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**Royal Commission
on Canada's Economic Prospects**

The Canadian Automotive Industry

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by **The Sun Life Assurance Company of Canada**

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ROYAL COMMISSION ON CANADA'S ECONOMIC PROSPECTS

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THE CANADIAN AUTOMOTIVE INDUSTRY

BY

THE SUN LIFE ASSURANCE COMPANY OF CANADA

SEPTEMBER 1956

*While authorizing the publication of
this study, which has been prepared at
their request, the Commissioners do
not necessarily accept responsibility
for all the statements or opinions
that may be found in it.*

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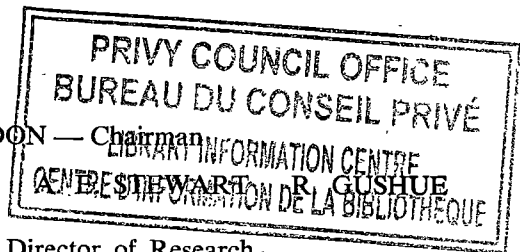


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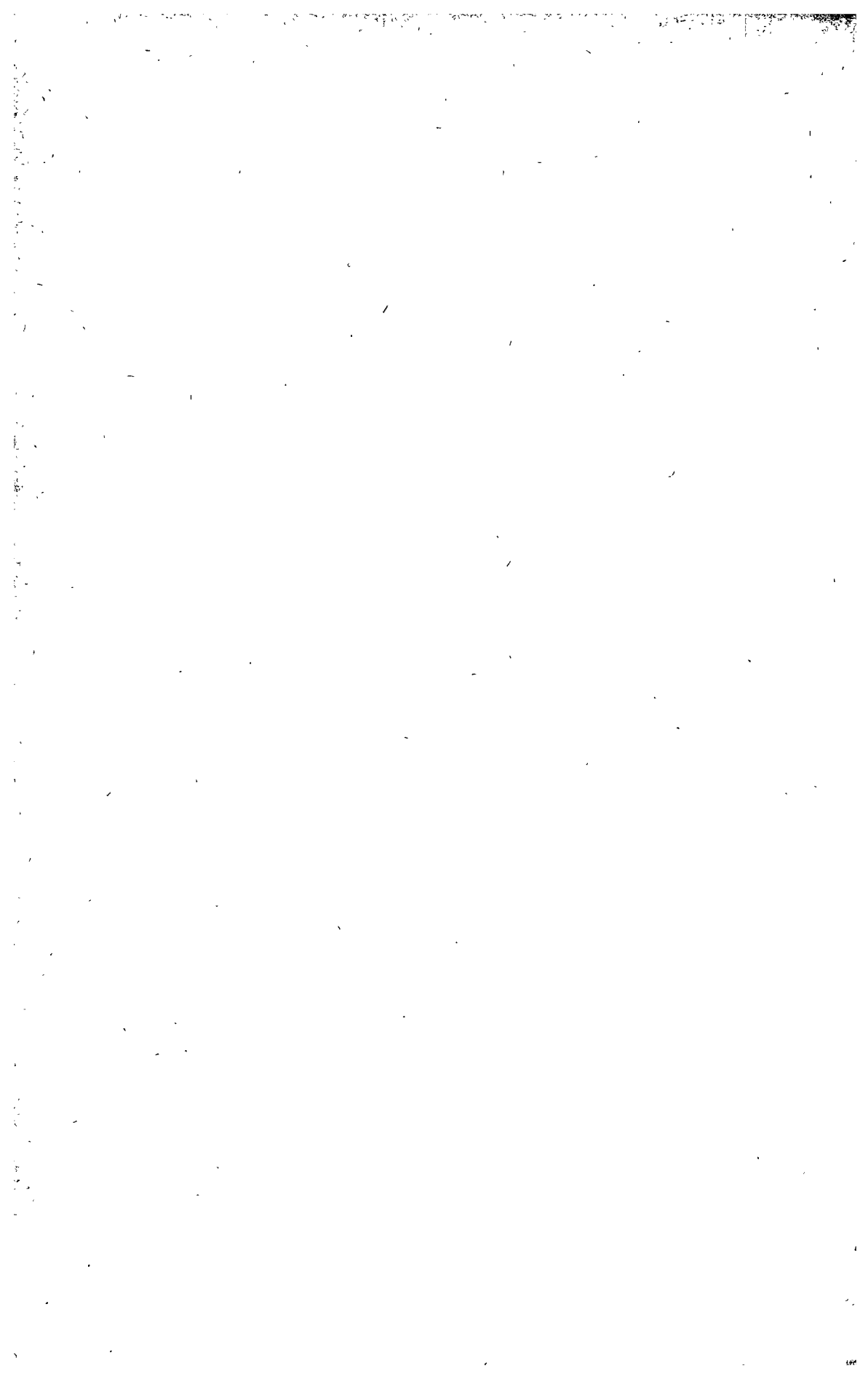
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PREFACE

The following Report has necessarily relied heavily on statistical data obtained from the Dominion Bureau of Statistics. These data have been supplemented, to the extent that proved practicable, with material obtained from other sources, including particularly the automotive industry. Although numerous direct interviews were readily arranged and considerable correspondence conducted with representative firms in the industry, it did not prove possible to obtain some of the information considered necessary for a full examination of the problem at hand. This was particularly true with respect to the costs of production of the automobile manufacturers, as well as data relating to output per man-hour in representative operations. It had been hoped that investigation would result in some concrete comparisons between the Canadian automotive industry and that of the United States with respect to these matters, but differences in manufacturing techniques and the absence of information regarding U.S. experience prevented this from being done in detail.

The D.B.S. statistics published on the Motor Vehicle Manufacturing Industry generally proved adequate for the basic requirements of the study. However it was found that the statistical data pertaining to the Motor Vehicle Parts Industry was not well suited to a study of this type. This is not a criticism of the Bureau, but reflects the considerable limitations of the "establishment" concept basic to the Standard Industrial Classification followed for purposes of national accounting. While the coverage of the parts industry is officially limited to those firms engaged primarily in the manufacture of metallic automotive parts, the coverage even in this field is deficient, due particularly to the exclusion of most firms producing automotive castings and forgings, which have (by definition) been included in the Iron and Steel classification. In addition, the parts industry reports do not reflect all of the remaining production of automotive parts, because of the classification of some captive industry facilities in the data pertaining to the vehicle manufacturers. The result is that the available data provides neither an accurate guide to the total production of automotive parts in Canada, nor the production of the "independent" parts industry. Since the amount of parts manufacturing done by the vehicle manufacturers has significant economic implications for the independent sector of the industry, it is felt that the absence of statistical measures of the captive and independent parts industries has been a major handicap to the analysis of integration within the automotive industry. It has, in addition, prevented a full evaluation of the economic importance of the production of automotive parts in Canada.

While some effort has been made to adhere to a liberal definition of the terms and phrases used in the following pages, on occasion recourse has been made to public usage where it is felt that no real ambiguity exists, and expression has been facilitated. The automotive industry has been considered to include those firms engaged primarily in the manufacture of passenger cars and trucks, and parts for these vehicles. Within this framework, truck and commercial vehicle are used interchangeably, with these terms normally also including buses and military vehicles. The term motor vehicle is used to include all the foregoing. While normally the distinction is made between automobile and truck manufacturing, on occasion the term "automobile industry" is used in its popular sense to include the manufacturers of both automobiles and commercial vehicles.



