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Labour Market Dynamics in Canada, 1891-1911: A First Look From New Census Samples

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Abstract :

This paper uses newly available census evidence to portray changes in labour market outcomes in Canada between 1891 and 1911. Multiple census cross-sections allow for the documentation of how the location, occupation, and earnings of Canadian and foreign-born cohorts changed over time. The westward movement of young anglophones after 1901 contributed to the formation of a national labour market. Anglophone, francophone, and foreign-born cohorts all experienced significant occupational mobility between 1891 and 1911, but francophones and immigrants remained over-represented at the bottom of the occupational ladder. Greater occupational and geographical mobility supported higher rates of earnings growth among Anglophones.

1. Introduction

The decades spanning the transition from nineteenth to twentieth centuries saw dynamic changes in the size and structure of North American labour markets. In both Canada and the United States, international and internal migration altered demographic profiles and the spatial distribution of the population. Population expanded rapidly in the cities and in previously thinly-settled regions, particularly western Canada. The Canadian population rose by more than 50 percent from 1891 to 1911; the population of urban areas more than doubled (Statistics Canada 1983. A1, A68). Immigration fuelled much of the growth in both countries. North America experienced a substantial surge in immigration from 1891 to 1911, with Canada receiving historically unprecedented numbers of immigrants from 1903 onwards (Statistics Canada 1983, A350). Immigration possibilities are usually thought of as being attractive

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mainly to unskilled young workers, but improving school attendance in Britain and the rest of Europe expanded the numbers of potential emigrants with some education. In Canada, too, educational attainment rose with the expansion of school provision and the establishment of an increasing number of secondary schools.

These supply changes were accompanied by changes on the demand side. For the United States, Goldin and Katz (1996) argue that skill-biased technological change in the early 20th century created a particularly rapid growth of workers in sectors using new technology and methods, with a supply response following in fairly short order. We might expect a similar, if somewhat lagged, pattern in Canada. Skill shortages would have been most acute in newly-settled and rapidly growing western-Canada. Moreover, increases in the size of firms in many sectors suggest Canada experienced an expansion and articulation of managerial activities and changes in firm organisation with additional implications for the structure of pay (Drummond 1987; Lowe 1985, 1987; Taylor and Baskerville 1994).

Scholars already have generated evidence on the pattern of wages, earnings, and skill premia in Canada for this period (Allen, 1994; Emery and Levitt 2002; Emery, Inwood and Thille 2007; Green and Green 2008). For the most part, however, the available data have not allowed the identification of earnings and employment outcomes associated with personal characteristics of interest. Indeed, for the earlier years, wage data are largely limited to blue collar workers in manufacturing or construction. The age of workers, for example, is particularly relevant to understanding the structure of occupations and pay and the effect of changes in labour supply and demand . Young workers with recent education and fewer job-specific skills, for example, may have benefited disproportionately from technological change that increased demand for new skills (Canada 1913). Schools are known to have increased both

technical training as well as secondary school academic subjects around the turn of the century (Stamp, 1976) but the consequence for young workers is so far unknown. The impact of immigration also is likely to have varied with skill and age. Differences in cohort size have implications for earnings patterns. Changes in demand, and the extent of human capital investment both before and after entering employment, affect how employment and especially earnings capacity evolves with age, as well as differences between cohorts at any point in time.

Hitherto we have not been able to document the long-run effects of these and other changing labour market conditions because life-cycle evidence has been lacking. Very recently, however, large random samples from successive Canadian censuses have been constructed. The new data open a window that allow, for the first time, a more comprehensive examination of occupational and earnings dynamics in Canada before the Second World War.

In this paper, we trace the evolution of employment and earnings in Canada over two decades using random samples of the censuses of 1891, 1901, and 1911. The availability of successive cross-sections of the Census of Canada supports an exploration of career dynamics for synthetic cohorts of both Canadians and foreign-born men. We document the evolution of occupations and earnings for the largest groups of Canadian workers, and examine how the spatial distribution of workers changed during this time of rapid population growth. The 1901 and 1911 censuses are particularly valuable because they asked respondents to report earnings. We use this information to describe changes to the structure of wages for male workers. We identify the wage implications of individual characteristics, document how pay was related to ethnicity, religion and national origin, and analyze how these relationships evolved between 1901 and 1911. We also use evidence on the occupational and spatial composition of cohorts to compute a

preliminary estimate of the sources of earnings growth over the life-cycle. Our goals are to identify the broad patterns that will frame the direction of future research and to provide preliminary evidence on issues that invite more intensive investigation.

Large random samples have been drawn from the 1891, 1901, and 1911 Censuses of Canada. The Canadian Families Project headquartered at the University of Victoria created the 5% sample of the 1901 census (http://web.uvic.ca/hrd/cfp/). The Canadian Century Research Infrastructure project led by a team at the University of Ottawa constructed the 5% sample of the 1911 census (http://www.ccri.uottawa.ca/). The University of Guelph built the 1891 sample which has a general density of 5% and 10% in the western provinces and eastern cities of Toronto, Montreal and Halifax (http://www.census1891.ca/). The 1901 sample has been available since 2003; the 1911 data became available last year and the 1891 sample is being completed this year (2010). Given the rapid population increase of the first decade of the twentieth century, especially in western Canada, the number of working age adults is much larger in the 1911 sample than for earlier samples.

In all cases, individual dwellings provide the sample points. Enumeration was broadly similar although some differences in the census questions influence our handling of the data. Earnings and hours of work are reported in 1901 and 1911 but not 1891. As we will see below, about 80% of production workers reported earnings in both 1901 and 1911. Hours of work are provided by the majority of employees in 1911, but not in 1901; inter-temporal earnings comparisons are therefore made on the basis of annual earnings rather than the hourly wage.

Occupations are reported in all three Censuses but the nature of the enumerations and procedures used to code occupations vary. The instructions to enumerators for acceptable occupational responses

became much more elaborate in 1891, and remained more directing than in earlier censuses, The contemporary processing of data into reportable categories of occupation is visible through the codes introduced post-enumeration onto the manuscript page in 1891 and 1911. The teams constructing data during the last ten years have brought the occupations into various modern classification systems based on the original alpha strings recorded by enumerators.

The 1901 team cast their data into a standard format based on a 1989 Statistics Canada Classification and Dictionary of Occupations (itself an adaptation of ISCO categories). This classification system is organized around 27 2-digit categories. The 1891 and 1911 samples implement versions of a classification system introduced by the 1950 United States census (and available for all historical census samples in that country).[1] The 1950 system recognizes 9 major occupational groups. Its implementation on 1891 data involves a larger number of sub-categories reflecting the variety of occupational strings returned by enumerators. As we are mainly interested in broad changes in the Canadian labour market, for the present chapter, we have collapsed the occupational structure into 8 broad categories: professional occupations and proprietors, clerical jobs, craft workers, operatives, service workers, farm workers, and labourers. For 1911, we are unable to separate farm labourers from farm managers or owner-operators.

2. Changes in Regional Labour Supply, 1891 to 1911

We begin our analysis by considering changes in the relative supply of labour across Canada. The arrival of internal and international migrants in locations offering high earnings would, all else equal, lead to reduced wage premia in locations where labour demand was initially high.

[1] All data are being coded into the NAPP-HISCO classification system as well.

Inter-regional migration offered an avenue for individuals to move to high wage regions and to realize significant earnings growth over time. Changing location may have coincided with a movement from one occupational sector to another – leaving farm work to become a city store or bank clerk, for example (McDowell, 1993). For much of the later 19th century, these kinds of moves were often associated with emigration from Canada to the United States. Between 1870 and 1900, the number of Canadian-born living in the United States increased 240 per cent and then not at all from 1900 to 1910 (Truesdell, 1943, Table 2, p. 10) The change in migrant pattern reflects, in part, the opening of the Canadian West which expanded the range of in-country choices for the footloose, and even allowed some expatriate Canadians to return to Canada (Widdis, 1998, Ch. 7, pp. 290-336).. Migration towards the Canadian West, of course, was associated with an expansion of prairie agriculture. It is difficult to measure pecuniary aspects associated with homesteading in the west, but it is clear that western farming was increasingly attractive to Eastern Canadians from the mid 1890s.

We document the regional distribution of the adult male labour force in Table 1. We focus on three large groups: Ontario-born anglophones, Quebec-born francophones, and the foreign-born (most of whom came from the United Kingdom). Ontario anglophones are the largest group of native English-speakers in Canada. The range of service and industrial employment within Ontario increased considerably in this period, and a good number of the locally born also migrated to Western Canada and to the United States**.** Most Canadian francophones came from Quebec. Green, MacKinnon, and Minns (2005) found that limited language skills and low levels of education (as approximated by literacy rates) were an impediment to Western migration. These characteristics may also have slowed occupational mobility within Quebec. Evidence of earnings disadvantages for francophone apprentices in Montreal

stretches back to the early nineteenth century (Baker and Hamilton 2000). The foreign-born in Canada were primarily of British origin. This is particularly true of those arriving before 1901, a group which we will focus on in order to trace out post-arrival economic mobility. Cross-sectional analysis of economic outcomes for this group in 1901 has suggested relatively slow labour market assimilation in spite of having broadly favourable characteristics (Green and MacKinnon 2001). On balance, however, choosing to live in Canada rather than the US in 1901 had not necessarily been a poor choice for a British migrant (Green, MacKinnon and Minns, 2002).

A comparison of the 1891 and 1901 data in Table 1 indicates that only a small proportion of Ontario anglophones and Quebec francophones relocated to the west during the 1890s. The western region did gain a noticeably larger proportion of the foreign-born by 1901 and more so after 1901 as Western settlement advanced more rapidly. About 10 percent of Ontario anglophones moved west over this decade; the newly established Northwest provinces of Saskatchewan and Alberta were the primary destinations. In contrast, as is well known, Quebec francophones did not participate in the western movement to any significant degree (Green, MacKinnon, and Minns 2005).

As one would expect, the location of the foreign-born was highly responsive to changing opportunities. British Columbia was attractive to immigrants as early as 1891. By 1911, about 60 percent of the foreign-born in Canada were found west of Ontario. The farm sector attracted much of this western movement, but high wages in a range of occupations also contributed to the appeal of rapidly growing labour markets in Western Canada.

Data from the Census allow us to explore the regional distribution of workers by age cohort. In Table 1 we trace the shares of young Ontario-born anglophones between 1901 and 1911. The westward shift

over the decade is particularly sharp among those aged 21 to 30 in 1901. This effect is more muted among older cohorts. It would appear that westward movement may have been an especially important influence on labour market outcomes for Ontario men entering employment at the very beginning of the 20th century. We also examine the mobility of the foreign-born in Canada. We focus on immigrants arriving between 1891 and 1901, and compare how their residential outcomes changed between the two Census years. Recent arrivals in their 20s were mainly found in the West in 1901. By 1911, only a slight shift in the location of this cohort is apparent, with a small increase in the Prairie Northwest and Ontario, and a small decrease in the share in Manitoba. The distinct locational patterns of the immigrant population in 1901 and 1911 appear to be driven by differences between reasonably long-lasting choices made by young adults in each cohort, rather than movement over time.

3. Occupation over the Life-Cycle

The 1901 and 1911 census samples allow us to examine changes in occupation and earnings at the micro-level. It is possible to trace successive cohorts of Canadian men's career development evolving with age We begin by summarising the occupational distribution for Ontario-born anglophone and Quebec-born francophone males aged 16 to 65 in the three censuses. Table 2 shows broadly similar occupational breakdowns for all groups. About one-third of men were engaged in farming. Ontario anglophones were more often in skilled occupations (professional/proprietor, clerical, craft); the difference is roughly five percentage points in all three years. This was mirrored by a higher share of Quebec francophones in semi-skilled and unskilled occupations (operatives and labourers). The distribution of occupations across categories changed little over the twenty years. The "unclassified"

category is a partial exception. Included here are occupational responses not easily placed with the eight occupational categories used in Table 3 (for example, “gentlemen”) as well as non-occupational responses such as “student”. As there may be some interest in seeing how the unoccupied share varies over the life-cycle (perhaps following unusual patterns of investment in human capital while young and then retirement when old), or between anglophones and francophones, we do not exclude these responses from our analysis (Baskerville and Sager 1998). The finding of broad similarities between the occupational distribution of Ontario anglophones and Quebec francophones, at least at this level of aggregation, were broadly similar. Indeed they were more alike than those of immigrants and locally-born in the northern United States in the same period (Minns 2000).

We provide a detailed breakdown of occupational patterns over time for “synthetic cohorts” – samples of men from the same birth year interval in successive census returns - in Appendix Table A1. For these calculations, operatives, service workers, and labourers have been aggregated into a semi-skilled/unskilled category. Figures 1 to 4 present this information by age cohorts for Ontario anglophone men. Younger cohorts experienced a significant rise in the share who were farming over time (figure 1); later cohorts were, however, less likely to be engaged in the sector at any given age. The data also show a sharp rise with age in the share in proprietor and professional occupations for men born after 1870 (figure 2), and young men in 1911 were more likely to be in this sector than in 1891 or 1901. The proportion in semi and unskilled work fell from 1901 to 1911 (figure 3), while patterns for clerical work (figure 4) show modest rate of entry over time, with the youngest cohorts more likely to be found in this range of jobs. If the 1890s were a time of labour market stress, the first decade of the 20th century allowed many to move up the ladder a bit. Taken as a whole, occupations where access to

resources and financial capital were important – farming, the professions, proprietorship – saw considerable cohort entry over time. For other sectors, there appears to have been relatively little entry or departure, although the younger cohorts were more likely to have the skills for clerical work and less likely to be "stuck" as labourers or operatives.

