inference from the ideas and patterns typical of English-speaking Canadians who may live next door, but actually live in a very different normative world. The linguistic channels and barriers we are suggesting are akin to the structures and mechanisms that support the "communication communities" introduced by Szreter (1996) in its study of fertility decline in the UK. Closer to our topic, Le Goff and Ryser (2010) and Le Goff (2013) illustrated that the interplay of political borders and linguistic channels and barriers had a key role in the diffusion of out-of-wedlock births in Switzerland.

Table 1   **Proportion of the population aged 15 or more living as a couple and of couples in common-law union, Canada and regions, decennial censuses, 1981–2011**

Regions	Living as a couple				Couples in a common-law union			
	1981	1991	2001	2011	1981	1991	2001	2011
Atlantic	.610	.611	.607	.596	.039	.087	.134	.169
Quebec	.596	.601	.578	.564	.082	.190	.303	.372
Ontario	.617	.607	.597	.577	.050	.075	.110	.128
Manitoba and Saskatchewan	.620	.613	.587	.577	.047	.081	.113	.143
Alberta	.619	.619	.599	.593	.077	.101	.136	.155
British Columbia	.619	.610	.580	.579	.079	.112	.130	.149
Canada less Quebec	.617	.610	.594	.582	.056	.086	.119	.141
Canada	.611	.608	.590	.577	.063	.112	.163	.195

Source: Dumas and Bélanger (1998:130), based on the 1981 and 1991 Censuses of Canada; author's estimation based on the 2.7% sample Public Use Microdata File of the 2001 Census of Canada; author's estimation based on Statistics Canada's Topic-based tabulation 98-312-XCB2011039 of the 2011 Census of Canada. From Laplante (2013).

Table 2   **Composition of the population of women aged 15–49 according to main language spoken at home and place of birth, Quebec and Ontario, 2006**

Place of birth	Quebec			Ontario		
	French	English	Other	French	English	Other
Born in the province	.737	.069	.018	.015	.584	.012
Born elsewhere in Canada	.023	.016	.002	.006	.074	.002
Foreign-born	.052	.024	.060	.003	.162	.142

Source: Census of Canada 2006, 20% sample. Weighted estimation.

Reading. .737 of Quebec women aged 15–49 are born in Quebec and mainly speak French at home.

Table 3   **Proportion of the population of women aged 15–49 living in a common-law union by place of birth, Quebec and Ontario, main language spoken at home, 2006**

Place of birth	Quebec			Ontario		
	French	English	Other	French	English	Other
Born in the province	.324	.108	.126	.132	.105	.049
Born elsewhere in Canada	.301	.175	.187	.210	.141	.114
Foreign-born	.142	.086	.044	.066	.065	.027

*Source:* Census of Canada 2006, 20% sample. Weighted estimation.

Reading. .324 of Quebec women aged 15–49 born in Quebec and mainly speak French at home live in a consensual union.

Figure 1. **Proportion of births according to the conjugal situation of the mother (left scale) and total number of births (right scale), Quebec, 1976-2012.**
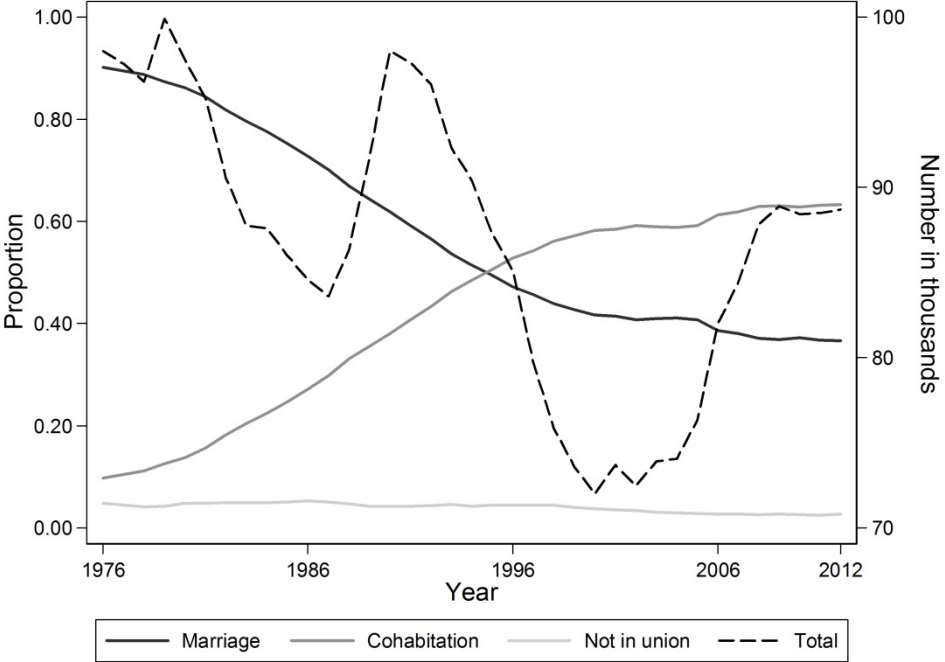
Source: Births according to marital status of parents, Quebec, 1951–2012 [Naissances selon l'état matrimonial des parents, Québec, 1951–2012], Institut de la statistique du Québec.

Figure 2. **Total fertility rate, Quebec and Ontario, 1976–2011.**
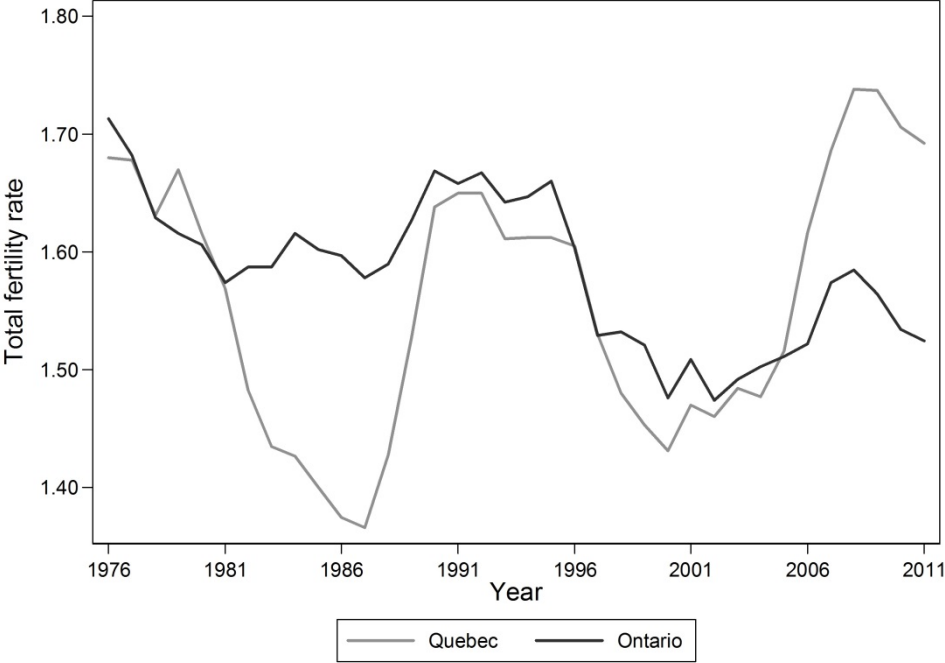
Source: Statistics Canada (1997),Births and Deaths, 1995, Table 3.5, 84-210-XPB; Statistics Canada (2003), Report on the Demographic Situation in Canada 2002: Current Demographic Analysis for Canada, 2002, Table A.6, 91-209-XIE; Statistics Canada, CANSIM Table 102-4505 - Crude birth rate, age-specific and total fertility rates (live births), Canada, provinces and territories, annual (rate).

3. Hypotheses

As we suggest in section 2, adopting norms, beliefs and attitudes about family life and conjugal life is largely a matter of socialisation. The Canadian population includes a fair amount of immigrants and internal migrants (see Table 2). Our view rests upon the notion that people belong to groups which devise and hand down sets of norms, beliefs and attitudes through their daily life, but also through the political process that leads to legislation—which is likely more important in a society where the main source of private law is the legislative power, not the judiciary—and the mass media.

Individuals are more likely to share a given set of norms, beliefs and attitudes if they have been socialized within it and still live within it. We thus focus the analysis on the comparison of groups made of people who, at the time of census, were resident of the province in which they were born. How migrants negotiate the differences between the norms, beliefs and attitudes from the society they were born into and the ones of the groups that make up the society in which they landed is an interesting question, but a very different one.

The straightforward hypothesis is that among French-speaking Quebecers, fertility was lower within consensual union before it became widespread, but is now the same as fertility within marriage. This view is probably too simplistic, but we use it as a heuristic hypothesis.

We do not expect the same in other groups, where fertility is likely to be lower within consensual union than in marriage However, we are interested in contrasting groups according to law and language, in an attempt at assessing whether they act as channels and boundaries in the diffusion of the norms and patterns typical of the Quebec French-speaking. Specifically, apart from the Quebec French-speaking, we are interested in three groups: the Ontario English-speaking, the Quebec English-speaking and the Ontario French-speaking. The Ontario English-speaking live under Ontario law where there is much less difference between marriage and consensual union in the level of economic dependence within the couple and have little exposure to the Quebec French-speaking cultural channels that would put them in contact with the set of norms and patterns typical of French-speaking Quebec. The Quebec-English-speaking live under Quebec law, but have no more exposure to the Quebec French-speaking mass media than the Ontario English-speaking. Finally, the Ontario French-speaking live under Ontario law, but have access to a large fraction of Quebec French-speaking mass-media.

We expect the difference between the Quebec French-speaking and the Ontario English-speaking to be the largest, and the two other groups to stand in between the two extremes. This set of contrasts does not really amount to a natural experiment, but is likely the closest approximation possible for such a topic.

4. Methods

4.1 Measuring the fertility of marriage and consensual union
Fertility is commonly estimated using vital statistics. Vital statistics commonly report whether children are born to married parents or an unmarried mother, but do not commonly report whether the unmarried mother is cohabiting with the child's father. Vital statistics are still largely computed following the traditional distinction between marital and non-marital fertility —historically, legitimate

and illegitimate fertility—, not acknowledging the social phenomenon of cohabitation. For this reason, fertility estimates for consensual union based on vital statistics are a rarity (Klüsener, Perelli-Harris and Sánchez Gassen 2013). Consequently, there is no established way to compare the fertility of marriage and consensual union. A review of attempts performed since the 1990s shows that the proposed solutions are many and gives insight into the difficulties of such a comparison.

