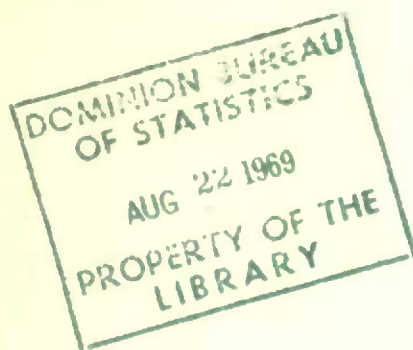


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STATISTICS
OF
THE ECONOMIC REGIONS
OF
ONTARIO AND QUEBEC

A Progress Report
for Restricted Circulation



DOMINION BUREAU OF STATISTICS
OTTAWA
September, 1956

PREFACE

At the request of the Second Dominion-Provincial Conference on Economic Statistics, which was held in Ottawa in April, 1955, the Dominion Bureau of Statistics inaugurated a pilot study of regional statistics. The present memorandum represents a progress report on this project. The memorandum is not final in any sense, but is intended primarily as a basis for further discussion and comment. Interested persons are invited to offer criticisms and suggestions for further work in this field.

In a new field of statistics there is usually some difficulty in moving from discussion of concepts, uses and needs for statistics in a general way, to specific questions as to what kind of statistics should be developed, and by what methods, in order to fulfill the most urgent practical needs. In particular, there is relatively little information regarding the specific practical problems which cannot be handled adequately with available information and the kind of new regional statistics their solution would require. Yet, without such knowledge it is difficult to formulate and develop a continuing programme of statistics. The users of regional statistics are therefore invited to make available to the Bureau the following information:

- (a) The kind of problems which they have encountered requiring regional statistics;
- (b) The specific questions on which they would like to secure regional statistics, which at present are either not available at all or are not present in the appropriate form, in order to help study these and prospective problems;
- (c) The priorities they would attach to these various questions.

This information would not only help to complete the pilot study but also to allocate resources in the most appropriate way if it was decided to embark on a continuing programme of development of regional statistics.

The present report was prepared by Mr. F. Denton of the Dominion Bureau of Statistics.

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INTRODUCTION

The impetus for the Pilot Study of Economic Regions came mainly from two sources: the practical requirements of provincial statistical and research agencies, and the zoning work of the Economics and Statistics Branch of the Department of Defence Production. Among the provinces, Ontario and Quebec have been foremost in the concern for a regional approach to economic analysis. When the Economics and Statistics Branch of D.D.P. made available its system of areas developed for studying the local impact of defence procurement and development of strategic resources it quickly became apparent that this system was of wide interest. The D.D.P. areas were defined according to basic economic considerations. Because of this they had some advantage over political or statistical units whose boundaries may arbitrarily cut through areas which ought not to be separated on economic grounds. The publication of the D.D.P. system represented a major development in Canadian area studies.

Publicity was first given to the D.D.P. system in a paper read by Dr.E.P.Weeks at the First Dominion-Provincial Conference on Economic Statistics, held at Ottawa in January, 1953. Dr.Weeks, who was at that time Director of the Economics and Statistics Branch of Defence Production, presented a survey of major contributions in the history of regional economic theory and an outline of practical zoning attempts in Canada and elsewhere. Mr.Z.W.Sametz, also of the Economics and Statistics Branch, later made available a report on zoning concepts and methods together with a detailed description of the original D.D.P. system of areas. Dr.Weeks' and Mr.Sametz' papers were printed and distributed under the title "Economic Zoning of Canada and the D.D.P. Geographic Code", the first of two basic documents on zoning in Canada.

As a result of the interest aroused by Dr.Weeks' paper at the First Dominion-Provincial Conference the question of economic areas was referred to the Continuing Committee established for the purpose of preparing for a second conference. The Continuing Committee met at Ottawa in June, 1954, at which time Mr.Sametz reported on some

further developments in the zoning project. Also, "Economic-Administrative Zoning of Canada", the second basic document on Canadian economic zoning, was issued by the Economics and Statistics Branch of D.D.P. The latter publication elaborated on some points considered previously, as well as reporting on certain changes in the system of areas introduced as a result of consultation with interested government officials and others. These contributions provided material for further consideration by participants in the Dominion-Provincial discussions, and the Continuing Committee recommended that the question of zoning be raised again at the next conference.

The Second Dominion-Provincial Conference on Economic Statistics was held at Ottawa in April, 1955. Mr. Sametz presented the paper which he had previously read at the meeting of the Continuing Committee, incorporating some additional remarks on the developments since that time. Interest was again expressed by certain provinces, particularly Ontario and Quebec. These two provinces had already adopted the revised D.D.P. system of economic regions, although some other provinces had withheld final approval pending further study. The consensus of the conference was that the next important step should now be taken, that of exploring the problems associated with the provision and use of statistics for small areas.

The Dominion Bureau of Statistics inaugurated the Pilot Study of Economic Regions following the 1955 Conference. This is the first report on the progress of the project. It is not intended to be final in any sense. Rather it is hoped that it will provide a starting point for further discussion and that it will prompt interested persons to offer criticism and suggestion. In a new field of endeavour there is usually some difficulty in moving from general concepts and proposals to the level of detailed practical considerations. If the distribution of this progress report encourages an exchange of ideas about specific concrete problems it will have satisfied its purpose.

The present report is divided into seven sections. Section I, "Conceptual Background and Uses", reviews briefly some methodological, theoretical and practical considerations underlying the D.D.P. system, and

presents a survey of the uses of regional information. Section II offers a set of descriptions of the regions of Ontario and Quebec. Section III provides some notes on the availability of regional statistics from census and non-census sources of the Federal Government, both of D.B.S. and of other agencies. Section IV undertakes an examination of some series available annually or monthly which are of considerable general interest and importance. This examination is made from the point of view of usefulness and accuracy. Section V contains the results of one of the major projects associated with the pilot study, the estimation of personal income for economic regions. Lastly, Section VI presents some concluding remarks and comments on possible future developments. In addition, there are several appendices at the back of the report. These include tables and maps describing the locations and boundaries of the regions, detailed lists of sources of regional information, selected regional statistics for census and non-census years, a note on developments in regional statistics in the United States, and a bibliography relating to regional analysis and allied topics.

SECTION I

CONCEPTUAL BACKGROUND AND USES

A note on the conceptual basis and usefulness of the D.D.P. economic regions seems appropriate. However, it is not our desire to reconsider the theory and methodology underlying the system. For our purposes we consider the areas as given and seek to explore only matters related to the provision and use of economic statistics. Therefore we shall be brief in the present section. Readers interested in zoning theory and methodology are referred to the bibliography appended to this report, and in particular to the publications "Economic Zoning of Canada and the D.D.P. Geographic Code" and "Economic-Administrative Zoning of Canada".

Obviously, economic zoning aims to group together areas with similar characteristics. However, there may be differences of opinion as to what characteristics should be taken into account. We want similarity, but similarity of what? The question cannot be answered without reference to the purposes for which the real system is intended. Dominant type of industrial activity provides one criterion. Local distribution or market areas offer another. Physiography, labour characteristics, transportation characteristics, etc., may be pertinent. In some cases different criteria lead to the delineation of similar areas. In other cases this is not so, and we have to sacrifice one type of similarity in order to retain another. What we sacrifice and what we retain depend on our particular aims.

The D.D.P. economic regions were intended to form "a system of general purpose zones designed to assist in the analysis of basic production and marketing factors, and hence the interpretation and forecasting of local economic conditions"¹. To achieve this aim a system of weights was devised which would allow each of several factors to contribute to the determination of the system in proportion to what was considered to be its importance from the point of view of general economic study. This system of weights was incorporated into what was termed the "SPPM" formula.

Other formulas could be devised to suit other requirements, but this formula was considered most suitable for general analysis because it comprises basic structural factors such as the physiographic basis and the population structure; functional factors such as the transportation and communication network and the flow of servicing functions; production factors both in respect to their homogeneity and their relationship to each other; and the marketing pattern. This formula is considered suitable for general

1. "Economic Zoning of Canada and the D.D.P. Geographic Code", p. 2.

theoretical area analysis such as area income and expenditure studies due to the provision for both production and marketing factors, and area input-output analysis due to the attention paid to industrial relationships.²

In order to endow the system with practical utility it was necessary to relax theoretical requirements to some extent. Regions were defined so as to include only whole census divisions, thus permitting the use of all statistics tabulated on a census division basis. Regions were further constrained so as not to cross provincial boundaries, thus facilitating their use by provincial government agencies, in particular. Both concessions involved sacrifice of desirable theoretical characteristics. However, a set of areas for which statistics were not available would be of little more than academic interest, and provincial agencies are among the most important proponents of the regional approach and users of regional statistics.

In support of the "general purpose" region we may draw an analogy with time series. The calendar year is a common unit for studying differences over time, arbitrary to some extent but suitable for many uses because it embraces a complete cycle of seasons and because it is a common planning and accounting period. For a specific purpose a particular calendar year, or possibly any twelve-month period, may fail by so much to coincide with the temporal pattern of change as to be quite inappropriate. Analogously, the regions of present interest may be thought of as convenient units for studying differences over space, of necessity somewhat arbitrary but nevertheless founded on basic economic considerations. Studies more specialized than those falling within the category of "general economic analysis" may demand areal systems based on more specialized criteria. The agricultural economist, or the labour economist, for example, may find that in particular instances the "general purpose" economic region is not appropriate. Nevertheless, even the specialist will be concerned at times with the way in which his sector of interest is related to other sectors of the regional economy. Therefore, it seems apparent that the D.D.P. regions satisfy an important need.

It should be noted that the authors of the D.D.P. system recognized the possible need of specialists for areal systems other than that devised for general analysis. Areas smaller than regions were defined. These

2. Ibid., p.12.

smaller areas could be grouped on an ad hoc basis according to specialized criteria. However, this study is not concerned with these smaller areas for which the problems of providing data are much more serious than those associated with regions. Interested persons may refer to "Economic-Administrative Zoning of Canada" for a description of these areas.

We may define three fundamental approaches in which regional statistics may be of value, although the boundaries of these approaches are not precise. The first is in the analysis of a local economy per se. Here we aim at an understanding of a local situation and take into account relationships and differences with respect to other areas only when by so doing we can better comprehend the economic structure and dynamics of the area with which we are concerned. We may find it advantageous to utilize qualitative opinions of persons familiar with local conditions and quantitative information obtainable from sources peculiar to the area of interest, as well as statistics which are more generally available. We might refer to this as an intensive use of regional data.

The second, or extensive use of regional statistics is appropriate in a number of situations. By extensive use we mean the utilization of regional statistics in discovering, describing, and understanding regional differences, the knowledge of which is assumed to be valuable for some purpose such as the selection of suitable plant location, the administration of a public spending program, or the study of the local incidence of unemployment, for example. For this sort of use we will probably rely more heavily on statistics which are available for all regions of interest. Sources of data for particular areas and qualitative judgment will be of less importance since we will probably desire objective and uniform criteria for making interregional comparisons as a basis for decision-making.

The third use we have termed structural. The structural use of regional statistics aims at an enhanced understanding of an economic situation obtaining in a large area by studying the economies of component areas in relation to one another. We seek greater knowledge through spatial disaggregation just as we may seek greater knowledge through disaggregation according to industry, occupation, age, size of income, etc. We may utilize a rigid theoretical and methodological framework, such as a regional input-output model, or we may employ methods which are formally less precise. In using a structural approach the implicit assumption is that comprehension of relationships between parts, geographic parts in this case, can make a significant contribution to an understanding

of the whole.

There are many problems which are, or might be advantageously considered within a regional framework. It may be helpful to mention a few, considering first those of particular relevance to governments.

A very important consideration is the way in which economic "shocks" are transmitted interregionally throughout the economy. Knowledge of time lags between initial local impact and subsequent effects in other areas would be valuable. For obvious examples, suppose a recession (or boom) in the mining industry of northern Ontario, or a crop failure (or abundance) in Saskatchewan. What will be the effect on consumer purchases in the area in which the shock occurs? What will be the magnitude and timing of the effect on the demand for consumer goods imported from other areas of the country? What will be the secondary effects and effects of higher order induced in these supplying areas and in other areas with which they are connected? We may ask the same chain of questions commencing with the initial impact on the demand for raw materials and capital equipment.

If we were able to comprehend the paths and timing of economic shock transmission we would be in a better position to recognize danger signs and to forecast future effects at various points in the economy. Administrators of a contra-cyclical expenditure policy might find such knowledge of great value. It would aid in selecting locations for making injections of public spending such that the effectiveness of this spending would be maximized. For example, expenditure in a region with a high marginal propensity to import foreign goods will have less total effect on national income than an equal volume of spending in a region whose imports are drawn chiefly from other areas of the country. If an area provides an important market for domestic goods produced elsewhere, then it might be considered desirable to offset a sudden decline in spending power in this area by means of a public building program, say, in order to forestall serious ramifications in other parts of the country.

From a defence standpoint, studies of local manpower resources would be valuable. Again, it might be useful to be able to forecast the effect on production of the loss of a given area through foreign invasion or nuclear devastation and radiation hazard. It has previously been noted that the D.D.P. areal system was developed in connection with defense procurement and development of strategic resources.

Taxes and tariffs will affect different areas in different ways.

While the nature of central taxing authorities is such that within classes of taxable units rates cannot vary from region to region, it may be possible and desirable to consider geographic incidence in the light of both immediate local effects and effects caused by interareal relationships. An import tariff on a type of commodity produced domestically may affect consumers adversely and producers favourably. This may mean that one area benefits while another suffers. It would seem important to take such effects into consideration.

Transportation facilities might also be considered within a regional framework. Knowledge of interregional trade and the effects of additional facilities for interregional transportation of goods would be valuable. The desirability of alternative routes might be assessed on the basis of their direct effects in particular regions and subsequent effects attributable to interregional trade relationships.

A few other uses may be mentioned without elaboration. It is important for a government agency concerned with unemployment to have some indication of its regional distribution, which is likely to be far from uniform. Studies of local labour characteristics are necessary for efficient administration of a placement service. Analyses of local housing markets, and needs for hospitals, educational facilities, power-generating facilities, and post offices may be required. Other government uses, actual or potential, could be cited but the ones mentioned should indicate the widespread and diversified applicability of regional economic analysis by public agencies.

Business uses are no less important than those of governments but they can be summarized more briefly. These uses centre around the markets for products on the one hand, and the markets for materials and labour services on the other. In both types of market transportation costs must be considered, although their relative importance varies from one industry to another.

Let us consider the efficient location of new plant. On the selling side a knowledge is required of local market characteristics. In the case of a final consumer good, population size and age distribution, income level and distribution, buying habits, seasonal and cyclical stability of purchasing power, and existence of other firms supplying similar goods are all immediately relevant, as well as short and long-run trends in these characteristics. In the case of an intermediate good, first consideration may be given to proximity to

firms providing a market. However, a thorough analysis would take into account future prospects of these purchasing firms. Similar questions may therefore arise in studies concerned with the marketing of either final or intermediate output.

On the production side, optimum plant location might be related to current and projected wage levels, occupational characteristics of the labour force, seasonal variation in the supply of workers, and availability of materials and power sources. Selling and production market analyses would be considered together in making a final decision, of course.

Again, a firm may find it beneficial to compare its performance in a given area with the performance of other firms in the area, as indicated by statistics of industrial sales. Such a comparison may indicate weakness in local selling policy or machinery. Geographic allocation of advertising resources, nature of advertising, and media employed may be determined by local studies.

The preceding remarks relate to what we have called intensive or extensive applications of regional analysis to business problems. However, business economists may have some interest in a structural approach. In so far as such an approach yields valuable information about interregional relationships it may aid in forecasting levels of national sales, for example.

Another use, of concern to both government and business, is in the study of a particular region with a view to determining appropriate measures for improving economic welfare. Policies may take the form of local resource development or encouragement of new firms to locate within the area, for example. This is the sort of use which we have termed intensive. The Development Associations established in several areas of Ontario, with the assistance and encouragement of the Ontario Government, are examples of organizations interested in regional development.

SECTION IIDESCRIPTIONS OF THE D.D.P. ECONOMIC REGIONS OF ONTARIO AND QUEBEC

In order to properly evaluate movements of regional series it is important to have some knowledge of the structural and functional characteristics of the areas to which they relate. With the purpose in mind of providing such knowledge we present in this section a set of twenty brief notes, one on each of the ten D.D.P. regions in Ontario and the ten in Quebec. These studies highlight only the more important economic characteristics. In preparing them we have made use of figures from a number of sources. The 1951 census statistics relating to population, labour force, and agriculture have been utilized intensively. The census of industry information on manufacturing shipments and the personal income estimates of Section V of this report should also be mentioned. In addition to a number of other miscellaneous statistical sources, we have relied heavily on two books containing valuable descriptive and analytical studies: "Canadian Regions" by Putnam, Brouillette, Kerr, and Robinson (J.M. Dent and Sons Limited, 1952); and the "Sixth Annual Economic Survey of Ontario, 1954", Ontario Bureau of Statistics and Research. Readers interested in the exact boundaries of the economic regions may refer to Appendices A, B, E and F, at the end of this report. Also, further statistical detail is available in Appendices J - Q.

ONTARIORegion 50: Eastern Ontario

The Eastern Ontario region is composed of eleven counties in the triangle formed by the Ottawa and St. Lawrence Rivers. It extends westward far enough to include the counties of Frontenac in the south and Renfrew in the north. Roughly, then, the region is bounded by the two large rivers on the north and south, and by the edge of the Canadian Shield on the west. It is a lowland area, and quite flat in some places. Physiographically, as well as in some other respects, Eastern Ontario approximates a "natural" region.

Encouraged by availability of transportation facilities and power resources, and for historical reasons associated with the early lumber trade, settlement and industrial development have taken place largely along the two major rivers bounding the area. Almost six hundred thousand people were living in the region in 1951. Sixty-four per cent of these were living in centres of over 1,000, and fifty-four per cent in centres over 5,000 population. Ottawa, with over 200,000 people, was the home of more than a third of all residents of the area. Kingston, in the southwestern corner of the region, is the second-ranking city (urban area, 49,000). Other large centres are Cornwall (17,000), Pembroke (13,000), and Brockville (12,000).

The large number of federal civil servants in the Ottawa district is responsible for the relative importance of the service industry group to which they are classified. This group employs about 36 per cent of the total labour force in the region. In the city of Ottawa itself about 36 per cent of the active population are Federal Government workers. The presence of such a large and constant employer imparts to the city and area a measure of economic stability not found elsewhere.

Manufacturing is responsible for almost a fifth of the regional labour force. Industries of note include printing and publishing, and food and beverages (Ottawa); aluminum products, nylon, and locomotives (Kingston); paper and chemicals (Cornwall); pulp (Hawkebury); and electrical equipment and hats (Brockville). In 1953 the gross value of manufacturing shipments was \$462 million, representing about 5 per cent of the provincial total.

About a sixth of the province's farms are located in Eastern Ontario. Agricultural activity is quite consistently concentrated in dairying throughout the area, and in 1950 about two-fifths of the gross value of farm production were attributable to this function. The territory around Ottawa constitutes a milk-shed for the city, while elsewhere a large part of output is taken up by cheese factories and condenseries. Net farm income was in the neighbourhood of \$60 million in 1953.

Per capita personal income from all sources is estimated for 1953 at \$1,280. On the basis of 1950-51 data it appears that wage income accounted for approximately 64 per cent of the personal total, farm income for 10 or 11 per cent, and other unincorporated business income for about 9 per cent. About 11 per cent of personal disposable income in Ontario came from here in 1953, making Eastern Ontario the third ranking region in terms of consumer purchasing power.

Region 51: Lake Ontario

The territory including and lying between the counties of Lennox and Addington in the east, Durham and Victoria in the west, and Haliburton in the north form what is known as the Lake Ontario region. The region encroaches upon the Canadian Shield in the north. A number of industrial centres are situated along the lake shore, on the main road and railway arteries between Toronto and Montreal. The largest of these are Belleville (1951 population 20,000), Trenton (10,000), Cobourg (7,000), Port Hope (7,000), and Bowmanville (5,000).

In the midst of the summer resort area north of the lake lie the other two large centres: Peterboro (urban area, 41,000) and Lindsay (10,000). The total population according to the 1951 census was 272,000, of which about 46 per cent were urban. Haliburton County was entirely rural, emphasizing the difference between the southern and norther parts of the region.

Thirty per cent or more of the working force in region 51 are engaged in manufacturing a rather wide variety of products. Peterborough, having originally developed as a centre of grain and lumber milling based on the supply of power available from the Otonabee River, now is the home of electrical equipment, small boat, clock, and meat packing industries, among others. At Lindsay, which also developed as a milling centre, woodworking, furniture, and munitions are important. Industries along the lake shore include radium refining at Port Hope; railway repair, electrical apparatus, bakelite products, and cement at Belleville; and canning, structural steel, and copper cable at Trenton. In total, the region's gross manufacturing shipments were valued at \$289 million in 1953.

Agriculture provides the means of livelihood for more than a fifth of the people. Overall, cattle and dairy products are the chief products. Fruits and vegetables are grown along the lakeshore. In the north, where the land is less suitable, farming is carried out largely on a subsistence and part-time basis.

The Lake Ontario region lacks a dominant marketing centre. Location on main transportation routes to Toronto, Ottawa, and Montreal has encouraged an interregional exchange of output. In general, the region is within the vast Toronto wholesale area. The cities and towns in the area are really only local centres whose spheres of influence are rather limited. Intraregional integration is not pronounced.

Personal per capita income is estimated to have been about \$1,150 in 1953, although there is considerable diversity between the southern and less prosperous norther sections. The 1950-51 proportionate estimates of earned components are wages, salaries, and supplementary labour income, 53 per cent; farm income, 18 per cent; and non-farm unincorporated business income, 13 per cent.

Region 52: Metropolitan

This region includes the Toronto area and extends along Lake Ontario to Oshawa on the east and the boundary of the Hamilton metropolitan area on the west. It is the urban giant of Ontario. In 1951 the population stood at

1,363,000, and 82 per cent of the total were in the City of Toronto metropolitan area. Other centres include Oshawa (urban area, 52,000), Brampton (8,000), Whitby (7,000), Oakville (7,000), Burlington (6,000), and Newmarket (5,000).

With three-tenths of the people of the province in 1951, region 52 accounted for 55 per cent of the labour force in finance, insurance, and real estate, 42 per cent in trade, 38 per cent in electricity, gas, and water, 37 per cent in manufacturing, 35 per cent in construction, and 34 per cent in transportation, communication, and storage. Its dominant position as a distribution centre is evident from the fact that 62 per cent of all wholesale sales in the province were made by firms in this region.

The pace of development in the City of Toronto metropolitan area has been rapid in recent years. From 1941 to 1951 the population increased by 23 per cent, largely a result of post-war expansion. The suburban municipalities registered an increase of more than 80 per cent, and both residential and industrial development have taken place in these areas on a large scale.

The greatest proportion of working population in region 52 is attached to the manufacturing industry group, about 37 per cent. Gross value of production in 1953 (\$3.4 billion) was a little under two-fifths of the provincial total, and represented the output of a large variety of light and heavy manufacturing industries: meatpacking, clothing, furniture, paper products, printing and publishing, agricultural implements, chemicals, etc., in the metropolitan Toronto area, and motor vehicles in Oshawa and Oakville, to mention only the more important ones.

Trade and services each account for about a fifth of regional labour force, construction for about 7 per cent, transportation, communication, and storage for another 7 per cent, and finance for 6 per cent. Agriculture's share was only 3 per cent, but the rich market gardening area at Holland Marsh north of Toronto is worth mentioning.

It is estimated that personal income per capita, the highest in the province, was about \$1,770 in 1953, and that, based on 1950-51 data, wage income was 75 per cent of the total and non-farm unincorporated business income about 9 per cent. The total personal disposable income of the region is estimated at a little more than \$2.3 billion in 1953, or 35 per cent of the provincial total. In terms of buying power the region is the foremost one in Canada.

Region 53: Niagara

The Niagara region extends from the edge of region 52 around the head of Lake Ontario to the United States border. It is a densely populated and highly industrialized area. The 1951 population of 576,000 was almost four-fifths urban. The largest centre in the area is Hamilton (the population of the metropolitan area, excluding Burlington which is in region 52, was 254,000), and others include St. Catharines (urban area, 67,000), Brantford (37,000), Niagara Falls (23,000), Welland (15,000), Port Colborne (8,000), Fort Erie (8,000), Thorold (6,000), and Paris (5,000).

The availability of hydro-electric power and transportation facilities, and the proximity to large markets, have encouraged manufacturing, which accounts for almost half of the labour force. Heavy iron and steel-using industries provide the bulk of employment. At Hamilton, primary iron and steel is of first importance, and other major industries include transportation equipment, agricultural implements, and refrigerators and electrical appliances. St. Catharines contributes iron and steel products, motor vehicle parts, and heavy electrical machinery and equipment; Brantford produces agricultural implements, textile products, motor vehicle parts, electrical apparatus, and textiles; Niagara Falls, chemicals, silverware, and abrasives; Welland, primary iron and steel, iron castings, rubber products, and textiles; and Fort Erie, aircraft, paints, and chemicals. In total, gross manufacturing shipments were valued at \$1.7 billion in 1953, about a fifth of the provincial total.

Turning from manufacturing, trade and service industries occupy about 13 and 15 per cent, respectively, of the regional working population. The Niagara Peninsula, which provides a gateway to the United States, is an important tourist area. Agriculture furnishes only a very small part of total regional income, but farm income represents about 9 per cent of the Ontario total. In 1950, almost two-thirds of the province's tree fruits and well over half of the small fruits were produced here. Fruit sales represented about a fifth of farm production in the region, and another fifth came from sales of dairy products.

In 1953, it is estimated, personal income per capita was about \$1,540. Estimates for 1950-51 indicate that about 70 per cent of total personal income came from wage sources, reflecting the high degree of industrialization. Farm income appears to have contributed 5 per cent, and other unincorporated business income about 10 per cent.

Region 54: Lake Erie

This region is composed of four counties: Elgin, Middlesex, Norfolk, and Oxford. It is situated in the southwestern part of the province and borders on Lake Erie. Physiographically, the area forms part of the western Ontario plains. London (1951 population of metropolitan area, 122,000) is the dominant centre, with its important manufacturing, financial, commercial, transportation, and educational facilities. The city, with 38 per cent of a total regional population of 319,000, was responsible for half of all wholesale trade, and 45 per cent of all retail trade in 1951. Over half a million people live within a radius of fifty miles. Other major centres are St. Thomas (18,000), Woodstock (16,000), Simcoe (7,000), Ingersoll (7,000), and Tillsonburg (5,000). All together, about three-fifths of the residents may be considered urban.

Manufacturing, which accounted for a quarter of the labour force, is characterized by diversity and stability. Heating and cooking apparatus, railroad equipment, brewing, bakery products, biscuits, boots and shoes, printing and publishing, hosiery, and paper boxes and bags are important industries at London. St. Thomas manufactures machinery and railroad equipment, and Woodstock contributes textile products, plywood and veneer, and iron castings. The gross value of all manufacturing shipments was \$434 million in 1953.

Farming engages about a fifth of the labour force of the region, and the prosperous agricultural hinterland contributes in large measure to the integration of the economy. The rich tobacco belt of southern Ontario runs through Norfolk County and the eastern part of Elgin. Elsewhere, dairying and, to a lesser extent, beef-raising, are predominant, and the former provides the basis for production of cheese and other milk products.

Location in the middle of southwestern Ontario has given to London and St. Thomas strategic importance as transportation centres. London is served by four railways and several main highways, an important factor in its industrial development. St. Thomas is served by six railroads, which provide employment for a fifth of its total labour force.