For Quebec-born francophones (figures 5 to 8) the rise in the farming share is less sharp, and there are fewer differences in levels across cohorts. Entry into professional and proprietor occupations looks broadly similar to Ontario anglophones. Employment in semi-skilled and unskilled occupations declines less between 1901 and 1911 than for the Ontario-born group, with the youngest cohorts holding high shares in these occupations in 1911. Among francophones, there is some evidence of higher rates of clerical employment among the youngest cohorts, but rates are much lower than for Ontario anglophones. Human capital and skills were surely important in allowing access to the clerical sector and escape from unskilled work.

It seems possible that lower educational attainment delayed the advancement of Quebec francophones. Indeed, the increased importance of human capital, and therefore the burden of its deficiency, may have contributed to the growing gap between anglophones and francophones in Quebec after 1901 (MacKinnon 2000).

Comparisons of school attendance across provinces are inevitably imprecise but it does appear that in Ontario had the highest proportion of children reporting school attendance. At age 13, 74% of Quebecers reported school attendance, 10 points below the Ontario rate (the rate for francophones in Quebec was even lower). In Ontario during the first decade of the twentieth century total enrollment in publicly-controlled schools kept pace with the growth of juvenile (age 5-19) population (both rose about 5%), while enrollments in the urban high schools and Collegiate Institutes increased more than 40% (Dominion Bureau of

Statistics 1921, Tables 4, 5, 27, 99). Quebec's 24% increase in pupils at publicly controlled schools and 21% increase at Classical Colleges did *not* keep pace with 34% increase in its juvenile population. It is therefore likely that the gap in educational attainment between Quebec francophones and Ontario anglophones was rising, at least in the later part of the period we study (Dominion Bureau of Statistics 1921, Tables 4, 5, 44, 99).

Figure 9 traces differences in the unskilled/semi-skilled share of occupations between Ontario anglophones and Quebec francophones. Ontario anglophones were almost uniformly less likely to be found at the bottom of the occupational distribution. The widening gap between 1901 and 1911 for the two youngest cohorts is particularly notable. This pattern suggests that young anglophone Ontarians managed to respond more effectively to changes in the demand for skill, realizing a greater share of the potential benefits. The early twentieth century is typically painted as a good time to have been a young Canadian, with much discussion of a growing sense of self-confidence and enthusiasm for various nation-building projects (Skelton 1914). The detailed evidence of labour market change suggests that this optimism was firmly rooted in the work and career experiences of many young men, particularly in the Anglophone population.

We have constructed similar evidence for the foreign-born from the 1901 and 1911 samples. The 1891 census does not disclose year of migration, so we are unable to track cohorts by age and year of arrival back from that source. The underlying data are in Appendix Table A2, and presented visually in Figures 10 to 13. The overall occupational patterns appear to be broadly similar to those of Canadian-born men, with increasing shares in farming and professional/proprietor occupations, and a declining share in unskilled and semi-skilled work. One difference between immigrants and the native-born is that the share changes

between 1901 and 1911 do not appear to vary much by immigrant age cohort. For example, there is less evidence of a rapid rise in the share of professionals and proprietors between 1901 and 1911. Occupational assimilation, at least in terms of rate of change, appears to have been fairly similar for immigrants of the same arrival vintage, but of different ages. This suggests to us that overall economic conditions in Canada probably had more impact on immigrants than how recently they had completed school or job training. Comparing the unskilled and semi-skilled share of immigrants to Ontario anglophones (figure 14) shows that all the foreign-born cohorts enjoyed reductions in the relative share in the bottom categories, but continued to be over-represented in labouring and operative work in 1911.

4. The Structure of Canadian Earnings, 1901 and 1911: Occupations

Recent research by Green and Green (2008) and Emery and Levitt (2002) provide important evidence on changes in wages and earnings in Canada in the early 20th century. Green and Green (2008) report results based on unpublished Census material for 1911 onwards, while Emery and Levitt (2002) construct nominal and real wage series from data in the *Labour Gazette*. We begin our analysis of earnings by documenting the basic patterns in the census samples before turning to consider the evolution of pay with age, and for targeted age cohorts, the evolution of pay over time.

Table 3 summarises earnings information from both the 1901 and 1911 Censuses. The sample for this purpose consists of adult men aged 16 to 65 with a recognized occupation. More than 80% of men in the clerical, craft, operative, and labouring categories indicate earnings in both 1901 and 1911. In these sectors we are fairly confident that the data

give a reasonable portrayal of the range of pay on offer; it is likely that the same types of workers report pay in both years. Workers in services also report pay with high frequency, although admittedly they are more likely to receive additional non-monetary compensation (such as food, lodging, and clothing) than clerical and production workers. The professional/proprietor and farming groups include many who receive compensation mainly in the form of retained earnings rather than salary or wages; it is no surprise that their shares reporting earnings are lower. Indeed, only wage-earners were required to report compensation.[2]

Table 3 shows that the ranking of occupational groups are the same in 1901 and 1911 for average and median earnings, and that these follow the expected pattern, as reported previously for 1901 by Green, MacKinnon, and Minns (2002). Table 4 uses the information in the first table to calculate the change in nominal wages over the 10 years for each of four categories. These calculations suggest that the skill premium in Canada narrowed between 1901 and 1911. The fastest rate of nominal earnings growth was in the labourer category, and the slowest among clerical workers, who are relatively well-paid. Evidence of wage compression between skilled and unskilled workers is consistent with evidence reported by Green and Green (2008), who also drew evidence on earnings from unpublished Census materials. Table 4 also reports the coefficient of variation on earnings within each occupational group in 1901 and 1911. For manual workers (craft, operative, labourer), the data suggest a narrowing of earnings dispersion, while the opposite is true for the clerical sector.

[2] The instructions to 1901 Census officers (Canada, Census Bureau, 1901) state that "Entries under the heading of Wage Earners [which includes the columns where earnings were recorded] will be made … for each person names in column 3 who is employed in any industrial or other occupation and is paid salary, wages, or other money allowance for his or her service, and whether employed by piece-work or by time (hour, day, week, etc.), at home, in a factory, or elsewhere."

The patterns in Table 4 imply that the net effect of supply and demand changes was a rise in wages for male workers in manual occupations, especially those with lower skill. This is consistent with rapid investment in urban and western Canadian infrastructure and in the export of goods which could have created a strong (if possibly temporary) need for less-skilled workers in a variety of occupations and industries. While the average clerical worker was slipping relative to less skilled workers, there is also evidence of a rising range of pay within the clerical sector. At the first pass, this is consistent with a story of occupational change and increasing returns to intermediate activities that are typically thought to have gained in importance as firm size and complexity grew. The number of relatively simple jobs at the bottom of the clerical ladder expanded, but so did more responsible positions (such as bank clerks) towards the top of it. This is also a trend one might expect to see with the advent of internal labour markets for white-collar employment within firms. Junior jobs for young men hoping to move up in the white-collar world could be very low paid while, to maintain honesty and work incentives for the more experienced, at least some men had to be paid above their marginal product later in their career Formal pensions were still rare except at very large firms like the CPR, so pension rights would not have contributed greatly to any shift of earnings across the age profile (Bryden 1974, Industrial Relations Section 1938, MacKinnon 1997).

5. The Structure of Canadian Earnings, 1901 and 1911: Regions

The census data provide evidence on nominal wages. We adjust wages by cost of living indices drawn from Minns and MacKinnon (2007) and Emery and Levitt (2002). We limit our attention here to wages in urban areas for which the cost of living evidence is most directly relevant.

We also exclude farm workers for whom the earnings evidence is least complete.

Table 5 summarizes earnings in 1901 by Canadian region. The same data expressed in Table 6 as regional ratios relative to Ontario replicate the east-west gradient in nominal wages found by Emery and Levitt (2002). After controlling for regional differences in the cost of living, Maritime earnings are about 10 to 15 percent lower than earnings in Ontario or Quebec. Real earnings in Manitoba are 10 to 25 percent above those in central Canada, while the premium further West is less consistent. Reported earnings are low in Alberta and Saskatchewan (the Northwest) in 1901 although this is based on a small number of observations. Another complication arises for 1911: nominal wages in the Northwest are similar to those of Manitoba but the two estimates of living costs diverge (Emery and Levitt (2002; Minns and MacKinnon (2007). The former is based on the *Labour Gazette* which reports large differences among towns in the region, while the latter relies mainly on contract prices paid by Federal Penitentiaries. For British Columbia, there is significant decline in relative nominal wages from 1901 to 1911, and both sources of living costs agree that these fell considerably less. The combined effect is to bring real wages in British Columbia a bit below comparable estimates for Central Canada. Rapid migration to BC therefore appears to have been effective in reducing the sharp disequilibrium observed in 1901**.**

Differences in supply and demand for skilled and unskilled workers across Canada might lead to distinctive regional patterns of skill premia. We investigate this possibility in Table 7 in which we report the ratio of nominal earnings between clerical workers and operatives. These are calculated for each region in 1901 and 1911. Here we find further evidence of an East-West gradient, with the relative earnings of clerical workers higher further west. The gradient appears to be somewhat flatter

in 1911 than in 1901. Part of the decline in the national skill premium documented in Table 4 originates with falling wages for white-collar work in western provinces.

6. Earnings over the Lifecycle, 1901 to 1911

Labour economists have drawn attention to a range of issues in understanding how earnings evolve over the employment career. One set of concerns is primarily empirical: how "humped" are earnings profiles over the life-cycle, and what functional form is most appropriate to make comparisons between groups and over time (Murphy and Welch, 1990). The shape of life-cycle earnings profiles speaks to fundamental questions regarding the importance of various forms of human capital, the structure of compensation, and other employment attributes. These point to a set of questions that are particularly interesting in the context of the early 20th century Canadian labour market. The extent to which workers entered employment with human capital acquired from schooling or other forms of training can affect initial earnings and the rate at which earnings rise with experience. Increased schooling among young workers entering employment after 1901 could have shifted the pattern of wage profiles across age cohorts. Another form of human capital is on-the-job experience. Part of the rise in earnings associated with time in employment reflects a return to experience. Whether this is concentrated in the first few years of employment or extended for most of the working life reflects opportunities for on-the-job skills acquisition and their portability to different work environments. For example, in large enterprises, managers need a wider range of skills as they move up, and this is likely a source of sustained earnings growth. A final point of consideration is whether or not earnings profiles have an inverted U-shape at the beginning and end of the career, This pattern might be

most evident at both ends of the age range in jobs where physical strength or manual dexterity are important.

Relatively little is known about the shape of earnings over the life cycle in the early 20th century. Evidence for employees of the Canadian Pacific Railroad (CPR) in this period suggests that earnings rose sharply until the mid to early 20s and then were fairly flat at higher ages (MacKinnon 1996). Given that workers moved across sectors in response to opportunities, studies limited to a single (large) firm or industry are likely to understate the extent of cumulative earnings growth . Other studies of labour market outcomes in this period are based mainly on single cross-sections from census or other labour force data (Green and MacKinnon 2001; Hatton 1997). Age-earnings profiles estimated with these sources assume that longitudinal wage or earnings growth can be approximated through variation by age in a snapshot at one point in time. The new census samples provide evidence on a broad range of occupations and activities; the presence of earnings information in two cross-sections allows us to trace cohort outcomes over time. To our knowledge, no other studies of early 20th century labour markets have been able to generate life-time earnings evidence of this type.

Figures 15 and 16 summarize earnings growth for Ontario-born anglophones and Quebec-born francophones from 1901 to 1911 (the raw data are given in Appendix Table A3). The lines trace the growth in real earnings between these two dates for five cohorts. Figure 10 shows that earnings growth was especially strong among men aged 16 to 25 in 1901 and that clerical workers aged 21 to 25 in 1901 enjoyed more sustained earnings growth than operatives. Real earnings growth was slower for those born before 1876 (ie aged at least 25 in 1901), with little return to experience for those remaining in operative work. The pattern for Quebec francophones is less settled. Very young clerical workers (aged 16 to 20 in 1901) saw large increases in earnings, although their income

was still lower than that of operatives in the next two age cohorts. Taken together, these figures show that men aged 16-25 in 1901 enjoyed faster intertemporal earnings growth than older cohorts. If the 20th century was thought to belong to Canada, contemporaries had particularly good reason to think it would belong to the rising generation of more skilled young workers. To highlight comparisons between the Ontario and Quebec groups, Figure 17 traces out relative growth rates for age cohorts. This comparison shows that Ontario anglophones in all cohorts enjoyed faster earnings growth over time. The picture for the clerical and operative sectors is more complicated – young cohorts of Ontario anglophone workers in clerical employment gained much more with time than their Quebec counterparts (a pattern which does not appear to hold for semiskilled workers in the operative sector). In 1901, Quebec francophones had lower earnings than Ontario anglophones of the same age; the subsequent decade saw further divergence between the two groups.