DEVELOPMENT OF THE CANADIAN AUTOMOTIVE INDUSTRY

Historical Background

There is record of a steam driven vehicle having been built in France as early as 1770, and an electrically operated car made its appearance on British roads in 1839, but it was not until 1862 that the first true "motor" car was actually made. The car was built in France by Lenoir, who two years before had designed and constructed the first successful internal combustion engine. Despite France's early lead in the technology of the automobile, the pioneering of Otto and Daimler in the 1880's put Germany temporarily to the fore, following which a series of independent inventions between 1880 and 1894 brought the motor car to Britain, Italy and the United States. In the latter country the Duryea brothers designed and built their first car in 1892-93, three years before Henry Ford built the predecessor of his revolutionary Model T.

To Henry Ford must go the credit for developing the major principles on which the present motor vehicle manufacturing industry is based. His determination to build a car "for the multitude—so low in price that no man making a good salary will be unable to own one", was expressed in his production philosophy outlined in 1903, "the way to make automobiles is to make one automobile like another—just as one pin is like another pin". While the principal of mass production was introduced in Britain around 1800, Ford developed the idea of the moving production line based on standardized parts, to facilitate which he developed special purpose machines and revolutionized methods of material handling. His theory of construction, to obtain the greatest power/weight ratio through reductions in the weight of his cars was eventually adopted by leading British and European manufacturers after many years of preoccupation with heavy luxury vehicles.

Production of motor cars in the U.S. increased to 5,000 in 1900 from an estimated 100 in 1897, and had mushroomed to 127,700 by 1909, following the introduction of the Model T Ford in the previous year. Stimulated by the latter, U.S. production rose phenomenally to 1,740,000 automobiles

in 1917, a number in excess of total automobile registrations in all other countries three years later. Production of motor vehicles increased to 4,265,800 in 1925, equal to 87% of world output and in 1929 reached the amazing peak of 5,358,400 units. In that year the U.S., with 26.5 million cars and trucks in operation, accounted for 76% of all motor vehicle registrations in the world.

During the depression the U.S. industry lost some of its dominance in world production with output plummeting 75% to 1.3 million vehicles in 1932. Despite another severe adjustment experienced by the U.S. industry in 1938, output in that year still was equal to 62% of total world production. In that year Great Britain accounted for 11.9% of world output, Germany for 8.8%, France for 5.4% and Canada 4.1%.

The rebirth of the European motor industry following the War has been spectacular, with motor vehicle production outside the U.S. and Canada increasing 288% from 873,000 units in 1947 to 3,391,000 units in 1954. Major gains have occurred in the United Kingdom, where production in 1954 was 1,039,000 units, in West Germany with production of 680,000, and in France, whose output in 1954 approximated 600,000 vehicles. Although this recovery has been spectacular, sparked by rising incomes in areas of low motor vehicle density, it has not resulted in a relative decline in the place of the U.S. industry. U.S. production of 6.6 million cars and trucks in 1954 was 63.8% of aggregate world production of 10.4 million units, while production of passenger cars exceeded 70%. However, the position of the U.S. with respect to truck manufacturing declined from 51% of world output in 1938 to 44% in 1954, reflecting the greater emphasis on national requirements (at the expense of personal ownership) typical of areas outside North America. It is of interest to note that automobile production in the U.S. of 8.0 million in 1955 was equal to the entire world production of passenger cars in the preceding year, with the increase in U.S. car production between 1954 and 1955 exceeding the entire automobile output of the rest of the world in 1954. Canada accounted for 3.6% of 1954 world production, equal to 10.5% of production outside the U.S. On the basis of 1954 figures, Canada was the fifth largest producer of passenger cars, while ranking seventh (behind Russia and Japan) in truck manufacturing.

Establishment of the Canadian Automotive Industry

It is generally believed that the first motor vehicle built in Canada was an electric car made in Toronto in 1893. Nothing of commercial significance resulted from this development however and it was not until the organization of the Ford Motor Company of Canada in Windsor in 1904 that the motor car became a commercial proposition in Canada. Ford of Canada, organized independently by a group of Canadian businessmen, obtained from Henry Ford exclusive rights to manufacture and sell Ford cars in all of the British Empire outside of the British Isles. Production during the early years

DEVELOPMENT OF THE CANADIAN AUTOMOTIVE INDUSTRY

was on a very small scale and consisted primarily of putting bodies and wheels on chassis ferried across the river from Detroit.

The McLaughlin Motor Car Company Limited was formed in 1907 in Oshawa, to manufacture the Buick car in Canada with the company's original production facilities consisting of a converted carriage works. By 1915 the company had acquired Canadian rights to the Chevrolet, and in 1918 the two McLaughlin companies were merged to form General Motors of Canada, Limited.

Studebaker entered the Canadian market in 1910, following the acquisition of the Everitt-Metzer-Flanders Company which operated a Canadian assembly plant at Windsor. By 1910, the year in which the industry was first classified as such in census reports, eight plants employing over 2,400 persons were manufacturing automobiles in Canada, with a combined production valued at \$6,250,000.

Table I includes an historical summary of certain industry data from 1917, the year in which D.B.S. records commenced, to 1954.

The Tariff

While the exceptionally broad economic stimulus provided by automobile manufacturing could only be guessed at 50 years ago, growing

Table I

**HISTORICAL SUMMARY OF THE AUTOMOBILE
MANUFACTURING INDUSTRY IN CANADA**
Selected Years, 1917-1954

Years	No. of plants (x)	Av. no. of Employees	Salaries and Wages	Cost of materials at works(a)	Value of products f.o.b. plant(b)
1917.....	11	5,919	\$ 6,239,471	\$35,585,820	\$ 54,466,273
1920.....	17	8,281	13,331,084	67,157,045	101,465,846
1926.....	11	11,905	19,650,804	89,372,095	133,598,456
1929.....	17	16,435	26,864,808	120,329,612	177,315,593
1933.....	22	8,134	8,557,331	28,730,750	42,885,643
1937.....	15	14,946	22,138,991	92,706,147	134,810,280
1939.....	12	14,427	20,573,714	71,671,753	107,463,351
1943.....	5	24,265	57,569,265	248,652,602	352,229,955
1946.....	9	21,647	43,968,772	135,556,183	193,439,688
1947.....	9	23,837	58,407,977	226,845,132	340,918,195
1948.....	11	24,703	68,477,721	249,754,235	398,056,575
1949.....	15	27,022	76,684,328	300,605,398	485,756,877
1950.....	19	29,355	94,414,819	388,496,630	675,867,467
1951.....	19	30,479	101,342,774	469,114,484	742,895,888
1952.....	19	31,102	113,607,071	497,474,097	767,354,984
1953.....	20	32,973	131,316,134	557,709,086	835,554,549
1954.....	20	27,949	106,062,439	477,309,375	666,286,542

Source: D.B.S.—The Motor Vehicles Industry and earlier reports.

(x) Includes assembly plants.

(a) Duty drawback has been deducted.

(b) (1) includes value of parts made in auto factories, also any other products made in these works.
(2) the total under this heading for 1952-1954 refers to value of factory shipments.

realization of its impact on local industry caused the automobile to receive special attention from tariff authorities in every industrial nation. Canada, reflecting early decisions of national policy to develop secondary industry, was no exception. The automobile literally fell heir to the 35% tariff accorded the carriage, in which category early automobile imports were included. It is of interest to note that this protection was substantially less than that accorded the automobile industry in both the U.S. and the older industrial nations of Europe, despite the fact that Canada had neither the established engineering and manufacturing industry nor the large potential domestic markets enjoyed by the older countries. Typical of the automobile tariffs prevailing at this time was the 45% rate in force both in the U.S. and in France. Even Great Britain, with her tradition of low tariffs and the distance protection she enjoyed from Detroit, felt obliged to impose a duty of 33% (through the "McKenna Duties") in 1915 to protect her domestic industry.

