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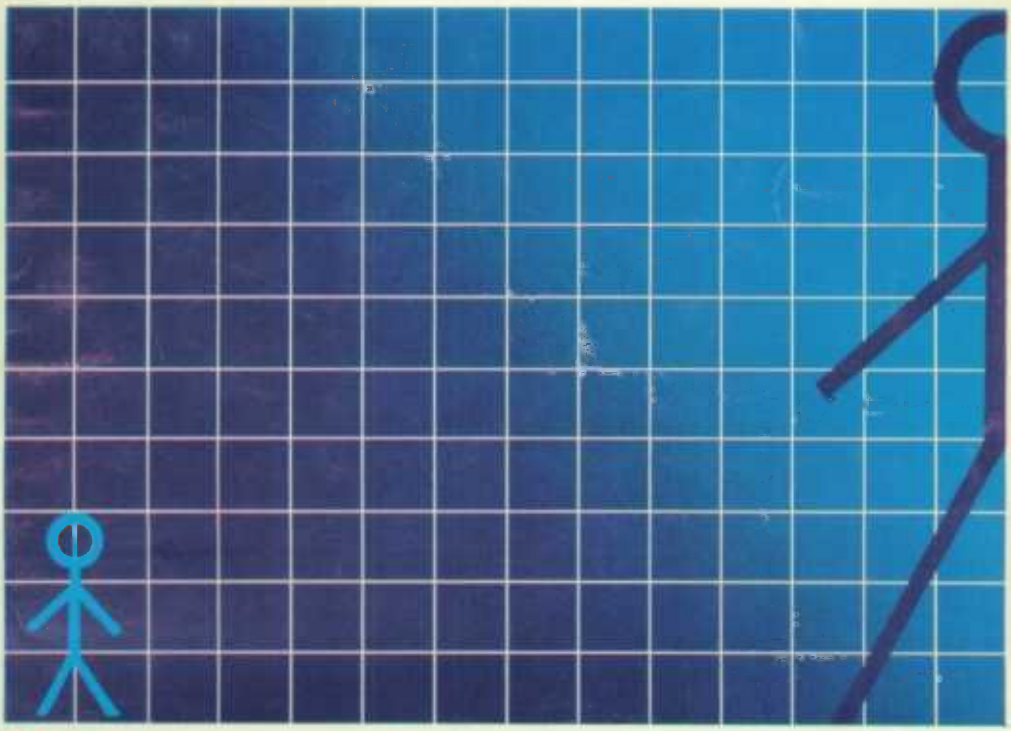

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STATISTICS CANADA
Labour Division
Manpower Research and Development Sub-Division

SPECIAL LABOUR FORCE STUDIES

Series A, No. 11

THE FLOW COMPONENTS OF UNEMPLOYMENT IN CANADA

by
Neil McIlveen and Harvey Sims

Published by Authority of
The Minister of Industry, Trade and Commerce

July 1978
5-4203-527

Price: $1.05

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Ottawa

PREFACE

This is the eleventh study in a series of special labour force studies concerned with the analysis of selected economic and demographic aspects of the working population in Canada. The data for this study were derived from the monthly survey of the labour force and from special supplementary surveys conducted by the Labour Force Survey Division of Statistics Canada.

The study was prepared by Neil McIlveen and Harvey Sims when they were employed in the Manpower Research and Development Sub-Division of Labour Division. The authors are presently employed with the Department of Finance.

A preliminary version of this study was presented at the first Canadian Regional Science Association Meetings held in Halifax, Nova Scotia in May, 1977.

PETER G. KIRKHAM,
Chief Statistician of Canada.

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CHAPTER I

INTRODUCTION

All Things Flow, Nothing Abides (Heracleitus)

Implicit in major theories of the labour market current in the 1960s was the assumption that the employed and the unemployed are essentially two different groups of people. As a consequence, the major issues in labour market policy centred on the means of transferring some portion of the unemployed to the employed group.

Recent research has questioned the adequacy of this static perception of unemployment as a description of the manner in which unemployment is experienced. This research emphasizes the dynamics of the labour market, in particular the magnitude of the flows over relatively short time periods between unemployment, employment and non-participation. Charles Holt has conveyed the essence of this flow perception of unemployment:

> It is probably more accurate to view "unemployed" as a state through which all workers pass periodically rather than as a description of certain kinds of people.[1]

American research[2] in this area has concentrated on the measurement, across demographic groups, of the dimensions or components of the unemployment flows: the frequency with which individuals experience unemployment and the length of time spent in an unemployed state. In Canada, examination of the flow dimensions of the labour market has been limited by the availability of data. In consequence heavy reliance has been placed on the stock measures of unemployment which, by their very nature, inadequately reflect variations in the manner in which groups experience unemployment.[3] Recently, however, as gross flows data generated from the Labour Force Survey have become available, a

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[1] Charles C. Holt, "Job Search, Phillips Wage Relation, and Union Influence: Theory and Evidence," in Edmund S. Phelps et.al., *The Microeconomic Foundations of Employment and Inflation Theory*, W.W. Norton, New York, 1970, pp. 53 - 123, p. 56.

[2] The seminal articles on this subject include Robert E. Hall, "Why is the Unemployment Rate so High at Full Employment? " *Brookings Papers on Economic Activity (hereinafter BPEA)*, 1970 - 3, pp. 369 - 402; Robert E. Hall, "Turnover in the Labour Force", *BPEA*, 1972 - 3, pp. 709 - 764; Hyman B. Kaitz, "Analysing the Length of Spells of Unemployment", *Monthly Labor Review*, Vol. 93, No. 11, November 1970, pp. 11 - 20; George L. Perry, "Unemployment Flows in the U.S. Labor Market" *BPEA*, 1972 - 3, pp. 245 - 292.

[3] The unemployment rate produced monthly from the Labour Force Survey is a stock – it is a measure of the proportion of the labour force (also a stock) which is without work and seeking work at a point in time (or more precisely during a reference week in the month). The annual average unemployment rate, although referring to a longer period, is only an average of 12 stock estimates.

number of studies have begun to probe this subject. Denton, Feaver, and Robb, in a study for the Economic Council, and Lazar in a separate article have estimated and analyzed some of the major flow variables underlying unemployment rates.[4]

The present study is both a complement and an addition to this body of knowledge. In it, a different methodology and a different data source are used to generate directly, for various demographic and regional groups, estimates of the flow components of their unemployment experience during a year. In addition, a framework is developed which relates these measures explicitly to the associated stock measure of unemployment, the annual average unemployment rate. Through this procedure, the proximate causes of differences in the unemployment rates of different groups, and changes in these rates over time, can be identified and analyzed.

The study includes four more chapters. In Chapter II, the data base is described and the methodology developed to relate the flow components to the stock measure. Chapter III presents our estimates of the flow components of unemployment for 1973. These estimates are disaggregated by sex and age, by sex, age and martial status and by sex and region. Chapter IV provides estimates of changes in the unemployment experience between 1964 and 1973 for the major age/sex groups. Finally, Chapter V summarizes the main conclusions of the study.

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[4] Frank T. Denton, Christine H. Feaver, A. Leslie Robb, *The Short-run Dynamics of the Canadian Labour Market,* Economic Council of Canada, 1976, and Fred Lazar, "Regional Unemployment Rate Disparities in Canada: Some Possible Explanations", *The Canadian Journal of Economics,* Vol. X, No. 1, February 1977, pp. 112 - 129.

CHAPTER II

DATA AND METHODOLOGY

This chapter provides a short description of the data underlying the study, then turns to a more comprehensive outline of the methodology we have employed.

Data

Two Annual Work Patterns Surveys (AWPS), conducted as supplements to the monthly Labour Force Survey (LFS) in January 1965 and January 1974, provide the basic information needed to construct estimates of the flow components of unemployment. Each AWPS asked questions concerning the individual's labour force activity during the previous calendar year – 1964[5] and 1973 respectively. The responses to three AWPS questions are crucial to this study: the number of weeks worked, the number of weeks of unemployment (weeks without work and looking for work) and the number of stretches of unemployment experienced during the calendar year. Facsimilies of the AWPS questionnaires are provided in Appendix I.

Methodology

The Labour Force Survey produces, for a given demographic group i, annual average estimates of the unemployed and the labour force; the Annual Work Patterns Survey measures, for the same group, the total weeks of unemployment and labour force activity experienced during the year. The first step in the procedure is to establish the relationship between these two sets of estimates.[6] The LFS provides an estimate of the total weeks of unemployment experienced by group i during the year; this estimate is 52 times the annual average level of unemployment, or $52U_i$. The corresponding estimate of the total weeks of labour force activity for group i is 52 times the annual average labour force, or $52L_i$. The annual average unemployment rate for group i, UR_i, can therefore be expressed as:

$$UR_i \equiv \frac{52\,U_i}{52\,L_i} \cdot 100$$

$$\equiv \frac{\text{Total weeks of unemployment}_i}{\text{Total weeks of labour force activity}_i} \cdot 100 \qquad (1)$$

---

[5] The Survey covering 1964 provided the data base for a Special Labour Force Study by Frank J. Whittingham and Bruce W. Wilkinson, *Annual Work Patterns of the Canadian Population, 1964*, Statistics Canada, Catalogue 71-506, April 1967. As the original data tapes from this survey are no longer available, the 1964 data presented in Chapter IV are calculated from information contained in this earlier study and from work sheets prepared for the monograph.