We have also generated earnings growth profiles for the foreign-born. We focus on immigrants who arrived in Canada between 1891 and 1901, and were at least 21 years of age in 1901. We start at a higher age band in order to exclude migrants who arrived in Canada as young children. Due to the smaller number of migrants in each age cell, we do not report sector-specific patterns as in the previous figures. Figure 18 shows that much as with the two native-born groups, earnings growth declines after age 25. Comparing immigrants to the Ontario-born (Figure 19) suggests little evidence of earnings assimilation over time, with the 1871-75 cohort experiencing slower earnings growth than native-born Ontario anglophones. These results are consistent with the occupational evidence presented above, and further support the view that the mainly British immigrant population in Canada experienced sluggish labour market assimilation.

7. The Sources of Earnings Growth

In this section, we compute a statistical decomposition of earnings in 1901 and 1911 for specific birth cohorts. This takes the form of a typical Oaxaca decomposition:

$$Y_1 - Y_0 = (\alpha_1 - \alpha_0) + (\beta_1 - \beta_0)x_0 + (x_1 - x_0)\,\beta_1 \qquad (1)$$

In equation (1), Y_1 and Y_0 are average log earnings of an age cohort in 1911 and 1910. We estimate regressions of the log of earnings against a set of dummy variables for region and occupational sector in both census years. These regressions yield the constant terms (α_1 and α_0), and vectors of coefficients (β_1 and β_0) used in the decomposition in (1). Finally, mean characteristics for age cohorts at both dates (x_1 and x_0) are combined with coefficient estimates to compute the decomposition. The results of this exercise yield crude estimates of the contribution of different sources to intertemporal earnings growth. The difference in the constant term shows the secular increase in earnings over time with age for the reference group (for Ontario-born anglophones, this is labourers resident in Ontario). The second term is the effect of changes in the return to occupation sector and location. For example, if the earnings premium associated with clerical work rises over time, or earnings in the Northwest rise relative to earnings in Ontario, these effects will be captured by positive differences in the β terms. The third term gives the contribution of occupational and geographical mobility. If cohorts migrate towards high-earnings regions, or increase their share in high earnings occupations, these will lead to positive values for $(x_1 - x_0)\,\beta_1$.

We focus our analysis on the three age cohorts that we observe in both 1901 and 1911 which have significant intertemporal earnings growth: urban-resident men born 1881-1885, 1876-1880, and 1871-1875. We undertake the analysis for both Ontario-born anglophones and Quebec-

born francophones. Regression results are summarized in Appendix Tables A4, A5, and A6. Table 8 in the text summarizes the main results of this exercise for the Ontario cohorts. For the youngest group (born 1881-1885), the steep age-earnings profile is evident even for unskilled workers. Those not in labouring occupations get a considerable extra kick from more rapid earnings growth in other sectors. Sectoral and regional movement together brought about a 9 log point increase in earnings. As we move to the next age cohort (born 1876-1880), earnings growth over the 10 years is slower, as shown before in Figure 10. The breakdown between characteristics, returns, and the secular trend is similar to those from the youngest group, although all of these effects are slightly smaller in absolute terms. For those born between 1871 and 1875 (age 26 to 30 in 1901), the constant term plays a much smaller role. There was much less earnings growth (on average) above age 26, but what there was more likely came from being in a sector (clerical) with sustained earnings growth, or intersectoral mobility. Taken together, these effects account for about two-thirds of earnings growth (.06 +.05 / .17) in this cohort.

Francophones (Table 9) appear to get similar secular changes in earnings (from a lower base) as Ontario anglophones, and also benefit from changes in the returns to the sector they are in. Strikingly absent in this set of decompositions is evidence of a substantial benefit from migration and occupational mobility. These effects account for a fair share of earnings growth in the youngest of the Ontario cohorts but otherwise appear to have been of modest importance for Ontario men. One can also see that had Quebec francophones enjoyed the same degree of occupational and geographical mobility as anglophones, they would have had faster intertemporal earnings growth than the Ontario-born group, and some earnings convergence between the two would have occurred.

Finally, we report the results of a similar decomposition for the foreign-born in Table 10. For the youngest immigrant cohort (age 21-25 in 1901), earnings growth was about 13 log points above that of native-born cohorts of the same age, with roughly similar proportions allocated to characteristics and returns. For both the 1871-75 and 1866-1870 immigrant cohorts, we find that changes in regional and sector returns account for the bulk of earnings growth, with less importance attached to changes in characteristics than for Ontario anglophones. There are several possible interpretations of this result. One is reduced discrimination against foreigners (mainly of British origin) outside of Central Canada and in more skilled occupations (Dean, 2010). Another is that immigrants invested greater amounts in sector specific-skills (perhaps complementing for limited pre-migration human capital formation), rather than investing in secondary migration or further occupational mobility once in Canada. If part of immigrant earnings convergence is due to the accumulation of country-specific skills, immigrants may have structured their careers so that more of these returns were specific to an occupational sector. It is difficult to draw any conclusions regarding the self-selection of immigrants to Canada from this evidence. They appear to have enjoyed somewhat faster earnings growth than the native-born, but the two older cohorts remained about 20 log points below the native born after at least 10 years of residence in Canada. While US evidence suggests that immigrant convergence with the native-born drew heavily on intersectoral mobility (Minns 2000), Canadian immigrants appear to have benefited from particularly strong intra-sector earnings growth.

8. Conclusions

The recent availability of large random samples from successive censuses allows us, for the first time, to analyze the labour market from a life-cycle perspective using synthetic cohort analysis. The ability to follow the experience of particular cohorts through time depends, critically, on the availability of samples from successive censuses. We can now begin to understand labour market outcomes (employment, occupation, income) in relation to personal characteristics (age, education, language and so on) and to do so in a way that disentangles life-cycle effects from broader changes in the historical context. The new data therefore make possible a significant advance in analytical potential. We have been able to identify several previously unrecognized features of the Canadian labour market before World War One.

Following lifetime outcomes for individual age and ethnic groups in the 1891, 1901 and 1911 census enumerations reveals how geographical mobility relates to economic mobility. We document how internal and international migration responded to changing opportunities across Canada during the period of rapid western settlement. Neither Ontario-born anglophones nor Quebec-born francophones moved to western Canada in significant numbers during the 1890s. By the end of the decade the share of the foreign-born in the west had begun to increase. The share of foreign-born living in the west increased significantly after 1901. The same was true for Ontario-born anglophones, especially among the younger cohorts. The considerable western movement of Ontario anglophones reinforces Coe and Emery's (2004) finding that Canada's national labour market emerged early in the 20th century. Quebec-born francophones, however, appear not to have benefitted equally from this development as they did not move to western Canada in significant numbers even during the 1901-1911 boom.

Migration, the spread of secondary schooling, and changes in technology and firm organization are expected to have altered the relative supply and demand for skilled workers early in the 20th century. One manifestation of these changes was a marked change in occupational mix over the twenty years. Ontario-born anglophones increasingly entered professional, proprietor and even farm occupations although, admittedly, later cohorts were less likely to be farming than earlier ones at the same age. Younger cohorts were much more likely to be employed in the clerical sector, even though the movement into clerical work of older cohorts through a process of career mobility was limited. Quebec-born francophones enjoyed broadly similar occupational transitions – an increasing share in farming and proprietorship, and a decreasing share in unskilled or semi-skilled occupations – but were more likely than comparable Ontario-born cohorts to remain at the bottom of the occupational ladder. Foreign-born men were predominantly occupied in unskilled and semi-skilled work in 1901. All immigrant cohorts show considerable movement out of this sector by 1911, but they remain much more likely to be in low-end work even after 10 or 20 years of residence in Canada.

Changes in the supply and demand for skill may also be expected to precipitate changes in the structure of wages and earnings. We see this, albeit imperfectly, through the 1901 and 1911 record of individual earnings for most employees (including the growing numbers in white-collar work who do not feature in many surveys of the industrial workforce). Clerical earnings increased rapidly. Earnings in semi/unskilled work grew even more quickly. This is consistent with an economy undergoing *both* a structural transformation that expanded the number and variety of clerical roles *and* a strong demand for lower-skilled workers because of the construction and export boom. The national skill premium, or differential between semi/unskilled and clerical earnings,

diminished in part because of a noticeable decline in the large western wage premium – perhaps reflecting the combined supply effects of increasing levels of education and westward migration.[3]

Finally, synthetic cohort evidence on earnings sheds new light on the nature of earnings life-cycle in the early 20th century, and how different groups were affected by the broader economic changes of the period. Younger men in 1901 appear to have benefited most; their rates of earnings growth 1901-1911 were much larger than for older cohorts . Ontario-born men older than 25 years in 1901 experienced more modest earnings growth, and much of that flowed from their geographical and occupational mobility. Quebec-born francophones had slower earnings growth than their Ontario counterparts. Lower levels of occupational and especially regional mobility would appear to account for much of the gap. The earnings growth of foreign-born workers drew heavily upon improved returns to skill and location.

The broad patterns of labour market change visible from the new Canadian census samples 1891-1911 suggest a number of possible extensions for future research. The data will sustain, for example, more fine-grained and complex multivariate analysis on many of the points identified above. A particular issue of importance that invites further attention is immigrant labour market assimilation. Dean (2010) reports an initial investigation based on the 1901 and 1911 census samples. A second question, which we have not explored here, is whether or not the larger changes in the Canadian economy may also have made the labour market more or less segmented by personal characteristics. Increased scale of activity and higher proportions of foreign and internal migrants

[3] High school enrolment nearly doubled in each of the western provinces between 1905 and 1911. The ratio of classrooms to population aged 5-19 in Alberta and Saskatchewan remained similar to that of eastern Canada in spite of the challenge of a very rapidly growing population (Dominon Bureau of Statistics 1921, Tables 10, 28-32).

decreased the likelihood that potential employers would have known potential employees. This may have made observable characteristics (such as ethnic origin, religion, or age) more important in hiring decisions. On the other hand, as employers became more used to a wider range of people seeking work in a tighter labour market towards 1911, there may have been greater willingness to hire across traditional ethnic or denominational lines.

Two additional topics that we have only begun to address in this paper are of particular importance and likely to receive attention in coming years. The availability of multiple census cross-sections now makes possible a complete analysis of earnings and employment differences between anglophones and francophones in the early 20th century. Understanding the disadvantaged labour market position of francophones throughout the twentieth century continues to be one of the most important challenges for historical and economic researchers in Canada. Our preliminary review of the new census samples points to the importance of a relatively slow francophone improvement in education achievements and relatively weak mobility within Canada. A more comprehensive analysis is needed to confirm or reject these observations arising from our preliminary analysis.

Finally, we are now able to see clearly that the dominant narrative of the Canadian economy in this period requires some nuancing if not outright revision. It is true that western Canada expanded enormously and that the national economy accelerated robustly (Skelton 1914; Urquhart 1986; Inwood and Stengos 1991). The importance of this macro-dynamic, of course, should not distract from equally dramatic changes occurring within individual industries and regions, even in eastern Canada (Drummond 1987). We are now in a position to extend this debate to the labour market. Preliminary analysis in this paper suggests that the extensive growth of the labour market after 1900 was

accompanied by a number of complex changes associated with intensification, human capital development and skill-biased technological change. Further research using individual-level evidence is needed to develop a new meta-narrative in which we recognize more clearly both extensive and intensive changes in the labour market and the importance of their interaction for the life outcomes of those Canadians who experienced the transformational decades 1891-1911.

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Table 1:

Distribution (%) by Province of the Male Labour Force 1891- 1911

	British Columbia	Northwest	Manitoba	Ontario	Quebec	Maritimes
1891						
All	3	2	4	46	28	18
O-born, A	1	1	4	92	1	0.1
Q-born, Fr	0.2	0.1	1	5	93	0.3
F-born	10	4	8	61	12	7
1901						
All	5	4	5	42	28	16
O-born, A	2	2	6	88	1	0.1
O-born, A, 21-25 yrs	2	3	7	87	1	0.2
O-born, A, 26-30 yrs	3	3	7	86	1	0.1
O-born, A, 31-35 yrs	3	3	8	84	1	0.3
Q-born, Fr	0.2	0.5	1	5	93	0.5
F-born	17	12	11	44	12	5
F-born, arrived 1891-1901, 21-30 yrs	31	21	16	18	11	3
1911						
All	9	14	7	34	24	11
O-born, A	4	11	5	79	1	0.1
O-born, A, 31-35 yrs	5	15	7	72	1	0.1
O-born, A, 36-40 yrs	5	12	7	75	1	0.2
O-born, A, 41-45 yrs	5	10	6	78	1	0.1
Q-born, Fr	0.1	1	0.4	3	95	0.3
F-born	20	28	12	29	8	2
F-born, arrived 1891-1901, 31-40 yrs	31	24	12	21	11	2

O-born - Ontario-born; Q-born - Quebec-born; F-born - Foreign-born
A: Anglophones; Fr: francophones; Yrs: years

Source: Canada, Census, Samples 1891, 1901 and 1911. Results for 1891 are calculated using sample weights.