Although specific data are not available, it is probable that domestic production exceeded imports for the first time in 1909. The tariff remained unchanged until 1926, when rising political pressure for free import of automobiles forced a reduction from 35% to 20% for cars valued up to \$1,200 and to 27% for cars valued in excess of this amount.

Following the tariff revisions of 1926, it became materially less attractive to continue manufacturing and assembling vehicles in Canada. The difficult position of the automotive industry was recognized by the existing government which, under the urgent bidding of the industry, instituted several tariff adjustments designed to foster the continued manufacture of motor vehicles in Canada. Chief amongst these was a rather unwieldy system of home consumption drawbacks, contingent on manufacturers attaining a 50% Empire content in their factory output. While these adjustments, aided by strong demand for automotive products both here and abroad, were helpful in maintaining the Canadian automotive manufacturing industry, they were difficult and costly to administer and were at best a stop-gap substitute for a comprehensive revision of automotive tariffs.

In 1931, the tariff was modified to provide a 30% duty on cars valued at between \$1,200 and \$2,100, with a rate of 40% imposed on cars valued in excess of the latter amount. Of more significance was the decision taken early in that year to limit maximum discounts on automobiles for duty purposes to 20% of list prices. In 1936, after several months of a modified schedule based on value, the present 17% rate was established, with provision made for an increase to 22% in the event that imports affected domestic production to a major degree. At the same time, the arbitrary basis for duty valuation was discontinued and a 3% import tax, previously instituted but not effective, was put in force.

In general the principle that has governed the formulation of Canadian tariff policy has been one of affording reasonable protection to those automotive parts the manufacture of which provides substantial employment and

may be undertaken relatively economically, while permitting the duty-free import of parts not capable of economic manufacture in Canada. The tariff revisions in 1936 consolidated automotive parts into several specific tariff items (primarily items 438 -b, c, d, and e) and permitted the discontinuance of the old home-consumption drawbacks. Of more significance was the revision in Empire content requirements to permit the duty-free importation of a broad list of automotive parts, providing

- (1) Parts concerned were of a class or kind not made in Canada,
- (2) Manufacturers achieved Empire content equal to 40% of the factory cost of automobile output (excluding duties and taxes) if factory production did not exceed ten thousand complete passenger cars during the year in which importation was sought; equal to 50% if factory production was between ten thousand and twenty thousand; and equal to 60% if annual production exceeded twenty thousand complete passenger cars. Truck manufacturers were granted similar privileges, with the maximum Empire content set at 50% for manufacturers with output in excess of ten thousand vehicles per annum.

The important improvement in the revised legislation was the recognition that volume was the key to the amount of Canadian manufacture that could be undertaken economically. Provision was made for the Empire content of the output of factories producing in excess of twenty thousand passenger cars annually to increase to 65% in 1938, which provision held until the cessation of civilian production in 1942. Maximum requirements returned to 60% in 1946 when it became obvious that the less rigid control of prices in the U.S. would make it difficult for the higher percentage to be met. Some of the technical factors involved in the actual calculation of content were also adjusted at this time to compensate for the differences in the relationship between Canadian and American costs that occurred since the prewar years.

The secondary tariff protection afforded automotive parts manufacturing in Canada through Empire (now Commonwealth) content provisions is unique in Canadian industry and has been of very considerable importance in developing the present level of parts fabrication in the domestic industry.

Production

While official figures are not available, an analysis of early D.B.S. registration, import and export data suggests that Canadian production approximated 400 cars in 1908, jumped to 1,500 in 1909 following the introduction of the Model T Ford, and exceeded 10,500 vehicles in 1911. By 1917, the year in which industry production figures were first collected, output had grown to 93,810 units, compared with estimated production in all prior years of only 135,000 vehicles.

Table II outlines historical data with respect to the production of motor vehicles in Canada in selected years.

Table II

PRODUCTION OF MOTOR VEHICLES IN CANADA

Selected Years, 1917-1954

Years	Passenger Cars(a)		Trucks(b)		Selling Value at Works \$
	Number	Selling Value at Works \$	Number	Selling Value at Works \$	
1917		Not available separately			
1920	83,970	80,558,204	10,174	8,153,517	54,466,273
1926	166,887	106,000,203	37,840	16,629,334	88,711,721
1929	203,307	134,023,280	59,318	29,474,395	122,629,537
1930	121,337	75,253,581	32,035	16,513,225	163,497,675
1931	65,072	42,634,163	17,487	10,330,763	91,766,806
1932	50,694	32,490,129	10,095	6,070,667	52,964,936
1936	128,369	76,814,258	33,790	19,140,946	38,560,796
1937	153,046	93,368,282	54,417	30,389,011	93,955,204
1938	123,761	81,661,687	42,325	26,497,038	123,757,293
1939	108,369	71,101,204	47,057	28,072,712	108,158,725
1946	91,871	82,847,330	79,657	81,204,338	99,173,916
1947	167,257	182,161,183	90,758	116,357,486	164,051,668
1948	166,819	210,799,512	96,941	137,228,722	298,518,669
1949	193,556	277,660,998	99,028	146,697,354	348,028,234
1950	284,076	447,029,182	106,026	163,942,858	424,358,352
1951	282,714	438,613,532	132,706	212,806,695	610,972,040
1952	283,534	417,654,448	150,176	253,247,296	651,420,227
1953	360,385	539,524,001	210,574	199,082,949	670,901,744
1954	287,191	436,820,440	69,892	122,291,809	738,606,950
					559,112,249

Source: D.B.S.—data now contained in report "The Motor Vehicles Industry".

(a) Prior to 1925 all chassis included with passenger cars; subsequently the division between passenger and truck chassis has been made.

(b) Trucks, buses and wheeled military vehicles.

DEVELOPMENT OF THE CANADIAN AUTOMOTIVE INDUSTRY

Production of trucks was first reported separately in 1918 in the amount of 7,319 units, although commercial vehicles are known to have been made in Canada as early as 1912. Truck development was more gradual than that of the automobile, probably largely because of the substantial investment in established shipping facilities and the absence of adequate roads, a necessity for the truck to compete commercially with other carriers. World War I saw the advantages of the truck amply demonstrated as a flexible method of transportation of both men and supplies. By 1920 Canadian truck production exceeded 10,000 vehicles valued at \$8.2 million, equal to 9.2% of the value of the automobile industry's total output.

The 1920's saw a continuation of the rapid expansion of the automotive industry, sparked to a large extent by sales to export markets as discussed below. The industry's economic stature was officially recognized in The Canada Year Book in 1924, which included the statement (in a section for the first time specifically devoted to the industry) "Canada's automobile industry, while one of the youngest of our manufactures, is already one of the most important". The industry had by this time grown to rank sixth amongst Canadian manufacturing industries on the basis of gross value of production. Continued development of the industry's potential was somewhat restrained by rising imports in 1926 following the reduction of tariffs on automobiles, although the value of industry production reached a new high in that year of \$122.6 million. Output expanded to 242,000 vehicles in 1928 and to 262,600 vehicles in 1929, with a rise in export volume in that year more than offsetting a small decline in production for the domestic market. Industry output in 1929 was obtained from seventeen plants employing 16,400 people and was valued at \$177.3 million f.o.b. the factory works.

Truck demand grew rapidly throughout the decade of the 20's, with 1919 production of 7,899 trucks only 13% of that achieved in 1929. While production for domestic markets increased nearly four times in the period, truck exports soared 1,000%.

The year 1929 marked the end of the industry's spectacular early period of development. Automobile production plummeted 40% to 121,300 units in 1930, while truck production declined even further. By 1932 total industry output had declined to 60,800 vehicles valued at \$38.6 million, less than 24% of the value of production three years earlier and the lowest level of activity experienced since records of the industry have been available. While capacity is an exceptionally elusive concept in the automobile industry, it has been estimated that production in 1932 approximated only 15% of the industry's potential.