[6] For the present, conceptual and measurement differences between the two surveys and the effect of these differences on the estimates are ignored. This subject will be addressed in Chapter III.

The second step is to decompose, using the AWPS data, the right-hand side of (1) into the flow components of unemployment. The variables required to effect this decomposition are defined as follows:

Uy_i = the annual unemployed – the number of members of group i who experienced any unemployment during the year;

Ly_i = the annual labour force – the number of members of group i who participated in the labour force at any time during the year;

I_i = the incidence of unemployment – the percentage of the annual labour force of group i which experienced any unemployment during the year. $I_i = (Uy_i/Ly_i) \cdot 100$;

wu_i = the average number of weeks of unemployment experienced by the Uy_i persons who were unemployed at any time during the year;

wl_i = the average number of weeks of labour force activity accounted for by the Ly_i persons who participated in the labour force at any time during the year;

s_i = the average number of spells of unemployment experienced by the Uy_i persons who were unemployed at any time during the year;[7]

d_i = the average duration (in weeks) of the spells of unemployment experienced by group i; $d_i = wu_i/s_i$.

The total weeks of unemployment experienced by group i can be expressed as the product of the number of members of group i who experience unemployment (Uy_i) and the average number of weeks of unemployment they experience (wu_i). Analogously, the total weeks of labour force activity accounted for by group i can be expressed as the product of the terms Ly_i and wl_i. Substitution of these products in (1) yields:

$$UR_i \equiv \left(\frac{Uy_i \cdot wu_i}{Ly_i \cdot wl_i} \right) \cdot 100 \qquad (2)$$

The term wu_i can be decomposed further as the product of the average number of spells of unemployment experienced by the Uy_i members of group i and the average duration (in weeks) of these spells. Replacement of wu_i by $s_i d_i$ and $(Uy_i/Ly_i) \cdot 100$ by I_i in (2) yields:

$$UR_i \equiv \frac{I_i \cdot s_i \cdot d_i}{wl_i} \qquad (3)$$

Thus the annual average unemployment rate of group i may be written as the product of four flow components: $1/wl_i$, the inverse of the average number of weeks of labour force activity; I_i, the incidence of unemployment among the

[7] Question 6 on the Annual Work Patterns Survey asks whether the weeks without work and looking for work occurred in one continuous stretch and, if not, in two or in three or more stretches. For purposes of calculating the average number of spells an answer of three or more is assumed to be three stretches. The proportion of persons experiencing three or more stretches of unemployment, among persons in each demographic group who experience some unemployment, is quite small. Thus this assumption does not result in any serious underestimate of the average number of stretches of unemployment.

annual labour force: s_i, the average number of spells of unemployment experienced by persons who were unemployed at some time during the year; and d_i, the average duration of a spell of unemployment.[8]

The relationship between the unemployment rate and the incidence, average spells and duration terms is straightforward. However, the link between UR_i and the average number of weeks of labour force activity requires further comment. The function of the wl_i term is to scale a given volume of unemployment to the portion of the year during which members of group i participate in the labour force. This function can be illustrated by reference to identities (1) and (2). The numerator of the flow side of (2), $Uy_i \cdot wu_i$, is equal, when divided by 52, to U_i, the annual average level of unemployment. If all members of the annual labour force of group i participate for 52 weeks, the annual average labour force (L_i) must equal the annual labour force (Ly_i). By contrast, if the members of group i participate, on average, for less than 52 weeks, the annual average labour force must be less than Ly_i. Assuming that the level of unemployment is the same in both cases, the annual average unemployment rate (UR_i) must be higher in the latter case because the same annual average level of unemployment (U_i) is divided by an annual average labour force which is smaller than that obtained if all the members of group i participate for the entire year. Therefore, the greater is the value of wl_i, other things being equal, the lower is the annual average unemployment rate.

Identity (3) is the basic relationship used to analyze the flow components of unemployment. However, the AWPS data must be modified in one important respect before being used within this framework. This modification is necessary because while most AWPS questions focus on the labour force activity of individuals during a calendar year, the question dealing with the number of spells of unemployment refers implicitly to a longer reference period. In the 1973 survey, for example, responses to this question would include spells of unemployment which began in 1972 and ended in 1973, spells which began and ended in 1973 and spells which began in 1973 but which were not completed during that year. Consequently, the AWPS estimate of spells of unemployment experienced in 1973 overstates the number of spells **completed** in 1973. Since average duration (d_i) is calculated by dividing average weeks of unemployment (wu_i) by the average number of spells (s_i), the overstatement of completed spells of unemployment results in a proportional underestimate of the average duration of completed spells of unemployment.[9]

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[8] A methodology similar to that developed here has been employed in some American research on the flow aspects of unemployment. See, for example, Nancy Smith Barrett, "The U.S. Phillips Curve and International Unemployment Rate Differentials: Comment", *American Economic Review*, Vol. LXV, No. 1, March 1975, pp. 213 - 221.

[9] This difference in the reference period in the AWPS questions affects all of the flow variables. For example, the estimate of the number of persons experiencing any unemployment during the reference year (Uy_i) includes individuals who were employed for most of 1973, began their only spell of unemployment late in the year and continued in an unemployed state into 1974. Such individuals are counted in Uy_i as presently defined but must be excluded if the concept of completed spells is employed.

In order to generate estimates of the flow components adjusted for this distortion, we have made a major simplifying assumption concerning the nature of labour market processes during each calendar year covered by the AWPS (and for periods of several months on either side of these years). Specifically, we assume that the labour market is in flow equilibrium during the calendar year in question, and in the months immediately adjacent to this year. With respect to the unemployed, this assumption means that equal numbers of individuals in group i enter and leave the pool of unemployed persons each month. This in turn implies that the number of unemployed persons is constant from month to month, and that the average duration of completed spells of unemployment is constant.[10]

These corollaries of the flow equilibrium assumption permit the derivation of two important results. First (using 1973 for illustration), the number of spells of unemployment begun in 1972 and completed in 1973 equals the number of spells begun in 1973 and completed in 1974. Second, the spells which began in 1972 but were completed in 1973 were on average one-half completed by January 1, 1973. Similarly, those which began in 1973 but were completed in 1974 were on average one-half completed by December 31, 1973. Thus the weeks of unemployment recorded by the 1973 AWPS which are associated with spells of unemployment overlapping the beginning or end of 1973 would generate average duration estimates equal to one-half the actual duration of these spells. By the flow equilibrium assumption, the actual duration of these spells also equals the average duration of spells begun and completed in 1973.

These results enable us to modify the AWPS data in order to derive estimates of the number and duration of completed spells of unemployment which began in 1973 but continued into 1974.[11] The spells remaining in the data are those spells completed in 1973. At the same time, the weeks of unemployment associated with the 1973 - 74 overlapping spells are retained in the data and are added to the weeks of unemployment associated with the 1972 - 73 overlapping spells. If the flow equilibrium assumption holds exactly, this procedure doubles the number of weeks of unemployment recorded for the 1972 - 73 overlapping spells. Consequently, the AWPS estimate of the duration of those spells also doubles, to equal the actual duration of all completed spells.

The removal of spells of unemployment not completed in 1973 from the AWPS data base permits the generation of estimates of the flow components within a completed-spells-of-unemployment framework. As a result of this

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[10] For a mathematical derivation of the constant average duration corollary, see Kaitz, *op. cit.*, pp. 18 - 19.

