

Basic Income Experiments in a Changing Labour Market

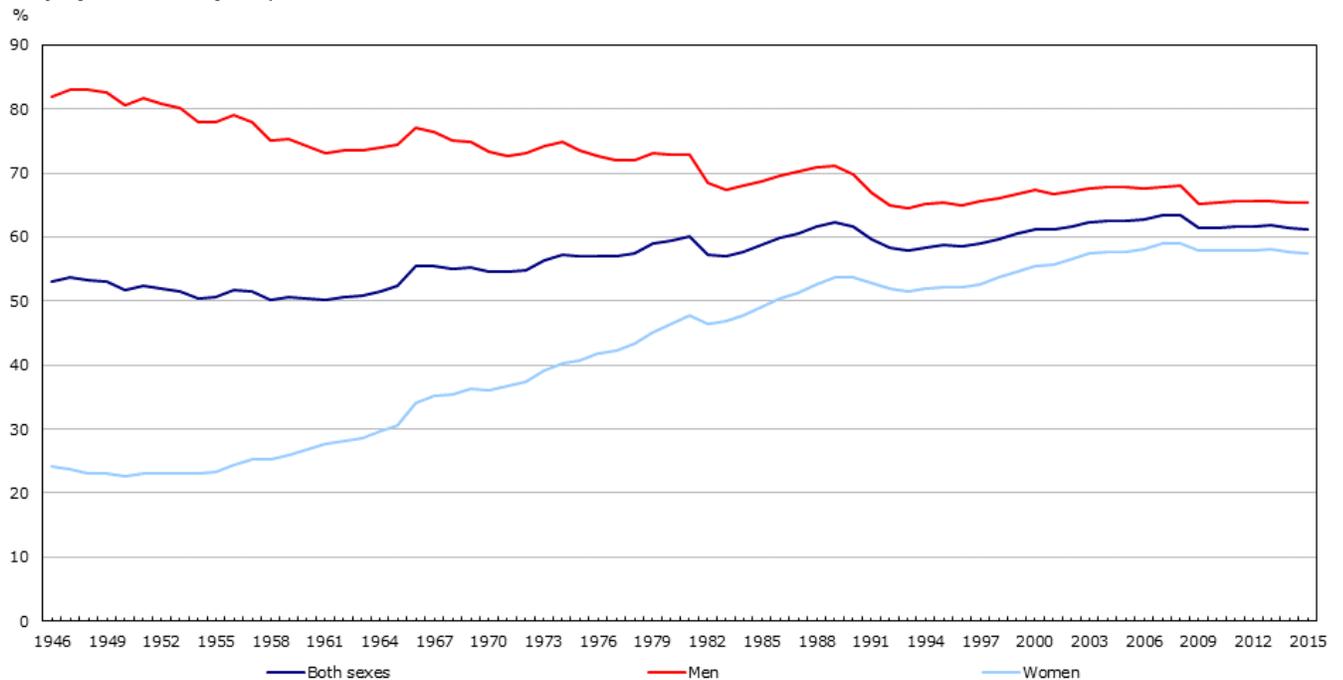
Wayne Simpson with assistance from Austin McWhirter

Draft: September, 2019

Renewed interest in basic income research and policy is often accompanied by concerns about the impact of economic and technological progress on the labour market and the future of employment. The most significant concerns are related to the rapid rate of displacement of longstanding occupations by technology, leading to either widespread unemployment or the relegation of displaced workers to low-paying and precarious jobs ill suited to their skill set.

The evidence of disappearing employment and concomitant rising unemployment has, well, not yet appeared. Indeed, Chart 3 below from the historical Labour Force Survey shows significant evidence of *steadily rising* employment rates in Canada, including the period from the advent of the NIT experiments in 1968 until 2015 when the total employment rate rose from roughly 55% to 61% as growth in female employment outstripped more modest declines in male employment. The employment rate for Canadians 15 years of age and older stands at 61.6% in 2018 and correspondingly at 61.8% for British Columbia. Given rising educational attainment and longer spells of education for young adults, this seems to be strong evidence that jobs *per se* are not as yet disappearing in Canada or B.C.

Chart 3
Employment rate by sex, 1946 to 2015



Notes: From 1946 to 1965, rates are based on the population aged 14 years and older. From 1966 to 2015, rates are based on the population aged 15 years and older. Newfoundland was included in the LFS in the fourth quarter of 1949.
Sources: Statistics Canada, Labour Force Survey, annual averages.

