

A MICRO MODEL OF THE
DETERMINANTS OF YOUTH UNEMPLOYMENT IN
CANADA 1951-1968

by

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CURRICULUM STUDIORUM

Steve Qengebe Mphankomo Majola Maphangoh was born in Zimbabwe (Rhodesia). He received the Master Of Science degree in Economic Planning from Sofia State University, Bulgaria in 1967. The title of his thesis was: "The Economic Impact of the Copper Mining Industry on the Rural Population of the Copper-Belt - Zambia - An analysis in Rural Economic Disintegration 1941-1961." In 1969, Maphangoh received a diploma in Graduate Economics from the University of Western Ontario, London, Canada.

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INTRODUCTION

In the past two decades the labor market situation of unskilled and less experienced workers in the Canadian labor force has worsened relative to that of the prime age male group. This deterioration overtime has been evident amongst teenagers of both sexes and also, to a lesser extent, amongst young males and females between the ages of 20-24. These groups have generally experienced greater unemployment than their adult male counterparts and have contributed more to the overall unemployment rate.

Tables I, II, III, and the business cycle graph adjusted for trend, summarize the unemployment position of young people relative to that of the prime labor force group which consists of males aged 25-64. For instance, in 1953, though young people aged 14-24 accounted for only 23 percent of the labor force, they contributed 35 percent of the total unemployment compared to 74 percent and 61 percent for males aged 25-64 respectively. In 1968, 14-24 year-olds accounted for 25 percent of the labor force while contributing 42 percent of the total unemployment vis avis 72 percent and 54 percent for prime age males respectively. A close inspection of Table I shows that youth unemployment rates have always been twice as high as the national prime age unemployment rates.¹

Table II shows the ratio of unemployment rates by age and sex to the national unemployment rates as computed from Table I. A comparison of the ratio of youth unemployment rates to the national unemployment rates with those of the prime age males indicates the

PERCENTAGE UNEMPLOYED BY AGE AND SEXCANADA 1951-1968

<u>Year</u>	<u>National</u>	<u>Males</u>				<u>Females</u>		
		<u>All</u>	<u>14-19</u>	<u>20-24</u>	<u>25-64</u>	<u>All</u>	<u>14-19</u>	<u>20-24</u>
1951	2.4	2.5	5.8	3.6	2.2	2.1	*	*
1952	2.9	3.1	6.3	4.7	2.6	2.2	*	*
1953	3.0	3.4	7.2	4.9	2.8	1.6	2.9	1.9
1954	4.6	5.1	10.1	7.7	4.4	2.6	5.3	2.6
1955	4.4	4.9	10.1	7.2	3.1	2.6	5.1	2.5
1956	3.4	3.9	8.1	5.7	3.2	1.9	4.0	1.8
1957	4.6	5.4	11.3	8.3	4.3	2.3	4.6	2.8
1958	7.0	8.1	16.7	12.7	6.8	3.6	7.4	4.1
1959	6.0	6.9	14.4	10.5	5.8	3.0	6.8	3.6
1960	7.0	8.1	16.4	12.3	6.9	3.6	8.6	3.9
1961	7.1	8.4	16.6	11.9	7.3	3.7	8.6	4.2
1962	5.9	6.9	14.4	9.9	5.9	3.3	7.8	3.7
1963	5.5	6.4	14.1	9.5	5.3	3.3	7.6	4.1
1964	4.7	5.3	12.2	7.8	4.4	3.1	7.6	3.3
1965	3.9	4.4	10.0	5.6	4.6	2.7	6.9	3.0
1966	3.6	4.0	9.6	5.3	3.3	2.6	6.4	2.6
1967	4.1	4.6	10.9	6.1	3.7	3.0	7.3	3.2
1968	4.8	5.5	12.8	7.6	4.3	3.4	8.3	4.2

* DENOTES LARGE SAMPLING ERROR AS REPORTED BY D.B.S.

Source: Special Tables, Annual Averages. Data supplied by D.B.S.

TABLE II
 RATIO OF UNEMPLOYMENT RATES BY AGE AND SEX TO NATIONAL
 UNEMPLOYMENT RATES
 CANADA 1951-1968

	<u>Males</u>			<u>Females</u>	
	<u>14-19</u>	<u>20-24</u>	<u>25-64</u>	<u>14-19</u>	<u>20-24</u>
1951	2.41	1.50	0.91	*	*
1952	2.17	1.62	0.89	*	*
1953	2.40	1.63	0.93	0.96	0.63
1954	2.19	1.67	0.95	1.15	0.56
1955	2.29	1.63	0.70	1.15	0.56
1956	2.38	1.67	0.94	1.17	0.52
1957	2.40	1.80	0.93	1.00	0.60
1958	2.34	1.81	0.97	1.05	0.58
1959	2.33	1.75	0.96	1.13	0.60
1960	2.44	1.75	0.98	1.22	0.55
1961	2.56	1.67	1.02	1.21	0.59
1962	2.59	1.67	1.00	1.32	0.62
1963	2.56	1.72	0.96	1.38	0.74
1964	2.59	1.65	0.93	1.61	0.70
1965	2.56	1.43	1.17	1.76	0.76
1966	2.66	1.47	0.91	1.77	0.72
1967	2.65	1.48	0.90	1.78	0.78
1968	2.66	1.48	0.89	1.72	0.87

Source: Data calculated from Table I.

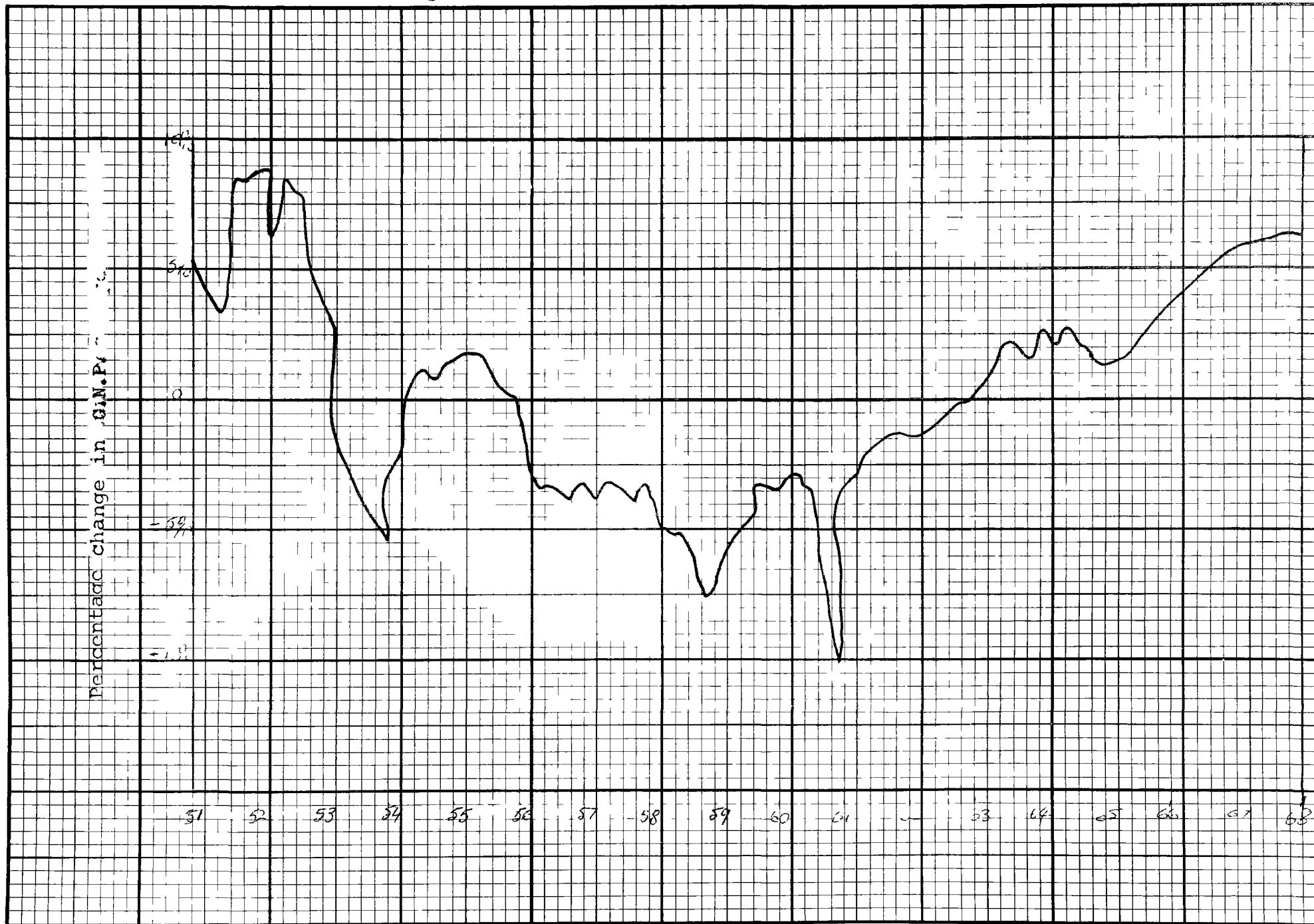
* Denotes large sampling error as reported by D.B.S.

TABLE III
 RATIO OF YOUTH UNEMPLOYMENT RATES BY AGE
 TO PRIME AGE MALE UNEMPLOYMENT RATES

	<u>Males</u>	
	<u>14-19</u>	<u>20-24</u>
1951	2.63	1.63
1952	2.42	1.80
1953	2.57	1.75
1954	2.29	1.75
1955	3.25	2.32
1956	2.53	1.78
1957	2.62	1.98
1958	2.45	1.86
1959	2.48	1.81
1960	2.37	1.78
1961	2.27	1.63
1962	2.44	1.67
1963	2.66	1.79
1964	2.77	1.77
1965	2.17	1.21*
1966	2.90	1.60
1967	2.94	1.64
1968	2.97	1.76

Source: Data calculated from Table I

Business Cycle corrected for trend. Canada, 1951-1968.



following tendencies. During the economic down-turn between 1951 to 1961, depicted on the business cycle graph, the ratio of male teenage unemployment rates to the national unemployment rates show, on average, a continuous decline up to 1961. The largest decline occurred during the years 1952 and 1954, reflecting a steep downward trend in the G.N.P. which increased unemployment amongst all the age and sex groups. Between 1961 and 1968, the period of the economic upswing, also depicted on the business cycle graph, the ratio of teenage male unemployment rates to the national unemployment rates show, on the average, a continuous increase. When the ratio of teenage male unemployment rates to the national unemployment rates are compared to those of the prime age males, we find a similar tendency only for the economic down-turn. For the economic upswing, the tendency differs between the two groups. Whereas the ratio of teenage male unemployment rates to the national unemployment rates show an increase between 1961 - 1968, those of the prime age males decrease. These figures then indicate a deterioration in the labor market position of male teenagers relative to that of prime age males.

A comparison of the ratio of unemployment rates to the national unemployment rates for males aged 20-24 to that of prime age males shows similar tendencies for the two groups both for the periods economic downturn and economic upswing. It can therefore be said that no deterioration existed in the labor market situation of males aged 20-24 vis-avis that of prime age males, though males aged 20-24 had higher unemployment rates.

The ratio of unemployment rates for females aged 14-19 and 20-24

to the national unemployment rates increase over time for both periods of the business cycle. This clearly indicates a deterioration in the labor market position of these two female age groups.

Table III shows the ratio of male youth unemployment rates to the unemployment rates of prime age males. For both the periods economic down-turn and economic upswing, the ratio of teenage unemployment rates to the unemployment rates of prime age males increased over time. The only exception to this tendency was during the years 1952, 1954, 1958, 1961, 1962 and 1965, reflecting downward fluctuations in the business cycle which resulted in higher unemployment rates for prime age males as Table I indicates. These results also do show the deterioration overtime of the labor market position of male teenagers.

The ratio of unemployment rates of males aged 20-24 to the unemployment rates of prime age males indicate no clear cut pattern. However, a return to Table I shows that unemployment rates of males 20-24 have in most cases been at least 1.5 times the unemployment rates for prime age males.

No ratios were computed for females since no comparison is made between them and prime age males in this study.

Because of the deterioration in the labor market position of young people, a number of Federal and Provincial Government programmes have in the past few years been initiated with the intent of increasing employment opportunities for youth. But what type of programmes and policies can efficiently accomplish this objective? Should the overall demand for labor be increased or is it possible that, given sufficient time, the unimpeded action of the labor market will do the job?

The answers and solutions to these questions require some knowledge of the determinants of the demand for youth labor and the processes by which supply adjusts. Questions arise as to whether youth and prime age males are non-competing groups in the labor market with youth looking for jobs in a labor market loosely linked to the general market or whether the demand for youth labor is closely related to the overall demand for labor?

This study will consider a few general hypotheses on the determinants of youth unemployment and from them develop a micro model which will be tested using time-series data. With this model, we hope to answer why unemployment has been so high among young people relative to the prime age group even during periods of economic upswings. We intend also to know why youth unemployment compared to that of adults has risen over the past 18 years.

Based on the results of the model to be tested, policies best suited to reduce youth unemployment will be discussed. However, before we begin describing the model, it is in order that a number of previous empirical studies closely related to this study be reviewed.