[11] This is accomplished by identifying persons who in the January 1974 LFS reported that they were unemployed as of the reference week in December 1973. The spells of unemployment which these individuals were experiencing in December are assumed to have carried over into 1974. We then reduce by one the number of spells which each of these individuals reported for 1973. If this procedure reduces the number of spells to zero, the individual is also excluded from the annual unemployed since this term is redefined as the number of persons experiencing at least one completed spell of unemployment.

procedure the precise definitions of the flow components change somewhat from the definitions provided earlier; for example, the estimate of the annual labour force Ly_i must be reduced by the number of persons in group i whose 1973 labour force experience was limited to a single spell of unemployment which began in 1973 and ended in 1974. The remaining revised definitions of the flow components are given in Appendix II. We also show in Appendix II that identity (3) continues to hold in the modified framework. Thus, letting an asterisk indicate that a variable has been redefined within the completed spells framework, the relationship between the stock of unemployment (as represented by the annual average unemployment rate) and its flow components is given as

$$UR_i \equiv \frac{l^*_i \cdot s^*_i \cdot d^*_i}{wl^*_i} \qquad (4)$$

CHAPTER III

CROSS-SECTIONAL VARIATION IN THE FLOW COMPONENTS OF UNEMPLOYMENT RATES, 1973

Estimates by Age and Sex

Demographic and geographic differences in unemployment rates are a persistent feature of the Canadian labour market. This chapter provides data on the variations in the unemployment flows which underly these differences in unemployment rates. First, Table 1 presents unemployment rates and the associated flow components for major age/sex groups in 1973. As an orientation to the format of this and subsequent tables, examine the all ages/both sexes data in the last row of the table. The 1973 average annual unemployment rate as given by the Labour Force Survey, i.e., the official unemployment rate, was 5.6 (UR^o in column 1). Column 3 presents what we call the calculated unemployment rate, UR^c. For a number of reasons,[12] identity (4) does not hold precisely once actual estimates of the left and right-hand side terms are made. Accordingly we have derived a "calculated" unemployment rate by multiplying together all of the terms on the right-hand side of the identity. Since UR^c is generated in this manner, it is attributable precisely to the combined effects of the four flow components. In the discussion which follows, when we relate differences in unemployment rates to differences in flow components, it is differences in calculated unemployment rates to which we will be referring. For 1973, the aggregate calculated unemployment rate was 6.5. Column 2 gives the ratio of the official to the calculated unemployment rate, R; this ratio is our choice of a summary statistic to provice a guide as to how closely the calculated unemployment rate approximates the official unemployment rate. Columns 4 through 7 present the estimates of the four flow components which, multiplied together, yield the calculated unemployment rate. In aggregate, individuals participated in the labour force on average for 44.8 weeks in 1973 (column 4); 15.2% of these annual labour force participants experienced at least one completed spell of unemployment (column 5). The average number of completed spells of unemployment per person who experienced unemployment was 1.32 (column 6); each of these spells lasted on average 14.5 weeks (column 7).

Turning to the estimates for the various age/sex groups, column 2 shows that for men of all age groups the calculated unemployment rates are fairly close to the official rates (although UR^c is approximately 15% larger than UR^o for teenagers and for men aged 55 and over). This is not the case for women; except for teenage non-students, official rates for women are 25 - 40 + per cent lower than calculated rates. The explanation of these large differences centres on the

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[12] These reasons would include: differences in sampling error associated with estimates from two different surveys, the LFS and the AWPS; some degree of recall error in particular associated with the AWPS, because in that survey respondents were asked to recall patterns of labour force activity covering the whole of the previous calendar year; and most importantly some conceptual differences in the way the same variables were measured in the two surveys.

TABLE 1. Unemployment Rates and their Components, by Sex and Age Group, Canada, 1973

	UR^o %	$\left(R = UR^o/UR^c\right)$	UR^c[a] %	$1.0/wl^*$ 1.0/wks.	l^* %	s^* No.	d^* Wks.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Men:							
14-19	12.9	.85	15.1	1/29.9	27.3	1.33	12.4
14-19 non-students[b]	18.9	.99	19.1	41.0	36.4	1.46	14.7
20-24	10.0	.99	10.1	44.0	25.6	1.37	12.7
20-24 non-students	10.0	1.01	10.1	48.3	25.9	1.40	13.5
25-44	4.2	1.02	4.1	50.7	10.8	1.38	13.9
45-54	3.8	.92	4.1	51.3	8.9	1.44	16.3
45+	4.1	.87	4.7	50.3	9.2	1.41	18.5
55+	4.7	.82	5.7	49.1	9.8	1.37	21.2
All age groups	5.9	.97	6.1	47.1	14.6	1.37	14.3
Women:							
14-19	10.8	.75	14.1	1/29.0	26.6	1.25	12.6
14-19 non-students	14.5	.88	16.4	39.2	36.3	1.29	13.7
20-24	6.5	.73	8.9	41.7	21.2	1.23	14.2
20-24 non-students	6.5	.72	9.0	43.2	21.0	1.23	15.1
25-44	3.9	.59	6.6	42.9	14.1	1.24	16.3
45+	2.8	.57	4.9	45.3	9.0	1.33	18.4
All age groups	5.1	.69	7.4	40.9	16.2	1.25	15.0
Both sexes:							
14-19	12.0	.81	14.8	1/29.5	27.0	1.30	12.4
14-19 non-students	16.9	.94	17.8	40.3	36.4	1.38	14.3
20-24	8.5	.88	9.6	43.0	23.8	1.31	13.3
20-24 non-students	8.7	.92	9.5	46.2	23.6	1.33	14.0
25-44	4.1	.84	4.9	47.8	12.0	1.32	14.8
45+	3.8	.79	4.8	48.7	9.1	1.38	18.5
All age groups	5.6	.86	6.5	44.8	15.2	1.32	14.5

Note: (a) $UR^c \equiv \frac{1}{wl^*} \cdot l^* \cdot s^* \cdot d^*$, as per equation 4 in the text.

(b) Official unemployment rates for non-students were calculated by the authors, not Statistics Canada. For a brief description of the methodology employed in the calculation of these rates, see Appendix III.

Source: Column 1, published and unpublished LFS data. Columns 3 through 7, Annual Work Patterns Survey, January 1974.

more direct nature of the question establishing unemployment in the AWPS relative to the questions in the old LFS. This issue will be discussed further when we examine estimates for married and single persons, since as will be shown the discrepancy between official and calculated unemployment rates is confined almost exclusively to married women.

For males, the pattern of average weeks of labour force activity across age groups (column 4) is as expected. Teenagers as a group participated in the labour force on average for about 30 weeks in the year. However, the labour force attachment of teenage non-students was much stronger; these young men spent 41 weeks in the labour force.[13] The number of weeks of labour force activity increased sharply for men aged 25 - 44 and remained high for the older age groups. The same general pattern holds for women although the increase in weeks in the labour force with age was much less dramatic.

The range of values for incidence (column 5) indicates that the probability of experiencing some unemployment varies greatly by age. Twenty-seven per cent of teenage labour force participants, and 36.4% of the non-students in this age group, experienced at least one completed spell of unemployment during 1973 (both sexes panel). In contrast, the incidence of unemployment among labour force participants aged 25 - 44 was only 12%, and dropped to 9.1% for persons aged 45 +. The pattern of declining incidence with increasing age holds for both men and women (although there are some differences in incidence rates across corresponding age groups). Variation in incidence is obviously a major explanation of the variation in unemployment rates across age groups, particularly in the case of young versus older persons. For example, the unemployment rate of 14 - 19 year old male non-students was 4.7 times higher than the rate of men aged 25 - 44 (19.1 versus 4.1, column 3). The bulk of this differential is accounted for by differential incidence. The incidence of unemployment experienced by the former group was 3.4 times that of the other group (36.4 versus 10.8, column 5).

Given the degree of variation in the incidence of unemployment, the constancy in the average number of spells of unemployment (column 6) is rather surprising. Women experienced slightly fewer spells than men – 1.25 spells on average for women versus 1.37 for men – with this pattern holding for each age group. Across age groups, however, there is little difference in the average number of completed spells. Coupled with the data for incidence, the estimates for average spells provide an interesting result. In 1973, labour force participants in different age groups faced vastly different probabilities of experiencing some unemployment. However, with the completion of one spell of unemployment, the chance of becoming unemployed again during the year was independent of age.

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[13] The definition of "non-student" underlying the flow component estimates for this group (a person not attending school full-time as of the survey reference week) includes both full-year non-students and school leavers. Therefore the wl* term for non-students understates to some extent the average weeks of labour force activity for full-year non-students.

Much of the research in the area of labour market flows suggests that employment instability is a major explanation of high unemployment rates among particular groups. To examine this hypothesis we have used combinations of completed spells and number of employers during a year to define, somewhat arbitrarily, a group of persons whose unemployment experience in 1973 was related to serious employment instability. This group includes persons who reported either two completed spells and worked for two or more employers or reported three or more spells and worked for at least one employer.

Table 2 gives the percentages which these persons comprised of all persons who experienced some unemployment in 1973 (the annual unemployed). About 22% of the male annual unemployed suffered serious employment instability, while the proportion dropped to about only 12% for women (the higher figures for men are probably related to the predominance of males in high turnover industries such as forestry and construction). However, there was relatively little

TABLE 2. Unemployment and Serious Employment Instability, by Sex and Age, Canada, 1973

	Employment instability group[a] as a percentage of the annual unemployed
	(1)
Men:	
14-19	20.9
20-24	23.4
25-44	21.7
45-54	24.8
55+	17.8
All ages	21.8
Women:	
14-19	14.1
20-24	11.9
25-44	10.5
45+	14.0
All ages	12.2
Both sexes:	
All ages	18.1

Note: (a) Persons experiencing serious employment instability are defined here as persons who reported either two completed spells of unemployment and worked for two or more employers, or reported three or more spells and worked for at least one employer.