The automobile industry's contraction during this period was in line with that of the U.S. automobile industry, yet considerably more severe than that experienced by Canadian manufacturing industry generally. The average

number of hourly-rate workers employed by the industry declined 54% to 6,500 between 1929 and 1933 (see Table XXVI) compared with a decline in the employment index for all manufacturing industries of 31%. The decline in the value of the industry's output of 76% during this period compared with a decline in the value of all Canadian manufacturers of 50%.

Recovery of production from the depression lows was rapid, reflecting the strong desire for car ownership that prevailed, reinforced by the deferred demand built up in the 1930-33 period for durable consumer goods of all types. Expansion continued through 1937, despite the tariff reductions of 1936 and the resulting increase in imports to 13.6% of domestic automobile supply, from 8.6% in 1936. Automobile production reached 153,000 units in 1937, with output of 54,400 trucks in that year actually exceeding in value that of 1929. The gross value of motor vehicle production increased 220% between 1933 and 1937, compared with a rise of 85% in the value of all manufactures. While the larger domestic manufacturers were able to compete effectively despite the reduced level of tariff protection, several of the smaller manufacturers were forced to withdraw from Canada in the 1936-39 period and actually succeeded in obtaining a larger share of the market with vehicles imported from the U.S. than they had formerly obtained with Canadian produced vehicles. These companies were Studebaker, Hudson and Packard. In addition, a number of other firms were compelled to discontinue automobile manufacturing during the depression, including Graham-Paige (in 1935), Willys-Overland (1933), Durant Motors (1930), Dominion Motors (1933) and Hupp Motor Car Corporation (1939). Truck builders forced out of business during this period include Thornycroft (1930), Leyland Motors (1937) and Federal Truck Company (1937).

The commencement of war production in 1939 marked a new phase in motor vehicle manufacturing in Canada. The industry's first military order in the fall of 1939, for gun tractors, marked the beginning of the production of military vehicles that eventually saw the Canadian automotive industry become the principal source of motorized equipment for Commonwealth forces. In 1942 all civilian production was suspended and in that year the industry, operating under conditions that taxed productive capacity to the full, produced 216,000 military vehicles of more than 100 different types. In that year industry employment reached its wartime peak of 24,400. Although vehicle production declined to 178,000 the following year, production of increased quantities of repair parts and other types of war equipment valued at \$130 million raised the combined value of industry production to a record \$352 million. Reflecting reduced requirements following the re-equipment of the British forces, production declined to a low of 133,000 military vehicles in 1945.

Although faced with a monumental task of reconversion, the automobile industry rapidly returned to a peacetime footing. Due to the years of in-

errupted engineering research and design work, the first passenger car models to be assembled late in 1945 were virtually unchanged from the industry's 1942 models. Production of cars totalled only 1,868 in 1945, compared with 130,800 trucks produced, over 60% of which was earmarked for the military.

Automobile production expanded to 91,900 cars in 1946, but reduced military requirements, particularly of trucks, caused the value of industry output to decline from \$228.7 million in 1945 to \$193.4 million the following year. The tremendous backlog of deferred demand built up during the war years spurred industry production in the postwar period to the limits permitted by available materials. Early postwar car output was entirely accounted for by General Motors, Ford and Chrysler, with the first of the independents to commence assembly operations in the postwar period being Studebaker in 1947, following purchase and rebuilding of a large war plant at Hamilton. Nearly 264,000 vehicles came off assembly lines in 1948, marking the first time that the record production of 1929 had been exceeded, although passenger car production declined fractionally from the 1947 level of 167,257 under the impact of exchange and credit controls. Industry production registered a series of gains in subsequent years, climaxed by output of 481,000 units, valued at \$738.6 million, in 1953. Reflecting the readjustment in the economy experienced in 1954, output declined to 357,000 units in that year, with passenger car production reduced to 287,200 and truck output off to 69,900 vehicles, a decline of 42%.

Production of passenger cars totalled 374,945 in 1955, of which 349,042 cars were shipped to domestic dealers with the remaining 25,903 cars (including chassis) shipped to export markets (see following section). This represented a gain of 30.5% over production in 1954, and exceeded the previous record production achieved in 1953 by 4%. Both production and export figures include chassis shipped without bodies, primarily to Australia. These amounted to 13,345 units last year, equal to 51.9% of all automobile units exported. Truck production reached 78,882 units, of which 18.8% was for export, in addition to which 355 buses were made for the domestic market. Factory shipments of made-in-Canada vehicles closely approximated production last year, and are shown in Table III on the basis of domestic and export shipments, together with comparable data for the years 1950-1954.

Truck production figures reflect an increased relative demand for light delivery and for heavy-duty vehicles over the past five years, at the expense of intermediate weight units. While shipments of the lighter pick-up vehicles, representing slightly under one-half of industry shipments have not increased relatively in recent years, deliveries of vehicles in the 16,000-19,500 lbs. class have increased from 2.5% of the total in 1949 to 14.3% last year. Shipments of all vehicles in the over 16,000 lbs. gross weight classification were equal to 21.1% of domestic shipments last year, compared with only 4.5% six years ago.

Table III

SHIPMENTS OF MOTOR VEHICLES DOMESTIC—EXPORT

1950-1955

(000)

	Passenger Cars				Trucks and Buses			
	Domestic	Export	Total	% Export	Domestic	Export	Total	% Export
1950*.....	259.5	24.6	284.1	8.7%	96.8	9.2	106.0	8.7%
1951*.....	243.2	39.6	282.7	14.0	105.5	27.2	132.7	20.5
1952.....	245.4	38.1	283.5	13.4	112.5	37.7	150.2	25.1
1953.....	319.9	40.4	360.4	11.2	100.8	19.8	120.6	16.4
1954.....	267.5	19.7	287.2	6.9	59.7	10.2	69.9	14.6
1955.....	349.0	25.7	374.8	6.9	69.5	9.4	78.9	11.9

* Production data, only, available prior to 1952

Note: Data includes chassis shipped without bodies.

Source: D.B.S.—The Motor Vehicles Industry.

Exports

Until recent years, export markets were of major importance to the Canadian industry, as indicated in Table IV.

Table IV

EXPORTS OF MOTOR VEHICLES AND PARTS FROM CANADA

Selected Years, 1917-1955

Years	Passenger Cars*		Trucks		Parts (\$000)	Total (\$000)
	Number	Value (\$000)	Number	Value (\$000)		
1917....	9,492	4,562	(a)	(a)	2,036	6,598
1920....	18,070	13,576	4,942	3,059	4,276	20,911
1925....	58,005	27,795	16,146	5,250	6,373	39,418
1929....	64,863	29,825	36,848	14,831	2,350	47,006
1930....	28,841	12,738	15,712	6,061	1,588	20,387
1931....	9,282	4,012	4,531	1,780	830	6,622
1932....	9,800	4,283	2,734	963	1,846	7,092
1936....	42,351	15,289	13,219	4,904	2,900	23,093
1939....	38,548	14,394	19,955	8,157	2,992	25,543
1946....	23,451	13,993	44,660	43,201	21,110	78,304
1947....	41,550	33,579	42,215	37,918	20,142	91,639
1948....	27,277	20,905	20,901	18,841	15,340	55,086
1949....	17,469	15,888	12,147	12,168	10,752	38,808
1950....	24,085	19,365	10,249	8,827	12,036	40,228
1951....	37,181	38,490	23,308	24,873	15,763	79,126
1952....	41,666	43,634	38,268	48,832	18,549	111,015
1953....	27,977	36,061	17,246	22,258	17,000	75,319
1954....	7,321	7,723	3,672	4,006	15,374	27,103
1955....	11,933	13,165	6,498	6,281	20,333	39,779

Source: Dominion Bureau of Statistics, "Trade of Canada—Exports".