NOTES

1. Special Tables, Annual Averages, 1951-1968. Data provided on request from the Special Surveys Division, D.B.S.

CHAPTER I

A REVIEW OF PREVIOUS EMPIRICAL STUDIES ON THE SUPPLY AND

DEMAND FOR YOUTH LABOR

The high cyclical sensitivity to labor market conditions of the youth labor force has in recent times attracted great attention. Three recent studies relevant to our own investigations will be reviewed and critically evaluated. These are studies by Thomas Dernburg and Kenneth Strand, Edward Kalachek, and Lester C. Thurow.¹

The Dernburg and Strand labor market model is used to estimate hypothetical labor force participation ratios and unemployment rates by age and sex for the years 1954 and 1962 under assumed conditions of 4 percent total unemployment in both years. It explains the ratio of teenage employment to the total population for males and females. The independent variables employed are: ratio of total employment to total population, the population reciprocal and the ratio of teenage to total population. The data are monthly observations for the period 1953-1962 inclusive. Dernburg and Strand obtained the following results, with standard errors in parentheses:

REGRESSION COEFFICIENTS, STANDARD ERRORS, AND COEFFICIENTS
OF DETERMINATION²

	C _{mi}	C _{1i} $\frac{E}{P}$ t	C _{2i} $\frac{I}{P}$ t	C _{3i} $\frac{P_i}{P}$	R ²
	(1)	(2)	(3)	(4)	(5)
Males 14-19	-0.0971	.1214 (.0086)	3210 (680)	.4551 (.0538)	.6796
Males 20-24	-.0072	.0989 (.0086)	-3820 (690)	.3931 (.0773)	.9244
Females 14-19	-.0652	.0838 (.0075)	1460 (650)	.3806 (.0547)	.7042
Females 20-24	-.0135	.0280 (.0058)	-230 (200)	.4250 (.0427)	.6812

The Dernburg-Strand findings are striking. Labor force participation ratios of marginal workers are strongly and positively related to aggregate employment, while the ratios of the prime-age males are relatively autonomous. Employment of all age-sex groups benefited from a rise in employment opportunities (aggregate employment). When the results of the labor force and employment equations are combined, the unemployment outcome shows a continuous and growing disadvantage of marginal workers as compared to the adult male group. Dernburg and Strand conclude that, "The economy has not yet been able to adjust to the sizable shifts in the structure of the labor force that have taken place over the decade."³

The basic weakness of the model is that it ignores cyclical variations in aggregate demand. The main problem is the magnitude of the coefficient Cl_i which is supposed to capture the response of group employment to the total employment. According to Tella, "the Dernburg-Strand correlations were run on the 1953-1962 period, but the average total employment-population ratio in the regression period was below its 1955-1957 levels when the overall unemployment rate was about 4 percent. The value of Cl_i in the overall employment equations is in fact consistent with a total unemployment rate in the decade averaging 5.2 percent. It is apparent, therefore, that Cl_i is measuring the response of group employment to total employment in a loose labor market characterized by high overall unemployment."⁴ In our own model, the problem of cyclical variations in aggregate demand is solved by running a time trend regression on G.N.P. for the years under study and choosing the periods on this basis.

Edward Kalachek in a special study on teenage employment used four youth labor force groups. These were females 14-17 and 18-19, males 14-17 and 18-19 years of age. In this study, Kalachek explains the youth proportion of total employment in 75 major S.M.S.A.⁵ For explanatory variables, he employs the population ratio, the unemployment rate, minimum wage dummies, a wage flexibility variable and various measures of industrial and occupational structure. Kalachek's findings differ slightly from those of Dernburg and Strand. The Dernburg-Strand study shows that only when the teenage population increases, employment of this group also rises whereas Kalachek's results show that an increase in teenage population results in an increase in employment associated with a decline in employment opportunities for teenagers. According to Kalachek, a 1 percent increase in the population of teenagers would result in a .5 percent rise in teenage employment for males and females between the ages of 18-19, and .2 percent to .5 percent for teenage males in the 14-17 year bracket. No significant shifts in employment for 14-17 year old females were observed.⁶ The Kalachek model has one flaw, this concerns the industrial and occupational variables. The industrial and occupational variables which were supposed to contribute in explaining teenage employment did not perform as was expected for older teenagers (18-19) because of the identification problem. Probably these variables were explaining both the demand for teenage labor and the supply for adult substitutes.

The Thurow Study confirms the findings of Dernburg and Strand, and Kalachek. Using seasonably adjusted quarterly data for the period from 1954 to second quarter 1966, Thurow explains teenage employment

and has as his independent variables adult unemployment, the adult unemployment rate, the teenage to adult labor force ratio, a time trend and the ratio of the Federal (U.S.) minimum wage rate to average hourly earnings. The results of Thurow's work show that the labor market adjusts well to changes in the supply of teenagers. From a teenage to adult labor force ratio of 7.6 percent in the first quarter of 1955, the ratio rose to a high of 11.3 percent in the second quarter of 1966. The increase in the teenage labor force was compensated for by an increase in teenage employment. The significant non-linear relationship between teenage employment and prime male age group unemployment in the Thurow study showed that if unemployment of the prime labor force group decreased from 6 percent to 5 percent, teenage employment would rise by 7 percent. If adult unemployment fell from 3 percent to 2 percent, teenage employment would rise by 2.4 percent. This finding strongly confirms the fact that as the supply of adult labor is depleted, employers will increase their hiring of teenage labor. The reverse is also true that "the last to be hired are the first to be fired" in times of economic downswings.

NOTES

1. Thomas Dernburg and Kenneth Strand, "Hidden Unemployment 1953-1962: A Quantitative Analysis by Age and Sex." American Economic Review (March, 1966), Volume 56, no. 1, 71-95.

Edward Kalachek, "Determinates of Teenage Employment." The Journal of Human Resources, (Winter, 1969), 3-21.

Lester C. Thurow, "Employment Gains Among Teenagers and Negroes.", paper presented to a conference on The Education and Training of Racial Minorities, The University of Wisconsin, May 12, 1967, 189-202.

2. The Dernburg and Strand equation for group employment is specified as:

$$\frac{E_i}{P} t = C_{mi} + C_{li} \frac{E}{P} t + C_{2i} \frac{1}{P} t + C_{3i} \frac{P_i}{P} t + r_{tui},$$

where $\frac{E_i}{P} t$ is the ratio of employment in group i to the total population,

$\frac{E}{P} t$ is the aggregate employment-population ratio,

$\frac{1}{P}$ is the population reciprocal,

$\frac{P_i}{P}$ is the population ratio in group i to total population.

3. Thomas Dernburg and Kenneth Strand, "Hidden Unemployment 1953-1962: A Quantitative Analysis by Age and Sex." American Economic Review (March, 1966), Volume 56, no. 1, 94-95.
4. Alfred Tella, "Hidden Unemployment 1953-1962: A Quantitative Analysis by Age and Sex: Comment," American Economic Review, (December, 1966) Volume 56, no. 5, 1236, 1235-1241.
5. S.M.S.A. stands for Standard Metropolitan Statistical Area. According to the U.S. Bureau of the Census, for an area to be designated S.M.S.A., it must have a population of over 250,000 inhabitants.
6. Edward Kalachek, "Determinants of Teenage Employment." The Journal of Human Resources, (Winter, 1969), 3-21.

CHAPTER II

THE MODEL AND THEORETICAL FRAMEWORK

It was illustrated by using Tables I, II, III, and the business cycle graph adjusted for trend in the introduction that the youth labor market situation in Canada relative to that of the prime age males has been deteriorating. In order to fully understand the usefulness of this model and thereby show the deterioration of youth unemployment vis-avis that of prime age males, a discussion of the conceptual and theoretical framework of the model is necessary.

There are two ways in which youth unemployment in Canada could be theoretically explained. The continuous and steady rise in youth unemployment rates could be due either to the demand for youth labor having expanded at a slower rate than the growth in supply, or that, regardless of the growth in supply, the demand for labor of this group has been declining. The increase in youth labor supply is readily explained by what has been commonly referred to as the baby-boom of the years 1946-1960. Between 1936 and 1945, the depression and war years respectively, 2.6 million people were born. For the years 1946-1955, 3.9 million persons, a 50 percent increase compared to the 1936-1945 period, were born. The result of this has been that growth rates of the labor force have varied sharply according to age groups between 1951 and 1966, and between 1951 and 1971. The population of 14-19 year olds doubled between 1951 and 1971. For the same period, 20-24 year olds increased their share of the Canadian population by 75 percent. Compared to the other age groups, Table IV shows that youth between 14-19 and 20-24 had a phenomenal population increase.

TABLE IV

PERCENTAGE GROWTH OF POPULATION BY AGE - GROUP

CANADA 1951 - 1966 and 1951 - 1971

	<u>Total</u>	<u>0 - 4</u>	<u>14-19</u>	<u>20-24</u>	<u>25-64</u>
1951-1966	42.9	27.6	73.7	34.2	76
1951-1971	54.4	7.7	99.8	75.1	68

Source: D.B.S. Vital Statistics, 71-75, (Queen's Printer, Ottawa, 1968)

The growth in supply cannot alone explain the growth in youth unemployment. As previously stated, the demand for this particular group of the labor force might have declined or increased at a slower rate than the demand for prime-age workers over the years, though the proportion of young people in the labor force increased. Various a priori reasons can be given for this hypothesis. Young people have minimal job experience and therefore have a disadvantage in the labor market. Because young people have minimal job experience, their productivity is low when compared to their adult counterparts. Since youth are entrants and re-entrants into the labor force at various times of the year, their turnover rate is high and this results in high non-wage costs. Because of what has just been cited, a replacement of adult labor by youth labor would tend to reduce output. From the above, a few assumptions can be made. Youth labor could be a good replacement for adult labor if wages were flexible, since at some relative wage, young and adult workers would be equally attractive to employers.

A shift in the demand for and supply of young workers would subsequently result in the wage rate changing. For instance, if the youth population increased, the adult-youth wage ratio would increase also, resulting in a product and factor market substitution favourable to young people. However, in practice, wages have always been flexible upwards and the shifts in demand and supply for youth labor have been in the opposite direction leading to adverse effects to youth employment. Experience has also shown that when the supply of the youth and adult labor is relatively elastic at a going wage, employers will, during periods of high unemployment, prefer adult to youth labor. Legal and social attitudes also prevent wages falling sufficiently low to offset lower youth productivity and high non-wage costs. Legislated Federal and Provincial minimum wage rates and trade unions demanding fairly high wages for unskilled union members result in this inflexibility of wages.

Because of their work habits, low productivity and job inexperience, it is justifiable to classify young people as a special labor force group by themselves. As a result in any study of the labor force, demographic factors play a crucial role in the analysis of the labor force. In acknowledging this fact, this study will dwell on five labor force groups with the following age and sex distributions: teenage females between the ages 14-19; teenage males between 14-19; young females 20-24; young males 20-24, and the male "prime" labor force group aged 25-64 years. The "prime" male labor force group is included for comparative purposes. The reasoning behind the selection of this particular age and sex distribution has already been mentioned. Tables I, II, and III in the introduction indicated that there was a marked

variation in the rates of unemployment by age and sex and that youth labor force groups bore the brunt of all the unfavourable labor market situations.

In formulating our model, we start from the basic fact that full employment or zero unemployment does not exist, thus:

$$S - D > 0 \quad (1)$$

where S and D stand for supply of and demand for labor respectively.

For any labor force group (i), the supply of labor (S_i) can be expressed as a function of the average wage rate (W_i) paid to this group, and the population (POP_i) of which this group is a part. This has the expression:

$$S_i = a + b W_i + Pop_i \quad (2)$$

where (a) is the intercept term and other variables keep their previous designations.

Relationship (2) is an overly simplified explanation of conditions in a subgroup labor market in that it in no way takes into consideration changes on the demand side of the market nor does it appear to consider the impact of variations in income expressed as G.N.P. In an effort to take this into account, the following expression is in order. The demand for labor (D_i) for any labor force group (i) is a function of the average wage rate (W_i) paid to this group and income (Y_i) expressed as G.N.P.:

$$D_i = c - d W_i + g Y_i \quad (3)$$

The difference between S_i and D_i gives the level of unemployment

(U₁). Putting equations (2) and (3) together and rearranging, we have the following form:

$$U_1 = (a - c) + (b + d) W_1 + f \text{Pop}_1 - g Y_1 \quad (4)$$

Let $(a - c) = \alpha$ $(b + d) = \beta$. We can then generate a general linear relationship of the form:

$$U = \alpha + \beta W + \tau \text{Pop} + \Psi Y + \Sigma \quad (5)$$

where (Σ) is a random error term whose expected value is zero.

If the normal demand and supply curves are assumed, we would expect the effects on (u) of the coefficients in relationship (5) to have the following partial derivatives:

$$\frac{\delta U}{\delta W} > 0, \quad \frac{\delta U}{\delta \text{Pop}} > 0, \quad \frac{\delta U}{\delta Y} < 0 \quad (6)$$

The theses underlying the relationships in (6) are based on the following considerations. The positive sign posited for the partial derivative $\frac{\delta u}{\delta w}$ with respect to W, means that any increase in wages or wage rates would result in a corresponding increase in unemployment, so would an increase in population. The third relationship simply states that an increase in G.N.P. reduces unemployment. Considering the sub-population groups under study and the disadvantages they face in the labor market, a rise in (W) would mean the replacement of youth by adult labor. From utility preference analysis, one would assume that an increase in wages could result, at a certain wage rate, in a backward bending supply curve giving the following relationship $\frac{\delta U}{\delta W} < 0$.

The model developed for regression analysis in this study is given as equation (5). The variables in this model were chosen for their importance in policy implementation and prediction power.