Source: Annual Work Patterns Survey, January 1974.

variation across age groups within each sex (with the exception of 55 + year old men); this suggests that differential employment instability does not account for the wide variations in incidence across age groups.[14]

Turning to the data on duration per completed spell in column 7, Table 1, a number of interesting patterns emerge. First, the average duration of a completed spell of unemployment is quite lengthy. For men, duration averaged 14.3 weeks (approximately 3.3 months) per spell; for women 15.0 weeks (approximately 3.5 months). Second, there are some differences across age/sex groups in the duration patterns. Among men under 45 years of age, there was little difference in average duration in 1973; the duration figure for men aged 25 - 44, 13.9 weeks, was slightly lower than that of 14 - 19 year old non-students. For men aged 45 and over, however, average duration rose quite sharply, reaching 21.2 weeks for the 55 and over group. Among women, the tendency for duration to rise with age was more sharply pronounced: duration rose steadily from 13.7 weeks for 14 - 19 year old non-students to 18.4 weeks for women aged 45 and over.

From the above discussion, it is evident that the most important source of variation in unemployment rates across age/sex groups is variation in the incidence of unemployment. In almost all cases, differences in the average duration of unemployment are of secondary importance in explaining unemployment rate differentials. Differences in labour force attachment and average spells per person experiencing unemployment tend not to be significant sources of variation in unemployment rates.

In our view, these are significant results particularly in the context of the problem of youth unemployment in Canada. As we noted in the introduction, a major finding of the American research in this area is that, relative to adults, young persons experience unemployment more frequently but for shorter periods of time. In other words, young people experience much higher than average frictional unemployment.[15] Our estimates suggest that the situation in Canada is substantially different. In Canada, at least during 1973, much higher proportions of the youth labour force (relative to the adult labour force) experienced some unemployment. The results indicate, however, that the incidence of repeated spells of unemployment was not greater for youth. Further, the higher incidence of unemployment among youth was not offset by shorter duration. In fact, duration per spell of unemployment was virtually the same for persons between the ages of 14 and 24 and those between 25 and 44. These factors suggest that the high unemployment rates of young persons in Canada reflect much more than a higher than average frictional component. Specifically they suggest that there exists a large structural element in the youth unemployment experience, i.e., that

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[14] Although the persons we have defined as having experienced serious employment instability accounted for less than one-fifth of the total incidence of unemployment in 1973, their contribution to the volume of completed spells of unemployment was of course much higher. In aggregate, while this group accounted for only 18.1% of total incidence, it experienced 33% of all completed spells of unemployment.

[15] See, for example, Hall, *op. cit.*, and Perry, *op. cit.*

there are important structural features of the labour market which make it difficult for many young persons both to hold jobs and to find new jobs when they become unemployed.

The further examination of this issue is beyond the scope of the present study. However, we feel that the estimates of the flow components of unemployment presented here provide clear indications of the directions which further research into the youth unemployment problem should take.

Estimates by Age, Sex and Marital Status

Table 3 presents 1973 unemployment rates and the associated flow components by sex, marital status and broad age group. Aside from providing an opportunity to assess variations by marital status in the manner in which unemployment is experienced, these data provide support for our contention that the values of the calculated unemployment rates are reasonable, even where these differ sharply from corresponding official Statistics Canada estimates. This point will be examined first.

An examination of the ratio R in column 2 indicates that the official and calculated annual average unemployment rates for men and for single women are approximately equal. Major differences between the two rates are confined almost exclusively to married women. For these women, calculated unemployment rates are almost double the official rates for each age group. This result is very similar to the finding that the 1971 Census estimate of the unemployment rate for married women, 8.9 in May 1971, was much higher than the May 1971 LFS estimate, 5.0. Census personnel undertook a detailed examination of this discrepancy, and concluded that it was probably attributable to a major difference in the nature of the questions used to establish the existence of unemployment in the two surveys. The relevant Census question was a direct question – "Did you look for work last week? – with examples of search activity being provided. Under the (old) LFS, on the other hand, unemployment status was determined indirectly, from the responses to questions concerning major and minor activities during the reference week. In the words of the author of the memorandum on this issue:

> It seems quite likely that if the looking activity was marginal (e.g., one telephone call in answer to a newspaper advertisement) then the Labour Force Survey line of questioning might not elicit a recall of this activity on the part of many housewives, while the direct questioning and examples given by the census questionnaire would jog their memory. The involvement of married women in household tasks would elicit the response "keeping house" to questioning on their major activity and unless they had spent considerable time in job hunting, they might easily neglect to mention this activity in response to the question on secondary activity. If, in fact, such women had

TABLE 3. Unemployment Rates and their Components, by Sex, Marital Status and Age Group, Canada, 1973

	UR^o %	$\left(R = UR^o/UR^c\right)$	$UR^{c[a]}$ %	1.0/w1* 1.0/wks	1* %	s* No.	d* wks.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Men – Single:							
14 - 24	12.5	.93	13.5	1/34.9	27.5	1.35	12.7
25 - 44	8.7	1.04	8.3	48.8	17.6	1.38	16.7
45 +	8.5	1.01	8.4	50.0	13.2	1.51	21.1
All ages	11.4	.96	11.9	38.5	24.7	1.36	13.6
Men – Married:							
14 - 24	6.4	.90	7.1	1/48.3	21.7	1.32	12.0
25 - 44	3.5	1.03	3.4	51.1	9.7	1.38	13.0
45 +	3.6	.82	4.4	50.4	8.8	1.40	18.1
All ages	3.7	.90	4.1	50.6	10.3	1.38	14.5
Women – Single:							
14 - 24	9.1	.83	10.9	1/33.8	23.3	1.24	12.8
25 +	..[b]	..	3.2	48.9	7.9	1.31	15.2
All ages	7.3	.88	8.3	37.8	19.3	1.25	13.0
Women – Married:							
14 - 24	6.1	.55	11.0	1/40.6	24.7	1.22	14.8
25 - 44	3.8	.53	7.2	41.4	14.5	1.21	17.1
45 +	2.7	.52	5.2	44.1	9.3	1.33	18.5
All ages	3.9	.53	7.3	42.1	14.9	1.23	16.7
Both sexes – Single:							
14 - 24	11.2	.90	12.5	1/34.5	25.8	1.31	12.8
25 - 44	6.9	1.08	6.4	48.9	14.2	1.36	16.2
45 +	5.6	.98	5.7	49.5	9.6	1.46	20.0
All ages	9.7	.92	10.5	38.2	22.5	1.32	13.5
Both sexes – Married:							
14 - 24	6.3	.69	9.1	1/44.1	23.3	1.26	13.6
25 - 44	3.6	.78	4.6	47.7	11.4	1.31	14.7
45 +	3.4	.74	4.6	48.8	8.9	1.38	18.2
All ages	3.7	.74	5.0	47.7	11.8	1.32	15.4

Note: (a) $UR^c \equiv \frac{1}{wl^*} \cdot l^* \cdot s^* \cdot d^*$, as per equation 4 in the text.

(b) The official unemployment rate for single females aged 25 years and over is based on estimates too small to be published. However, the associated flow components and the calculated unemployment rate for this group are based on estimates considered sufficiently large to be published. Nonetheless the estimates for this group should be used cautiously.

Source: Column 1, published and unpublished LFS data; Columns 3 through 7, Annual Work Patterns Survey, January 1974.

> engaged in job search activities, they would certainly fall into the group of people who "were without work and looking for work" . . .[16]

A similar explanation underlies the large difference between the official and calculated unemployment rates for married women found in this study. The question in the AWPS which establishes unemployment – "How many weeks was this person without work and looking for work in 1973?" is considerably more direct than the LFS questions. In cases in which job search activity is marginal, it is more likely to be included in the response to the AWPS question than in the LFS questions establishing labour force activity.[17] Therefore, there are good grounds for believing that the calculated unemployment rates presented in this paper, for married women as well as for other groups, accurately reflect the volume of unemployment experienced during the calendar year.[18]

The flow component estimates for the various sex/marital status groups illustrate one of the dimensions of unemployment in Canada in the early 1970's. It seems reasonable to argue that, in terms of the degree of individual choice which can be exercised in the questions of whether to quit work and look for another job, how long to look for another job or whether to leave the labour market entirely, there are broadly speaking two major groups of people. The first consists of persons whose choices are relatively limited. This group would include married men, who are constrained by family responsibilities in the flexibility they have in quitting their jobs, in the degree of choice they can exercise in accepting or rejecting job offers, and in the time they can afford to spend looking for work;

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[16] A.J. Kempster "Background Information on the 1971 Census Labour Force Data" *Population and Housing Research Memorandum*, No. 74-EC-4, Statistics Canada, November 1973, p. 3.