(a) not listed separately.

* does not include chassis sold without bodies which are included in shipments data.

Exports exceeded imports for the first time in 1909 and grew rapidly during World War I, sparked by the Ford agreement and the occupation of European industry with war production. By 1920 exports had reached 23,000 vehicles valued at \$21.0 million, including parts, equal to 24.5% of the industry's output in that year. While preferential tariffs favoured markets in Australia, Great Britain, New Zealand, South Africa and other Empire countries, substantial sales were also made during the 20's to over 60 other countries, including Argentina, The Dutch East Indies, and Brazil. These sales in general reflect the tariff advantages enjoyed by Canadian vehicles over American in many foreign markets. In 1923 over 84% of industry exports went to five major Empire markets, and exports had increased to 33.2% of total production. Demand for Canadian trucks abroad was particularly heavy in these years, with truck exports of 20,400 in 1927 equal to 62.5% of aggregate truck volume. Exports of passenger cars peaked at 64,900 in 1929, over 31% of the industry's automobile output, while exports of all vehicles rose to 101,700 units, a level never again attained in a peacetime year. Export sales of trucks in that year were equal in value to 50% of passenger car exports, in contrast to aggregate truck volume valued at only 22% of the industry's car production.

The onset of the depression saw Canadian automotive exports decline both absolutely and in relative importance as importing countries discouraged capital repatriation and increased protection. Fluctuating exchange rates and arbitrary customs valuations made export markets unduly hazardous. Passenger car sales of 9,300 abroad in 1931 were only 14.2% of industry production, while truck exports the following year declined to a record low of 2,734 units valued at under one million dollars. As a result of the negotiation of a contract whereby all the requirements of the English Ford company for the new Ford V-8 car in overseas markets were to be supplied from Canada, together with the revival of markets in Australia and New Zealand (which had declined from 30% to 3% of export sales between 1929 and 1931), exports rebounded to 20,400 units in 1933. By 1937 sales abroad had recovered to 65,900 vehicles, equal to 31.8% of total domestic production. Sales to Australia and New Zealand reached an all time high of 38,000 cars and trucks in that year.

Throughout the latter 30's automobile exports approximated one-third of production, while exports of commercial vehicles slightly exceeded 40%. The advent of World War II disrupted traditional export markets, and, although the war years saw as much as 94% of output shipped abroad, these markets were not fully regained following the end of hostilities. Exports of military vehicles exceeded \$246 million in 1944, approximately 76% of the gross value of industry output.

The worldwide shortage of passenger cars and trucks at the end of the war, coupled with the destruction of a major part of European automotive industry enabled Canadian motor vehicle manufacturers to enjoy a temporary

export boom. Sales of vehicles to France, Belgium, the Netherlands and China, along with recovery of the Australian market, permitted 1946 exports at 68,000 units to exceed those of 1938. While many markets obtained in 1946 were lost in whole or in part the following year (e.g. China took only 12 vehicles in 1947 versus 3,088 the preceding year) expansion of sales in preferential markets was sufficient to push exports in 1947 to their postwar peak of 84,000 units, about evenly divided between cars and trucks. The worldwide shortage of dollars had reached critical proportions in many countries by 1948, as a result of which exchange controls, coupled with the revival of competition from the British and European automobile industries, caused exports to decline to 48,200 units in that year. Continued existence of these factors depressed exports to below 30,000 vehicles in 1949, and while export markets were temporarily regained over the next three years, further loss of markets in 1953 and 1954 reduced exports to their lowest levels since 1920. Exports of automobiles in 1954 totalled only 7,300 units, equal to 2.5% of industry production while truck exports of 3,700 vehicles represented 5.3%. Sales to Australia and South Africa approximated 7,900 cars and trucks, almost 72% of all export sales, a marked concentration of sales in these markets compared with 1946, when they accounted for 46%. South Africa's relative importance in a declining export picture has materially increased in postwar years, with that country taking 28% of all exports in 1954, compared with 22% in 1950 and only 8% in 1946.

The decline in export markets that has been typical of recent years was reversed in 1955, although the improvement was insufficient to increase the relative importance of export shipments above the historically low level to which they declined in 1954. Despite the improvement in passenger cars, production of trucks for export showed a further decline in 1955. Australia continued as the major export market last year, accounting for 38.8% of total export volume through November. While Australian demand for complete units has declined substantially as a result of measures taken to force vehicle manufacture in that country, sales of chassis (including engines) have offset this loss to an important extent. Sales of vehicles and parts to South Africa increased to \$11.4 million through eleven months of 1955, compared with \$4.9 million for the full year 1954, while export sales to New Zealand increased to \$4.0 million from \$1.7 million the previous year.

Imports

Imports have always occupied an important place in the Canadian automobile market with, however, the dependence becoming somewhat less in recent years. Table V outlines certain data with respect to automotive imports in specified years since 1917.

Despite the broad expansion of the domestic manufacturing industry in the 1920's, imports (primarily from the U.S.) increased their share of the

DEVELOPMENT OF THE CANADIAN AUTOMOTIVE INDUSTRY

automobile market from less than 10% in 1920 to over 22% in 1928 and 1929. As has been indicated, tariff reductions in 1926 stimulated the importation of motor vehicles substantially in that year, with imports of both passenger cars and trucks nearly doubling between 1925 and 1926. Truck imports virtually doubled each year between 1925 and 1928, with imports expanding to equal 26% of available domestic supply in the latter year, compared with under 10% three years earlier.

Imports of both cars and trucks shrank rapidly after 1929, with truck imports reaching a low of 289 in 1932, equal to only 3.8% of total supply. Automobile imports fell even further to represent 2.8% of domestic supply in both 1932 and 1933. Of major importance in bringing about this sharp decline was the change in the basis of duty valuation referred to earlier, which was estimated to have increased the effective protection against U.S. imports by 15%.

Following the tariff revisions of 1936, imported automobiles increased their relative share of the domestic market in each year until the outbreak of war. Imports accounted for 3.4% of available supply in 1935, rising to equal 19.2% by 1939, only slightly below the record levels of the late twenties.

Table V

IMPORTS OF MOTOR VEHICLES AND PARTS INTO CANADA

Selected Years 1917-1955

Years	Passenger Cars		Trucks		Parts (\$000)	Total Value (\$000)	Imports % Domestic Supply	
	Number	Value (\$000)	Number	Value (\$000)			Cars %	Trucks %
1917...	15,825	10,738	831	1,133	7,556	19,426	—16.5—	
1920...	7,191	9,890	1,954	3,971	14,052	27,913	9.8	27.2
1926...	26,345	21,563	2,199	2,818	27,466	51,847	18.9	11.4
1929...	39,446	32,606	5,278	6,817	44,772	84,195	22.2	19.0
1933...	1,098	759	683	445	10,837	12,041	2.8	8.4
1936...	8,053	6,114	1,850	1,651	24,044	31,809	8.6	8.3
1937...	17,267	13,393	2,802	2,792	32,775	48,960	13.6	8.0
1939...	16,585	13,725	1,699	1,949	25,308	40,982	19.2	5.9
1946...	19,076	25,209	3,166	6,493	66,453	98,145	21.8	8.3
1947...	36,574	57,499	6,289	12,042	98,432	167,972	22.5	11.5
1948...	17,264	21,428	3,348	5,875	101,261	128,564	11.0	4.2
1949...	35,427	38,970	3,270	5,179	117,748	161,898	16.7	3.6
1950...	81,758	75,330	6,770	10,588	158,405	244,322	23.9	6.6
1951...	42,692	56,632	5,642	13,992	195,177	265,801	14.8	4.9
1952...	34,906	49,484	4,087	11,743	190,337	251,563	12.6	3.5
1953...	53,372	79,454	5,103	17,304	222,284	319,042	13.8	4.7
1954...	38,509	58,574	4,973	17,407	183,569	259,550	12.1	7.0
1955...	48,546	78,937	9,403	35,231	249,673	363,841	12.2	6.3

Source: D.B.S., Trade of Canada—Imports.