The theoretical and conceptual framework of this study has now been established. It now remains to show how the estimation of equation (5) is to be carried out. This is the subject of the next paragraphs.

The data used in the estimation are derived from quarterly seasonally adjusted labor force statistics for the period 1951-1968. The population, wage rates and G.N.P. figures are also quarterly. In order to take the business cycle into account, the periods studied are selected by running a time-trend regression on G.N.P. in constant 1961 dollars for the period 1951-1968. These periods are further divided into "Economic Upswings" and "Economic Down-turns" around a constantly growing trend. Because of data availability, the following periods are to be selected for males of all ages under study:

1st quarter 1951 to 1st quarter 1961 - down-turn

1st quarter 1961 to 3rd quarter 1967 - upswing

All four quarters of 1954 and the first quarter of 1955 will be left out because of a poor scatter. Reliable wage data for females of all ages are available only for the periods 1955 to 1967, which limits our analysis to this time period. Following the time trend regression, on G.N.P. the following periods will be selected for females:

2nd quarter 1955 to 1st quarter 1961 - down-turn

1st quarter 1961 to 2nd quarter 1967 - upswing

Using direct least squares (D.L.S.) estimation, the excess supply of workers will be estimated. A similar analysis of the determinants

of unemployment will be conducted for the prime male labor force group to demonstrate that the labor market situation of young people has worsened during the period under study as compared to that of their adult counterparts. For the period 1969-1971, a forecast will be carried out to test the model and predictions will be made of the future labor market situation that young people are likely to face. On the basis of the findings, policy recommendations will be made on the best methods to reduce youth unemployment to tolerable levels.

The model just developed has a serious limitation, which is the lack of data. The problem of statistical data compilation is the subject of the next chapter.

CHAPTER III

STATISTICAL DATA COMPILATION AND COMPUTATION

Problems

It was stated in the previous chapter that the basic limitation to the model was lack of reliable statistical data. Where data did exist, it was in such form as to render it useless for the type of analysis we have in mind. If data was available with a sex breakdown, no age distribution would be given. It was then necessary to transform the available data into the form that would best make the analysis of youth unemployment possible.

The labor force statistics used in this study were compiled from the Dominion Bureau of Statistics annual publication, "Seasonally Adjusted Labor Force Statistics, January 1953 - December 1969".¹ This publication is the most comprehensive of the labor force data collection efforts of D.B.S. Since the labor force data in this publication is monthly, quarterly averages had to be computed. Included in this publication are:

1. The labor force for Canada and the Provinces by age and sex;
2. Employment for Canada and the Provinces by age and sex;
3. Unemployment in Canada and the Provinces by age and sex;
4. Participation Rates for Canada and the Provinces by age and sex.

Data for the years 1951 and 1952 were computed from Labor Force Surveys conducted and published monthly by the Labor Force Division of the Dominion Bureau of Statistics.

The collection and computation of wage data was made more complex by the Dominion Bureau of Statistics' compilation methods. D.B.S. does not publish wage data with an age and sex break-down. Such a break-down was of paramount importance to this study. The only available wage data are average weekly and hourly wages, with a fine industry and occupational break-down. The wage data by occupation have a sex break-down but no age distribution.² In order to surmount the age and sex problem, a roundabout procedure was followed. Since average weekly and hourly wages data were available by industry division, the problem was then to find the number of people employed in each industry by age and sex. This problem was solved by using data from the D.B.S. publication "Persons Covered by Unemployment Insurance by Industry, Sex and Age".³ The data in this publication covers 85 percent of all people employed in Canada. For the purposes of this study, the remaining 15 percent, consisting entirely of professionals, is of no consequence since the groups under study would not face the same labor demand curve with them. For each age group in each industry, weights were computed by dividing the number of workers belonging to each age group working in a given industry by the total labor force of that age group, i.e.

$$\frac{\text{L.F.}_{25-64} \text{ Manufacturing}}{\text{L.F.}_{25-64}}$$

The weights were computed for all eight (8) main industrial classifications for Canada. The weights were multiplied by the average weekly wage rate in the given industry:

Weight X Av. Wage Rate in given industry = Weighted Average Wage Rate for the Industry.

The sum of the weighted average wage rates for all industries gave the total weighted average weekly wage rate for the eight (8) main Canadian industrial classifications.

$$\sum_{j=1}^8 W A \bar{W} = \hat{W} A \hat{W} \quad \text{for all industries where}$$

$j = 1, 2, \dots, 8$ and $W A \bar{W}$ is the Weighted Average Weekly Wage Rate.

This procedure was followed for both sexes. To arrive at average hourly wages, the method described above was also followed. Weighted average hourly wages were computed for males 20-24, males 25-64 and females 20-24. For the 14-19 year old age group, average hourly earnings were computed from unpublished D.B.S. Consumer Finance Division Surveys. For the years in which no surveys were carried out, data was filled in by means of statistical interpolation.

The population figures were derived from another D.B.S. publication, "Estimated Population by Sex and Age Groups, Canada and Provinces."⁴ Since the estimated population is by five year age groups, a technical problem arose as to how to separate the population of fourteen (14) year olds from younger ones. The following procedure was used:

$$P_{12} - 2 \frac{\Delta P}{4} = P_{10-14} - \frac{\Delta P}{2} = P_{10-14} - 2 \frac{P_{5-9} - P_{10-14}}{5} = P_{14}$$

Since the population figures are annual, quarterly averages were computed by means of interpolation for all age and sex groups under study.

Quarterly adjusted Gross National Product figures were provided on request by the National Income and Expenditure Accounts section of the Dominion Bureau of Statistics. The G.N.P. data for the period

1951-1968 is in constant 1961 dollars.

NOTES

1. Seasonally Adjusted Labor Force Statistics, January 1953 - December, 1969, D.B.S., Catalogue no. 71-201, (Queen's Printer, Ottawa, 1970) 1-93.
2. Average Weekly Wages and Salaries, D.B.S., Catalogue no. 72-002, (Queen's Printer, Ottawa) Monthly.
3. Persons Covered by Unemployment Insurance by Industry, Sex and Age, D.B.S., Catalogue no. 73-201, (Queen's Printer, Ottawa).

The Foreward to the above document states, "...Employment and earning patterns in relation to the sex and age composition of contributors to unemployment insurance are presented in this reference paper from the inception of the scheme in July, 1941, up to and including March, 1954. As the bulk of paid workers are in covered employments (70 percent in 1941, rising to 80 percent in 1954), for many purposes the data for contributors may be used as representative of the wage earning population as a whole." (Underlining is mine). It is however, important to note that a weighted average hourly wage rate was computed where the weights were derived from the number of people employed in the corresponding industry. This method was based on the assumption that the percentage of the people insured in each industry remained relatively unchanged during the period of our analysis. Note should also be taken of the fact that the Unemployment Insurance Act has been

revised only once (in 1955, see Summary of the Act from the same publication). As regards the weighted average wage rates, caution should be taken due to the fact that an increase in the standard of living of Canadian workers during the period of analysis may have increased the number of insured workers relative to the total number of workers employed by Industry. If indeed this development did occur to a larger extent in some industries, relative to other industries, the average hourly wages as computed in this study might include measurement errors. A second source of measurement error in the wage rate might derive from the possibility that the weights may be affected by the business cycle, leading to a bias of the coefficients in the model.

4. Population by Age and Sex, 1921 - 1966, D.B.S., Catalogue no. 91-511. (Queen's Printer, Ottawa), 23-53.

CHAPTER IV

The Determinants of Youth Unemployment in Canada

The empirical work for this chapter consists of Direct Least Squares regressions with time series data using the regression model (5) developed in Chapter I. In the first section the regression model is applied to quarterly time series data for the period 1st quarter 1951 - 1st quarter 1961. This period we have called the 'Economic Down-turn'. An analysis is made for each age group in the male labor force and relevant comparisons are pointed out. In the second section of the chapter, the same analysis as carried out for the period 'Economic Down-turn' is also performed for the period 1st quarter 1961 - 3rd quarter 1967. This period we have labelled the 'Economic Upswing'. Data limitations, as explained in the previous chapter, restrict the analysis on female unemployment to the periods 2nd quarter 1955 to 1st quarter 1961, and 1st quarter 1961 to 3rd quarter 1967. For females, the same analytical approach described for males above is followed. This is done in the last section of this chapter.

PRESENTATION OF EMPIRICAL WORK

Teenage Males - Down-turn 1st Quarter 1951 - 1st Quarter 1961

In this section we present the results of our analysis of the determinants of unemployment for the 14-19 year old male labor force group. The intention, as previously stated, is to estimate the influence of wages, population and income variables on unemployment.

The regression results in table IV give a picture of the labor

market position of the three male labor force groups under study. As the table indicates, these are males aged 14-19, 20-24, and the prime age group between the ages 25-64. We start our analysis with the 14-19 year old male cohort. The period under study is the 'Economic Down-turn', spanning the period 1951-61.

TABLE IV
REGRESSION RESULTS FOR MALES BY AGE
ECONOMIC DOWN-TURN 1951 - 1961

Regression coefficients, standard errors, coefficients of determination and t-statistics.

Cohort	(1) $\frac{\delta U}{\delta W}$	(2) $\frac{\delta U}{\delta \text{Pop}}$	(3) $\frac{\delta U}{\delta Y}$	(4) R^2
Males 14-19	126.646* (62.794) t = 2.0	0.301* (0.058) t = 5.2	-4.662* (1.662) t = -2.9	.7071
Males 20-24	138.283* (64.280) t = 2.2	1.374* (0.478) t = 2.9	-4.694 (2.563) t = -1.8	.7607
Males 25-64	-1.994 (131.611) t = 0.0	0.913* (0.478) t = 4.2	-34.040* (0.217) t = -3.1	.8533

- (1) W = Wage Rate, U = Unemployment in 000's
- (2) Pop = Population in 000's
- (3) Y = Income in Billions of dollars

The (W) regression coefficient shows that a \$1 increase in the average wage rate per hour would result in teenage unemployment for the male cohort increasing by 127,000 persons. The population variable (P) has a positive regression coefficient statistically significant at 5%. Its t - value statistic is 5.2. The positive (P) coefficient implies an increase of 300 persons in unemployed male teenagers for every 1,000 increase in the teenage male population. As for the variable (Y), its regression coefficient has the right sign, it is negative. A \$1 billion increase in G.N.P. would lead to a reduction in teenage male unemployment of 4,662 persons. This regression analysis of the 14-19 male cohort proves the obvious fact that economic conditions prevailing during this period played a dominant factor on the labor market position of male teenagers. The main determinants of teenage unemployment being changes in the average wage rates and the Gross National Product. The high R^2 shows that over 70% of teenage male unemployment is explained by the model. When teenage male unemployment determinants are compared to those of the prime age males for the same period, a number of features stand out. Previously in this work, it was pointed out that other researchers have found a positive relationship between teenage unemployment and that of experienced prime age males. Pointed out also was the fact that during periods of economic downswings, employers tend to prefer adult to teenage workers. A look at the (W) regression coefficients for the two male cohorts support these hypotheses. The signs for the regression coefficients for the two male groups are different. They are positive for male teenagers and negative for the prime male labor force. This implies that when the average wage rate

increases by \$1, employers will prefer the experienced prime age males to the detriment of male teenagers. According to the figures, a \$1 increase in the average wage rate would lead to 127,000 teenagers joining the unemployment roles whereas a similar increase in the wage rate for prime age males would reduce unemployment by 1,994 workers. Earlier in this work, an assumption was made that youth labor would be a good substitute for adult labor if wages were flexible and that at some relative wage, young and adult workers would be equally attractive to employers. During the period under study, wages were only flexible upwards. Provincial and Federal minimum wage rates had continuously been increasing and the employability of teenagers has suffered in the process. In actual fact, prime age males had been good substitutes for teenage labor. As far as the wage rates are concerned we can conclusively say that they, to a very significant degree, determined the deterioration of the labor market situation of male teenagers.

For the variable population, the impact of the pre-war babies was not of any significance to youth labor supply during this period. As for prime age males, other factors did make population a very important variable. Immigration and the influx of refugees from post-war Europe was one of the most important factors affecting the labor supply of prime age males. Though a 1,000 person increase in the teenage male population results in only 300 persons being unemployed, a similar increase in the population of prime age males gives a remarkably high figure of 913 persons. The regression coefficient for the variable (Y) is an interesting indicator of what happens to the labor market position of prime age males and male teenagers. According to the regression

results, a \$1 billion increase in G.N.P. would reduce teenage male unemployment by 4,662 persons whereas a similar increase for prime age males results in a reduction of 34,000 persons. These results show that an increase in the G.N.P. influences more the employment situation of prime age males than it does for teenage males. The possibility of teenagers going to school and dropping out of the labor force is also a plausible alternative. With a reduction in unemployment of prime age males, more of them would afford sending their children to school instead of into the labor force. The very high R^2 for prime age males, over .85, indicates the fact that most of the prime age male unemployment is explained by the variables in the model. If the coefficients of determination for teenage males and that for prime age males are compared, we are led to believe that other variables besides those specified in the model explained the remainder of teenage unemployment. Such variables would include job experience, number of years in school, the demand for youth labor intensive products and other non-quantifiable factors like the attitude of youth towards being employed etc.