[17] A similar explanation may account for the difference between the official and calculated rate for teenagers (Table 1). Since the two rates are virtually equal for teenage non-students, the discrepancy must lie in the data for students. It seems reasonable to assume that job search among this latter group is often neither a major nor even a significant activity and thus may not be captured by indirect questions.

[18] The recent revisions in the labour force survey questionnaire have produced higher estimates of unemployment among women. In the parallel run of the new and old surveys undertaken in 1975, the annual average unemployment rate for women in the former was estimated to be 8.1% as compared to 6.4% in the latter. The explanation for this increase is quite similar to the argument in the text above:

> The higher level of female unemployment . . . is the result of the much better identification of job search activities among women in the revised survey. In the former survey, there was a tendency on the part of women not to report looking for work in response to the general questions "What did . . . do mostly last week?" and "Did . . .do anything else last week?" Rather, they tended to respond in terms of household or other non-labour force activities which account for a much greater proportion of women's time. Hence, while the old survey accurately indicated trends and changes in female unemployment, it understated the levels and rates.
>
> Statistics Canada, *Labour Force Information for the week ended January 17, 1976*, Catalogue 71-001P, February 10, 1976, page 12.

it would also include single women (particularly those 25 years of age and over), who have both fewer alternatives to supporting themselves by working and fewer non-labour force responsibilities, than do married women. The second group comprises those persons whose range of choices is wider. This group includes, of course, married women, who have significant household responsibilities and who are generally second income earners in the family, and single men, whose family responsibilities are relatively limited. In this context, the patterns of incidence and duration in the estimates provided in Table 3 are interesting. The incidence of unemployment experienced by members of the limited-choice group was lower than that experienced by members of the wider-choice group. For example, the incidence of unemployment among single men aged 25 - 44 was 17.6%, nearly double the 9.7% incidence for their married counterparts. Single women 25 years old and over recorded very low incidence, 7.9%; the corresponding figures for married women aged 25 - 44 and 45 and older were 14.5 and 9.3% respectively. Furthermore, the duration of spells of unemployment experienced by the limited-choice group was lower than that experienced by the wider-choice group. For example, average duration for single men aged 25 - 44 was 16.7 weeks; for their married counterparts, it was 13.0 weeks. An opposite pattern exists for women. Thus individuals in what we have called the wider-choice group clearly experienced a higher incidence of unemployment and remained unemployed longer than did those persons whose choices were more limited. This suggests that some individuals at least exercise a significant degree of control over main aspects of their unemployment experience.

Estimates by Sex and Region

Table 4 presents unemployment rates and the associated flow components by sex and region. As is well known, regional differences in unemployment rates in Canada are very marked. In 1973, for example, the Atlantic region's official unemployment rate was 8.9, more than twice that of Ontario, while Quebec's rate, 7.4, was 85% higher than the rate for Ontario. As the data in column 4 show, differences in labour force attachment do not account for much of the regional variation in unemployment rates (although there are some minor differences in attachment among women across regions). Similarly, differences in the average number of spells experienced by unemployed persons, column 6, are rather small. It is differences in incidence and in duration which account for the dispersion of regional unemployment rates. As column 5 shows, 12.1% of Ontario's 1973 annual labour force experienced unemployment, compared to over 14% in the Prairies, over 17% in Quebec and British Columbia, and 21.5% in the Atlantic region. The relative patterns of incidence by region are similar for men and women. An average spell of unemployment lasted over 11 weeks in the Prairies, nearly 13 and 14 weeks respectively in Ontario and British Columbia, nearly 17 weeks in Quebec, and over 18 weeks in the Atlantic region. Duration patterns are similar for both men and women, except in the case of British Columbia, where an average spell of unemployment lasted five weeks longer for women than for men.

TABLE 4 Unemployment Rates and their Components, by Sex and Region, Canada, 1973

	UR^O %	$\left(\frac{R}{= UR^O/UR^c}\right)$	UR^c[a] %	1.0/wl* 1.0/wks	l* %	s* No.	d* wks
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Men:							
Atlantic	10.0	.85	11.8	1/46.4	22.1	1.39	17.9
Quebec	7.9	.99	8.0	47.4	17.3	1.31	16.8
Ontario	4.1	1.05	3.9	47.2	10.9	1.37	12.4
Prairies	4.1	.93	4.4	46.2	13.4	1.40	10.9
British Columbia	6.4	1.08	5.9	46.8	16.0	1.49	11.6
Canada	5.9	.97	6.1	47.1	14.6	1.37	14.3
Women:							
Atlantic	6.7	.55	12.2	1/39.3	20.7	1.23	18.8
Quebec	6.4	.75	8.5	42.5	17.1	1.26	16.8
Ontario	3.9	.70	5.6	41.3	13.9	1.26	13.1
Prairies	3.6	.62	5.8	39.5	15.9	1.21	12.0
British Columbia	6.6	.61	10.9	39.5	19.6	1.25	17.5
Canada	5.1	.69	7.4	40.9	16.2	1.25	15.0
Both sexes:							
Atlantic	8.9	.75	11.9	1/43.8	21.5	1.33	18.3
Quebec	7.4	.90	8.2	45.6	17.2	1.29	16.8
Ontario	4.0	.87	4.6	44.9	12.1	1.32	12.8
Prairies	3.9	.80	4.9	43.8	14.4	1.32	11.4
British Columbia	6.5	.86	7.6	44.1	17.4	1.39	13.8
Canada	5.6	.86	6.5	44.8	15.2	1.32	14.5

Note: (a) $UR^c \equiv \frac{1}{wl^*} \cdot l^* \cdot s^* \cdot d^*$, as per equation 4 in the text.

Source: Column 1, published LFS data; Columns 3 through 7, Annual Work Patterns Survey, January 1974

Table 5 highlights the dispersion across regions in the incidence of unemployment and the average duration of completed spells, by giving the percentage difference in the estimates for these components relative to the Ontario estimates. Compared to Ontario, labour force participants in the Atlantic provinces in 1973 were 78% more likely to experience some unemployment; each spell of unemployment lasted 43% as long again as a spell in Ontario. Labour force participants in Quebec also experienced sharply higher incidence and duration than did their counterparts in Ontario, although not to the same degree as did persons in the Atlantic provinces. In the Prairies, higher incidence relative to Ontario was offset to some extent by lower duration. Persons in British Columbia, finally, recorded a significantly higher incidence of unemployment than persons in Ontario. However, the average duration of a completed spell of unemployment was only marginally greater than in Ontario.

The flow component estimates show that the unemployment experience of individuals differed substantially across the three high-unemployment regions of the country in 1973. In two of these regions, the Atlantic region and Quebec, much higher than average incidence and duration both contributed to the high unemployment rates. On the other hand, British Columbia's higher than average aggregate unemployment rate was almost exclusively attributable to higher than average unemployment incidence. (More precisely, this was the situation of men in British Columbia; female duration significantly exceeded male duration in that province.)

TABLE 5. Percentage Differences in the Incidence of Unemployment and the Average Duration of Completed Spells Between Each Region and Ontario, Both Sexes, 1973

	Percentage difference relative to Ontario for	
	Incidence	Duration
	(1)	(2)
Atlantic	77.7	43.0
Quebec	42.1	31.3
Prairies	19.0	- 10.9
British Columbia	43.8	7.8

Source: Table 4, columns 5 and 7.

CHAPTER IV

CHANGES IN THE FLOW COMPONENTS OF UNEMPLOYMENT BETWEEN 1964 AND 1973

Throughout the economic expansion of the early 1970's, Canada's aggregate unemployment rate remained markedly higher than the corresponding rates experienced during the 1961 - 66 expansion. This chapter examines whether changes in the underlying flow components suggest any explanation for this upward drift. To do this, we would have liked to have been able to compare flow components across years which occupied identical positions in their respective cycles. Unfortunately, the two years for which comparable data are available, 1973 and 1964, do not fulfill this requirement precisely. 1973 was a cyclical peak, while 1964 antedated the cyclical peak in 1966 by two years. In some ways, however, 1964 and 1973 were quite similar. Each was the third year of expansion following a cyclical trough (1961 and 1970 respectively). Each was a year in which strong economic activity was recorded: GNE grew by 6.7% in 1964, 7.5% in 1973. The index of industrial production in fact grew by more in 1964 than it did in 1973 (10.0% versus 9.0%) as did gross fixed capital formation (13.3% in 1964 versus 11.1% in 1973). On the other hand utilization indexes indicate that the economy was operating more closely to capacity in 1973 than in 1964: the capacity utilization index for manufacturing was 92% in 1973, 88.1% in 1964. On balance, it seems likely that the 1964 unemployment rate contained a cyclical dimension which was not present to the same degree in the 1973 rate. However, the number of similarities between these years suggests that the difference in the cyclical components of the unemployment rates may have been small. Thus while an observed difference in a particular flow component between 1964 and 1973 will not provide an exact measure of the influence of non-cyclical factors, it should be a good approximation. In any case, the reader can keep in mind the likely direction of any bias.