Table 2:
Occupational Distribution (%) 1891, 1901, 1911

	Ontario-born Anglophone			Quebec-born francophone		
	1891	1901	1911	1891	1901	1911
Proprietor/professional	8	8	10	7	7	8
Clerical	6	7	9	3	4	5
Craft	12	11	13	12	11	14
Operative	6	8	7	7	9	7
Service	1	2	2	2	2	2
Farm	41	37	37	40	36	34
Labour	9	16	11	13	19	18
No occupation category	18	10	12	15	12	13
N	49073	27984	33811	22536	18072	21506

Source: Canada, Census, Samples 1891, 1901 and 1911. Results for 1891 are calculated using sample weights.

Table 3:
Male Nominal Earnings by Occupation Group, 1901 and 1911

	1901			1911		
	Mean (sd)	median	N (% with earnings	Mean (sd)	median	N (% with earnings
Proprietor/professional	864 (872)	600	3121 (50)	1185 (1020)	960	4731 (54)
Clerical	542 (378)	480	3953 (85)	785 (610)	660	6251 (81)
Craft	483 (318)	450	7452 (83)	723 (405)	685	11393 (80)
Operative	423 (325)	375	6047 (80)	627 (430)	600	6556 (82)
Service	366 (279)	300	1584 (75)	577 (364)	520	2451 (80)
Farm	216 (277)	150	3225 (12)	378 (389)	300	6614 (19)
Labour	276 (183)	250	12619 (83)	469 (258)	450	15497 (80)
ALL	414 (408)	320	38610	640 (541)	533	55717

Note: standard errors in parentheses.

Table 4:
Changes in Earnings Between 1901 and 1911, Selected Occupation Categories

	Mean ratio, 1911/1901	Median ratio, 1911/1901	CV, 1901	CV, 1911
Clerical	1.45	1.38	0.79	0.92
Craft	1.50	1.52	0.71	0.59
Operative	1.48	1.60	0.87	0.72
Labour	1.70	1.80	0.73	0.57

Table 5:
Male earnings for urban non-farm workers, by region, 1901 and 1911

	Nominal	Real (1)	Real (2)	N	Nominal	Real (1)	Real (2)	N
	1901				1911			
British Columbia	679 (602)	485 (430)	561 (498)	1276	797 (548)	429 (295)	420 (289)	3109
Northwest	549 (676)	392 (483)	422 (520)	253	841 (633)	584 (440)	470 (354)	3309
Manitoba	694 (733)	574 (606)	547 (577)	699	921 (835)	606 (550)	580 (526)	2645
Ontario	469 (365)	469 (365)	469 (365)	8916	680 (578)	482 (410)	511 (434)	15244
Quebec	519 (553)	480 (512)	489 (522)	6465	671 (560)	460 (383)	516 (431)	10069
Maritimes	434 (382)	391 (344)	443 (389)	2393	561 (390)	395 (274)	442 (307)	3242
CANADA	503 (477)	467 (433)	480 (444)	20002	708 (591)	482 (403)	500 (416)	37618

Note: standard errors in parentheses.

Table 6:
Relative Regional Earnings (Ontario=100), 1901 and 1911, Urban Non-Farm Workers

	Nominal	Real (1)	Real (2)	Nominal	Real (1)	Real (2)
	1901			1911		
British Columbia	145	103	120	117	89	82
Northwest	117	84	90	124	121	92
Manitoba	148	122	117	135	126	114
Ontario	100	100	100	100	100	100
Quebec	111	102	104	99	95	101
Maritimes	93	83	94	83	82	86

Table 7:
Regional Skill Premia, 1901 and 1911

	Nominal earnings, clerical	Nominal earnings, operative	Ratio clerical/ operative	Nominal earnings, clerical	Nominal earnings, operative	Ratio clerical/ operative
	1901			1911		
British Columbia	807	570	1.42	1000	769	1.30
Northwest	511	333	1.53	959	734	1.31
Manitoba	738	599	1.23	960	752	1.28
Ontario	532	410	1.30	744	601	1.24
Quebec	569	446	1.28	738	623	1.18
Maritimes	485	386	1.26	611	520	1.18

Table 8:
Decomposing Earnings Growth, Ontario-Born Anglophones, 1901-1911

	Born 1881-1885	Born 1876-1880	Born 1871-1875
Log earnings 1901	5.38	5.91	6.11
Log earnings 1911	6.18	6.26	6.28
Difference	**.80**	**.35**	**.17**
Contribution of:			
Change in region	.05	.03	.02
Change in sector	.03	.05	.04
Total change in characteristics	**.09**	**.08**	**.06**
Change in regional return	-.001	-.001	.01
Change in sector return	.31	.12	.04
Total change in returns	**.31**	**.12**	**.05**
Change in constant (secular change in real wage for age group)	**.41**	**.15**	**.06**

Note: Calculated from regression results in Table A4

Table 9:
Decomposing Earnings Growth, Quebec-born Francophones, 1901-1911

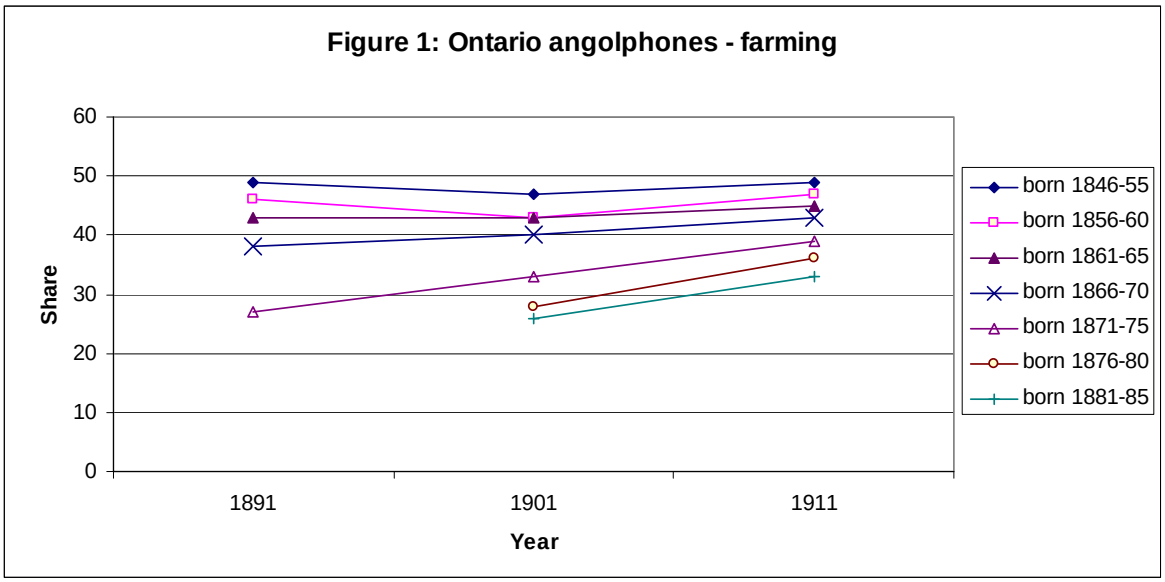
	Born 1881-1885	Born 1876-1880	Born 1871-1875
Log earnings 1901	5.16	5.72	5.99
Log earnings 1911	5.99	6.04	6.04
Difference	**.78**	**.30**	**.05**
Contribution of:			
Change in region	-.004	.002	.01
Change in sector	.01	.0002	-.03
Total change in characteristics	**.004**	**.002**	**-.02**
Change in regional return	-.004	-.001	-.02
Change in sector return	.33	.16	.08
Total change in returns	**.32**	**.16**	**.06**
Change in constant (secular change in real wage for age group)	**.45**	**.16**	**.02**

Note: Calculated from regression results in Table A5

Table 10:
Decomposing Earnings Growth, Foreign-born, 1901-1911

	Born 1876-1880	Born 1871-1875	Born 1866-1870
Log earnings 1901	5.64	5.77	5.83
Log earnings 1911	6.12	6.03	6.05
Difference	**.48**	**.26**	**.22**
Contribution of:			
Change in region	.05	-.01	.03
Change in sector	.05	.01	.01
Total change in characteristics	**.10**	**-.003**	**.04**
Change in regional return	.06	.05	.08
Change in sector return	.10	.12	.14
Total change in returns	**.16**	**.17**	**.22**
Change in constant (secular change in real wage for age group)	**.23**	**.09**	**-.04**

Note: Calculated from regression results in Table A6



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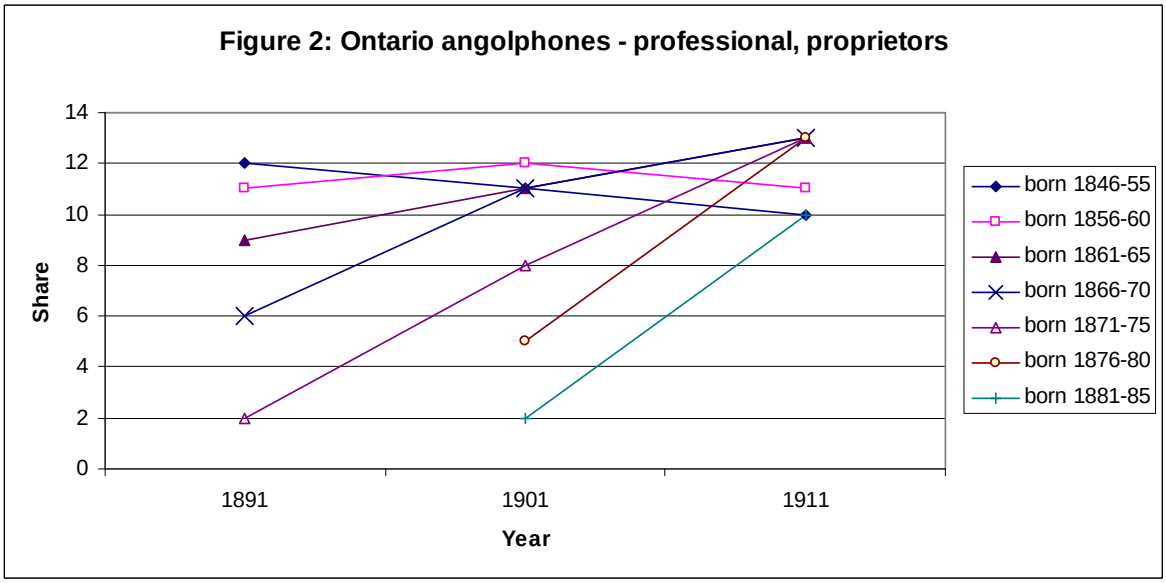

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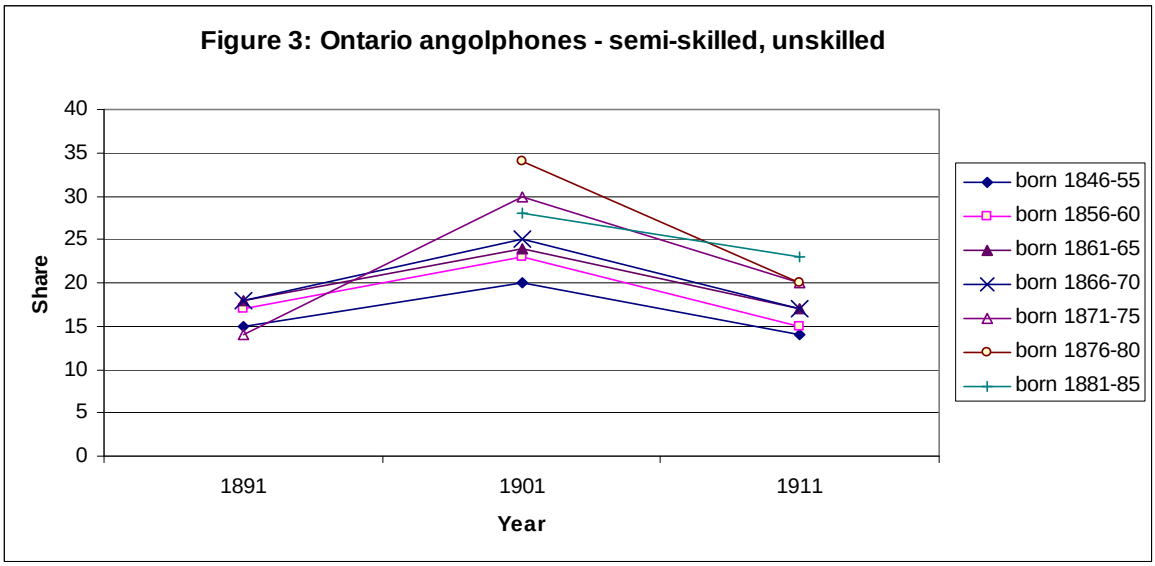