Source: Online at <https://www150.statcan.gc.ca/n1/pub/75-005-m/75-005-m2016001-eng.htm>

Although we have not witnessed declining employment and rising unemployment thus far, other labour market developments may be important. In particular, there is considerable international evidence of rising earnings and income inequality and, in particular, weak wage performance for less educated workers (Beach, 2014; Heisz, 2016). Autor (2019) has recently documented the U.S. case of falling real and relative wages of less-educated workers since 1980. He associates this pattern with occupational polarization, as the middle skill jobs of non-college workers have disappeared and been replaced by low skill jobs. Autor shows that the loss of middle skill jobs among non-college workers has been concentrated in urban areas where wages are higher.

These labour market trends merit consideration in the context of income maintenance and basic income policy and research going forward. The cost of any income support plan will depend on the extent to which workers, especially workers without postsecondary education, are left behind. Decisions about experimental site selection need to understand the changing labour markets in urban and rural areas, especially as these markets produce very different outcomes for less educated workers. And the incentives to participate in the labour market, often a feature of past experimentation, may be less important than incentives to accumulate human capital, an issue which has received only passing attention in basic income experimental design.

From this perspective what are the relevant labour market trends in Canada and in British Columbia since the end of the income maintenance experiments circa 1980? In this section we use the Census long form Public Use Master Files (PUMFs) from 1981 to 2016 to investigate changing employment trends. Following Autor, we pay particular attention to changing occupational patterns and skill requirements.

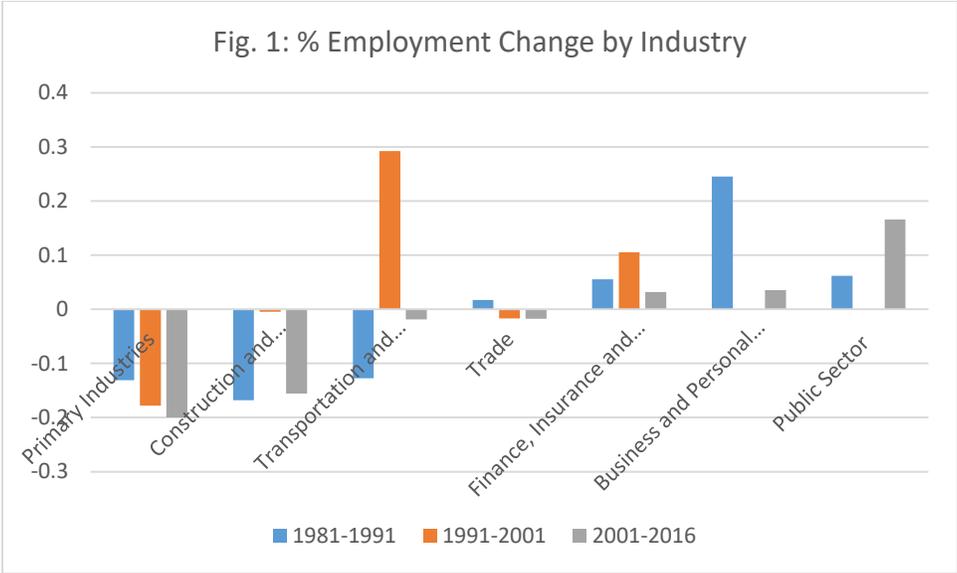
Labour Market Trends in Canada 1971-2016

Our analysis of labour market trends begins in 1971, both as a useful starting point after completion of the income maintenance experiments in the U.S. and Canada and as a practical decision on the data available. The Census long form PUMF was first issued in 1971, providing detailed information on a host of individual data including employment and its characteristics. The PUMFs allow us to examine occupational classifications and other data for the period since the beginning of the wave of experimentation in the 1970s to assess labour market developments that might affect the design of future basic income experimentation.

One of the best known and most dramatic changes in the labour market concerns the shift of employment opportunities from primary and secondary (manufacturing and construction) toward business, personal and public services, as indicated in Table 1 and Figure 1 for the period from 1981 to 2016.¹ While the share of retail and wholesale trade in employment has remained steady at 17%, finance, insurance and real estate (FIRE), business and personal services and public administration have

¹ The industrial classifications in the 1971 PUMF are not easily linked to subsequent PUMFs.