The Annual Work Patterns Survey covering the year 1964 provided the data base for a 1967 study on the subject by Whittingham and Wilkinson.[19] In the intervening years, the computer tapes which carried the individual records have disappeared. Without the individual records, it is not possible to modify the 1964 data via the approach outlined in Chapter II and Appendix II. However, we have developed an alternate methodology which permits the redefinition of the summary data, from the worksheets prepared for the 1967 study, within a completed spells framework.[20] The new identity used for the 1964/1973 comparison is

$$UR_i^c \equiv \frac{F_i' d_i'}{wl_i} \qquad (5)$$

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[19] Whittingham and Wilkinson, *op. cit.*

[20] As the development of this methodology is quite lengthy we have omitted it from the text. However, full details of the methodology are avaiable on request.

where UR_i^c = the calculated unemployment rate for group i as derived from unadjusted data;

d_i' = the average duration of a completed spell of unemployment for group i. This variable is estimated from a formula which relates d_i' and the unadjusted average duration per spell for group i;

wl_i = the unadjusted average weeks of labour force activity for group i. For the 1973 data differences between wl_i and wl_i^* are negligible;

F_i' = the frequency of unemployment for group i expressed as a percentage. Conceptually, F_i' equals the product $l_i^* s_i^*$ and thus can be interpreted as the average number of completed spells per 100 members of the annual labour force of group i.

To ensure comparability, the flow components for 1973 have been recomputed using identity (5). Differences between the two sets of estimates for 1973 are relatively small; consequently we are reasonably confident that the 1964 estimates are accurate.

This chapter focusses on only one cross-classification of the data: sex by age.[21] Table 6 presents the unemployment rates and associated flow components for major sex/age groups in 1964. This information furnishes the base for Table 7, which provides the ratio of each unemployment rate or flow component in 1973 to the corresponding estimate for 1964. Using the both sexes/all ages data in the latter table for illustration, the ratio estimates are interpreted as follows. From column 1, the official aggregate unemployment rate in 1973 was 19% higher than in 1964. The increase in the calculated rate, on the other hand, was 14% (column 3). The resulting increase in the ratio of official to calculated rates between the two years was 4% (column 2).[22] Accounting for the 14% increase in the calculated unemployment rate were, first, a 3% decline in the average number of weeks of labour force activity (since wl is inversely related to the unemployment rate, the 1973 to 1964 ratio of this component is actually wl_{64}/wl_{73}); second, a decrease of 4% in the frequency of unemployment (column 5); and finally, a 16% increase in the average length of a completed spell of unemployment (column 6).

The ratios in column 4 indicate that labour force participants in 1973 spent, on average, almost the same amount of time in the labour force as did their counterparts a decade earlier. Only among younger participants was there some evidence of a decrease in labour force activity. This decline was probably attributable to the larger proportion of students in the annual labour force in 1973 as compared to 1964.

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21 With the available data, it is not possible to control for age in the 1964 sex/marital status estimates.Since the marital status estimates are dominated by age-related patterns, there seems little point in presenting them separately. Although they are available, we have chosen not to present 1964 - 73 regional comparisons because their interpretation requires an analysis of changes in the economic structures of the regions which is beyond the scope of this study.

22 The ratios of the calculated rates between the two years differ somewhat across sex and age groups from the ratios of official rates. In most cases, however, the direction of change is the same, and the estimated degree of change is broadly similar.

TABLE 6. Unemployment Rates and their Components, by Sex and Age Group, Canada, 1964

	UR^o %	$\left(\frac{R}{=UR^o/UR^c}\right)$	$UR^{c(a)}$ %	1.0/wl 1.0/wks	F′ %	d′ wks
	(1)	(2)	(3)	(4)	(5)	(6)
Men:						
14 - 19	12.0	.75	15.9	1/31.0	33.3	14.8
20 - 24	7.9	.90	8.8	46.4	35.7	11.5
25 - 44	4.2	.95	4.4	51.2	19.1	11.8
45 - 54	4.2	.86	4.9	51.2	17.3	14.4
55 +	4.9	.83	5.9	49.0	15.8	18.4
All age groups	5.3	.88	6.0	48.3	21.7	13.3
Women:						
14 - 19	8.1	.75	10.8	1/30.3	26.1	12.5
20 - 24	3.0	.61	4.9	41.7	14.9	13.6
25 - 44	2.0	.49	4.1	41.7	11.4	15.1
45 +	2.1	.66	3.2	45.3	8.8	16.6
All age groups	3.1	.65	4.8	40.9	13.6	14.3
Both sexes:						
14 - 19	10.3	.75	13.7	1/30.7	30.1	14.0
20 - 24	6.1	.82	7.4	44.5	27.7	11.9
25 - 44	3.8	.86	4.4	48.5	17.3	12.4
45 +	3.9	.81	4.8	48.8	14.4	16.2
All age groups	4.7	.82	5.7	45.9	19.3	13.5

Note: (a) $UR^c \equiv \frac{1}{wl} \cdot F' \cdot d'$, as per equation 5 in the text.

Source: Official unemployment rates, column 1, are calculated from 1964 LFS data which were not revised in light of the general LFS revision of March 1965. We have used the unrevised data because it was not possible to adjust the 1964 AWPS data to incorporate effects of the 1965 revision. Calculated unemployment rates, column 3, and their components, columns 4 - 6, are based on 1964 AWPS data.

TABLE 7. Changes in Unemployment Rates and their Components, 1964 - 73, by Sex and Age Group, Canada

	$\frac{UR^o_{73}}{UR^o_{64}}$	$\frac{R73}{R64}$	$\frac{UR^c_{73}}{UR^c_{64}}$	$\frac{wl_{64}}{wl_{73}}$	$\frac{F'73}{F'64}$	$\frac{d'73}{d'64}$
	(1)	(2)	(3)	(4)	(5)	(6)
Men:						
14 - 19	1.08	1.14	.95	1.05	1.06	.86
20 - 24	1.27	1.10	1.15	1.06	.96	1.13
25 - 44	1.00	1.07	.93	1.01	.77	1.19
45 - 54	.90	1.08	.84	1.00	.74	1.13
55 +	.96	.99	.97	1.01	.80	1.23
All age groups	1.11	1.09	1.02	1.03	.91	1.10
Women:						
14 - 19	1.33	1.00	1.33	1.06	1.20	1.07
20 - 24	2.17	1.19	1.82	1.01	1.55	1.18
25 - 44	1.95	1.21	1.61	.98	1.26	1.32
45 +	1.33	.87	1.53	1.00	1.11	1.36
All age groups	1.65	1.07	1.54	1.01	1.29	1.21
Both sexes:						
14 - 19	1.17	1.08	1.08	1.05	1.10	.94
20 - 24	1.39	1.07	1.30	1.04	1.06	1.18
25 - 44	1.08	.97	1.11	1.01	.85	1.30
45 +	.97	.97	1.00	1.01	.80	1.24
All age groups	1.19	1.04	1.14	1.03	.96	1.16

Note: The ratio of calculated unemployment rates, column 3, equals the ratio of official unemployment rates,column 1, divided by the ratio of errors between the two rates, column 2. The ratio of calculated rates also equals the product of the three components, columns 4 - 6. Some of these relationships do not hold exactly because of rounding and because of the use of unadjusted estimates for the wl component.

Source: Column 1, Labour Force Survey; Columns 3 through 6, Annual Work Patterns Surveys, January 1965 and January 1974.

The slight decrease in the overall frequency of unemployment masks significant changes across age/sex groups between the two years. Except for teenagers, the frequency of unemployment among male labour force participants in all age groups decreased substantially. For example, the probability of a man aged 25 - 44 experiencing a spell of unemployment declined by 23% between 1964 and 1973 (column 5). For women, the situation was completely reversed. Relative to their counterparts in 1964, the frequency of unemployment for each age group was markedly higher in 1973. The largest increase occurred among female labour force participants 20 - 24 years of age; for this group, frequency was 55% higher in 1973 than in 1964. Across all female age groups, the frequency of unemployment increased by 29%.

Unadjusted data[23] presented in Table 8 provide some evidence on the relative importance of changes in the components of frequency, i.e., incidence and average spells, between the two years. In each age/sex group, average spells of unemployment (column 6) fell, to a slightly greater extent for men than for women. For men aged 25 and over, the incidence of unemployment also fell, in general by proportionately more than the decrease in average spells (column 3). For these men, therefore, declining frequency of unemployment between 1964 and 1973 was attributable to decreases in both incidence and average spells. In contrast, women of all ages and to a lesser extent males aged 14 - 24 experienced a sharp increase in the incidence of unemployment. In most cases, this increase more than offset the decline in average spells of unemployment.