Verdugo Lazo (1994) used an approach developed by Rodriguez and Cleland (1988) and survey data to estimate the fertility of four forms of unions (civil and religious, civil only, religious only, and consensual) in Brazil. The technique relies on exposure time measured from the beginning of the union and requires that women do not change the form of their union after its onset.

Dumas, Bélanger and Smith (1998) compared the fertility of marriage and consensual union in Canada using data from a retrospective biographical survey. They estimated five-year age group birth rates for each of the two forms of union, for two ten-year periods, 1975–1984 and 1985–1994, and for two regions, Quebec and Canada less Quebec. They computed the total fertility rate (TFR) for each region and period, based on the conjugal situation of the mother at the time of the birth of the child. They concluded that the fertility of consensual union is lower than that of marriage in both regions and in both periods, but that the difference between the fertility level of marriage and consensual union is smaller in Quebec than in the rest of Canada. These authors, despite using data from a biographical survey, based their comparison on the TFR, using the conjugal situation at the time of birth to compute the denominators of the age-specific rates (ASFRs). Apparently, they were aware that basing ASFRs on the time spent in each conjugal situation produces misleading results (see below).

Brown and Dittgen (2000) compared the fertility of married and cohabiting couples across European countries using data from the Family and Fertility Surveys. They compared the number of children living within married and cohabiting couples at the time of survey, for women aged 20–29 and 30–39, and concluded that in all countries on which they had data, the fertility of cohabiting couples was lower than that of married couples.

Raley (2001) used survey data and a decomposition technique to investigate whether the increasing number of births occurring to women living in cohabiting unions in the USA was a consequence of the increasing number of such women or changes in the behaviour of cohabiting women. Her decomposition relies, among other things, on estimates of rates within marriage and cohabiting unions. She concluded that most of the growth in the proportion of births to cohabitors is the result of increases in the proportion of women cohabiting, rather than changes in union formation behaviours surrounding pregnancies.

Hoem and Muresan (2011b) generalised the piecewise-constant intensity model of the TFR proposed in Hoem and Muresan (2011a) so that it could be used to estimate the expected number of children within different types of unions conditional on the duration of union rather than on age. This approach reduces the overestimation of the expected number of children due to the high values at lower ages that are typical of the legitimate fertility rate. The use of a regression-like model allows further modelling of the TFR using covariates. The authors used data from a Romanian biographical survey to estimate a duration-based TFR within three different types of unions: cohabitation, cohabitation followed by marriage and marriage from the onset of the union. This strategy allowed them to

show that the fertility of the three types of union is similar and that fertility is related to the time elapsed since the beginning of the union rather than to the type of the union. However, despite using biographical data and statistical models that allow respecting the order of events, they avoided modelling the transformation of cohabitation into marriage as a move between states. They rather classify unions, from their onset, according to the future value of a time-varying characteristic[3].

Hoem, Jalovaara, and Mureșan (2013) used a similar approach with a sample from Finnish register data, but took advantage of the large size of the sample to define a series of non-time-varying categories of union types based on the number of years lived in cohabitation before marriage. Marriage without previous cohabitation, cohabitation never followed by marriage, marriage within one year of the beginning of cohabitation, marriage within two years of the beginning of cohabitation and so on, are used as different non-time-varying categories, and they estimate a different set of duration-based rates for each of these categories. Consequently, for example, the TFR for marriage after at least ten years of cohabitation is the sum of the predicted duration-based rates—or equivalently of the predicted number of events—from the first year of the union onwards for women who got married after at least 10 years of cohabitation, assuming that, from the onset of their conjugal life, these women were living in a type of cohabiting couple different from all other cohabiting couples. Their results show that the TFR is highest for marriage without cohabitation, and is higher for marriage within up to six years after the beginning of cohabitation than for cohabitation never followed by marriage.

Besides introducing the difficulties of the comparison we are interested in, this review illustrates the variety of approaches and makes clear that these are highly dependent on the focus of the analysis and on the available data.

Comparing fertility of marriage and consensual union involves at least three different kinds of difficulty: 1) conjugal situation is a time-varying characteristic; 2) fertility may have a different calendar within marriage and consensual union; 3) marriage and consensual union themselves may have different calendars. Given that the problems are intertwined, we discuss them jointly, using the time-varying nature of conjugal situation as the main thread.

A somewhat "natural" way to deal with the time-varying nature of conjugal situation is modelling fertility within the framework of biographical analysis and using hazards models. The straightforward solution takes into account the time at risk, or exposure time, spent within each of the states. This can be done by modelling conjugal situation as a three-modality time-varying covariate. However, this approach has some problems best illustrated using a little thought experiment. Let us imagine two women who have their first child at the same age. Both started living with their partner in a consensual union at the same age, but one got married during her pregnancy. One of the two children is

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[3] To avoid confusion, we use "types of union" for non-time-varying classifications of the *course* of conjugal unions whatever their categories—as in Hoem and Muresan (2011a, 2011b) and in Hoem, Jalovaara, and Mureșan (2013)—and "conjugal situation" for the time-varying classification, or state space, that distinguishes "not living in a conjugal union", "being married and living with one's spouse" and "living in a consensual union". See section 4.2 for more details on conjugal situation. We reserve "forms of union" for the legal status of a conjugal union—as in Verdugo Lazo (1994) above.

born to unmarried parents, whereas the other is born within marriage. Let's assume a society made of pairs of such women—with the age at the formation of the consensual union, and the age at the first birth being the same within each pair, but varying across pairs— and the marriage of the second woman always occurring during her first pregnancy. In such a society, half the first-born children are born to married parents and half to parents who live in a consensual union. However, in this approach, the denominator of the consensual union fertility rate is estimated using the time spent in consensual union by all women whereas the denominator of the marriage fertility rate is estimated using the time spent in marriage solely by married women. For this reason, estimations based on a straightforward event history modelling would conclude that fertility is higher within marriage than within consensual union even in societies where the probability of being born to married or cohabiting parents is the same. Similarly, integrating the estimated hazard functions would produce cumulated hazards—TFRs—higher for marriage than for consensual union. As soon and as long as, in a society, cohabitation precedes marriage for some women, and some women have children outside of marriage, the comparison of the fertility of the two forms of union using biographical data and the statistical models typical of event history analysis will almost inevitably lead to conclude that fertility is higher within marriage than within consensual union. None of the authors who compared fertility within marriage and consensual union using biographical data took such an approach. Van Hook and Altman (2013), which we have not cited yet, averted the problem completely. In their didactic article on the computation of fertility measures from event history models estimated with logistic regression, they steered clear from the difficulty by limiting the space state of conjugal situation to "married" and "unmarried". Still, the choice is intriguing as their data source, the National Survey of Family Growth, had already been used to estimate that in 2002, half of American women aged 15–44 had already cohabited (Goodwin, Mosher, and Chandra 2010).

Verdugo Lazo (1994), Hoem and Muresan (2011b) and Hoem, Jalovaara and Muresan (2013)—as well as Brown and Dittgen (2000), although in an implicit way—avoid dividing the individual's time at risk between states by assuming that individuals never move between states. In Verdugo Lazo (1994), all births are allocated to the state at the beginning of the union; in Brown and Dittgen (2000), Hoem and Muresan (2011) and Hoem, Jalovaara and Muresan (2013), births are allocated to the state at the longest known duration of the union. The approach developed by Hoem and his co-authors deals nicely with the overestimation of conditional TFRs and allows modelling the TFR in regression-like equations, but its strong reliance on unions being classified according to the state they were in when last observed is at odds with the logic of biographical analysis: for all union types except directly married, the rates are conditional on a future event. The approach relies heavily on some couples marrying directly, which does not suit societies where not living together before marriage has become marginal, such as French-speaking Quebec (Laplante 2013). Finally, the TFRs estimated using this approach are related to the conventional TFR conceptually, but not algebraically, which limits comparison.

Dumas, Bélanger and Smith (1998) and Raley (2001) used very different techniques, but all based their estimates on the conjugal situation of the mother at the time of birth rather than the time spent in any conjugal situation. This approach avoids the paradox of fertility rates conditional on conjugal situation being at odds with the probability of being born within a given conjugal situation. In other

words, in the imagined case we described above, comparing period ASFRs and TFR computed using nothing more than the conjugal situation at the time of birth would show that fertility is the same in marriage and consensual union. These ASFRs and TFRs are those of three synthetic cohorts of women who would have lived out of union, in a consensual union or would have been married marriage during all of their reproductive years. They are nothing more than extensions of the illegitimate and legitimate ASFRs and TFRs, with their known limitation. The sum of marriage ASFRs typically leads to a value of the TFR that is far above of any observed value of completed fertility because ASFRs at lower ages are typically very high although very few women are married at age 15 or 16. Pressat (1973: 179) provides a classic representation of a smoothed distribution of the legitimate ASFRs and its relation to overall ASFRs, which depicts clearly how the legitimate ASFRs leads to "unrealistic" values of the TFR.