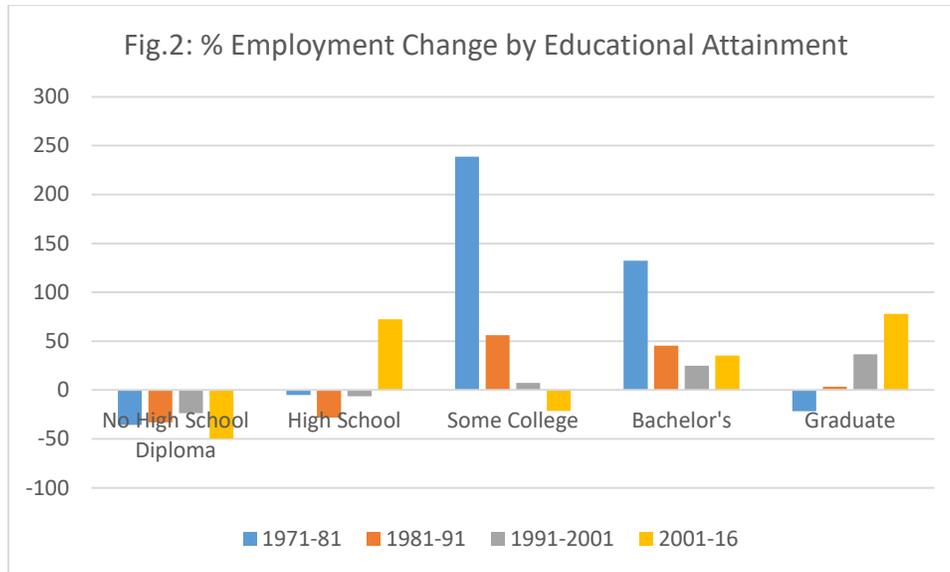
grown from 44% of classified employment² in 1981 to 55.1% in 2016 at the expense of primary industries, manufacturing and construction. This has undoubtedly changed the labour market landscape in terms of occupations, skill requirements, and earnings opportunities in the Canadian economy.



Source: Table 1

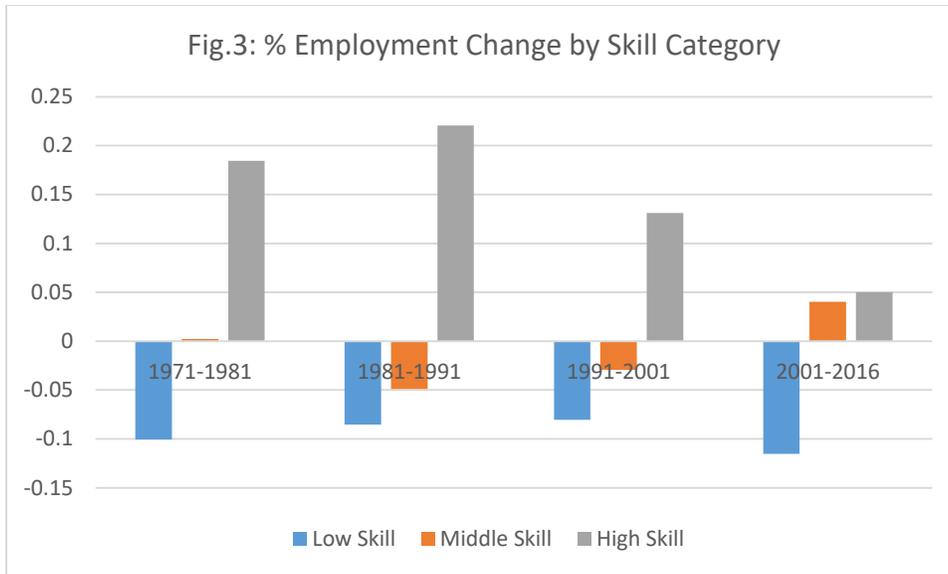
Another well known change on the supply side of the labour market has been improved education of workers, as shown in Table 2 and Figure 2. The proportion of workers without a high school diploma has steadily and quite sharply declined from 61% in 1971 to 10% in 2016, replaced by a steady increase in workers with at least a university degree, now more than one-quarter of all employed workers. Workers with at least “some college,” including those with a postsecondary diploma, increased sharply from 8% in 1971 to more than 40% in 1991 and still constitutes about one-third of all workers.