All together, the personal income of the Lake Erie Region is estimated at \$455 million in 1953, yielding a per capita figure of about \$1,370. For 1950-51 it is estimated that wages, salaries, and supplementary labour income accounted for 53 per cent of the personal total, farm income for 23 per cent, and non-farm unincorporated business income for 9 per cent.

Region 55: Lake St.Clair

In the extreme southwest corner of southern Ontario, region 55 is composed of the Counties of Essex, Kent, and Lambton. Most of the area is made up of clay plains, although the eastern sections encroach upon sand plains, and till plains further north. The 1951 census recorded a total of 371,000 people, of which 42 per cent were living in the Windsor metropolitan area (158,000), and another 21 per cent resided in the Sarnia urban area (41,000), Chatham (21,000), Wallaceburg (8,000), and Leamington (7,000). Urban dwellers constituted seven-tenths of the total.

Windsor is a heavily industrialized city with a high degree of dependence on a single industry. Proximity to the automobile industry in Detroit was primarily responsible for the similar development which occurred on the Canadian side of the border. It has been estimated that more than three-fifths of the people in the city are directly dependent upon the wage payments of the three large automobile companies, and possibly another fifth on the payrolls of firms which supply these companies. In addition to the influence of Detroit, another factor encouraging the development of the industry was the availability of transportation facilities. Five railroads operate out of Windsor, and six provincial highways service the city. The Detroit River provides the means of cheap transportation of coal and other space-consuming raw materials. In addition to motor vehicles and parts, there is some printing and publishing and manufacturing of food and beverages, furniture, and chemical products. A gross value of manufacturing shipments of \$682 million in 1953 made Windsor the fourth most important centre in Canada in this respect.

Sarnia, the second-ranking municipality in the region, is to a large extent industrially oriented towards the petro-chemical complex known as "Chemical Valley". Although oil mining is not now of much importance in the area, its early development in Lambton County provided the incentive for the location of oil refineries. These, in turn, were largely responsible for the development of the chemical and allied industries based on petroleum, and today the list of products is long. Sarnia, like Windsor, also enjoys the advantages of cheap water transportation. The gross value of manufacturing output was \$214 million in 1953.

Altogether, region 55 shipped, in the gross, \$1,143 million worth of manufactured goods in 1953 and manufacturing accounts for two-fifths of the working force in the area. In addition to Windsor and Sarnia, Chatham contributes

automotive products, textiles, food and steel products, and Wallaceburg furnishes metal and glass products. Leamington has an important canning industry with a large though seasonally fluctuant volume of employment.

Agriculture, with 14 per cent of the labour force, consists largely of mixed farming. About 30 per cent of gross farm revenue came from grains in 1950. In Essex and Kent Counties, which form the corn belt of southern Ontario, grains represented the largest source of gross farm revenue in 1950. Sugar beets, tobacco, fruits, and vegetables are also important in the southern part of the region. In Lambton County in the north, livestock and dairying assume more importance, though a diversity of crops is characteristic. It is estimated that farm net income in region 55 was about \$48 million in 1953, about 11 per cent of the provincial total.

Personal income from all sources, on a per capita basis, is estimated to have been about \$1,500 in 1953, and 1950-51 estimates indicate that about 63 per cent of the regional total came from wage sources, and 11 per cent from each of farm and non-farm unincorporated business sources.

Region 56: Upper Grand River

The Upper Grand River region is composed of Huron, Perth, Waterloo, and Wellington Counties. Situated in the middle of western Ontario, it faces on to Lake Huron. The region consists largely of till plains, broken in the east and west by morainic hills, and replaced by clay plains along the coastal strip. It is drained by the Maitland River which flows into Lake Huron, and the upper part of the Grand River, which empties into Lake Erie.

A little less than 300,000 people made their homes in this region in 1951, three-fifths urban and two-fifths rural, with Huron County being less urbanized than the rest of the region. The leading municipalities are Kitchener (45,000), Guelph (27,000), Galt (19,000), Stratford (19,000), Waterloo (12,000), and Preston (8,000). Kitchener, Waterloo, Bridgeport, and adjacent parts of Waterloo Township form an urban agglomeration of 64,000 people which is connected by road and railway with the large markets of Toronto, Hamilton, London, and Windsor.

The manufacturing firms of the Upper Grand River region provide income for approximately two-fifths of the working population. The principle industries of the Kitchener-Waterloo conurbation are slaughtering and meat packing, rubber products, leather products, men's clothing, furniture, machinery, wire and wire products, and radios and radio parts. Guelph is notable for clothing and textiles,

iron castings, and electrical apparatus and supplies. Boots and shoes, clothing and textiles, and iron and steel products are manufactured at Galt, and furniture, and railroad and rolling stock equipment at Stratford. Although there is some heavy industry, light industry is generally characteristic of the area, differentiating it in this respect from the industrial belt of the Niagara region. The total gross value of all manufactured goods shipped was \$513 million in 1953, 6 per cent of the provincial aggregate.

Service and trade enterprises use about 15 and 12 per cent of the regional supply of labour, but agriculture with about a fifth ranks next to manufacturing. Livestock is of first importance, providing the basis for the Kitchener-Waterloo slaughtering and meat packing industry. In 1950 about three-tenths of gross farm revenue came from cattle, a quarter of the total from swine, and a sixth from dairy products. It is estimated that net farm income was around \$58 million in 1953, 14 per cent of the total net farm income of Ontario.

Personal income per capita is estimated at about \$1,310 for 1953. Fifty-four per cent of the 1950-51 total is estimated to represent wages, salaries, and supplementary labour income, 21 per cent farm income, and 10 per cent non-farm unincorporated business income. The 1953 estimate of total disposable personal income in the Upper Grand River region is set at \$378 million, or 6 per cent of the provincial total.

Region 57: Georgian Bay

The counties around Georgian Bay comprise a region somewhat heterogeneous in its physiography. The western part consists of till plains broken by morainic hills, with limestone plains in the Bruce Peninsula, while the area on the east side of Georgian Bay is characterised by rocky uplands, forming part of the Canadian Shield. Between these two sections is an area of clay plains.

The 1951 population was 273,000, of which the largest part, 61 per cent, was living in places of less than 1,000. The largest of the urban centres in the area is Owen Sound (16,000 in 1951), and the others over 5,000 are Barrie (13,000), Orillia (12,000), Collingwood (7,000), Midland (7,000), and Parry Sound (5,000).

The Georgian Bay region is the least prosperous one in Ontario, with an estimated personal income per capita in 1953 of \$1,000 as compared with a provincial average of \$1,470. Farming accounts for the largest share of the labour force, 28 per cent. Livestock is of greatest importance, with about a third of gross farm revenue coming from cattle in 1950, and about a fifth

from swine. Dairy products contributed another 15 per cent. Fruit growing is carried on in a narrow belt along the southwest shore of Georgian Bay, lying partly in Grey County and partly in Simcoe. In Muskoka and Parry Sound Districts the land is poorly suited to farming and these areas contribute only a very small proportion of the region's agricultural produce.

The importance of tourism is reflected in the large proportion of labour force associated with the service industry group, about a fifth of the total. Approximately 35 per cent of all tourist accommodation facilities are located in the Georgian Bay region, mostly in Muskoka and Simcoe. The reliance on the tourist and summer resort trade imparts to the area marked seasonal variability of income and employment.

Manufacturing engages another fifth of the labour force, according to the 1951 census, with a gross value of shipments of \$143 million in 1953. Owen Sound, favoured by good harbour facilities and served by two railways and provincial highways, is the foremost manufacturing centre. Its largest industries are furniture, iron castings, and heating and cooking apparatus. Orillia produces mining and lumbering machinery, agricultural implements, and iron castings, in particular. Barrie's major industries are leather tanning and electrical apparatus. Collingwood and Midland are notable for shipbuilding, and there are lumber mills and small boat works at Parry Sound, Gravenhurst, and Bracebridge.

The Georgian Bay region is not economically integrated to any extent. It lacks a dominant marketing centre, and the several small communities in the area exert influences which are quite local.

Of all the regions of Ontario, this one is least dependent on wage income. It is estimated that only 44 per cent of all personal income was attributable to this source in 1950-51. Another 27 per cent appears to have been contributed by farming operations, and 12 per cent by non-farm unincorporated businesses.

Region 58: Northeastern Ontario

Covering a total of about 105,000 square miles, Northeastern Ontario is the second largest region of the province, and accounts for 29 per cent of the total area. It includes the District of Nipissing, less than a hundred miles from the water of Lake Ontario at its southernmost point, and extends north along the Quebec border to include the District of Cochrane, which faces on to James Bay. A total of 370,000 people were counted at the 1951 census, slightly less than three-fifths urban. Sudbury, with over 70,000 people living in its greater urban area in

1951, was the largest centre in the region, and seventh largest in Ontario. Another 40,000 were in the Sault Ste. Marie urban area. Timmins (municipality proper) accounted for 28,000, and North Bay for 18,000.

This region is the home of most of Ontario's mining industry, with about four-fifths of the mining and quarrying labour force of the province. From the point of view of the region, mining occupies roughly a fifth of the working population. The nickel and copper production of the region is concentrated around Sudbury, while further north Kirkland Lake and Timmins are centres of gold mining. Silver and cobalt are obtained in the Cobalt area, and iron ore in the Algoma District in the western part of the region.

Manufacturing, which engages a little more than a fifth of the regional labour force, is closely oriented towards the local mining and forestry industries. Smelting and refining operations in the Sudbury copper mining area provide employment for more than 8,000 workers. Sault Ste. Marie is almost entirely dependent on its primary iron and steel industry, which employs most of the manufacturing workers in the city. At Iroquois Falls and Espanola there are large pulp and paper plants. New Liskeard industries include saw milling, and machinery and supplies for mines and paper mills. Lumber mills are located at a number of places in the region. In the south, North Bay, an important transportation centre, manufactures railroad and rolling stock equipment. All together the gross value of manufacturing shipments was \$539 million in 1953.

The forestry and logging labour force of the region is over two-fifths of the industry total for Ontario, although it represents only 7 per cent of the working population in the region. Services and trade are of less importance than elsewhere, but transportation provides a larger proportion of total employment than it does in the regions of southern Ontario. Agriculture is not of much importance, with subsistence farming typical of most of the region. Dairy products for local consumption represent the largest item entering farm cash sales.

Northeastern Ontario, then, is a large area economically dependent, either directly or indirectly, upon a few basic industries. The location of the several clusters of urban development have been determined primarily by proximity to mineral and forest resources. In most places there is almost exclusive dependence on a single basic industry, making them extremely vulnerable from an income and employment point of view, as some large-scale strikes have demonstrated. Although each of the urban concentrations has its sphere of trade influence, there

is no centre dominant throughout the region.

In 1953, it is estimated, personal income per capita was about \$1,340. Also, 1950-51 estimates indicate that 70 per cent of all personal income came from wage sources, 4 per cent from farming, and 11 per cent from non-farm unincorporated business.

Region 59: Lakehead - Northwestern Ontario

This immense region comprises the remainder of northern Ontario, i.e. all territory west and north of region 58. Its 213,000 square miles represent almost three-fifths of the province, but the 1951 population of 177,000 was less than 4 per cent of the total. The Fort William-Port Arthur urban area, on the north shore of Lake Superior, had 71,000 people, or two-fifths of the population. Another 9,000 and 8,000 were living in Kenora and Fort Frances, respectively, both of which are situated in the western part of the region. All together, 71 per cent of the population were urban, 29 per cent rural.

According to the 1951 census labour force distribution, the most important industrial groups are manufacturing (20 per cent), services (17 per cent), transportation, communication, and storage (16 per cent), and forestry and logging (15 per cent). Although forestry and logging ranked only fourth within the region, more than two-fifths of the province's workers in this industry were located here. It is also the second-ranking mining region, with about a tenth of the provincial labour force.

Manufacturing shipments were valued (gross) at \$229 million in 1953. Fort William and Port Arthur, which together contributed half of this figure, are notable for paper, buses, railroad equipment, and shipbuilding and repairing. Pulp mills are located at Nipigon, Marathon, and Terrace Bay, all of which are near Lake Superior, in the Thunder Bay District, and paper is produced at Dryden, Fort Frances, and Kenora.

The Lakehead-Northwestern Ontario region produces at its Steep Rock Mines roughly half of the province's output of iron ore. Gold, the other major mineral product, is mined in the Red Lake, Pickel Lake, and Thunder Bay areas.

The Fort William-Port Arthur conurbation exerts an important influence throughout much of the area. In 1951, stores in these two cities were responsible for 85 per cent of all wholesale sales in the region, and 51 per cent of all retail sales. Railway facilities, large grain elevators, and one of the best harbours on the Great Lakes contribute to the importance of Fort William-Port Arthur as a point of transshipment, particularly for western wheat.

Per capita personal income is estimated at about \$1,350 in 1953. For 1950-51, wage income appears to have contributed about 71 per cent to total personal income, farming operations only 3 per cent, and non-farm business about 11 per cent.

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Region 40: North Shore - New Quebec

Region 40, consisting of the Saguenay census division, is very large in size (315,000 square miles, or 60 per cent of the province) but sparsely populated. Roughly, it includes all territory east of a line drawn northward from a point near Tadoussac at the mouth of the Saguenay River, the vast area in the north of the province known as New Quebec, and Anticosti Island in the Gulf of St. Lawrence. The 1951 census population was 43,000, with only 20 per cent of the total considered urban, i.e. living in centres of more than 1,000 population. As is typical of "frontier" areas, the ratio of males to females is relatively high (1.23 to 1). The largest centres are Baie-Comeau (4,000 in 1951), Sept-Iles (2,000), and Tadoussac (1,000). All of these towns lie on the St. Lawrence shoreline, and, in general, settlement is largely confined to pockets along this coastal strip.

The forestry and logging industry, based on the extensive forest resources of the region, is centred on the milling operations at Baie-Comeau and Clarke City. This industry accounted for about 30 per cent of the labour force at the 1951 census, and during the winter there is a large temporary influx of lumberjacks from other parts of the province. Fishing and trapping, manufacturing, and services each accounted for another 12 or 13 per cent of the total census labour force. Agriculture is of relatively little importance. It is largely concentrated along the river in the southwest corner of the region, and is mostly subsistence farming supplemented by sales of forest products. Recent iron ore developments have added new importance to the area.

Personal income in 1953 is estimated at about \$890 per capita. One of the reasons that this figure is not lower is that the proportion of female workers in the region is small, and the average wage is therefore somewhat higher. Another reason is that the smaller proportion of women in the population implies fewer dependents. Estimates for the year preceding June 1, 1951, indicate that hired employment was the predominant source of personal income, accounting for about 63 per cent of the total. Non-farm business furnished another 16 per cent, while farming accounted for only about 3 per cent.

Region 41: Gaspesia - South Shore

This region includes the Gaspé Peninsula, the counties along the south shore of the St. Lawrence River as far west as Montmagny, and the Madeleine Islands located in the Gulf of St. Lawrence. The Gaspé Peninsula, over 7,500 square miles, contains the Shickshock Range some parts of which rise over 4,000 feet, the highest in the Appalachians. The population and roads are located along the coast line, while the central area is rugged and not settled. Moving westward from the peninsula we find a strip of lowland covering about 1,200 square miles along the St. Lawrence River, with settlements dating back 200 years or more, and a large plateau of about 10,000 square miles further inland from the river which is only about one-third occupied and where most settlement has taken place within the last century. The Madeleine Islands are only about 50 square miles in area and well removed from the mainland. They have boat connections with the town of Gaspé about 150 miles distant.

The 1951 census population of region 41 was 361,000, of which only about one-fifth was urban (by census definition) making this one of the two least urbanized regions of Quebec (region 40 is the other one). Rimouski is the largest centre with a 1951 population of 12,000. Rivière-du-Loup follows with 9,000, and the only other two centres with more than 5,000 population are Matane (6,000) and Montmagny (6,000).

Agriculture is the dominant industry in terms of employment, engaging about a third of the labour force. A large part of produce is consumed directly by farm families, particularly in the agricultural belt along the Gaspé shoreline and in the inland plateau area further west. Coupled with subsistence farming in these areas are sales of forest products by farmers. In the lowland section along the river dairy products and livestock are important items entering into cash sales.

In addition to agriculture, another 15 per cent of the labour force are in each of manufacturing and services, and 12 per cent in forestry and logging. Although fishing is not very important when considered with respect to its contribution to employment and income within the area, viewed from the standpoint of the industry region 41 is the home of almost three-quarters of all fishermen in Quebec. Over a quarter of the provincial forestry and logging labour force is located in the region, as well. Lastly, tourism is important in the Gaspé Peninsula.

Estimates indicate that this is the least prosperous of the ten regions of Quebec, with a per capita personal income in 1953 of about \$530, or about half of the provincial figure. A further criterion suggesting low income is the ratio to labour force of persons paying federal income tax, which was only 11 per cent in 1951, again the lowest figure of the ten Quebec regions. It is estimated that the relative shares of personal income by type of employment during the twelve-month period prior to June 1, 1951, were about 37 per cent for wages, salaries, and supplementary labour income, 24 per cent for farming operations, and 16 per cent for other unincorporated business activity.

Region 42: Saguenay - Lake St. John

This region, which approximates the Saguenay drainage basin, lies north of the Central and Eastern Laurentians and west of Saguenay County. Settlement is clustered around Lake St. John and along the Saguenay River, an area of about 1,500 square miles all told, while the rest of the region is rugged wooded plateau country. The isolated lumbering and agricultural communities of the turn of the century have given way to industrial expansion and urbanization, although the rate of development has been much more rapid along the Saguenay than in the Lake St. John area which still remains predominantly rural. The result is what has been termed "an industrial empire in the wilderness".¹

The 1951 census population was 198,000, of which about 60 per cent lived in centres of over 1,000 population, and about 37 per cent lived in the five centres having more than 5,000. The largest centres are Chicoutimi and Jonquières, with 1951 populations of 23,000 and 22,000, followed by Arvida (11,000), Kenogami (10,000), which adjoins Jonquières, and St. Joseph d'Alma (8,000). These and other centres (Bagotville, Port Alfred, Grand Baie, and Ste. Anne) are all situated within a few miles of each other, and it is here that the industrial and urban development of the region has been concentrated. The high birth rate of region 42 (estimated at about 40 per 1,000 population in 1953) is reflected in an average family size of about five and a half persons at the 1951 census, the largest of the ten Quebec regions.

Manufacturing is responsible for about 27 per cent of the working force in the area. Of this group, one of the largest employers is the aluminum industry centered at Arvida, which has grown up to take advantage of favourable

1. Putnam, et al., "Canadian Regions", 1952, p.211.

waterpower and transportation conditions. Pulp and paper is the other most important manufacturing industry, with mills located at Jonquières, Kenogami, Riverbend, Port Alfred, and Dolbeau.

Next to manufacturing ranks agriculture, with about 17 per cent of total labour force. Dairy products constitute the largest revenue-providing group, followed by swine. Services, forestry and logging, and trade account for another 16 per cent, 11 per cent, and 10 per cent, respectively. With about 15 per cent of the provincial forestry and logging labour force, the area ranks with region 43 as a producing area next in importance to region 41.

Chicoutimi is the regional centre in a number of respects. It is a transportation focal point, and in particular it is connected by rail and road with Quebec City. Its deep water harbour is the one furthest up the Saguenay River. Only ten miles away is the Bagotville airport. Also, it is a distribution, administrative, and cultural centre.

The 1953 per capita personal income estimate for region 42 is about \$850, while 1950-51 estimates of components indicate relative shares of about 60 per cent for wages, salaries, and supplementary labour income, and 11 per cent for each of farm and non-farm unincorporated business income. Large family size is reflected in a low ratio of labour force to total population, about 29 per cent in 1951, which implies a large ratio of dependents to earners, a fact which should be kept in mind in connection with the per capita estimate of income.

Region 43: Quebec

The Quebec region straddles the St. Lawrence. North of the river is an area of which the Eastern Laurentian Plateau forms the largest part. South of this area is Quebec City and a section of the St. Lawrence Lowland strip. Still further south, the lowland gives way to higher and more hilly ground as we move towards the U.S. border and the Appalachian Highlands. Of the total population of 531,000 enumerated in 1951, about 62 per cent were considered urban, and more than half lived in the Quebec City metropolitan area (population 275,000). The only other centres with more than 5,000 people are Lévis (13,000) and Lauzon (10,000), and both are situated in the immediate vicinity of Quebec City. In general, settlement in the region is highly concentrated in the St. Lawrence Lowland section.

Services account for over a quarter of the regional labour force, and this includes government, religious, and tourist personnel. A fifth or more is in manufacturing, including pulp and paper and other industries noted below.

In 1953 about 7 per cent of the province's gross value of manufacturing shipments came from the Quebec region.

Agriculture accounts for almost another fifth of the labour force. In the lowland area dairy products are important, while further inland farming is more of a subsistence kind.

The influence of the Quebec City area is dominant in region 43. In addition to its deep water harbour facilities the city is a railway terminal point with lines to Montreal and many smaller places near and distant. Roads provide similar links. Its transportation connections make Quebec City the principal regional distributing centre. Industry in the city is diversified, with shoes, clothing, and shipbuilding among the most important manufacturing components. All together, manufacturing engages about a quarter of the labour force of the metropolitan area. Trade engages another sixth. However, the most important group is services which accounts for about 35 per cent of the total. Of this 35 per cent, about a third represents government employees, federal, provincial, and municipal. Lastly, the city is a religious and educational centre, and a tourist attraction of some importance.

Personal income per capita in region 43 is estimated for 1953 as \$850. Of the 1950-51 total it is estimated that 58 per cent was wage income, 13 per cent farm income, and 10 per cent non-farm unincorporated business income.

Region 44: Three Rivers

The region includes the portion of the St. Lawrence Lowland in the vicinity of Three Rivers, but the four counties on the north side extend well back from the river to include most of the Central Laurentians. Settlement has taken place mostly along the St. Lawrence, and in the valley of the St. Maurice River where water power and forest resources created a situation favourable to industrial development. At the mouth of the St. Maurice, Three Rivers and Cap-de-la-Madeleine form an urban concentration of about 65,000 people, while further up the river are Shawinigan Falls (27,000), Grand'Mère (11,000), and La Tuque (10,000). Of the 254,000 people enumerated in 1951 in the region, 57 per cent were urban and 47 per cent resided in cities and towns of over 5,000 population.

Manufacturing is the first-ranking activity in region 44, accounting for about 35 per cent of the total labour force, while in the St. Maurice Valley centres the proportion is much higher: almost 50 per cent in Shawinigan Falls, and as high as 57 per cent in Grand'Mère. Pulp and paper mills and textile firms are located in Three Rivers — Cap-de-la-Madeleine, Shawinigan Falls, and Grand'

Mère. Together, these centres account for about a sixth of the total pulp and paper workers in the province. In addition, railroad equipment is produced at Three Rivers, and aluminum smelting and chemicals are important industries in Shawinigan Falls. All told, in 1953 the region accounted for \$369 million of manufacturing shipments, about 7 per cent, by gross value, of Quebec's total.

Service industries engage about 17 per cent of the regional labour force, while another 18 per cent are in agriculture, which is concentrated in the St. Lawrence Lowland area. Nicolet County, on the south side of the river, is almost entirely classified as occupied farm land. Dairy products and swine are the largest contributors to farm cash income.

The Three Rivers—Cap-de-la-Madeleine conurbation, which is the principal distribution centre for the region, offers important transportation facilities. It is on the main railway and highway from Montreal to Quebec, and has connections with the St. Maurice Valley industrial centres. It is also the site of an airport and a deep water harbour which handles a large volume of freight.

In 1953 it is estimated that personal income was about \$830 per capita. The percentage shares of wages, farm income, and non-farm unincorporated business income were estimated for 1950-51 as 58, 12, and 11, respectively.

Region 45: Eastern Townships

The Eastern Townships region, with an area of 7,230 square miles, consists of a compact group of eleven counties east, but not immediately east, of Montreal, and bordered on the south and southeast by the United States. The region, which forms part of the Appalachian system, is generally rather hilly. It is drained by the St. Francis, Chaudière, and Etchemin river systems. The 1951 population of 396,000 was 44 per cent rural and 56 per cent urban. The eleven centres with more than 5,000 population accounted for 40 per cent of the total. Sherbrooke, the largest of these centres (1951 population, 51,000), is situated at the junction of the St. Francis and Magog Rivers in the south central part of the region. Granby, the second largest centre (22,000), is further west, about equidistant from Sherbrooke and Montreal. Other centres include Thetford Mines (15,000), Drummondville (14,000), Victoriaville (13,000), and Magog (12,000).

Aided by an abundance of small power sites, there was an early development of sawmills, grist mills, and other enterprises. Today, manufacturing employs about 35 per cent of the labour force in the region. Textiles are the most important products, and firms are located at a number of centres: Sherbrooke,

Granby, Drummondville, Magog, Victoriaville. Other important industries are iron and steel products at Sherbrooke, including mining machinery and locomotive parts; rubber footwear and tobacco at Granby; and furniture at Victoriaville. All together, the gross value of manufacturing shipments was \$395 million in 1953, about 7 per cent of the provincial total.

Agriculture, with about 23 per cent of the labour force, ranks next to manufacturing. Dairying and livestock are of most importance to the region. Also, in 1950 about 44 per cent of Quebec's farm maple products came from here.

Asbestos mining, another important industry, provides the basis for a number of centres, the largest of which are Thetford Mines and Asbestos. Although in 1951 the mining industry engaged only 5,600 workers or about 4 per cent of the regional labour force, this figure represented a little less than 30 per cent of the provincial total.

Sherbrooke is the dominant centre in the Eastern Townships region. Railways connect it with many other centres (Montreal; Quebec; St. John, N.B.; Portland, Maine; Boston), and major highways perform a similar function. In 1951 the city, with 13 per cent of the population, accounted for \$42 million of retail sales, or 22 per cent of the regional total. The city's role as a distributing centre is underlined by the fact that almost half of the region's wholesale trade is concentrated here (\$46 million out of \$96 million in 1951).

per capita,

The 1953 personal income estimate for region 45 is about \$830 / with 55 per cent coming from wage payments, 16 per cent from farm income, and 11 per cent from other unincorporated business income, according to 1950-51 estimates.

Region 46: Montreal

This region consists of 23 counties on both sides of the St. Lawrence, surrounding, but not including, the metropolitan area of the City of Montreal. It embraces the lowland area around the city, bounded on the south by the United States. However, some of the counties on the north side of the St. Lawrence are very long and narrow, and extend well back from the river to include a large section of the Central Laurentians. The dominant centre, of course, is Montreal, but the influence of this city extends much further than the surrounding territory, and it is treated as a region by itself. Cities and towns actually lying within region 46 include Valleyfield (1951 population, 22,000), St. Hyacinthe (20,000), St. Jean (19,000), St. Jerome (18,000), Joliette (16,000), and Sorel (15,000). The total population was 552,000 in 1951, 55 per cent rural and 45 per cent urban. About a quarter of the people were living in centres over 5,000.

The manufacturing labour force is about a third of the regional total. The most heavily industrialized of the larger centres are Valleyfield, St. Jerome, and Sorel. Textile firms are located in all of the larger centres. In Valleyfield textiles account for almost 40 per cent of the working population, and in St. Hyacinthe, the proportion is about 30 per cent, so that the fortunes of these cities, and the region in general, are closely tied to those of the industry. At St. Jean there is a large sewing machine plant, and a rubber footwear industry at St. Jerome. Iron and steel products are made at Joliette and Sorel, and the latter, which is situated on the St. Lawrence at the mouth of the Richelieu River, is an important shipbuilding and repair centre. The gross value of manufacturing shipments in the region was \$503 million in 1953, about 9 per cent of the total for Quebec.