These conditional TFRs clearly cannot be interpreted as estimates of expected completed fertility. However, and as well as the conditional ASFRs they are based on, they provide useful information about fertility within the different conjugal situations and we will make use of it in our analyses. This said, they cannot be used directly to understand the contribution of each conjugal situation to fertility in a given period. However, they may be used as the base of a different set of ASFRs and TFRs that allow doing this and lead to "realistic" estimates of conditional expected completed fertility. Practically speaking, these new measures rely on the weighting of each ASFR by the age-specific proportion of women in the corresponding state. The sum of the weighted ASFRs over conjugal situation is the overall ASFR. The sum of the weighted ASFRs over time is a TFR "adjusted" to the proportion of women living in each conjugal situation. The sum of the "adjusted" TFRs is the overall TFR. Formally, these relations may be written as

$$r_t = \sum_{k=1}^{n} p_{kt} r_{kt},$$

$$R_k^A = \sum_{t=1}^{49} p_{kt} r_{kt}$$

and

$$R = \sum_{k=1}^{n} R_k^A,$$

where p_{kt} is the proportion of women living in conjugal situation k at age t, r_{kt} is the age-specific fertility rate at age t for conjugal situation k, r_t is the age-specific fertility rate, R_k^A is the "adjusted" total fertility rate for conjugal situation k and R is the overall total fertility rate. Weighting the rates by the proportion of women living in each conjugal situation allows expressing the overall TFR as the sum of "adjusted" conjugal situation TFRs, which amounts to a decomposition. From this perspective, the overall TFR is the expected number of children born to a woman who would have spent her reproductive years in each conjugal situation according to the actual proportion of women in each conjugal situation at each age in the synthetic cohort. Similarly, the "adjusted" TFR of a given conjugal situation is the expected number of children born to a woman who would have spent all her reproductive years in this conjugal situation according to the actual proportion of women living in this conjugal situation at each age. Thus, over her artificial life course, the average woman of the synthetic

cohort of a more complete version of our imagined example may have had one child while living with her spouse, one child while living in a consensual union and, say, 0.1 children while living alone. Expressed as proportions of the overall TFR, the "adjusted" TFRs may be interpreted as the proportion of fertility that can be attributed to each conjugal situation. By definition, the "adjusted" ASFRs and TFRs are related algebraically to the overall TFR. By definition, they lead to "realistic" estimates of completed fertility. Conceptually, they assume conjugal situation as dynamic. We explain below they also have a substantive interpretation closely related to our research goal. Because of this interpretation and to avoid further use of the word "adjusted", we will from now refer to the "adjusted" ASFR—$p_{kt}r_{kt}$—as the contribution of a given conjugal situation to the overall ASFR (CASFR)—written c_{kt}—and to the "adjusted" TFR—R_k^A—as the contribution of a given conjugal situation to the overall TFR (CTFR)—written C_k. Thus, from now on,

$$r_t = \sum_{k=1}^{n} c_{kt},$$

$$C_k = \sum_{t=15}^{49} c_{kt}$$

and

$$R = \sum_{k=1}^{n} C_k = \sum_{k=1}^{n} \sum_{t=15}^{49} c_{kt}.$$

4.2 Data

ASFRs and the TFR, conditional or not, as well as CASFRs and CTFRs, may be computed from a variety of data types, including biographical data, vital statistics data, other forms of register data and census data, depending on the availability of information in each given source, the objectives of the study and sample size. Two sources of data contain the information we need: Statistics Canada' retrospective biographical survey on the family realised every five years or so since the mid-1990s as part of the General Social Survey program, and the 20% samples from census records available to researchers in Statistics Canada's Research Data Centres. The biographical data have the advantage of allowing ordering events precisely, which leads to a low probability of misclassifying a birth as occurring in a given conjugal situation when it truly occurred when the mother was in another one. However, these data have two serious drawbacks for our purpose. First, they are designed to perform life course analysis *per se*: they are fine for cohort analysis within the framework of life course analysis, but they are not very well suited for comparing periods, which is what we are interested in. They can be used in this way: Dumas, Bélanger and Smith (1998) provide an example of such a use. However, such a use limits to five years the width of the intervals in which ASFRs may be computed when computing them for entire provinces. Using these data for groups defined by language and place of birth within provinces, as we need to do, leads to subsample size that force resorting to smoothing techniques that are commendable in some circumstances (see Laplante 2013 for an example), but would lead to useless estimates in our case. Given the hypotheses we wish to test, using the data from the available biographical surveys is not a realistic option, which leaves no other choice than using census data.

Census data provide subsample of sizes that allow estimating ASFRs using 1-year intervals for all the groups we are studying. Using the own-children method and focusing on the birth that occurred in the 12-month period before the census allows producing estimates of all the quantities we wish to estimate. This level of precision allows graphing cumulative fertility—r_t and r_{kt} as a function of T— and the contribution of each conjugal to cumulative fertility—c_{kt} as a function of T. Their only drawback is that they do not offer the same precision as biographical data in the classification of women. Using census data impose using the conjugal situation at the time of census as an approximation of the conjugal situation at the time of birth. This obviously creates a risk of misclassification as the conjugal situation of the mother may change between the birth and the census. The most likely change is that a couple who had a child while living in a consensual union less than a year before the census gets married after the birth and before the census; such a birth would be incorrectly assigned to marriage. The reverse, although legally possible, is extremely unlikely. Other kinds of changes may occur between the birth and the census: the mother may leave her husband or partner, and may be living by herself or have started living with someone else at the time of census; the mother may have had the child while living alone, and had started living with the father or someone else by the time of census. Technically speaking, all these changes lead to a classification error. If these classification errors are random, they do not induce a systematic bias and simply attenuate whatever statistical difference the researcher wishes to estimate. Of all these changes, the only one that may induce a systematic bias is the move from consensual union to marriage. If such move is common, the age-specific rates for consensual union could be underestimated and the rates for marriage overestimated in some groups, which could lead to conclude incorrectly that there is no difference between the two sets of rates. Results will show that this should not be a concern.

Apart from such methodological considerations, substantive reasons also mitigate concerns for systematic biases arising from the conversion of consensual union into marriage. Simply put, this is not an issue in Canada. The most recent work on the conversion of consensual union into marriage in Canada is part of a comparison of three countries (Mills and Trovato 2001) based on an analytical framework developed in the early 1990s for the study on this phenomenon in Germany in the 1980s (Blossfeld, Manting, and Rohwer 1993; Blossfeld, Klijzing, Pohl, and Rohwer 1999). The authors of the original framework explicitly present Germany as having a conservative welfare state regime and relate the relevancy of studying this topic to this institutional context. Indeed, there have been legal motives for legitimising children by getting married before or soon after birth in Germany well into the 21st century, as the distinction between legitimate and illegitimate children was not withdrawn from the *Bürgerlichen Gesetzbucheshe* (the German Civil code) until recently and is still used in article 6 of the *Grundgesetz für die Bundesrepublik Deutschland* (the German constitution). Whatever the transformation of the German society, these changes to German law seem to have occurred largely through the influence of the European Court of Human Rights and other European countries (Kregel-Olff 2011). However, Canada's welfare system is a mix of the liberal and the Nordic welfare regimes and, as in the Nordic welfare state regime, social rights largely depend on individual characteristics and not of marital status. Having access to health insurance or favourable taxation are no more incentives for marriage in Canada as in the Nordic countries (Andersson, Noack, Seierstad, and Weedon-Fekjær 2006). Furthermore, as we explained in section 2, Canadian law has evolved on its

own quite early on these matters and does not allow any distinction between children based on the circumstances of their birth or the conjugal situation of their parents. Although the topic has not been studied for some time, presumably for lack of relevancy, the relation between the timing of pregnancy, birth and marriage in Canada is likely similar to what was found in Sweden by Holland (2013): couples who want to form and raise their family in the context of marriage get married before the birth of their first child: marriage during pregnancy or in the year following birth have withered away. From a substantive perspective, concerns for a systematic bias reducing the difference between the measures of conditional fertility arising from the misclassification of the conjugal situation of the mother induced by the conversion of consensual union into marriage in the year following the birth of child in Canada are simply unwarranted.

Since 1976, the Canadian Census is done every five years, on the first and fifth years of the decade. Up to 2006, the Census of households and individuals used two different forms: the "short" one and the "long" one. The short form consisted of a limited number of questions that enumerated persons according to sex, age, relation to the head of the household and marital status. The long form included the questions from the short form as well as a long series of supplementary questions mainly on language, province and country of birth, education, employment and income. The forms were randomly assigned to households so that 80% of households answered the short one, whereas 20% answered the long one. Researchers have access to the data from the long form. We use individual data from the 20% sample of the Canadian population who answered the 1986, 1996 and 2006 long form of the Census. The 1981 census did not include questions that clearly allowed couples to declare a common-law union and the estimates reported in Table 1 are reasonable approximations for a population, but using them as individual characteristics could be reckless. The 2011 census and National Household Survey microdata are not yet available to researchers.

Canadian official statistics classify persons according to conjugal situation in three categories: 1) not living in a conjugal union, 2) being married and living with one's spouse or 3) living in a common-law union. We estimate five different measures: the proportion of women in each conjugal situation by age—p_{ki}; age-specific fertility rates by conjugal situation—r_{ki}; the total fertility rate by conjugal situation—R_k, not previously formally introduced; the contribution of each conjugal situation to age-specific fertility rates—CASFR, c_{ki}; and the contribution of each conjugal situation to the total fertility rate—CTFR, C_k. Each measure is computed for each of the three censuses. For each census, each measure is computed for each of the four cultural groups we compare: Quebec French-speaking born in the province, Ontario English-speaking born in the province, Quebec English-speaking born in the province and Ontario English-speaking born in the province. Results are reported as figures.

Our estimations of fertility are based on the own-children method, which is an indirect technique for the estimation of fertility by age using census data (Cho, Rutherford, and Choe 1986). Its original formulation uses the distribution of the number of children less than five years old in the household conditional on the age of mothers aged between 15 and 49, grouped into five-year intervals. It was developed for the USA census, mainly to relate fertility measures with characteristics available in the census, but not in the sources of vital statistics. The most obvious difficulties and

limitations of this method are establishing the relationship between mother and child from census records, census undercoverage of children and women, infant mortality and children who do not live with their mother (Grabill and Cho 1965). Rindfuss (1976) compared estimations of USA fertility based on vital statistics with estimations based on census data and the own-children method. He concluded that the own-children estimations reproduced the *trends* in fertility, despite not reproducing the *levels* of vital statistics.

We use within conjugal situation ASFRs and the cumulative fertility to compare fertility patterns across conjugal situations in a given group. If the distribution of ASFRs and cumulative fertility within marriage and within consensual union are similar, both conjugal situations are likely to be acceptable for childbearing and child rearing for the individuals who belong to that group as well as to the group.

We use the contribution of each conjugal situation to age-specific fertility rates and the contribution of each conjugal situation to cumulative fertility to appreciate the respective contributions of marriage and consensual union in the fertility of the group.

Finally, we compare the ASFRs and the TFR across censuses as a way to assess the extent to which the social acceptance of consensual union as a setting for childbearing and child rearing increased over time and we compare in the same fashion contributions to ASFR and to TFR to assess variation in the contribution of consensual union and marriage to fertility over time.

