The Alberta GPI Accounts: Employment

Report # 6

by

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About this Report

This is one of 28 reports that provide the background for the Genuine Progress Indicators (GPI) System of Sustainable Well-being Accounts. It explains how we derived the indices that were earlier published in *"Sustainability Trends 2000: The Genuine Progress Statement for Alberta, 1961 to 1999."* The research for this report was completed near the end of 2000. The appendices provide further background and explanation of our methodology; additional details can be obtained by contacting the authors. Appendix A includes a list of all GPI background reports.

In this report we explore employment in Alberta. In doing so, we investigate the prevalence and cost of both underemployment and unemployment in Alberta. The report answers the following questions:

1) How many members of the labour force are employed in Alberta?
2) What is the average weekly wage rate of those that are employed?
3) How many member of the labour force in Alberta are unemployed? What is the estimated cost of unemployment in Alberta?
4) How many members of the labour force in Alberta are underemployed? What is the estimated cost of underemployment in Alberta?

About the Authors

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Mark Anielski is Director of the Green Economics team, and has considerable experience in public policy analysis including natural resource, energy, royalty and fiscal policy issues in both the public (Alberta Government) and private (GPC – Government Policy Consultants) sector. He also serves as Senior Fellow to the U.S. economic policy think-tank Redefining Progress in Oakland, California and authored the 1999 U.S. GPI report with journalist Jonathan Rowe. He currently advises the National Round Table on Economy and the Environment's Sustainable Development Indicator Steering Committee on the development of indicators for measuring sustainability in Canada. Mark teaches business and the environment in the University of Alberta's School of Business. His expertise is varied and broad including accounting for sustainable development, natural resource accounting, public policy analysis, business planning and performance measurement. Mark pioneered the development of natural capital accounts for Alberta's timber, oil, gas, coal and other natural capital as well as having experience in the development of performance measurement systems, land use planning and non-market resource valuation, royalty policy analysis (forestry, oil and gas), and analysis of subsidies for both government and private forestry, energy and financial service industries. He holds a Masters degree in forest economics, plus bachelor degrees in economics and forestry.

Acknowledgements and Disclaimer

We have made every effort to ensure the accuracy of the information contained in this document at the time of writing. However, the authors advise that they cannot guarantee that the information provided is complete or accurate and that any person relying on this publication does so at their own risk. Given the broad scope of the project and time constraints, it has not been possible to submit the entire report for peer review. The material should thus be viewed as preliminary and we welcome suggestions for improvements that can be incorporated in any later edition of the work.

Contents

Figures and Tables

1   Executive Summary

Employment, labour productivity and wage rates all indicate that the employment situation in Alberta is booming. Indeed, Alberta enjoys one of the highest rates of employment in Canada. Currently, 68.6 percent of Albertans are employed. Labour force productivity has increased by 26 percent since 1966 in Alberta—from $54,550 (1998$) in 1961 to $68,845 (1998$) in 1999. Average weekly wage rates increased steadily over the study period, from $446 (1998$) in 1961, to $718 (1998$) in 1999. However, not all employment-related indicators are showing such favourable trends. Relative to 1961 levels, employment, labour force productivity and average wage rates have increased, but so too have underemployment, overwork and unemployment in the province. In 1961 in Alberta, 700 males and 1,550 females were underemployed. By 1999, that number had grown to 18,500 males and 39,900 females. Between 1976 and 1999, overemployment increased by 92 percent. In 1961, 10,284 workers were unemployed in Alberta—equivalent to a 2.5 percent unemployment rate. By 1999, that number had increased to 96,352 workers, or a six percent unemployment rate.

The figure below shows underemployment in Alberta as an index. Here we set 100 equal to the lowest rate of underemployment in the study period—that is, the benchmark year. The lowest rate of underemployment in Alberta over the study period occurred in 1961 when only 0.55 percent of the labour force was underemployed. Thus, if Alberta maintained underemployment at 1961 levels, the index would equal 100 for all years. Over the study period, as underemployment deviates from the rate of the benchmark year, the index measures change from 100 over time. The further the underemployment rate is from 0.55 percent, the more the index tends toward zero. Thus, as underemployment in Alberta has increased, the index has moved closer to zero.

**Underemployment in Alberta as an Index, 1961 to 1999**
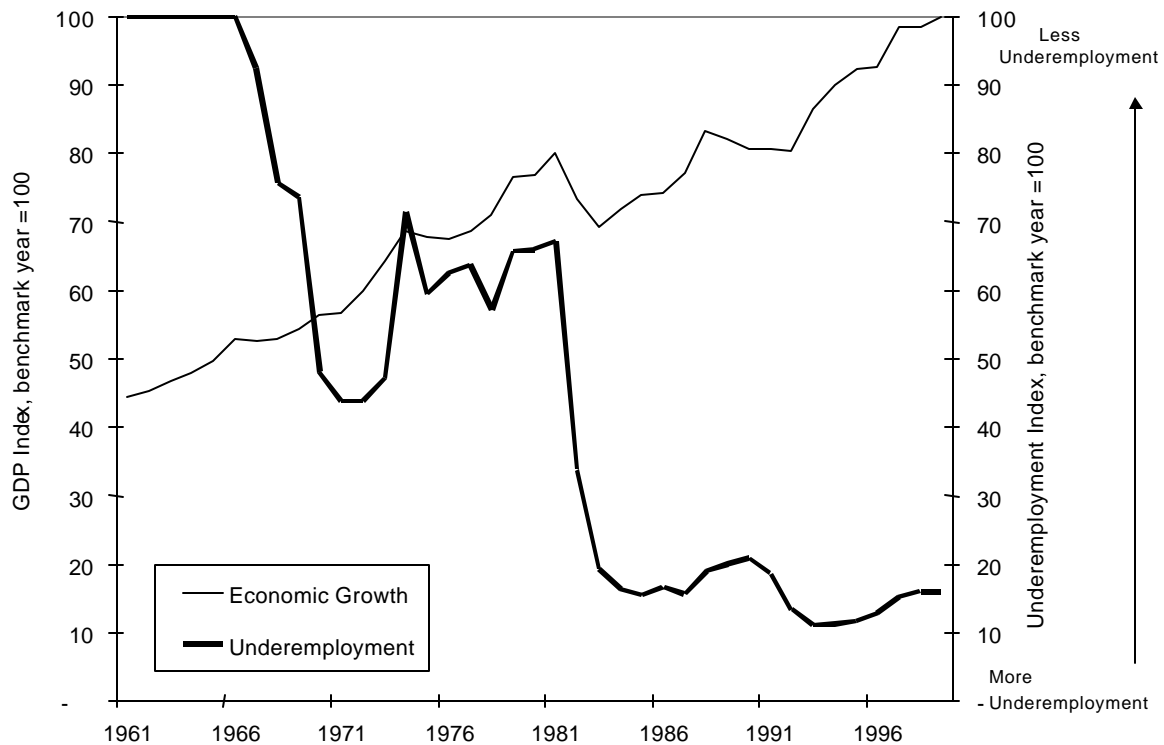
The figure below shows unemployment in Alberta as an index. As with underemployment, we set 100 equal to the lowest rate of unemployment in the study period, calling the year in which the lowest rate of unemployment occurred the benchmark year. In this case, the benchmark year is 1961 when only 2.5 percent of the labour force was unemployed. As unemployment deviates from the rate of the benchmark year, the index measures change from 100 over time. The further the unemployment rate is from 2.5 percent, the more the index tends toward zero. Thus, as unemployment in Alberta has increased, the index has moved away from the rate of the benchmark year and closer to zero. This figure also shows the trend in provincial GDP over the study period. While GDP increased steadily over the study period, the condition of both underemployment and unemployment deteriorated.

Unemployment in Alberta as an Index, 1961 to 1999
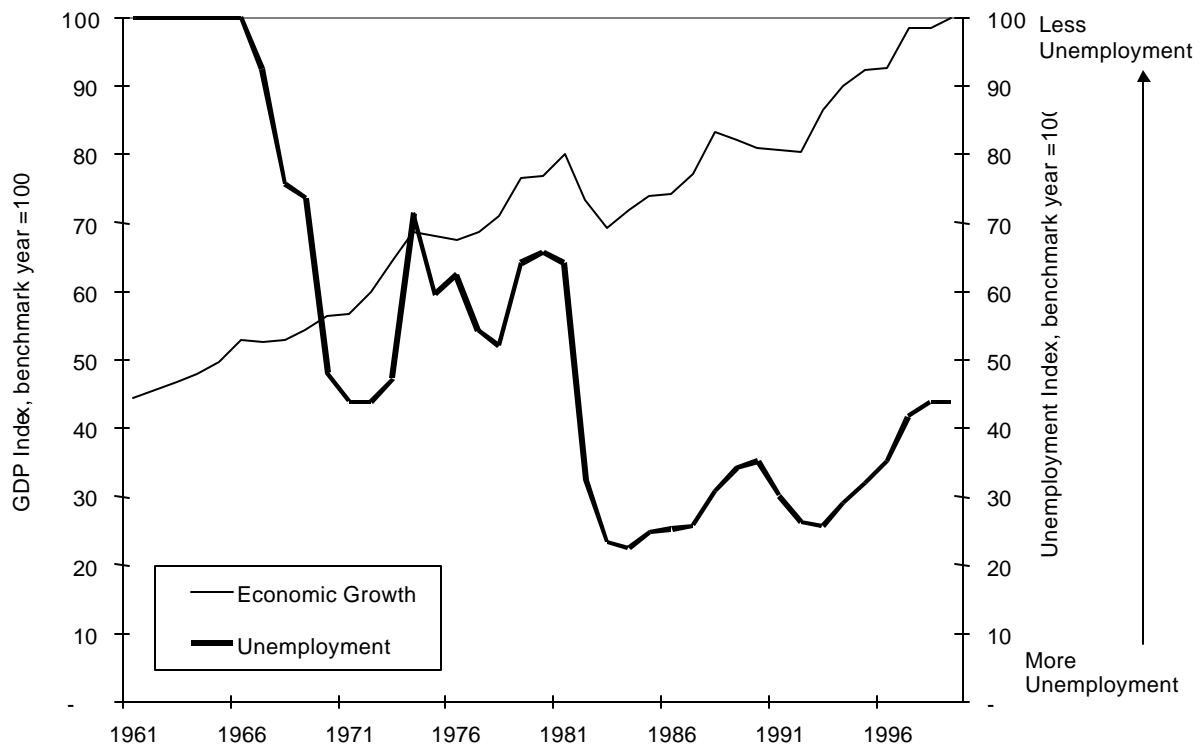
Given the substantial increase in both underemployment and unemployment over the study period, it is not surprising that the estimated cost of workers working fewer hours than they desire is also substantial. The cost of underemployment in Alberta was $12-million (1998$) in 1961, increasing to $503-million (1998$) in 1999. In 1961, while underemployment in Alberta was equal to only 0.056 percent of provincial GDP, by 1999 underemployment was worth 0.458 percent of GDP. The cost of unemployment is substantially higher than the cost of underemployment, $220-million (1998$) in 1961 and over $3,321-million (1998$) in 1999. In 1961, while unemployment in Alberta was equal to 1.01 percent of provincial GDP, by 1999 unemployment was worth 3.03 percent of GDP.