Between a fifth and a quarter of the provincial agricultural labour force is located in the region, and it is estimated that in 1953 about 27 per cent of the province's total net farm income originated here, making it the most important region with respect to agriculture. About a third of Quebec's dairy products and a little less than half of her grain came from here in 1950, as did the bulk of the province's fruit, vegetable, and honey output. From the point of view of the region, dairy products are most important, accounting for about a third of gross farm revenue in 1950, with cattle and swine contributing another quarter.

North of the City of Montreal, in the Laurentians, there are numerous resort villages which capitalize on the local scenic resources and skiing facilities, making the tourist industry important in this area.

In 1953 it is estimated that personal income per capita was about \$900. On the basis of 1950-51 estimates it appears that about 53 per cent of total personal income comes from wages, about 18 per cent from farm income, and about 12 per cent from non-farm unincorporated business income.

Region 47: Metropolitan Montreal

The Metropolitan Montreal region consists of 432 square miles containing 1,436,000 people in 1951, representing 35 per cent of the population of Quebec and a tenth of the Canadian total. Over two-fifths of the working population of the province find employment here. The location of the city gives the key to its historical development. In addition to being the point furthest up the St. Lawrence presently accessible to ocean-going traffic, it is also strategically located at the junction of three natural routes leading north, west, and south, i.e. the Ottawa, upper St. Lawrence, and Richelieu Rivers.

About 38 per cent of the working population of the Montreal area are engaged in the manufacture of a variety of products. With about half of the

manufacturing labour force, the region accounted for 57 per cent, by gross value, of total provincial manufacturing shipments in 1953 (\$3.1 billion out of \$5.4 billion). Clothing and textile products constitute the largest industry in terms of working force, accounting for almost half of all women employed in the area. The transportation equipment, iron and steel products, and food and beverage industries are also large employers. Others include electrical apparatus and supplies, printing, chemicals, and leather products.

Some non-manufacturing industrial groups are even more concentrated in the Metropolitan Montreal region. The importance of the city as a transportation centre is reflected in the fact that 57 per cent of the provincial transportation, communication, and storage labour force live there. The largest part consists of employees of the Canadian National and Canadian Pacific Railways, evidence of Montreal's position as the nation leading railway centre. Seven-tenths of the provincial labour force in the finance, insurance, and real estate group, and almost a fifth of the national total, are located in the area, emphasizing its importance as a Canadian financial centre. Again, with 54 per cent of the provincial trade labour force, the distribution function of the city is evident. In 1951, more than four-fifths of Quebec's wholesale sales, and half of her retail sales, were made by stores in the Metropolitan Montreal area.

From the point of view of the region, the service group is second to manufacturing, with 22 per cent of the working force. This group includes, as the largest employers, the federal and municipal governments, educational institutions, hospitals, and restaurants and similar enterprises.

Agriculture makes a negligible contribution to the total income of the area. However, it is worth noting that farm income per farm, estimated for 1950-51 at \$3,230, is higher than it is in any other Quebec region. A little less than 30 per cent of gross farm revenue came from the sale of vegetables in 1950.

The Metropolitan Montreal region exhibits some typical concomitants of large-scale urbanization and industrialization. It has a high ratio of labour force to total population (42 per cent in 1951), and a large proportion of females in the labour force (28 per cent). Families are considerably smaller on the average than elsewhere in Quebec (3.6 persons), reflecting in part a birth rate which is also lower than in other regions of the province (estimated as 27 per 1,000 population in 1953). Also, average income is higher. The personal income figure of \$1,450 per capita in 1953 is the only one of the ten Quebec regional estimates greater than \$1,000. Lastly, there is a higher ratio of wage income to total personal

income (77 per cent in 1950-51, with only 8 per cent from other earning sources).

The importance of the Montreal consumer market is obvious. We have already noted that the area is the home of 35 per cent of Quebec's population. The personal disposable income in the hands of residents of the area is estimated as a little less than two billion dollars for 1953, or close to half of the provincial total.

Region 48: Hull-Western Laurentides

Region 48 consists of a narrow lowland strip along the Ottawa River, extending from the eastern boundary of Papineau County to the western boundary of Pontiac County, and the much larger Western Laurentian area further north. In all, the region covers about 13,700 square miles. It is drained by the Gatineau, Lièvre, Coulogne, Black, and Dumoine Rivers. Settlement has largely confined itself to the lowland along the Ottawa and the valleys of the Gatineau and Lièvre Rivers. A total population of 143,000 enumerated in 1951 was 57 per cent urban, 43 per cent rural. The largest centre is Hull with a municipal population of 43,000, and another 20,000 people living within a radius of five miles up and down the river to include Aylmer (4,000) on one side and Gatineau (6,000) on the other. All together, then, about 45 per cent of the people in the region were living in the Hull area in 1951. Buckingham (6,000), in the Lièvre Valley a few miles north of the Ottawa River, was the only other place over 5,000.

The dividing line between region 48 in Quebec and region 50 in Ontario is, in some respects, an unfortunate one, dictated by the stipulation that the D.D.P. economic regions were not to cross provincial boundaries. Hull and vicinity actually form part of the City of Ottawa metropolitan area. The volume of daily movement back and forth across the river is large, and many people on both sides find common employment. The Federal Government, which is by far the largest employer in the Ottawa-Hull area, draws many civil servants from the Quebec side of the river.

Manufacturing firms, which shipped \$140 million worth of goods (gross) in 1953, employ about a quarter of the labour force in the region. Pulp and paper represents the largest single manufacturing industry, with mills at Hull, Gatineau, Buckingham, and Masson. Textiles, meat packing, and other industries are also important.

Services accounted for another quarter of the labour force, with the largest part representing Federal Government employees. Scenic attractions provide the basis for a tourist industry.

Agriculture (17 per cent of the regional labour force) is largely devoted to livestock and dairying in the Ottawa Lowland. Further north farming is more of a subsistence kind supplemented by sales of forest products.

The region is generally oriented towards the Ottawa-Hull area. The historic basis of this settlement was twofold: the power resources of the Ottawa River and the forest resources of the interior. The selection of Ottawa as provincial capital in 1858 and federal capital in 1867 provided a great impetus to development.

It is estimated that in 1953 personal income per capita in region 48 was about \$940. About 62 per cent of all personal income appears to have come from wage sources in 1950-51, and about 10 per cent from each of farm and other unincorporated business sources.

Region 49: Abitibi-Témiscamingue

The Abitibi-Témiscamingue region, the second largest in Quebec, covers an area of 85,700 square miles. It extends from the Ottawa Lowland in the south to the boundary of New Quebec. The Laurentians in the south-central part give way to the James Bay-Lake Abitibi Lowland in the north. There were 141,000 people enumerated in the region in 1951. Fifty-six per cent of these were classified as rural and 44 per cent as urban, with the four incorporated municipal centres over 5,000 accounting for 28 per cent of the total. The largest of these centres is Rouyn, with a 1951 population of 15,000, and the others are Noranda (10,000), Val d'Or (9,000), and Malartic (6,000).

The largest consumer of labour is agriculture, with almost a quarter of the total working force in the region. However, it is estimated that farm income was only about 10 per cent of all personal earned income in 1950-51. There is some dairying but throughout most of the territory subsistence farming is common, supplemented by sales of forest products.

From a dynamic point of view, non-ferrous metal mining is the most important activity. A little less than half of the Quebec mining industry is located here, if we use number of workers as our criterion. Within the region itself this industry engages about a fifth of the active population. All of the larger centres (Rouyn, Noranda, Val d'Or, Malartic) are mining towns, in addition to a number of smaller centres.

Manufacturing is comparatively unimportant, with only 10 or 11 per cent of the working force. It includes some pulp and paper milling (Témiscaming). The forestry and logging group accounts for another 8 per cent of the total.

Region 49 is largely a pioneer area. Its recent development is reflected in a population increase from 1941 to 1951 of more than 30 per cent. Typical of this type of area is the preponderance of men, with a male to female ratio of 1.14 to 1 at the last census.

Per capita personal income in 1953 is estimated at about \$910, with wages making up an estimated 57 per cent of the total (based on 1950-51 data), farm income about 8 per cent, and income of other unincorporated businesses about 17 per cent.

SECTION IIIAVAILABILITY OF REGIONAL STATISTICSA. INFORMATION PROVIDED BY PUBLISHED 1951 CENSUS TABLES

The Census of 1951 has provided a large number of census division (or county) statistics relating to major fields of socio-economic interest, and these can be combined to give regional figures. A brief outline of this information is provided below, while a complete list is presented in Appendix G.

The scheme of presentation employed below and in Appendix G follows that used in the publication of the results of the census, i.e. it commences with Volume I, dealing with population, and proceeds volume by volume to Volume IX, dealing with fisheries. Volumes omitted contain no census division detail. It should be noted that other methods of classification are possible and the person interested in a particular subject may wish to refer to more than one volume. For example, someone interested in the trade industry may wish to consult Volumes VII and VIII for information on number of establishments, sales, etc., and Volume IV for data on the trade component of the labour force.

It will be observed that the number and extent of cross-classifications are small in comparison with those available by provinces, since the tabulating and printing costs of such classifications tend to be prohibitive at the census division level. Accordingly, there are no census division tables contained in Volume II, "Cross-Classification of Characteristics".

In the field of population, distributions are available by sex, density, rural-urban and farm-non-farm components, age in five-year groups, marital status, racial origin, religious denomination, birthplace, language, school and non-school components, and military service in World Wars I and II. The immigrant population is classified by sex and by period of immigration. All of this information is contained in Volume I.

Statistics relating to housing are tabulated in Volume III, Part I. Occupied dwellings are distributed by type of tenure, rural-urban and farm-non-farm components, type of dwelling (i.e. whether single detached, single attached, or apartment or flat), and by nature of facilities or equipment with respect to heating, washing, lighting, refrigeration, and cooking. Other tables indicate the number of persons per room, first year of occupancy by the head of the household, frequency distribution of non-farm monthly rents, furnished and

unfurnished components of non-farm tenant-occupied dwellings, distribution of non-farm rent payments between those including and not including heating costs, and the distribution of non-farm tenant-occupied dwellings according to whether or not they have mortgages.

Family information, tabulated in Volume III, Part II, consists of distributions by size, type (i.e. maintaining or not maintaining own household), number of members in the labour force, earnings of wage-earner heads of families, rural-urban and farm-non-farm components, number and age of children in families, and number of children in school and in the labour force.

Volume IV provides distributions of the labour force by rural-urban components, occupational groups, industrial groups, and sex. Earnings and employment of wage-earners are tabulated in Volume V. Tables are provided showing (a) labour force status (i.e. whether working, not working and looking for work, at school, etc.), and (b) number of weeks worked and earnings during the twelve months prior to the census. In both (a) and (b) rural-urban and farm-non-farm distributions are included. Further information on earnings is contained in the table in Volume III, Part II, pertaining to the earnings of wage-earner heads of families, as noted previously.

Tabulations of data on agriculture are presented in Volume VI. The rather extensive list of agricultural information includes that on age of farm operators, farm values, irrigation, new breaking, forest fires, farm indebtedness, size of farm, condition and area of farm land, tenure, field crops by type, fruits and vegetables, live stock on farms, disposal of live stock from farms (i.e. sold alive, slaughtered for sale, etc.), animal products of farms, farm machinery by type, electrification of farms, value of products sold, work of operators other than on the farm, forest and maple products of farms, gross farm revenues and expenditures, and farm values.

The tables of retail trade statistics, presented in Volume VII, contain data on number of stores and volume of sales by type of business, and on inventories, number of paid employees, and payrolls, for retail trade as a whole.

Wholesale trade statistics, published in Volume VIII, include number of establishments, sales, employment, and stocks, for the wholesale group

as a whole. Statistics on services, which are contained in the same volume, are similar in type of classification to retail trade as outlined above.

Fisheries statistics are presented in Volume IX. Census division data relate to the number and working status of fishermen.

B. INFORMATION PROVIDED BY ANNUAL D.B.S. PUBLICATIONS

Intercensal information published on a census division basis by D.B.S. is not extensive as will be seen from the detailed list of tables provided in Appendix H. Probably the most important of the annual series, in the present context, are those relating to manufacturing. These consist of statistics on number of establishments, number of employees, payrolls, cost of fuel and electricity, cost of materials, and gross value of factory shipments. Statistics on births, deaths, and marriages are of particular value for regional population estimation or forecasting. Motor vehicle registrations may provide a useful guide to regional economic development. In addition to these series there are some statistics on fisheries (for Quebec but not Ontario), fertilizers, and dairy products.

C. INFORMATION PROVIDED BY OTHER FEDERAL GOVERNMENT PUBLICATIONS

Other than D.B.S., there are two published Federal Government sources of statistics compiled by census divisions. Firstly, "Taxation Statistics", an annual publication of the Department of National Revenue, presents figures for the number of taxpayers, the aggregate reported income of taxpayers, and the aggregate tax collected. Secondly, the "Livestock Market Review", published annually by the Department of Agriculture, provides information for Ontario and Quebec on the marketing of cattle, calves, sheep and lambs, and the number of hog carcasses graded. Mention should also be made of the statistical series of the Unemployment Insurance Commission. These include unplaced applicants for employment and unfilled vacancies. Although U.I.C. statistics are compiled by local office areas of the Commission, rather than census divisions, the local office areas can be grouped in such a way as to approximate economic regions. This is discussed in Section IV, Part F of this report.

D. 1956 CENSUS INFORMATION PROPOSED FOR PUBLICATION

A list of census division information to be furnished by 1956 Census tables is presented in Appendix I. However, this list should not be considered final.

As plans now stand, population tables will be published showing

totals, urban, rural farm, and rural non-farm components, sex distributions, age distributions, and distributions by marital status. Households will be classified by number of persons and number of families, for urban, rural farm, and rural non-farm groups. Families will be classified by number of persons and type, and children living at home will be classified by age, again for urban, rural farm, and rural non-farm groups. The Census of Agriculture will provide information on number of farms, total farm area, crop area, condition of farm land, farm machinery and electric power, farm expenditures, size of farm, numbers of live stock, vegetables, dairy products and eggs, and farm labour and part-time work.

SECTION IVNOTES ON THE ACCURACY AND USEFULNESS OF SELECTED SERIESA. BUILDING PERMITS

The Forecast Surveys Section of D.B.S. collects monthly reports on the value of building permits issued. This information has in the past been sorted on a regional basis for the Province of Ontario, and it would be possible to do the same elsewhere. However, some difficulties associated with this series should be recognized.

Reporting is done, in effect, on a voluntary basis, although it appears that of those municipalities which do issue building permits, nearly all report. A more serious problem arises because many municipalities do not issue permits. Those which do are in nearly all cases predominantly urban, although they may contain rural areas. The survey of building permits therefore comes closer to representing urban construction intentions than to representing construction intentions as a whole. In Ontario the coverage of urban centres is nearly complete in all ten regions, as indicated by the accompanying table. The fact that the percentages in column V are greater than 100 in some cases reflects the fact that some rural areas are represented in the survey results, but the discrepancy is not great. In Quebec the coverage is considerably less complete.

Another difficulty arises from the use of different methods of determining value for purposes of issuing permits. It appears that most municipalities issue on the basis of anticipated cost of construction (which is often understated), but some do so on the basis of expected market value. The statistics collected are therefore to some extent a mixture of dollar figures representing quite different types of value. Unfortunately, no indication is presently available as to the methods of valuation employed in specific municipalities. Because of this it may be difficult to make accurate inter-regional comparisons, and even temporal comparisons in the same region must be treated with some reservation. However, the importance of the building permits series does seem to lie primarily in the latter use. As a general indicator of economic activity the series is very significant. Its utility is enhanced by the fact that separate figures are available for four types of construction: residential, industrial, commercial, and institutional.

Regional Indicators of Coverage in D.B.S. Monthly Survey
of Building Permits: Ontario.

Region	I 1951 Population of Municipalities Reporting	II 1951 Total Regional Population	III 1951 Urban Population in Region	IV I as % of II	V I as % of III
50	415,249	591,760	380,670	70	109
51	121,505	271,584	126,042	45	96
52	1,277,672	1,363,386	1,244,936	94	103
53	493,907	575,677	449,730	86	110
54	182,458	319,183	192,682	57	95
55	249,533	371,238	258,698	67	96
56	169,144	294,917	177,563	57	95
57	119,934	273,403	105,327	44	114
58	234,326	369,683	215,519	63	109
59	92,693	166,711	99,932	56	93
Province	3,356,421	4,597,542	3,251,099	73	103

Regional Indicators of Coverage in D.B.S. Monthly Survey
of Building Permits: Quebec.

Region	I 1951 Population of Municipalities Reporting	II 1951 Total Regional Population	III 1951 Urban Population in Region	IV I as % of II	V I as % of III
40	3,972	42,664	8,181	9	49
41	32,273	360,785	71,511	9	45
42	96,013	197,910	117,258	49	82
43	242,082	531,219	330,224	46	73
44	129,177	254,130	144,477	51	89
45	171,613	396,475	220,359	43	78
46	175,483	552,375	250,036	32	70
47	1,366,285	1,436,006	1,411,307	95	97
48	57,266	142,659	81,647	40	70
49	51,441	141,458	62,318	36	83
Province	2,325,605	4,055,681	2,697,318	57	86

B. CHEQUES CASHED IN CLEARING CENTRES

Statistics are available each month for the total value of cheques cashed in each of twenty-one clearing houses in Ontario, and ten in Quebec. In every case the clearing house area for which these figures are recorded lies entirely within a single economic region. For the month of January, 1953, the Canadian Bankers Association undertook to collect figures on all cheques cashed, and a comparison of these figures with those for clearing house areas indicated that the monthly coverage was about 90 per cent in each of Ontario and Quebec. However, coverage varies considerably between individual economic regions. In some cases a region will contain no clearing house centres at all. An accompanying table shows the distribution of centres by economic regions. Another table provides very crude estimates of regional coverage. These estimates are rounded to the nearest 10 per cent and are undoubtedly subject to gross error. However, it is hoped that they will provide a rough picture of the regional ratios of cheques cashed in clearing centres to total cheques cashed. The estimates are obtained by distributing the 10 per cent of total cheques cashed elsewhere than in clearing centres according to the 1951 regional distribution of retail trade.

Clearing houses are located in major centres of economic activity. In so far as the economic regions containing these centres are oriented towards them as dominant distributing points, changes in the cheques cashed series may in fact be taken as a general indicator of regional trend. However, caution must be exercised in this regard.

Cheques Cashed in Clearing House Centres of Ontario - 1953

Region	Clearing House Centres	Cheques Cashed, 1953 (\$'000,000)
50	Cornwall Kingston Ottawa	200.4 341.3 <u>4,588.5</u> 5,130.2
51	Peterborough	365.1
52	Oshawa Toronto	1,279.4 <u>42,579.2</u> 43,858.6
53	Brantford Hamilton Niagara Falls St. Catharines	522.7 3,409.6 483.6 <u>632.6</u> 5,048.5
54	London	1,973.4
55	Chatham Sarnia Windsor	433.4 433.4 <u>2,082.4</u> 2,949.2
56	Guelph Kitchener	280.7 <u>765.7</u> 1,046.4
57	-	-
58	Sault Ste. Marie Sudbury Timmins	485.2 434.4 <u>156.2</u> 1,075.8
59	Fort William Port Arthur	311.7 <u>267.1</u> 578.8
Total, 21 Centres		62,025.9

Cheques Cashed in Clearing House Centres of Quebec - 1953

Region	Clearing House Centres	Cheques Cashed, 1953 (\$'000,000)
40	-	-
41	-	-
42	Chicoutimi	228.3
43	Quebec City	3,535.1
44	Shawinigan Falls	131.9
	Three Rivers	<u>382.6</u>
		514.5
45	Drummondville	137.1
	Granby	164.6
	Sherbrooke	<u>425.7</u>
		727.4
46	St. Hyacinthe	185.7
	Valleyfield	<u>96.7</u>
		282.4
47	Montreal	34,178.6
48	-	-
49	-	-
Total, 10 Centres		39,466.2

Estimated Coverage of Cheques Cashed Series for Economic Regions of Ontario, 1953

Region	I Cheques Cashed in Clearing Centres (\$'000,000)	II Estimate of Cheques Cashed Other than in Clearing Centres (\$'000,000)	III Estimate of Total Cheques Cashed (\$'000,000)	IV I as % of III
50	5,129	989	6,118	80
51	365	843	1,208	30
52	43,858	644	44,502	100
53	5,050	782	5,832	90
54	1,973	782	2,755	70
55	2,948	606	3,554	80
56	1,047	843	1,890	60
57	-	1,050	1,050	-
58	1,075	797	1,872	60
59	579	330	909	60
Total	62,024	7,666	69,690	90

Estimated Coverage of Cheques Cashed Series for Economic Regions of Quebec, 1953

Region	I Cheques Cashed in Clearing Centres (\$'000,000)	II Estimate of Cheques Cashed Other than in Clearing Centres (\$'000,000)	III Estimate of Total Cheques Cashed (\$'000,000)	IV I as % of III
40	-	74	74	-
41	-	511	511	-
42	228	285	513	40
43	3,535	386	3,921	90
44	515	250	765	70
45	727	507	1,234	60
46	282	1,073	1,355	20
47	34,179	211	34,390	100
48	-	273	273	-
49	-	332	332	-
Total	39,466	3,902	43,368	90

C. REGIONAL MANUFACTURING INDICES

The Employment Section of D.B.S. for several years prepared indices of manufacturing employment and payrolls for each of the eighteen economic regions formerly used by the Ontario Government. Presently these indices are being provided for the new set of Ontario regions with which this study is concerned. However, historical series are not available for these new areas, and it has therefore been necessary to work with what are here referred to as the "old regions". There is no reason to suppose that the conclusions reached for these "old regions" are not readily applicable to the new regions.

The indices are based on returns from all manufacturing firms which employ fifteen or more employees. In so far as smaller firms account for a large share of total employment in a particular region the indices will be in error if actual trends differ between small and large manufacturers. However, as is noted below, the errors were found to be generally small for the "old regions" of Ontario during the period 1950 to 1953.

Tables 1 and 2 present the results of applying the averages of monthly employment and payroll indices, for each of the years 1950 to 1953, to the appropriate regional totals for the previous year, as obtained from the Census of Industry. Comparisons are made between the estimates so obtained, and the figures determined by the Census of Industry (referred to as "actual" in the table), for each of the years in the series. The errors are displayed as percentages of the Census of Industry figures. A brief summary is provided by the following table of average percentage errors (signs ignored).

	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1950-53</u>
Employment	1.6	2.1	2.1	1.5	1.8
Payrolls	1.6	1.8	2.5	2.2	2.0

In addition to estimates based on projections from previous year totals, estimates were also prepared by projecting from 1949 as a base period, although the latter are not presented here. The difference in error between the previous year projections and the base year projections was not significant. It therefore appears that estimates of current employment and payrolls based on Census of Industry totals which are two or three years out of date will

be about as accurate as those based on data out of date by only one year.

By utilizing the indices in this way it is possible to obtain annual estimates of total manufacturing employment and payrolls, which are fairly reliable for most areas, about two or three years before the Census of Industry data are tabulated. The indices are actually prepared on a monthly basis but it has not been possible to determine the accuracy of monthly estimates. It seems probable that there is inherent in the monthly series somewhat greater error than in the annual series, but that this error is still reasonably small. The monthly series provide information which is available from no other source and they are of great value in studying seasonal variations.

Distribution of Percentage Errors in Regional Estimates of Manufacturing Employment in Ontario ("Old Regions")

% Error	1950	1951	1952	1953	1950-1953
0 - 0.9	5	5	6	8	24
1.0 - 1.9	7	8	3	5	23
2.0 - 2.9	3	2	6	3	14
3.0 - 4.9	3	2	1	1	7
5.0 - 7.4	-	-	2	1	3
7.5 - 9.9	-	-	-	-	-
10.0 +	-	1	-	-	1
Total	18	18	18	18	72

Distribution of Percentage Errors in Regional Estimates of Manufacturing Payrolls in Ontario ("Old Regions")

% Error	1950	1951	1952	1953	1950-1953
0 - 0.9	9	6	4	5	24
1.0 - 1.9	5	6	6	5	22
2.0 - 2.9	1	4	2	4	11
3.0 - 4.9	3	1	4	2	10
5.0 - 7.4	-	-	1	1	2
7.5 - 9.9	-	1	1	1	3
10.0 +	-	-	-	-	-
Total	18	18	18	18	72

On the other hand, it is apparent from Tables 3 and 4 that the annual indices are much less reliable for making estimates of annual change. If we are interested in an up-to-date estimate of the level of employment or payrolls we can obtain a fairly accurate one, but if it is the change over a period of a year or two which concerns us we must use the indices with great caution. Percentage errors in estimates of change seem to be somewhat

smaller for payrolls than employment, probably because the ubiquitous influence of rising wage levels has tended to outweigh to some extent the error in estimates of changes in numbers of employees.