5. Results

Figure 3 reports the distribution of women aged 15–49 according to their conjugal situation at the time of census among the linguistic majority groups of Quebec and Ontario in 1986, 1996 and 2006. The spread of consensual union among Quebec French-speaking women from the first to the last census is noticeable. In 1986, consensual union was at its peak—about 20%— among women in their early twenties. In 2006, the peak was higher and located among somewhat older women: about half of Quebec French-speaking women aged between 25 and 30 were living in a consensual union. The proportion of women in their late twenties who did not live in a conjugal union increased somewhat from the first to the most recent census, but among older women, this proportion is stable. The growth in the proportion of women living in a consensual union came from a decrease in the proportion of married women, not from a decrease in the proportion of women living alone. Things are different among Ontario English-speaking women. The spread of consensual union was much slower. The distribution of consensual union by age in Ontario in 2006 is very close to what it was in Quebec 20 years earlier: the peak is the same, about 20%, but it is located around age 25. As among Quebec French-speaking women though, the increase in the proportion living in a consensual union after the late twenties came from the reduction of the proportion of married women.

Figure 3. Conjugal situation of women by age, women aged 15–49, Quebec French-speaking born in the province and Ontario English-speaking born in the province, 1986, 1996 and 2006. Census data, 20% sample from the long form.
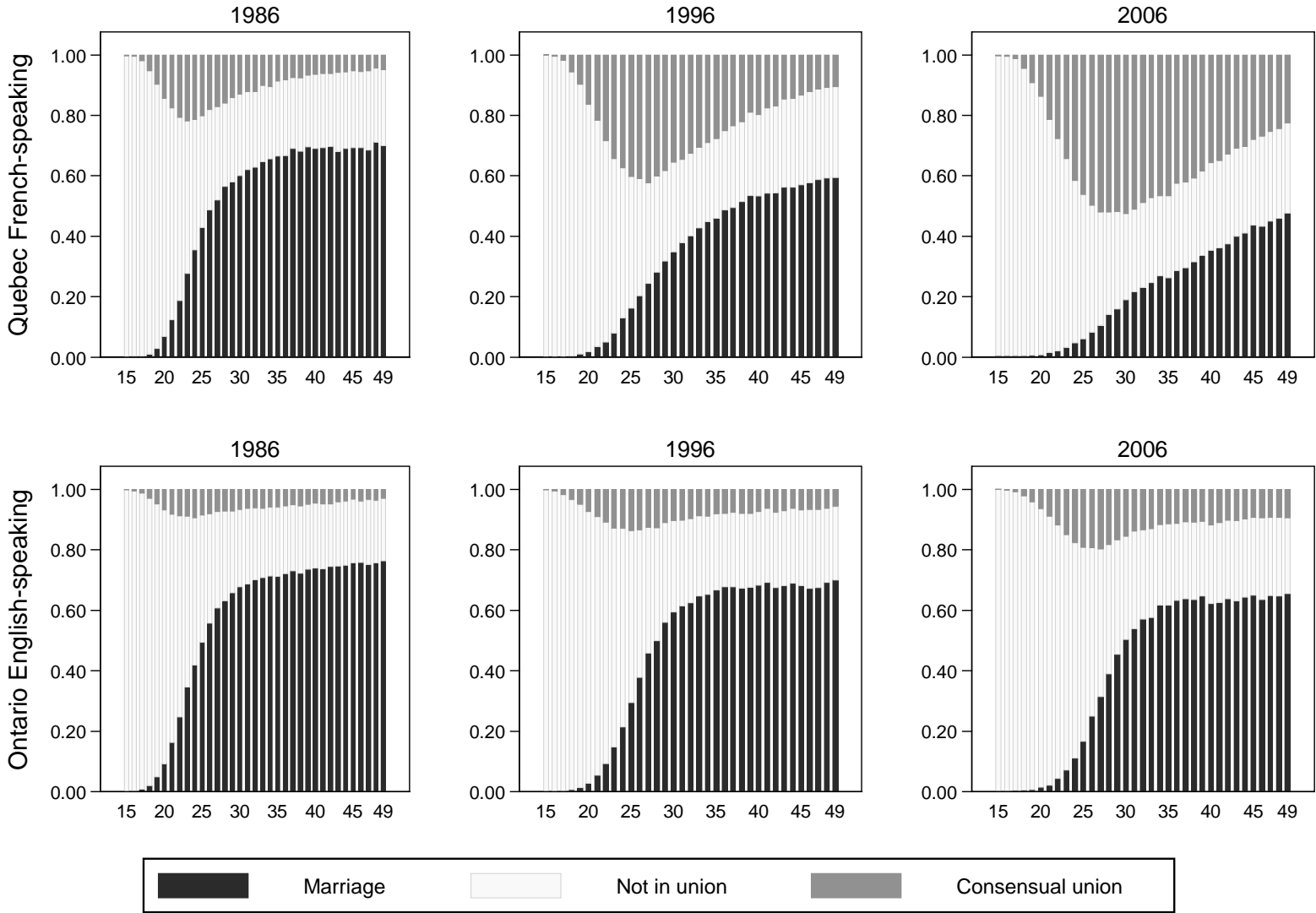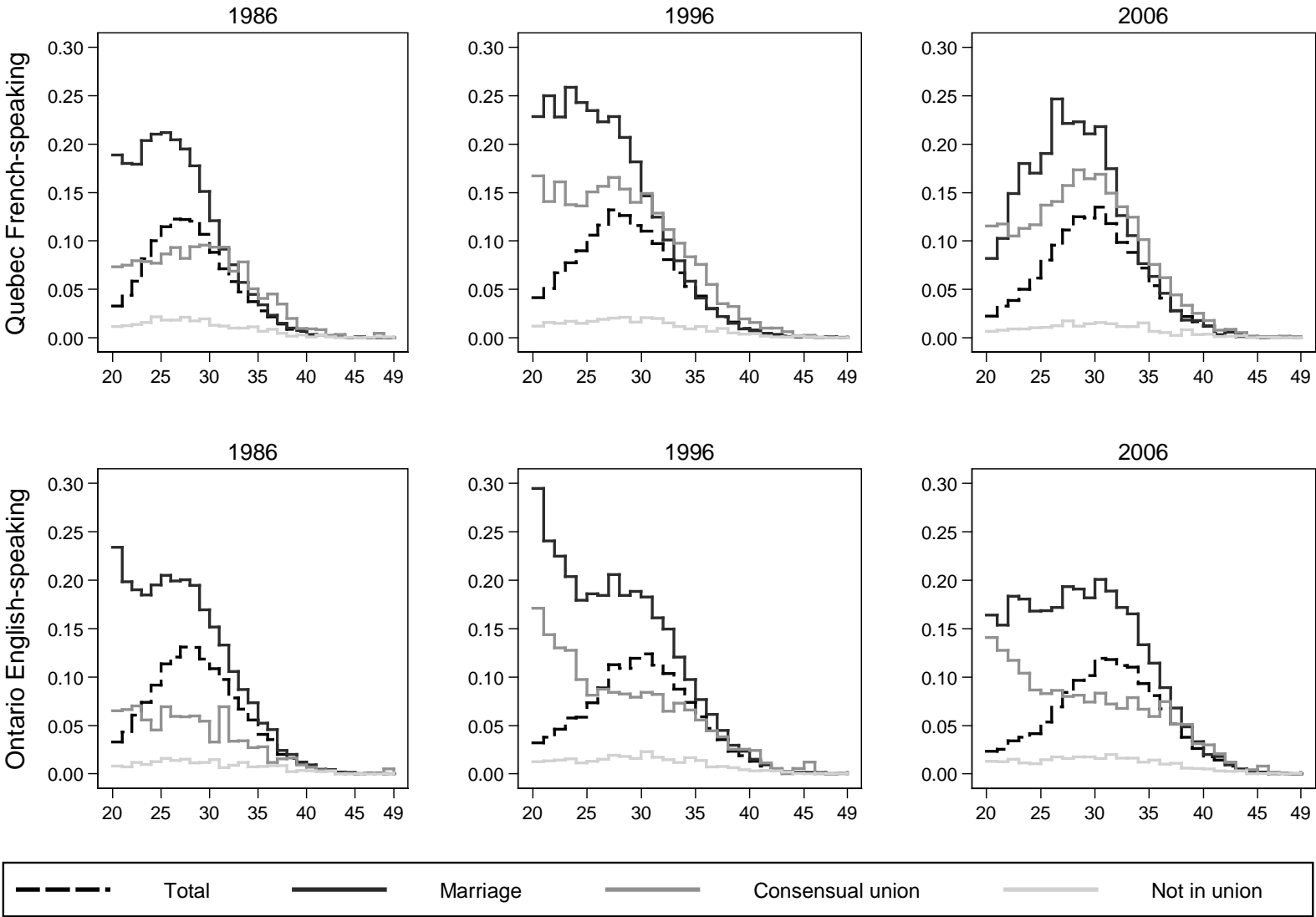
Figure 4. Age-specific fertility rates by conjugal situation, women aged 20–49, Quebec French-speaking born in the province and Ontario English-speaking born in the province, 1986, 1996 and 2006. Census data, 20% sample from the long form.