The analysis of the determinants of male teenage unemployment during the period we have termed 'economic down-turn' does show that excess youth labor supply was not an important determinant of male teenage unemployment. The dominant factors in teenage unemployment were increases in wages and a decline in the demand for youth labor caused by a deficiency in demand in the whole economy. During this period, employers must have tended to hire the more skilled and experienced prime age males more than they did teenage males. Since

the wage rate was a very significant factor, and the fact that minimum wage rates were increasing during this period, employers did prefer prime age males to male teenagers in their hiring policies. An inspection of the regression results for the period 'economic down-turn' indicates that population increases caused more unemployment for prime age males than for male teenagers. However, no conclusion about the effects of population changes on employment can be made from the regression analysis above. In order to determine which age groups suffered more unemployment due to population increases, a different procedure has to be followed and this is the subject of the last section of this chapter.

Regression Results for the 20-24 year old male Cohort

Down-turn 1st Quarter 1951 - 1st Quarter 1961

The regression results for the 20-24 year old males follow the same pattern as that followed by the 14-19 year old male cohort. Starting with the average wage rate, we find that its regression coefficient is positive and statistically significant at 5%. A \$1 increase in the hourly average wage rate increases unemployment of the 20-24 year old males by 138,000 persons. This result is not significantly different from that of 14-19 year old males. The population variable also has a positive coefficient that is statistically significant. Compared to the 14-19 year olds, the population for the 20-24 year age group becomes important. An increase of 1,000 persons in this age group leads to 1,374 persons becoming unemployed. This result is

a reflection of the net increase in immigration among members of the labor force belonging to this group. As expected, the regression coefficient for the variable (Y) is negative but statistically insignificant. A \$1 billion increase in G.N.P. would reduce unemployment amongst the 20-24 year old age group by 4,694 persons. Compared to male teenagers, the effect of a change in G.N.P. is not very different. For 20-24 year olds, 76% of the variation in unemployment is explained by the model.

A comparison of the determinants of unemployment for 20-24 year olds and that of male teenagers shows that 20-24 year old males are comparatively in a worse labor market position than 14-19 year old males. This is expected since 20-24 year olds compete more for the same jobs as prime age males than do male teenagers. An inspection of the regression results show that when average hourly wages increase by \$1, 138,000 persons aged 20-24 become unemployed whereas only 126,000 male teenagers would be without jobs. The 156,000 person increase in employment for prime age males is an indication that employers will hire the more experienced and skilled workers to the detriment of 14-19 and 20-24 year old males. This substitution of unskilled youth labor by skilled experienced prime age male labor also indicates that proportion of youth labor which competes with the prime age males (mainly 20-24 year old males) suffers more in terms of numbers unemployed. Changes in unemployment due to changes in population are not different for males aged 20-24 than are those of the prime age males.

As similarly observed for male teenagers, increases in the G.N.P. lead to more employment opportunities for the 25-64 year old age group

than they do for the 20-24 year old males. One would assume here too that increases in G.N.P. make other alternatives other than joining the labor force, more attractive to 20-24 year old males. Such alternatives would be getting further training or just dropping out of the labor market.

After the analysis of determinants of unemployment for 14-19, 20-24 and 25-64 year old males, a number of important features stand out. The most important result of our analysis is the fact that changes in the average wage rates and G.N.P. were very important during the period of the economic down-turn. The regression coefficients for the variables (W) and (Y) for the three groups indicate this point.

Looking at each age group, we find that changes in average wage rates and in G.N.P. were very important for the prime age male group of the labor force. We also find that as G.N.P. increases, the employment of youth 14-24 years of age increases at a decreasing rate. This would indicate the weakening of the 'added worker effect'. The added worker effect hypothesis is simply based on the fact that as more family bread-winners (prime age males) lose their jobs, there is pressure on the other members of the family to get themselves employed. When incomes increase, marginal workers, in our case the 14-24 year olds, drop out of the labor market and begin other more attractive ventures like going to school or getting further technical training. This would be interesting to look into, but since our topic is not on labor force participation of various labor force groups, we can only assume that the decrease in importance of changes in G.N.P. for 14-24 year olds can be explained by this hypothesis.

The variable (Pop) behaved just as expected. During the period we have termed 'economic down-turn', most of the so-called war-babies had not yet flooded the labor market, and that is why the regression coefficient for (Pop) for the 14-19 year olds did not as suspected determine teenage unemployment very much. However, (Pop) becomes very important for 20-24 year olds and the prime age labor force. A look at population figures during this period leads us to believe that net increases in immigration, especially among the 20-64 year age group were responsible for the outcomes.¹ The variable (W) shows also some interesting features of the male labor market. What stands out clearly is the fact that when wages change, one labor force group is substituted by another in the labor market. The degree of substitution is different for different age groups and seems to depend on whether the groups compete for the same type of jobs. The regression analysis shows that a \$1 increase in wages leads to more workers of the prime age groups getting the jobs at the detriment of the 14-24 year olds. Since 20-24 year olds compete for the same jobs as prime age males, an increase in wages is more detrimental to their labor market position than it is for the 14-19 year old males.

We can therefore conclusively say that during the 'economic down-turn' between 1951 and 1961, unemployment for all male age groups was related to the overall economic conditions that existed during this time. Most of the unemployment being determined by changes in average wage rates and the G.N.P. This was true for all age groups but more so for the prime age males. Changes in wage rates were very important determinants of unemployment, and indicate that if such changes were

changes upwards, this worsened the labor market position of young people. The population as a determinant of unemployment was not important for 14-19 year olds, but was of greater importance for the 20-64 year olds. Immigration was assumed as having played an important role in this.

Regression Results for the Period 'Economic Upswing'

1st Quarter 1961 - 3rd Quarter 1968 - Males

In this section, an analysis of the determinants of youth unemployment during the expansion is made and appropriate comparisons with the prime age group in the labor force are pointed out. It should be noted that a paradox in the labor market position of young people has arisen in the past two decades as explained at the beginning of this work. This paradox is the continuous rise in the unemployment of young people even during periods of economic expansion.

During the 'economic down-turn', economic conditions existing at the time explained most of the youth unemployment. The variable (Pop) did not significantly influence the youth labor market. Table V shows the regression results for the three male labor force groups for the period 'economic Upswing' and illustrates a completely different situation from that of the period 'economic down-turn'.

TABLE V

Regression Results for Males by Age

Economic Upswing 1st Quarter 1961 - 3rd Quarter 1968

Regression Coefficients, Standard Errors, Coefficients of Determination and t - Statistics.

Cohort	(1) $\frac{\delta U}{\delta W}$	(2) $\frac{\delta U}{\delta Pop}$	(3) $\frac{\delta U}{\delta Y}$	(4) R^2
14-19	395.374* (85.356) t = 4.6	0.050 (0.047) t = 1.1	-3.438* (0.825) t = -4.2	0.7240
20-24	-43.712* (25.849) t = -3.7	0.347* (0.069) t = 7.0	-3.864* (1.104) t = -3.0	0.7163
25-64	108.741* (29.823) t = 2.8	0.522* (0.106) t = 7.8	-22.781* (1.832) t = -15.0	0.9403

Regression Results for the 14 - 19 Years of Age Male Cohort

For males 14-19, wages become a very important determinant of teenage unemployment. The positive regression coefficient for (W) implies an increase of 395,000 unemployed teenagers if wages went up by one dollar. (\$1). This is of course an obvious relection of the various increases in legislated minimum wage rates in the different provinces. The population regression coefficient is positive but

statistically insignificant. An increase of 1,000 persons in the teenage population would result in only 50 teenagers becoming unemployed. This result refutes completely the excess supply hypothesis that has been advanced by many as the main determinant of teenage unemployment. It should be noted that the period 1961-1968 was when the bulk of the war and post-war babies entered the labor market. The income variable is negative as expected and statistically significant at 5%. A \$1 billion increase in the G.N.P. would result in unemployment of teenagers decreasing by 3,438. Over 72% of the variation in unemployment is explained by the model.

The regression results for male teenagers during the economic expansion show that average wage rates and to a lesser degree the G.N.P., determined most of the unemployment. When the regression results for teenagers are compared to those of the prime age males, for the same period, a few interesting facts stand out. Starting with the variable (W), a \$1 increase in the wage rate would result in 395,000 teenagers becoming unemployed and a similar increase in wages would reduce prime age employment by 108,000 persons. This result implies that wages during this expansionary period were flexible within a certain interval and teenagers were able to effectively compete with the prime age males in some occupations. This result also indicates that during periods of economic upswings, teenagers gain proportionately more in employment than their adult male counterparts. This economic phenomenon is different from that of the 'economic down-turn' when employers tended to substitute teenage by adult labor whenever wages went up. The variable (Pop), compared to the 'economic down-turn' loses its importance as a

determinant of teenage unemployment and also as a determinant of prime age unemployment. Only 522 prime age males become unemployed when the population increases by 1,000 persons. This result can be interpreted as meaning that employment opportunities were increasing faster than the rate of increase in population. This interpretation of the results is supported by figures from The Economic Council of Canada². Between 1961 and 1966, total employment rose by 18% and unemployment decreased from 7.1% to 3.6% during the same period. A comparison of the regression coefficient for the variable (Y) for teenagers and that of prime age males shows that an increase in the G.N.P. results in greater employment opportunities for prime age males than it does for teenagers. The increase in employment resulting from a \$1 billion increase is 22,781 for prime age males and 3,438 for teenagers respectively.

When the regression results for teenage males for the two periods 'economic down-turn' and 'economic upswing' are compared, a few interesting facts stand out. Taking the average wage rate variable, first, we note that during the 'economic down-turn' an increase in wages results in teenage labor being substituted by adult labor. Teenage males during economic recessions are in a disadvantageous labor market position. However, during the 'economic upswing' we see that teenage males are very competitive in the labor market vis-a-vis the prime age males. The cause of this competitiveness may be due to a slight flexibility in wages within a certain range making youth labor equally attractive to employers as that of the experienced prime age males. Actually, during 'economic upswings', the labor market position of adult males deteriorates with an increase in wages.

The population variable continues to lose its strength as a determinant of both teenage and prime age unemployment. The population regression coefficients for the two periods strongly discount the popular view that the increase in youth labor supply due to a glutting of the labor market by war babies or the so-called post-war baby-boom is the main determinant of the youth unemployment. Probably the increase in employment opportunities and the general increase in other economic indicators during the economic expansion might have contributed to the population losing its influence as an important determinant of unemployment.

Finally, we see that for the two periods, 91% and 94% of the variation in unemployment for prime age males is explained by the model respectively. For teenagers, we note that 70% and 72% of the variation in unemployment is explained. The difference in the coefficients of determination between prime age males and that for teenagers can be explained by the fact that certain unquantifiable variables like skills etc., enter into the labor market equation that determines youth unemployment.

Analysis of Regression Results for the 20 - 24 Years of Age

Male Cohort, Economic Upswing

It was pointed out in the previous section that when the average wage rate increased, the labor market competitiveness of male teenagers improved. It was also suggested that the cause of this was a slight flexibility of wages within a certain interval. For males aged 20-24, the average wage variable is of some more significant interest. Its regression coefficient is negative and statistically significant at 5%.

This result implies a reduction of 43,000 persons from the ranks of the unemployed for 20-24 year olds. In the labor market, males aged 20-24 do, to a very significant degree, compete for the same jobs with males aged 25-64. However, during the 'economic upswing' this degree of competitiveness seems to have been pushed to the extent where 20-24 year old males replaced the prime age males in the labor market. An increase of \$1 in the average wage rate results in 108,000 persons in the prime age group becoming unemployed, compared to the 43,000 person decrease in unemployment for 20-24 year old males. The cause for this substitution of prime age males by 20-24 year old males is something of a puzzle, though one would consider the inflationary wage demands by experienced unionized workers during this period as being responsible.

The regression coefficient for the variable (Pop) is positive and statistically significant. An increase in the population of males aged 20-24 by 1,000 would result in unemployment increasing by 347 persons. A similar increase in the population of the prime age males results in 522 persons joining the unemployed ranks. From these results, it is apparent that population as a determinant of unemployment loses its power during periods of economic booms. As has already been stated for the 14-19 year olds, employment opportunities for the 20-24 year olds during the 'economic upswing' were increasing at a faster rate than the rate of increase either in immigration or population.

The statistically significant and positive regression coefficient for the variable (Y) continues to show, during the 'economic upswing', how strong changes in G.N.P. are as a determinant of unemployment for

the 20-24 year old male cohort just as they did during the 'economic down-turn'. The impact of changes in G.N.P. would generate 3,864 extra jobs during the 'economic upswing', compared to 4,694 during the 'economic down-turn'. This result means that continuous increases in G.N.P. tend to generate less and less jobs during economic expansions.

Regression for the Female Cohort Aged 14-19 and 20-24 for the Periods
'Economic Down-Turn and 'Economic Upswing'

It was pointed out at the start of this work that age and sex are major correlates of the rate and also the duration of unemployment. In this section, an analysis of the regression results for females 14-19 and 20-24 years of age is carried out. However, before this is done, a few outstanding facts which make the Canadian female labor force peculiar have to be discussed.

First and foremost, whereas the unemployment rates of females in other countries have been rising compared to those of males, the unemployment rates of the Canadian female labor force have been lower than those of its male counterparts. The 'Gordon Committee' in making an appraisal of comparative levels of unemployment in industrial countries, notes that unemployment rates for women in industrialized countries are higher than those for men and that "Canada is a striking exception"³ to this tendency. The differences in unemployment rates for males and females in Canada is due to the fact that the female labor force is concentrated in those sectors of the economy that are less susceptible to changes in the business cycle. Compared to the other countries,

Canadian women are less 'committed' to the labor force. This lack of commitment to the labor force is a very important factor for females and to a large extent helps to explain the low unemployment rates especially during business booms.