T A B L E 1

ERRORS IN THE USE OF INDICES TO ESTIMATE TOTAL REGIONAL MANUFACTURING EMPLOYMENT FOR "OLD REGIONS" OF ONTARIO

Region	1949 Employment	1950 Estimate	1950 Actual	1950 % Error	1951 Estimate	1951 Actual	1951 % Error	1952 Estimate	1952 Actual	1952 % Error	1953 Estimate	1953 Actual	1953 % Error
Metropolitan	196,688	203,572	201,842	0.9	214,518	213,423	0.5	215,557	220,000	- 2.0	237,622	235,332	1.0
Burlington	71,782	71,423	72,688	- 1.7	78,241	76,736	2.0	75,662	76,774	- 1.4	76,413	75,823	0.8
Niagara	35,969	35,825	36,333	- 1.4	40,929	40,865	0.2	42,504	42,528	- 0.1	42,528	42,504	0.1
Lake Erie	3,554	3,458	3,606	- 4.1	3,647	3,643	0.1	3,539	3,623	- 2.3	3,858	3,959	- 2.6
Upper Thames River .	26,250	27,458	27,106	1.3	28,350	28,109	0.9	27,159	27,933	- 2.8	30,101	29,933	0.6
Border	45,846	47,772	46,877	1.9	49,666	47,528	4.5	45,632	48,578	- 6.1	50,273	49,774	1.0
St. Clair River	8,082	8,203	8,488	- 3.4	9,040	8,928	1.3	9,332	9,112	2.4	9,152	9,099	0.6
Upper Grand River ..	43,907	43,161	43,760	- 1.4	45,405	44,561	1.9	42,159	42,747	- 1.4	45,406	44,718	1.5
Blue Water	15,579	14,971	14,813	1.1	15,768	15,496	1.8	15,329	15,463	- 0.9	15,952	15,846	0.7
Kawartha	26,719	29,337	28,740	2.1	31,384	31,905	- 1.6	30,894	32,614	- 5.3	34,610	35,123	- 1.5
Quinte	14,531	13,194	13,517	- 2.4	15,750	15,134	4.1	15,620	15,618	-	15,818	15,766	0.3
Upper St. Lawrence .	11,950	12,010	12,378	- 3.0	13,289	13,050	1.8	12,203	12,303	- 0.8	12,949	13,217	- 2.0
Ottawa Valley	19,920	18,645	18,561	0.5	19,276	19,528	- 1.3	19,930	19,629	1.5	21,390	20,140	6.2
Highlands	4,375	4,511	4,561	- 1.1	4,720	4,623	2.1	4,649	4,557	2.0	4,672	4,495	3.9
Clay Belt	5,670	5,885	6,024	- 2.3	6,650	5,920	12.3	5,879	6,161	- 4.6	6,004	5,971	0.6
Nickel Range	8,587	8,913	8,910	-	10,001	10,125	- 1.2	10,472	10,464	0.1	10,751	10,538	2.0
Sault	7,538	8,028	8,029	-	8,760	8,756	-	9,291	9,045	2.7	9,478	9,648	- 1.8
Lakehead	10,243	10,223	10,280	- 0.6	11,218	11,103	1.0	12,632	12,547	0.7	12,649	12,668	- 0.1
Province	557,190	566,105	566,513	- 0.1	605,546	599,433	1.0	600,512	609,696	- 1.5	641,644	634,554	1.1

TABLE 2

ERRORS IN THE USE OF INDICES TO ESTIMATE TOTAL REGIONAL MANUFACTURING PAYROLLS FOR "OLD REGIONS" OF ONTARIO

Region	1949 Payrolls	1950 Estimate	1950 Actual	1950 % Error	1951 Estimate	1951 Actual	1951 % Error	1952 Estimate	1952 Actual	1952 % Error	1953 Estimate	1953 Actual	1953 % Error
	(\$'000)	(\$'000)	(\$'000)		(\$'000)	(\$'000)		(\$'000)	(\$'000)		(\$'000)	(\$'000)	
Metropolitan	460,416	502,314	500,872	0.3	594,535	595,803	- 0.2	665,750	665,549	-	765,381	752,481	1.7
Burlington	176,491	185,139	187,530	- 1.3	223,817	221,707	1.0	239,776	243,213	- 1.4	250,388	249,850	0.2
Niagara	93,740	99,833	101,437	- 1.6	129,819	127,542	1.8	142,987	141,388	1.1	144,993	145,479	- 0.3
Lake Erie	6,895	6,812	7,100	- 4.1	8,185	8,098	1.1	8,745	8,865	- 1.4	9,643	9,571	0.8
Upper Thames River ..	54,931	61,138	61,343	- 0.3	71,814	71,259	0.8	74,651	76,110	- 1.9	85,981	85,317	0.8
Border	118,589	132,583	133,299	- 0.5	149,988	144,620	3.7	152,328	163,779	- 7.0	182,319	177,236	2.9
St. Clair River	20,477	21,992	23,033	- 4.5	27,536	27,965	- 1.5	34,173	31,524	8.4	33,573	33,127	1.3
Upper Grand River ...	92,747	95,808	97,529	- 1.8	111,407	110,336	1.0	114,827	115,391	- 0.5	129,203	125,463	3.0
Blue Water	28,352	28,352	28,036	1.1	33,587	32,805	2.4	35,928	36,859	- 2.5	39,472	39,105	0.9
Kawartha	63,938	76,662	76,540	0.2	90,968	93,522	- 2.7	97,918	100,056	- 2.1	109,912	118,874	- 7.5
Quinte	28,780	27,830	28,823	- 3.4	36,870	36,123	2.1	41,643	41,229	1.0	44,437	43,950	1.1
Upper St. Lawrence ..	25,592	27,358	27,278	0.3	32,202	31,992	0.7	31,714	31,605	0.3	34,535	35,353	- 2.3
Ottawa Valley	40,215	39,491	39,385	0.3	44,958	45,236	- 0.6	50,805	49,113	3.4	56,524	53,878	4.9
Highlands	8,027	8,485	8,709	- 2.6	9,879	10,026	- 1.5	11,105	10,593	4.8	11,766	11,185	5.2
Clay Belt	14,423	15,505	15,594	- 0.6	19,815	18,165	9.1	19,082	19,815	- 3.7	19,801	19,539	1.3
Nickel Range	24,098	26,050	25,599	1.8	32,111	32,047	0.2	36,915	36,928	-	39,742	38,906	2.1
Sault	20,877	22,297	22,202	0.4	26,318	26,858	- 2.0	32,458	31,319	3.6	34,163	34,841	- 1.9
Lakehead	26,957	28,547	28,689	- 0.5	35,434	35,282	0.4	41,485	40,850	1.6	42,921	43,828	- 2.1
Province	1,305,544	1,406,071	1,412,999	- 0.5	1,678,078	1,669,387	0.5	1,835,157	1,844,186	- 0.5	2,037,088	2,017,982	0.9

TABLE 3

COMPARISON OF ESTIMATED WITH ACTUAL CHANGES IN REGIONAL MANUFACTURING EMPLOYMENT FOR "OLD REGIONS" OF ONTARIO

Region	1949-50		1950-51		1951-52		1952-53	
	Actual Change	Estimated Change	Actual Change	Estimated Change	Actual Change	Estimated Change	Actual Change	Estimated Change
Metropolitan	5,154	6,884	11,581	12,676	6,577	2,134	15,332	17,622
Burlington	906	-359	4,048	5,553	38	-1,074	-951	-361
Niagara	364	-144	4,532	4,596	1,663	1,639	-24	-
Lake Erie	52	-96	37	41	-20	-104	336	235
Upper Thames River ...	856	1,208	1,003	1,244	-176	-950	2,000	2,168
Border	1,031	1,926	651	2,789	1,050	-1,896	1,196	1,695
St. Clair River	406	121	440	552	184	404	-13	40
Upper Grand River	-147	-746	801	1,645	-1,814	-2,402	1,971	2,659
Blue Water	-766	-608	683	955	-33	-167	383	489
Kawartha	2,021	2,618	3,165	2,644	709	-1,011	2,509	1,996
Quinte	-1,014	-1,337	1,617	2,233	484	486	148	200
Upper St. Lawrence ...	428	60	672	911	-747	-847	914	646
Ottawa Valley	-1,359	-1,275	967	715	101	402	511	1,761
Highlands	186	136	62	159	-66	26	-62	115
Clay Belt	354	215	-104	626	-241	-41	-190	-157
Nickel Range	323	326	1,215	1,091	339	347	74	287
Sault	491	490	727	731	289	535	603	433
Lakehead	37	-20	823	938	1,444	1,529	121	102
Province	9,323	8,915	32,920	39,033	10,263	1,079	24,858	31,948

TABLE 4

COMPARISON OF ESTIMATED WITH ACTUAL CHANGES IN REGIONAL MANUFACTURING PAYROLLS FOR "OLD REGIONS" OF ONTARIO

Region	1949-50		1950-51		1951-52		1952-53	
	Actual Change	Estimated Change	Actual Change	Estimated Change	Actual Change	Estimated Change	Actual Change	Estimated Change
	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)	(\$'000)
Metropolitan	40,456	41,898	94,931	93,663	69,746	69,947	86,932	99,832
Burlington	11,039	8,648	34,177	36,287	21,506	18,069	6,637	7,175
Niagara	7,697	6,093	26,105	28,382	13,846	15,445	4,091	3,605
Lake Erie	205	-83	998	1,085	767	647	706	778
Upper Thames River	6,412	6,207	9,916	10,471	4,851	3,392	9,207	9,871
Border	14,710	13,994	11,321	16,689	19,159	7,708	13,457	18,540
St. Clair River	2,556	1,515	4,932	4,503	3,559	6,208	1,603	2,049
Upper Grand River	4,782	3,061	12,807	13,878	5,055	4,491	10,072	13,812
Blue Water	-316	-	4,769	5,551	4,054	3,123	2,246	2,613
Kawartha	12,602	12,724	16,982	14,428	6,534	4,396	18,818	9,856
Quinte	43	-950	7,300	8,047	5,106	5,520	2,721	3,208
Upper St..Lawrence	1,686	1,766	4,714	4,924	-387	-278	3,748	2,930
Ottawa Valley	-830	-724	5,851	5,573	3,877	5,569	4,765	7,411
Highlands	682	458	1,317	1,170	567	1,079	592	1,173
Clay Belt	1,171	1,082	2,571	4,221	1,650	917	-276	14
Nickel Range	1,501	1,952	6,448	6,512	4,881	4,868	1,978	2,814
Sault	1,325	1,420	4,656	4,116	4,461	5,600	3,522	2,844
Lakehead	1,732	1,590	6,593	6,745	5,568	6,203	2,978	2,071
Province	107,455	100,527	256,388	265,079	174,799	165,770	173,796	192,902

D. POSTCENSAL POPULATION ESTIMATES

In the past censal population data for small areas have been available only at ten year intervals. In the future, at least for the present decade, the interval will be reduced to five years. Accordingly, the difficulties associated with obtaining accurate postcensal estimates will be reduced. As the situations are different in Ontario and Quebec we shall consider each province individually.

Ontario:

Ontario is the only province in which actual municipal enumerations are available each year. These enumerations appear to suffer generally from undercount. However, quite accurate estimates can be made by calculating the rate of change in municipal enumeration totals since the most recent census date, and applying this rate to the census base figure. The implicit assumption, of course, is that the rate of change in total regional population is the same as the rate of change in the enumerated group. This assumption is most realistic in regions 50 to 57 because these areas are composed entirely of organized municipalities, each of which is responsible for making an annual count. Regions 58 and 59, however, contain unorganized territory in which no enumeration is conducted, and therefore it is in these areas that the assumption is weakest. Also, as unorganized parts become organized they contribute to the enumeration totals. It is therefore necessary to estimate regional rates of change on the basis of the rates of change in only those municipalities which were organized in the census base year. When estimates for all regions have been made they are adjusted to conform in total with the D.B.S. estimate of provincial population.

An accompanying table shows the result of comparing 1951 census figures with estimates made by the preceding method, using 1941 as the base year. It will be seen that the errors are small. The average error, ignoring signs, is 1.6%. It should be noted that the final adjustment was based on the actual 1951 census total for Ontario, whereas in practice it would be based on an estimate of the total, but the additional error introduced for this reason will not be great.

Quebec:

The Quebec Government, like that of Ontario, collects population returns from organized municipalities. However, unlike Ontario, these returns are

estimates rather than actual counts. For this reason they are subject to greater error. Since these estimates were not available for 1951 (or for 1950), it was decided to make intercensal estimates of regional populations for 1942-49, and compare them with the postcensal estimates which had been made for these years, based on the municipal returns and on supplementary estimates for unorganized areas. Since intercensal estimates are based on knowledge of actual population totals at both the beginning and end of a decade they are in general more accurate than postcensal estimates.

The intercensal estimates were made by arithmetic interpolation between the 1941 and 1951 census figures, with an adjustment to make the regional estimates add to the D.B.S. provincial estimate. This is a simple method, but a preliminary test of it in the three Prairie Provinces yielded results which were very good in comparison with those of alternative methods. The test involved estimating the 1946 population of each of the fifty-one census divisions in these provinces, on the basis of the 1941 and 1951 census data, and comparing the estimates with the 1946 Prairie census figures. These census divisions are much smaller units, generally, than the economic regions of Quebec, but even for them the average error, ignoring signs, was 2.2%. For the eighteen D.D.P. economic regions of the Prairie Provinces (not accepted as final), the average error was 1.6%. The distribution of percentage errors was as follows:

<u>% Error</u>	<u>Census Divisions</u>	<u>Economic Regions</u>
0.0 - 0.9	14	8
1.0 - 1.9	11	5
2.0 - 2.9	12	3
3.0 - 3.9	6	-
4.0 - 4.9	3	2
5.0 +	5	-
Total	51	18

The largest error in the census division column was 6.0%, while in the economic region column it was 4.7%. It should be noted that the final adjustment to correspond with an independently obtained provincial figure reduced the average errors considerably.

The comparisons between postcensal and intercensal estimates for the economic regions of Quebec indicate a tendency for errors to increase over

the period, as one would expect.

We may conclude that in Ontario and Quebec annual municipal data provide the basis for estimates more accurate than those obtainable by other methods. In other provinces it may be necessary to employ different techniques. The reader interested in techniques for estimating populations of small areas is referred to the bibliography appended to this report, containing references to the recent work of American demographers: Bogue, Brown, Frisen, Greenberg, Schmitt, and others.

It should be noted that while the annual estimates are fairly reliable as estimates of current totals, they are not sufficiently accurate to provide good estimates of annual changes. This will be clear from an examination of Table 3. Column (1) shows crude estimates of per centage increases in regional populations from 1950 to 1951. These estimates are obtained by calculating the regional (geometric) average rate of change in the 1941-51 decade and adjusting this by the ratio of provincial rate of change 1950-51 to average provincial rate of change 1941-51. Column (2) shows per centage errors in the 1951 estimates, ignoring signs. Column (3) shows the ratios of errors to estimated changes, and it will be seen that these ratios are generally large. We have been unable to provide a similar table for Quebec because of lack of information, but at best the ratios would be of about the same size as those in Ontario, and they would probably be larger.

TABLE 1: ACCURACY OF REGIONAL POPULATION ESTIMATES: ONTARIO

	(1)	(2)	(3)	(4)	(5)
Region	Municipal Enumeration 1951	Estimate 1951	Census 1951	(1)-(3) as % of (3)	(2)-(3) as % of (3)
50	558,406	583,627	591,760	- 5.6	- 1.4
51	255,254	274,953	271,584	- 6.0	1.2
52	1,313,630	1,340,153	1,363,386	- 3.6	- 1.7
53	558,002	585,409	575,677	- 3.1	1.7
54	308,206	320,297	319,183	- 3.4	0.3
55	369,698	373,581	371,238	- 0.4	0.6
56	282,662	288,390	294,917	- 4.2	- 2.2
57	280,761	277,616	273,403	2.7	1.5
58	299,847	383,356	369,683	-18.9	3.7
59	127,660	170,066	166,711	-23.4	2.0

TABLE 2: ESTIMATES OF ERROR IN REGIONAL POPULATION ESTIMATES FOR QUEBEC

Region	% Deviation of Postcensal from Intercensal Estimate								1951 Census Population
	1942	1943	1944	1945	1946	1947	1948	1949	
40	- 5.5	- 8.4	- 10.6	N.A.	N.A.	- 15.2	- 17.5	- 6.8	42,664
41	1.6	3.1	5.2	4.0	4.8	5.2	6.4	6.6	360,785
42	- 0.2	- 0.6	- 0.3	- 5.2	- 6.3	- 7.3	- 8.5	- 9.9	197,910
43	0.8	1.2	3.6	2.5	3.0	3.5	3.9	2.8	531,219
44	0.8	1.4	2.6	6.9	3.0	3.4	3.9	3.1	254,130
45	0.3	0.4	1.1	- 0.2	- 0.2	- 0.8	- 0.3	- 1.1	396,475
46	- 0.2	- 0.8	- 0.6	- 0.1	- 0.2	- 0.9	- 1.2	- 2.4	552,375
47	- 0.8	- 1.9	- 1.6	0.4	0.3	- 1.1	0.4	-	1,436,006
48	0.1	0.1	0.8	1.1	1.3	0.7	1.5	1.5	142,659
49	0.6	1.0	2.1	- 2.7	- 3.3	- 2.7	- 4.6	- 6.3	141,458
Average (1)	0.5	1.1	1.8	2.3	2.2	2.6	3.1	3.4	

(1) Average excluding Region 40, signs ignored.

N.A. - Not available

TABLE 3

ESTIMATED RATIOS OF % ERRORS IN REGIONAL POPULATION
ESTIMATES TO % INCREASES IN POPULATION: ONTARIO

	(1)	(2)	(3)
Region	Estimated Increase 1950-51	Error of Estimate for 1951*	Ratio of (2) to (1)
	%	%	
50	2.0	1.4	0.7
51	2.1	1.2	0.6
52	3.4	1.7	0.5
53	3.6	1.7	0.5
54	2.9	0.3	0.1
55	2.9	0.6	0.2
56	2.2	2.2	1.0
57	0.7	1.5	2.1
58	2.1	3.7	1.8
59	2.7	2.0	0.7

* omitting signs.

E. TAXATION STATISTICS

The Department of National Revenue publishes in "Taxation Statistics" annual data on the number of **personal** taxpayers, their total income, and the personal income tax payable, by counties or census divisions. This information appears in print about **two** years after the close of the **taxation** year to which it pertains. A discussion of the usefulness of the figures on income of taxpayers follows, and is broken into two parts. The first part seeks to describe the precision of the sample estimates, while the second part attempts to indicate the reliability of taxpayers' income as a measure of total income.

Precision of Estimates:

The estimates are prepared on the basis of a 10% sample of all returns coming into each local taxation office. The returns are not stratified geographically. Since a taxation office may administer returns from several counties (or census divisions), the estimates of number of taxpayers obtained for individual counties are subject to sampling error. Also, of course, the estimates of average income are subject to **sampling** error, as are the estimates of total income. The error in total **income** is generated by both of the other sources of error.

The present analysis is not concerned with the error in estimates for individual counties but only with the total error in the aggregation of such estimates according to the system of economic regions in Ontario and Quebec. An attached table provides approximations to the 95% confidence intervals associated with the estimate of total income of taxpayers for each of these areas. For example, the 4% figure in region 45 means that the true total may be expected to lie within 4% of the estimated total, with a fairly high degree of assurance. Another table presents similar information for regional estimates of average income of taxpayers.

It may be seen from an examination of these tables that the proportionate error is considerably greater for estimates of total income than for estimates of average income. Also, the **errors** are higher in Quebec than in Ontario owing to the smaller **number** of taxation offices in the former province. The sampling error in Ontario is generally **negligible**, while in Quebec it may be an important consideration for some of the economic regions.

CONFIDENCE INTERVALS FOR REGIONAL ESTIMATES OF
TOTAL INCOME OF TAXPAYERS (1951)

Region	Estimated Total Income of Taxpayers (\$'000)	95% Confidence Interval (+ or -)
<u>Ontario:</u>		
50	368,467	2%
51	132,584	2%
52	1,638,177	1%
53	592,657	1%
54	223,664	2%
55	307,672	1%
56	197,003	2%
57	93,111	4%
58	268,924	1%
59	131,921	2%
<u>Quebec:</u>		
40	12,664	30%
41	33,257	12%
42	48,432	10%
43	151,562	4%
44	84,867	11%
45	124,396	4%
46	143,193	6%
47	1,245,937	1%
48	54,906	8%
49	41,460	11%

CONFIDENCE INTERVALS FOR REGIONAL ESTIMATES OF AVERAGE
INCOME OF TAXPAYERS (1951)

Region	Estimated Average Income of Taxpayers (\$)	95% Confidence Interval (+ or -)
<u>Ontario:</u>		
50	3,074	1%
51	2,903	2%
52	3,269	1%
53	3,180	1%
54	3,089	2%
55	3,182	1%
56	2,906	2%
57	2,841	2%
58	3,171	1%
59	3,106	2%
<u>Quebec:</u>		
40	3,074	6%
41	2,892	4%
42	3,101	3%
43	3,031	2%
44	3,059	3%
45	2,902	2%
46	2,748	2%
47	3,320	1%
48	2,842	3%
49	2,985	3%

Taxpayers' Income as a Measure of Total Income:

A table accompanying this section shows the regional differences between number of taxpayers and number of persons in the labour force. As the table shows, the discrepancies may be very great. Another table provides a cross-classification of regions by average income of taxpayers and ratio of taxpayers to labour force. It is apparent that **there** is a tendency for these two characteristics to vary directly, this tendency being more pronounced in **Ontario** than **Quebec**. The explanation, of course, is that the higher the average income the greater is the proportion of income-earners who are taxable, and hence the better is taxpayers' income as an indicator of total income. It will be noted that the ratios of taxpayers to labour force are generally much higher in **Ontario** than in **Quebec**.

The ratio of taxpayers to labour force may be of some interest in itself as a crude welfare indicator. It must be noted that annual fluctuations in this ratio may be due to changes in the income tax regulations, and in so far as this is so the value of the annual series for purposes of comparison is reduced.

It should also be observed that the presence of income-earners who are not members of the labour force will impair the validity of the ratio as an indicator of **coverage**. However, this is not a serious problem.

REGIONAL RATIOS OF TAXPAYERS TO LABOUR FORCE, 1951

Region	I No. of Taxpayers	II Labour Force	III I as % of II
40	4,120	14,641	28.1
41	11,500	106,287	10.8
42	15,620	58,156	26.9
43	50,000	182,939	27.3
44	27,740	85,853	32.3
45	42,870	134,702	31.8
46	50,720	191,264	26.5
47	375,250	603,169	62.2
48	19,320	48,833	39.6
49	13,890	45,996	30.2
TOTAL, QUEBEC	611,030	1,471,840	41.5
50	119,850	229,339	52.3
51	45,670	99,703	45.8
52	501,110	621,483	80.6
53	186,390	240,427	77.5
54	72,400	128,126	56.5
55	96,700	145,728	66.4
56	67,800	121,900	55.6
57	32,770	99,141	33.1
58	84,800	134,968	62.8
59	42,470	64,126	66.2
TOTAL, ONTARIO	1,249,960	1,884,941	66.3

CROSS-CLASSIFICATION OF REGIONS BY AVERAGE INCOME OF
TAXPAYERS AND RATIO OF TAXPAYERS TO LABOUR FORCE ⁽¹⁾

Average Income of Taxpayers	Taxpayers as % of Labour Force						
	10-19%	20-29%	30-39%	40-49%	50-59%	60-69%	70-100%
\$2700-2799		46					
\$2800-2899	41		57	48			
\$2900-2999			45,49	51	56		
\$3000-3099		40,43	44		50,54		
\$3100-3199		42				55,58,59	53
\$3200-3299							52
\$3300-3399						47	

(1) The regions are represented in the table by their code numbers. Thus, the first entry at the top of the table is region 46.

F. STATISTICS OF THE UNEMPLOYMENT INSURANCE COMMISSION

Statistics of unplaced applicants and unfilled vacancies are available monthly by local office areas of the Unemployment Insurance Commission, and these statistics are extremely valuable for following current local conditions. Although local office areas cut across boundaries of the economic regions in some cases, statistics can be added to give figures for areas approximating these regions. A local office area is assigned to the region claiming the largest share of its labour force or wage-earners (in Ontario and Quebec there was no disagreement on this count between labour force and wage-earners, although such disagreement is possible). Two types of errors arise out of this approximation: errors of inclusion, caused by having to include parts of local office areas which are not in the region; and errors of exclusion, caused by having to exclude parts of local office areas which are in the region. These errors are displayed in accompanying tables in terms of percentages of labour force and percentages of wage-earners included or excluded. The largest error of inclusion is 11%, and the largest error of exclusion is 9%. If the U.I.C. figures are converted to index form the effect of errors caused by boundary disagreement will be considerably reduced.

ERRORS OF COVERAGE IN THE USE OF U.I.C. STATISTICS

AS REGIONAL INDICATORS: ONTARIO

Region	Labour Force			Wage-Earners		
	Total	Error of Inclusion	Error of Exclusion	Total	Error of Inclusion	Error of Exclusion
50	229,339	1%	-	184,023	1%	-
51	99,703	3%	9%	72,566	2%	9%
52	621,483	2%	3%	554,372	1%	3%
53	240,427	3%	1%	210,433	2%	1%
54	128,126	2%	-	97,766	1%	-
55	145,728	-	-	116,959	-	-
56	121,900	2%	-	91,663	2%	-
57	99,141	11%	8%	64,402	11%	6%
58	134,968	3%	-	116,202	2%	-
59	64,126	-	-	56,340	-	-

ERRORS OF COVERAGE IN THE USE OF U.I.C. STATISTICSAS REGIONAL INDICATORS: QUEBEC

Region	Labour Force			Wage-Earners		
	Total	Error of Inclusion	Error of Exclusion	Total	Error of Inclusion	Error of Exclusion
40	14,641	-	3%	11,622	-	3%
41	106,287	-	4%	60,601	1%	4%
42	58,156	-	-	44,328	-	-
43	182,939	1%	3%	135,131	-	2%
44	85,853	1%	9%	64,186	1%	7%
45	134,702	7%	2%	94,750	4%	2%
46	191,264	10%	7%	133,569	11%	5%
47	603,169	2%	2%	548,341	1%	2%
48	48,833	-	1%	38,042	-	1%
49	45,996	-	3%	31,013	-	4%

ALLOCATION OF U.I.C. LOCAL OFFICES TO ECONOMIC REGIONS OF ONTARIO

<u>Regions</u>	<u>Local Offices</u>
50.	Arnprior Brockville Carleton Place Cornwall Gananoque Hawkesbury Kingston Ottawa Pembroke Perth Prescott Renfrew Smiths Falls
51.	Belleville Cobourg Lindsay Napanee Peterborough Picton Trenton
52.	Brampton New Toronto Oakville Oshawa Toronto Weston
53.	Brantford Fort Erie Hamilton Niagara Falls Port Colborne St. Catharines Welland
54.	Ingersoll London St. Thomas Simcoe Woodstock
55.	Chatham Leamington Sarnia Wallaceburg Windsor
56.	Galt Goderich Guelph Kitchener Listowel Stratford

ALLOCATION OF U.I.C. LOCAL OFFICES TO ECONOMIC REGIONS OF ONTARIO

- 2 -

<u>Regions</u>	<u>Local Offices</u>
57.	Barrie Bracebridge Collingwood Midland Orillia Owen Sound Parry Sound Walkerton
58.	Kapuskasing Kirkland Lake North Bay Sault Ste. Marie Sturgeon Falls Sudbury Timmins
59.	Fort Frances Fort William Kenora Port Arthur Sioux Lookout

ALLOCATION OF U.I.C. LOCAL OFFICES TO ECONOMIC REGIONS OF QUEBEC

<u>Regions</u>	<u>Local Offices</u>
40.	Forestville Sept Iles
41.	Causapscol Chandler Gaspé Matane Montmagny New Richmond Rimouski Rivière du Loup
42.	Chicoutimi Dolbeau Jonquières Port Alfred Roberval St. Joseph d'Alma
43.	La Malbaie Lévis Quebec St. Georges E.
44.	La Tuque Louiseville Shawinigan Falls Three Rivers
45.	Asbestos Drummondville Granby Magog Mégantic Sherbrooke Thetford Mines Victoriaville
46.	Beauharnois Farnham Joliette Lachute Mont Laurier Ste. Agathe des Monts Ste. Anne de Bellevue St. Hyacinthe St. Jean St. Jerome Ste. Thérèse Sorel Valleyfield
47.	Montreal
48.	Buckingham Hull Maniwaki
49.	Rouyn Val d'Or

SECTION V
PERSONAL INCOME ESTIMATES

Because of its importance for market analysis and as a general welfare indicator, much interest is attached to personal income. It was therefore considered appropriate to explore the possibility of estimating personal income on a regional basis. We are able to report some results here, but these are not necessarily final. Further study may indicate desirable changes in present methods.

The task of regional income estimation is much easier for periods close to a census date than for other periods, owing to the relative abundance of data. Therefore, the approach used was to treat the problem in two stages: (1) the estimation of the regional distribution for a census base period; (2) the estimation of changes in this distribution from the base to later periods. The base period selected is the twelve-month period prior to June 1, 1951. We have developed two methods for estimating the distribution in this period. While we shall recommend one of them, the other is also useful as a check. The first method has been termed the allocation method because it involves the regional allocation of provincial totals of the principal components of personal income. The second method we have called the regression method, since it employs a linear regression equation relating personal income per capita to two other variables. At the second stage, the projection to later periods is effected by employing as the main tool a weighted index of rates of change in receipts per labour force member, using provincial rates where annual regional information is not available. We shall now discuss the two base period methods and the method of projection separately.

Base Period Distribution: Allocation Method

A. The General Approach:

In this method we consider the problem of allocating to economic regions the following components of provincial personal income: (1) wages, salaries, and supplementary labour income; (2) net income received by farm operators from farm production; (3) net income of non-farm unincorporated business; (4) government transfer payments, excluding interest; (5) interest,

dividends, and net rental income of persons; (6) residual. We shall consider these items in order.