Figure 5. Cumulative fertility rates by conjugal situation, women aged 15–49, Quebec French-speaking born in the province and Ontario English-speaking born in the province, 1986, 1996 and 2006. Census data, 20% sample from the long form.
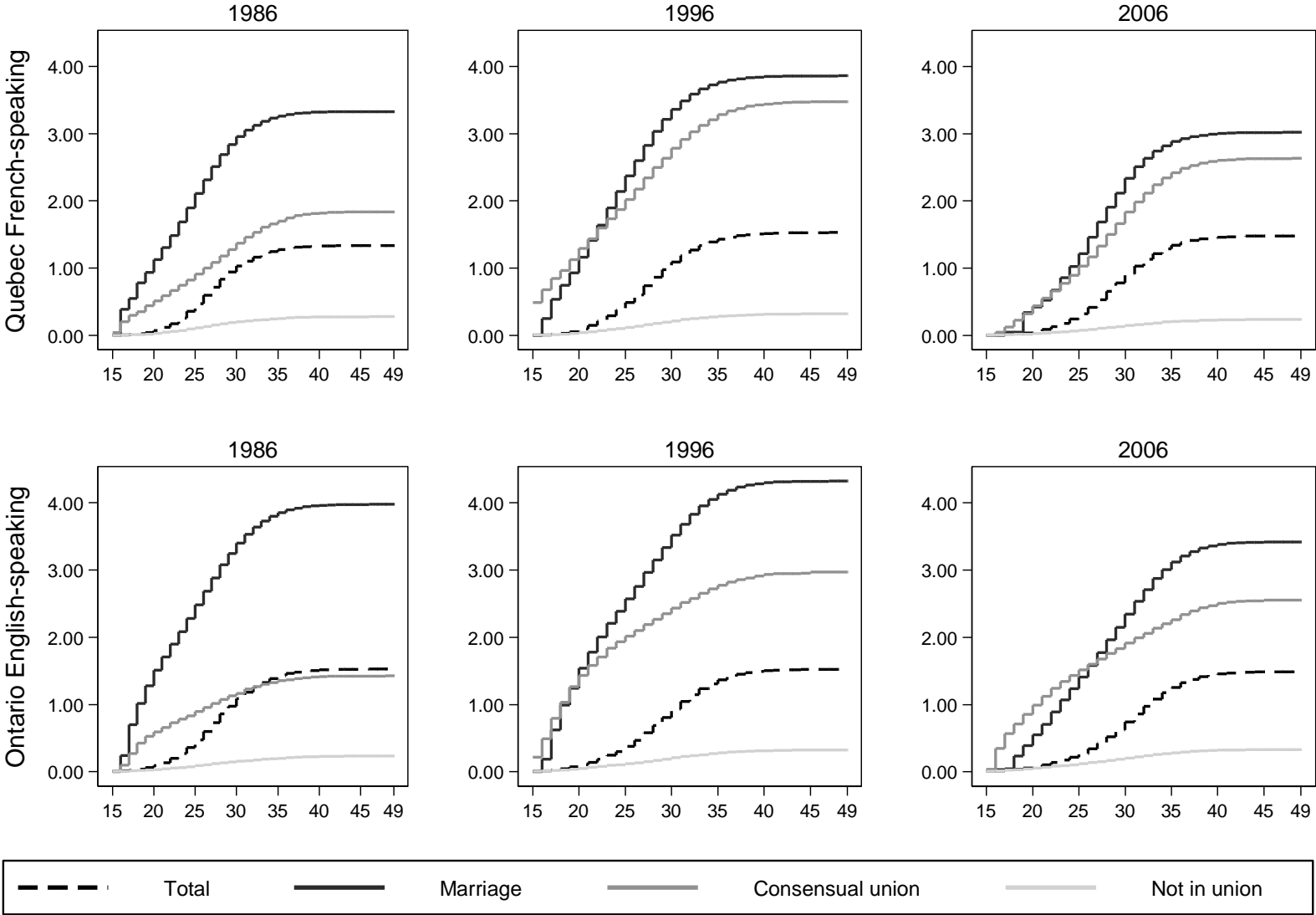
Figure 6. Contribution of each conjugal situation to age-specific fertility rates, women aged 15–49, Quebec French-speaking born in the province and Ontario English-speaking born in the province, 1986, 1996 and 2006. Census data, 20% sample from the long form.
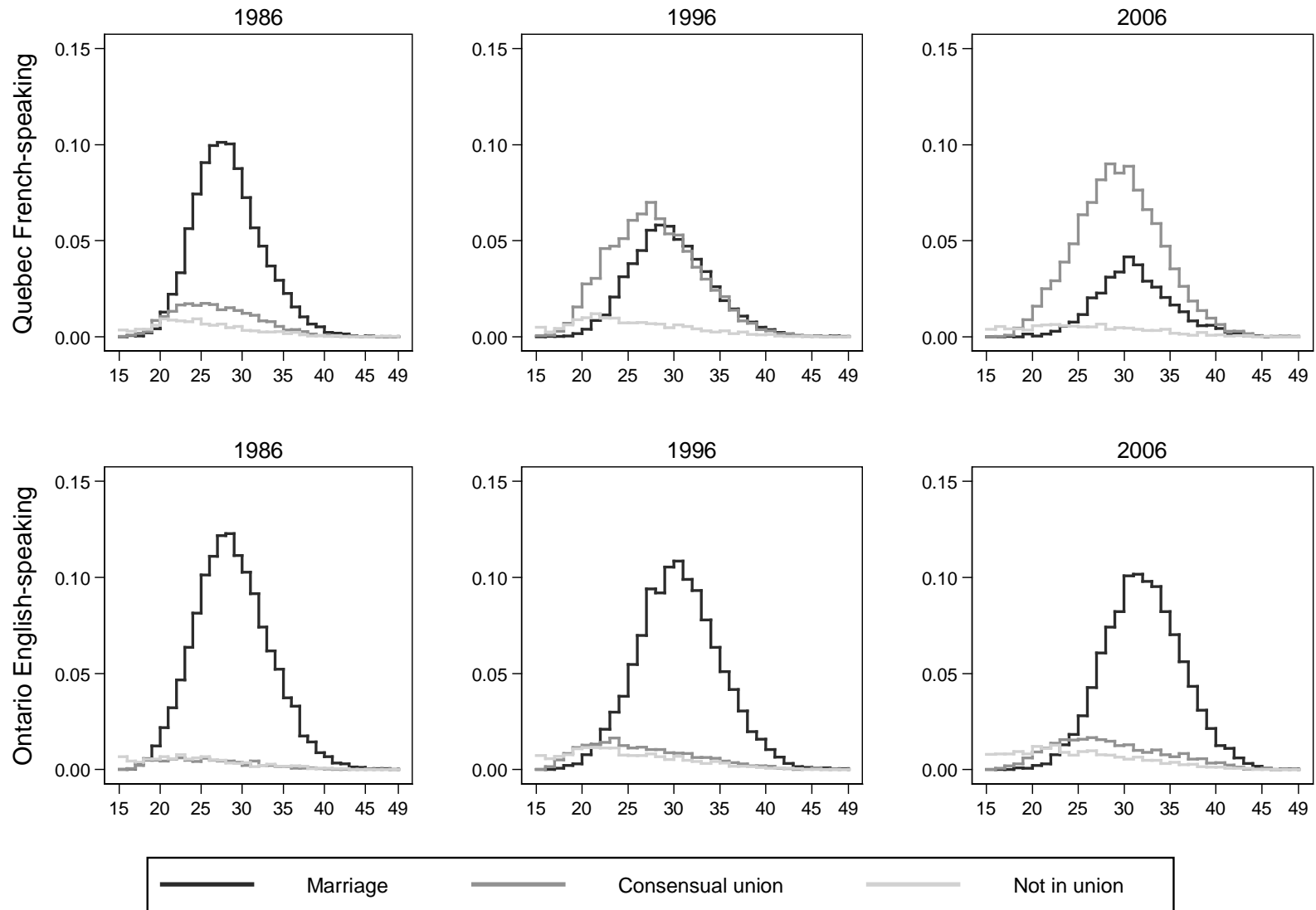
Figure 7. Contribution of each conjugal situation to cumulative fertility, women aged 20–49, Quebec French-speaking born in the province and Ontario English-speaking born in the province, 1986, 1996 and 2006. Census data, 20% sample from the long form.
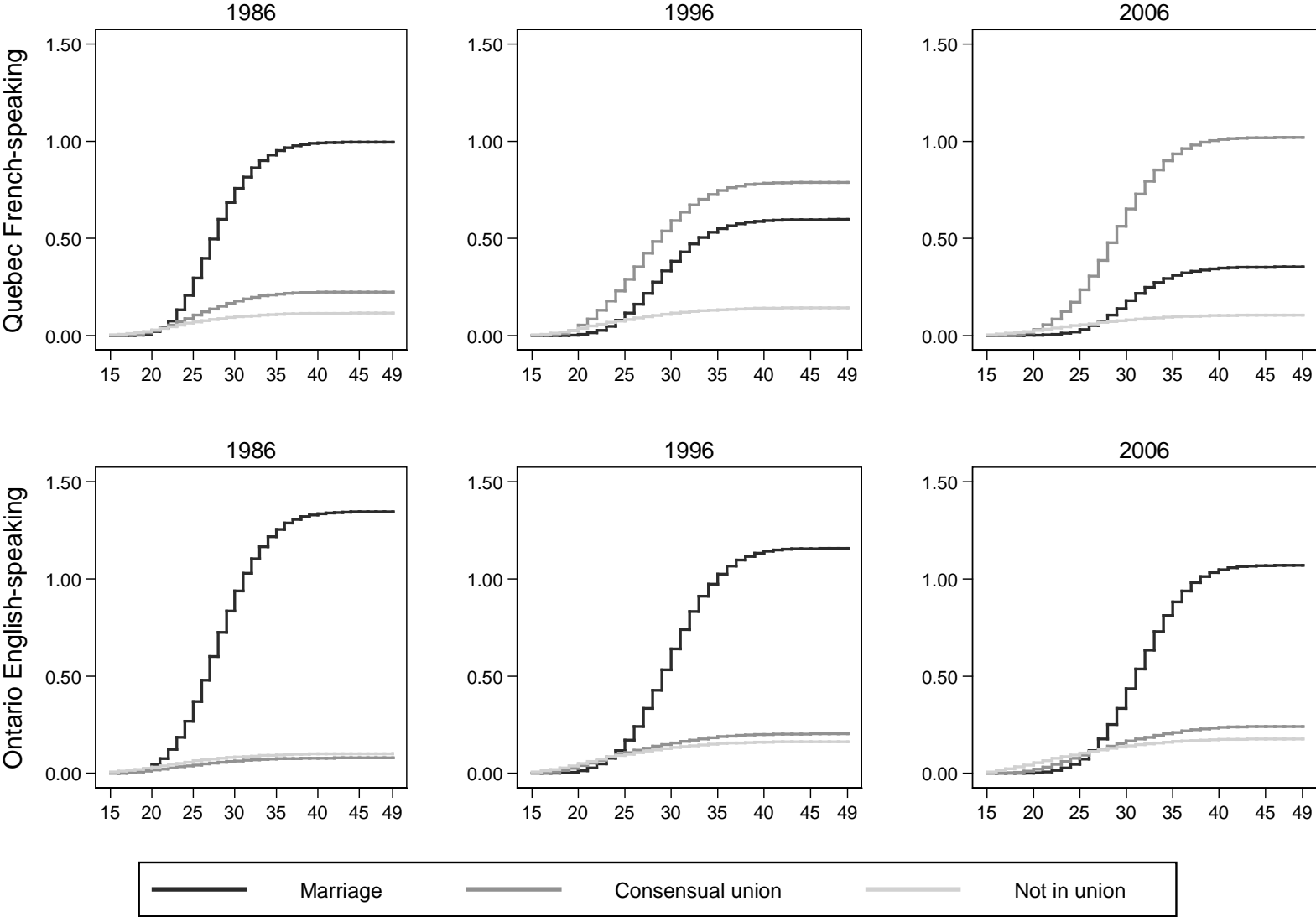
Figure 8. Conjugal situation of women by age, women aged 15–49, Quebec English-speaking born in the province and Ontario French-speaking born in the province, 1986, 1996 and 2006. Census data, 20% sample from the long form.