² About 45% of employment is unclassified across each PUMF from 1981 to 2016.



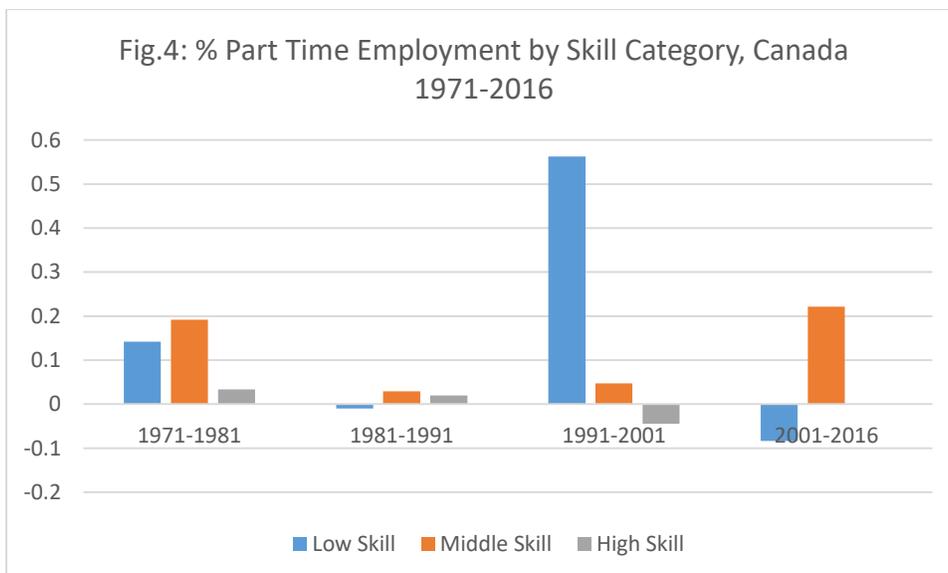
Source: Table 2

Autor (2019) used a measure of skill level based on occupational categories to characterize changes in the skill requirements of the U.S. labour force. The measure clusters occupations into three skill categories: low skill manual and service occupations; middle skill production, office and sales occupations; and high skill professional, technical and managerial occupations. He finds very little change in the proportion of low skill workers in the U.S. from 1970 to 2016 and declines in middle skill occupations that are matched by growth in high skill occupations, “which is not something that economists should worry about” (p.8). Using the same occupational categorization and the Canadian census PUMFs, we find a somewhat different picture: Fig. 3 depicts steady declines in the low skill occupations throughout the period from 1970 to 2016, declines in the middle skill occupations between 1981 and 2001 that are partially offset from 2001 to 2016, and steady increases in the high skill occupations that are especially strong up to 2001. In other words, the Canadian data shows a direct transfer of low skill employment to high skill employment, which implies an even better scenario than in the U.S. Table 3 shows that low skill jobs have fallen from 38% to 25% of all employment between 1971 and 2016. Middle skill jobs have declined much more modestly during the same period of time, while high skill occupations have increased from 20% to 34% of all jobs in the Canadian economy.



Source: Table 3

While the reduction in low and middle skill jobs appears to be a positive development, there appears to be a downside in terms of more precarious employment for those who remain in jobs at these skill levels. As Table 4 and Fig. 4 show, low skill and middle skill jobs are increasingly part time. Part time employment has risen from 17.6% of all low skill employment in 1971 to 28.5% in 2016 and from 17.2% of all middle skill jobs in 1971 to 27% in 2016. Hence, as the proportion of low skill jobs has declined, more of them are part time and more middle skill jobs are part time as well. Part time employment among the growing class of high skill workers has remained about 15% of all jobs throughout the same period. This could be a factor in the weaker wage performance of low skill workers in Canada and elsewhere.