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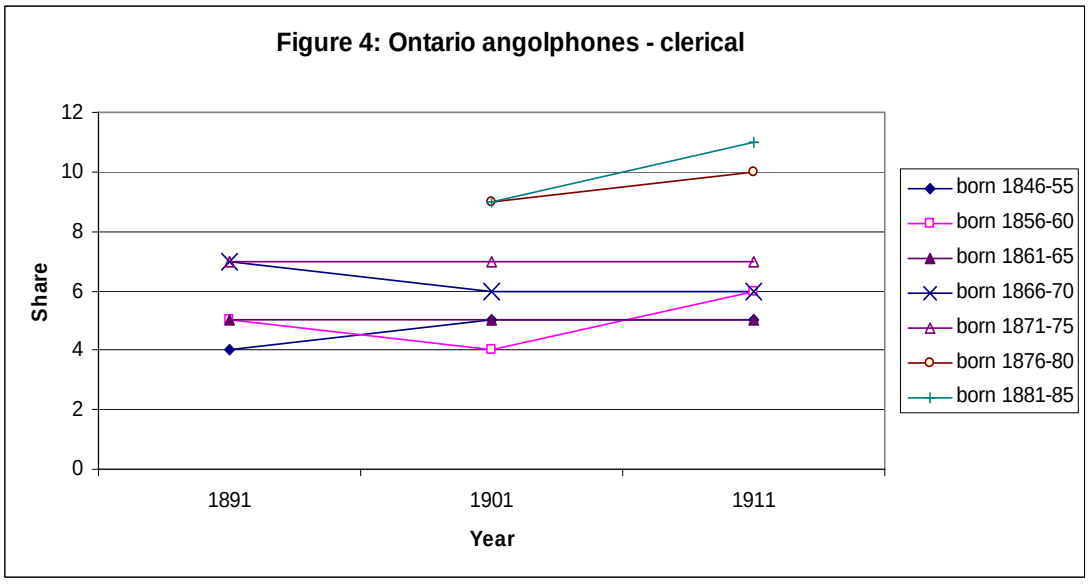

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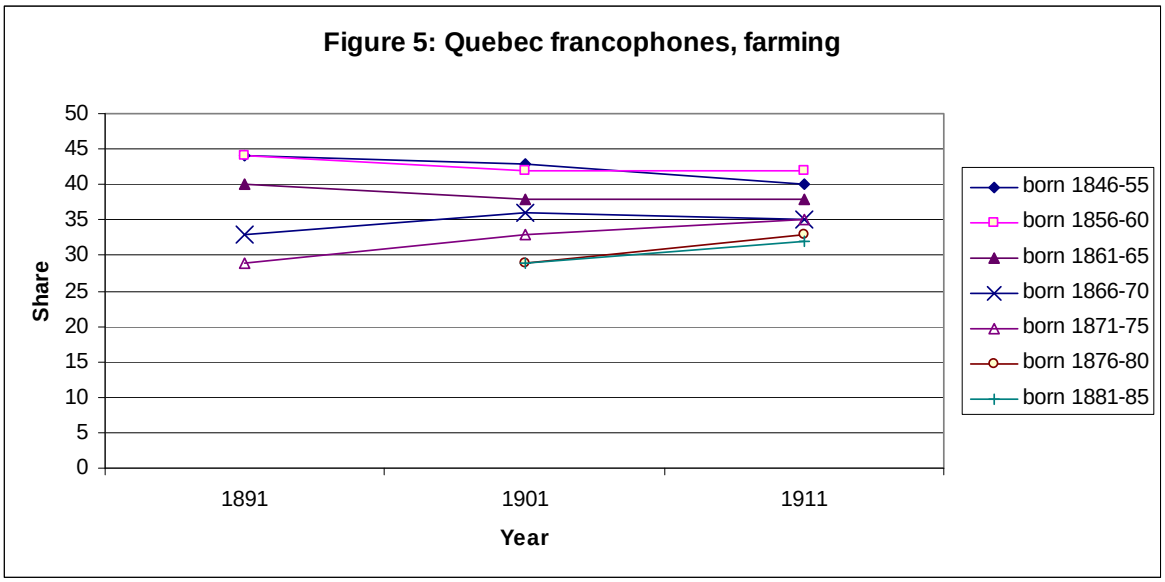

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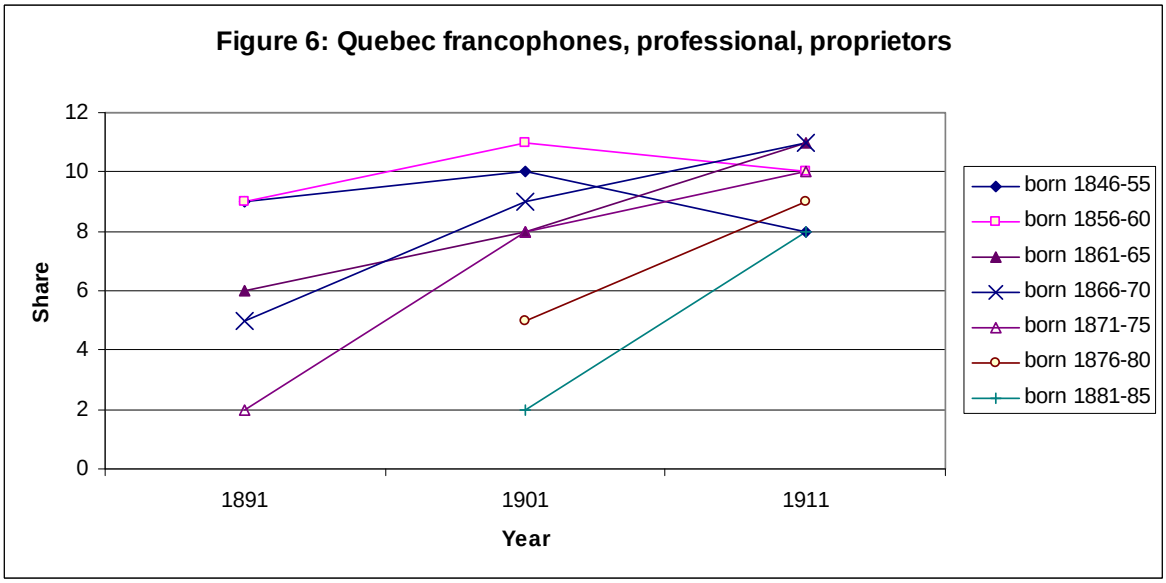

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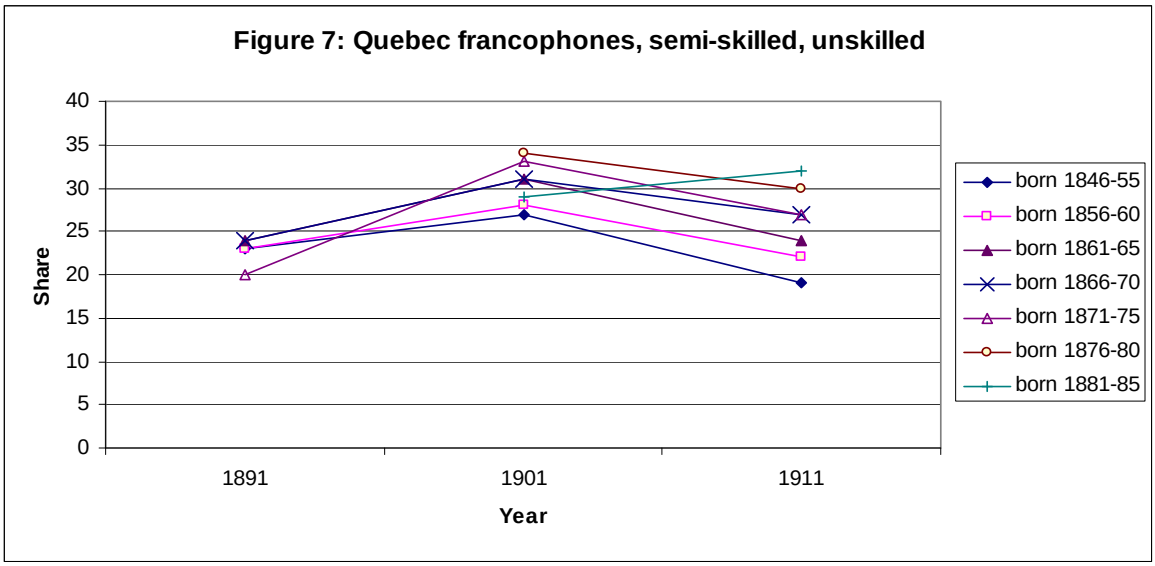

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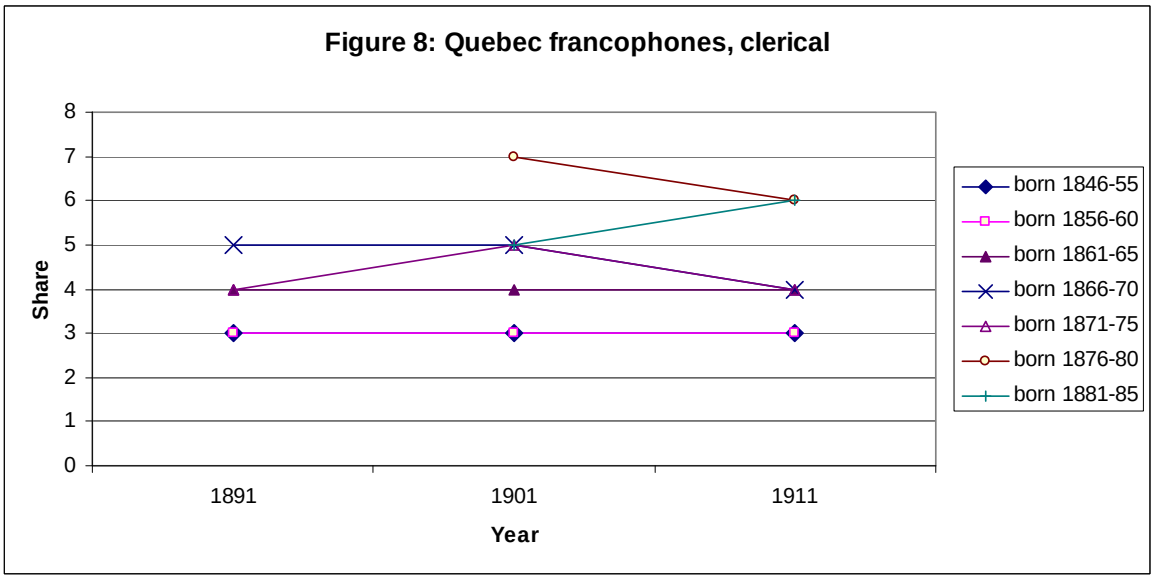

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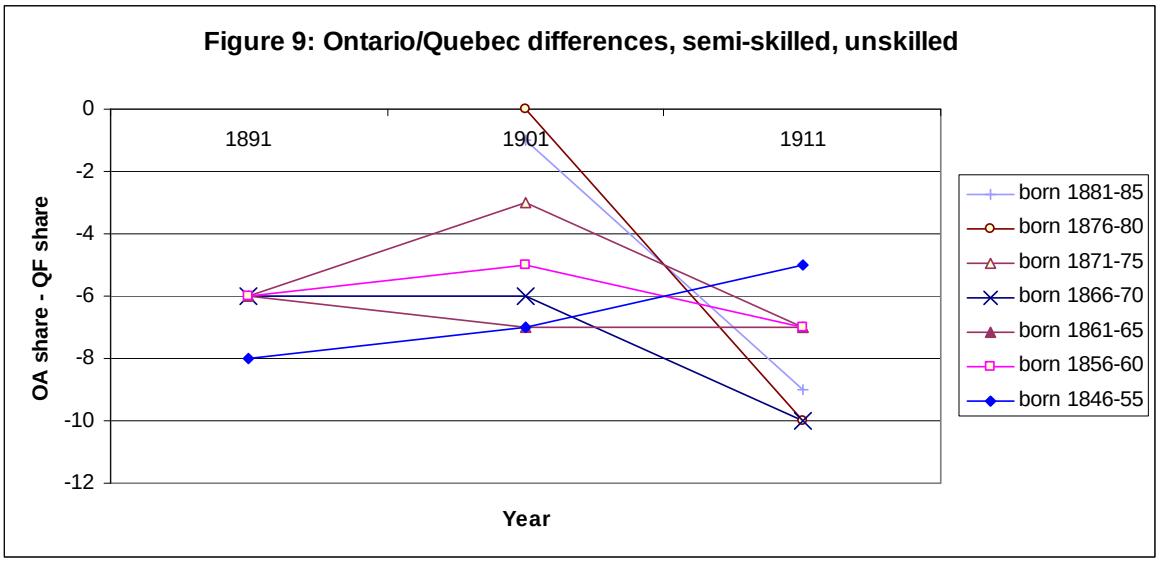