Imports accounted for an exceptionally high percentage of the Canadian market in the early postwar years, reflecting both low domestic production and ready access to U.S. sources of supply. Exchange controls imposed in 1948 sharply reduced importation of U.S. vehicles, at the same time giving some impetus to imports from the United Kingdom. Imports of British vehicles rose rapidly in the 1948-1950 period at the expense of American imports, which fell from over 85% of foreign supply in 1947 to under 4% in 1950. Table VI indicates the trend of imports by countries of origin in recent years. Automobile imports reached an all-time high of 81,758 in 1950, equal to almost 24% of the total supply of automobiles available to the domestic market. Imports from the United Kingdom accounted for 95% of the total, with most of the cars consisting of units valued at less than \$1,200 each. In contrast to this was the virtual absence of U.S. imports in this price range, while 23% of the latter was in the highest tariff classification (over \$2,100). Imports from Britain were stimulated at this time largely by the high used-car price structure that prevailed, which permitted new British cars to sell well under the price of late model, conventional used cars.

Table VI

IMPORTS OF MOTOR VEHICLES BY COUNTRIES OF ORIGIN 1950-1955

	Cars				Trucks			
	U.S.	U.K.	Germany	Total*	U.S.	U.K.	Germany	Total*
1950...	3,154	77,659	—	81,758	1,587	5,173	—	6,770
1951...	14,050	28,512	—	42,692	3,375	2,267	—	5,642
1952...	13,828	20,748	84	34,906	2,996	1,057	33	4,087
1953...	23,501	28,141	1,527	53,372	3,938	855	310	5,103
1954...	17,954	17,482	2,917	38,509	3,853	318	489	4,681
1955...	27,392	15,018	6,110	48,546	7,707	448	1,243	9,403

* Includes an insignificant number of imports from other, chiefly European, countries.
Source: D.B.S.—Trade of Canada, Imports.

Importation of medium and high-priced American cars has increased substantially in recent years, with units valued at over \$2,100 increasing from 721 units in 1950, to over 9,000 units in recent years, equal to almost one-half of U.S. imports. Imports from the United States accounted for 55% of the 40,614 passenger cars imported into Canada in the first ten months of 1955, while the proportion of British vehicles had declined to one-third of the U.S. figure and represented less than 4% of available supply. Imports of high-priced units consist of low volume models not capable of economic manufacture in Canada.

Of particular interest has been the recent rise in imports from West Germany, spearheaded by the Volkswagen. These increased from nil in 1952 to close to 6,000 last year, despite the increasingly difficult time experienced by other makes of small cars in meeting the competition from the standard

North American models. Imports from all sources accounted for approximately 12% of total domestic supply last year.

The composition of truck imports since 1950 reflects the increasing importance of U.S. vehicles, similar to that noted with respect to passenger cars. U.S. vehicles represented 23.4% of truck imports in 1950, increased to 59.8% the following year and have exceeded 80% of total imports in each of the past two years. British vehicles have declined drastically from 76.4% of imports in 1950 to under 6% in 1955. While not quite as spectacular as the increase in passenger cars, imports of trucks from West Germany have risen materially since 1951 to a level more than double that of British vehicles. Imports of German trucks exceeded 12% of total truck imports last year, compared with less than 1% three years ago. Approximately 10% of total domestic truck supply was accounted for by imported vehicles in 1955, a marked increase over the 7.2% registered the previous year. Truck imports are generally heavy-duty or specialty vehicles not made in Canada because of volume limitations.

The Parts Industry

The first motor cars built in Canada were largely assembled from components fabricated in the United States, in many instances the Canadian manufacturer doing little more than putting wheels on imported chassis. As the scope of operations increased, it was natural that more of the required components should be obtained locally, particularly where existing facilities were readily adaptable to the manufacture of automotive products.

While the earliest parts made in Canada were those that did not require a high degree of engineering skill to produce, by the early 20's a broad range of automobile parts, including engines, wheels, axles, body components, tops, etc. were being produced. In 1923 the value of production from 60 plants classified by the Dominion Bureau of Statistics as composing the "Parts and Accessories Industry" totalled \$22.0 million, employing a total capital investment of approximately \$18 million. As indicated in the Preface, these figures are not comprehensive, omitting all suppliers of non-metallic parts and materials and those of automotive castings and forgings. In this connection, cylinder blocks were first cast in Canada around 1920, with the growth of the automotive casting business largely determined by the extent of machining facilities available. Impetus was given to Canadian automotive manufacturing and engineering in this period by the establishment in Canada of a number of branch plants of U.S. firms specializing in the design and manufacture of highly engineered automotive parts.

Production in the industry declined between 1923 and 1925, with production valued at only \$11.2 million in the latter year, reflecting somewhat higher imports of parts and probably some increased fabrication of components by the vehicle manufacturers. A comprehensive study of the automotive

industry prepared by the Tariff Board in 1935-36 indicated sales by parts companies and automotive suppliers of \$21.7 million to the motor vehicle industry in 1925, in addition to which \$31.3 million of sales were made to replacement and service outlets and to export markets.

Table VII outlines the volume of sales to the automotive industry of a broad range of Canadian companies for the years 1925-34, as indicated in the Tariff Board Report referred to above.

Firms supplying the automobile and truck manufacturers did not experience as extreme an adjustment as the vehicle manufacturers in the 1929-32 period, probably due to their greater flexibility in adjusting operations to changing conditions and to the relatively sustaining influence of non-automotive business and service requirements. This is illustrated by a decline of 63% in total sales volume of the companies included above, compared with a 75% decline for the automobile companies. The less representative D.B.S. group of parts companies showed a decline in gross sales of 62% during this period, a circumstance perhaps more attributable to coincidence than to the representative nature of the companies included (suggested by the fact that the D.B.S. group registered a gain of 88% between 1928 and 1929, compared with a 20% increase registered for the companies included in the broader industrial grouping). The inclusion of the tire companies in the Tariff Board group probably accounts for the major part of the volume difference between the two classifications.

Table VII

SALES TO AUTOMOTIVE CUSTOMERS BY CANADIAN PARTS COMPANIES AND SUPPLIERS

1925-1934

(000)

	Total Sales to Automotive Industry	Sales to Automobile and Truck Manufacturers	Sales to Automotive Parts Manufacturers	Export Sales	Sales to replacement & Service Outlets
1925.....	\$52,955	\$21,675	\$ 1,576	\$10,887	\$18,817
1926.....	71,538	30,900	1,956	16,962	21,720
1927.....	72,987	27,821	2,490	19,076	23,600
1928.....	87,538	38,920	3,910	18,345	26,363
1929.....	104,950	46,751	11,173	19,422	27,604
1930.....	77,325	28,961	6,860	14,848	26,656
1931.....	51,056	16,772	4,866	6,808	22,610
1932.....	38,734	13,555	3,409	3,809	17,961
1933.....	40,332	15,071	4,305	4,563	16,393
1934.....	61,290	29,032	7,088	6,382	18,188

Source: Report of The Tariff Board in Reference No. 91, The Automotive Industry, 1936—Page 83.

An analysis of the 220 companies included in the Tariff Board survey revealed that in 1934 they employed an average of 12,500 workers on automotive business, 91.5% of whom were located in Ontario and 7.0% in Quebec.