B. Wages, Salaries, and Supplementary Labour Income:

This is, for most non-agricultural areas, the largest component of personal income. We are fortunate, then, in having census information on earnings of wage-earners for the twelve-month period prior to June 1, 1951. However, the census statistics of wage-earnings are subject to misstatement on the one hand, and differences in definition of earnings from that used for national accounting purposes, on the other. These difficulties are met by estimating "true" average earnings (\bar{W}) by a linear regression on "census" average earnings (X_1), where the latter is calculated in the following way. Class mid-points are multiplied by class frequencies and the sum of the products is divided by the total number of wage-earners reporting earnings. Non-respondents are assumed to have the same average as respondents. The "\$4,000 and over" class is broken into two classes (\$4,000-\$5,999, and \$6,000 and over) on the basis of the distribution of earnings of wage-earner heads of families, also available from the census. The mean of the "\$6,000 and over" class was set at \$8,500. It should be noted that small changes in the assumed class means have very little effect on the relative size of the "census" averages computed for different areas. The simple assumptions described above are quite satisfactory for the purpose at hand.

The "census" averages computed for provinces were plotted against the "true" averages obtained by interpolating arithmetically between wages, salaries, and supplementary labour income for 1950 and 1951, and dividing the result by the total number of wage-earners enumerated at the census. The number of wage-earners relates to June 1 of the census year, and therefore this "true" average is slightly different from actual average earnings in the twelve-month period prior to the census date. However, this will not have much effect on estimates of total earnings. Indeed, it will probably affect estimates of average earnings to only a small degree. The least-squares regression of the "true" on the 1951 "census" averages yields, for the ten provinces, the equation

$$\bar{W} = -473.8 + 1.383 X_1.$$

The average error, ignoring signs, is 3.4%. The 90% and 95% confidence

intervals are approximately Est. $\bar{W} \pm 9\%$ and Est. $\bar{W} \pm 11\%$. Provincial estimates are given in Table 1, together with their errors. Estimates for economic regions of Ontario and Quebec based on the above equation are presented in Tables 2 and 3. The latter estimates have been adjusted in order to add to the figures obtained by arithmetic interpolation between the provincial totals⁽¹⁾ of wages, salaries, and supplementary labour income for 1950 and 1951, and these are referred to as "final" estimates in the tables. The adjustment for total will generally tend to reduce error, of course.

(1) These and all other provincial "control" totals mentioned in connection with regional personal income estimates are obtained from published or unpublished tables compiled for the national accounts. For discussion of concepts, sources, and methods associated with these totals see D.B.S. National Accounts, Income and Expenditure, 1926-50.

Table 1: Estimates of Average Earnings of Wage-Earners in Twelve-Month Period
Prior to June 1, 1951: Provinces

	X_1	\bar{W}	Est. \bar{W}	Error
	\$	\$	\$	%
Newfoundland	1404	1502	1468	-2.3
Prince Edward Island	1232	1151	1230	6.9
Nova Scotia	1641	1715	1796	4.7
New Brunswick	1536	1588	1650	-2.3
Quebec	1813	1997	2034	1.9
Ontario	2137	2397	2482	3.5
Manitoba	1863	2095	2103	0.4
Saskatchewan	1642	1961	1797	-8.4
Alberta	1923	2163	2186	1.1
British Columbia	2121	2534	2460	-2.9

Table 2: Estimates of Average and Total Earnings of Wage-Earners in Twelve-Month Period Prior to June 1, 1951: Economic Regions of Ontario.⁽¹⁾

Region	X_1	Est. \bar{W}	Est. W	Final Est. W	Final Est. \bar{W}
	\$	\$	\$'000,000	\$'000,000	\$
50	2002	2295	422	408	2217
51	1826	2052	149	144	1984
52	2304	2713	1504	1452	2619
53	2210	2583	544	526	2500
54	1928	2193	214	207	2117
55	2222	2599	304	294	2514
56	1899	2153	197	190	2073
57	1612	1756	113	109	1692
58	2199	2567	298	288	2478
59	2100	2431	137	132	2343
Total	-	-	3882	3750	-

(1) Total earnings is represented by the symbol W.

Table 3: Estimates of Average and Total Earnings of Wage-Earners in Twelve-Month Period Prior to June 1, 1951: Economic Regions of Quebec.

Region	X_1	Est. \bar{W}	Est. W	Final Est. W	Final Est. \bar{W}
	\$	\$	\$'000,000	\$'000,000	\$
40	1690	1863	22	21	1832
41	1101	1049	64	63	1032
42	1755	1953	87	85	1921
43	1529	1641	222	218	1614
44	1588	1722	111	109	1693
45	1606	1748	166	163	1719
46	1563	1688	225	222	1660
47	2095	2424	1329	1307	2384
48	1704	1883	72	70	1852
49	1814	2035	63	62	2001
Total	-	-	2359	2320	-

C. Net Income Received by Farm Operators from Farm Production:

The 1951 census provides information for 1950 on eighteen sources of gross farm revenue and nine items of farm expense. Capital and current components of some expense items are not given separately. The method here is to estimate, first, the regional distribution in 1950, and then to employ an index for each region to estimate the change from 1950 to the twelve-month period prior to June 1, 1951. The 1950 distribution of net farm income is estimated by allocating provincial gross farm income according to census data on gross revenue, and the provincial current farm expenses according to census data on total expenses (capital plus current), and then subtracting regional expense estimates from regional gross income estimates (see Tables 4 and 5).

The projection to the 1950-51 period is effected for each region by multiplying the 1950 estimate by an index of change. This index is constructed by assuming that regional rates of change in farm income can be considered as weighted averages of provincial rates of change in sales and stocks of particular farm products. Suppose a simple hypothetical case where in a certain region product A provided 40 per cent by value of total gross farm revenue in 1950, and product B provided 60 per cent. Further suppose that in the province of which the region forms a part the total of sales plus inventory change in the twelve-month period prior to June 1, 1951, was 20 per cent higher than in the 1950 calendar year in the case of product A, and 10 per cent lower in the case of product B. The estimate of the index of change in gross revenue is $(.40)(1.20) + (.60)(.90) = 1.02$. The next step is to adjust the figure 1.02 up or down according to whether in the province as a whole the ratio of total net to total gross farm revenue has risen or fallen, thus obtaining a preliminary estimate of regional net farm income. Finally, the preliminary estimates for all regions are multiplied by a constant factor to make them add to the provincial "control" total obtained by arithmetic interpolation between the 1950 and 1951 figures.

In practice, fourteen sub-indexes were incorporated into the index of net farm income, one for each of the following groups of items:

- (1) grains, seeds, and hay
- (2) vegetables and other field crops
- (3) fruits
- (4) greenhouse and nursery products
- (5) cattle and calves
- (6) dairy products
- (7) poultry and eggs
- (8) swine
- (9) horses, sheep, and wool
- (10) honey
- (11) forest products
- (12) maple products
- (13) fur-bearing animals
- (14) products consumed on farms

It may be noted that item (4) was projected using an index of "miscellaneous" farm products, and item (9) using an index of sheep and wool only.

The algebraic expression for the index is

$$\frac{f_1}{f_0} = K \left[\frac{\sum_j (C_{0j} + \Delta S_{0j})}{\sum_j (C_{1j} + \Delta S_{1j})} \right] \left[\frac{\sum_j F_{1j}}{\sum_j F_{0j}} \right] \sum_j \left(q_{0j} \frac{C_{1j} + \Delta S_{1j}}{C_{0j} + \Delta S_{0j}} \right)$$

where the subscripts 0 and 1 relate to the 1950 and 1950-51 periods, respectively, and the other symbols are defined as follows:

f - regional net farm income

C_j - provincial cash income from sales of farm product j

ΔS_j - provincial change in farm inventory holdings of product j

F_j - (theoretical) provincial net farm income derived from product j

q_j - proportion of total regional gross revenue derived from product j

K - final adjustment factor based on provincial "control" total.

Table 4: Estimates of Net Income Received by Farm Operators from Farm Production
in 1950: Economic Regions of Ontario

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Region	Census Gross Revenue	(1) as % of Total	Estimated Gross Income	Census Total Expenses	(4) as % of Total	Estimated Current Expenses	Estimated Net Income (3) - (6)
	\$'000		\$' 000,000	\$' 000		\$' 000,000	\$' 000,000
50	75,328	12.8	105.8	43,332	11.8	44.5	61.3
51	55,084	9.4	77.4	32,887	9.0	33.8	43.6
52	53,886	9.2	75.7	42,975	11.7	44.2	31.5
53	48,591	8.3	68.3	31,706	8.7	32.6	35.7
54	104,513	17.8	146.8	62,644	17.1	64.3	82.5
55	67,351	11.5	94.6	41,912	11.4	43.1	51.5
56	87,138	14.8	122.4	56,098	15.3	57.6	64.8
57	73,664	12.5	103.5	41,728	11.4	42.9	60.6
58	16,454	2.8	23.1	9,535	2.6	9.8	13.3
59	5,730	1.0	8.0	3,361	0.9	3.5	4.5
Total	587,739	100.0	825.6	366,178	100.0	376.3	449.3

**Table 5: Estimates of Net Income Received by Farm Operators from Farm
Production in 1950: Economic Regions of Quebec**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Region	Census Gross Revenue	(1) as % of Total	Estimated Gross Income	Census Total Expenses	(4) as % of Total	Estimated Current Expenses	Estimated Net Income (3) - (6)
	\$' 000		\$' 000,000	\$' 000		\$' 000,000	\$' 000,000
40	862	0.3	1.2	275	0.2	0.4	0.8
41	39,302	12.6	56.9	15,388	9.8	20.7	36.2
42	16,698	5.3	24.2	7,639	4.9	10.3	13.9
43	51,313	16.4	74.2	24,768	15.8	33.4	40.8
44	25,989	8.3	37.6	12,951	8.3	17.4	20.2
45	57,066	18.3	82.6	30,734	19.6	41.4	41.2
46	90,119	28.8	130.3	49,020	31.3	66.0	64.3
47	7,769	2.5	11.2	4,030	2.6	5.4	5.8
48	12,629	4.0	18.3	5,990	3.8	8.1	10.2
49	10,826	3.5	15.7	5,842	3.7	7.9	7.8
Total	312,573	100.0	452.2	156,637	100.0	211.0	241.2

Table 6: Estimates of Net Income Received by Farm Operators from Farm
Production in Twelve-Month Period Prior to June 1, 1951:
Economic Regions of Ontario.

Region	Estimated Net Farm Income, 1950	Index of Change 1950 to 1950-51	Estimated Net Farm Income, 1950-51	Adjusted Estimate, 1950-51
	\$'000,000	%	\$'000,000	\$'000,000
50	61.3	109.8	67.3	67.4
51	43.6	110.1	48.0	48.0
52	31.5	109.6	34.5	34.5
53	35.7	107.7	38.4	38.4
54	82.5	107.3	88.5	88.6
55	51.5	103.6	53.4	53.4
56	64.8	111.1	72.0	72.1
57	60.6	110.1	66.7	66.8
58	13.3	108.5	14.4	14.4
59	4.5	107.2	4.8	4.8
Total	449.3		488.0	488.4

Table 7: Estimates of Net Income Received by Farm Operators from Farm
Production in Twelve-Month Period Prior to June 1, 1951:

Economic Regions of Quebec.

Region	Estimated Net Farm Income, 1950	Index of Change, 1950 to 1950-51	Estimated Net Farm Income, 1950-51	Adjusted Estimate, 1950-51
	\$'000,000	%	\$'000,000	\$'000,000
40	0.8	114.0	0.9	0.9
41	36.2	113.2	41.0	41.4
42	13.9	112.6	15.7	15.9
43	40.8	115.3	47.0	47.5
44	20.2	113.2	22.9	23.1
45	41.2	114.4	47.1	47.6
46	64.3	112.9	72.6	73.4
47	5.8	111.5	6.5	6.6
48	10.2	113.9	11.6	11.7
49	7.8	111.5	8.7	8.8
Total	241.2		274.0	276.9

D. Net Income of Non-Farm Unincorporated Business:

In this case we estimate the number of non-farm unincorporated **business** proprietors in a region by subtracting non-agricultural wage-earners from the total non-agricultural labour force. Then we weight the figures so obtained by **regional** average wage-earnings. When we add together these weighted figures the sum is a little less than the provincial total of unincorporated non-farm business income in the national accounts, and we prorate the difference. The assumption underlying the method is, of course, that average wage and non-wage (non-agricultural) income tend to maintain a **constant** relationship of proportionality from region to region. Tables 8 and 9 display the estimates obtained for the economic regions of Ontario and Quebec.

Table 8: Estimates of Net Income of Non-Farm Unincorporated Business

in Twelve-Month Period Prior to June 1, 1951: Economic

Regions of Ontario

	(1)	(2)	(3)	(4)	(5)	(6)
Region	Non-Agricultural Labour Force	Non-Agricultural Wage-Earners	(1)-(2)	Average Wage-Earnings	(3)x(4)	Estimated Net Income
				\$	\$'000,000	\$'000,000
50	195,360	171,311	24,049	2217	53.3	60.0
51	78,652	62,742	15,910	1984	31.6	35.6
52	602,880	545,522	57,358	2619	150.2	169.0
53	224,270	198,870	25,400	2500	63.5	71.5
54	100,940	86,417	14,523	2117	30.7	34.6
55	124,967	106,809	18,158	2514	45.6	51.3
56	97,879	82,710	15,169	2073	31.4	35.3
57	71,778	55,910	15,868	1692	26.8	30.2
58	125,714	109,882	15,832	2478	39.2	44.1
59	61,019	53,437	7,582	2343	17.8	20.0
Total	1,683,459	1,473,610	209,849	-	490.1	551.6

Note: Average wage-earnings are estimates from Table 2.

Table 9: Estimates of Net Income of Non-Farm Unincorporated Business in
Twelve-Month Period Prior to June 1, 1951: **Economic Regions of**
Quebec

Region	(1) Non-Agricultural Labour Force	(2) Non-Agricultural Wage- Earners	(3) (1)-(2)	(4) Average Wage- Earnings	(5) (3)x(4)	(6) Estimated Net Income
				\$	\$'000,000	\$'000,000
40	13,865	11,075	2,790	1832	5.1	5.4
41	70,722	45,556	25,166	1032	26.0	27.4
42	48,067	40,272	7,795	1921	15.0	15.8
43	149,165	126,961	22,204	1614	35.8	37.8
44	70,742	59,211	11,531	1693	19.5	20.6
45	103,812	85,839	17,973	1719	30.9	32.6
46	146,790	118,724	28,066	1660	46.6	49.2
47	598,074	547,485	50,589	2384	120.6	127.1
48	40,656	34,762	5,894	1852	10.9	11.5
49	35,164	26,525	8,639	2001	17.3	18.3
Total	1,277,057	1,096,410	180,647	-	327.7	345.7

Note: Average wage-earnings are estimates from Table 3.

E. Government Transfer Payments, Excluding Interest:

This item is allocated according to 1951 population. Some improvement in accuracy might be effected by distributing certain components of government transfer payments individually. For examples, family allowances can be allocated with practically no error by using census age-group data, and payments to veterans can be distributed fairly accurately by using census information on war service of the population. However, these refinements will probably not reduce error in the allocation of transfer payments by much, and in the light of the relatively unimportant contribution which these payments make to total personal income the effect on the latter will be very small. Tables 10 and 11 show the regional estimates for Ontario and Quebec.

Table 10: Estimates of Government Transfer Payments, Excluding Interest,
in Twelve-Month Period Prior to June 1, 1951: Economic
Regions of Ontario

Region	Distribution of Population 1951		Estimated Government Transfer Payments
	No.	%	\$'000,000
50	591,760	12.9	38.6
51	271,584	5.9	17.7
52	1,363,386	29.7	88.9
53	575,677	12.5	37.5
54	319,183	6.9	20.8
55	371,238	8.1	24.2
56	294,917	6.4	19.2
57	273,403	5.9	17.8
58	369,683	8.0	24.1
59	166,711	3.6	10.9
Total	4,597,542	100.0	299.7

Table 11: Estimates of Government Transfer Payments, Excluding Interest,
in Twelve-Month Period Prior to June 1, 1951: Economic
Regions of Quebec

Region	Distribution of Population 1951		Estimated Government Transfer Payments
	No.	%	\$'000,000
40	42,664	1.1	2.9
41	360,785	8.9	24.9
42	197,910	4.9	13.7
43	531,219	13.1	36.7
44	254,130	6.3	17.6
45	396,475	9.8	27.4
46	552,375	13.6	38.2
47	1,436,006	35.4	99.3
48	142,659	3.5	9.9
49	141,458	3.5	9.8
Total	4,055,681	100.0	280.4

F. Interest, Dividends, and Net Rental Income of Persons:

The actual distribution of this component among provinces was found to be fairly similar to the distribution of total personal income, as the following table shows:

Table 12		
Interest, Dividends, and Net Rental Income of Persons: 1950-51 Base Period		
	National Accounts Distribution(1)	Distribution in Proportion to Total Personal Income
	\$'000,000	\$'000,000
Newfoundland	13	18
P.E.I.	5	5
Nova Scotia	40	45
New Brunswick	29	33
Quebec	317	327
Ontario	562	528
Manitoba	71	75
Saskatchewan	82	83
Alberta	85	96
British Columbia	138	132
Total, Canada	1,342	1,342

(1) Calculated by arithmetic interpolation between 1950 and 1951 figures.

It was therefore decided to allocate this item to economic regions on the basis of the sum of the previous items. The results appear in Tables 13 and 14.

G: The Final Estimates:

This completes the list of components, except for a residual which is prorated among the regions. The final estimates of personal income are obtained by adding up all the estimates of components, and these are presented in Tables 15 and 16.

Table 13: Estimates of Interest, Dividends, and Net Rental Income of Persons
in Twelve-Month Period Prior to June 1, 1951: Economic Regions of
Ontario

Region	Distribution of Total Income from Other Sources		Estimated Interest, Dividends, and Net Rental Income of Persons
	\$' 000,000	%	\$' 000,000
50	574.0	11.3	63.4
51	245.3	4.8	27.1
52	1,744.4	34.3	192.8
53	673.4	13.2	74.4
54	351.0	6.9	38.8
55	422.9	8.3	46.7
56	316.6	6.2	35.0
57	223.8	4.4	24.7
58	370.6	7.3	40.9
59	167.7	3.3	18.5
Total	5,089.7	100.0	562.3

Note: Total income from other sources is the sum of estimates in Tables 2,
6, 8, and 10.

Table 14: Estimates of Interest, Dividends, and Net Rental Income of Persons
in Twelve-Month Period Prior to June 1, 1951: Economic Regions of
Quebec

Region	Distribution of Total Income from Other Sources		Estimated Interest, Dividends, and Net Rental Income of Persons
	\$,000,000	%	\$,000,000
40	30.2	0.9	3.0
41	156.7	4.9	15.4
42	130.4	4.0	12.8
43	340.0	10.5	33.4
44	170.3	5.3	16.7
45	270.6	8.4	26.6
46	382.8	11.9	37.6
47	1,540.0	47.8	151.5
48	103.1	3.2	10.1
49	98.9	3.1	9.7
Total	3,223.0	100.0	316.8

Note: Total income from other sources is the sum of estimates in Tables
3, 7, 9, and 11.

Table 15: Estimated Total Personal Income in Twelve-Month Period Prior to
June 1, 1951: Economic Regions of Ontario.

Region	Employment Income (Table 2)	Farm Income (Table 6)	Non-Farm Business Income (Table 8)	Transfer Payments (Table 10)	Rentier Income (Table 13)	Estimated Total Personal Income ⁽¹⁾
	\$'000,000	\$'000,000	\$'000,000	\$'000,000	\$'000,000	\$'000,000
50	408.0	67.4	60.0	38.6	63.4	635
51	144.0	48.0	35.6	17.7	27.1	271
52	1,452.0	34.5	169.0	88.9	192.8	1929
53	526.0	38.4	71.5	37.5	74.4	745
54	207.0	88.6	34.6	20.8	38.8	388
55	294.0	53.4	51.3	24.2	46.7	468
56	190.0	72.1	35.3	19.2	35.0	350
57	109.0	66.8	30.2	17.8	24.7	247
58	288.0	14.4	44.1	24.1	40.9	410
59	132.0	4.8	20.0	10.9	18.5	185
Total	3,750.0	488.4	551.6	299.7	562.3	5628

(1) This total includes a small residual component, which is not shown.

Table 16: Estimated Total Personal Income in Twelve-Month Period Prior to
June 1, 1951: Economic Regions of Quebec.

Region	Employment Income (Table 3)	Farm Income (Table 7)	Non-Farm Business Income (Table 9)	Transfer Payments (Table 11)	Rentier Income (Table 14)	Estimated Total Personal Income(1)
	\$' 000,000	\$'000,000	\$'000,000	\$'000,000	\$'000,000	\$'000,000
40	21.0	0.9	5.4	2.9	3.0	33
41	63.0	41.4	27.4	24.9	15.4	170
42	85.0	15.9	15.8	13.7	12.8	141
43	218.0	47.5	37.8	36.7	33.4	369
44	109.0	23.1	20.6	17.6	16.7	185
45	163.0	47.6	32.6	27.4	26.6	293
46	222.0	73.4	49.2	38.2	37.6	415
47	1,307.0	6.6	127.1	99.3	151.5	1669
48	70.0	11.7	11.5	9.9	10.1	112
49	62.0	8.8	18.3	9.8	9.7	107
Total	2,320.0	276.9	345.7	280.4	316.8	3494

(1) This total includes a small residual component which is not shown.

Base Period Distribution: Regression Method

A. The General Approach:

As indicated above, the basic device is a linear regression equation relating personal income per capita to two other variables. These other variables are available from published census sources. The relationship was derived at the provincial level. Variables available at both the regional and provincial levels were tested, in various combinations, for their value in predicting personal income per capita for provinces, and the relationship found most satisfactory for provinces was considered applicable to the smaller areas.

B. The Variables Used as Predictors:

A combination of two variables was found to yield quite accurate results for provinces. The first variable (X_1) is the "census" average earnings of wage-earners during the twelve-month period prior to the census date, as calculated previously for the allocation method. The second variable (X_2) is the ratio of sales of "grocery and combination stores" (as defined for the Census of Merchandising) to total retail sales.

C. Significance of the Predictors:

Personal income per capita may generally be expected to vary directly with X_1 . However, X_1 is insufficient by itself for areas in which components other than payrolls form a large part of the total. This is particularly true of areas in which agriculture is important. Annual income from farming operations is notoriously volatile, whereas wages are comparatively sticky in the short-run. Re-negotiation of wage-contracts and adjustment of employment levels may not take place rapidly enough to reflect adequately annual changes in demand by the farm sector for goods and services, and hence changes in farm income. In some industries the demand for labour may be closely linked with out-of-area markets so that the effect of changes in local purchasing power on employment and wage-rates may not be pronounced. Furthermore, X_1 may be an unreliable indicator of income in areas in which direct consumption is important, particularly on-the-farm consumption of food, since income in kind is excluded in the census definition.

In order to compensate for the short-comings of X_1 , the variable

X_2 was included in the equation. The significance of X_2 arises from the difference in income elasticities between food and other retail goods. As income rises, total retail expenditure increases more rapidly than food expenditure, and X_2 falls; as income declines, the reverse is true. Also, direct consumption of food will lower food purchases and decrease X_2 . Thus, in agricultural areas where wages are generally lower than elsewhere, a misleadingly low value of X_1 may be compensated by a low value of X_2 . We should, of course, note that what we are in fact using are not statistics of purchases but of sales. However, for areas as large as the D.D.P. economic regions the differences will probably be small.

Another consideration is the difference in time-period. While X_1 relates to the twelve-month period prior to the census date, X_2 relates to the calendar year in which the census was taken. Personal income per capita is estimated for the earlier period on the assumption that there is a strong relationship between total retail sales and personal income lagged seven months. Ignoring price changes, since they are unlikely to have much net effect, the numerator of the ratio X_2 will be approximately invariant over the seven-month interval, while we expect the denominator to reflect the level of personal income in the earlier period.

D. The Estimating Equation:

The least-squares regression of personal income per capita (\bar{Y}) on X_1 and X_2 calculated from 1951 census data and 1950 and 1951 personal income and population estimates, is

$$\text{Est. } \bar{Y} = 72.2 + .717 X_1 - 22.680 X_2.$$

The parameters were estimated from data for nine provinces. Newfoundland was excluded because the 1950 and 1951 statistics are somewhat less reliable for that province than for the others. "True" personal income per capita for the twelve-month period prior to the census date was calculated by arithmetic interpolation between the 1950 and 1951 figures.

The estimates for provinces are presented in Table 17, together with their errors. The average error, ignoring signs, is 2.6%. The 90% and 95% confidence intervals are approximately $\text{Est. } \bar{Y} \pm 9\%$ and $\text{Est. } \bar{Y} \pm 11\%$. It should be noted that estimates for economic regions can be adjusted to agree in total with provincial personal income. This adjustment will generally reduce average error.

Table 17: Regression Estimates of Provincial Personal Income Per Capita in
Twelve-Month Period Prior to June 1, 1951

	X_1	X_2	\bar{Y}	Est. \bar{Y}	Error
	\$	%	\$	\$	%
Prince Edward Island	1232	16.36	583	584	0.2
Nova Scotia	1641	22.59	752	736	-2.1
New Brunswick	1536	20.50	679	709	4.4
Quebec	1813	22.12	872	870	-0.2
Ontario	2137	17.70	1243	1203	-3.2
Manitoba	1863	14.74	1042	1074	3.1
Saskatchewan	1642	11.26	1063	994	-6.5
Alberta	1923	12.16	1112	1175	5.7
British Columbia	2121	16.14	1230	1227	-0.2

E. Estimates for Economic Regions:

Tables 18 and 19 display estimates of personal income for the economic regions of Ontario and Quebec, as calculated by the method described above. The population figures required for these estimates were obtained by subtracting from the 1951 figures 1/20 of the 1941-1951 intercensal change. The personal income estimates have been adjusted to agree in total with an estimate obtained by arithmetic interpolation between the 1950 and 1951 figures for the province as a whole. The adjusted figures are referred to as "final" estimates.

Table 18: Regression Estimates of Total and Per Capita Personal Income
in Twelve-Month Period Prior to June 1, 1951: Economic Regions
of Ontario (1)

Region	X_1	X_2	Est. \bar{Y}	Est. Y	Final Est. Y
	\$	%	\$	\$'000,000	\$' 000,000
50	2002	18.41	1090	641	671
51	1826	18.03	973	262	274
52	2304	16.26	1355	1828	1915
53	2210	19.14	1223	696	729
54	1928	16.27	1086	343	359
55	2222	18.39	1248	459	481
56	1899	14.89	1096	321	336
57	1612	17.24	837	228	239
58	2199	23.41	1118	410	429
59	2100	19.87	1127	186	195
Total	-	-	-	5374	5628

(1) Total personal income is represented by the symbol Y.

Table 19: Regression Estimates of Total and Per Capita Personal Income in
Twelve-Month Period Prior to June 1, 1951: Economic Regions of
Quebec

Region	X_1	X_2	Est. \bar{Y}	Est. Y	Final Est. Y
	\$	%	\$	\$'000,000	\$'000,000
40	1690	9.83	1061	45	48
41	1101	20.09	406	146	156
42	1755	26.06	739	144	154
43	1529	21.70	676	356	380
44	1588	23.52	677	171	182
45	1606	23.20	698	274	292
46	1563	21.54	704	385	411
47	2095	21.88	1078	1534	1636
48	1704	24.95	728	103	110
49	1814	23.20	847	118	126
Total	-	-	-	3276	3494

Comparison of Allocation and Regression Methods

Regional estimates by both methods are compared in Table 20. It will be seen that in Ontario the two are quite close, considering that both estimates are subject to error and may vary in opposite directions from the unknown true figure. In Quebec the estimates are also quite close in most regions. In fact, three-fifths of the differences are less than 4%. However, in two regions the differences exceed 10%, and in one of these the difference is greater than 30%. It appears that this large difference is attributable to gross error in the estimate made by the regression method. More particularly, it appears that a large part of food sales are made in this area by stores which are classified not to the "grocery and combination stores" group but to the "general merchandise" group. This is a serious deficiency of the regression method, and one which was originally overlooked. Unfortunately, it is not possible to obtain separate figures on food sales of stores in the "general merchandise" group.