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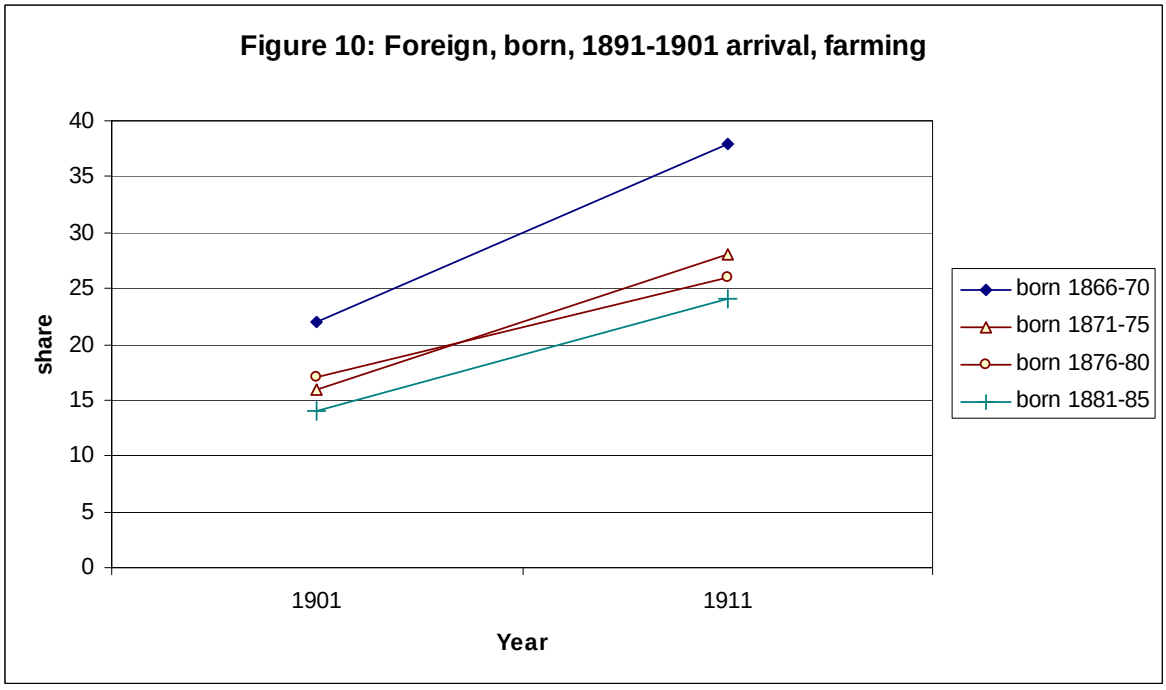

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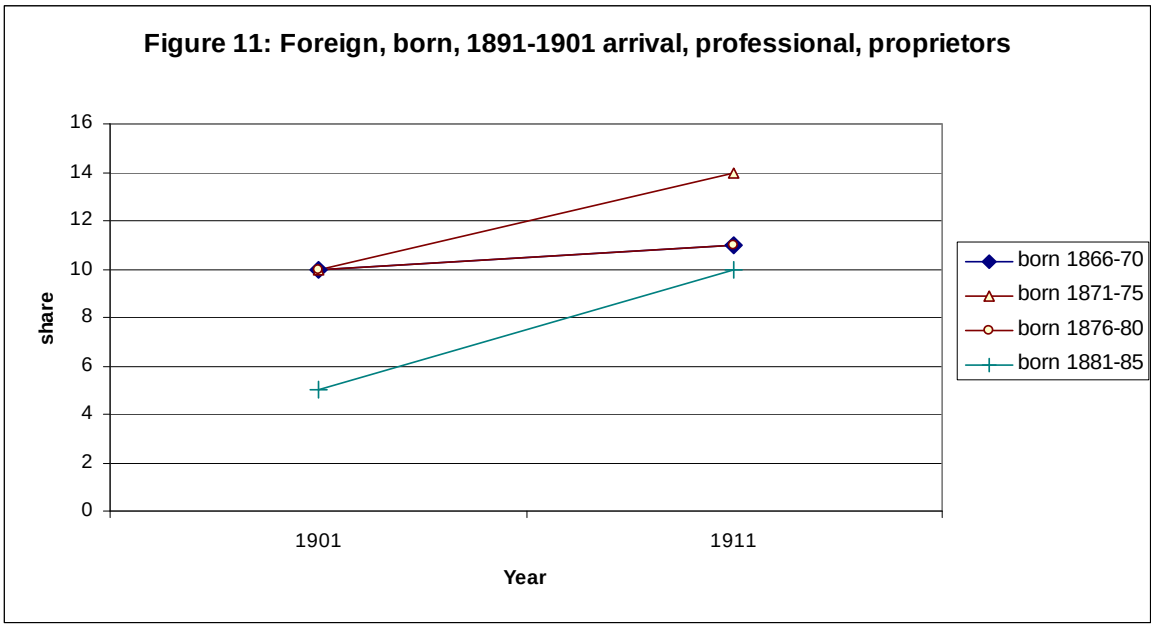

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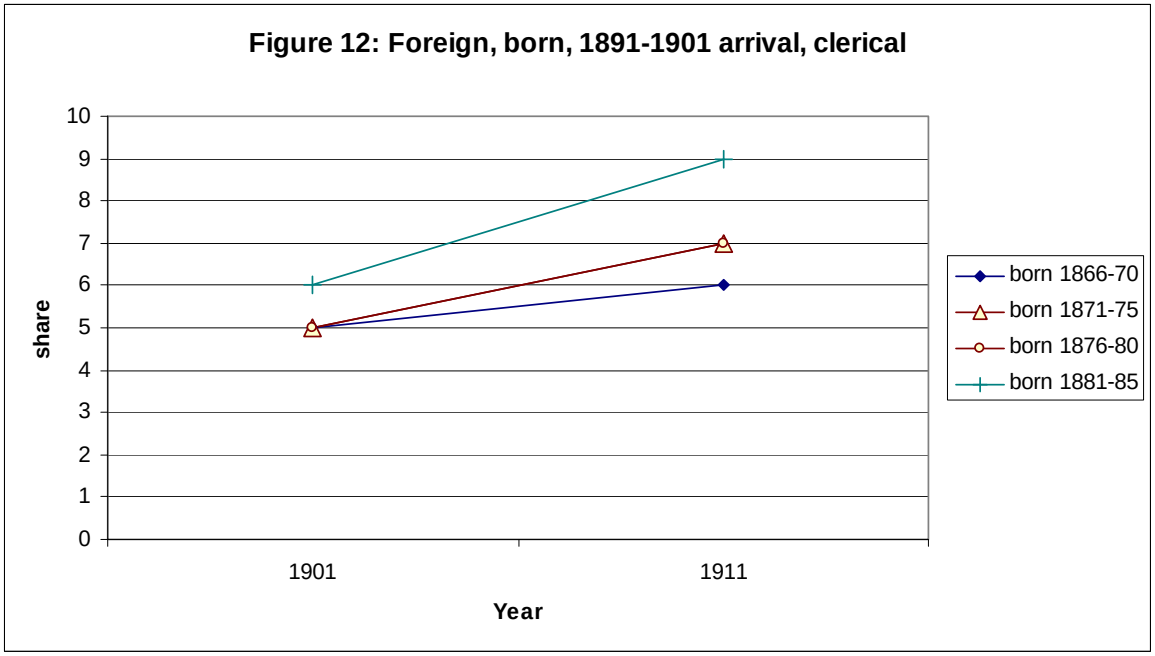

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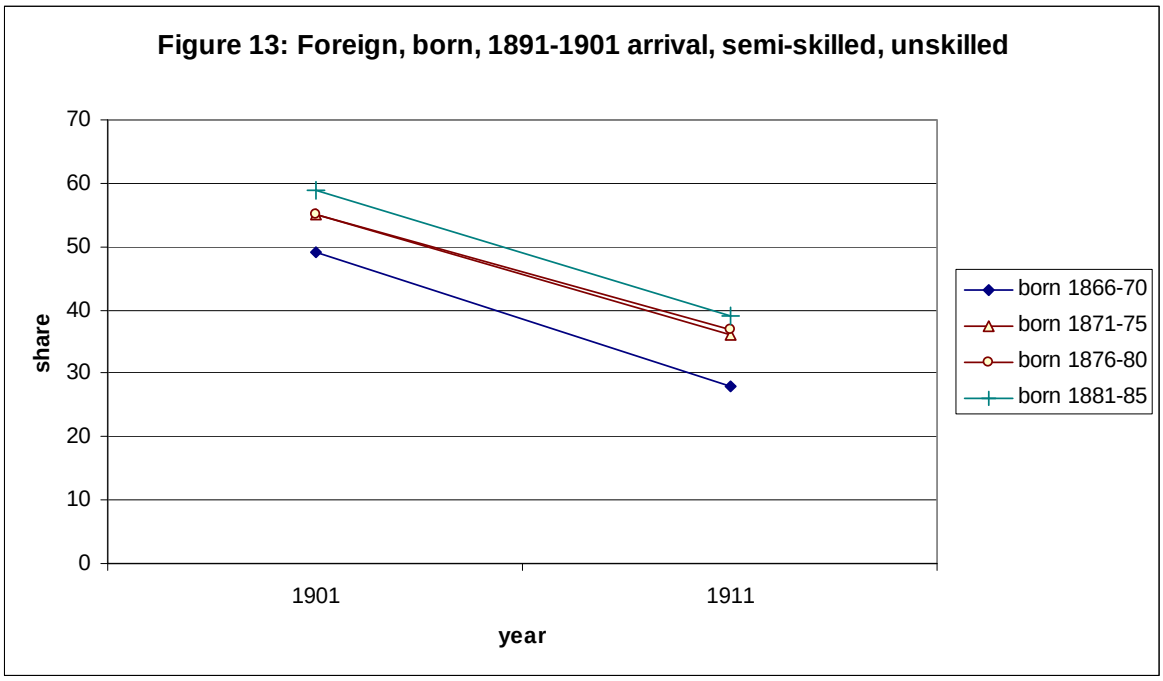

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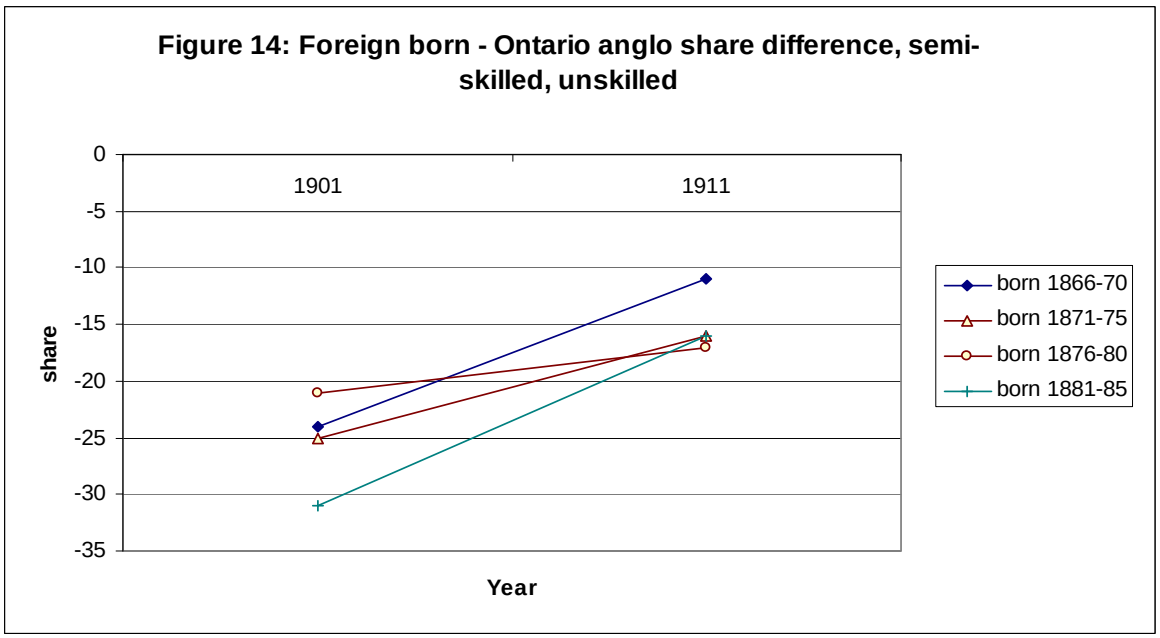
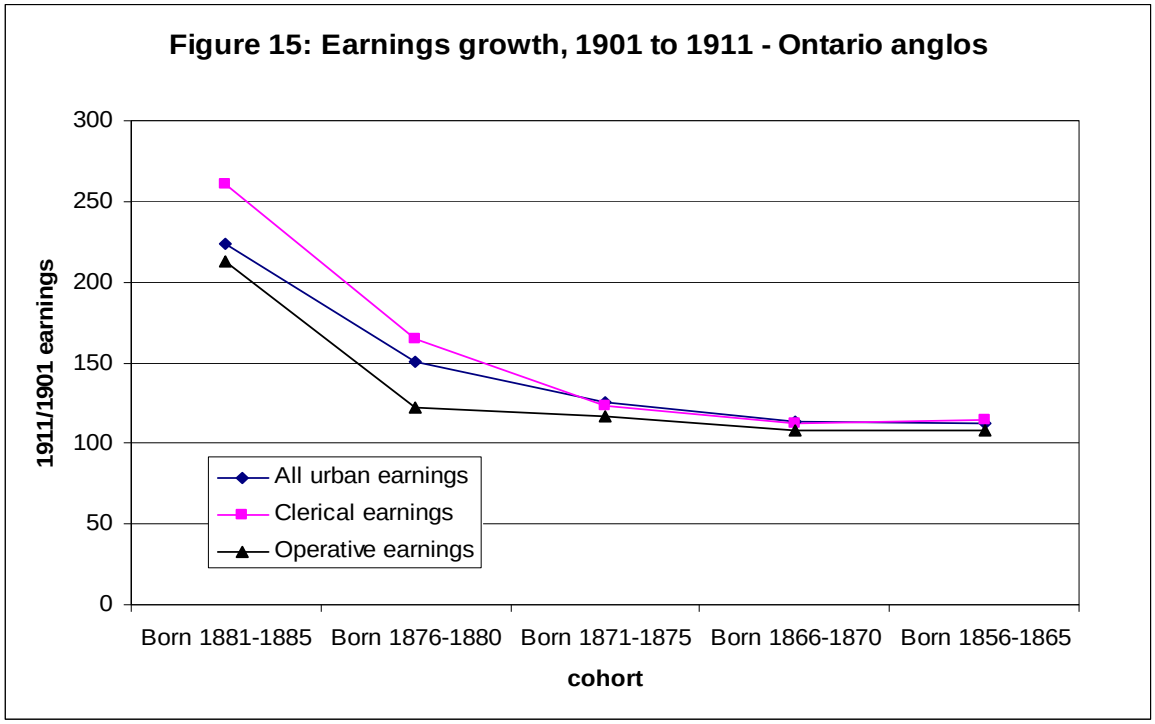