Figure 9. Contribution of each conjugal situation to age-specific fertility rates, women aged 15–49, Quebec English-speaking born in the province and Ontario French-speaking born in the province, 1986, 1996 and 2006. Census data, 20% sample from the long form.

Figure 10. Contribution of each conjugal situation to cumulative fertility, women aged 15–49, Quebec English-speaking born in the province and Ontario French-speaking born in the province, 1986, 1996 and 2006. Census data, 20% sample from the long form.
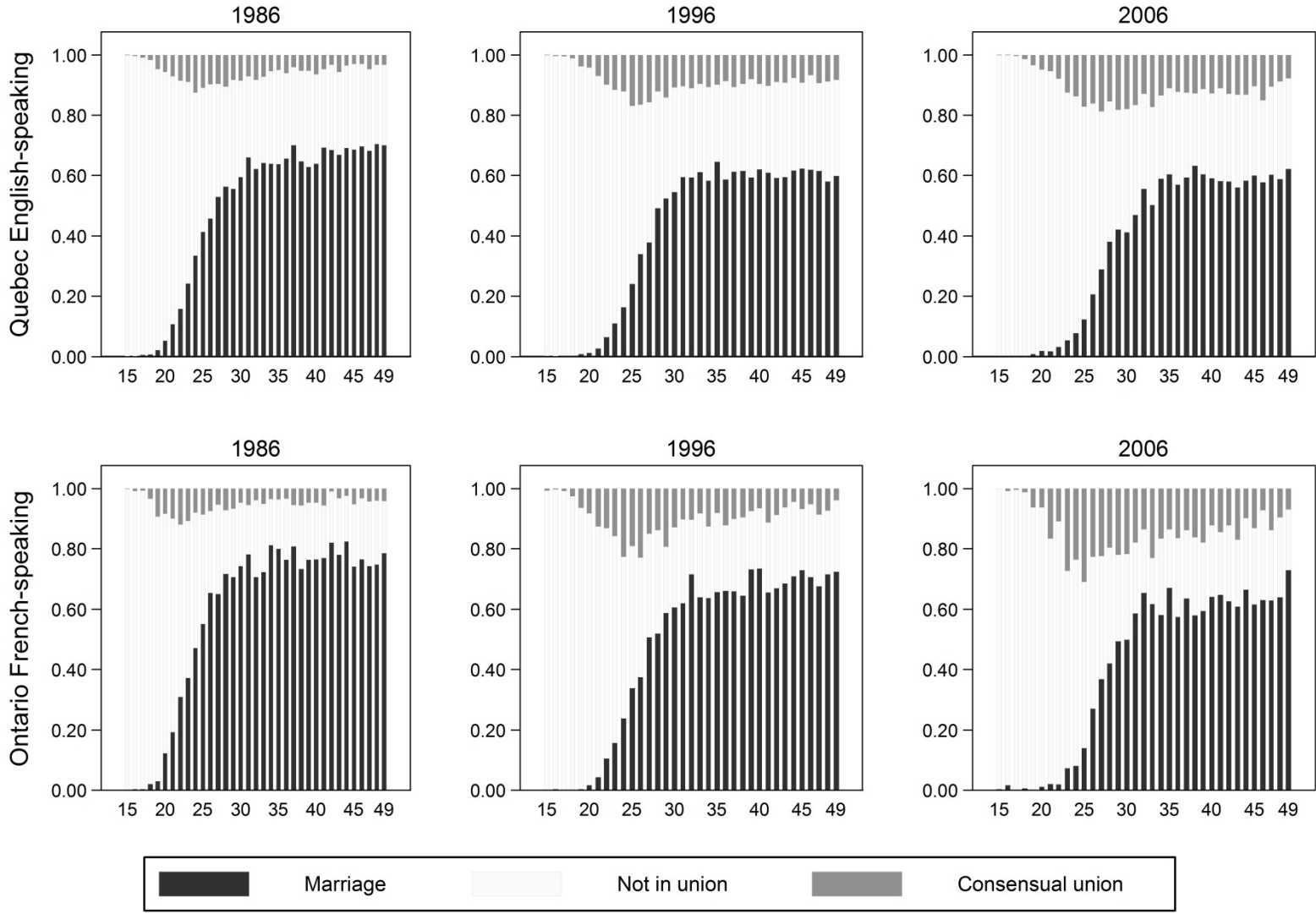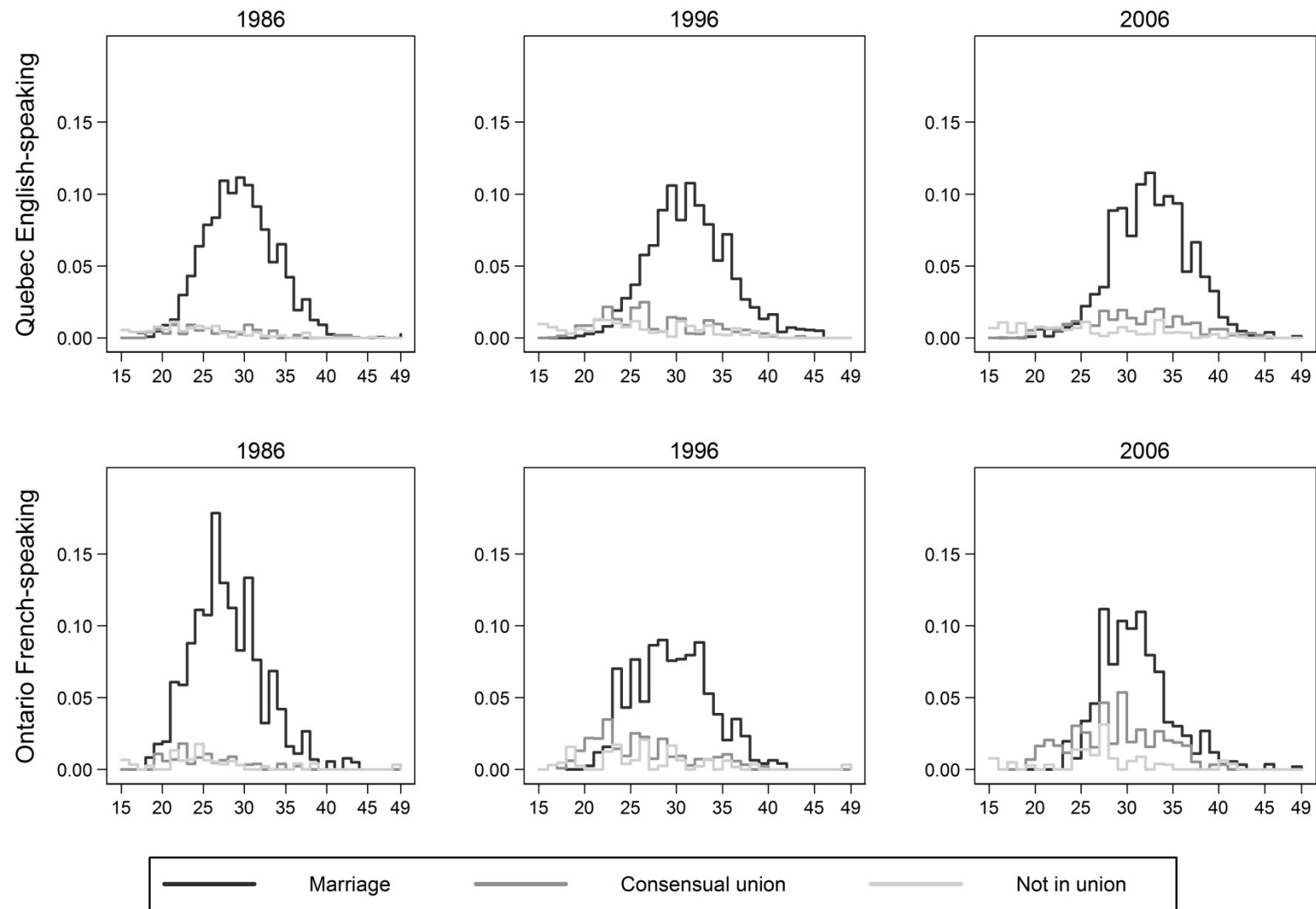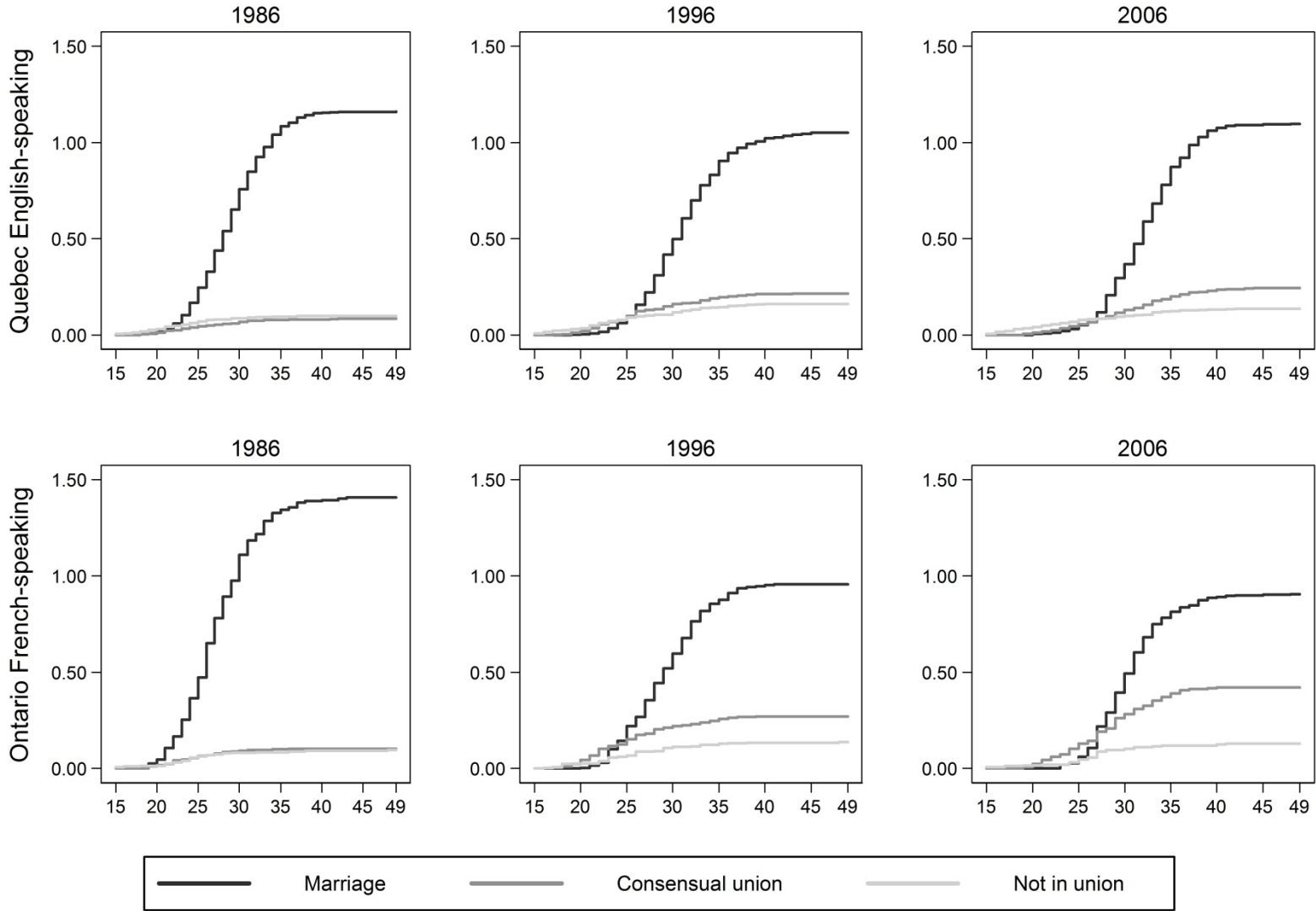
Figure 4 reports the age-specific fertility rates of women aged 20–49 by conjugal situation within the same two groups. Few women live in a consensual union and even fewer are married before age 20, but ASFRs are very high among them. As we pointed out in section 4.1, this is a known feature of legitimate fertility. The contribution of births to women aged less than 20 to fertility is negligible, whether married or in a consensual union (see Figure 7), but displaying the corresponding ASFRs in a graph would dwarf its most relevant portion. Among Quebec French-speaking women, the peak of the distribution of age-specific rates between age 20 and 49 remains at the same level from the first census to the last one, but its location shifts from left to right. In all censuses, the rates are consistently much higher within marriage than within consensual union up to age 30, but similar or slightly higher among consensual union between age 30 and 40. From the first census to the most recent, rates increase somewhat within consensual union. In 1986 and 1996, the distribution of rates was almost flat until the late twenties within marriage as well as within consensual union. In 2006, they increase within both from age 20 to 30.