These firms had a total automotive sales volume of \$61.3 million in that year, with respect to which they paid \$13.6 million in salaries and wages. These figures compare with employment averaging 9,700, sales volume of \$76.1 million and payrolls aggregating \$12.9 million in the automobile manufacturing industry. Some idea of the relative concentration within the parts industry is seen in the fact that less than 26% of the firms did 82% of the industry's business in 1934.

In examining reasons for the broad range of automotive products manufactured in Canada in 1935, the Tariff Board listed the following factors:

- (1) the protection afforded by the Customs Tariff.
- (2) the benefits obtainable by automobile manufacturers in preferential export markets as a result of Empire Content in Canadian automobiles produced for export.
- (3) the benefits of home consumption drawbacks and relief from excise taxes obtainable by automobile manufacturers under Canadian content requirements regulations.
- (4) the manufacture in Canada of parts for those makes of automobiles which were imported into Canada prior to 1930.
- (5) the policy followed by certain Canadian automobile manufacturers of purchasing the majority of their parts requirements in Canada from independent manufacturers instead of producing those parts themselves in their own establishments.
- (6) the establishment of subsidiary organizations in Canada of U.S. parts makers for the purpose of supplying the automobile manufacturers in Canada with Canadian parts.

The Customs tariff, including Empire Content requirements and tariff preference in Empire markets, has been of major significance in the development of the Canadian automotive parts industry. Prior to 1926 the rates of duty on automobiles and automobile parts were such that a large measure of protection was provided to the Canadian industry, particularly in view of the preference granted in Empire markets vehicles with a 50% Empire content. The provision for a 99% drawback of duty paid on imported parts and materials incorporated in vehicles exported, while of considerable assistance to the manufacturing industry in competing in export markets, was obviously some hindrance to domestic suppliers. The latter, however, gained the advantages inherent in sharing in a larger total market than otherwise would have existed.

The effect of the Content revisions in 1936 was undoubtedly to spur the manufacture of additional automotive parts in Canada. With pressure to achieve the higher content of 60%, purchasing departments of the major man-

ufacturing companies were forced to canvass Canadian sources of supply more carefully and, where possible, award business locally. This was in marked contrast to the former situation where the path of least resistance had been to purchase materials from established U.S. sources. In addition, it made it easier for the Canadian subsidiaries of U.S. firms to obtain capital for expansion purposes, in some cases resulting in the production in Canadian plants of parts previously imported entirely from the parent company. Concrete evidence of the stimulus given to the automobile parts industry by this legislation is seen in the increase in the gross value of the industry's output (as measured by D.B.S.) from \$33.4 million in 1936 to \$46.6 million in 1937. Table VIII compares sales in the industry as measured by the Tariff Board survey and as measured by the official D.B.S. figures prior to this time. It appears that the D.B.S. figures became increasingly representative of the activities of the automotive parts companies through the early 1930's, and it is probable that this trend continued to some extent in later years as more companies directly identified with the automotive industry entered into business. On the reasonable assumption that D.B.S. statistics covered something over 40% of the production of all automotive suppliers in 1937, the total value of production of these companies approximated \$110 million in that year, well in excess of the volume achieved in 1929. On a similar assumption, total employment by these companies on work directly attributable to motor vehicle manufacturing, probably exceeded 18,000.

Table VIII

VALUE OF FACTORY OUTPUT CANADIAN AUTOMOTIVE PARTS INDUSTRY

1925-1934

(millions)

	(a) Total Automotive Sales 220 Cos.	(b) Gross Value of Production	(b) % (a)
1925.....	\$53.0	\$11.2	21.1%
1926.....	71.5	13.9	19.4
1927.....	73.0	14.9	20.4
1928.....	87.5	17.0	19.4
1932.....	38.7	12.2	31.5
1933.....	40.3	13.0	32.2
1934.....	61.3	24.4	39.8

(a) Tariff Board Report, 1936.

(b) D.B.S.

The declaration of war in 1939 sparked a tremendous upturn in activity in the industry, exceeding even the impetus given to the automobile manufacturers. Production of a broad list of defence items pushed industry output to a high of \$184.5 million in 1942, while employment in the major parts establishments through the 1942-1944 period averaged 21,000.

The parts industry readjusted to peacetime conditions reasonably quickly, although the relatively greater expansion in non-automotive lines during the war caused the industry to be slower in this regard than the vehicle manufacturers. A number of American parts companies established plants in Canada in the early postwar years, in many cases to make parts that had formerly been supplied from U.S. sources. D.B.S. reports show 150 establishments operating in 1949, compared with 108 in 1945, producing a gross output valued at \$171.6 million. Growth of the parts industry has somewhat exceeded that of the automobile industry in recent years, although rising automobile and truck production has not permitted the domestic manufacture of an increasingly large part of the typical automobile as might have been expected.

The Canadian content of most manufacturers' vehicles is lower today than it was in the middle 1930's, largely due to the growing demand for automatic transmissions, with which one-third of Canadian cars made for the domestic market were equipped in 1954. The comparable proportion for 1955 is not available, but it seems probable that between 45% and 50% of all factory shipments of passenger cars to domestic dealers last year were so equipped. Since this complicated and expensive assembly accounts for close to 10% of the cost of the car which is equipped with it, coupled with the fact that all units must be imported, the increasing difficulty in meeting "content" is readily seen. The Canadian content of one major manufacturer has declined since the late 1930's from a high of close to 69% to under 62% in 1955, with the average of the Big Three well below that prevailing in the earlier period. This decline is naturally of prime concern to the industry and appears to have resulted in the placing of some orders with Canadian suppliers for parts that might otherwise have been imported.

During the 1949-1953 period, employment in the parts industry increased 30% to 23,300, compared with a 22% gain for the motor vehicle manufacturers. During the same period the number of parts establishments rose to 179, while the gross value of the industry's production rose 79% to \$307.7 million. Output of a broader list of automotive supplies produced in Canada totalled \$525.8 million in 1953, compared with \$297.3 million in 1949. The D.B.S. data covering the output of automotive parts from all industries adds to the official industry figures both the value of metallic parts production by other firms and the output of such major non-metallic items as tires, glass and brake linings. By far the most important of these additional items, from a value standpoint, are tires and tubes which in 1953 accounted for \$120.2 million or 72% of the increased value of production attributable to the more comprehensive classification.

THE DEMAND FOR MOTOR VEHICLES

THE FOLLOWING factors are considered to be of prime importance in determining the demand for motor vehicles.

- | | |
|---------------------------------|-------------------------|
| (1) Personal disposable income; | (5) Prices and Taxes; |
| (2) Population growth; | (6) Operating Costs; |
| (3) Credit; | (7) Roads and Highways; |
| (4) Scrappage; | |

These are discussed in some detail below on the basis of their impact on both car and truck demand, following which a brief discussion of the domestic market is provided.

Passenger Cars

(1) Personal Disposable Income

This is by all odds the most important single determinant of passenger car demand, given the obvious initial requirement of population. The motor industry has been singularly successful in the U.S. and Canada in identifying the automobile with a desirable way of life, to the extent that it probably ranks closer to food, shelter and clothing as a virtual necessity than any other consumer product. As a result of this situation, fostered by the development of better products and the use of aggressive merchandising techniques, increases in real disposable income in the two countries have been quickly translated into increased car ownership.

With rising income levels in the postwar years, the Canadian automobile industry has been able to increase its share of the consumer sales dollar from an average of 2.3% in 1935-1939 to 4.5% in 1950-1954. This has been achieved despite strong competition from other durable goods which, as a whole, have increased their relative position from around 7.5% to over 11% of total personal expenditures in the period. During the last five years, consumer expenditures on automobiles (and parts) have represented 55% of aggregate expenditures on consumer durables, a significant increase over the 46% prevailing in the latter 1930's, and well above the ratio of 42%

existing in the U.S. Schedule 1 (appended) outlines personal disposable income on an actual, real, and per adult basis in selected years. Personal expenditures on new cars relative to disposable income are indicated in Schedule 4 and relative Canadian and U.S. experience in this regard is compared in Schedule 6.