2   Employment in Alberta

Alberta enjoys the highest rate of employment in Canada at 68.6 percent; 75.2 percent of men and 61.9 percent of women are employed (Table 1). More women (61.9 percent of all Alberta women) are employed in Alberta than any other province. Manitoba has the second highest employment rate for women at 58.4 percent of female residents.

Table 1: Percentage of Population Employed by Province in 2000

Province	Percentage of Residents Employed
Alberta	68.6%
Manitoba	64.6%
Saskatchewan	64.0%
Ontario	63.3%
British Columbia	60.2%
Prince Edward Island	58.9%
Quebec	57.9%
Nova Scotia	56.1%
New Brunswick	55.4%
Newfoundland	46.5%

Source: Statistics Canada, Labour, Employment and Unemployment Data, www.statcan.ca

Figure 1 illustrates employment figures for Alberta from 1961 to 1999, showing labour force participation in thousands, employment in thousands and employment rate. Employment rate is defined as percentage of the provincial labour force that is employed. Ninety-eight percent of Alberta's labour force was employed in 1961, declining to approximately 95 percent by 1999. The employment rate varies with the business cycle, increasing in "boom times" and decreasing in times of recession.

Figure 1: Employment in Alberta, 1961 to 1999
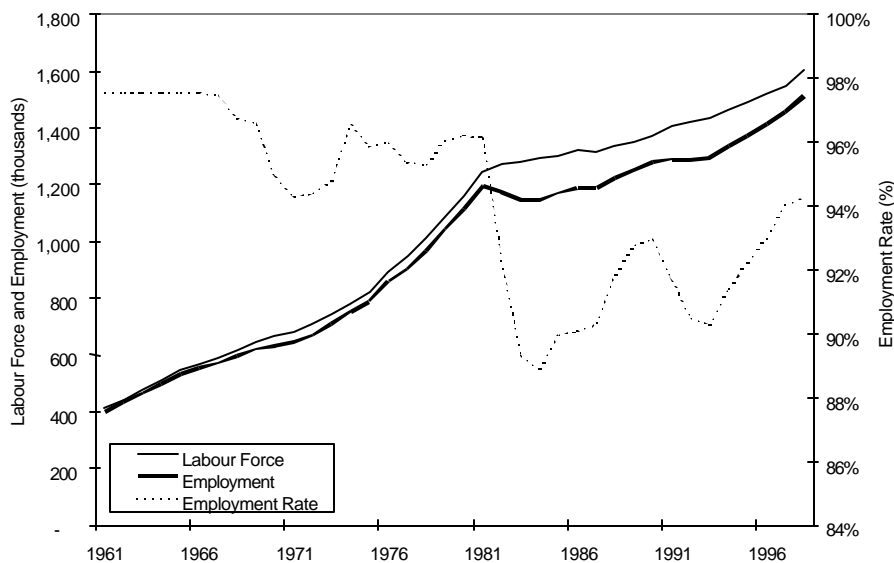
Source: Data for 1966 to 1998 from Statistics Canada, Table 381-0035, other years derived through extrapolation

2.1   Labour Productivity Analysis

Not only is it useful to consider trends in employment over time, but it is also useful to look at labour productivity trends. Figure 2 shows labour productivity for Alberta from 1961 to 1999. Here we define labour productivity as the amount of GDP (1998$) per employed Albertan. Labour force productivity has increased by 26 percent since 1961 in Alberta, from an estimated $54,550 (1998$) in 1961 to $68,845 (1998$) in 1999. This means that output per employee has increased substantially over the study period.

Figure 2: Labour Productivity in Alberta, 1961 to 1999

Source: Employment Data from Statistics Canada, GDP Data from Alberta Treasury
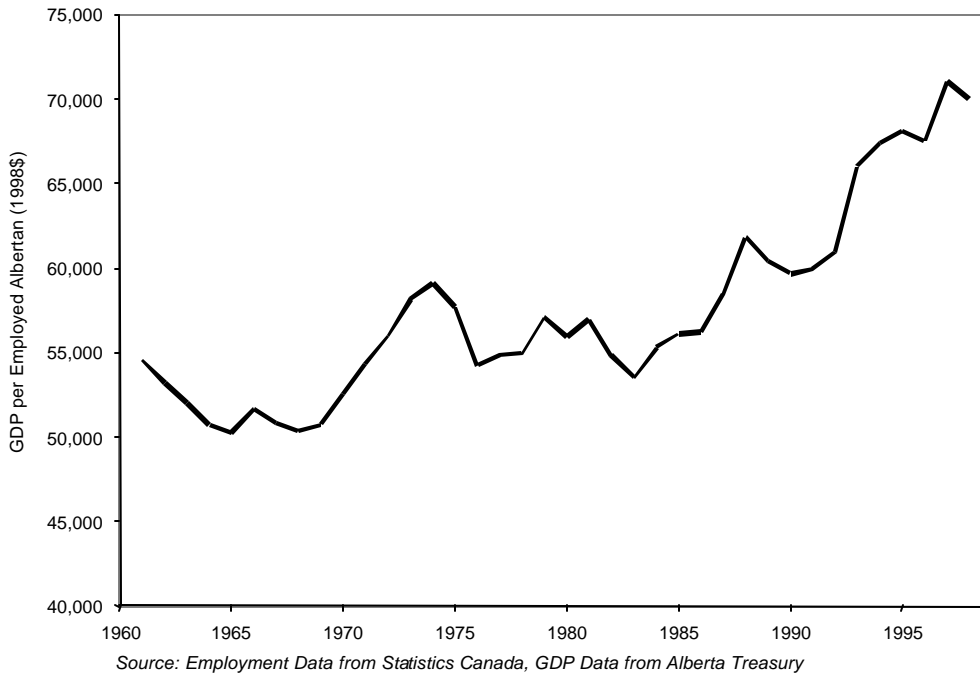
2.2   Average Wage Rate in Alberta

Any consideration of the state of employment in a region would be incomplete without an investigation into the wage rates of the region. Figure 3 shows average weekly wage rates for Alberta (including salaries) from 1961 to 1999 (1998$). As the figure indicates, average weekly wage rates increased steadily over the study period. Indeed, while average weekly wage rates were $446 (1998$) in 1961, by 1999 they had risen to $718 (1998$). Total income in Alberta was equal to 39 percent of GDP in 1961 and by 1999 it was worth 50 percent of GDP. Thus, the economic value of employment has increased somewhat relative to GDP over the study period.

Figure 3: Average Weekly Wage Rates (including salaries) in Alberta (1998$), 1961 to 1999

Source Statistics Cana da, personal communication
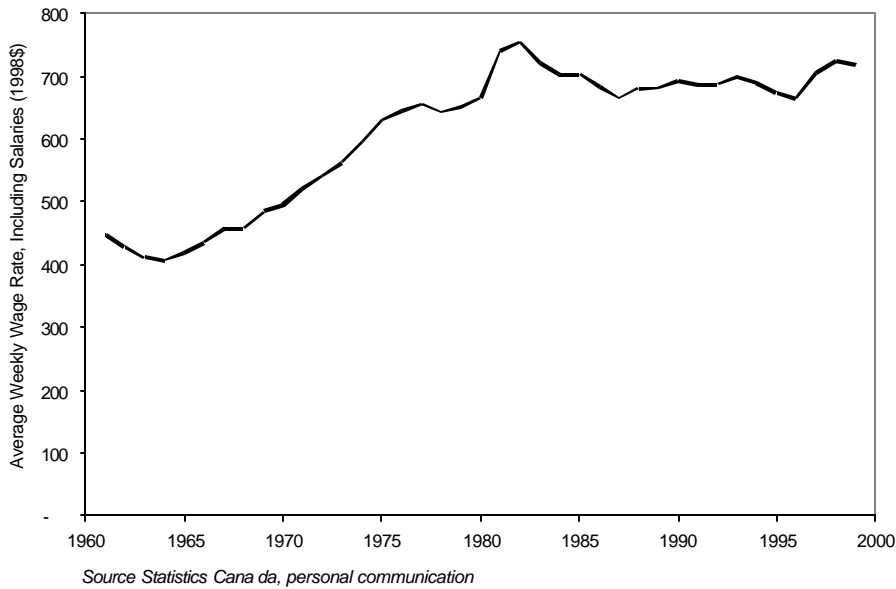
Figure 4 shows weekly wage rates in Alberta as an index, relative to GDP as an index for the study period. For the index, we set the highest wage rate and the highest level of GDP equal to 100 and measure change from that benchmark year as an index over time. Provincial GDP and provincial weekly wage rates have followed a similar pattern over the study period. They have both increased substantially since 1961.