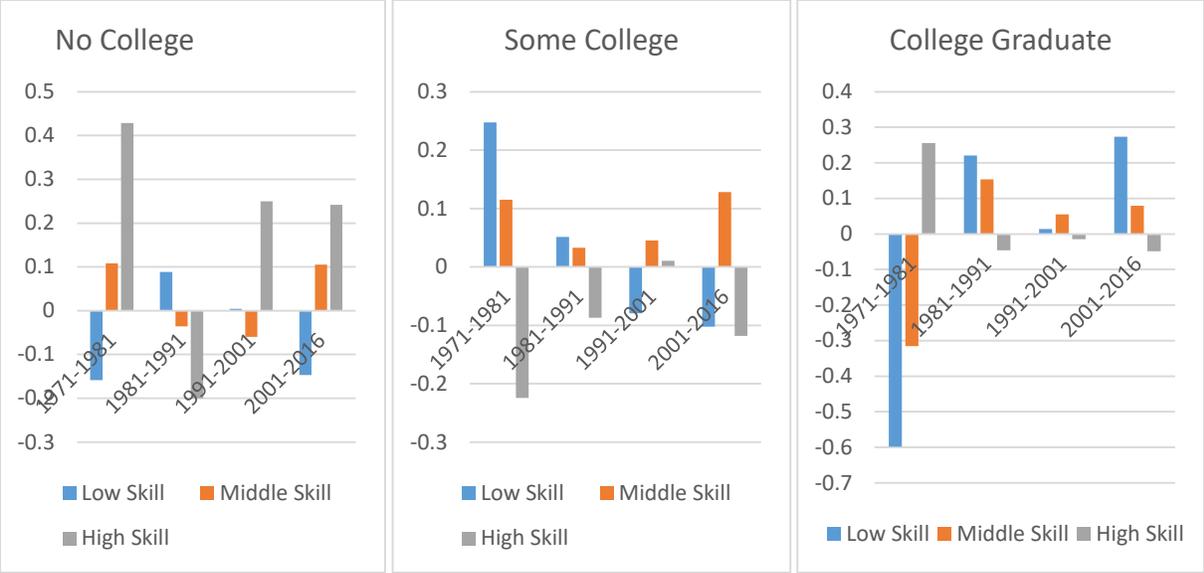
Source: Table 4

When Autor looks for the middle skill jobs that have disappeared in the U.S., he finds a dichotomy. Among college workers, middle skill jobs have generally gone into better paying high skill jobs, but these middle skill jobs have become low skill employment for non-college workers. This trend is concerning, as it reflects an erosion of middle skill and higher paying employment opportunities among non-college workers, who have settled into low skill jobs that will yield much lower earnings.

Table 5 and Figure 5 look at the comparable situation for Canada. We use three categories of educational attainment to reflect the fact that fully one-third of Canadian workers do not have a university degree but have either a trades certificate, a university certificate or diploma, or have attended a postsecondary institution without completing a degree or diploma program. Thus, Autor's non-College category is refined to a "no college" category with a high school diploma or less and a "some college" category for those who have received some postsecondary education without receiving a university degree. Our "college" category, like Autor's, includes workers with at least one university degree.

Autor's finding of declining middle skill jobs that have become high skill jobs for college graduates and low skill jobs for those without college degrees is far less clear in the Canadian case. First, the absence of a significant decline in middle skill jobs overall in Canada (Table 3) carries over to all education groups. Figure 5 shows that declines in some periods for no college and college workers are offset by increases in other periods, such that the proportion of middle skill jobs for no college workers rose from 40.6% to 45.1% between 1971 and 2016 while falling only modestly from 22.8% to 20.5% for college workers. And, for workers with some college, middle skill employment rose sharply from 38.3% to 52% over the same period. Second, the decline in low skilled jobs is more marked and steady for no college workers than college workers, as the proportion of low skilled jobs declined from 51.1% to 40.1% among no college workers but only from 14.7% to 9.3% for college workers. The decline for college workers occurred entirely between 1971 and 1981 and there has actually been a slight increase since then. For some college workers, the proportion of low skilled workers has changed little from 20.2% in 1971 to 21.9% in 2016. Thirdly, college and no college workers have both experienced growth in high skill jobs; Autor's dichotomy does not show up in the Canadian data. The proportion of college workers with a high skill job has risen from 62.5% to 70.2% between 1971 and 2016, although all of this increase occurred between and 1971 and 1981; growth in high skill employment among college workers declined somewhat thereafter. But the proportion of no college workers in high skill jobs also grew and at a more steady pace from 8.4% in 1971 to 14.9% in 2016. The decline in high skill jobs was confined to workers with some college, where the proportion employed in high skill occupations fell from 41.4% to 26.1% between 1971 and 2016. Perhaps modest support for Autor's findings from the U.S. can be found in the some college group, but it is a loss of high skill jobs to middle skill occupations rather than a loss of middle skill jobs to low skill occupations.