Figure 5 reports the cumulative fertility rates by conjugal situation for the same two groups. Among the Quebec French-speaking, cumulative fertility is higher within marriage than within consensual union in all censuses. However, from the first to the last census, it decreases within marriage, but increases within consensual union. In all three censuses, the maximum difference is reached at age 30. Some features are the same among the Ontario English-speaking: cumulative fertility within marriage decreases from the first to the last census, cumulative fertility is always lower within consensual union. There are some noticeable differences. In all censuses, the maximum difference is reached a few years later than among the Quebec French-speaking. The most salient difference is that cumulative fertility is higher within consensual union than within marriage until age 25.

Figure 6 reports the contribution of each conjugal situation to age-specific fertility rates for the same two groups. The striking difference is the radical change among the Quebec French-speaking from the 1986 census to the 2006 one. In 1986, marriage had by far the largest contribution to fertility. In 2006, the situation was reversed. In 1996 and 2006, the contributions of marriage reach their peak at a later age than the contributions of consensual union. This underlines that although age-specific rates are higher within marriage than within consensual union in general and especially in younger ages, few women are married at such ages. Among the Ontario English-speaking, the contributions of marriage are overwhelming in all censuses. The contributions among the Ontario English-speaking in 2006 are very similar to those of the Quebec French-speaking in 1986.

Figure 7 reports the contribution of each conjugal situation to cumulative fertility for the same two groups. Among the Quebec French-speaking, since 1996, consensual union accounts for the largest share of the cumulative fertility from the early twenties onwards. In 2006, about 70% of fertility as measured by the TFR comes from births within consensual union. Among the Ontario English-speaking, the contribution of marriage to fertility is overwhelming. Again, the picture among this group is very similar to that of the Quebec French-speaking twenty-years earlier.

Figures 8, 9 and 10 report respectively the conjugal situation by age, the contribution of each conjugal situation to age-specific fertility rates, and the contribution of each conjugal situation to cumulative fertility among the Quebec English-speaking and among the Ontario French-speaking. In both groups and in all censuses, marriage outnumbers consensual union although the latter is slowly

becoming more common. The contribution of marriage to age-specific rates is overwhelming in all censuses within both groups, although the contribution of consensual union is higher among the Ontario French-speaking. The contribution of marriage to cumulative fertility is overwhelming in both groups and in all three censuses. There is one noticeable difference: in the 1986 census and more clearly in the 2006 one, among the Ontario French-speaking, the contribution of consensual union to cumulative fertility is higher than that of marriage until the mid-twenties.

6. Conclusions

The relation between fertility and conjugal situation has changed in a profound way among the Quebec French-speaking from the onset of the spread of consensual union, in the early to mid-1980s, until 2006. Over this period, age-specific fertility rates and cumulative fertility have decreased within marriage and increased within consensual union. At the end of the period, both remain higher within marriage, but the difference is much smaller than at the beginning.

However, the most striking difference is found in the contributions of the two forms of conjugal union to fertility: in 1986, fertility was by far and large fertility within marriage; in 2006, fertility is mainly fertility within consensual union. The apparent contradiction between higher age-specific rates and cumulative fertility within marriage even in 2006 and the higher contribution of consensual union to fertility and cumulative fertility boils down to two things. First, most women in their reproductive years live in a consensual union rather than in a marriage. Second, age-specific rates are high within marriage for ages at which very few women are married. In other words, the conclusion that fertility is higher within marriage than within consensual union is reached by comparing two synthetic cohorts and interpreting their respective TFR as if they were the completed fertility of the average married woman and of the average woman who lives in a consensual union. This interpretation is convenient and reasonably realistic when comparing TFRs computed within groups defined by a fixed characteristic, but truly misleading when comparing groups defined by a time-varying characteristic. However, looking at the contribution of each conjugal situation to cumulative fertility, the average member of the most recent synthetic cohort of French-speaking Quebec women spends her life between living alone, living in a consensual union and being married, and have most of her children while living in a consensual union. Unlike the conclusions based on conventional conditional ASFRs and TFR, the conclusions based on the contributions of each conjugal situation to conditional ASFRs and TFR fits what we know of the probability of being born within marriage or consensual union in Quebec.

The results found in Ontario and in Quebec are very different from those found in Latin American countries where consensual union is now spreading or already widespread. In these countries, the distribution of age-specific rates depends almost solely on age and not on the form of the conjugal union: they tend to be very similar within marriage and within consensual union (Laplante et al. 2013). Among the Quebec French-speaking, age-specific rates are still higher within marriage up to the mid-thirties. This leads to conclude that the traditional way of thinking about differential fertility may not suit well all contexts. Clearly, among the Quebec French-speaking, finding age-specific rates higher within marriage at young ages at which almost no woman is married cannot be thought of as meaning that fertility is higher within marriage than within consensual union. This also leads to con-

clude that fertility is "high enough" within consensual union so that fertility is higher in Quebec than in Ontario despite the large proportion of women living in a consensual union.

The Ontario English-speaking basically maintain traditional fertility patterns with very little change. The similarity between the patterns of the Ontario English-speaking in 2006 to those of the Quebec French-speaking in 1986 is interesting, but the change over these twenty years is so small that extrapolating a trend from it would be very hazardous. The concentration at young ages of fertility within consensual union is likely a trace of the association between youth, consensual union and poverty (see Stalker and Ornstein 2013).

There is very little diffusion, if any, of the patterns typical of the Quebec French-speaking to the Quebec English-speaking despite them sharing the same law and the same space, at least in parts of the Island of Montreal. We see no more diffusion to the Ontario French-speaking, despite their access to French-speaking media. On the contrary, among them, fertility within consensual union seems to be associated with youth and probably poverty, as it is among the Ontario English-speaking. Concisely, fertility within consensual union seems to have a very distinctive pattern among the Quebec French-speaking that singles them out from the rest of Canadians as does their high level of consensual union. From a broader perspective, they are different as well from the people of the USA, but maybe not so much from other people who share with them the heritage of Catholicism and Civil law. Consensual union is spreading in Latin America (Esteve, Lesthaeghe, and López-Gay, 2012); consensual unions and out-of-wedlock births, largely driven by the increasing number of people living in a consensual union, are also on the rise in Spain (Domínguez-Folgueras and Castro-Martín 2013).

The conclusion that fertility is "high enough" within consensual union in Quebec so that fertility is higher in Quebec than in Ontario despite the importance of consensual union leads to new questions. Our study shows *how* this can be, but does not explore *why* it is so. This topic is beyond the reach of this paper, but there we can see three related but different hypotheses. The first one is that the break from the traditional patterns is rooted in a deep rejection of religion-based traditional norms. According to this hypothesis, this rejection has set in motion a series of transformations that allow high level of consensual union, relatively higher level of fertility, high level of women's labour force participation, higher levels of gender equality within and outside of the household (Laplante 2006; Laplante, Miller, and Malherbe 2006). The second hypothesis is that Quebec family policies—mainly subsidised low cost day care and flexible as well as comparatively generous parental leave—favour childbearing and child rearing in more equalitarian forms of conjugal union.

The third one is newer and more speculative, but deserves attention. Some recent research based on cross-national comparison shows that in countries with advanced economies, fertility, in recent years, is positively correlated with the proportion of births outside marriage. This association suggests that "family flexibility" may have a positive effect on fertility (Streeck 2009; Héran 2013). These results are recent and not well known. They are based on aggregate data and may not survive further scrutiny. However, the reversal of the relation between women labour force activity and fertility, now believed to have happened in the 1980s, was first noticed using such data (Brewster and Rindfuss 2000; Ahn, Namkee, and Mira 2002). From this perspective, a better understanding of the Quebec fertility paradox may help operationalize further research of this rather new hypothesis.