TABLE VI

Regression Results for Females by Age

1955 - 1967

Regression Coefficients, Standard Errors, Coefficients of Determination and t - Statistics.

Cohort	<u>Economic Down-Turn</u>				<u>Economic Upswing</u>			
	2nd Quarter 1955 - 1st Quarter 1961				1st Quarter 1961 - 2nd Quarter 1967			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	$\frac{\delta U}{\delta W}$	$\frac{\delta U}{\delta Pop}$	$\frac{\delta U}{\delta Y}$	R^2	$\frac{\delta U}{\delta W}$	$\frac{\delta U}{\delta Pop}$	$\frac{\delta U}{\delta Y}$	R^2
14-19	-3.818 (22.673) t = -0.2	0.147* (0.015) t = 10.0	-1.823* (0.569) t = -3.2	.9476	142.272* (61.671) t = 2.3	0.043 (0.062) t = 0.7	-0.278 (0.915) t = 0.3	.2056
20-24	-1.470 (13.121) t = -0.1	0.420* (0.078) t = 5.4	-1.221* (0.278) t = -4.4	.9010	-8.099 (8.167) t = -1.0	0.087* (0.024) t = 3.7	-0.537 (0.310) t = -1.7	.3791

The period of analysis for the female labor force is from 1955 to 1967. No comparison of the labor market position of females will be made with that of prime age males since the two labor force groups face a completely different labor demand curve. Regression results for the 14-19 and 20-24 year old females show that the wage rate was a very significant factor in determining the unemployment of these two age groups during the 'economic down-turn'. A number of factors appear responsible for this outcome. Employers, in most cases, view female labor supply as inexhaustible and are only prepared to pay the going legal minimum wage rate. Also during periods of economic slack, wages rise at a decreasing rate and because of the labor market disadvantages that the females face, most of them are discouraged from remaining in the labor market.

These female disadvantages are wage and job discrimination, the allocation of certain specific tasks that only females are supposed to perform and undemocratic hiring and leave procedures.⁴ Since the period 'economic down-turn' was one of high unemployment, the combination of all the factors cited above, plus high unemployment must have contributed to a high discouraged worker index. This discouraged worker index is based on the discouraged worker hypothesis which states that when high unemployment exists, people seeking employment tend to give up in the end when no jobs are available and drop out of the labor force.

Though the population variable is significant for the two age groups, it was of no importance in terms of absolute numbers. If the population increased by 1,000 persons, only 147 and 420 females would be unemployed in the 14-19 and 20-24 year age groups respectively. For

the two groups we succeed in explaining the variation in unemployment by 94% and 90% for the 14-19 and 20-24 year age groups respectively. This means that for the period 'economic Down-turn, the specification of the model seems to have captured most of the determinants of female unemployment. What then is obvious is that higher wages and other economic conditions existing during the 'economic Down-turn' determined most of the female unemployment for the age groups under analysis.

For the period 'economic upswing', the model fails in explaining the determinants of unemployment for the two female age groups as the low two R^2 's show. The regression results for the period 'economic upswing' become very interesting when compared to the results for the period 'economic down-turn'. Starting with the average wage rate variable, we note that its coefficient is positive and significant for 14-19 year old females, negative and insignificant for 20-24 year olds. This result is similar to that obtained for males 14-19 and 20-24 during the same period. The positive regression coefficient for (W) for the 14-19 year olds implies an increase in female teenage unemployment of 142,000 persons if wages go up by \$1. This result is a reflection of the increase in legislated minimum wages that took place during the period under study. It is also clear that a substitution of teenage female labor by 20-24 year old females did take place. The population variable (Pop) completely loses its power as a determinant of female unemployment. Just as it was proved previously for young males that excess numbers of young people do not determine their unemployment, we find the same results for females. This is a further refutation of the excess supply hypothesis. While the Gross National Product (Y) explained

some of the unemployment for males of all ages and also for females during the period 'economic down-turn', the variable (Y) becomes a poor determinant of female unemployment during the upswing. Though the coefficients have the right signs, they are both insignificant for the two female groups.

These results are not surprising considering the peculiarities of the labor force groups we are dealing with. At the beginning of this analysis of the female groups, it was pointed out that the Canadian females are less 'committed' to the labor force than their male counterparts. It was also stated that compared to other industrial nations, Canadian female members of the labor force have lower unemployment rates. The points cited above support the results of the regression analysis. The Fourth Annual Review of the Economic Council of Canada states that "The exceptionally large overall growth in employment in 1961-1966 was accompanied by major changes in the labor force and in patterns of employment. The population from which the labor force is drawn grew at roughly the same rate for both males and females. There was however, a quite striking increase in the number of women in the labor force. Whereas the male labor force grew by only 1.7 percent, per year over the period, the female labor force grew three times as rapidly. The participation rate of males in the labor force in fact dropped slightly from about 80 to roughly 78 percent, while the female participation rate rose from roughly 29 percent to 33 percent."⁵ We have noted that unemployment rates for females have been decreasing while their participation rate has been climbing. This discrepancy in participation and unemployment rates can be explained by the fact that the Canadian female labor force short-circuits the labor market. When no jobs are available they just drop out of the labor market.

Sylvia Ostry states: "Thus when they lose a job, they are less likely to remain in the market looking for work, but instead return to some non-labor force activity. Many desire only intermittent employment and will take a suitable or convenient job when it becomes available without any preliminary period of testing the market."⁶

A comparison of the periods under analysis shows that the specification of the model is able to explain more the determinants of female unemployment during the 'economic down-turn' than it does for the upswing. This fact is illustrated by the high R^2 's for the upswing. The increase in the female participation rate during the period 'economic upswing' must have had a lot to do with the low coefficients of determination we get. However, regardless of the coefficients of determination, a time series study of the female labor force does not always bring good results because of the few variables that can be specified in any one model. If this study was cross sectional, the addition of the variables like marital status, separation rates due to maternity reasons, etc., whose data is available during census years only, would help explain most of the determinants of female unemployment.

TABLE VII

Unemployment Rates, by Sex Canada 1951-1961

Annual Averages

Year	Unemployment Rate		Year	Unemployment Rate	
	Males	Females		Males	Females
	%	%		%	%
1951	2.8	2.1	1957	5.3	2.3
1952	3.2	2.2	1958	8.1	3.6
1953	3.4	1.6	1959	6.9	3.0
1954	5.1	2.6	1960	8.1	3.6
1955	4.9	2.6	1961	8.4	3.7
1956	3.9	1.9			

The Population, G.N.P. and Wage Rates as Determinants of Youth Unemployment

It was stated previously that no concrete conclusions could be made about the effects of changes in population and G.N.P. from the regression analysis alone. To arrive at these concrete conclusions, a different procedure had to be followed. The population at time (t) was multiplied by the regression coefficient for the variable (Pop) in order to get the amount of unemployment for each age group. For the period (t + 1) the same procedure was followed. The difference in the results constituted the change in unemployment (ΔU). This change in unemployment (ΔU) was divided by the percentage change in population

in order to arrive at the amount of unemployment caused by a one percentage increase in population; i.e.

$$\text{POP}_t \times \text{R.C.} = U_t.$$

$$\text{POP}_{t+1} \times \text{R.C.} = U_{t+1}$$

$$U_{t+1} - U_t = \Delta U$$

and

$$\frac{\text{POP}_{t+1} - \text{POP}_t}{\text{POP}_t} = \frac{\Delta \text{POP}}{\text{POP}}$$

and

$$\frac{\Delta U}{\frac{\Delta \text{POP}}{\text{POP}}}$$

Where R.C. is the regression coefficient for the variable (Pop).

The following table shows the increases in unemployment generated by a one percentage increase in population.

Increase in Unemployment Generated by a 1% Increase in
Population by Age - Males

Down-Turn

<u>AGE</u>	<u>YEAR</u>	<u>INCREASE IN UNEMPLOYMENT</u>	<u>RATE OF GROWTH OF POP. %</u>
14-19	1951-61	3,173	3.56
20-24	"	2,595	.85
25-64	"	41,081	2.06

Upswing

14-19	1961-68	553	4.81
20-24	"	3,958	4.68
25-64	"	11,776	2.07

The table above supports the results of the regression analysis that led to the conclusion that excess supply of youth labor was not an important determinant of youth unemployment. Between 1951-1961, the average rate of teenage male population growth was 3.56 percent. A one percent increase in the teenage male population led to only 3,173 persons becoming unemployed. For the same period, the average rate of growth of the population for males 20-24 and 25-64 years of age was .85 and 2.06 percent respectively. The corresponding increases in unemployment due to a one percent increase in population were, 2,595 for the 20-24 year olds, and 41,081 for the 25-64 year olds. Increases in the population caused considerable unemployment for males aged 25-64.

For the period 'economic upswing', which happens to be the time when the 'war-babies' got into the labor market, we find that a one percent increase in the teenage population leads to 553 persons becoming unemployed. Teenage population has increased during this period by an average percentage rate of 4.81. The average percentage increases of males 20-24 and 25-64 were 4.68 and 2.07 percent respectively. Whereas the teenagers registered the highest growth rate, a one percentage increase in population resulted in only 553, compared to 3,958 and 11,776 persons unemployed in the 20-24 and 25-64 year age groups respectively. This then proves that comparatively, young males did not suffer from unemployment caused by population increases as other age groups did. This result buttresses our refutation of the excess supply hypothesis.

In explaining the deterioration of the labor market position of young people, we find that we are only left with G.N.P. and the wage rate as the main determinants of youth unemployment. In order to find

out whether the labor market position of youth did deteriorate due to changes in G.N.P., the following procedure was undertaken: The G.N.P. at time (t) was multiplied by the regression coefficient for the variable (Y). The result (Ut), was divided by the population of the age group under study. The same approach was followed for time (t + 1). The result from this was then the percentage increase in unemployment due to a \$1 billion fall in G.N.P.; i.e.

$$Y_t \times R.C. = \frac{U_t}{POP_{14-19}}$$
$$Y_{t+1} \times R.C. = \frac{U_{t+1}}{POP_{t+1}_{14-19}}$$

The results for the period 'economic upswing' show that if the G.N.P. fell by \$1 billion, the percentage increase in unemployment would be 3.6% for male teenagers, 3.23% for males aged 20-24, and .82% for the prime age male group. These computations do show that the labor market position of young people did indeed deteriorate during the 'economic upswing'.

The same procedures on G.N.P. and population were carried out for the female age groups. The results for the two female groups were so small and insignificant that worthwhile conclusions could not be made. For instance, between 1967 and 1968 a 1% increase in the population led to only 164 persons being unemployed. The results for the G.N.P. were just as poor, supporting the conclusion arrived at previously that other things besides the variables specified in the model did determine female unemployment.

The regression analysis above has demonstrated that changes in

wage rates were the most important determinants of youth unemployment. In order to find out exactly what percentage of unemployment was caused by a one percentage increase in the wage rate, the following procedure was carried out:

$$\frac{U_t - U_{t-1}}{U_{t-1}} = \frac{\delta U}{U}$$

$$\frac{W_t - W_{t-1}}{W_{t-1}} = \frac{\delta W}{W}$$

Where $\frac{\delta U}{U}$ and $\frac{\delta W}{W}$ are percentage changes in unemployment and wages respectively, and

$$\frac{\frac{\delta U}{U}}{\frac{\delta W}{W}} = \frac{\delta U}{\delta W} \cdot \frac{\bar{w}}{\bar{u}}$$

gives the percentage change in unemployment due to a percentage change in wages. The first quarter of 1951 is taken as the base.

TABLE VIII

Percentage Unemployment Generated by a 1 percent Increase in Wages.

MALES	<u>14-19</u>	<u>20-24</u>	<u>25-64</u>
Down-turn 1951-1961	5.7	3.3	-3.11
Upswing 1961-1968	-2.05	-0.3	1.65
FEMALES			
Down-turn 1955-1961	4.95	2.66	
Upswing 1961-1967	-2.37	0.83	

Table VIII indicates the percentage unemployed by age and sex resulting from a one percentage increase in wage rates. The table supports the results of the regression analysis above that an increase in wages results in more young people becoming unemployed as compared to the prime labor force group. These results also indicate the point raised previously that during economic upswings, young people gain proportionately more in terms of better employment opportunities relative to their adult counterparts.

NOTES

1. See Table I in Appendix.
2. Economic Council of Canada, Fourth Annual Review, (Queen's Printer, Ottawa, 1967) Table 2-1, 12.
3. Measuring Employment and Unemployment. The President's Committee to Appraise Employment and Unemployment Statistics, Washington, D.C. (Government Printer, Washington, 1962), 260.
4. Stanislaw Judek, "Women in the Public Service, Their Utilization and Employment". Economics and Research Branch, Department of Labor. (Queen's Printer, Ottawa, 1968), 99.
5. Economic Council of Canada, Fourth Annual Review, (Queen's Printer, Ottawa, 1967), 30-31.
6. Sylvia Ostry, "Unemployment in Canada", D.B.S. (Queen's Printer, Ottawa, 1968), 7.

CHAPTER V

Youth Unemployment - A Long-run View

In the previous chapter, a short-run cyclical model was used to explain the determinants of youth unemployment. For this purpose, the period under analysis was divided into two parts, i.e. the economic upswing, starting in 1961 and ending in 1967. This chapter will look into the non-cyclical long-run aspects of youth unemployment. In the latter sections, a forecast of the labor market position of young people will be carried out. The last sections will deal with the summary and policy implications of the statistical results from the previous chapters.