Figure 4: Average Weekly Wage Rates as an Index, 1961 to 1999
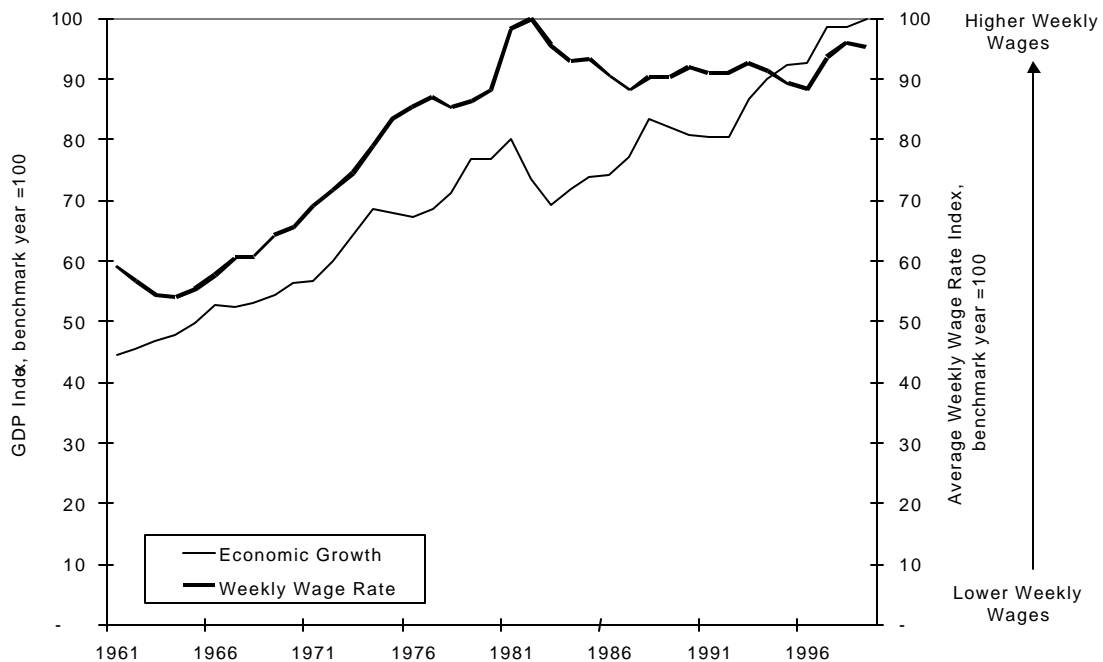
Alberta's employment, labour productivity and wage rates all increased substantially from 1961 to 1999. Indeed, according to these indicators of employment, Alberta looked better in the 1990s than it did in any other decade in the study period. However, these are not the only indicators of the employment situation. A more comprehensive analysis of the employment situation reveals not only increases in employment, labour productivity and wage rates but underemployment and unemployment as well.

3   Underemployment and Unemployment in Alberta

3.1   Why Measure the Cost of Underemployment?

There are two types of underemployment. According to Statistics Canada,[1] "invisible" underemployment occurs when workers' skills are underutilized or when wages, productivity or other job qualities are sub-standard. The second kind of underemployment is referred to as "visible" underemployment. This occurs when a worker feels that his or her work hours are insufficient. The latter type of underemployment is also referred to as involuntary part-time employment; i.e., workers who are working part-time but would prefer to be working full-time. In this report we consider only visible underemployment and when we refer to underemployment, we are only accounting for one aspect of total underemployment.

In recent years, the number of part-time jobs has increased substantially. In some cases, the increase may be good—as in the case of mothers who prefer to work part-time to have more time for child care and leisure. Other people however, may be working part-time while preferring full-time work and indeed may be experiencing economic hardship as a result.[2] It is important to consider why the number of part-time jobs in Canada is increasing. Is it because workers want more free time? Or is it because workers cannot find full-time work? Recent data indicate that the second situation often prevails. For example, in 1995, while only 6.4 percent of Canadian workers preferred fewer hours and less pay, 27.1 percent desired more hours and more pay.[3]

The GPI accounting framework values individuals' free time.[a] However, to the extent that people are forced to take free time because they are underemployed, the GPI will overestimate the value of free time in a region. The GPI accounting framework accounts for the true value of free time without including workers who are underemployed, and thus forced into leisure, by subtracting the cost of underemployment.

3.2   Why Measure the Cost of Unemployment?

As with underemployment, the cost of unemployment needs to be subtracted from the value of free time in the GPI accounting framework. To the extent that people are forced to take free time because they are unemployed, the GPI will overestimate the value of leisure in a region. By valuing unemployment in the GPI accounting framework, we get a better indication of the true value of free time and a more informed indication of well-being in a particular region.

3.3   How Do We Measure Underemployment and Unemployment?

Underemployment data for Alberta come from Statistics Canada, which has two data sets for underemployment in Alberta. The first data set extends from 1976 to 1995 and includes all part-time workers who "could only find part-time work." It does not include those who worked part-time because of illness or disability, personal or family responsibilities, going to school, or

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[a] See the GPI report entitled *The Alberta GPI Accounts: Time Use*, Report #8 in this series.

because they did not want full-time work. In contrast to the second data set, these workers are considered underemployed whether they looked for full-time work or not. The second data set extends from 1997 to 1999 and includes all part-time workers who "could only find part-time work" and looked for full-time work. In other words, after 1997, Statistics Canada only registers part-time workers as underemployed if they sought full-time work. Because the former data set covers more years of the study period, we used this data to measure underemployment in Alberta.

To estimate the cost of underemployment, we needed underemployment data for the entire study period (1961 to 1999). To assemble this data, we correlated underemployment with unemployment and extrapolated it over time.[4] In this analysis we assumed, in keeping with Statistics Canada, that part-time work is 30 hours of work per week. This implies that part-time workers would prefer to work an additional 10 hours a week (the difference between part-time and full-time work).[b] Thus, we measured the amount of lost work as the number of underemployed workers times 10 hours per week. To convert this to "number of hours per year," we multiplied by 48.[c]

To estimate the economic cost of this lost work, we multiplied the number of hours of lost work per year by the average wage rate for Alberta for the same year. We then converted this to the equivalent number of full-time jobs by dividing the total number of unworked hours per year by 1,920.[d]

Unemployment data also come from Statistics Canada (table 384-0035). The data set for unemployment from Statistics Canada includes years from 1966 to 1998. It was extended to cover the entire study period using regression analysis. The cost of unemployment is valued in the same way that underemployment is. The cost of the lost work is the number of hours per week (which in the case of unemployment is 40 hours) multiplied by the average wage rate for each year in the study period, multiplied by 48, which is the number of work weeks in a year. The number of full-time job equivalents is equal to the total hours of lost work (40 multiplied by 48) divided by the total number of hours per year per job; that is, 1,920.

3.4   Underemployment and Unemployment in Alberta: How Much?

Drolet and Morissette investigated the determinants of work preferences.[5] They reported that for both men and women, many factors influence whether workers want more or fewer hours of work. These factors include hourly wages, seniority, age, occupation and whether a job is permanent or temporary. The desire for more hours increases with decreasing hourly wage rates and with decreasing seniority and age. Young workers without seniority are much more likely to want more hours than are older workers with more seniority. Approximately half of workers aged 15 to 24 prefer additional hours of work. The same percentage is associated with workers with only one to six months' experience. This differs substantially from workers aged 45 to 54 and from workers with 11 to 20 years of seniority, of which only 14 to 19 percent desired more hours of work.

Figure 5 shows underemployment for Alberta over the study period by sex. Underemployment has increased substantially since 1961 with the number of underemployed females in Alberta outnumbering the number of underemployed males every year in the study period.

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[b] Note that the result will likely underestimate the actual cost of underemployment because this analysis assumes that all part-time workers work a full 30 hours per week. In reality, many part-time workers probably work less.

[c] There are 48 work weeks in one year.

[d] There are 1,920 hours per job per year associated with a full-time job.

Figure 5: Underemployment in Alberta by Sex, 1961 to 1999

Source: Data for 1976 to 1995 from Statistics Canada, Labour Statistics Division, other years derived through extrapolation.

In 1961, 700 males and 1,550 females were underemployed in Alberta. By 1999, these numbers had increased to 18,500 males and 39,900 females. Unemployed females accounted for 68 percent of total unemployed workers in both 1961 and 1999, varying from 64 percent to 74 percent over the study period. Of all the employed women in 1988, 25 percent worked part-time, while only 10 percent of corresponding males were employed part-time. Thus it is not surprising that involuntary part-time employment is especially concentrated among women aged 25 to 44.[6] Women accounted for 69 percent of all part-time employment in 1993 and that figure has changed little over the last two decades.[7] Along with underemployed youths aged 15 to 24, underemployed women accounted for over 81 percent of total underemployment in Canada in 1985.[8]

Youth underemployment varies with the calendar year and is a greater problem when young people are seeking summer employment. Research suggests that since 1989 summer jobs have been increasingly difficult to find for younger students. In the summer of 1994, 51 percent of students aged 15 to 19 had a job. That figure is down from the summer of 1989 when almost 65 percent of students of the same age had work.[9] The substantial proportion of unemployed youths could partly explain the significant increase in the number of young people doing volunteer work. The volunteer rate among 15-24 year olds almost doubled in ten years, from 18 percent in 1987 to 33 percent in 1997.[10] Perhaps youths unsuccessful at finding full-time work devote some of their time to volunteer work. This is especially likely given that the reason most youths volunteer is to increase their work skills; more than half of volunteers between 15 and 24 years of age (54 percent) were more likely to volunteer to improve their job opportunities.[11]

Occupation type and whether a job is temporary or permanent also influence underemployment. Service industry jobs are especially vulnerable to underemployment. Indeed, in 1997, 11.9 percent of all workers were involuntarily working part-time in the accommodation and food industry, while another 10.9 percent of workers were underemployed in the health and social

services industry. Underemployment was also relatively high in the educational services industry (8.9 percent of workers) and in other services (9.6 percent of workers). Underemployment is much more likely to be associated with temporary positions than with permanent positions; roughly half of workers holding temporary jobs would prefer to work longer hours while only 25 percent of those working permanent jobs would prefer more hours.[12]

Alberta had the lowest underemployment rate[e] in Canada in 1997. Involuntary part-time workers in Alberta accounted for 5.3 percent of all workers in 1997. Ontario had the second lowest rate of underemployment at 5.7 percent and British Columbia the third lowest at 6.1 percent. The highest rates of underemployment in Canada are found in Newfoundland (10.2 percent of all workers), Nova Scotia (9.4 percent of all workers) and New Brunswick (9.0 percent of all workers).[13] Figure 6 shows total underemployment and underemployment as a percentage of the labour force in Alberta.