We recommend the use of the allocation method in preference to the regression method, because of the deficiency just noted in the latter, and because the allocation method provides estimates of major components of personal income, although some of these estimates must be regarded with considerable caution. However, for most areas the two estimates are quite close and it is also recommended that regression estimates be calculated as checks on the allocation estimates. A substantial difference between the two may suggest the advisability of further study of a particular area. It is probably unnecessary to sound the warning that agreement between the two is not proof of accuracy but merely favourable evidence based on non-contradiction.

Table 20: Comparison of Allocation and Regression Estimates of Personal
Income in Twelve-Month Period Prior to June 1, 1951: Economic
Regions of Ontario and Quebec

Region	(1)	(2)	(3)
	Allocation Estimate	Regression Estimate	(1)-(2) as % of (2)
	\$' 000,000	\$' 000,000	
50	635	671	-5.4
51	271	274	-1.1
52	1929	1915	0.7
53	745	729	2.2
54	388	359	8.1
55	468	481	-2.7
56	350	336	4.2
57	247	239	3.3
58	410	429	-4.4
59	185	195	-5.1
40	33	48	-31.2
41	170	156	9.0
42	141	154	-8.4
43	369	380	-2.9
44	185	182	1.6
45	293	292	0.3
46	415	411	1.0
47	1669	1636	2.0
48	112	110	1.8
49	107	126	-15.1

Projection of the Distribution to Postcensal Years

The basic problem associated with projecting the personal income estimates to a postcensal year (1953 in the present case) arises from the lack of information directly available on regional changes in earned income. An important exception is manufacturing for which the Census of Industry provides annual regional payroll figures. However, for all other industries it was necessary to devise some indirect estimating technique. The procedure selected involves the assumption that regional rates of change in earnings can be considered as weighted averages of industrial rates of change. Let us take a hypothetical example. Suppose, for simplicity, that in a particular region there are only two industries, A and B, and that in the base year the earnings (wage and nonwage) of workers in A constituted 75 per cent of total earnings in the region, and those of workers in B constituted 25 per cent. Further suppose that within the province of which the region forms a part, average earnings of workers in industry A rose between the base and postcensal years by 20 per cent, and those of workers in B by 8 per cent. Then we assume that within the region average earnings of workers in A have similarly risen by 20 per cent, and those of workers in B by 8 per cent. The estimate of the ratio of regional average earnings in the postcensal year to the average in the base year is $(.75)(1.20) + (.25)(1.08) = 1.17$. If we had postcensal data on regional labour force we could multiply the average of earnings in the base year by 1.17 to give an estimate of the corresponding average in the later year, and then multiply this by the labour force to give an estimate of the total. However, we have postcensal information on total population (see Section IV, part D of this report), but not on the labour force component. Therefore we estimate the index of average earnings per population member by adjusting the figure 1.17 (which pertains to average earnings per labour force member) on the basis of changes in the ratio of provincial labour force to provincial population, the adjustment being upward if the ratio is increasing, downward if it is decreasing. The estimate of average earnings per population member is then obtained and multiplied by the postcensal regional population estimate to yield an estimate of total earned personal income.

Now let us turn from the simplified hypothetical illustration to a consideration of the actual form of the index used in practice. When expressed in algebraic form the index appears at first sight to be very complex. In

reality it is conceptually quite simple, as the foregoing example was intended to illustrate. As noted above, manufacturing payroll data are available annually for economic regions. These are used to construct a manufacturing sub-index for each region within the total index of average earned income for that region. Adjustment is made for regional population changes as an indication of changes in manufacturing labour force, and further adjustment is made for changes in the ratio of manufacturing labour force to population at the provincial level. It should be noted that manufacturing payrolls are used to project unincorporated manufacturing business income as well as wages and salaries. However, this is not considered to be a serious source of error.

Agricultural income is projected from the base year to a postcensal year by using the same type of index that was employed in projecting the 1950 estimates to the 1950-51 base period, as described above in part C of the discussion of the allocation method. Of course, the agriculture index is given an appropriate income weight when it is included as part of the total index of average earned income.

A separate index is constructed for each of the following nonmanufacturing-nonagricultural industrial groups, using provincial rates of change:

- (1) forestry and logging
- (2) fishing and trapping
- (3) mining and quarrying
- (4) construction
- (5) transportation, communication, and storage; and public utilities
- (6) trade
- (7) finance
- (8) services
- (9) federal government (used in regions 48 and 50, only).

Again, the sub-index for each industry is given an appropriate income weight and added into the total index.

We have constructed an index of average earned income, then, which is composed of a number of sub-indexes: one for agriculture, which is itself a composite of several indexes (one for each of fourteen groups of farm products); one for manufacturing, which differs from the others in that it is based on actual regional changes rather than changes in a provincial aggregate; and one for each of eight or nine nonmanufacturing-nonagricultural industrial groups.

Each index has been assigned an appropriate income weight. However, a further correction is required to allow for changes in the nonmanufacturing labour force. The agriculture and other nonmanufacturing sub-indexes are bracketed together and multiplied by the ratio of the total provincial nonmanufacturing labour force in the base year to the total in the postcensal year. As mentioned previously, an adjustment is made to convert the index of earned income per labour force member to an index of earned income per population member. Lastly, when the regional estimates of earned income have been calculated they are multiplied by a constant factor to make them add to the provincial "control" total, but this last adjustment is of formal importance only. In Ontario the correction required for 1953 was only a quarter of one per cent, and in Quebec it was only two-fifths of one per cent.

It now remains to consider the base year income weights assigned to each of the sub-indexes. These are the estimates of the relative shares of total regional earned personal income belonging to workers in each industry, and they are estimated in the following way. Firstly, provincial farm wages and supplementary payments are distributed regionally on the basis of census information for 1950 on payments to hired farm labour, and the estimates thus obtained are added to net farm income to give regional estimates of earned income in the agricultural sector. Secondly, for each nonagricultural industrial group the provincial total is allocated to regions on the basis of labour force. Regional figures so obtained are then multiplied by a constant factor to make them add to the estimate of total regional earned (nonagricultural) income of persons. The implied assumption is that average earnings in the various industrial groups maintain a relationship of proportionality in all regions though absolute levels may vary. Lastly, the individual industrial estimates in a particular region are reduced to a relative basis by expressing them as proportions of the total.

We may note that the method of estimating income weights is necessarily crude, but that the error arising from this source may be expected to be fairly small even if the weights are quite inaccurate. For example, suppose a simple case where a particular region has two industries, A and B. Suppose that the correct weights are .50 for both industries, but that we estimate these weights as .40 for A and .60 for B. Further suppose that the indexes of change to be weighted are 1.10 and 1.20 for A and B, respectively. Now, we will

estimate the index for the region as $(.40)(1.10) + (.60)(1.20) = 1.16$, when in fact the correct figure is 1.15. This means that even though we have miscalculated the income weights by 20 per cent in each case, our estimate of the percentage change is wrong by only 6.7 per cent, while our estimate of the actual level of the index is less than one per cent out.

The assumption of the applicability to regions of provincial rates of change will, of course, be more realistic for some industries and regions than for others. For services the assumption may be rather weak because this is a heterogeneous group and is broadly distributed among all areas of a province. On the other hand, it will be not far from true for the mining industry of region 58, since four-fifths of Ontario's mining and quarrying labour force are located here. Finance in region 47 is another conspicuous example, with seven-tenths of the provincial finance labour force. However, even if an industry is widely distributed geographically the level of earnings may move in approximately the same way in all regions if there is dependence on common markets, as is the case, for example, with some agricultural products. In general, then, the assumption will be more realistic the higher the degree of geographic concentration and the higher the degree of dependence on common markets.

The index of earned income per labour force member may be expressed algebraically as

$$\frac{\bar{F}_1}{\bar{F}_0} = \frac{\sum_{i+m} L_{0i}}{\sum_{i+m} L_{1i}} \left\{ K \left[\frac{\sum_j (C_{0j} + \Delta S_{0j})}{\sum_j (C_{1j} + \Delta S_{1j})} \right] \left[\frac{\sum_j F_{1j}}{\sum_j F_{0j}} \right] \left[\frac{\sum_j (q_{0j} \frac{C_{1j} + \Delta S_{1j}}{C_{0j} + \Delta S_{0j}})}{\sum_j q_{0j}} \right] P_{0a} \right. \\ \left. + \sum_{i+m,a} P_{0i} \frac{E_{1i}}{E_{0i}} \right\} + P_{0m} \left(\frac{w_{1m}}{w_{0m}} \right) \left(\frac{n_0}{n_1} \right) \left(\frac{N_1}{N_0} \right) \left(\frac{L_{0m}}{L_{1m}} \right)$$

and the index of earned income per population member becomes

$$\frac{\bar{e}_1}{\bar{e}_0} = \frac{N_0}{N_1} \cdot \frac{\sum_i L_{1i}}{\sum_i L_{0i}} \cdot \frac{\bar{F}_1}{\bar{F}_0}$$

The subscripts 0 and 1 relate to the base and later periods, respectively; the subscript i denotes industry, with special subscripts a and m for agriculture and manufacturing; and the variables are defined as follows:

\bar{r} - earned personal income per labour force member in region (earned personal income is employment income plus farm income plus nonfarm unincorporated business income)

E_i - total earned personal income of provincial labour force in industry i

\bar{e} - earned personal income per population member in region

L_i - provincial labour force in industry i

C_j - provincial cash income from sales of farm product j

ΔS_j - provincial change in farm inventory holdings of product j

F_j - (theoretical) provincial net farm income derived from product j

q_j - proportion of total regional gross farm revenue derived from product j

P_i - proportion of total regional earned personal income received by labour force in industry i

w_m - manufacturing payroll in region

n - regional population

N - provincial population

K - adjustment factor applied to regional estimates of net farm income to make them add to the provincial "control" total.

Government transfer payments are distributed according to estimated regional population; and interest, dividends, and net rental income of persons is distributed in proportion to other income (transfer payments plus earned income). These estimates are added to the earned income estimates and the small residual is prorated to yield the final estimates of personal income for the postcensal year. Estimates for 1953 for the economic regions of Ontario and Quebec are shown in Tables 21-26. Tables 27 and 28 provide estimates of net farm income, which were obtained in the same way as we obtained estimates for the twelve-month period prior to June 1, 1951, i.e. by using the weighted index of gross farm income which appears as a component of the total earned personal income index.

Table 21: Estimates of Personal Earned Income in 1953: Economic Regions
Of Ontario⁽¹⁾

Region	Est. \bar{e} 1950-51	Index of Change 1950-51 to 1953	Est. \bar{e} 1953	Estimated Population 1953	Est. e 1953	Final Est. e 1953
	\$	%	\$		\$'000,000	\$'000,000
50	911	115.5	1052	621,000	653	655
51	844	111.0	937	282,090	264	265
52	1227	121.6	1492	1,487,280	2,219	2,224
53	1117	115.2	1287	625,240	805	807
54	1044	109.1	1139	331,160	377	378
55	1085	115.0	1248	391,870	489	490
56	1016	107.0	1087	310,340	337	338
57	756	105.6	798	278,090	222	223
58	944	117.2	1106	392,730	434	435
59	949	117.4	1114	177,200	197	198
Total	-	-	-	4,897,000	5,997	6,013

(1) Total personal earned income is represented by the symbol e .

Table 22: Estimates of Personal Earned Income in 1953: Economic
Regions of Quebec

Region	Est. \bar{e} 1950-51	Index of Change 1950-51 to 1953	Est. \bar{e} 1953	Estimated Population 1953	Est. e 1953	Final Est. e 1953
	\$	%	\$		\$'000,000	\$'000,000
40	650	111.3	723	49,640	36	36
41	367	107.6	395	370,990	147	146
42	598	116.2	695	211,080	147	146
43	575	120.2	691	555,260	384	382
44	605	111.6	675	267,950	181	180
45	619	108.7	673	413,420	278	277
46	630	116.4	733	586,300	430	428
47	1013	122.8	1244	1,517,580	1,888	1,881
48	659	116.5	768	147,910	114	114
49	637	116.2	740	148,870	110	110
Total	-	-	-	4,269,000	3,715	3,700

Table 23: Estimates of Government Transfer Payments in 1953: Economic
Regions of Ontario

	(1)	(2)	(3)
Region	Est. Population 1953	(1) as % of Total	Est. Govt. Transfer Payments 1953
			\$'000,000
50	621,000	12.7	58.7
51	282,090	5.8	26.7
52	1,487,280	30.4	140.6
53	625,240	12.8	59.1
54	331,160	6.8	31.3
55	391,870	8.0	37.1
56	310,340	6.3	29.3
57	278,090	5.7	26.3
58	392,730	8.0	37.1
59	177,200	3.6	16.8
Total	4,897,000	100.0	463.0

Table 24: Estimates of Government **Transfer** Payments in 1953: Economic
Regions of Quebec

Region	Est. Population 1953	(1) as % of Total	Est. Govt. Transfer Payments 1953
			\$'000,000
40	49,640	1.2	4.5
41	370,990	8.7	34.0
42	211,080	4.9	19.3
43	555,260	13.0	50.9
44	267,950	6.3	24.5
45	413,420	9.7	37.9
46	586,300	13.7	53.7
47	1,517,580	35.5	139.1
48	147,910	3.5	13.5
49	148,870	3.5	13.6
Total	4,269,000	100.0	391.0

Table 25: Estimates of Personal Income in 1953: Economic Regions of Ontario

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Region	Estimated Earned Income	Estimated Government Transfer Payments	(1)+(2)	(3) as % of Total	Estimated Rentier Income	(1)+(2) + (5)	Estimated Total Personal Income (1)
	\$'000,000	\$'000,000	\$'000,000		\$'000,000	\$'000,000	\$'000,000
50	655.0	58.7	713.7	11.0	78.8	792.5	793
51	265.0	26.7	291.7	4.5	32.2	323.9	324
52	2,224.0	140.6	2,364.6	36.5	261.1	2,625.7	2,627
53	807.0	59.1	866.1	13.4	95.6	961.7	962
54	378.0	31.3	409.3	6.3	45.2	454.5	455
55	490.0	37.1	527.1	8.1	58.2	585.3	586
56	338.0	29.3	367.3	5.7	40.6	407.9	408
57	223.0	26.3	249.3	3.8	27.5	276.8	277
58	435.0	37.1	472.1	7.3	52.1	524.2	525
59	198.0	16.8	214.8	3.3	23.7	238.5	239
Total	6,013.0	463.0	6,476.0	100.0	715.0	7,191.0	7,196

(1) This total includes a small residual component which is not shown.

Table 26: Estimates of Personal Income in 1953: Economic Regions of Quebec

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Region	Estimated Earned Income	Estimated Government Transfer Payments	(1)+(2)	(3) as % of Total	Estimated Rentier Income	(1) +(2) + (5)	Estimated Total Personal Income
	\$'000,000	\$'000,000	\$'000,000		\$'000,000	\$'000,000	\$'000,000
40	36.0	4.5	40.5	1.0	4.2	44.7	44
41	146.0	34.0	180.0	4.4	18.6	198.6	196
42	146.0	19.3	165.3	4.0	17.1	182.4	180
43	382.0	50.9	432.9	10.6	44.6	477.5	472
44	180.0	24.5	204.5	5.0	21.1	225.6	223
45	277.0	37.9	314.9	7.7	32.5	347.4	344
46	428.0	53.7	481.7	11.8	49.7	531.4	526
47	1,881.0	139.1	2,020.1	49.4	208.3	2,228.4	2,205
48	114.0	13.5	127.5	3.1	13.2	140.7	139
49	110.0	13.6	123.6	3.0	12.7	136.3	135
Total	3,700.0	391.0	4,091.0	100.0	422.0	4,513.0	4,464

Table 27: Estimates of Net Income Received by Farm Operators from Farm
Production in 1953: Economic Regions of Ontario

	(1)	(2)	(3)	(4)
Region	Net Farm Income 1950-51	Index of Change 1950-51 to 1953	(1) x (2)	Final Estimate of Net Farm Income, 1953
	\$'000,000	%	\$'000,000	\$'000,000
50	67.4	87.0	58.6	57.8
51	48.0	85.0	40.8	40.2
52	34.5	87.5	30.2	29.8
53	38.4	95.8	36.8	36.3
54	88.6	88.6	78.5	77.4
55	53.4	90.8	48.5	47.8
56	72.1	81.6	58.8	58.0
57	66.8	81.7	54.6	53.8
58	14.4	88.1	12.7	12.5
59	4.8	92.6	4.4	4.3
Total	488.4	-	423.9	417.9

Table 28: Estimates of Net Income Received by Farm Operators from Farm
Production in 1953: Economic Regions of Quebec

	(1)	(2)	(3)	(4)
Region	Net Farm Income 1950-51	Index of Change 1950-51 to 1953	(1) x (2)	Final Estimate of Net Farm Income, 1953
	\$'000,000	%	\$'000,000	\$'000,000
40	0.9	101.9	0.9	0.9
41	41.4	97.4	40.3	39.6
42	15.9	96.8	15.4	15.1
43	47.5	97.2	46.2	45.4
44	23.1	97.5	22.5	22.1
45	47.6	96.5	45.9	45.1
46	73.4	101.8	74.7	73.5
47	6.6	101.6	6.7	6.6
48	11.7	95.4	11.2	11.0
49	8.8	99.0	8.7	8.5
Total	276.9	-	272.5	267.8

Personal Disposable Income

We may go one step further and estimate the disposable component of personal income, i.e. personal income minus personal direct taxes. Estimates for economic regions of Ontario and Quebec are contained in Tables 29 and 30. These were calculated by distributing total personal direct taxes on the basis of personal income tax statistics. First, the national total was allocated to provinces, and then the regional allocation was derived. The use of income tax statistics in this way is considered to be justified because of the very large proportion which income tax forms of total personal direct taxes. This proportion was 86% in the 1950-51 base period and 91% in 1953 (excluding from the total the provincial hospital taxes of Saskatchewan and British Columbia).

Table 29: Estimates of Personal Disposable Income in 1953 and Twelve-
Month Period Prior to June 1, 1951: Economic Regions of
Ontario

Region	1950-51			1953		
	Est. Personal Income (Table 15)	Est. Personal Direct Taxes	Est. Personal Disposable Income	Est. Personal Income (Table 25)	Est. Personal Direct Taxes	Est. Personal Disposable Income
	\$'000,000	\$'000,000	\$'000,000	\$'000,000	\$'000,000	\$'000,000
50	635	34	601	793	58	735
51	271	11	260	324	18	306
52	1,929	187	1,742	2,627	308	2,319
53	745	54	691	962	95	867
54	388	21	367	455	34	421
55	468	29	439	586	47	539
56	350	18	332	408	30	378
57	247	8	239	277	13	264
58	410	22	388	525	40	485
59	185	10	175	239	18	221
Total	5,628	394	5,234	7,196	661	6,535

Table 30: Estimates of Personal Disposable Income in 1953 and Twelve-Month Period Prior to June 1, 1951: Economic Regions of Quebec

Region	1950-51			1953		
	Est. Personal Income (Table 16)	Est. Personal Direct Taxes	Est. Personal Disposable Income	Est. Personal Income (Table 26)	Est. Personal Direct Taxes	Est. Personal Disposable Income
	\$'000,000	\$'000,000	\$'000,000	\$'000,000	\$'000,000	\$'000,000
40	33	1	32	44	2	42
41	170	2	168	196	4	192
42	141	3	138	180	6	174
43	369	12	357	472	22	450
44	185	5	180	223	9	214
45	293	9	284	344	13	331
46	415	10	405	526	20	506
47	1,669	140	1,529	2,205	220	1,985
48	112	3	109	139	6	133
49	107	3	104	135	5	130
Total	3,494	188	3,306	4,464	307	4,157

SECTION VICONCLUDING REMARKS

One is tempted to apologize for the unintegrated appearance of the report, but on the other hand this probably reflects a lack of specificity in the terms of reference of the Pilot Study. The pertinent resolution of the Second Dominion-Provincial Conference on Economic Statistics described the purpose of the study as that of ascertaining "the uses of (regional) statistics and the feasibility of producing them on a continuing basis" and, as a secondary object dependent on the availability of resources, the description of the "methodological and conceptual problems involved". How far we have been able to meet these general aims is for the reader to decide. However, we should like to submit that if we are to make much further progress it appears necessary to formulate more specific questions, questions relating to actual working problems and requirements.

Let us turn to a consideration of some possible future developments. Firstly, it would be possible to rearrange the present alphabetical lists of census division statistics to show regional totals as well as component census division figures. However, this is a straight-forward task, and, given a certain amount of resources available for the development of regional statistics, it might be desirable to leave this simple addition of figures to consumers, and instead to undertake projects for which D.B.S. is obviously better equipped than other agencies, i.e. those relating to the development of new series. On the other hand it might be possible to include with each census division entry in a table an appropriate regional code number so that anyone wishing to make a regional grouping could easily do so. This was done by the U.S. Bureau of the Census in the "County and City Data Book, 1952", so that totals for State Economic Areas could readily be obtained (see Appendix R).

With regard to the personal income estimates, to which so much space has been devoted in this report, it would be a relatively easy matter to calculate them annually. Further study may indicate desirable improvements in methods, but much of the groundwork seems to be completed and once estimating methods have been established and bench-marks based on census data obtained the calculation of annual estimates is not a very time-consuming job.

Certain other projects which might be of interest have suggested themselves. One is a comparison of the D.D.P. economic regions with the type-of-farming classification of areas which has recently been completed by the Economics Division of the Department of Agriculture. Another is a study of interregional correlations between unemployment levels, using U.I.C. monthly unplaced applicants statistics and searching for time lags as well as directions in the transmission of unemployment. A third is a study of the usefulness of existing series for short-run forecasting of regional economic conditions. This might include studies of relationships between regional conditions and movements of series relating to (1) the region at an earlier time-period, (2) other regions, or (3) the province. A fourth possible project is an exhaustive inventory of D.B.S. questionnaires from which information could be sorted geographically to yield regional figures, with attention being given to questions of cost and usefulness. None of these projects has been commenced, nor, in fact, has a decision been made to undertake any of them. They are presented here merely as possible lines of future development which might be followed if resources permit and if there is sufficient interest.

APPENDIX AECONOMIC REGIONS OF ONTARIO, SHOWING
THE COMPONENT CENSUS DIVISIONS

<u>Regions</u>	<u>Census Divisions</u>
50. Eastern Ontario	Carleton Dundas Frontenac Glengarry Grenville Lanark Leeds Prescott Renfrew Russell Stormont
51. Lake Ontario	Durham Haliburton Hastings Lennox and Addington Northumberland Peterborough Prince Edward Victoria
52. Metropolitan	Halton Ontario Peel York
53. Niagara	Brant Haldimand Lincoln Welland Wentworth
54. Lake Erie	Elgin Middlesex Norfolk Oxford
55. Lake St. Clair	Essex Kent Lambton

RegionsCensus Divisions

56. Upper Grand River

Huron
Perth
Waterloo
Wellington

57. Georgian Bay

Bruce
Dufferin
Grey
Muskoka
Parry Sound
Simcoe

58. Northeastern Ontario

Algoma
Cochrane
Manitoulin
Nipissing
Sudbury
Timiskaming59. Lakehead - Northwestern
OntarioKenora
Rainy River
Thunder Bay

Note: The set of regions defined above differs in two respects from that described in the D.D.P. publication "Economic-Administrative Zoning of Canada": (1) Frontenac County has been shifted from region 51 to region 50; and (2) Brant County has been shifted from region 54 to region 53.