The Long-Run View:

At the beginning of this work it was pointed out that in the last two decades the labor market position of young people had deteriorated. It was also pointed out that part of the intention of this study was to find out if this deterioration in the labor market position of youth had a continuous trend and what the implications of such a trend would be on the Canadian Labor market.

Table XI below shows the results of time-trend regressions of the unemployment rates, participation rates, and the level of employment by age and sex run for the period 1948 to 1970. The regression results on unemployment rates for males of all ages show no significant change over time, though the labor market position of males aged 20-24 years deteriorated more than that of other male groups. While insignificant,

the prime age male unemployment rates did drop, showing a slight improvement in the labor market position of this group over time. While unemployment rates showed no significant changes, participation rates for all age groups dropped remarkably over the period under analysis. The highest drop was evident for males 14-19 and 20-24 years of age. We can attribute this drop in participation rates of young males to increased school enrollment and to a high discouraged worker index. The results on the level of employment show a long-run increase for all male age groups. However, males 25-64 registered the highest increase. The small drop in the participation rates over time for males 25-64 and an increase in the level of employment, accounts for the slight decrease in unemployment rates for this group. No clear-cut comparison can be made between the participation rates for males 14-19 and 20-24 years of age and their respective unemployment rates. However, since unemployment rates showed no significant change over time and the participation rates of these groups dropped significantly over the same period, we can conclude that the labor market position of youth did indeed deteriorate because the unemployment rates of young people, as has been previously indicated, have always been twice as high as those of their adult counterparts. A decrease in participation rates also indicates high discouragement factors though these cannot be reflected through unemployment rates since non-participants are not members of the labor force.

The regression results on unemployment rates for the two female age groups indicate a deterioration in the labor market position of these two groups over time. While the unemployment rates of 14-19 year old females show an overall increase of .03 percent per year, the participation rates

TABLE IX

UNEMPLOYMENT RATES, PARTICIPATION RATES AND THE
LEVEL OF EMPLOYMENT, BY AGE AND SEX REGRESSED AGAINST TIME 1948-1970

(a) Unemployment Rates

<u>TREND</u>		<u>MALES 14-19</u>	<u>MALES 20-24</u>	<u>MALES 25-64</u>	<u>FEMALES 14-19</u>	<u>FEMALES 20-24</u>
Linear	B	No	0.170	-0.074	0.267*	0.089*
	T ₂	Significant	1.2	-1.1	4.2	2.6
	R ²	Change	0.0248	0.0172	0.5043	0.2565
Loga- rithmic	B'	No	0.042	-0.015	0.039*	0.028*
	T ₂ '	Significant	1.1	-1.1	4.2	2.5
	R ² '	Change	0.009	0.018	0.5068	0.2538

(b) Participation Rates

Linear	B	-0.775*	-0.636*	-0.138*	-0.191*	0.887*
	T ₂	-8.7	-7.0	-8.1	-4.7	11.2
	R ²	0.8243	0.7475	0.8022	0.5669	0.8869
Loga- rithmic	B'	-0.018*	-0.007*	-0.002*	-0.006*	0.017*
	T ₂ '	-9.0	-6.7	-8.1	-4.6	11.9
	R ² '	-0.8324	0.7309	0.8027	0.5584	0.8983

(c) Level of Employment

Linear	B	8.939*	16.311*	58.230*	8.779*	15.574*
	T ₂	8.0	7.8	19.0	15.6	8.7
	R ²	0.7979	0.7906	0.9574	0.9381	0.8219
Loga- rithmic	B'	0.026*	0.030*	0.016*	0.033*	0.045*
	T ₂ '	8.1	8.2	17.5	16.1	9.8
	R ² '	0.8033	0.8037	0.9501	0.9416	0.8562

Source: D.B.S. Labor Force Survey Catalogue No. 72-001

of this group dropped during the same period. The drop in participation rates for females aged 14-19 can also be attributed to an increase in school enrollment and high discouragement factors. The regression results for females aged 20-24 are consistent with what one would expect if unemployment rates increased over time, they show an increase in the labor force participation of this group. This means that though the level of employment increased, it did not increase fast enough to offset the increase in the labor force participation of females aged 20-24 years.

After the analysis of the regression results above, the only significant conclusions that can be made are that the youth unemployment situation has not changed at all while their participation rates have been falling. The situation for females has been worse than that for males. Their labor force participation has been increasing over time while unemployment rates have been also increasing. What the above results do indeed show is that poor employment conditions affecting young people have not changed significantly from what they were twenty-two years ago. This finding has profound policy implications as the next sections will show.

Youth Unemployment Forecast 1969-1970

The forecast below was carried out only to test the accuracy of the model and the data used for estimation. In order to generate the unemployment forecast for all groups by age and sex, the following procedure was performed. For each age and sex group, the average growth rate in wages was calculated, and on this basis, projections were made up

to 1970. Population projections by age and sex were derived from the D.B.S. publication "Analytical and Technical Memorandum No. 4. Population projections for Canada 1969-1984." The D.B.S. population projections were based on an assumption of medium fertility and a net immigration figure of 100,000 persons per annum. The medium fertility assumption is described as between 2.8 to 2.2 children per family. G.N.P. figures up to 1970 were provided on request by D.B.S. To arrive at the unemployment forecast for 1969-1970, the projected wage rates, population and G.N.P. figures were multiplied by the regression coefficient for the period 'economic upswing' 1961-1967.

Table X below gives a summary of the equations used and the unemployment forecasts generated from them.

TABLE X

SUMMARY OF EQUATIONS

1. Males 14-19 $-104.832 + 895.374 W + 0.05 POP + -3.438 Y.$
2. Males 20-24 $45.87 + -43.711 W + 0.347 POP + -3.864 Y.$
3. Males 25-64 $-1147.664 + 108.745 W + 0.522 POP + -1.823 Y.$
4. Females 14-19 $-21.071 + -3.818 W + 0.147 POP + -1.823 Y.$
5. Females 20-24 $-188.235 + -1.470 W + 0.420 POP + -1.221 Y.$

UNEMPLOYMENT FORECASTS 1969-1970

	Males 14-19	Males 20-24	Males 25-64
1969 Actual	58,000	55,000	165,000
Forecast	60,000	41,961	164,323
1970 Actual	74,000	80,000	213,000
Forecast	74,732	26,923	265,207

	Females 14-19	Females 20-24
1969 Actual	33,000	19,000
Forecast	44,000	24,000
1970 Actual	42,000	27,000
Forecast	49,000	24,000

The forecast figures above indicate the accuracy of the specification of the model used for analysis. An inspection of the figures also indicates that an 'artificial identification' problem exists. This 'artificial identification' problem is not due to our model, which, as has been shown, is exactly identified, but is due to the way the figures are broken down by age. Since in the eyes of an employer there is no difference between a 19 year old teenager and a 20 year old person, it is possible that our variables were explaining both the demand for teenage labor and the supply for 20-24 year old male substitutes. The forecast figures for males aged 14-19 and 20-24 show this problem clearly. For this problem Kalachek has this to say.... "boys and girls, younger and older teenagers differ greatly in the work activities which they perform. This suggests that heterogeneity can be reduced by using the finer age and sex groupings - boys 18-19, girls 18-19, boys 14-17 and girls 14-17 - for which the availability of data permits separate invest-

igation. Even at this level of disgregation, the diversity in labor quality and availability must still be considerable. There is need for a more complex hypothesis which recognizes both differences in central tendencies between teenagers and adults, and also the possibility of a substantial overlap of ranges. For instance, some teenagers may have specific productivity which warrants a wage rate considerably above the statutory or social minimum wage and permits them to compete with adults on an equal or near equal basis". (The D.B.S. does not give a finer breakdown of ages.) If the forecast figures for 14-19 and 20-24 year olds are added together and compared to the actual figures for 14-24 year old males, our model does a very good job. The unemployment forecast for 1969 for males 25-64 is correct to within 600 persons. We however over-estimate for 1970. The forecasts for 1970 are underestimated for males 20-24.

It was stated previously that the model developed failed to explain female youth unemployment for the period 'economic upswing' 1961-1967. In order to generate reasonably acceptable forecasts, estimates for the period 'economic down-turn' 1955-1961 were used instead. Though the figures are not very accurate, they are closer to the actual ones.

Summary of Findings and Policy Implications:

The preceeding chapters have reviewed some of the literature on the demand for and supply of youth labor, noted the methodological differences between them, presented a theoretical model for statistical testing and reported and interpreted the empirical results on the determinants of youth unemployment. The following sections will summarize

the basic findings of this study and their implications to manpower policy.

It is convenient to summarize the principal empirical findings of this study under three headings: (1) the average wage rate; (2) population; and (3) the Gross National Product. The term 'youth' is here used for both sexes unless otherwise stated.

The Average Wage Rate:

- (a) There is an important relationship between the level of youth unemployment, wages and the employment of adult workers. When the economy is sluggish, upward changes in wage rates lead to the substitution of youth labor by adult workers. The degree of substitution of youth labor by adult workers is strongest for males aged 20-24 years who compete for the same jobs as the prime age males than it is for male teenagers.
- (b) During economic upswings, young people are more competitive in the labor market. This competitiveness is probably due to the high wage demands of their adult counterparts, and the depletion of surpluses in the prime age labor force group.

The Population:

- (a) Increases in population have had no significant effect on the unemployment of young people. The results lead us to reject the excess supply hypothesis as a determinant of youth unemployment.
- (b) We however find that population increases did cause unemployment among male adult workers. The influx of immigrants into Canada within this age bracket is suggested as having played an important role in this outcome.

The Gross National Product:

- (a) There is a general relationship between the level of aggregate demand (G.N.P.) and the labor market position of all male age groups. For females the opposite was found to be the truth.
- (b) Increases in G.N.P. tend to generate more jobs for prime age males than they do for young male members of the labor force. Though young people gain proportionately more in terms of new job openings, their unemployment rates are always twice as high as the overall unemployment rate.
- (c) Looking at the long run aspects of youth unemployment, we find that the youth unemployment problem has not changed significantly from what it was twenty years ago.

Policy Implications and Recommendations:

The foregoing study has conclusively shown that for the period under analysis, the population was not a significant determinant of youth unemployment. The level of aggregate demand (G.N.P.) and the average wage rates were found to be the main determinants of youth unemployment. The implications of these findings are clear. Since most of the unemployment has been concentrated among the young members of the labor force, an effective manpower policy to combat it will have to start from the demographic structure of the labor force itself. The demographic picture of the labor force shows that the groups with the highest unemployment rates are young people who are unskilled and are less experienced. This lack of skill and experience is reflected in the wage rates that are paid to young people. However, our regression

results have shown that continuous increases in statutory minimum wages have caused considerable unemployment amongst youth. Considering the escalating standard of living index and the existence of powerful unions to which youth do not belong, a ceiling or lowering of statutory minimum wage rates would be retrogressive. Since wages paid to youth reflect lack of skill and experience, the only solution to youth unemployment lies in manpower training. This is the subject of the next few paragraphs.

Though increases in aggregate demand tend to generate more employment opportunities for youth, this happens only for a short period over the business cycle. For example, as full employment is approached, employers find it increasingly expensive to insist on skilled adult workers since this insistence will involve either enduring vacancies or increasing recruiting expenditures or paying overtime or bidding up wages. It then becomes increasingly profitable to lower hiring standards, and the proportion of youth employed will rise sharply as full employment is approached. However, Canadian business cycle history has shown that as this happens, inflationary pressures begin to set in. Vigorous anti-inflationary measures are then adopted and the first victims of such measures are the unskilled youth. Such situations have actually occurred in 1953, 1958, 1961 and 1969. This is the only plausible reason for the constantly high youth unemployment rates which have also constantly been twice the national rate. This is the most important argument against aggregative expansionary policies to combat unemployment which overlook the demographic structure of the labor force. The problem then points to the preparedness of Canadian youth for future employment. A comparison of the Canadian youth unemployment situation with that of

their counterparts in Western Europe indicates that the main reason why Canadian youth are always in a disadvantageous labor market position is that they are not trained for future employment. The educational system is directly responsible for this outcome. What policies then are best suited to combat youth unemployment? This is the subject of the next paragraphs.

National Policy:

Full employment is only one of a number of aggregative economic goals. The others are rapid economic growth, price stability and balance-of-payments equilibrium. The main objective of aggregative economic policy is to promote the most efficient utilization of existing national resources with the constraints mentioned above in mind. This means maintaining an adequate level of aggregate demand. A lot has been written about maintaining full employment in the economy. To those in charge of implementing economic policy, the emphasis has been on price stability at the cost of high number of unemployed. Everybody is familiar with the failure of policies based on the trade-off between unemployment and price changes. This writer believes that the lack of understanding and appreciation of the way the labor market functions is at the root of most of these misguided policies. For instance, if we assume for once that the unemployment of only people aged 14-24 were eliminated today, the national unemployment rate in Canada would have stood at 2.8 percent in 1970. The causes of youth unemployment have already been established and with all we know by now it stands to reason that all manpower policies should be directed at this age group.