Figure 6: Underemployment in Alberta, 1961 to 1999
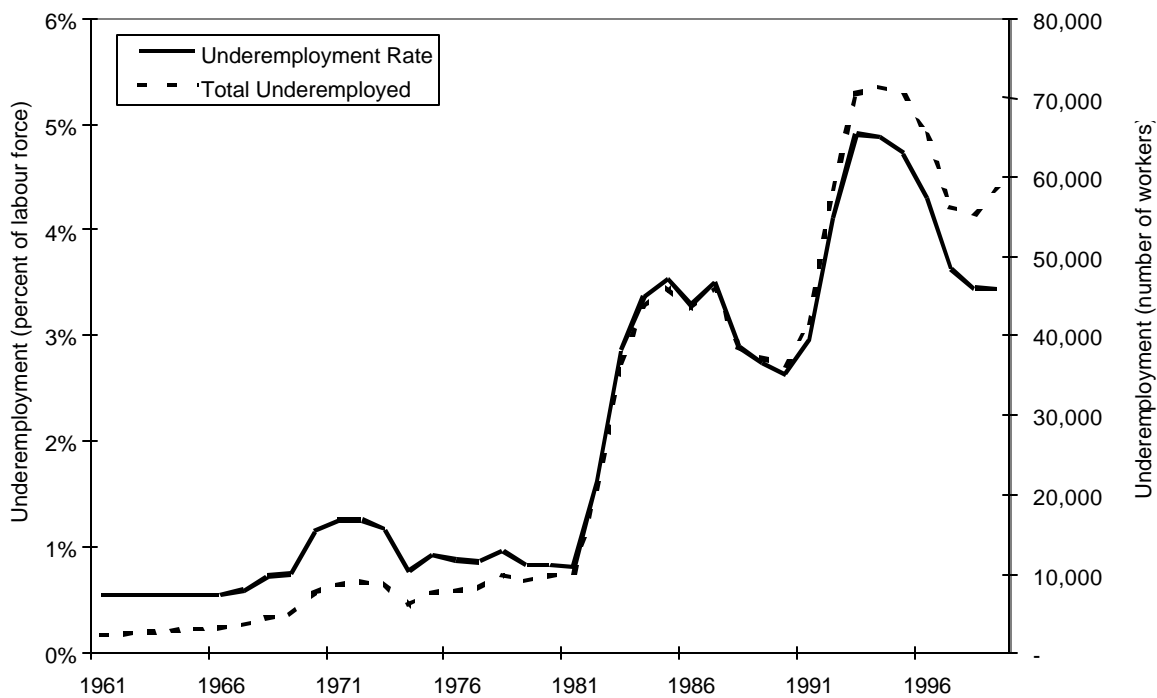
Source: Data for 1976 to 1995 from Statistics Canada, Labour Statistics Division, other years derived through extrapolation.

Figure 7 shows unemployment in Alberta for the study period. In 1961, 10,284 workers were unemployed in Alberta, equivalent to a 2.5 percent unemployment rate. By 1999, that number had increased to 96,352 workers, or a six percent unemployment rate. That is a startling 837 percent increase in the number of unemployed workers in the province, and a 128 percent increase in the unemployment rate between 1961 and 1999. In Alberta as in other provinces, unemployment is higher for women and youths aged 15 to 24,[14] but overall Alberta has one of the lowest provincial unemployment rates in Canada; the national average in 2000 was 6.8 percent, and Table 2 shows the unemployment rates by province.

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[e] Underemployment rate here refers to the proportion of total workers that are underemployed.

Table 2: Unemployment Rates by Canadian Province, 2000

Province	Percentage of Unemployed Residents
Manitoba	4.9%
Alberta	5.0%
Saskatchewan	5.2%
Ontario	5.7%
British Columbia	7.2%
Quebec	8.4%
Nova Scotia	9.1%
New Brunswick	10.0%
Prince Edward Island	12.0%
Newfoundland	16.7%

Source: Statistics Canada, Labour, Employment and Unemployment Data, www.statcan.ca

Figure 7: Unemployment in Alberta, 1961 to 1999
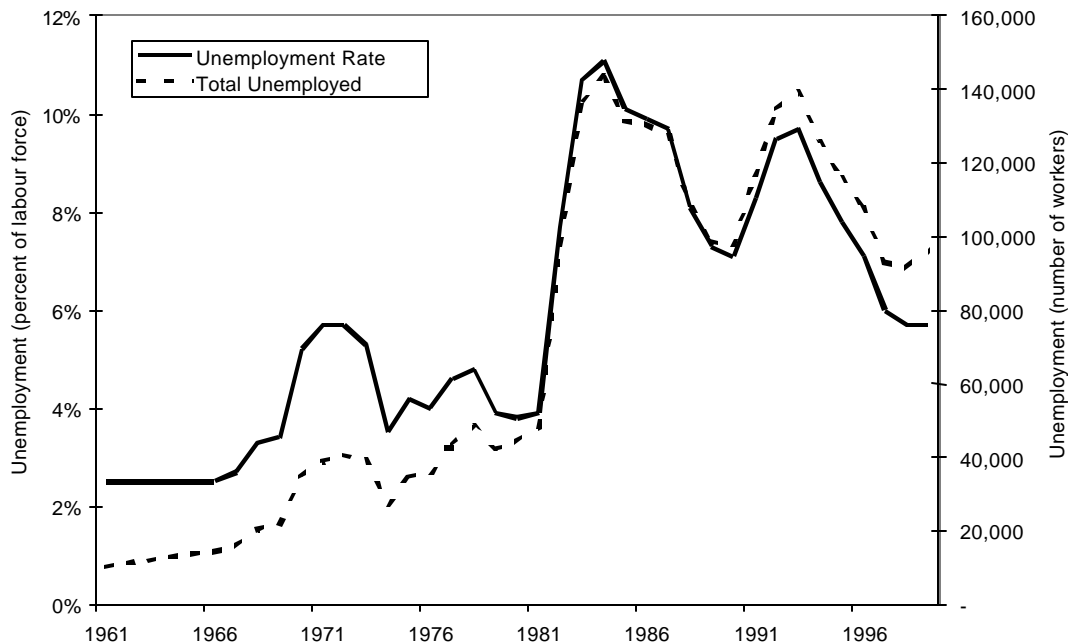
Source: Data for 1966 to 1998 from Statistics Canada Table 381-0035, other years derived through extrapolation

Unemployment and underemployment vary with the business cycle,[15] tending to increase in recessionary times when full-time employment is falling. This was the case in the recession of the early 1980s and again in the early 1990s. In non-recessionary times, underemployment and unemployment decline, but despite these post-recession recoveries there is a general trend toward increasing underemployment and unemployment in Alberta.

Not only is underemployment linked to unemployment, but it appears also to be linked to the declining number of full-time positions. Noreau (1994) reports that from 1980 to 1993, the proportion of full-time positions available in Canada dropped 4.3 percent.[16] During the same period, the proportion of involuntary part-time workers rose 3.9 percent.

3.5   Underemployment and Unemployment as Indices

Figure 8 shows underemployment in Alberta as an index. Here we set 100 equal to the lowest rate of underemployment in the study period. We call the year in which the lowest rate of underemployment occurred the benchmark year—1961 in this case, when only 0.55 percent of the labour force was underemployed. Thus, if Alberta maintained underemployment at 1961 levels, the index would equal 100 for all years. As underemployment deviates from the rate of the benchmark year over the study period, the index measures change from 100 over time. The further the underemployment rate is from 0.55 percent the more the index tends toward zero. As underemployment in Alberta has increased, the index has moved further away from the rate of the benchmark year and closer to zero.