Figure 5: % Change in Employment by Skill Category and Educational Attainment, Canada 1971-2016



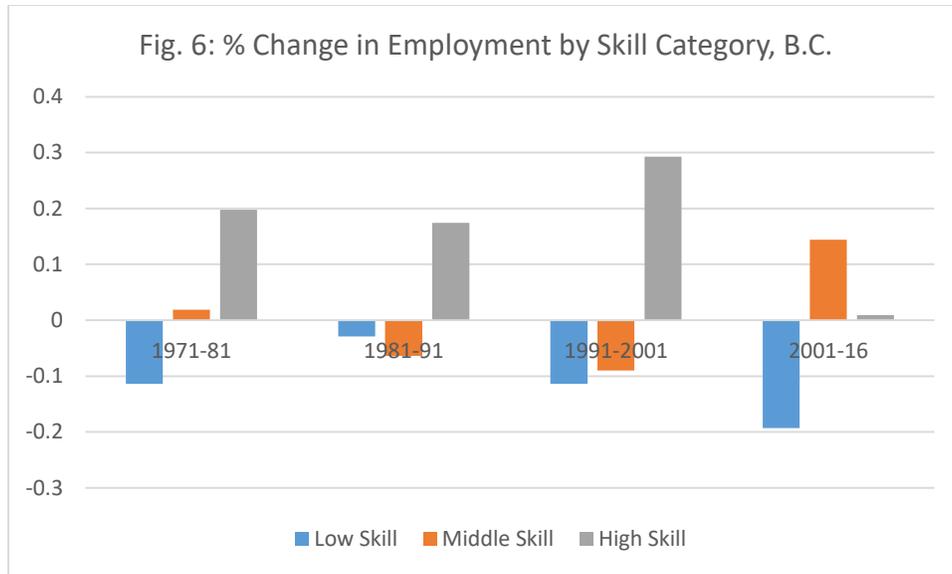
Source: Table 5

In summary, Autor's story of declining middle class jobs and occupational polarization in the U.S. does not hold up for Canada's using comparable occupational categorizations. His story of those middle class jobs becoming low skill jobs for workers without college and high skill jobs for workers with college also does not hold up. Both no college and college workers have realized high skill job growth and workers with some college, who have lost high skill employment, have lost those high skill jobs to jobs in the middle of the skill spectrum, precisely where Autor finds jobs disappearing in the U.S. The absence of occupational polarization and its impacts on non-college workers could have moderated rising earnings inequality in Canada relative to the U.S.

Is the B.C Story Different?

Labour market developments in B.C. follow a similar pattern to the national story. Table 6 shows a comparable shift of employment opportunities from primary and secondary (manufacturing and construction) toward business, personal and public services between 1981 and 2016. The proportion of employment in retail and wholesale trade has held steady at the national figure 17%, while finance, insurance and real estate (FIRE), business and personal services and public administration have grown from 45% of classified employment in 1981 to 57% in 2016 at the expense of primary industries, manufacturing and construction. Table 7 indicates that the proportion of workers without a high school diploma has steadily and quite sharply declined from 49.9% in 1971 to 8.7% in 2016, replaced by a steady increase in workers with at least a university degree, again now more than one-quarter of all employed workers. Workers with at least "some college," including those with a postsecondary diploma, increased sharply from 9.7% in 1971 to more than 47.4% in 1991 and still constitute about one-third of all workers, as in Canada as a whole.