If we look at recent data we find that unemployment has been heaviest in goods producing industries and in operative and unskilled occupations. It is in these sectors that over 85 percent of young people are employed. A job vacancy survey carried out by D.B.S. for the Department of Manpower and Immigration shows that shortages existed in professional, technical, managerial and other skilled occupations.² National manpower policies must take such imbalances into account. Government spending must be geared towards those occupations with an excess supply of workers. A national manpower policy therefore should both be of the short-run and long-run nature. Public spending must therefore pay special attention to those areas that require a minimum of skills in short supply and a maximum of skills in excess supply. Such public spending would be on public utilities projects, housing, urban renewal, construction of roads and bridges etc. This would be a short - run manpower policy. In the long-run, the main objective of a manpower policy would be to maintain short-run demand and steer the labor force towards long-run labor adjustment. The problem of youth unemployment can never be solved by stop-go measures like the ones organized by the Secretary of State's Department. As already mentioned, youth are unemployed because they are unskilled and inexperienced, and any successful programme will have to start from this fact alone.

An Active Manpower Policy for Youth:

The roles of a manpower policy are:

- (a) To enable us to move closer to a full-employment economy without triggering inflationary pressures than we could by aggregative

- measures alone;
- (b) It offers greater efficiency in the utilization of all our manpower resources, and
 - (c) It is a method for salvaging those individuals so disadvantaged that they are hardly touched by the market economy.

The three roles mentioned above would make up what one would term an active manpower policy. As far as youth are concerned, none of these roles seem to be activated on their behalf. A look at Canada Manpower Programmes will show why. If a strict definition of a manpower programme is assumed, i.e. that the programmes should be designed to improve the matching of skills demanded and supplied in the labor market, all Canadians unemployed would come under the 'Occupational Training' for Adults Act³. The Act stipulates that its aim is to 'provide training for (an) adult and increase his earning capacity or his opportunities for employment.'⁴ Though this programme has been very successful in having over 70 percent of its graduates getting employed⁵, its stipulations effectively bar anyone under the age of twenty (20) from taking advantage of the programme. The Act makes it perfectly clear that in order to qualify for training allowances, applicants must have been in the labor force for three years! Discrimination against young people by the Act is made evident by rigid eligibility requirements. To qualify under this programme, an applicant must be one year over the school leaving age and not have attended school for at least twelve months. This includes the requirement that the applicant must have been in the labor force for three years. An evaluation of the

success of the programme by age and sex is not possible in the Minister's 1971 report, however, a break-down does exist for the 1969-1970 year.⁶ Between 1969-1970, 304,899 trainees were taking part in the programme. Of this number, 152,600 were males and 40,000 were females. 81,500 trainees of both sexes were under 25, that is 42 percent of the total and 14,600 of the total were under 20. This number made only 12 percent of youth in this age bracket who were unemployed during this period. The number of male trainees under 20 was 9,800 i.e. 6.4 percent of all male trainees, and the number of female trainees under 20 was 4,800 or 11.9 percent of all female trainees. Of the 116,000 young people under 20 who were unemployed in 1970, only 14,600 were retrained under this programme! The remainder were probably eliminated by the stringent requirements of the Act.

Other Programmes:

Various other non-classifiable programmes for youth have been initiated by the Secretary of State's Department in the past two years. They range from the Opportunities for Youth Programme to Hostel accommodation for transient youth. The Opportunities for Youth Programme, which financially has been the most important of a host of other programmes (the budget for 1972 has been put at \$33,978,000), has been the most politically controversial. Grants under this programme have been made for as diverse purposes as street theatres to the growing of marijuana in British Columbia. Since these programmes cannot be regarded as manpower programmes, their importance and economic impact for that matter, are minimal. Their initial purpose was to ease the pressure on

labor markets during a period of mild recession.

Summer Employment Programmes:

No integrated summer employment programme exists. However, when summer unemployment of students reached a crisis point in 1968, an emergency programme was instituted by the Departments of Manpower, Defence and the Secretary of State. In 1970, 641,000 students entered the labor market. According to a survey made by the Department of Manpower and Immigration,⁷ unemployment of Post-Secondary Students rose from a rate of 7 percent in 1969 to 11 percent in 1970. For high school kids, it rose from 16 to 21 percent. The irony behind these figures is that society expects students to pay their way through school when that same society cannot provide them with jobs.

Some Specific Proposals:

Since a large portion of the unemployed is composed of youth who are less educated and unskilled, a policy solution must look into the whole social and educational structure of Canadian society. This study therefore proposes that:

- (1) Greater emphasis should be put on training programmes that will involve those workers who always suffer more unemployment even during periods of economic booms than on workers who would be employed if aggregate demand was high enough.
- (2) Less emphasis should be laid on training for semi-skilled work which can be filled by the unemployed semi-skilled. Instead,

training should be geared towards skills in demand now and in the future.

- (3) The Government must always strive to maintain an adequate level of demand in the short-run while striving to bring about long-run labor market adjustment through training and retraining programmes.
- (4) Legal restrictions against youth getting manpower training should be eliminated.
- (5) Federal Government supported training programmes must accomodate at least 2.5 percent of the labor force annually.
- (6) Educational programmes in high schools should be geared towards future employment rather than academic satisfaction. This proposal is of paramount importance since the gap between the least experienced and skill requirements is widening due to technological progress.
- (7) The existing school year pattern must be changed to probably one that is all year round and that the financing of higher education requires a thorough re-evaluation.
- (8) The last and probably the most important proposal is that a separate and different manpower training programme directed towards youth only be established. This proposal is of greater significance if the forecast figures on youth unemployment are to be reduced to acceptable levels.

NOTES

1. Edward Kalachek, "Determinants of Teenage Employment", The Journal of Human Resources, Vol. IV, no. 1, (Winter, 1969) 7.
2. Sylvia Ostry, Unemployment in Canada D.B.S. (Queen's Printer, Ottawa, 1968) 17. Table 9 B. See also: Report on Job Vacancies - D.B.S. and The Department of Manpower and Immigration. December 23, 1971. See full report.
3. The Adult Occupational Training Act. May 8th, 1967, Chapter 94. Hansard House of Commons. 1967.
4. Adult Occupational Training Act, cited in preceeding footnote.
5. See Press Release of the Department of Manpower and Immigration. Report by the Hon. Otto E. Lang, Minister of Manpower and Immigration on the Canada Manpower Training Programme, Results of Training. January to December 1970, Office of the Minister of Manpower and Immigration. December 16, 1971. Release 71-34.
6. Figures supplied by Planning and Evaluation Branch Department of Manpower and Immigration.
7. Summer Employment Survey of Post-Secondary Students in Canada. Department of Manpower and Immigration, Ottawa, March, 1971.

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APPENDIX

TABLE IIMMIGRATION TO CANADA BY AGE AND SEX 1951 - 1968

YEAR	MALES				FEMALES			
	AGE				AGE			
	0-14	15-19	20-24	25 and over	0-14	15-19	20-24	25 and over
1951	20,700	8,848	22,119	71,499	18,774	4,420	10,143	40,888
1951	20,743	6,134	13,343	49,629	18,912	4,439	10,281	41,017
1953	38,321	13,012	28,810	88,725	18,420	5,658	12,544	40,824
1954	33,098	11,307	29,033	80,789	15,876	4,832	12,589	36,399
1955	23,626	8,454	20,502	57,364	11,292	3,952	9,782	28,092
1956	18,879	7,270	18,918	44,474	17,334	4,733	7,465	7,747
1957	34,337	10,882	29,898	79,109	32,049	9,047	23,894	62,948
1958	14,599	5,192	11,307	29,532	13,584	5,484	13,626	31,527
1959	12,531	4,433	9,139	25,373	11,675	4,619	11,535	27,623
1960	11,625	4,181	9,966	25,246	11,105	4,401	11,507	26,080
1961	8,144	2,610	5,572	15,780	7,581	3,393	8,763	19,846
1962	8,449	2,899	5,821	17,377	8,043	3,490	8,396	20,111
1963	10,718	3,592	7,585	23,268	10,330	4,102	9,714	23,842
1964	13,986	4,463	8,996	28,380	13,162	4,847	10,829	27,943
1965	18,977	5,889	12,377	37,464	17,848	6,152	13,466	34,585
1966	25,395	7,068	17,474	50,412	24,041	7,645	18,738	43,970
1967	26,601	7,380	21,976	59,201	25,100	8,153	23,744	50,721
1968	20,986	6,766	18,714	47,037	19,544	6,908	20,612	43,407

SUMMARY OF EQUATIONS

EQ. (1) = - 104.832 + 395.374 + 0.050 - 3.438
 -2.7 4.6 1.1 -4.2

NDF= 23 SEE= 3.435 RBSQ= 0.689 DW= 1.89

EQ. (2) = + 45.870 - 43.711 + 0.347 - 3.864
 3.0 -2.3 5.4 -4.5

NDF= 23 SEE= 3.476 RBSQ= 0.869 DW= 1.76

EQ. (3) = -1147.666 + 108.745 + 0.522 - 22.782
 -3.0 4.4 4.4 -11.5

NDF= 23 SEE= 9.563 RBSQ= 0.966 DW= 2.25

EQ. (4) = - 47.978 + 95.165 + 0.001 + 0.239
 -1.3 2.1 0.0 0.3

NDF= 23 SEE= 2.534 RBSQ= 0.060 DW= 1.17

EQ. (5) = - 7.479 - 7.142 + 0.074 - 0.451
 -1.0 -0.9 2.6 -1.4

NDF= 23 SEE= 1.446 RBSQ= 0.134 DW= 1.62

EQ. (6) = + 1.000 + 1.000

EQ. (7) = + 1.000 + 1.000

LENSBB INDICATORS: 49100 0 0 0 6 1 1 8 50 0

193 194 195 1 7 8 7 0

VAR. = MU14-19	58.00	65.62	RATIO T1=	0.13139
VAR. = MU20-24	53.67	24.68	RATIO T1=	-0.54015
VAR. = MU25-64	185.25	166.91	RATIO T1=	-0.09901
VAR. = FU14-19	32.00	30.68	RATIO T1=	-0.04127
VAR. = FU20-24	18.33	14.32	RATIO T1=	-0.21884

IDENT: WAGE RATES

COL 1 COL 2 COL 3 COL 4 COL 5

MW14-19 MW20-24 MW25-64 FW14-19 FW20-24

Q1	1951	0.549	0.740	1.040	0.000	0.000
Q2	1951	0.553	0.740	1.040	0.000	0.000
Q3	1951	0.557	0.740	1.040	0.000	0.000
Q4	1951	0.561	0.740	1.040	0.000	0.000
Q1	1952	0.564	0.740	1.130	0.000	0.000
Q2	1952	0.566	0.740	1.130	0.000	0.000
Q3	1952	0.569	0.740	1.130	0.000	0.000
Q4	1952	0.571	0.740	1.130	0.000	0.000
Q1	1953	0.574	0.740	1.180	0.000	0.000
Q2	1953	0.577	0.740	1.180	0.000	0.000
Q3	1953	0.580	0.740	1.180	0.000	0.000
Q4	1953	0.583	0.740	1.180	0.000	0.000
Q1	1954	0.589	0.740	1.170	0.000	0.000
Q2	1954	0.596	0.720	1.170	0.000	0.000
Q3	1954	0.602	0.720	1.170	0.000	0.000
Q4	1954	0.608	0.720	1.170	0.000	0.000
Q1	1955	0.614	0.720	1.130	0.000	0.780
Q2	1955	0.615	0.840	1.310	0.511	0.780
Q3	1955	0.626	0.840	1.310	0.521	0.780
Q4	1955	0.637	0.840	1.310	0.530	0.780
Q1	1956	0.648	0.860	1.340	0.540	0.790
Q2	1956	0.659	0.860	1.340	0.549	0.790
Q3	1956	0.670	0.860	1.340	0.559	0.790
Q4	1956	0.692	0.860	1.340	0.569	0.790
Q1	1957	0.703	0.880	1.400	0.579	0.830
Q2	1957	0.714	0.880	1.400	0.589	0.830
Q3	1957	0.721	0.880	1.400	0.598	0.830
Q4	1957	0.714	0.880	1.400	0.609	0.830
Q1	1958	0.707	0.890	1.420	0.611	0.880
Q2	1958	0.699	0.890	1.420	0.613	0.880
Q3	1958	0.692	0.890	1.420	0.615	0.880
Q4	1958	0.685	0.890	1.420	0.616	0.880
Q1	1959	0.677	0.950	1.480	0.618	0.910
Q2	1959	0.670	0.950	1.480	0.620	0.910
Q3	1959	0.663	0.950	1.480	0.622	0.910
Q4	1959	0.659	0.950	1.480	0.624	0.910
Q1	1960	0.656	0.990	1.490	0.626	0.960
Q2	1960	0.653	0.990	1.490	0.628	0.960

NAVY AIR FORCE

Q3 1960
Q4 1960

0,649
0,645

0,990
0,990

1,490
1,490

0,630
0,632

0,960
0,960

IDENT: WAGE RATES

COL 1 COL 2 COL 3 COL 4 COL 5

MW14-19 MW20-24 MW25-64 FW14-19 FW20-24

Q1	1961	0.642	0.980	1.760	0.634	0.970
Q2	1961	0.639	0.980	1.760	0.636	0.970
Q3	1961	0.635	0.980	1.760	0.638	0.970
Q4	1961	0.638	0.980	1.760	0.640	0.970
Q1	1962	0.641	1.070	1.600	0.636	1.040
Q2	1962	0.643	1.070	1.600	0.633	1.040
Q3	1962	0.646	1.070	1.600	0.630	1.040
Q4	1962	0.648	1.070	1.600	0.626	1.040
Q1	1963	0.651	1.110	1.710	0.623	1.070
Q2	1963	0.654	1.110	1.710	0.619	1.070
Q3	1963	0.656	1.110	1.710	0.616	1.070
Q4	1963	0.659	1.110	1.710	0.612	1.070
Q1	1964	0.661	1.300	1.830	0.610	1.240
Q2	1964	0.664	1.300	1.830	0.606	1.240
Q3	1964	0.667	1.300	1.830	0.602	1.240
Q4	1964	0.669	1.300	1.830	0.599	1.240
Q1	1965	0.672	1.390	1.960	0.595	1.330
Q2	1965	0.674	1.390	1.960	0.592	1.330
Q3	1965	0.677	1.390	1.960	0.589	1.330
Q4	1965	0.684	1.390	1.960	0.584	1.330
Q1	1966	0.691	1.490	2.150	0.589	1.410
Q2	1966	0.698	1.490	2.150	0.593	1.410
Q3	1966	0.705	1.490	2.150	0.598	1.410
Q4	1966	0.712	1.490	2.150	0.602	1.410
Q1	1967	0.719	1.590	2.310	0.607	1.510
Q2	1967	0.726	1.590	2.310	0.611	1.510
Q3	1967	0.733	1.590	2.310	0.621	1.510
Q4	1967	0.753	1.590	2.310	0.627	1.510
Q1	1968	0.761	1.650	2.450	0.631	1.620
Q2	1968	0.768	1.650	2.450	0.636	1.620
Q3	1968	0.776	1.650	2.450	0.648	1.620
Q4	1968	0.793	1.650	2.450	0.653	1.620
Q1	1969	0.801	1.800	2.540	0.659	1.740
Q2	1969	0.809	1.800	2.540	0.664	1.740
Q3	1969	0.818	1.800	2.540	0.676	1.740
Q4	1969	0.836	1.800	2.540	0.683	1.740
Q1	1970	0.845	1.940	2.630	0.688	1.870
Q2	1970	0.854	1.940	2.630	0.694	1.870

Q3	1970	0.864	1.940	2.630	0.708	1.870
Q4	1970	0.883	1.940	2.630	0.715	1.870

1970 10 28

IDENT: G.N.P.