Figure 8: Underemployment in Alberta as an Index, 1961 to 1999
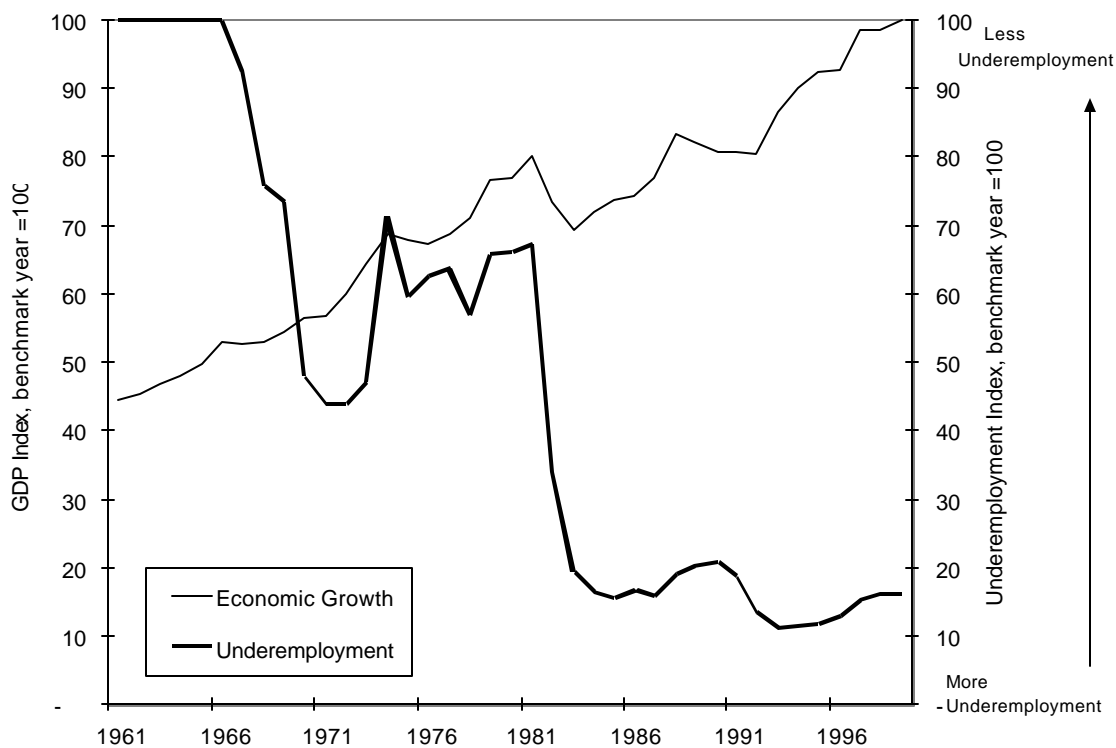
Figure 8 also compares the index over the study period with GDP for Alberta over the study period. While GDP has increased steadily, the index for underemployment has worsened.

Figure 9 shows unemployment in Alberta as an index, with 100 being equal to the lowest rate of unemployment in the study period. Again, we call the year in which the lowest rate of unemployment occurred the benchmark year, which in this case is 1961 when only 2.5 percent of the labour force was unemployed. As unemployment deviates from the rate of the benchmark year, the index measures change from 100 over time. The further the unemployment rate is from 2.5 percent the more the index tends toward zero. Thus, as unemployment in Alberta has increased, the index has moved further from the rate of the benchmark year and closer to zero. This figure also shows the trend in provincial GDP over the study period. While GDP increased steadily over the study period, both underemployment and unemployment have deteriorated.

Figure 9: Unemployment in Alberta as an Index, 1961 to 1999
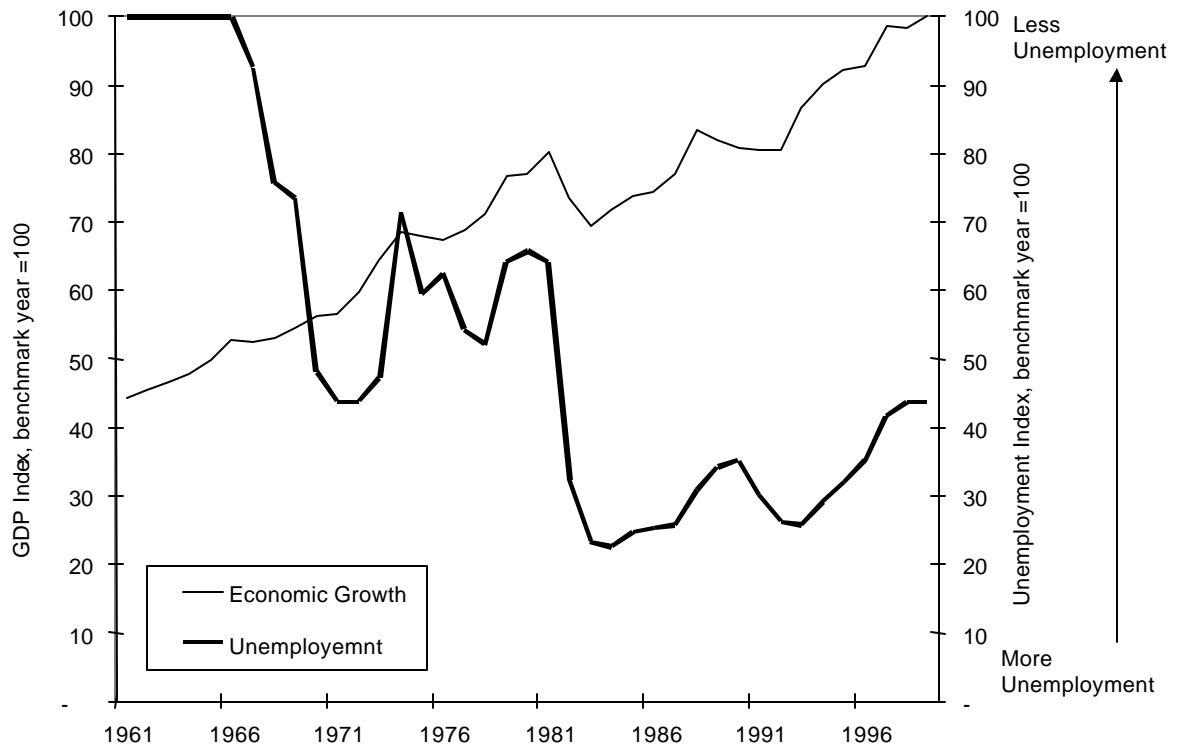
3.6 The Cost of Underemployment and Unemployment

The costs of underemployment and unemployment can be substantial with loss of productive output to the economy and potential loss of skills due to minimal work experience. Socially, unemployment in particular is linked with increased suicide, increased crime, increased family breakdown, negative psychological impacts as well as trauma, stress and low self esteem. In this analysis we attempted to derive measures for the cost of both underemployment and unemployment. Our estimates are not comprehensive, measuring only the value of the forgone work due to underemployment or unemployment. They do not account for any of the socially oriented costs described above. However, many of these costs are captured in other Alberta GPI Account reports including suicide, crime and family breakdown (see Appendix A for a complete list of Alberta GPI reports).

Figure 10 shows the cost of underemployment in Alberta, which was $12-million (1998$) in 1961, increasing to $503-million (1998$) in 1999. While underemployment in Alberta in 1961 was only 0.056 percent of provincial GDP, by 1999 underemployment was worth 0.458 percent of GDP—a significant increase in just 39 years.

Figure 10: The Economic Cost of Underemployment in Alberta, 1961 to 1999
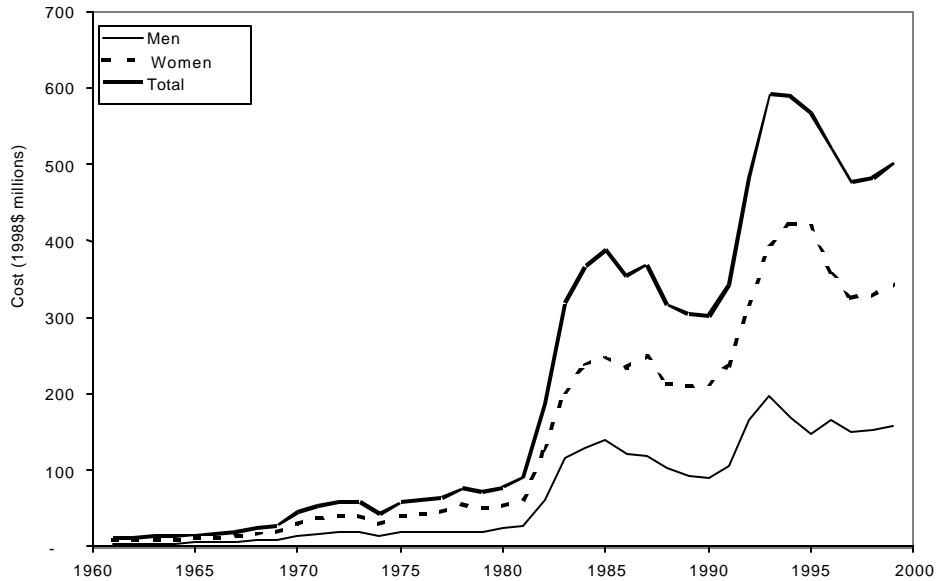
Underemployment in Alberta in 1999 was equivalent to 14,580 full-time jobs, compared with just 567 full-time jobs in 1961.

Figure 11 shows the cost of unemployment in Alberta over the study period, which was substantially higher than the cost of underemployment. The cost of unemployment was $220-million (1998$) in 1961, increasing to over $3,321-million (1998$) in 1999. In 1961, while unemployment in Alberta was equal to 1.01 percent of provincial GDP, by 1999 unemployment was worth 3.03 percent of GDP.