Source: Calculated from Tables A1 and A2



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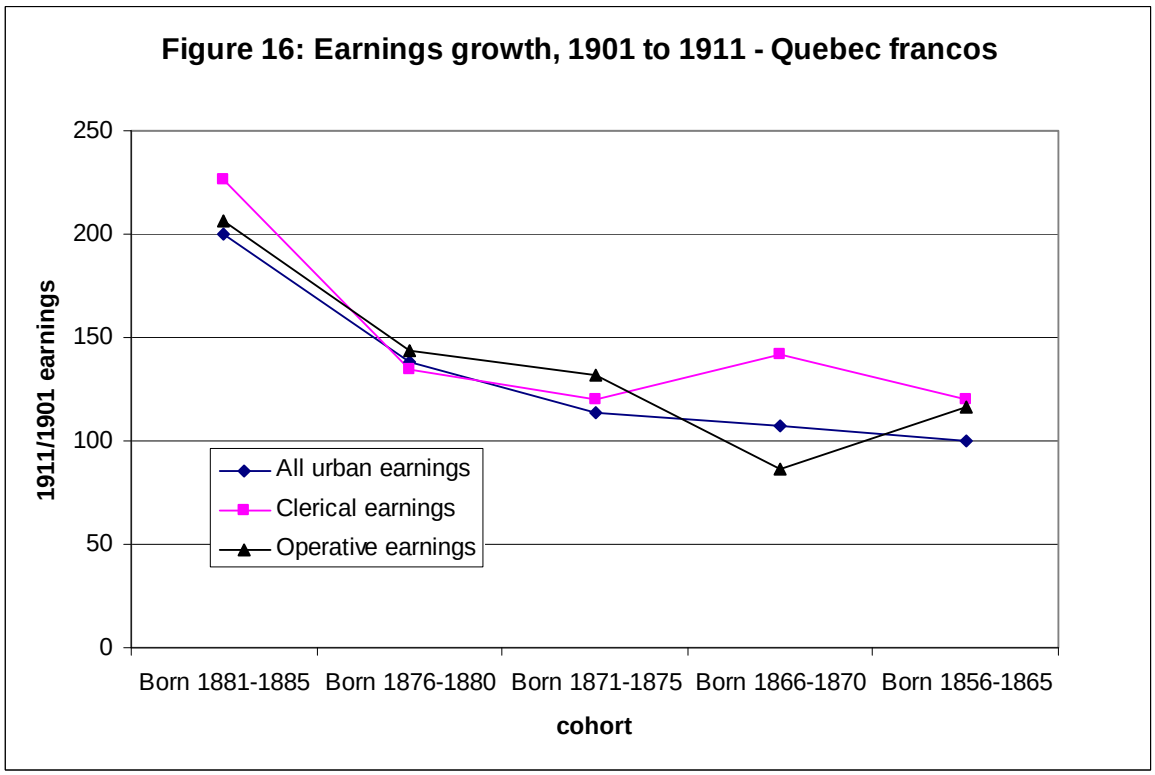

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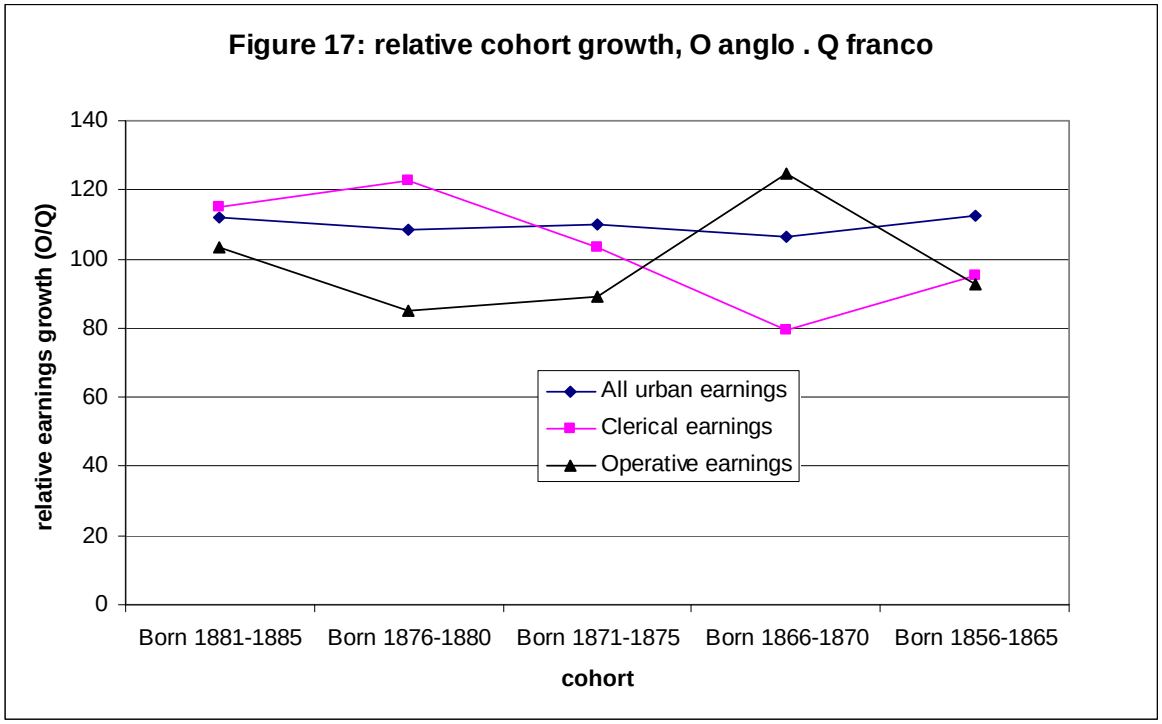

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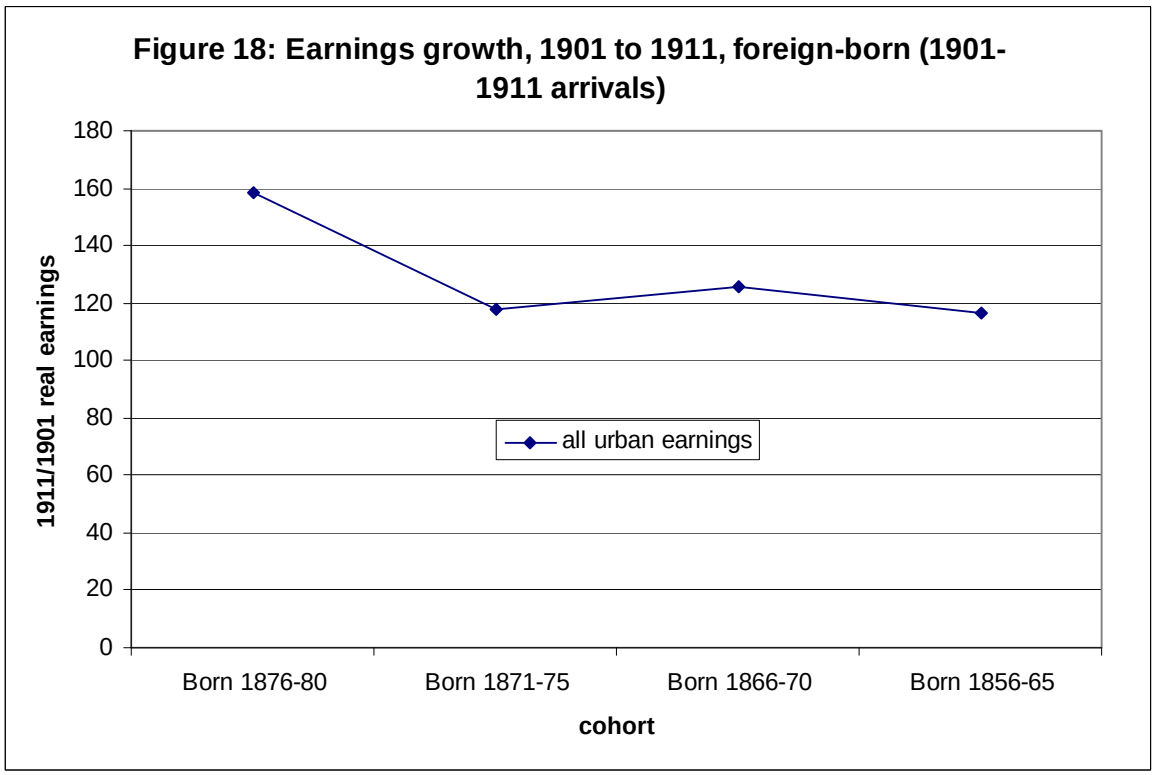

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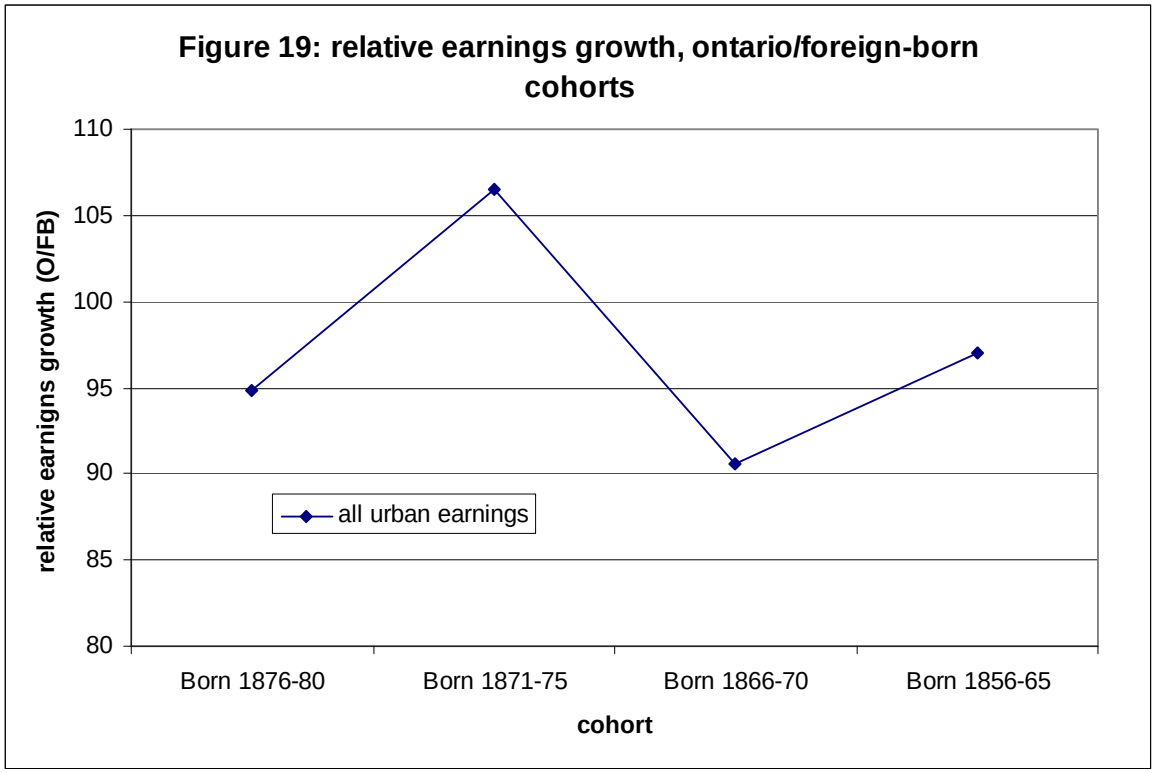