APPENDIX B

ECONOMIC REGIONS OF QUEBEC, SHOWING
THE COMPONENT CENSUS DIVISIONS
AND MUNICIPAL COUNTIES

<u>Regions</u>	<u>Census Divisions</u>	<u>Municipal Counties</u>
40. North Shore - New Quebec	Saguenay	Saguenay
41. Gaspesia - South Shore	Bonaventure Gaspé Kamouraska L'Islet Matane Montmagny Rimouski Témiscouata	Bonaventure Gaspé E. Gaspé W. Madeleine Islands Kamouraska L'Islet Matane Matapédia Montmagny Rimouski Rivière-du-Loup Témiscouata
42. Saguenay-Lake St. John	Chicoutimi Lake St. John	Chicoutimi Lake St. John E. Lake St. John W.
43. Quebec	Beauce Bellechasse Charlevoix Dorchester Lévis Lotbinière Montmorency Portneuf Québec	Beauce Bellechasse Charlevoix E. Charlevoix W. Dorchester Lévis Lotbinière Montmorency No. 1 Montmorency No. 2 Portneuf Québec
44. Three Rivers	Berthier Champlain Maskinongé Nicolet St. Maurice	Berthier Champlain Maskinongé Nicolet St. Maurice
45. Eastern Townships	Arthabaska Brome Compton Drummond Frontenac Mégantic Richmond Shefford Sherbrooke Stanstead Wolfe	Arthabaska Brome Compton Drummond Frontenac Mégantic Richmond Shefford Sherbrooke Stanstead Wolfe

RegionsCensus DivisionsMunicipal Counties

46. Montreal

Argenteuil
 Bagot
 Beauharnois
 Châteauguay
 Deux-Montagnes
 Huntingdon
 Iberville
 Joliette
 Labelle
 Laprairie
 L'Assomption
 Missisquoi
 Montcalm
 Napierville
 Richelieu
 Rouville
 St. Hyacinthe
 St. Jean
 Soulanges
 Terrebonne
 Vaudreuil
 Verchères
 Yamaska

Argenteuil
 Bagot
 Beauharnois
 Châteauguay
 Deux-Montagnes
 Huntingdon
 Iberville
 Joliette
 Labelle
 Laprairie
 L'Assomption
 Missisquoi
 Montcalm
 Napierville
 Richelieu
 Rouville
 St. Hyacinthe
 St. Jean
 Soulanges
 Terrebonne
 Vaudreuil
 Verchères
 Yamaska

47. Metropolitan Montreal

Montreal Island

Hochelaga
 Jacques Cartier
 Laval
 Chambly

Chambly

48. Hull-Western Laurentides

Hull

Gatineau
 Hull
 Papineau
 Pontiac

Papineau
 Pontiac

49. Abitibi-Témiscamingue

Abitibi
 Témiscamingue

Abitibi
 Témiscamingue

APPENDIX C

ECONOMIC REGIONS OF ONTARIO, SHOWING THE COMPONENT
URBAN CENTRES OVER 5,000 POPULATION
IN 1951

REGIONS	URBAN CENTRES	1951 POPULATION
50. Eastern Ontario.	Ottawa	202,045
	Kingston	33,459
	Cornwall	16,899
	Eastview	13,799
	Pembroke	12,704
	Brockville	12,301
	Smith's Falls	8,441
	Renfrew	7,360
	Hawkesbury	7,194
	Perth	5,034
	Remainder of Region	272,524
	TOTAL	<u>591,760</u>
51. Lake Ontario	Peterborough	38,272
	Belleville	19,519
	Trenton	10,085
	Lindsay	9,603
	Cobourg	7,470
	Port Hope	6,548
	Bowmanville	5,430
	Remainder of Region	174,657
	TOTAL	<u>271,584</u>
52. Metropolitan	Toronto (Metropolitan)	1,117,470
	Oshawa	41,545
	Brampton	8,389
	Whitby	7,267
	Oakville	6,910
	Burlington	6,017
	Newmarket	5,356
	Remainder of Region	170,432
	TOTAL	<u>1,363,386</u>

REGIONS	URBAN CENTRES	1951 POPULATION
53. Niagara	Hamilton (Metropolitan).....	253,668 (1)
	St. Catharines	37,984
	Brantford	36,727
	Niagara Falls	22,874
	Welland	15,382
	Port Colborne	8,275
	Fort Erie	7,572
	Thorold	6,397
	Paris.....	5,249
	Remainder of Region	181,549
	TOTAL	<u>575,677</u>
54. Lake Erie	London (Metropolitan).....	121,516
	St. Thomas	18,173
	Woodstock	15,544
	Simcoe	7,269
	Ingersoll	6,524
	Tillsonburg	5,330
	Remainder of Region	144,827
	TOTAL	<u>319,183</u>
55. Lake St. Clair	Windsor (Metropolitan).....	157,672
	Sarnia	34,697
	Chatham	21,218
	Wallaceburg.....	7,688
	Leamington	6,950
	Remainder of Region	143,013
	TOTAL	<u>371,238</u>
56. Upper Grand River	Kitchener	44,867
	Guelph	27,386
	Galt	19,207
	Stratford	18,785
	Waterloo	11,991
	Preston.....	7,619
	Remainder of Region.....	165,062
	TOTAL	<u>294,917</u>
57. Georgian Bay	Owen Sound	16,423
	Barrie	12,514
	Orillia	12,110
	Collingwood	7,413
	Midland	7,206
	Parry Sound	5,183
	Remainder of Region	212,554
	TOTAL	<u>273,403</u>

REGIONS	URBAN CENTRES	1951 POPULATION
58. Northeastern Ontario	Sudbury	42,410
	Sault Ste. Marie.....	32,452
	Timmins	27,743
	North Bay	17,944
	Remainder of Region	249,134
	TOTAL	<u>369,683</u>
59. Lakehead - Northwestern Ontario	Fort William	34,947
	Port Arthur.....	31,161
	Kenora	8,695
	Fort Frances.....	8,038
	Remainder of Region	83,870
	TOTAL	<u>166,711</u>

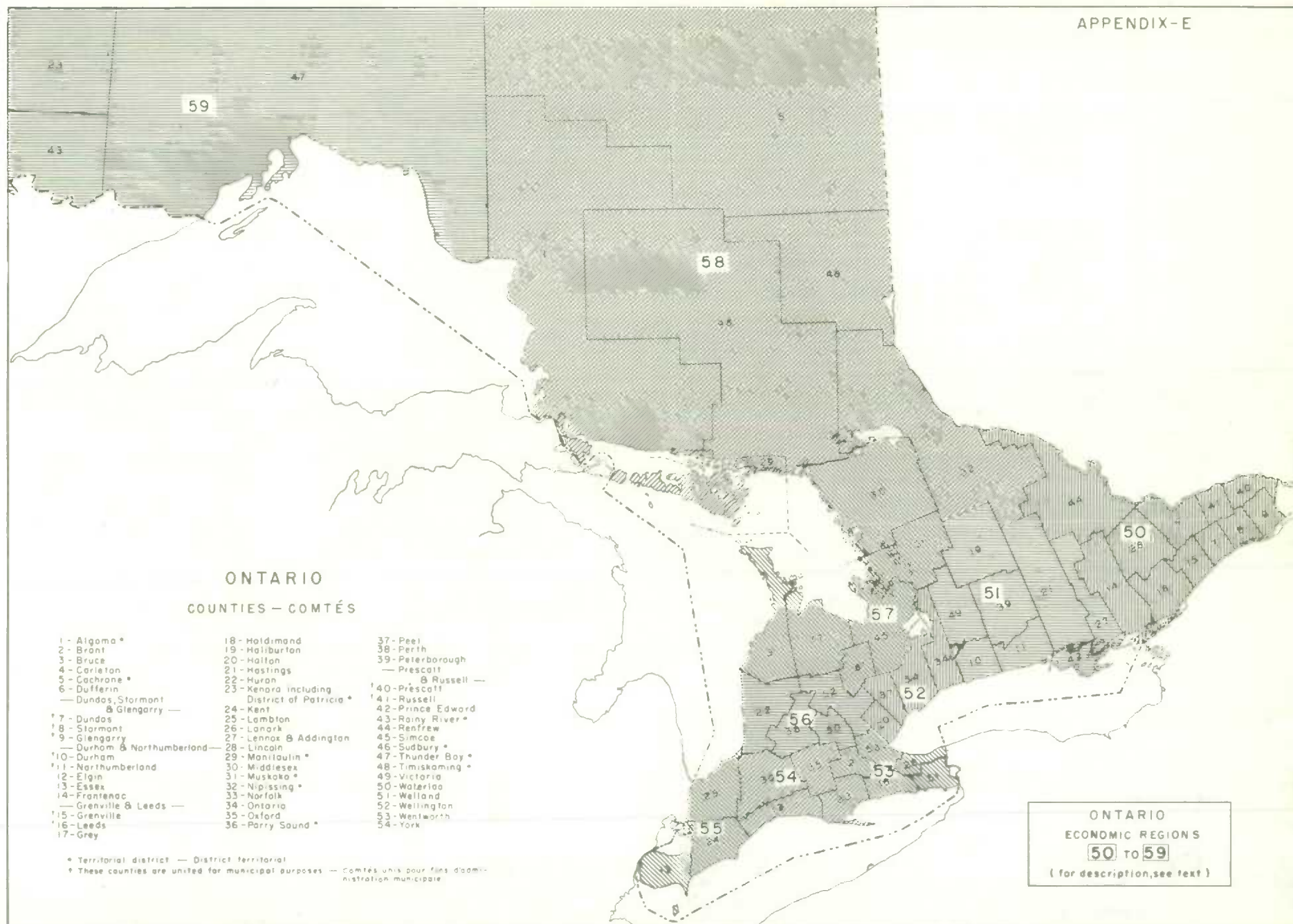
(1) Excluding the town of Burlington (6,017) which is in Region 52.

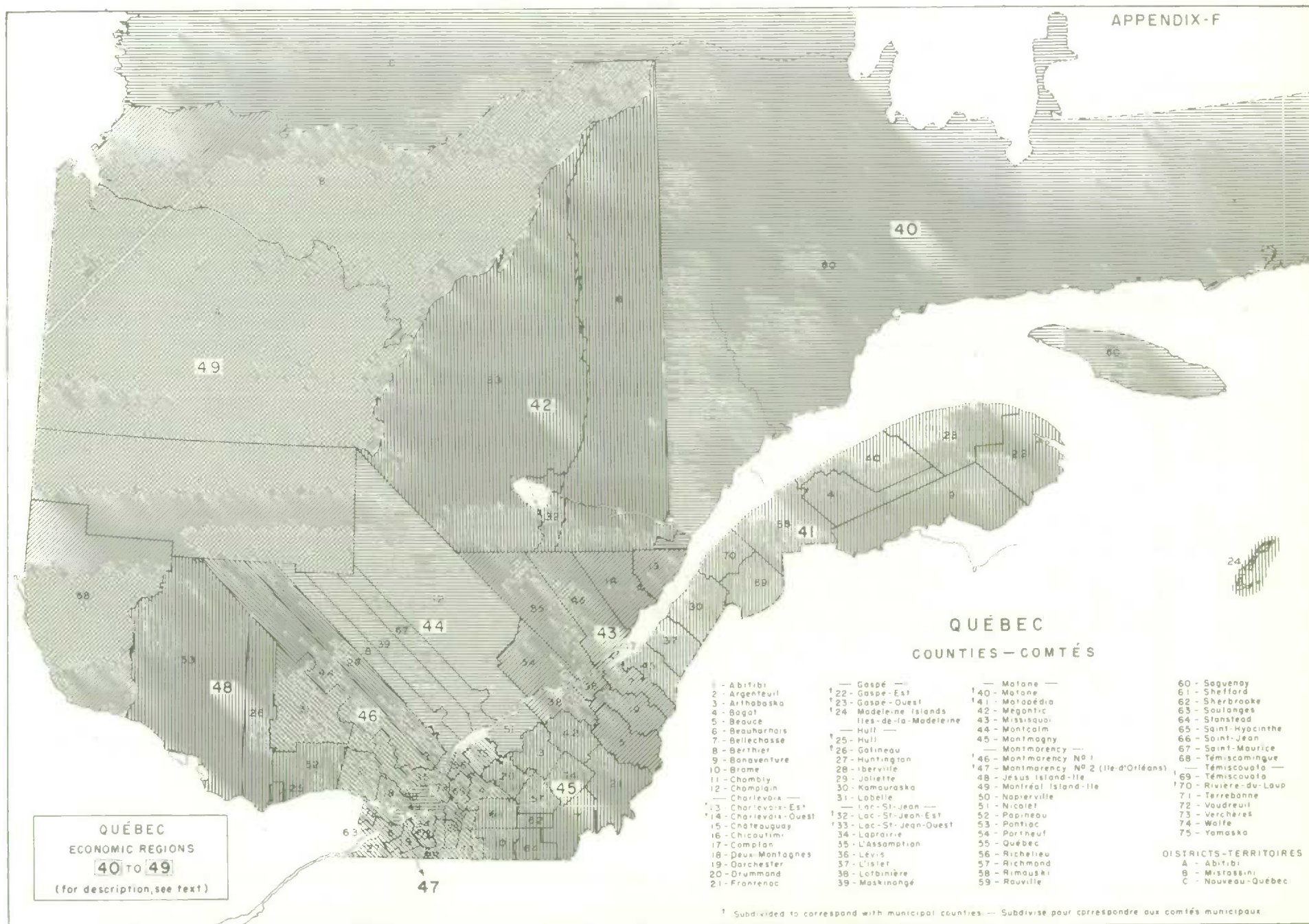
APPENDIX D

ECONOMIC REGIONS OF QUEBEC, SHOWING THE COMPONENT
URBAN CENTRES OVER 5,000 POPULATION
IN 1951

REGIONS	URBAN CENTRES	1951 POPULATION
40. North Shore - New Quebec	42,664
41. Gaspesia - South Shore	Rimouski	11,565
	Rivière-du-Loup	9,425
	Matane	6,345
	Montmagny	5,844
	Remainder of Region.....	327,606
	TOTAL	<u>360,785</u>
42. Saguenay-Lake St. John	Chicoutimi	23,216
	Jonquières	21,618
	Arvida	11,078
	Kenogami	9,895
	St. Joseph d'Alma.....	7,975
	Remainder of Region.....	124,128
	TOTAL	<u>197,910</u>
43. Quebec	Quebec (Metropolitan)	274,827
	Lévis	13,162
	Lauzon	9,643
	Remainder of Region	233,587
	TOTAL	<u>531,219</u>
44. Three Rivers	Three Rivers	46,074
	Shawinigan Falls	26,903
	Cap-de-la-Madeleine	18,667
	Grand'Mère	11,089
	La Tuque	9,538
	Shawinigan South	6,637
	Remainder of Region	135,222
	TOTAL	<u>254,130</u>
45. Eastern Townships	Sherbrooke	50,543
	Granby	21,989
	Thetford Mines	15,095
	Drummondville.....	14,341
	Victoriaville	13,124
	Magog.....	12,423
	Asbestos.....	8,190
	St. Joseph	6,576
	Coaticook	6,341
	Mégantic	6,164
	Flessisville.....	5,094
	Remainder of Region	236,595
	TOTAL	<u>396,475</u>

REGIONS	URBAN CENTRES	1951 POPULATION
46. Montreal	Valleyfield	22,414
	St. Hyacinthe.....	20,236
	St. Jean.....	19,305
	St. Jerome.....	17,685
	Joliette	16,064
	Sorel	14,961
	Ste. Thérèse	7,038
	Lachute	6,179
	Beauharnois	5,694
	Iberville	5,185
	Ste. Agathe-des-Monts.....	5,169
	Remainder of Region	412,445
	TOTAL	<u>552,375</u>
47. Metropolitan Montreal	Montreal (Metropolitan).....	1,395,400
	Remainder of Region.....	40,606
	TOTAL	<u>1,436,006</u>
48. Hull-Western Laurentides	Hull	43,483
	Buckingham	6,129
	Gatineau	5,771
	Remainder of Region	87,276
	TOTAL	<u>142,659</u>
49. Abitibi - Témiscamingue	Rouyn	14,633
	Noranda	9,672
	Val d'Or.....	8,685
	Malartic	5,983
	Remainder of Region	102,485
	TOTAL	<u>141,458</u>





APPENDIX G1951 CENSUS TABLES CONTAINING
CENSUS DIVISION INFORMATIONVolume 1 - Population: General Characteristics

- Table 2 - Area and density of population - 1931, 1941, 1951.
- Table 6 - Population - 1871- 1951.
- Table 7 - **Population** by sex - 1951.
- Table 14 - Population, rural and urban - 1951 and 1941.
- Table 15 - Population by sex; rural farm, rural non-farm, and urban by size groups - 1951.
- Table 16- Population by sex, showing in each case the ratio of males to females - 1871-1951.
- Table 22 - Population by five-year age groups and sex - 1951.
- Table 28 - Population by marital status and sex - 1951.
- Table 34 - Population by origin and sex - 1951.
- Table 40 - Population by religious denomination and sex - 1951.
- Table 47 - Population by birthplace and sex - 1951.
- Table 51 - Immigrant population by period of immigration and sex - 1951.
- Table 56 - Population by (a) official language and sex, and (b) mother tongue and sex - 1951.
- Table 60 - Population five years of age and over, attending school and not attending school, by years of schooling and **sex** - 1951.
- Table 64 - Population reporting service in World War I and World War II by (a) war of service, and (b) country of service - 1951.

Volume III - Part I - Housing

- Table 4 - Households by number of persons and average number of persons per household; rural farm, rural non-farm, and urban - 1951.
- Table 6 - Occupied dwellings by tenure; rural farm, rural non-farm, and urban - 1951.
- Table 9 - Occupied dwellings by tenure showing type of dwelling - 1951.
- Table 13 - Occupied dwellings by tenure showing number of rooms and average number of rooms per dwelling - 1951.
- Table 17 - Occupied dwellings by tenure showing principal exterior material and state of repair - 1951.

- Table 21 - Occupied dwellings by tenure showing principal heating equipment - 1951.
- Table 25 - Occupied dwellings by tenure showing principal heating fuel - 1951.
- Table 29 - Occupied dwellings by tenure showing supplementary heating equipment and fuel - 1951.
- Table 33 - Occupied dwellings by tenure showing water supply, bath and toilet facilities - 1951.
- Table 37 - Occupied dwellings by tenure showing lighting, cooking, and refrigeration facilities - 1951.
- Table 41 - Occupied dwellings by tenure showing specified living conveniences - 1951.
- Table 45 - Occupied dwellings by tenure showing household size - 1951.
- Table 49 - Occupied dwellings by tenure showing household composition - 1951.
- Table 53 - Occupied dwellings by tenure showing number of persons per room - 1951.
- Table 57 - Occupied dwellings by tenure showing first year of occupancy by present household head - 1951.
- Table 61 - Tenant - occupied non-farm dwellings by monthly rent - 1951.
- Table 65 - Tenant - occupied non-farm dwellings showing the number in which the rent includes (a) furniture and (b) heat - 1951.
- Table 69 - Owner - occupied non-farm dwellings showing the number with and without mortgages - 1951.

Volume III - Part II - Families

- Table 128 - Families by size, type, number of members in the labour force, and by earnings of wage-earner heads; rural farm, rural non-farm, and urban - 1951.
- Table 131 - Families by number and age of children 24 years of age and under at home, and children in families by age group and activity; rural farm, rural non-farm, and urban - 1951.

Volume IV - Labour Force: Occupations and Industries

- Table 10 - Labour force, 14 years of age and over, by occupation group and sex; rural and urban - 1951.
- Table 18 - Labor force, 14 years of age and over, by industry group and sex; rural and urban - 1951.

Volume V - Labour Force : Earnings and Employment of Wage-Earners

- Table 2 - Population, 14 years of age and over, by activity during the week ending June 2, 1951, and sex; rural farm, rural non-farm, and urban.
- Table 15 - Wage-earners, 14 years of age and over, by sex, showing the number of wage-earners by amount of earnings and weeks of employment during the 12 months prior to the census date, June 1, 1951; rural and urban.

Volume VI - Agriculture

- Table 15 - Population, age of farm operators, farm values, 1951; irrigation, new breaking, 1950; forest fires, 1941-1951; and farm indebtedness, 1951.
- Table 16 - Area and condition of farm land, farms classified by size of farm, tenure and area of improved land, 1951.
- Table 17 - Area and farms reporting field crops, 1951.
- Table 18 - Field crops - Grains, 1950.
- Table 19 - Field crops - Fodder crops, potatoes, roots, tobacco, other field crops and seeds, 1950.
- Table 20 - Vegetables, tree fruits, small fruits (cultivated), greenhouses, mushrooms and rhubarb houses and nurseries.
- Table 21 - Live stock on farms, 1951.
- Table 22 - Disposal of live stock from farms, 1950.
- Table 23 - Animal products of farms.
- Table 24 - Farm Machinery and electric power, 1951.
- Table 25 - Occupied farms classified by economic classifications and value of products sold in 1950.
- Table 26 - Work off the farm, 1950.
- Table 27 - Forest and maple products of farms.
- Table 28 - Gross farm revenues and farm expenditures, 1950.
- Table 29 - Farm population, farm operators, tenure, area and condition of occupied farm land, 1951.
- Table 30 - Farm values, size of farms and non-resident farms, 1951.
- Table 31 - Live stock on farms and area of field crops, 1951.

Volume VII - Distribution: Retail Trade

- Table 4 - Retail trade, 1951, by kinds of business, showing number of stores and volume of sales for each kind.
- Table 8 - Retail trade, 1951, showing population of census county or division, number of stores, volume of sales, inventories at December 31, 1951, number of paid employees, and payrolls.

Volume VIII - Distribution: Wholesale Trade and Services

- Table 5 - Wholesale trade, showing number of establishments, sales, employment, stocks and population - 1951.
- Table 23 - Services - 1951 (similar to retail trade information in Vol. VII, Table 8)
- Table 24 - Services, by major kind of business groups, and by selected kinds of business - 1951.

Volume IX - Fisheries

- Table 1 - Number and status of fishermen - 1951.

APPENDIX H

TABLES IN ANNUAL D.B.S. PUBLICATIONS
CONTAINING INFORMATION FOR COUNTIES OR CENSUS DIVISIONS

Vital Statistics

- Table 6 - General summary of vital statistics (by place of residence) - live births (male and female), stillbirths, total deaths, infant deaths, neo-natal deaths, and marriages.

The Manufacturing Industries of Canada, Section III: Geographical Distribution

- Tables 3 to 13 - Number of establishments; number of employees; payrolls; cost of fuel and electricity; cost of materials; gross value of factory shipments.

Fisheries Statistics of Canada

- Table 23 - Value of landings and of manufactured fishing products marketed, in the sea fisheries - for Quebec but not Ontario.
- Table 31 - Fishing bounties paid to vessels and boats - Quebec but not Ontario.

The Fertilizer Trade

- Tables 10 - 14 - Fertilizer materials and mixed fertilizers.

The Dairy Products Industries: Butter and Cheese Factories

- Table 16 - Number of establishments, number of employees, salaries and wages, amounts paid to patrons, value of supplies used, value of containers used, value of products (broken down by types of products).
- Table 17 - Number of establishments, amounts and values of materials delivered to factories, quantities and values of products (broken down by types of products).

The Motor Vehicle

- Table 4 - Motor vehicle registrations broken down by passenger cars and commercial vehicles.

APPENDIX I

PROPOSED 1956 CENSUS TABLES CONTAINING
CENSUS DIVISION INFORMATION

(This list is not final)

General Population:

- Area and density of population - 1956.
- Population: rural farm, rural non-farm, and urban - 1956 and 1951.
- Population by sex: rural farm, rural non-farm, and urban by size groups - 1956.
- Population by sex and ratio of males to females - 1956 and 1951.
- Population by five-year age groups and sex - 1956.
- Population by marital status and sex - 1956.

Households and Families:

- Households by number of persons and average number of persons per household: rural farm, rural non-farm, and urban - 1956.
- Households by number of families and number of lodgers per household: rural farm, rural non-farm, and urban - 1956.
- Families by number of persons and average number of persons per family: rural farm, rural non-farm, and urban - 1956.
- Children at home 24 years of age and under by age groups: rural farm, rural non-farm, and urban - 1956.
- Families by type: rural farm, rural non-farm, and urban - 1956.

Agriculture:

- Area and farms reporting field crops - 1956.
- Live stock on farms - June 1, 1956.
- Farms, area and condition of farm land, unimproved pasture, new breaking and grass silage - 1956.
- Population, farms classified by size, tenure and economic class of farm and operators not residing on farm operated - June 1, 1956.
- Farm machinery and electric power - June 1, 1956.
- Vegetables, tree fruits, small fruits, nurseries and greenhouses - 1956.
- Dairy products and eggs - May, 1956.
- Farm labour and part-time work.

APPENDIX J

SELECTED 1951 CENSUS STATISTICS FOR ECONOMIC REGIONS OF ONTARIO

Region			
	50	51	52
Population: Total	591,760	271,584	1,363,386
Rural	211,090	145,542	118,450
Farm	113,566	76,407	49,538
Non-Farm	97,524	69,135	68,912
Urban	380,670	126,042	1,244,936
Housing: Total Occupied Dwellings	144,780	74,470	338,660
Rural Occupied Dwellings	50,635	38,945	31,165
Urban Occupied Dwellings	94,145	35,525	307,495
Families: Total	139,614	68,406	365,370
Rural	47,211	35,660	29,744
Urban	92,403	32,746	335,626
Average Size	3.6	3.4	3.2
Labour Force: Total	229,339	99,703	621,483
By Industry: Agriculture	33,979	21,051	18,603
Forestry & Logging	1,098	1,002	316
Fishing & Trapping	110	186	36
Mining & Quarrying	467	365	872
Manufacturing	42,134	30,524	225,823
Electricity, Gas, Water	3,136	1,467	11,779
Construction	15,459	6,655	44,212
Transport. & Comm.	13,391	5,721	43,175
Trade	27,833	11,900	112,898
Finance	6,443	1,748	34,078
Service	82,708	18,202	123,556
By Sex: Male	172,718	80,525	444,174
Female	56,621	19,178	177,309
Number of Wage-earners	184,023	72,566	554,372
Agriculture: Number Occupied Farms	24,638	17,025	11,892
Occupied Farm Area ('000 Ac.)	4,192	2,865	1,306
Area Improved ('000 Ac.)	2,133	1,450	953
Area under Crops ('000 Ac.)	1,473	963	653
Number of Cattle on Farms	491,933	303,192	196,484
Number of Swine on Farms	194,061	193,364	154,267
Number of Sheep on Farms	56,040	53,524	36,501
Gross Revenue, 1950 (\$'000):			
Grains	1,770	2,079	2,609
Hay and Forage Crops	1,176	584	477
Potatoes, Roots, Other Field Crops	396	1,155	695
Vegetables	587	1,161	2,599
Tree Fruits	240	956	1,430
Small Fruits	120	168	532
Greenhouse Products	143	91	3,281
Nursery Products	39	175	1,000
Cattle	18,679	14,769	10,732
Dairy Products	27,724	12,696	12,967
Poultry and Eggs	5,525	5,086	5,772
Swine	7,179	8,873	7,478
Horses, Sheep, Wool	868	723	671
Honey and Beeswax	100	89	53
Forest Products	1,538	721	119
Maple Products	249	60	11
Fur-bearing Animals	108	118	263
Products Consumed on Farms	8,887	5,580	3,197
Retail Trade: 1951 Total Sales (\$'000,000)	475.0	211.5	1,426.2
Wholesale Trade: 1951 Total Sales (\$'000,000)	302.6	95.5	2,722.2

SELECTED 1951 CENSUS STATISTICS FOR ECONOMIC REGIONS OF ONTARIO

Region							
53	54	55	56	57	58	59	Province
575,677	319,183	371,238	294,917	273,403	369,683	166,711	4,597,542
125,947	126,501	112,540	117,354	168,076	154,164	66,779	1,346,443
60,986	77,421	72,707	74,147	85,727	49,178	18,366	678,043
64,961	49,080	39,833	43,207	82,349	104,986	48,413	668,400
449,730	192,682	258,698	177,563	105,327	215,519	99,932	3,251,099
153,295	87,645	100,315	78,975	74,070	86,110	42,805	1,181,125
32,920	33,100	29,950	29,900	43,805	34,435	16,015	340,870
120,375	54,545	70,365	49,075	30,265	51,675	26,790	840,255
150,689	80,994	94,656	74,976	66,610	82,377	39,080	1,162,772
31,689	30,716	27,864	27,934	39,072	30,852	13,370	314,112
119,000	50,278	66,792	47,042	27,538	51,525	25,710	848,660
3.3	3.3	3.5	3.4	3.5	3.9	3.6	3.4
240,427	128,126	145,728	121,900	99,141	134,968	64,126	1,884,941
16,157	27,186	20,761	24,021	27,363	9,254	3,107	201,482
86	190	49	65	969	9,899	9,356	23,030
167	264	436	38	196	410	416	2,259
747	182	230	98	136	24,546	3,010	30,653
116,562	32,360	59,030	47,248	19,462	29,424	12,791	615,358
4,248	1,829	2,230	1,089	1,738	2,270	918	30,704
15,830	8,434	9,225	6,951	7,165	8,946	4,617	127,494
12,330	8,991	8,943	5,339	6,864	12,445	10,222	127,421
30,487	18,308	18,930	14,308	11,227	14,112	7,264	267,267
4,932	4,234	2,958	3,191	1,508	1,790	846	61,728
36,854	25,207	21,534	18,806	21,251	20,202	10,809	379,129
183,205	97,629	117,016	93,296	82,434	114,668	54,301	1,439,966
57,222	30,497	28,712	28,604	16,707	20,300	9,825	444,975
210,433	97,766	116,959	91,663	64,402	116,202	56,340	1,564,726
13,039	16,971	15,275	17,230	20,952	9,113	3,785	149,920
1,068	1,957	1,543	2,197	3,339	1,704	708	20,880
855	1,470	1,307	1,777	1,956	597	194	12,693
605	967	958	1,187	1,280	424	135	8,645
121,144	274,103	152,484	391,599	414,628	97,215	23,093	2,465,875
89,768	190,453	150,566	416,419	332,289	30,729	3,574	1,755,490
16,077	27,623	22,873	32,085	78,093	30,252	7,133	360,201
1,986	5,025	19,229	4,292	3,673	359	205	41,227
877	659	498	759	891	805	296	7,022
3,384	41,870	7,096	802	1,833	341	100	57,669
1,375	780	4,566	157	826	72	28	12,150
6,663	1,092	959	118	487	6	2	11,951
3,593	746	254	54	171	46	20	5,703
707	323	903	226	84	4	2	5,779
726	289	67	99	14	-	10	2,434
6,490	16,395	10,598	26,856	23,321	3,766	673	132,277
9,748	15,973	5,839	14,241	10,972	4,558	1,447	116,165
4,898	6,273	5,814	10,317	5,586	1,107	409	50,790
4,222	8,706	6,670	21,459	15,141	933	107	80,769
363	492	343	626	1,180	387	80	5,731
34	49	21	52	79	9	3	488
66	177	77	236	954	861	935	5,683
16	47	16	69	87	11	-	568
169	120	82	446	288	76	184	1,867
3,274	5,497	4,319	6,329	8,077	3,113	1,229	49,502
525.9	279.9	323.7	254.8	208.1	279.4	131.9	4,116.4
373.0	193.4	241.5	111.7	65.0	174.4	102.5	4,381.8