Figure 11: The Economic Cost of Unemployment in Alberta, 1961 to 1999
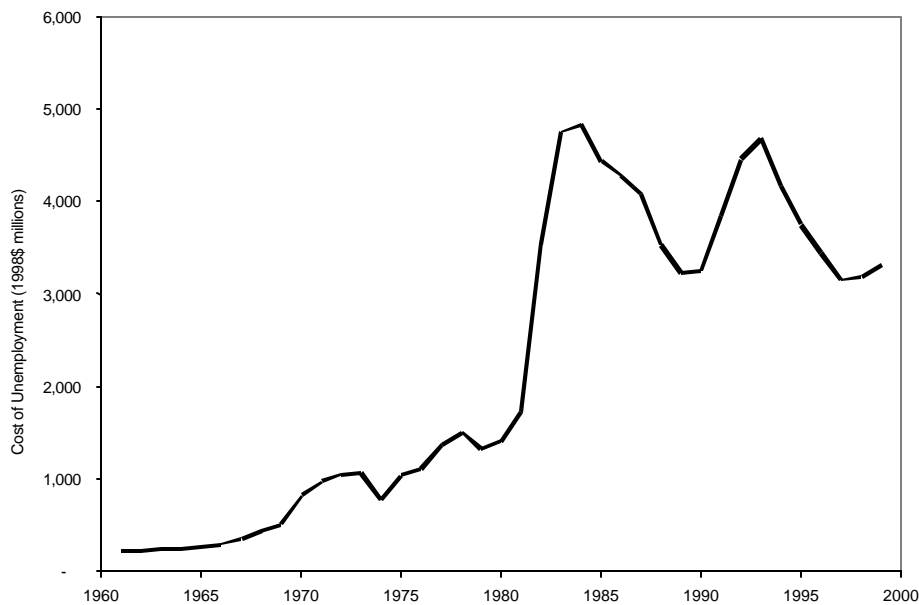
3.7   Overemployment in Alberta

Although Alberta boasts the highest rates of employment, the lowest rates of underemployment and the second lowest rate of unemployment in Canada, both unemployment and underemployment remain substantial concerns. The increase in the total number of underemployed workers in Alberta as well as the increase in the rate of underemployment (number of underemployed as a percentage of the labour force) since 1961 is significant.

The increase in underemployment is occurring at the same time as an increase in the number of "overemployed" workers. In other words, while more and more workers are working fewer hours than they desire, another group is working more than 40 hours a week. According to Morisette and Sunter (1994), since the beginning of the 1980s, the share of workers working 35 to 40 hours per week has declined while the proportion of people working either short or long hours increased.[17] In 1995, only 54 percent of workers in Canada worked between 35 and 40 hours while in 1976 that figure was 65 percent.[18] Over the same period, the proportion working less than 35 hours per week increased from 16 percent to 24 percent. At the same time, those working over 40 hours increased from 19 to 22 percent.[19] Knowing that more women are underemployed than men it is not surprising that it is mostly men who work more than 40 hours per week and it is mostly women who work less than 35 hours per week.[20] Assuming that workers who dedicate more than 40 hours per week to their main job are overemployed, Figure 12 shows the prevalence of overemployment in Alberta from 1976 to 1999. Between 1976 and 1999, the number of Albertans working more than 40 hours per week in their main job increased from 223,400 to 427,900. That is an increase of 92 percent. As a percentage of employed workers, overemployment increased from 26 percent in 1976 to 38 percent in 1999.

Figure 12: Overemployment in Alberta, 1961 to 1999

Source: Statistics Canada, Labour Force Historical Review CD Rom

The increase in the percentage of workers working longer hours can be explained at least in part by the substantial increase in the number of self-employed individuals in Canada. Since 1975, the numbers of self-employed women and men have increased 118 percent and 39 percent respectively.[21] The self-employed now account for over 17 percent of all workers, up from 12 percent twenty years ago.[22] Self employed workers are known to work much longer hours. For example, 20 percent of self-employed women and approximately 47 percent of self-employed men worked 50 or more hours per week in 1986. In contrast, just three percent of paid female workers and 10 percent of paid male workers devoted similar hours to work in 1986.[23] The increase in those working fewer hours is likely explained by the increase in the number of part-time jobs and the number of people pursuing an education in Canada.[24]

4   Conclusion

Given the increase in the polarization of hours devoted to work, it is interesting to consider whether a redistribution of the hours from those working more than 40 hours per week to those who are working less than 30 hours per week would decrease underemployment. While such a redistribution would reduce underemployment to some degree, research by Drolet and Morissette (1997) revealed that the number of hours generated by a voluntary reduction in work time would be insufficient to eliminate underemployment in Canada.[25] They also found that the characteristics of underemployed workers differ from those who are working overtime. Specifically, Canadians desiring fewer hours are well-educated professionals working as managers, architects, engineers, teachers, doctors or nurses. These workers have high hourly wages, high seniority and are employed in permanent jobs with pension plans. In contrast, those who want more hours are young; have little seniority and low levels of education; are employed in sales, service or clerical occupations; or work at temporary jobs that are not covered by pension plans. Thus, a redistribution of hours from overemployed workers to underemployed workers is neither practical nor realistic.

Appendix A.   List of Alberta GPI Background Reports

A series of Alberta GPI background reports accompanies the *Alberta Sustainability Trends 2000* report and this report. These documents are being released in late 2001 and early 2002 and will be available on the Pembina Institute's website at www.pembina.org.

Alberta GPI Background Reports and Sustainability Indicators

GPI Background Reports	GPI Accounts Covered by Report
1. Economy, GDP, and Trade	• Economic growth (GDP) • Economic diversity • Trade
2. Personal Consumption Expenditures, Disposable Income and Savings	• Disposable income • Personal expenditures • Taxes • Savings rate
3. Money, Debt, Assets and Net Worth	• Household debt
4. Income Inequality, Poverty and Living Wages	• Income distribution • Poverty
5. Household and Public Infrastructure	• Public infrastructure • Household infrastructure
6. Employment	• Weekly wage rate • Unemployment • Underemployment
7. Transportation	• Transportation expenditures
8. Time Use	• Paid work time • Household work • Parenting and eldercare • Free time • Volunteerism • Commuting time
9. Human Health and Wellness	• Life expectancy • Premature mortality • Infant mortality • Obesity
10. Suicide	• Suicide
11. Substance Abuse; Alcohol, Drugs and Tobacco	• Drug use (youth)
12. Auto Crashes and Injuries	• Auto crashes
13. Family Breakdown	• Divorce
14. Crime	• Crime
15. Gambling	• Problem gambling
16. Democracy	• Voter participation
17. Intellectual Capital and Educational Attainment	• Educational attainment
18. Energy (Oil, Gas, Coal and Renewable)	• Oil and gas reserve life • Oilsands reserve life
19. Agriculture	• Agricultural sustainability
20. Forests	• Timber sustainability • Forest fragmentation
21. Parks and Wilderness	• Parks and wilderness

GPI Background Reports	GPI Accounts Covered by Report
22. Fish and Wildlife	• Fish and wildlife
23. Wetlands and Peatlands	• Wetlands • Peatlands
24. Water Resource and Quality	• Water quality
25. Energy Use Intensity, Greenhouse Gas Emissions and Air Quality	• Energy use intensity • Air quality-related emissions • Greenhouse gas emissions
26. Carbon Budget	• Carbon budget deficit
27. Municipal and Hazardous Waste	• Hazardous waste • Landfill waste
28. Ecological Footprint	• Ecological footprint

Appendix B.   Data Details

Employment and Labour Force Productivity, Alberta, 1961 to 1999

Year	Labour Force (000s)	Employment (000s)	Employment Rate (percentage of labour force)	Labour productivity (GDP/labour force member)
1961	411	401	98%	$ 54,550
1962	445	434	98%	$ 53,161
1963	479	467	98%	$ 52,017
1964	512	500	98%	$ 50,718
1965	546	533	98%	$ 50,202
1966	569	555	98%	$ 51,612
1967	586	571	97%	$ 50,788
1968	615	595	97%	$ 50,311
1969	643	621	97%	$ 50,712
1970	667	633	95%	$ 52,564
1971	682	643	94%	$ 54,308
1972	711	671	94%	$ 55,955
1973	746	707	95%	$ 58,179
1974	781	754	97%	$ 59,105
1975	822	788	96%	$ 57,691
1976	895	859	96%	$ 54,240
1977	947	903	95%	$ 54,862
1978	1015	967	95%	$ 54,937
1979	1085	1042	96%	$ 57,086
1980	1160	1116	96%	$ 55,890
1981	1242	1194	96%	$ 56,955
1982	1271	1173	92%	$ 54,826
1983	1283	1146	89%	$ 53,515
1984	1293	1149	89%	$ 55,295
1985	1301	1170	90%	$ 56,083
1986	1320	1189	90%	$ 56,213
1987	1316	1188	90%	$ 58,410
1988	1333	1224	92%	$ 61,833
1989	1352	1254	93%	$ 60,395
1990	1374	1277	93%	$ 59,642
1991	1407	1290	92%	$ 59,894
1992	1420	1285	90%	$ 60,964
1993	1436	1296	90%	$ 66,021
1994	1463	1337	91%	$ 67,402
1995	1489	1373	92%	$ 68,083
1996	1520	1413	93%	$ 67,537
1997	1550	1457	94%	$ 71,033
1998	1606	1514	94%	$ 69,965
1999	1690	1594	94%	$ 68,845

Source: Employment and labour force data for 1966 to 1998 from Statistics Canada table 384-0035 (other years derived through extrapolation). GDP data from Alberta Treasury.