Source: Calculated from Table A3

Table A1:
Occupational Distribution by Age Cohort, 1891-1911, Native-born

		Ontario anglophones			Quebec francophones		
		1891	1901	1911	1891	1901	1911
born 1846-1855 [N 1891 = 7904] [N 1901 = 3326] [N 1911 = 2914]	Prop/prof	12	11	10	9	10	8
	Clerical	4	5	5	3	3	3
	Craft	14	13	11	15	12	12
	Farm	49	47	49	44	43	40
	Unskilled/semi-skilled	15	20	14	23	27	19
	No category	5	4	11	6	5	17
born 1856-1860 [N 1891 = 6131] [N 1901 = 2478] [N 1911 = 2455]	Prop/prof	11	12	11	9	11	10
	Clerical	5	4	6	3	3	3
	Craft	15	14	13	14	13	14
	Farm	46	43	47	44	42	42
	Unskilled/semi-skilled	17	23	15	23	28	22
	No category	7	3	8	6	3	10
born 1861-1865 [N 1891 = 8531] [N 1901 = 3196] [N 1911 = 2864]	Prop/prof	9	11	13	6	8	11
	Clerical	5	5	5	4	4	4
	Craft	14	13	13	14	15	15
	Farm	43	43	45	40	38	38
	Unskilled/semi-skilled	18	34	17	24	31	24
	No category	11	4	6	10	5	8
Born 1866-1870 [N 1891 = 10039] [N 1901 = 3327] [N 1911 = 3103]	Prop/prof	6	11	13	5	9	11
	Clerical	7	6	6	5	5	4
	Craft	12	13	15	12	14	16
	Farm	38	40	43	33	36	35
	Unskilled/semi-skilled	18	25	17	24	31	27
	No category	20	4	6	20	7	7
Born 1871-1875 [N 1891 = 10884] [N 1901 = 4036] [N 1911 = 3568]	Prop/prof	2	8	13	2	8	10
	Clerical	7	7	7	4	5	4
	Craft	8	13	15	6	13	18
	Farm	27	33	39	29	33	35
	Unskilled/semi-skilled	14	30	20	20	33	27
	No category	41	8	7	39	8	6
Born 1876-1880 [N 1901 = 4725] [N 1911 = 4160]	Prop/prof		5	13		5	9
	Clerical		9	10		7	6
	Craft		10	14		10	18
	Farm		28	36		29	33
	Unskilled/semi-skilled		34	20		34	30
	No category		13	7		15	6

Born 1881-1885 [N 1901 = 5081] [N 1911 = 4679]	Prop/prof		2	10		2	8
	Clerical		9	11		5	6
	Craft		6	15		5	15
	Farm		26	33		29	32
	Unskilled/semi-skilled		28	23		29	32
	No category		28	8		31	7
Born 1886-1890 [N 1911 = 5198]	Prop/prof			6			6
	Clerical			12			6
	Craft			12			13
	Farm			32			29
	Unskilled/semi-skilled			25			32
	No category			12			13
Born 1891-1895 [N 1911 = 4870]	Prop/prof			2			3
	Clerical			12			6
	Craft			7			7
	Farm			28			30
	Unskilled/semi-skilled			19			26
	No category			32			29

Source: Canada, Census, Samples 1891, 1901 and 1911. Results for 1891 are calculated using sample weights.

Table A2:
Occupational Distribution by Age Cohort, Foreign-born, 1891-1901 Arrivals

		1901	1911
born 1861-1865 [N 1901 = 547] [N 1911 = 442]	Prop/prof	10	11
	Clerical	5	6
	Craft	11	12
	Farm	22	38
	Unskilled/semi-skilled	49	28
	No category	4	5
Born 1866-1870 [N 1901 = 694] [N 1911 = 603]	Prop/prof	10	14
	Clerical	5	7
	Craft	11	11
	Farm	16	28
	Unskilled/semi-skilled	55	36
	No category	4	5
Born 1871-1875 [N 1901 = 969] [N 1911 = 785]	Prop/prof	10	11
	Clerical	5	7
	Craft	9	12
	Farm	17	26
	Unskilled/semi-skilled	55	37
	No category	4	6
Born 1876-1880 [N 1901 = 797] [N 1911 = 856]	Prop/prof	5	10
	Clerical	6	9
	Craft	8	13
	Farm	14	24
	Unskilled/semi-skilled	59	39
	No category	9	5

Source: Canada, Census, Samples 1891, 1901 and 1911

Table A3:
Age and Earnings by Cohort, 1901 and 1911

		Ontario-born anglophones		Quebec-born francophones		Foreign born, arriving 1891-1901	
		1901	1911	1901	1911	1901	1911
Born 1856-1865	All wage obs.	597 (440) [1238]	673 (702) [1327]	519 (407) [958]	520 (509) [856]	482 (440) [261]	560 (683) [227]
	Clerical	751 (346) [176]	859 (908) [182]	657 (393) [84]	787 (911) [56]		
	Operative	549 (419) [187]	593 (869) [128]	473 (351) [152]	551 (713) [86]		
Born 1866-1870	All wage obs.	581 (463) [779]	660 (634) [900]	516 (418) [568]	551 (690) [521]	464 (385) [196]	582 (729) [225]
	Clerical	678 (303) [134]	763 (591) [138]	652 (302) [70]	926 (1619) [31]		
	Operative	477 (165) [149]	513 (467) [86]	511 (289) [107]	440 (240) [64]		
Born 1871-1875	All wage obs.	507 (286) [1128]	635 (497) [1085]	456 (289) [677]	520 (480) [730]	426 (339) [308]	501 (366) [297]
	Clerical	599 (244) [216]	740 (607) [165]	553 (252) [94]	662 (647) [62]		
	Operative	464 (194) [225]	542 (367) [145]	417 (159) [142]	548 (716) [101]		
Born 1876-1880	All wage obs.	407 (196) [1320]	611 (427) [1416]	356 (177) [818]	492 (338) [824]	358 (237) [263]	567 {659) [348]
	Clerical	448 (180) [322]	738 (498) [302]	423 (197) [137]	569 (277) [100]		
	Operative	398 (220) [313]	486 (198) [212]	343 (135) [181]	492 (254) [105]		
Born 1881-1885	All wage obs.	248 (129) [1184]	557 (359) [1759]	221 (134) [738]	441 (213) [1065]		
	Clerical	251 (119) [334]	655 (464) [405]	228 (122) [124]	516 (319) [139]		

	Operative	232 (121) [322]	494 (226) [274]	209 (131) [211]	431 (167) [169]		
Born 1886-1890	All wage obs.		453 (301) [1909]		382 (199) [1170]		
	Clerical		464 (237) [486]		446 (342) [116]		
	Operative		416 (162) [361]		387 (157) [178]		
Born 1891-1895	All wage obs.		282 (151) [1358]		252 (174) [995]		
	Clerical		282 (143) [485]		233 (117) [180]		
	Operative		255 (130) [259]		230 (134) [188]		

Note: Standard error in parentheses, number of observations in square brackets.

Table A4:
Earnings Regressions for Ontario Anglophones

	Born 1881-85		Born 1876-80		Born 1871-75	
	1901	1911	1901	1911	1901	1911
Professional / proprietor	.039 (0.41)	.657 (14.36)	.357 (6.28)	.815 (17.17)	.627 (12.19)	.827 (16.16)
Clerical	.016 (0.32)	.461 (11.62)	.357 (9.19)	.568 (12.80)	.493 (11.85)	.529 (9.93)
Craft	.055 (1.05)	.317 (8.35)	.319 (8.09)	.388 (9.31)	.355 (9.34)	.346 (7.62)
Operative	-.084 (-1.71)	.297 (6.90)	.237 (6.08)	.307 (6.40)	.261 (6.33)	.335 (6.10)
Service	-.084 (-0.83)	.184 (2.88)	.218 (3.44)	.315 (4.02)	.123 (1.77)	.130 (1.65)
British Columbia	.225 (1.71)	.088 (1.50)	.168 (2.52)	.003 (0.04)	.261 (4.67)	.013 (0.18)
Northwest	.303 (1.51)	.352 (8.99)	-.539 (-3.74)	.295 (6.58)	-.380 (-3.13)	.188 (3.31)
Manitoba	.191 (1.72)	.255 (5.46)	.242 (4.03)	.237 (4.11)	.139 (2.35)	.319 (5.38)
Quebec	.116 (0.79)	.105 (1.12)	.247 (2.93)	.162 (1.34)	.210 (2.57)	.330 (2.25)
Maritimes	.241 (0.60)	.215 (0.95)	.194 (0.43)	1.11 (2.18)	.156 (0.36)	.986 (1.97)
Constant	5.37 (142.04)	5.78 (188.10)	5.64 (189.74)	5.80 (173.90)	5.78 (195.62)	5.84 (160.39)
R-square	.02	.18	.10	.24	.20	.27
N	1184	1759	1320	1416	1128	1085

Note: T-statistics in parentheses.

Table A5:
Earnings Regressions for Quebec-born Francophones

	Born 1881-85		Born 1876-80		Born 1871-75	
	1901	1911	1901	1911	1901	1911
Professional / proprietor	-.088 (-0.82)	.455 (8.41)	.109 (1.30)	.553 (7.99)	.452 (6.61)	.641 (8.05)
Clerical	-.023 (-0.30)	.366 (7.80)	.359 (5.14)	.476 (6.98)	.481 (7.24)	.533 (5.70)
Craft	-.128 (-1.70)	.383 (10.23)	.143 (2.23)	.367 (7.18)	.278 (5.06)	.339 (5.48)
Operative	-.162 (-2.49)	.245 (5.56)	.129 (2.02)	.330 (4.93)	.185 (3.19)	.328 (4.20)
Service	-.290 (-2.44)	.169 (2.38)	-.087 (-0.78)	-.027 (-0.27)	.115 (1.02)	.235 (2.10)
British Columbia	-.335 (-0.70)	.073 (0.16)	0.356 (0.56)	---	.225 (0.76)	---
Northwest	---	-.183 (-0.97)	-.633 (-1.01)	.212 (0.66)	1.47 (2.85)	.293 (1.02)
Manitoba	1.17 (2.45)	.258 (0.79)	-.264 (-0.42)	.422 (1.30)	.192 (0.74)	.354 (0.95)
Ontario	.111 (1.02)	.060 (0.74)	.227 (2.46)	.021 (0.17)	.005 (0.51)	-.400 (-2.68)
Maritimes	---	-.704 (-2.16)	.292 (0.46)	-.164 (-0.51)	-.116 (-0.45)	.289 (0.45)
Constant	5.29 (110.40)	5.74 (217.88)	5.60 (125.05)	5.76 (147.91)	5.74 (142.73)	5.76 (128.86)
R-square	.03	13	.04	.12	.12	.11
N	738	1065	818	824	677	730

Note: T-statistics in parentheses.

Table A6:
Earnings Regressions for Foreign-born

	Born 1876-80		Born 1871-75		Born 1866-1870	
	1901	1911	1901	1911	1901	1911
Professional / proprietor	.382 (2.01)	.912 (9.61)	.396 (2.89)	.696 (6.19)	.316 (1.45)	1.12 (8.22)
Clerical	.445 (2.62)	.404 (4.40)	.535 (3.28)	.610 (5.42)	.611 (2.72)	.537 (3.46)
Craft	.508 (3.13)	.398 (4.80)	.508 (3.67)	.380 (4.21)	.448 (2.64)	.436 (3.41)
Operative	.222 (1.67)	.374 (4.15)	.030 (0.26)	.337 (2.99)	.231 (1.42)	.302 (2.34)
Service	-.159 (-0.97)	.119 (1.09)	.142 (0.87)	.195 (1.66)	-.511 (-1.99)	.258 (1.55)
British Columbia	-.474 (-3.55)	-.362 (-4.76)	-.498 (-4.29)	-.106 (-1.23)	-.227 (-1.42)	-.375 (-3.33)
Northwest	-.756 (-3.35)	.083 (0.94)	-1.05 (-5.46)	.364 (3.07)	-1.28 (-5.70)	-.003 (-0.02)
Manitoba	-.254 (-1.25)	.153 (1.45)	-.593 (-3.51)	.007 (0.05)	-.435 (-2.00)	.206 (1.29)
Quebec	-.114 (-0.78)	-.015 (-0.18)	-.144 (-1.17)	.147 (1.49)	-.158 (-0.87)	-.111 (-0.87)
Maritimes	-.254 (-1.25)	-.320 (-1.93)	-.082 (-0.36)	-.106 (-0.57)	-.048 (-0.19)	-.353 (-1.61)
Constant	5.72 (47.27)	5.84 (80.85)	5.89 (50.78)	5.69 (71.03)	5.89 (38.53)	5.80 (54.73)
R-square	.17	.31	.21	.23	.24	.31
N	263	348	308	297	196	225

Note: T-statistics in parentheses.

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