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Figure A1.   Proportion of children aged 0–4 living in a "couple family" in which the couple lives in a common-law union. Census 2011, Montreal Census Metropolitan Area census tracts.
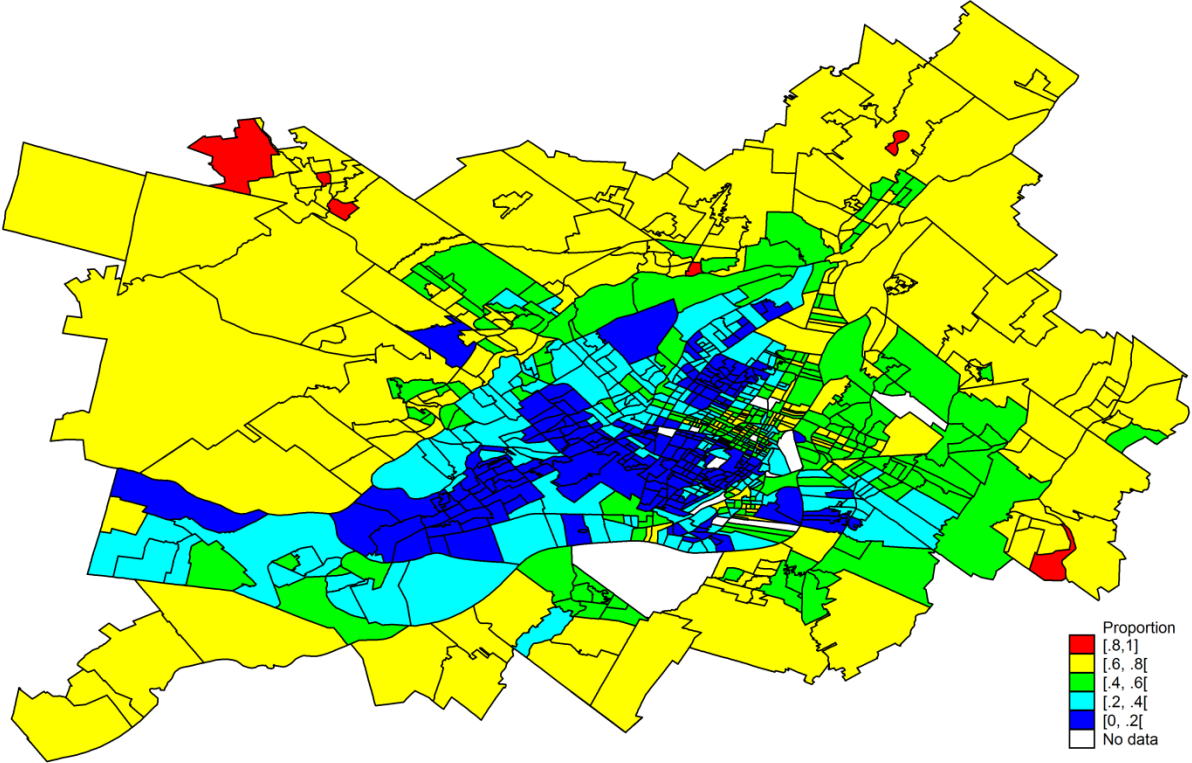
Source: Statistics Canada's Topic-based tabulation 98-312-XCB2011022 of the 2011 Census of Canada.

Figure A2.   Proportion of women aged 15–49 who speak mainly French at home. Census 2011, Montreal Census Metropolitan Area census tracts.
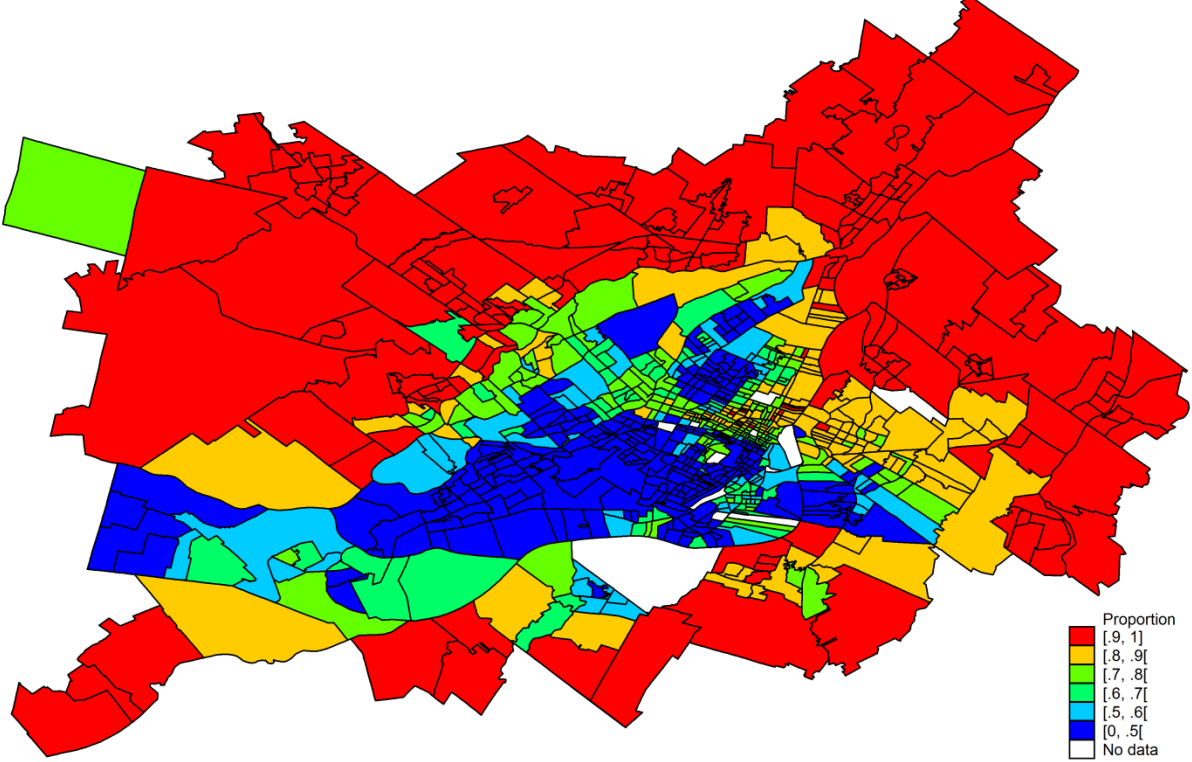
Source: Statistics Canada's Topic-based tabulation 98-314-XCB2011036 of the 2011 Census of Canada.

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Table A1   Top programs, English-speaking Canada, 4 February to 10 February 10th 2013

Rank	Programme	"Broadcast outlet"	Type	Origin
1	Big Bang Theory	CTV	Fiction	USA
2	Grammy Awards	Global	Variety	USA
3	NCIS	Global	Fiction	USA
4	Hockey Night in Canada (Prime East)	CBC	Sports	Canada
5	Two and a Half Men	CTV	Fiction	USA
6	C.S.I.	CTV	Fiction	USA
7	CTV Evening News	CTV	News	Canada
8	Grey's Anatomy	CTV	Fiction	USA
9	NCIS: Los Angeles	Global	Fiction	USA
10	American Idol 12th season	CTV	Reality	USA
11	C.S.I. New York	CTV	Fiction	USA
12	Blue Bloods	CTV	Fiction	USA
13	Criminal Minds	CTV	Fiction	USA
14	Castle	CTV	Fiction	USA
15	Bones	Global	Fiction	USA
16	Hawaii Five-O	Global	Fiction	USA
17	Hockey Night in Canada (Prime West)	CBC	Sports	Canada
18	Big Bang Theory (sic)	CTV	Fiction	USA
19	The Following	CTV	Fiction	USA
20	Elementary	Global	Fiction	USA
21	Arrow	CTV	Fiction	USA
22	CTV Evening News (Week-end)	CTV	News	Canada
23	Once Upon a Time	CTV	Fiction	USA
24	Vegas	Global	Fiction	USA
25	Big Bang Theory	CTV	Fiction	USA
26	CTV National News	CTV	News	Canada
27	American Idol 12th season *(sic)*	CTV Two	Reality	USA
28	Marketplace	CBC	News	Canada
29	Person of Interest	City	Fiction	USA
30	Hockey Night in Canada (Saturday afternoon)	CBC	Sports	Canada

Source: BBM Canada and Sondages BBM for ranking, programme and "broadcast outlet". Own research for type and origin.

Table A2   Top programs, French-speaking Quebec, 4 February to 10 February 2013

Rank	Programme	"Broadcast outlet"	Type	Origin
1	La voix	TVA	Reality	Quebec
2	Unité nº 9	SRC	Fiction	Quebec
3	La voix	TVA	Reality	Quebec
4	19–2	SRC	Fiction	Quebec
5	LOL :-)	TVA	Fiction	Quebec
6	Yamaska	TVA	Fiction	Quebec
7	Les enfants de la télé	SRC	Variety	Quebec
8	Accès illimité	TVA	Variety	Quebec
9	Toute la vérité	TVA	Fiction	Quebec
10	Vlog	TVA	Variety	Quebec
11	Les Parent	SRC	Fiction	Quebec
12	Tranches de vie	TVA	Fiction	Quebec
13	On connaît la chanson	TVA	Quiz	Quebec
14	L'auberge du chien noir	SRC	Fiction	Quebec
15	La poule aux œufs d'or, La	TVA	Quiz	Quebec
16	Tout le monde en. parle	SRC	Variety	Quebec
17	Le tricheur	TVA	Quiz	Quebec
18	Mémoires vives	SRC	Fiction	Quebec
19	TVA Nouvelles (18h – Weekdays)	TVA	News	Quebec
20	Trauma	SRC	Fiction	Quebec
21	La facture	SRC	News	Quebec
22	Destinées	TVA	Fiction	Quebec
23	O'	TVA	Fiction	Quebec
24	Le hockey des Canadiens (Week-end)	RDS+	Sports	Quebec
25	Qui perd gagne	TVA	Reality	USA
26	TVA Nouvelles (17h)	TVA	News	Quebec
27	Découverte	SRC	Science	Quebec
28	TVA Nouvelles (18h – Week-end)	TVA	News	Quebec
29	Prière de ne pas envoyer de fleurs	SRC	Variety	Quebec
30	En direct de l'univers	SRC	Variety	Quebec

Source: BBM Canada and Sondages BBM for ranking, programme and "broadcast outlet". Own research for type and origin.