The estimates of the duration of unemployment (column 6 of Table 7) indicate that the average length of a completed spell of unemployment for all groups except teenage males increased between 1964 and 1973. The increase in duration was substantially greater for women than for men, with the difference widening with age.

In summary, unemployment rates between 1964 and 1973 remained constant or declined for prime-age and older males and increased for young men and for women of all ages.[24] Changes in the average number of weeks of labour force activity were minimal and consequently contributed little to movements in unemployment rates. For men 25 years of age and over, the decline in frequency (attributable to decreases in both incidence and average spells) was offset by an

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[23] Unadjusted data refer to estimates based on a tabulation of spells of unemployment which includes both spells completed in the reference year and spells carrying over into the next year. Following the argument in Chapter II, such estimates will overcount both the number of completed spells of unemployment and the number of persons experiencing at least one completed spell of unemployment. However, under the assumption that roughly the same degree of overcounting occurs in each year, changes in the unadjusted estimates of incidence and average spells can be used as proxies for the (unavailable) changes in adjusted estimates.

[24] For two groups, males aged 14 - 19 and 25 - 44, the direction of movement in unemployment rates between 1964 and 1973 differs according to whether official or calculated rates are used.

TABLE 8. Incidence of Unemployment and the Average Number of Spells per Person Experiencing Unemployment (Estimates not Adjusted to Conform to the Flow Equilibrium Assumption) by Sex and Age Group, 1964 and 1973

	Incidence			Average spells		
	I_{73} %	I_{64} %	I_{73}/I_{64}	s_{73}	s_{64}	s_{73}/s_{64}
	(1)	(2)	(3)	(4)	(5)	(6)
Men:						
14-19	31.4	27.1	1.16	1.38	1.58	0.87
20-24	29.6	26.2	1.13	1.44	1.66	0.87
25-44	12.8	14.9	0.86	1.45	1.60	0.91
45-54	10.7	13.4	0.80	1.55	1.67	0.93
55+	12.3	13.2	0.93	1.49	1.62	0.92
All ages	17.2	17.0	1.01	1.44	1.62	0.89
Women:						
14-19	30.3	23.7	1.28	1.27	1.37	0.93
20-24	24.4	14.4	1.69	1.24	1.30	0.95
25-44	15.9	10.7	1.49	1.24	1.36	0.91
45+	10.4	7.6	1.37	1.32	1.50	0.88
All ages	18.5	12.6	1.47	1.26	1.38	0.91

Source: 1964 and 1973 AWPS.

increase in the duration of a completed spell. In other words, a greater degree of employment stability for this group was accompanied by longer periods of unemployment for those who became unemployed. Among women in all age groups, and to a lesser extent among men under 25 years of age, higher frequency and longer duration combined to produce often dramatic increases in unemployment rates.

As we argued at the beginning of this chapter, cyclically induced differences in the flow components in 1964 and 1973 were probably small. Thus cyclical factors do not account for the flow component differentials discussed above. In our view, a fundamental alteration (or set of alterations) in the structure of the labour market is required to explain these differentials. One such possible explanation, which focusses chiefly on the increased employment instability among secondary workers, would be a change in the composition of labour demand, specifically an increase in the proportion of unpleasant, low wage, low opportunity and, in consequence, high turnover jobs in the economy. While it is impossible to measure directly the relative proportion of "good" and "bad" jobs in the economy, two points from Table 8 provide indirect evidence against such an explanation. First, it seems unlikely that the effects of a relative increase in unstable employment opportunities would impact in such concentrated fashion on secondary workers, while not touching prime-age males. Secondly, one would expect that increasing instability induced by the job conditions outlined above would translate into either constant or rising average spells of unemployment. In fact, the reverse has occurred. Average spells have declined for both the prime-age male and the secondary worker groups. Proportionately more persons (often, a much higher proportion) in the female and young male groups experienced unemployment in 1973 than in 1964. However, in order for average spells to have fallen, proportionately more of these people must have experienced only one spell of unemployment during 1973.

One fundamental difference in the circumstances facing the unemployed in 1973 relative to their counterparts in 1964 was represented by the changes in the Unemployment Insurance system resulting from the 1971 revisions to the Unemployment Insurance Act. The pattern of changes in the flow components suggests that the increase in the aggregate unemployment rate between 1964 and 1973 was to some extent associated with these changes. Most obviously, the increase, for almost every demographic group, in the average length of a spell of unemployment is consistent with a growing body of evidence regarding the effect on duration of more generous benefits and lengthened benefit periods.[25] The increases in the incidence of unemployment among secondary workers support the argument that easier and wider access to benefits makes acceptance of a spell

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[25] See for example, Herbert G. Grubel, Dennis Maki and Shelley Sax, "Real and Insurance-Induced Unemployment in Canada" *Canadian Journal of Economics,* Vol. 8, No. 2, May 1975; C. Green and J-M. Cousineau, *Unemployment in Canada: The Impact of Unemployment Insurance, Economic Council of Canada.* Ottawa, 1976, particularly pp. 113-117.

of unemployment a less unattractive proposition than previously. It should be noted, however, that the declines in both incidence and in average spells for prime-age males may also, in part, be attributable to the 1971 revisions as well as, perhaps, to some cyclical influences. Higher benefit levels, although encouraging longer periods of unemployment, also permit more extensive job search. To the extent that this leads to improved job-worker matching, the probability of subsequent unemployment is reduced.

The above discussion of the relationship of Unemployment Insurance and unemployment is designed to be illustrative rather than definitive. It is important not to exaggerate the size of the impact which the 1971 revisions may have had. The difference in the aggregate unemployment rate between 1964 and 1973 was 0.9 percentage points; it is unlikely that the full amount of this increase can reasonably be attributed to the changes in the Unemployment Insurance system.

CHAPTER V

SUMMARY AND CONCLUSIONS

In this paper we have explored the flow dimensions underlying demographic and regional unemployment rates in Canada. The estimates we have developed show how different is the manner in which unemployment is experienced across different groups, and how that experience has changed over time. It may be useful at this stage to summarize the main results of the analysis.

In Canada, the unemployment rates of young people have always exceeded those of adults. This situation by itself is neither unique nor remarkable, it is the common experience in western industrialized countries.[26] Studies focussing on the American experience have found a pattern of unemployment among youths which is characterized by frequent but short spells. This pattern has been described as reflecting frictional unemployment. Our comparison of the flow components of unemployment across age groups suggests that youth unemployment in this country is not merely frictional in nature. Although the incidence of unemployment among young labour force participants is much higher than that of adults, youths are not significantly more prone to experience multiple spells of unemployment during the year. In addition, the higher incidence of unemployment among youths is not offset by shorter average duration. It thus appears that youth unemployment in Canada is at least in part structural in nature. Given the current very high levels of youth unemployment, the delineation of these structural factors should be a priority for labour market research.

Although the patterns of the regional estimates are not surprising, the magnitudes of some of the flow components are striking. For example, in 1973 when the Atlantic region's unemployment rate was 8.9, over one-fifth of the annual labour force of the region was unemployed for, on average, almost half the year. In addition, the estimates show that unemployment in the regions east of Ontario is a product of both high incidence and lengthy duration, while in contrast British Columbia's higher than average unemployment rate is almost entirely attributable to higher than average incidence.

Finally, our comparison of the estimates for 1964 and 1973 provides some insight into the secular upward drift in the aggregate unemployment rate. The estimates are consistent with the argument that behaviour has been modified as a result of the 1971 revisions to the Unemployment Insurance Act. The incidence of unemployment among the so-called secondary labour force groups is sharply higher, while among all demographic groups average duration has risen. At the same time, the lower frequency of unemployment among prime-age men may be

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[26] See, for example, J. May and C. Sorrention, "An Analysis of Unemployment in Nine Industrial Countries", *Monthly Labor Review*, Vol. 100, No. 4, April 1977, pp. 12-24.

attributable, in part, to better job-worker search activity made possible by the more generous post, 1971 Unemployment Insurance benefits.

The estimates presented in this paper cover only two years which were, as we indicated above, similar in terms of patterns of aggregate economic activity. An important extension of this work would be the examination of cyclical movements in the flow components of unemployment. Such an examination could draw on work patterns data covering the years 1974 through 1976. Of particular interest would be whether one, or more than one, of the flow components is particularly sensitive to the cycle.