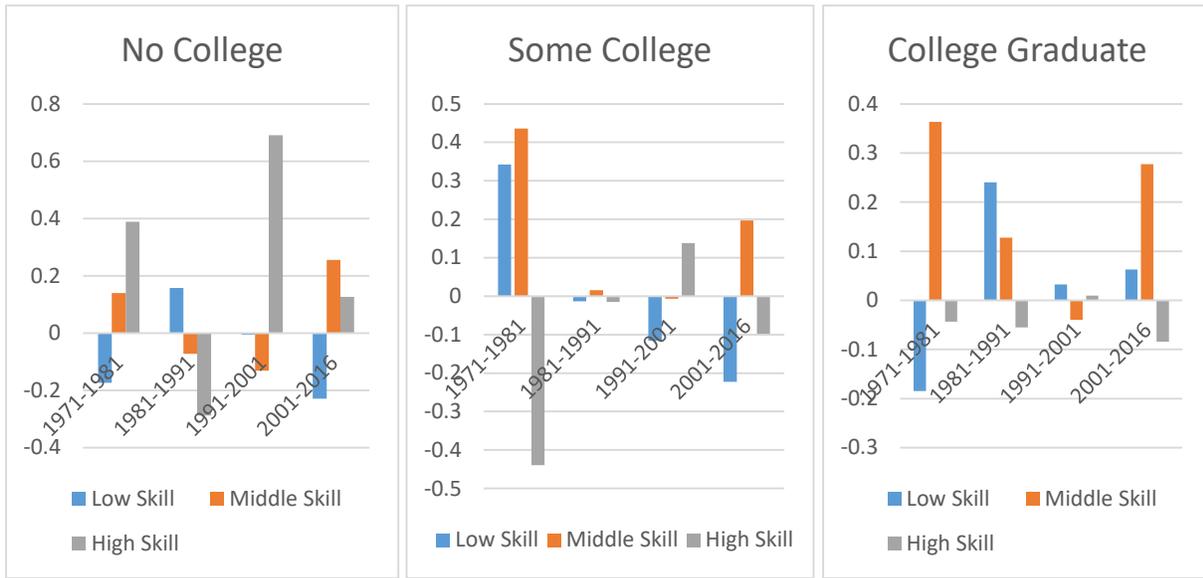
Using Autor's occupational categorization for B.C., Fig. 6 illustrates a similar set of developments to the Canadian case: A steady decline in low skill occupations throughout the period from 1970 to 2016, a decline in middle skill occupations between 1981 and 2001 that is partially offset from 2001 to 2016, and steady increases in the high skill occupations up to 2001. This again reflects a direct transfer of low skill employment to high skill employment in B.C. without a net loss of middle skill jobs. Table 8 shows that low skill jobs have fallen from 38.7% to 23.8% of all employment in B.C. between 1971 and 2016, middle skill jobs continue to constitute about 43% of all employment, and high skill occupations have increased from 18.2% to 33.4% of all jobs in the B.C. economy. Moreover, Table 9 indicates that part time employment has grown in low and middle skill jobs, but not in high skill jobs, in a similar fashion to Canada as a whole.



Source: Table 8

Finally, Figure 7 illustrates patterns of job growth and decline by educational attainment that are similar to those for Canada as a whole, and contrary to Autor's results for the U.S., with minor differences. Middle skill employment has grown in B.C. as well, including among college graduates where there was a small decline for Canada as a whole. College workers have replaced low skill jobs with middle skill jobs rather than high skill jobs, and it is only for non-college workers where we see a transfer of low skill jobs to high skill jobs, comparable to the results for Canada as a whole and a direct contradiction to Autor's findings for the U.S. Some college workers mimic the Canadian pattern of a transfer of high skill jobs to middle skill employment. The B.C. experience is not surprisingly quite similar to the results for Canada as a whole and reflects a different story than the U.S.; middle skill jobs are not disappearing and, while a college education still vastly improves a worker's chances of high skill employment, workers without a college education continue to experience better middle and high skill job opportunities.

Figure 7: % Change in Employment by Skill Category and Educational Attainment, Canada 1971-2016



Source: Table 10

References

Autor, David (2019) "Work of the Past, Work of the Future," Working Paper 2558, National Bureau of Economic Research, February at <http://www.nber.org/papers/w25588>

Beach, Charles (2014) "What Has Happened to Middle-Class Earnings? Distributional Shifts in Earnings in Canada, 1970-2005," Working Paper No. 131, Canadian Labour Market and Skills Researcher Network, March

Heisz, Andrew (2016) "Trends in Income Inequality in Canada and Elsewhere" in *Income Inequality: The Canadian Story* David A. Green, W. Craig Riddell and France St-Hilaire (eds), Volume V of The State of the Art series, Institute for Research on Public Policy, February

Table 1. Percentage of Workers per Industry Sector, Canada 1981-2016

Year	Primary	Const/ Mfg	Transport/ Warehousing	Trade	FIRE	Bus/Pes Services	Public
1981	8.4	25.6	4.7	17.3	5.4	15.9	22.7
1991	7.3	21.3	4.1	17.6	5.7	19.8	24.1
2001	6	21.2	5.3	17.3	6.3	19.8	24.1
2016	4.8	17.9	5.2	17	6.5	20.5	28.1