Weekly Wage Rate (1998$) and Weekly Wage Rate Index, where benchmark year = 100, Alberta, 1961 to 1999

Year	Weekly Wage Rate (includes salaries and wages)	Weekly Wage Rate Index
1961	$ 446.13	59.15
1962	$ 427.34	56.66
1963	$ 410.53	54.43
1964	$ 407.23	54.00
1965	$ 417.65	55.38
1966	$ 435.07	57.69
1967	$ 456.62	60.54
1968	$ 457.97	60.72
1969	$ 484.13	64.19
1970	$ 494.31	65.54
1971	$ 520.72	69.04
1972	$ 541.26	71.77
1973	$ 562.16	74.54
1974	$ 596.11	79.04
1975	$ 630.18	83.56
1976	$ 643.77	85.36
1977	$ 656.25	87.02
1978	$ 642.83	85.24
1979	$ 651.91	86.44
1980	$ 665.33	88.22
1981	$ 740.63	98.20
1982	$ 754.18	100.00
1983	$ 720.72	95.56
1984	$ 701.89	93.07
1985	$ 703.43	93.27
1986	$ 682.10	90.44
1987	$ 665.35	88.22
1988	$ 680.82	90.27
1989	$ 681.24	90.33
1990	$ 693.21	91.92
1991	$ 685.55	90.90
1992	$ 687.55	91.17
1993	$ 699.65	92.77
1994	$ 689.16	91.38
1995	$ 672.59	89.18
1996	$ 665.05	88.18
1997	$ 705.49	93.54
1998	$ 724.55	96.07
1999	$ 718.15	95.02

Source: Statistics Canada, Personal Communication

Underemployment Rate, Unemployment Rate and Underemployment and Unemployment Indices, where benchmark year =100, Alberta, 1961 to 1999

Year	Underemployment Rate (percentage of those employed)	Underemployment Index	Unemployment Rate (percentage of labour force)	Unemployment Index
1961	0.55%	100	2.5%	100
1962	0.55%	100	2.5%	100
1963	0.55%	100	2.5%	100
1964	0.55%	100	2.5%	100
1965	0.55%	100	2.5%	100
1966	0.55%	100	2.5%	100
1967	0.60%	93	2.7%	93
1968	0.73%	76	3.3%	76
1969	0.75%	74	3.4%	74
1970	1.15%	48	5.2%	48
1971	1.26%	44	5.7%	44
1972	1.26%	44	5.7%	44
1973	1.17%	47	5.3%	47
1974	0.77%	71	3.5%	71
1975	0.93%	60	4.2%	60
1976	0.88%	63	4.0%	63
1977	0.87%	64	4.6%	54
1978	0.97%	57	4.8%	52
1979	0.84%	66	3.9%	64
1980	0.84%	66	3.8%	66
1981	0.82%	67	3.9%	64
1982	1.63%	34	7.7%	32
1983	2.86%	19	10.7%	23
1984	3.37%	16	11.1%	23
1985	3.54%	16	10.1%	25
1986	3.29%	17	9.9%	25
1987	3.51%	16	9.7%	26
1988	2.90%	19	8.1%	31
1989	2.75%	20	7.3%	34
1990	2.64%	21	7.1%	35
1991	2.96%	19	8.3%	30
1992	4.12%	13	9.5%	26
1993	4.91%	11	9.7%	26
1994	4.88%	11	8.6%	29
1995	4.72%	12	7.8%	32
1996	4.30%	13	7.1%	35
1997	3.63%	15	6.0%	42
1998	3.45%	16	5.7%	44
1999	3.45%	16	6.0%	44

Source: Data for 1976 to 1995 from Statistics Canada, Labour Statistics Division (other years derived through extrapolation).

Appendix C.   U.S. GPI Cost of Underemployment Methodology

This appendix outlines the U.S. GPI Cost of underemployment methodology as described in *The 1998 U.S. Genuine Progress Indicator: Methodology Handbook*. The handbook accompanies a series of Excel spreadsheets for each of the 26 parameters of the U.S. GPI. Thus, references to "columns" in the description below relate to the accompanying spreadsheets. For complete details see *The 1998 U.S. Genuine Progress Indicator: Methodology Handbook* prepared by Mark Anielski, Redefining Progress, 1998.

Sources:

Council of Economic Advisers (CEA). 1998. Economic Report of the President. Washington, D.C.: U.S. Government Printing Office. http://www.access.gpo.gov/eop/

Leete-Guy, Laura and Juliet B. Schor. 1992. *The Great American Time Squeeze: Trends in Work and Leisure, 1969-1989*. Economic Policy Institute Briefing Paper. Washington, D.C.: Economic Policy Institute.

Average Work Week Length: http://epf.org/annual.htm#ANN15

Calculation:

Data

This column is the inverse of column J (Leisure). Instead of measuring the hours that people work when they would prefer leisure, this column estimates the hours when people are forced to have leisure when they would like to work.

Leete-Guy and Schor provide data for 1969 and 1989 (two business cycle peaks) on the number of constrained hours of all people in the economy who were either unemployed or worked fewer hours per week than they wished. Based on Current Population Surveys of the Census Bureau, Leete-Guy and Schor estimated that the number of hours of underemployment in the entire labour force rose from 4.2 billion hours in 1969 to 14.6 billion hours in 1989 (Leete-Guy and Schor 1992, p.8).

Although there were several business cycles between those two years, the GPI is oriented toward long-term trends. Thus, the growth of underemployment is assumed to be a smooth curve from 1969 to 1989. In addition, the same growth rate of underemployment is applied to the period from 1950 to 1969.

Unprovided hours are projected beyond Schor's 1989 figure as follows.

1. The annual rate of increase in unprovided hours per constrained labour force participant (Schor) for the period 1969 to 1989 is 0.59 percent per annum. This is used to project forward to 1997 from the 1989 base figure of 812.67 unprovided hours.

> (Note: This 812 hour figure differs slightly from Schor's 803 unprovided hours because we recalculate the unprovided hours per unconstrained worker by dividing our own estimate of total hours from 1950-1968 and 1970-1988, divided by the number of constrained labourers (from Col J Leisure).

2. The unprovided hours per constrained worker is then multiplied by the constrained labour force to obtain an estimate of total unprovided hours for 1990-1997.

In discussions with Juliet Schor, she had not updated the last 1989 estimates of underemployment though Larry Mishel, Economic Policy Institute is tracking the issue though using a different accounting method than Schor used. You can't simply add the Economic Policy Institute's estimates to Schor's figures. The only possible way to reconcile Juliet's estimates with those of the Economic Policy Institute is to extrapolate Schor's figures based on the Economic Policy Institute's recent estimates of change since 1989.

The Economic Policy Institute (1998) provides estimates of underemployment as a percentage of total employable workforce for 1994 to 1997 whereby EPI uses Bureau of Labour Statistics and the BLS definition of underemployment http://146.142.4.24/cgi-bin/surveymost.

Underemployment as a percentage of total employable workforce plus discouraged and otherwise constrained persons. These were 11.4 percent (1994), 10.6 percent (1995), 10.2 percent (1996), and 9.4 percent (1997). These are used for estimating the percentage of the labour force that is unconstrained for 1994 to 1997.

BLS calculates in terms of number of persons, unemployed, discouraged persons (stopped looking for work), people who want to work but can't as a percentage of the willingly employable work force. . The denominator does not include people who choose to opt out of the labour force. EPI looked at cross sectional data of different worker cohorts using BLS data and estimated underemployment percentages for 1994-1997 which could be used to extrapolate from the last GPI data point estimate using Schor's figures according to discussions with Jared Bernstein of the EPI: epi@epinet.org; Jbernstein@epinet.org. (Larry Mishel and Jared Bernstein, Economic Policy Institute; Ph: 202.775.8810 1660 L Street NW Suite 1200, Washington, DC 20036; fax: 202-775-0819)

Larry Mishel et.al (1996) estimate that annual hours of work have increased by 26 hours between 1989 and 1994 or an average annual increase of 5.2 hours per year. This rate is used to extrapolate Schor's figure estimates of annual hours of work from 1989 from 1990 to 1997.

Calculation:

These hours of involuntary unemployment are valued as the real wage rate that was lost. In fact, the true cost to society is much higher because the psychological costs to those who suffer unemployment are not estimated.

Cost of underemployment = number of constrained hours x $11.20 per hour

Real Wage Rate

The 1995 GPI used a real wage rate of $8.00/hr (1982$). The 1998 GPI re-estimates a real wage rate based on the average real (1982$) wage rate for private non-agricultural industries for the period 1959 to 1997 at $7.70/hr. Converting the $7.70 real wage rate (1982$) used in the 1995 GPI estimates to 1992 chained dollars requires conversion to 1992 chained dollar basis by multiplying by 1.454, yielding an average 1992$ wage rate of $11.19/hr, which is rounded to $11.20/hr average real wage rate in 1992$.

Rationale:

The American economy has created tens of millions of new jobs since 1950. But it has not been able to create *as much* employment—particularly *full-time* employment—as the members of the labour force would like and need. In addition to cyclical increases in unemployment, and underemployment during recessions, there has also been a long-term rise in the percent of the labour force that would like to work more. The costs fall initially, of course, on the discouraged workers themselves and their families. But others pay a price, too, when limited work opportunities give rise to violence, crime, substance abuse and the like.

The GPI does not include the effects of cyclical and short-term unemployment. Although such layoffs are not without social consequences, much of the financial hardship is covered by unemployment insurance.

The social distress caused by long-term structural changes, by contrast, is of a different order of magnitude. There is documented evidence that it is correlated with various social ills. A 14.3 percent increase in the unemployment rate (from 4.9 percent to 5.6 percent) from 1973 to 1974 was associated with an additional 46,000 deaths, 270 suicides, 403 homicides, 7,000 assaults, and 8,400 admissions to mental hospitals, with many of these effects spread out over a period of six years.[26]

Nevertheless, the GPI does not attempt to place a value on all such secondary effects of changes in the economy. Instead, it takes a more conservative course, and treats each hour of underemployment as a cost, much as an hour of leisure is treated as a benefit. In the latter case, an hour of free time is sought after, whereas in the former case, it is a burden.

Additional Sources:

Leete-Guy, Laura and Juliet B. Schor. 1994. Assessing the Time-Squeeze Hypothesis: Hours Worked in the United States, 1969-89. *Industrial Relations*, 33 (4): 25-43.

Bluestone, Barry and Stephen Rose. 1997. "Overworked and Underemployed: Unraveling an Economic Enigma," *The American Prospect* no. 31 (March-April 1997): 5869 http://epn.org/prospect/31/31bluefs.html

Appendix D.   Australia GPI Cost of Unemployment Methodology

This appendix outlines the Australia GPI Cost of unemployment methodology as is described in *Tracking Well-being in Australia The Genuine Progress Indicator 2000*. Appendix A of that report contains a complete set of Australia GPI data organized into a series of columns. Thus, references to "columns" in the description below relate to the columns as presented in the above mentioned publication. For complete details see *Tracking Well-being in Australia The Genuine Progress Indicator 2000* prepared by Clive Hamilton and Richard Denniss, Australia Institute, 2000.