APPENDIX I

ANNUAL WORK PATTERNS QUESTIONNAIRES

(1) **January 1974** (Attached to Labour Force Survey Questionnaire)

ASK FOR ALL PERSONS

A. In how many weeks did this person work in 1973? (Include any part-time or temporary work) (if 00 skip to E)

B. During these weeks was this work mostly –

full-time part-time Did not work (Ask E)

C. Did this person work all these weeks with the same employer?

Yes No Don't Know

Two employers Three or more employers

D. In any of these weeks, did this person have more than one employer at the same time? (Include self-employment)

Yes No Don't Know

(IF 52 WEEKS IN A END HERE)

E. How many weeks was this person without work and looking for work in 1973?

(if 00 skip to G)

F. Were those weeks all in one continuous stretch?

Yes	No	No
ONE stretch	TWO stretches	THREE stretches or more

G. What did this person do mostly in 1973 during the weeks he was neither working nor looking for work?

– permanently unable to work
– kept house
– went to school
– retired or voluntarily idle
– other

(2) **January 1965** (Attached to Labour Force Survey Questionnaire)

APPENDIX I – Concluded

QUESTIONS ON WORK IN 1964

30. In how many weeks did this person work in 1964? (Include any part-time or temporary work)

31. During these weeks was the work mostly – Full-time? Part-time?

Questions 32 to 34 refer to the job at which this person worked the greatest number of weeks.

32. For whom did this person work?

33. **INDUSTRY** In what kind of business or industry did this person work?

34. **OCCUPATION** What kind of work did this person do in this industry?

QUESTIONS ON LOOKING FOR WORK IN 1964

(Ask of all persons who did not work 52 weeks in 1964)

35. How many weeks was this person without work and looking for work in 1964?

36. Were those weeks all in one continuous stretch?

Yes	No	No
ONE stretch	TWO stretches	THREE or more

If Questions 30 and 35 do not account for all 52 weeks ASK

37. What did this person do mostly in 1964 during the weeks he (she) neither worked nor looked for work?

Permanently unable to work
Kept house
Went to school
Retired or voluntarily idle
Other

APPENDIX II

REDEFINITIONS OF COMPONENTS WITHIN FLOW EQUILIBRIUM ASSUMPTION

Within a completed-spells-of-unemployment framework, the definitions of the flow components of unemployment are as follows:

s_i^* = an estimate of the average number of spells of unemployment completed during 1973 by members of group i who experienced at least one completed spell of unemployment in 1973. Those respondents who in the January 1974 LFS indicated that they were unemployed in December 1973 were considered to have had a spell of unemployment which overlapped the end of 1973. For these persons, the reported number of spells of unemployment was reduced by one. The number of spells remaining is thus an estimate of the total number of spells of unemployment completed in 1973. Therefore s_i^* is this redefined total number of spells, divided by a revised estimate of the number of persons in group i experiencing at least one completed spell of unemployment in 1973 (i.e., Uy_i^*);

Uy_i^* = the original estimate, Uy_i, minus those persons who prior to the removal of overlapping spells recorded only one spell of unemployment during 1973, and this spell was identified as having carried over into 1974;

wu_i^* = the average number of weeks of unemployment experienced by persons in group i experiencing one or more completed spells of unemployment (Uy_i^*). Since by the assumption of flow equilibrium the total number of weeks of unemployment recorded in the AWPS (TW_i^u) equals the number of weeks of unemployment associated with spells of unemployment completed in 1973, wu_i^* can be calculated either as:

$wu_i^* = TW_i^u / Uy_i^*$ or using the unadjusted variables as:

$$wu_i^* = wu_i \frac{Uy_i}{Uy_i^*};$$

d_i^* = the estimated average duration (in weeks) of spells of unemployment completed in 1973 by members of group i, i.e., $d_i^* = \frac{wu_i^*}{s_i^*}$;

Ly_i^* = the revised estimate of the annual labour force of group i. Persons whose 1973 labour force activity was limited to a single spell of unemployment which overlapped the end of 1973 were subtracted from Ly_i to yield Ly_i^*.

wl_i^* = the revised estimate of the average number of weeks of labour force activity. Since by the flow equilibrium assumption the total number of weeks of labour force activity recorded in the AWPS (TW_i^l) equals the number of weeks of labour force activity accounted for by the Ly_i^* individuals in the revised estimate of the annual labour force, wl_i^* can be calculated either as:

$wl_i^* = TW_i^l / Ly_i^*$ or using the unadjusted variable as:

$$wl_i^* = wl_i \cdot \frac{Ly_i}{Ly_i^*}$$

APPENDIX II – Concluded

I_i^* = the revised estimated of incidence for group i,
$= (Uy_i^* / Ly_i^*) \cdot 100$.

The identity equating the annual average unemployment rate for group i to its components as modified above is

$$UR_i \equiv \frac{I_i^* \, s_i^* \, d_i^*}{wl_i^*} \tag{4}$$

$$\equiv \left(\frac{Uy_i^* \cdot wu_i^*}{Ly_i^* \cdot wl_i^*} \right) \cdot 100 \tag{4'}$$

It is important to realize that the identity (3) which is developed using the unadjusted estimates, continues to hold in the adjusted form (4). This can be seen by substituting the expressions for wu_i^* and wl_i^* based on the unadjusted variables in (4'):

$$UR_i \equiv \frac{Uy_i^* \cdot wu_i \cdot \dfrac{Uy_i}{Uy_i^*}}{Ly_i^* \cdot wl_i \cdot \dfrac{Ly_i}{Ly_i^*}} \cdot 100$$

$$\equiv \left(\frac{Uy_i \cdot wu_i}{Ly_i \cdot wl_i} \right) \cdot 100$$

which is the relationship with which we began.

The reason for the equivalence of the two identities requires emphasis. **Under the assumption of flow equilibrium the total number of weeks of unemployment associated with spells of unemployment completed in the course of a calendar year exactly equals the total number of weeks of unemployment actually experienced during the calendar year.** The proportion by which the Uy_i term is reduced by redefining it to refer to persons experiencing at least one completed spell of unemployment during the year is exactly offset by the proportional increase in the estimate of wu_i occasioned by redefining it to refer to average weeks of unemployment associated with completed spells of unemployment (i.e., since $wu_i = TW_i^u / Uy_i$ and $wu_i^* = TW_i^u / Uy_i^*$). A similar argument applies in the case of the redefinition of Ly_i and wl_i.

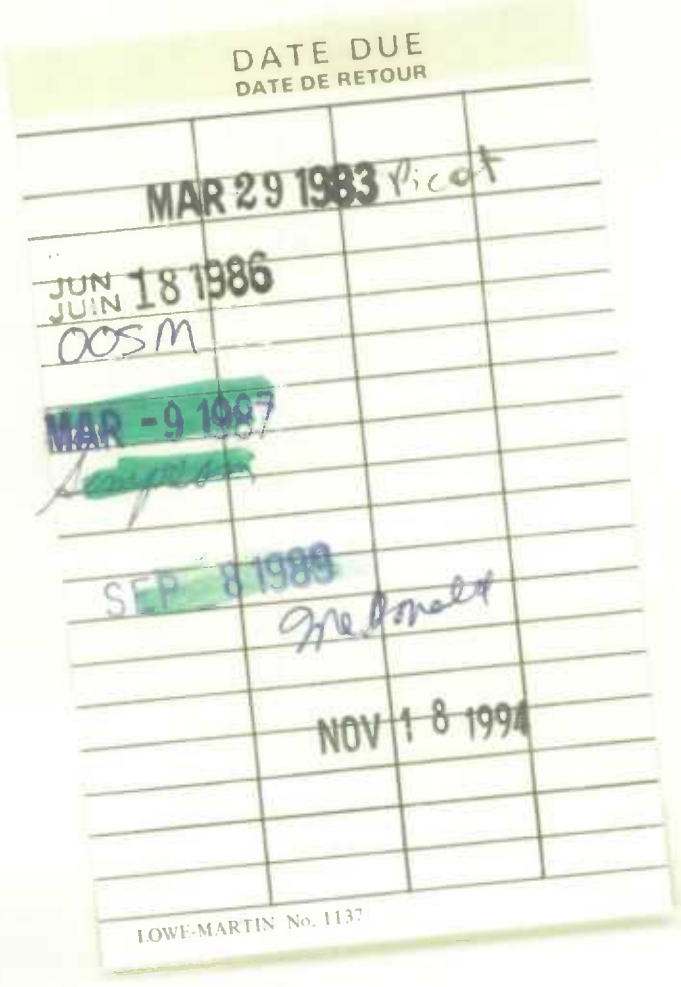
APPENDIX III

ESTIMATES FOR NON-STUDENTS

The flow components (columns 4 to 7) for non-students are calculated from data which refer to persons in the relevant age groups whose major activity at the time of the survey was other than "went to school". The "official" unemployment rates for this group are calculated as follows:

(1) for the months of January - May and October - December 1973, the monthly unemployment and labour force estimates for persons in the relevant age groups whose major activity was other than "went to school";

(2) for the months of May - September 1973, the difference between the monthly estimates of unemployment and labour force for the relevant age groups and the corresponding estimates (from the supplementary surveys on Student Identification) for persons who were in full-time attendance at school in March 1973 and who intended to return to school in the fall.

The resulting monthly estimates for non-students were summed over the 12 months to produce the annual average unemployment rates. It should be emphasized that these rates are not official; Statistics Canada is in no way responsible for their accuracy.

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