Source (for all tables): Canadian Census PUMFs, 1981-2016; calculations by the author

Table 2. Percentage of Workers by Educational Attainment, Canada 1971-2016

Year	No High School Diploma	High School	Some College	Bachelor's	Graduate
1971	61.4	23.3	8	3.7	3.7
1981	39.4	22.1	27.1	8.6	2.9
1991	26.4	15.9	42.3	12.5	3
2001	20.2	14.9	45.4	15.6	4.1
2016	10.2	25.7	35.7	21.1	7.3

Table 3. Distribution of Workers by Skill Category, Canada 1971-2016

Year	Low Skill	Middle Skill	High Skill
1971	37.8	42.8	19.5
1981	34	42.9	23.1
1991	31.1	40.8	28.2
2001	28.6	39.6	31.9
2016	25.3	41.2	33.5

Table 4. Distribution of Part-Time Employment by Skill Category, Canada 1971-2016

Year	Low Skill	Middle Skill	High Skill
1971	17.6	17.2	14.8
1981	20.1	20.5	15.3
1991	19.9	21.1	15.6
2001	31.1	22.1	14.9
2016	28.5	27	14.9

Table 5. Distribution of Workers by Skill Category and Educational Attainment, Canada 1971-2016

Year	No College			Some College			College		
	Low Skill	Middle Skill	High Skill	Low Skill	Middle Skill	High Skill	Low Skill	Middle Skill	High Skill
1971	51.1	40.6	8.4	20.2	38.3	41.4	14.7	22.8	62.5
1981	43.0	45.0	12.0	25.2	42.7	32.1	5.9	15.6	78.5
1991	46.8	43.4	9.6	26.5	44.1	29.3	7.2	18.0	74.9
2001	47.0	40.8	12.0	24.4	46.1	29.6	7.3	19.0	73.8
2016	40.1	45.1	14.9	21.9	52.0	26.1	9.3	20.5	70.2

Table 6. Percentage of Workers per Industry Sector, BC 1981-2016

Year	Primary	Const/Mfg	Transport/Warehousing	Trade	FIRE	Bus/Pers Services	Public Sector
1981	8.5	22.7	5.8	18	5.9	17.9	21.3
1991	7.8	18.8	5.1	17.7	5.9	23	21.8
2001	5.9	16.7	6.2	17.4	6.6	22.1	24.4
2016	4.5	16.1	5.6	17.1	6.8	23.2	26.9

Table 7. Percentage of Workers by Educational Attainment, BC 1971-2016

	No High School Diploma	High School	Some College	Bachelor's	Graduate
1971	49.9	33	9.7	3	4.4
1981	38.1	22	28.9	8.3	2.9
1991	23.2	15	47.4	11.6	3
2001	17.9	13.2	48.4	16	4.5
2016	8.7	29.3	32.9	21.4	7.8

Table 8. Distribution of Workers by Skill Category, BC 1971-2016

Year	Low Skill	Middle Skill	High Skill
1971	38.7	43.1	18.2
1981	34.3	43.9	21.8
1991	33.3	41.1	25.6
2001	29.5	37.4	33.1
2016	23.8	42.8	33.4

Table 9. Distribution of Part-Time Employment by Skill Category, BC 1971-2016

Year	Low Skill	Middle Skill	High Skill
1971	21.7	21.2	17.3
1981	23.5	23.8	16.9
1991	24.4	22.7	17.8
2001	34.3	26.1	18.6
2016	31.8	27.4	17.3

Table 10. Distribution of Workers by Skill Category and Educational Attainment, BC 1971-2016

Year	Non-College			Some College			College		
	Low Skill	Middle Skill	High Skill	Low Skill	Middle Skill	High Skill	Low Skill	Middle Skill	High Skill
1971	51.3	40.2	8.5	22.2	30.5	47.3	9.2	13.2	77.8
1981	42.4	45.8	11.8	29.8	43.8	26.5	7.5	18.0	74.4
1991	49.1	42.5	8.4	29.4	44.5	26.1	9.3	20.3	70.3
2001	48.8	36.9	14.2	26.0	44.2	29.7	9.6	19.5	71.0
2016	37.6	46.3	16.0	20.2	52.9	26.8	6.5	24.9	70.2