The costs of unemployment are several, and in this component of the GPI we need to be particularly mindful of the dangers of double counting. The costs of unemployment are the following:[f]

1. loss of output in the economy due to underutilisation of factors of production;
2. loss of human capital due to declines in levels of skills, especially as a result of long-term unemployment;
3. declining levels of health and increasing suicide among the unemployed;
4. increasing levels of crime associated with higher unemployment;
5. increasing rates of family breakdown;
6. psychological impacts on the families of unemployed people; and
7. trauma, stress and loss of self-esteem associated with being unemployed.

The first two of these factors, the resource costs of unemployment, are already reflected in the GPI through personal consumption and public consumption (via lower tax revenues). The next two (health and crime) are partly accounted for elsewhere in the index, under public and private defensive spending on health (Columns D and I) and the costs of crime (Column W).

This leaves us with the last three factors, which might be characterised as the psychological costs of unemployment. Some of the evidence relating unemployment to various personal and social problems is reviewed in Junankar and Kapuscinski (1992).[27] These effects are extremely difficult to measure in monetary terms. However they represent large costs in social and personal terms and should be taken into account in any attempt to assess changes in national well-being.

The U.S. GPI assigns a value of US$8 (about A$14) to each hour of unemployment, but the rationale is opaque. The authors argue that an hour of involuntary leisure should be valued the same way, but with a negative sign, as an hour of forgone leisure (Cobb, Halstead and Rowe 1995: 23).[28] Thus, if the unemployed derive benefits of leisure but are willing to give them up to obtain a job, the price of an hour of leisure might be seen as the 'willingness to pay' to obtain work (assuming that the wage received is compensation for the work actually performed).

Elsewhere in the Australian GPI we have used an assessment of the value of forgone leisure in measuring the time component of the costs of commuting. The Bureau of Transport and

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[f] Sometimes it is argued that these costs are partly offset by benefits, including a more efficient economy due to lower inflation and current account deficits, and increased leisure for the unemployed. The former is the subject of considerable debate among macroeconomists, and in any case the efficiency effects are recorded elsewhere in the GPI. It is doubtful that the unemployed count increased leisure as a benefit.

Communications Economics (BTCE 1996: 484) values a person-hour of travel time at $15.19 across major Australian cities in 1995-96[29]. (In the same publication it also uses $9 per hour.)

Another method of obtaining a rough estimate of the monetary value of an hour of unemployment may be to consider the costs of attempting to overcome some of the psychological damage caused by unemployment. If an unemployed person decided to visit a counsellor once a week, the cost would be at least $80. On this basis (an admittedly crude one), the psychological costs of an hour of unemployment have a value of at least $2.

Thus we have a number of methods of evaluating the psychological costs of unemployment, and a range of estimates from $2 to $15.19. In the Australian GPI, we adopt a middle figure of $8 per hour for 1995-96.

The next step is to apply this figure to the amount of unemployment over time. Only unemployment in excess of a rate of 1.7 percent is considered to be costly. This figure can be regarded as the rate of 'frictional' unemployment arising from the normal processes of job change in a full-employment economy. It is the approximate rate for most of the 1950s and 1960s. Thus unemployment that imposes a cost is estimated by adjusting the number unemployed by this rate. Under this definition, unemployment among those seeking full-time work does not start to impose a cost until 1972, although according to Commonwealth Employment Service data the rate of unemployment exceeded 1.7 percent in the period 1961-1963 (RBA 1996).[30]

To calculate the number of unemployed hours we assume that an unemployed person seeking full-time work forgoes 40 hours of work each week while an unemployed person seeking part-time work forgoes 20 hours of work per week. (Note that the shortest average working week for full-time workers was 39.9 hours in 1982.)

However it is well-known that official unemployment statistics significantly underestimate the true level of unemployment, principally because of the discouraged worker effect. Discouraged workers are those jobless individuals who have given up the search for work, not for lack of want of a job, but because they feel the chance of success to be low or zero. The number of discouraged workers is highly dependent on the state of the economy, in times of recession, the number of discouraged workers rises dramatically. Our estimate of the number of discouraged workers relies on Mitchell (1999).[31]

The data sources used for this column were:

> Persons employed full-time; ABS
>
> Persons employed part-time; ABS
>
> Number of unemployed persons seeking full-time work; ABS
>
> Number of unemployed persons seeking part-time work; ABS
>
> Number of Hidden Unemployed; Mitchell, W.F. (1999),[32] Table 3. For 2000, the number of hidden unemployed was assumed to decline at the same rate as actual unemployment.
>
> The unit cost of unemployment of $8 per hour in 1995 was deflated against a series for average weekly earnings back to 1950 from RBA (1996).[33]

Appendix E.   Australia GPI Cost of Underemployment Methodology

This appendix outlines the Australia GPI Cost of underemployment methodology as is described in *Tracking Well-being in Australia The Genuine Progress Indicator 2000*. Appendix A of that report contains a complete set of Australia GPI data organized into a series of columns. Thus, references to 'columns' in the description below relate to the columns as presented in the above-mentioned publication. For complete details see *Tracking Well-being in Australia The Genuine Progress Indicator 2000* prepared by Clive Hamilton and Richard Denniss, Australia Institute, 2000.

Underemployed workers are defined as those who work part-time but would like to work full-time. ABS (Australia Bureau of Statistics) estimates of the number of part-time workers seeking more hours and of the average number of hours sought were used to estimate the number of hours of underemployment that exist in the economy. It should be noted that only the hours of underemployment are captured, not the underutilisation of human capital. Workers performing tasks that do not make full use of their skills and experience are also, in another sense, underemployed. The absence of reliable time series data on the quality of work means that the estimate used in the GPI is likely to underestimate the extent of underemployment.

It would be unreasonable to assume that the cost of an hour of unemployment for a partly employed person is the same as that of an hour of unemployment for a wholly unemployed person. On the other hand, many part-time employees are employed in casual jobs for short periods. We therefore value an hour of unemployment for an underemployed person at half of the rate for a fully unemployed person, i.e. $4 in 1995/96.

In estimating the costs of underemployment the following data were used:

> Number of part-time workers, ABS;
>
> Share of part-time workers wanting more hours, ABS;
>
> Average number of additional hours desired by part time workers seeking additional hours, ABS.

Endnotes

[1] Statistics Canada. *Labour Force Update.* Statistics Canada Catalogue No. 71-005-XPB

[2] Statistics Canada. *Labour Force Update.* Statistics Canada Catalogue No. 71-005-XPB

[3] Drolet, Marie and Rene Morissette. 1997. *Working More? Working Less? What Do Canadian Workers Prefer?* Statistics Canada: Research Paper Series, Analytical Studies Branch, No. 104.

[4] Underemployment and unemployment move in tandem (Noreau, Nathalie. 1994. "Involuntary Part-timers," *Perspectives on Labour and Income.* Autumn 1994, Vol. 6, No. 3, Statistics Canada, Catalogue 75-001E).

[5] Drolet, Marie and Rene Morissette. 1997. *Working More? Working Less? What Do Canadian Workers Prefer?* Statistics Canada: Research Paper Series, Analytical Studies Branch, No. 104.

[6] Statistics Canada. Women in the Labour Force. Statistics Canada Catalogue No. 75-507E.

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[8] Akyeampong, Ernst. *Involuntary Part-time Employment in Canada, 1975-1985.* Statistics Canada, Ottawa, Ontario.

[9] Statistics Canada. "Summer Jobs for Students: Recent Trends."

[10] Statistics Canada. 1998. *Caring Canadians Involved Canadians Highlights from the 1997 National Survey of Giving, Volunteering and Participating.* Ministry of Industry.

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[19] Sheridan, Mike, Deborah Sunter and Brent Diverty. "The Changing Workweek: Trends in Weekly Hours of Work in Canada, 1976-1995. Statistics Canada, Household Surveys Division, Statistics Canada.

[20] Sheridan, Mike, Deborah Sunter and Brent Diverty. "The Changing Workweek: Trends in Weekly Hours of Work in Canada, 1976-1995. Statistics Canada, Household Surveys Division, Statistics Canada.

[21] Statistics Canada. Women in the Labour Force. Statistics Canada Catalogue No. 75-507E.

[22] Statistics Canada. *Labour Force Update.* Statistics Canada, Catalogue No. 71-005-XPB.

[23] Statistics Canada. Women in the Labour Force. Statistics Canada Catalogue No. 75-507E.

[24] Sheridan, Mike, Deborah Sunter and Brent Diverty. "The Changing Workweek: Trends in Weekly Hours of Work in Canada, 1976-1995. Statistics Canada, Household Surveys Division, Statistics Canada.

[25] Drolet, Marie and Rene Morissette. 1997. *Working More? Working Less? What Do Canadian Workers Prefer?* Statistics Canada: Research Paper Series, Analytical Studies Branch, No. 104.

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[27] Junankar, P. N. and Kapuscinski, C. A. 1992. *The Costs of Unemployment in Australia.* EPAC Background Paper No. 24. Canberra: AGPS.

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[29] Bureau of Transport and Communications Economics (BTCE). 1996. *Transport and Greenhouse Gas: Costs and options for reducing emissions.* Report 94. Canberra: AGPS.

[30] Reserve Bank of Australia (RBA). 1996. *Australian Economic Statistics 1949-50 to 1994-95*. RBA Occasional Paper No. 8.

[31] Mitchell, W. F. 1999. *Estimating Hidden Unemployment in Australia and the United States.* Working Paper No. 99-01. Maryland: Center for Full Employment and Equity, University Press of America.

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