APPENDIX KSELECTED 1951 CENSUS STATISTICS FOR ECONOMIC REGIONS OF QUEBEC

Region		40	41	42
Population: Total		42,664	360,785	197,910
Rural		34,483	289,274	80,652
Farm		3,993	175,602	46,179
Non-Farm		30,490	113,672	34,473
Urban		8,181	71,511	117,258
Housing: Total Occupied Dwellings		6,875	62,305	31,670
Rural Occupied Dwellings		5,610	48,920	11,663
Urban Occupied Dwellings		1,265	13,385	20,005
Families: Total		7,425	64,546	33,870
Rural		5,833	50,850	12,643
Urban		1,592	13,696	21,227
Average Size		5.0	5.2	5.5
Labour Force: Total		14,641	106,287	58,156
By Industry: Agriculture		776	35,565	10,089
Forestry & Logging		4,296	12,497	6,589
Fishing & Trapping		1,784	2,573	17
Mining & Quarrying		917	412	65
Manufacturing		1,802	15,620	15,713
Electricity, Gas, Water		39	510	521
Construction		1,562	5,343	5,241
Transport. & Comm.		685	5,987	3,277
Trade		699	7,926	5,620
Finance		52	758	620
Service		1,866	16,188	9,386
By Sex: Male		13,160	89,996	49,209
Female		1,481	16,291	8,947
Number of Wage-earners		11,622	60,601	44,328
Agriculture: Number Occupied Farms		536	27,593	6,212
Occupied Farm Area ('000 Ac.)		73	3,003	918
Area Improved ('000 Ac.)		27	1,214	463
Area under Crops ('000 Ac.)		14	809	299
Number of Cattle on Farms		3,355	206,862	87,165
Number of Swine on Farms		1,827	143,802	66,975
Number of Sheep on Farms		1,608	108,082	31,002
Gross Revenue, 1950 (\$'000):				
Grains		3	687	559
Hay and Forage Crops		15	1,191	975
Potatoes, Roots, Other Field Crops		22	872	244
Vegetables		7	132	61
Tree Fruits		-	98	-
Small Fruits		-	28	2
Greenhouse Products		-	-	3
Nursery Products		-	1	-
Cattle		82	4,175	1,855
Dairy Products		131	7,559	4,362
Poultry and Eggs		47	1,374	900
Swine		55	4,735	2,765
Horses, Sheep, Wool		15	973	342
Honey and Beeswax		-	7	6
Forest Products		207	5,103	1,167
Maple Products		-	315	-
Fur-bearing Animals		-	16	123
Products Consumed on Farms		278	12,036	3,334
Retail Trade: 1951 Total Sales (\$'000,000)		16.6	116.3	89.2
Wholesale Trade: 1951 Total Sales (\$'000,000)		3.5	47.2	52.2

SELECTED 1951 CENSUS STATISTICS FOR ECONOMIC REGIONS OF QUEBEC

Region							Province
43	44	45	46	47	48	49	
531,219	254,130	396,475	552,375	1,436,006	142,659	141,458	4,055,681
200,995	109,653	176,116	302,339	24,699	61,012	79,140	1,358,363
117,176	58,352	114,486	158,514	7,446	31,114	54,048	766,910
83,819	51,301	61,630	143,825	17,253	29,898	25,092	591,453
330,224	144,477	220,359	250,036	1,411,307	81,647	62,318	2,697,318
102,230	50,735	83,805	120,170	343,425	30,305	27,265	858,785
36,260	21,155	34,800	64,725	4,995	12,840	14,415	255,385
65,970	29,580	49,005	55,445	338,430	17,465	12,850	603,400
100,873	50,825	81,105	116,689	343,563	30,774	26,371	856,041
35,940	21,129	33,459	62,046	4,948	12,537	13,560	252,945
64,933	29,696	47,646	54,643	338,615	18,237	12,811	603,096
4.7	4.6	4.4	4.3	3.6	4.3	4.9	4.2
182,939	85,853	134,702	191,264	603,169	48,833	45,996	1,471,840
33,774	15,111	30,890	44,474	5,095	8,177	10,832	194,783
6,915	3,222	2,315	2,270	196	3,137	3,683	45,120
64	61	17	119	26	24	487	5,172
1,065	151	5,603	1,112	787	678	9,109	19,899
38,702	29,951	46,922	62,526	225,401	11,605	4,831	453,073
1,548	1,455	960	2,002	4,625	548	409	12,617
12,388	6,780	7,409	15,107	41,810	4,008	3,055	102,703
12,057	4,677	5,388	9,654	61,101	2,032	2,144	107,002
21,901	8,060	12,036	15,738	92,664	4,813	3,613	173,070
3,707	1,020	1,767	2,564	27,300	629	503	38,920
46,801	14,345	19,184	32,160	133,695	11,697	6,517	291,839
139,092	67,546	105,854	153,086	432,000	40,194	40,057	1,130,194
43,847	18,307	28,848	38,178	171,169	8,639	5,939	341,646
135,131	64,186	94,750	133,569	548,341	38,042	31,013	1,161,583
20,824	10,221	21,149	29,992	2,044	6,043	9,722	134,336
2,514	1,162	3,211	3,449	153	1,094	1,208	16,786
1,277	719	1,721	2,358	129	477	445	8,829
777	477	1,017	1,695	97	298	305	5,790
265,856	125,866	381,678	397,542	14,495	89,052	68,969	1,640,840
223,276	105,310	207,927	276,242	10,093	45,788	27,066	1,108,306
73,291	20,712	39,579	16,368	538	12,315	12,923	316,418
544	860	728	3,553	270	245	127	7,574
1,307	1,264	1,551	3,756	261	288	681	11,287
727	1,145	396	4,257	373	199	35	8,272
384	266	124	2,097	1,860	66	15	5,008
217	24	141	1,886	85	4	-	2,457
323	70	68	696	23	15	3	1,233
10	1	42	40	370	11	-	1,136
6	-	1	32	165	2	-	251
6,119	3,050	9,176	11,371	845	2,729	1,460	40,865
12,430	7,224	18,727	28,245	1,668	3,145	2,507	85,985
3,827	1,683	2,601	6,881	440	531	338	18,622
9,402	4,426	8,939	10,789	387	1,390	796	43,683
779	326	522	727	28	175	157	4,041
11	30	16	193	8	7	5	286
3,792	931	2,781	2,124	2,110	1,193	1,438	18,748
1,420	109	2,198	954	8	48	-	5,050
199	28	220	149	78	10	5	847
9,826	4,552	8,835	12,370	890	2,571	3,259	57,951
264.3	123.8	192.6	268.7	1,227.6	62.4	75.5	2,436.9
356.1	51.4	96.1	77.2	3,296.8	9.2	43.8	4,033.5

APPENDIX LSTATISTICS AVAILABLE FOR NON-CENSUS YEARS: ONTARIO, 1953

	Region		
	50	51	52
Population: Estimated Total	621,000	282,090	1,487,280
Vital Statistics: Births (Place of Residence)	16,580	7,393	36,601
Deaths (Place of Residence)	5,967	2,773	13,575
Marriages	5,496	2,097	15,919
U.I.C.: (1) Unplaced Applicants	5,344	2,546	15,979
Unfilled Vacancies	2,228	351	7,133
Manufacturing: Number of Establishments	1,287	823	5,189
Number of Employees	39,824	26,156	253,986
Payrolls (\$'000)	109,253	74,268	821,853
Cost of Fuel and Electricity (\$'000)	12,057	6,933	37,516
Cost of Materials (\$'000)	234,837	147,869	1,741,697
Gross Value of Shipments (\$'000)	461,765	301,713	3,401,153
Agriculture: Movement off Farms of -			
Sheep and Lambs (Live and Carcasses)	22,159	21,879	25,261
Cattle	75,294	54,409	59,699
Calves	96,205	38,968	31,133
Hog Carcasses Graded	142,177	179,467	205,455
Motor Vehicles: Total Registrations (2)	158,784	83,746	435,079
Passenger Vehicle Registrations	131,379	67,046	356,210
Commercial Vehicle Registrations	27,405	16,700	78,869
Taxation Statistics: Number Personal Taxpayers			
(Federal Income Tax)	144,860	54,990	598,920
Income of Taxpayers (\$'000)	476,078	173,498	2,125,920
Total Tax (\$'000)	46,913	14,785	250,431

(1) Unemployment Insurance Commission; figures relate to end of May, 1953.

(2) Excluding non-resident vehicles, dual purpose vehicles, and motorcycles.

STATISTICS AVAILABLE FOR NON-CENSUS YEARS: ONTARIO, 1953

Region							
53	54	55	56	57	58	59	Province
625,240	331,160	391,870	310,340	278,090	392,730	177,200	4,897,000
16,942	8,272	10,904	8,028	6,991	12,944	5,116	129,771
5,396	3,434	3,555	3,077	3,004	3,053	1,408	45,242
6,100	2,912	3,572	2,742	2,143	3,593	1,380	45,954
8,715	2,654	4,135	1,831	2,557	5,535	2,441	51,737
1,325	1,554	492	882	994	1,056	592	16,607
1,416	778	794	1,053	787	621	366	13,114
120,243	31,976	58,873	46,638	16,053	28,137	12,668	634,554
399,834	90,384	210,363	129,818	39,605	98,778	43,828	2,017,982
48,830	5,538	28,022	8,315	2,239	27,361	9,434	186,244
853,334	240,318	674,441	250,552	73,878	232,343	110,867	4,560,135
1,711,444	433,681	1,143,231	512,797	142,766	538,864	229,091	8,876,505
7,334	10,927	8,760	17,815	39,352	12,014	3,044	167,915
19,806	60,562	42,464	149,340	122,444	8,788	2,188	594,994
15,836	27,566	3,802	16,564	14,037	3,487	411	248,009
87,502	194,642	129,054	534,729	364,862	5,028	291	1,843,207
179,130	104,134	116,535	99,630	82,632	80,567	36,579	1,376,816
148,943	84,290	94,380	83,286	65,430	58,430	26,432	1,115,826
30,187	19,844	22,155	16,344	17,202	22,137	10,147	260,990
214,930	82,940	110,460	80,570	41,940	95,310	49,040	1,473,960
746,951	273,692	389,614	254,420	126,162	334,766	163,653	5,064,754
76,572	27,312	37,697	24,215	10,687	31,988	14,516	535,116

(1) Unemployment Insurance Commission; figures relate to end of May, 1953.

(2) Excluding non-resident vehicles, dual purpose vehicles, and motorcycles.

APPENDIX MSTATISTICS AVAILABLE FOR NON-CENSUS YEARS: QUEBEC, 1953

Region			
	40	41	42
Population: Estimated Total	49,640	370,990	211,080
Vital Statistics: Births (Place of Residence)	1,956	13,204	8,493
Deaths (Place of Residence)	369	2,701	1,338
Marriages	338	2,573	1,648
U.I.C.: ⁽¹⁾ Unplaced Applicants	1,043	9,381	5,424
Unfilled Vacancies	33	974	496
Manufacturing: Number of Establishments	62	1,010	421
Number of Employees	1,219	9,202	14,161
Payrolls (\$'000)	4,984	17,114	50,063
Cost of Fuel and Electricity (\$'000)	1,100	1,819	30,396
Cost of Materials (\$'000)	16,467	46,384	139,106
Gross Value of Shipments (\$'000)	30,125	79,800	328,973
Agriculture: Movement off Farms of -			
Sheep and Lambs (Live and Carcasses)	166	47,319	12,802
Cattle	1	3,023	1,734
Calves	-	36,519	8,741
Hog Carcasses Graded	-	64,495	35,865
Motor Vehicles: Total Registrations	2,764	37,420	18,265
Passenger Vehicle Registrations ⁽²⁾	1,660	23,886	11,671
Trucks and Other Registrations	1,104	13,534	6,594
Taxation Statistics: Number Personal Taxpayers			
(Federal Income Tax)	5,430	16,900	22,370
Income of Taxpayers (\$'000)	18,184	48,683	75,504
Total Tax (\$'000)	1,456	3,236	4,734

(1) Unemployment Insurance Commission; figures relate to end of May, 1953.

(2) Includes buses, motorcycles, taxis, private cars, ambulances, and hearses.

STATISTICS AVAILABLE FOR NON-CENSUS YEARS: QUEBEC, 1953

Region							Province
43	44	45	46	47	48	49	
555,260	267,950	413,420	586,300	1,517,580	147,910	148,870	4,269,000
15,819	7,861	13,146	17,215	40,356	4,875	5,794	128,719
4,456	1,947	3,253	4,722	13,366	1,366	951	34,469
4,672	2,227	3,082	4,314	14,870	1,242	1,002	35,968
10,883	5,592	6,590	8,599	23,013	2,503	2,980	76,008
1,538	314	798	1,708	7,670	102	171	13,804
1,460	742	1,135	1,683	5,065	280	274	12,132
34,774	24,679	40,129	52,202	252,316	9,287	3,586	441,555
83,044	66,880	94,823	130,338	739,821	29,225	9,282	1,225,573
12,313	20,715	8,786	16,057	42,858	8,630	3,092	145,764
185,841	172,798	207,791	266,220	1,657,572	66,131	58,064	2,816,373
364,089	368,685	394,679	503,077	3,093,642	140,312	83,403	5,386,785
32,073	9,929	19,291	11,190	1,165	4,290	5,893	144,118
8,023	2,424	19,654	35,774	7,378	6,790	2,151	86,952
29,490	14,410	63,478	94,593	6,152	8,709	5,048	267,140
145,843	90,510	173,549	246,442	22,820	26,154	4,388	810,066
76,595	31,465	68,872	109,966	227,365	25,507	16,509	614,728
57,135	23,011	53,033	78,777	179,411	18,567	11,020	458,171
19,460	8,454	15,839	31,189	47,954	6,940	5,489	156,557
68,180	30,900	49,880	70,760	472,580	22,220	16,340	775,560
217,312	100,079	149,436	216,728	1,673,690	65,982	51,891	2,617,489
17,549	6,961	10,358	16,274	179,443	4,834	3,959	248,804

(1) Unemployment Insurance Commission; figures relate to end of May, 1953.

(2) Includes buses, motorcycles, taxis, private cars, ambulances, and hearses.

APPENDIX N

PERCENTAGE DISTRIBUTION OF LABOUR FORCE BY INDUSTRY WITHIN REGIONS
ONTARIO, 1951

	Region										Province
	50	51	52	53	54	55	56	57	58	59	
	%	%	%	%	%	%	%	%	%	%	%
Agriculture	14.8	21.1	3.0	6.7	21.2	14.2	19.7	27.6	6.9	4.8	10.7
Forestry and Logging	0.5	1.0	0.1	-	0.1	-	0.1	1.0	7.3	14.6	1.2
Fishing and Trapping	-	0.2	-	0.1	0.2	0.3	-	0.2	0.3	0.6	0.1
Mining and Quarrying	0.2	0.4	0.1	0.3	0.1	0.2	0.1	0.1	18.2	4.7	1.6
Manufacturing	18.4	30.6	36.3	48.5	25.3	40.5	38.8	19.6	21.8	19.9	32.6
Electricity, Gas, and Water	1.4	1.5	1.9	1.8	1.4	1.5	0.9	1.8	1.7	1.4	1.6
Construction	6.7	6.7	7.1	6.6	6.6	6.3	5.7	7.2	6.6	7.2	6.8
Transportation and Communication	5.8	5.7	6.9	5.1	7.0	6.1	4.4	6.9	9.2	15.9	6.8
Trade	12.1	11.9	18.2	12.7	14.3	13.0	11.7	11.3	10.5	11.3	14.2
Finance	2.8	1.8	5.5	2.1	3.3	2.0	2.6	1.5	1.3	1.3	3.3
Service	36.1	18.3	19.9	15.3	19.7	14.8	15.4	21.4	15.0	16.9	20.1
Unspecified	1.1	0.9	1.0	0.8	0.7	1.0	0.6	1.3	1.2	1.2	1.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Figures may not add to 100.0% because of rounding.

APPENDIX O

PERCENTAGE DISTRIBUTION OF LABOUR FORCE BY INDUSTRY WITHIN REGIONS
QUEBEC, 1951

	Region										Province
	40	41	42	43	44	45	46	47	48	49	
	%	%	%	%	%	%	%	%	%	%	%
Agriculture	5.3	33.5	17.3	18.5	17.6	22.9	23.3	0.8	16.7	23.5	13.2
Forestry and Logging	29.3	11.8	11.3	3.8	3.8	1.7	1.2	-	6.4	8.0	3.1
Fishing and Trapping	12.2	2.4	-	-	0.1	-	0.1	-	-	1.1	0.4
Mining and Quarrying	6.3	0.4	0.1	0.6	0.2	4.2	0.6	0.1	1.4	19.8	1.4
Manufacturing	12.3	14.7	27.0	21.2	34.9	34.8	32.7	37.4	23.8	10.5	30.8
Electricity, Gas, and Water	0.3	0.5	0.9	0.8	1.7	0.7	1.0	0.8	1.1	0.9	0.9
Construction	10.7	5.0	9.0	6.8	7.9	5.5	7.9	6.9	8.2	6.6	7.0
Transportation and Communication	4.7	5.6	5.6	6.6	5.4	4.0	5.0	10.1	4.2	4.7	7.3
Trade	4.8	7.5	9.7	12.0	9.4	8.9	8.2	15.4	9.9	7.9	11.8
Finance	0.4	0.7	1.1	2.0	1.2	1.3	1.3	4.5	1.3	1.1	2.6
Service	12.7	15.2	16.1	25.6	16.7	14.2	16.8	22.2	24.0	14.2	19.8
Unspecified	1.1	2.7	1.8	2.2	1.2	1.6	1.8	1.7	3.0	1.8	1.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Figures may not add to 100.0% because of rounding.

APPENDIX F

PERCENTAGE DISTRIBUTION OF LABOUR FORCE BY REGION WITHIN INDUSTRIES
ONTARIO, 1951

	Region										Province
	50	51	52	53	54	55	56	57	58	59	
	%	%	%	%	%	%	%	%	%	%	%
Agriculture	16.9	10.4	9.2	8.0	13.5	10.3	11.9	13.6	4.6	1.5	100.0
Forestry and Logging	4.8	4.4	1.4	0.4	0.8	0.2	0.3	4.2	43.0	40.6	100.0
Fishing and Trapping	4.9	8.2	1.6	7.4	11.7	19.3	1.7	8.7	18.1	18.4	100.0
Mining and Quarrying	1.5	1.2	2.8	2.4	0.6	0.8	0.3	0.4	80.1	9.8	100.0
Manufacturing	6.8	5.0	36.7	18.9	5.3	9.6	7.7	3.2	4.8	2.1	100.0
Electricity, Gas, and Water	10.2	4.8	38.4	13.8	6.0	7.3	3.5	5.7	7.4	3.0	100.0
Construction	12.1	5.2	34.7	12.4	6.6	7.2	5.5	5.6	7.0	3.6	100.0
Transportation and Communication	10.5	4.5	33.9	9.7	7.1	7.0	4.2	5.4	9.8	8.0	100.0
Trade	10.4	4.5	42.2	11.4	6.9	7.1	5.4	4.2	5.3	2.7	100.0
Finance	10.4	2.8	55.2	8.0	6.9	4.8	5.2	2.4	2.9	1.4	100.0
Service	21.8	4.8	32.6	9.7	6.6	5.7	5.0	5.6	5.3	2.9	100.0
Total	12.2	5.3	33.0	12.8	6.8	7.7	6.5	5.3	7.2	3.4	100.0

Note: Figures may not add to 100.0% because of rounding.

APPENDIX Q

PERCENTAGE DISTRIBUTION OF LABOUR FORCE BY REGION WITHIN INDUSTRIES
QUEBEC, 1951

	Region										Province
	40	41	42	43	44	45	46	47	48	49	
	%	%	%	%	%	%	%	%	%	%	%
Agriculture	0.4	18.3	5.2	17.3	7.8	15.9	22.8	2.6	4.2	5.6	100.0
Forestry and Logging	9.5	27.7	14.6	15.3	7.1	5.1	5.0	0.4	7.0	8.2	100.0
Fishing and Trapping	34.5	49.7	0.3	1.2	1.2	0.3	2.3	0.5	0.5	9.4	100.0
Mining and Quarrying	4.6	2.1	0.3	5.4	0.8	28.2	5.6	4.0	3.4	45.8	100.0
Manufacturing	0.4	3.4	3.5	8.5	6.6	10.4	13.8	49.7	2.6	1.1	100.0
Electricity, Gas, and Water	0.3	4.0	4.1	12.3	11.5	7.6	15.9	36.7	4.3	3.2	100.0
Construction	1.5	5.2	5.1	12.1	6.6	7.2	14.7	40.7	3.9	3.0	100.0
Transportation and Communication	0.6	5.6	3.1	11.3	4.4	5.0	9.0	57.1	1.9	2.0	100.0
Trade	0.4	4.6	3.2	12.7	4.7	7.0	9.1	53.5	2.8	2.1	100.0
Finance	0.1	1.9	1.6	9.5	2.6	4.5	6.6	70.1	1.6	1.3	100.0
Service	0.6	5.5	3.2	16.0	4.9	6.6	11.0	45.8	4.0	2.2	100.0
Total	1.0	7.2	4.0	12.4	5.8	9.2	13.0	41.0	3.3	3.1	100.0

Note: Figures may not add to 100.0% because of rounding.

APPENDIX BA NOTE ON THE U.S. STATE ECONOMIC AREAS

The system of State Economic Areas used by the U.S. Bureau of the Census was developed for use in presenting the results of the 1950 Census of Population, and the 1950 Census of Agriculture. The State Economic Areas are really conceived by their author, Donald J. Bogue, as the final stage of geographic division in a hierarchy of economic areas.(1) However, it is with this particular set of regions which we are presently concerned.

State economic areas are relatively homogeneous subdivisions of States. They consist of single counties or groups of counties which have similar economic and social characteristics. The boundaries of these areas have been drawn in such a way that each State is subdivided into a few parts, with each part having certain significant characteristics which distinguish it from the other areas which it adjoins. The 48 States have been subdivided into 501 State economic areas.(2)

The only State Economic Area compilations of which we are aware are those of total population from the 1950 Census of Population, and the following from the 1950 Census of Agriculture:

Farms, farm operators, and farm woodland.
 Farm labour.
 Farms reporting specified number of livestock on hand and butchered.
 Farms reporting specified acres and quantities sold for principal crops.
 Farms and farm characteristics, by size of farm.
 Farms and farm characteristics, by tenure of operator.
 Farms and farm characteristics, by type of farm.
 Farms and farm characteristics, by economic class.
 Farms classified by tenure of operator, by type of farm, and by economic class;
 value of products sold by source, livestock and specified crops, by
 size of farm.
 Farms classified by size of farm, by type of farm, and by economic class; value
 of products sold by source, livestock and specified crops, by tenure
 of operator.
 Farms classified by size of farm, by tenure of operator, and by economic class;
 value of products sold by source; livestock and specified crops, by
 type of farm.
 Farms classified by size of farm, by tenure of operator, and by type of farm;
 value of products sold by source, livestock and specified crops, by
 economic class.

(1) See Bogue, "An Outline of the Complete System of Economic Areas",
American Journal of Sociology, September, 1954, pp. 136 - 139.

(2) U.S. Bureau of the Census, "State Economic Areas: A Description of the
 Procedure Used in Making a Functional Grouping of the Counties of the
 United States", Washington, 1951, p. 1.

However, State Economic Areas, like the Canadian D.D.P. Economic Regions, are composed of whole counties, and therefore State Economic Area series can easily be derived from county series by addition. In its "County and City Data Book, 1952", the U.S. Bureau of the Census presents a large number of county series, as indicated in the table below. The counties are not grouped into State Economic Areas, but to each county is attached a code number which would permit a user to make such a grouping. It will be noted that in the following table most of the information is obtained from census sources.

Statistics Included in "County and City Data Book,
1952", U.S. Bureau of the Census

Series	Source
<u>Population -</u>	
U.S. rank in population	Census of Pop. (1950)
Total, 1950	" " " "
Increase, 1940-50	" " " "
Number non-white	" " " "
Population density	" " " "
Urban population	" " " "
Rural non-farm population	" " " "
Rural farm population	" " " "
Age distribution	" " " "
Persons immigrating in 1950 from abroad	" " " "
<u>Vital Statistics -</u>	
Live births	Vital Statistics (annual)
Deaths	" " "
Infant deaths	" " "
Marriages	" " "
<u>Families -</u>	
Number	Census of Pop. (1950)
Distribution of income by size	" " " "
<u>Education -</u>	
School enrollment	Census of Pop. (1950)
Population, by years of school	" " " "
<u>Labour Force -</u>	
Total	Census of Pop. (1950)
Civilian labour force	" " " "
Sex distribution	" " " "
Total employed	" " " "
Labour force, by industry groups	" " " "

<u>Series</u>	<u>Source</u>
<u>Housing -</u>	
Total dwelling units	Census of Housing (1950)
Rooms per unit	" " " "
Type of structure	" " " "
Occupied dwelling units	" " " "
Persons per unit	" " " "
Type of occupation	" " " "
Household facilities	" " " "
Non-farm dwelling units	" " " "
Value	" " " "
Rent of renter-occupied units	" " " "
<u>Retail Trade -</u>	
Number of stores	Census of Business (1948)
Sales for year	" " " "
Active proprietors of unincorporated businesses	" " " "
Number of paid employees	" " " "
Food group - number of stores	" " " "
- sales for year	" " " "
Eating and drinking places	" " " "
- number of stores	" " " "
- sales for year	" " " "
<u>Wholesale Trade -</u>	
Number of establishments	" " " "
Sales for year	" " " "
Number of paid employees	" " " "
<u>Personal, Business, and Repair Services -</u>	
Number of establishments	" " " "
Receipts for year	" " " "
Active proprietors of unincorporated businesses	" " " "
Number of paid employees	" " " "
<u>Manufacturing -</u>	
Number of establishments	Census of Manufactures (1947)
Value added	" " " "
Number of employees	" " " "
Salaries and Wages	" " " "
Production workers - number	" " " "
- wages	" " " "
Operating establishments by number of employees	Old Age Survivors Insurance records (annual)
<u>Agriculture -</u>	
Number of farms	Census of Agric. (1950)
Number of commercial farms	" " " "
Percent farms tenant-operated	" " " "
Area in farms	" " " "
Cropland harvested	" " " "
- all farms	" " " "
- commercial farms	" " " "

<u>Series</u>	<u>Source</u>
<u>Agriculture - (Cont.)</u>	
Value of farm products sold, by type of product	Census of Agric. (1950)
Farms having specified facilities	" " " "
Farms having specified equipment	" " " "
Farm expenditures, by type of expenditure	" " " "
Livestock on farms	" " " "
Off-the-farm work of farm operators	" " " "
Farm-operator family level-of-living index	Bureau of Agric. Economics (irregular)
<u>Banking, etc. -</u>	
Bank deposits - total	Federal Reserve System (annual)
- time	" " " (")
Savings and loan associations	Housing & Home Finance Agency,
- number	Home Loan Bank Board special
- savings capital	tabulation from records.
- first mortgage loans outstanding	
E. Bond sales	Treasury Dept. records (special tabulation)

A comparison of the Canadian and U.S. situations with respect to the availability of data for economic "regions" or "areas" indicates a considerable degree of similarity, particularly in regard to census statistics. One of the most important advantages enjoyed by Canadian users arises from the availability of annual information about manufacturing, as provided by the Census of Industry. Taxation statistics and statistics of the Unemployment Insurance Commission are other annual Canadian series for which there seem to be no available U.S. counterparts. However, it should be noted that there are 501 State Economic Areas while there are only 67 "economic regions" defined for all of Canada. Also, series available for the 48 states represent a much finer break-down than their counterparts for the Canadian provinces. Realistic comparisons of the availability of geographic detail should therefore take into account differences at both the state-province and the area-region levels of aggregation.

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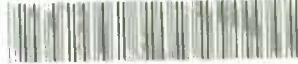
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