COL J

Y

Q1	1951	25020
Q2	1951	24764
Q3	1951	25036
Q4	1951	25196
Q1	1952	26736
Q2	1952	27244
Q3	1952	27160
Q4	1952	28452
Q1	1953	28776
Q2	1953	28960
Q3	1953	28812
Q4	1953	28900
Q1	1954	27988
Q2	1954	28032
Q3	1954	28588
Q4	1954	28524
Q1	1955	29684
Q2	1955	30972
Q3	1955	31664
Q4	1955	31996
Q1	1956	32956
Q2	1956	33600
Q3	1956	34052
Q4	1956	34512
Q1	1957	34624
Q2	1957	34636
Q3	1957	34928
Q4	1957	34652
Q1	1958	34800
Q2	1958	35360
Q3	1958	35560
Q4	1958	36128
Q1	1959	36228
Q2	1959	36904
Q3	1959	37128
Q4	1959	37456
Q1	1960	38120
Q2	1960	37632

Q3 1960 37952
Q4 1960 38272

IDENT: G.V.P

CDL 1

Y

Q1	1961	37716
Q2	1961	38940
Q3	1961	39520
Q4	1961	40144
Q1	1962	41100
Q2	1962	41284
Q3	1962	42320
Q4	1962	42408
Q1	1963	42760
Q2	1963	43440
Q3	1963	44212
Q4	1963	45572
Q1	1964	46412
Q2	1964	46796
Q3	1964	47132
Q4	1964	47860
Q1	1965	49064
Q2	1965	49476
Q3	1965	50344
Q4	1965	51712
Q1	1966	52836
Q2	1966	53456
Q3	1966	53712
Q4	1966	54596
Q1	1967	54880
Q2	1967	55660
Q3	1967	55544
Q4	1967	55984
Q1	1968	56856
Q2	1968	57724
Q3	1968	58740
Q4	1968	59716
Q1	1969	60684
Q2	1969	60256
Q3	1969	61536
Q4	1969	62380
Q1	1970	62440
Q2	1970	62908

IDENT: UNEMPLOYED

		COL 1	COL 2	COL 3	COL 4	COL 5
		MU14-19	MU20-24	MU25-64	FU14-19	FU20-24
Q1	1951	30	27	109	0	0
Q2	1951	13	12	36	0	0
Q3	1951	69	13	13	0	0
Q4	1951	20	15	56	0	0
Q1	1952	33	36	124	0	0
Q2	1952	16	14	41	0	0
Q3	1952	19	18	78	0	0
Q4	1952	23	21	86	0	0
Q1	1953	21	21	88	0	0
Q2	1953	22	21	82	0	0
Q3	1953	23	25	95	0	0
Q4	1953	30	32	125	0	0
Q1	1954	39	32	127	0	0
Q2	1954	39	39	157	0	0
Q3	1954	40	39	184	0	0
Q4	1954	38	40	166	0	0
Q1	1955	32	38	155	0	0
Q2	1955	33	34	149	11	7
Q3	1955	32	32	134	11	6
Q4	1955	30	27	131	10	6
Q1	1956	29	30	126	10	5
Q2	1956	27	26	114	10	4
Q3	1956	27	20	104	9	4
Q4	1956	24	27	110	9	4
Q1	1957	33	33	137	9	6
Q2	1957	37	34	145	10	7
Q3	1957	41	44	181	11	9
Q4	1957	50	56	218	13	9
Q1	1958	56	58	238	16	11
Q2	1958	60	62	268	18	11
Q3	1958	56	70	271	18	11
Q4	1958	61	66	267	19	11
Q1	1959	51	55	233	18	9
Q2	1959	49	51	254	15	9
Q3	1959	50	48	204	18	9
Q4	1959	50	50	214	18	11
Q1	1960	57	58	235	22	11
Q2	1960	57	62	262	23	10

Q3	1960	60	62	298	23	11
Q4	1960	62	65	303	25	12

IDENT: UNEMPLOYED

		COL 1	COL 2	COL 3	COL 4	COL 5
		MU14-19	MU20-24	MU25-64	FU14-19	FU20-24
Q1	1961	63	63	296	27	12
Q2	1961	60	63	305	25	13
Q3	1961	56	57	281	23	11
Q4	1961	52	51	245	24	9
Q1	1962	51	52	235	21	11
Q2	1962	53	47	221	21	10
Q3	1962	55	47	221	20	10
Q4	1962	55	49	227	23	13
Q1	1963	56	51	221	23	12
Q2	1963	55	50	209	22	12
Q3	1963	53	49	194	20	14
Q4	1963	53	48	191	17	13
Q1	1964	51	38	179	22	12
Q2	1964	50	42	172	24	11
Q3	1964	47	37	168	26	11
Q4	1964	47	44	162	20	11
Q1	1965	43	35	154	22	11
Q2	1965	46	34	157	23	12
Q3	1965	42	32	140	21	9
Q4	1965	39	28	127	21	10
Q1	1966	42	30	138	20	10
Q2	1966	40	33	126	20	9
Q3	1966	47	37	135	24	13
Q4	1966	59	33	136	24	11
Q1	1967	46	37	147	28	13
Q2	1967	49	40	155	27	15
Q3	1967	49	39	156	24	13
Q4	1967	59	47	170	26	16
Q1	1968	59	50	179	27	20
Q2	1968	61	54	189	28	21
Q3	1968	60	53	189	32	20
Q4	1968	59	55	186	31	19
Q1	1969	58	54	185	32	18
Q2	1969	59	53	186	34	18
Q3	1969	53	54	186	31	18
Q4	1969	60	59	186	34	23
Q1	1970	66	65	195	36	22
Q2	1970	76	83	203	39	27

Q3 1970
Q4 1970

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80

89
92

212
220

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29

IDENT: POPULATION

COL 1 COL 2 COL 3 COL 4 COL 5

MPI14-19 MP20-24 MP25-64 FPI14-19 FP20-24

Q1	1951	591.80	537.50	3299.60	551.10	585.46
Q2	1951	595.49	540.00	3325.80	551.52	587.30
Q3	1951	599.18	542.50	3352.20	551.94	589.14
Q4	1951	602.87	545.00	3378.20	552.36	590.98
Q1	1952	602.88	546.60	3394.40	552.80	592.82
Q2	1952	605.90	548.12	3414.25	553.20	594.72
Q3	1952	608.92	549.64	3434.10	553.60	596.62
Q4	1952	611.94	551.16	3453.95	554.00	598.52
Q1	1953	611.96	552.70	3473.80	554.40	600.42
Q2	1953	615.45	555.07	3495.80	554.90	603.30
Q3	1953	618.94	557.44	3517.80	555.40	606.18
Q4	1953	622.43	559.01	3539.80	559.90	609.06
Q1	1954	626.91	559.20	3561.80	556.40	611.96
Q2	1954	631.39	560.15	3581.07	572.23	613.36
Q3	1954	635.87	561.10	3600.34	557.23	614.76
Q4	1954	640.35	562.05	3638.90	557.42	616.16
Q1	1955	643.83	563.00	3648.03	557.61	617.56
Q2	1955	644.73	564.04	3657.17	619.08	557.90
Q3	1955	649.08	565.10	3675.44	622.64	558.65
Q4	1955	653.43	566.15	3693.17	626.22	558.90
Q1	1956	657.80	567.20	3712.00	630.27	559.65
Q2	1956	669.28	570.57	3735.90	634.32	560.40
Q3	1956	680.76	573.94	3759.80	638.37	561.15
Q4	1956	692.24	577.31	3783.70	642.42	561.90
Q1	1957	705.28	580.70	3807.60	652.94	565.17
Q2	1957	715.47	582.30	3825.75	663.46	568.44
Q3	1957	725.66	583.90	3843.90	673.98	571.71
Q4	1957	735.85	585.50	3862.05	684.52	574.00
Q1	1958	746.06	587.10	3880.20	694.24	576.10
Q2	1958	756.03	587.15	3898.72	703.96	578.20
Q3	1958	766.00	587.20	3917.24	713.68	580.30
Q4	1958	775.97	587.25	3935.76	723.42	582.40
Q1	1959	785.94	587.30	3954.30	732.30	583.05
Q2	1959	796.69	587.40	3968.75	741.18	583.70
Q3	1959	807.44	587.50	3983.20	750.08	584.35
Q4	1959	818.19	587.60	3997.65	758.96	585.00
Q1	1960	828.94	587.70	4012.10	768.96	586.27
Q2	1960	839.83	587.72	4024.70	778.96	587.54

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Q3	1960	850.72	587.74	4037.40	788.96	588.81
Q4	1960	861.61	587.76	4049.90	798.98	590.10

IDENT: POPULATION

		COL 1	COL 2	COL 3	COL 4	COL 5
		MP14-19	MP20-24	MP25-64	FP14-19	FP20-24
Q1	1961	872.50	587.80	4062.50	809.71	591.70
Q2	1961	882.23	591.87	4071.44	820.44	593.30
Q3	1961	891.96	595.94	4080.38	831.17	594.90
Q4	1961	901.69	600.01	4089.32	841.90	596.50
Q1	1962	921.42	604.10	4098.26	854.68	600.47
Q2	1962	940.16	610.27	4106.42	867.46	604.44
Q3	1962	958.90	616.44	4114.58	880.24	608.41
Q4	1962	977.64	622.61	4122.74	893.02	612.40
Q1	1963	996.34	628.80	4130.90	905.04	618.05
Q2	1963	1000.57	631.27	4150.20	917.06	623.70
Q3	1963	1004.80	633.74	4169.50	929.08	629.35
Q4	1963	1009.03	636.21	4188.80	941.73	635.00
Q1	1964	1013.28	658.70	4175.50	952.94	641.77
Q2	1964	1024.31	666.50	4190.15	964.75	648.54
Q3	1964	1035.34	674.30	4204.80	976.56	655.31
Q4	1964	1046.37	682.10	4219.45	988.40	662.10
Q1	1965	1057.40	689.90	4234.10	998.83	669.90
Q2	1965	1068.70	699.20	4252.80	1009.26	677.70
Q3	1965	1080.00	708.50	4271.50	1019.69	685.50
Q4	1965	1091.30	717.80	4290.20	1030.14	693.30
Q1	1966	1102.60	727.10	4308.90	1040.32	703.52
Q2	1966	1115.43	739.92	4331.95	1050.50	713.74
Q3	1966	1128.26	752.74	4355.00	1060.68	723.96
Q4	1966	1141.09	765.56	4378.05	1070.88	734.20
Q1	1967	1153.92	778.40	4401.10	1082.26	746.12
Q2	1967	1165.53	791.22	4421.92	1093.64	758.04
Q3	1967	1177.14	804.04	4442.74	1117.33	769.96
Q4	1967	1188.75	816.86	4463.56	1141.66	781.90
Q1	1968	1200.39	829.70	4484.40	1165.99	792.44
Q2	1968	1212.03	830.55	4505.80	1190.32	800.96
Q3	1968	1223.67	831.40	4527.20	1214.65	809.48
Q4	1968	1235.31	832.25	4548.60	1238.98	818.00
Q1	1969	1244.62	841.18	4636.60	1239.00	830.70
Q2	1969	1253.84	850.11	4724.60	1247.50	843.20
Q3	1969	1263.06	859.04	4812.60	1256.00	855.70
Q4	1969	1272.26	868.00	4900.00	1264.50	868.00
Q1	1970	1281.48	876.20	4988.60	1273.00	888.01
Q2	1970	1290.70	884.40	5076.60	1281.50	883.34

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Q3	1970	1299.92	892.60	5164.00	1290.00	898.67
Q4	1970	1309.14	914.00	5253.20	1298.50	914.00