Of particular significance in assessing the impact of disposable income on car sales is the fact that more money tends to be spent on automobiles as income rises. A survey made by the U.S. Bureau of Labor Statistics in 1950 indicated that individuals earning \$3,000 a year spent approximately 5% of their incomes on car purchases, people in the \$5,500 bracket spent about 8%, while at an income level of \$7,500, approximately 9% was spent on new car purchases. The survey indicated that beyond this level the relative amount spent on automobile purchases tended to decline somewhat as incomes increased, reflecting however still larger absolute amounts spent. No reliable data exists with respect to Canadian experience, although a D.B.S. study on Canadian Non-Farm Family Expenditures, 1947-48 tended to generally confirm this trend. Between 1950 and 1954, an average of 16% more of the national income was spent on cars in Canada than in the U.S., despite the latter's higher income levels, indicating rather conclusively that Canadians as a group are willing to spend more of their available incomes to have the privilege of driving a new car. Accordingly, rising income levels exert a leverage effect on the market for new cars to the extent that aggregate purchasing power is both increased and upgraded into hands more desirous (from the standpoint of effective demand) of new car ownership.

In recent years there has been a spectacular increase in the number of tax payers in the income groups that include the bulk of potential new car purchasers. Table IX summarizes the change in Canadian income distribution that has occurred since 1941.

It is generally considered that income of \$5,000 per annum represents the new car buying threshold today, with the bulk of the substantial ownership that is achieved below this level gained through the used car route. The number of taxpayers in the \$5,000 or over bracket increased 662% between 1941 and 1953, substantially aided by the inflationary pressures of the early postwar years. Allowing for a 70% inflation factor during the period, \$3,000 per annum may be considered to have been the equivalent car-buying threshold in 1942. In that year some 139,000 taxpayers exceeded that figure in reported income, while in 1953 nearly 357,000 exceeded \$5,000 per annum, indicating an effective increase of 157% in the potential new car market during the period. Of perhaps more significance is the increase of 25% per annum that occurred in the number of taxpayers in the over \$5,000 classification between 1951 and 1953, a period of negligible inflation. Concurrently with this increase has been an equally important increase in the \$3,000-\$5,000 income group, suggesting that only very moderate further wage increases will be necessary to sustain the recent high rate of movement into the \$5,000

Table IX

DISTRIBUTION OF CANADIAN TAXPAYERS BY INCOME CLASSES

	1941-1953						
	Total Taxpayers	\$1,000-\$2,000		\$3,000-\$5,000		Over \$5,000	
		(000)	No.	% of Total	No.	% of Total	No.	% of Total
1941.....	871.5	368.9	42.3%	92.0	10.6%	46.8	5.4%
1945.....	2,254.2	1,163.6	51.6	167.2	7.4	69.9	3.1
1950.....	2,374.2	739.4	31.1	568.6	23.9	168.6	7.1
1953.....	3,389.5	722.7	21.3	1,285.0	37.9	356.6	10.5
<u>% Increase</u>							
1941-53.....	288.9%	95.9%		1,296.7%		661.9%	
1945-53.....	50.4%	37.9%		668.5%		410.2%	

Source: Taxation Statistics—Department of National Revenue.

plus bracket. These income shifts have provided the basis on which the high levels of early postwar car sales have been exceeded in recent years, despite loss of the impetus afforded by deferred demand. It is firmly believed that they will continue to exert profound expansionary influences on the passenger car market over the longer term.

A social phenomenon associated with higher income levels, and of more importance as these became more general is the desire to obtain social prestige through automobile ownership. While not possible to evaluate it analytically, there is no doubt that the desire to "keep up with the Joneses" has been a factor of considerable importance in establishing the automobile in its present unique place in North American society. As income levels rise, more people are permitted the indulgence of non-economic desires on a scale hitherto reserved only for the wealthy. The adroitness with which the North American motor industry has capitalized on this national frailty has resulted in making the automobile market in the U.S., and to only a slightly lesser extent in Canada, peculiarly susceptible to advertising pressures and styling in a manner unknown in the rest of the world. This has been indicated in recent years by the increase in sales of de luxe models complete with many accessories, at the expense of the stripped-down car affording very adequate, and cheaper, basic transportation. It is similarly reflected in the rapid rise to popularity of the expensive, but convenient, automatic transmission and in the impact of style changes on new car sales. It appears quite possible that this desire for some measure of social distinction may well rival any other single factor in determining new car ownership and it undoubtedly has an important influence on car ownership per se, even where this is obtained through purchase of a used vehicle.

Table X outlines passenger car ownership by provinces in specified years since 1929.

Table X.

PASSENGER CAR REGISTRATIONS BY PROVINCES

Selected Years, 1929-1954

	1929	1932	1939	1945	1950	1954	Percentage Of Total	
							1954	1945-54
Nfld.	N.A.	—	4,208	4,530	10,907	24,000	0.9%	429.8%
P.E.I.	5,537	6,181	6,804	6,744	10,441	12,551	0.5	86.1
N.S.	33,748	33,798	41,919	40,314	62,636	90,068	3.3	123.4
N.B.	27,962	24,030	30,457	28,794	48,890	67,624	2.5	134.9
Que.	132,839	135,594	171,766	171,240	303,752	490,819	18.3	186.6
Ont.	473,222	462,923	593,693	555,461	881,143	1,187,725	44.2	113.8
Man.	68,441	61,420	70,506	69,268	111,756	151,915	5.6	119.2
Sask.	108,630	75,685	89,471	96,268	129,302	162,980	6.1	69.2
Alta.	85,087	72,079	88,516	92,334	151,724	222,305	8.3	140.7
B.C.	79,065	73,516	96,737	99,421	198,397	276,161	10.3	177.8
Yukon & N.W.T.	132	129	152	214	1,124	2,317	0.1	982.7
Canada	1,013,663	945,355	1,190,021	1,160,058	1,910,072	2,688,465	100.0	131.8

Population Growth

While population growth in itself is no guarantee of an automobile market, in conjunction with adequate levels of purchasing power, it provides an important and basic stimulus to car sales over the longer term. Of obvious importance in considering the impact of population on automobile demand is its age distribution and geographic location. As is indicated in the Appendix, the adult population is considered to be the most useful population benchmark against which to measure new car sales and density, primarily because it physically approximates in size the potential automobile market and because it reflects important changes in age distribution better than other concepts. Schedules 1 and 2 indicate the trend of the adult population and passenger car density per thousand adults in Canada since 1926. Reflecting the high birth rate following the war, adult population in recent years has increased at a somewhat slower rate than total population, at the same time laying the basis for stronger relative gains in the 1965-70 period. Table XI outlines the growth of passenger car density by provinces in selected years since 1929.

Table XI

	POPULATION PER CAR					
	<i>Selected Years</i>					
	1929	1932	1939	1945	1950	1954
Newfoundland.....	—	—	53.0	46.8	32.5	16.6
P.E.I.....	15.9	14.4	14.0	13.6	9.2	8.4
Nova Scotia.....	15.3	15.4	13.2	15.4	10.5	7.5
New Brunswick.....	14.4	17.2	14.8	16.2	10.7	8.1
Quebec.....	20.9	21.6	18.7	20.1	13.1	9.0
Ontario.....	7.0	7.5	6.3	7.2	5.1	4.2
Manitoba.....	9.9	11.5	10.3	10.6	7.2	5.4
Saskatchewan.....	8.1	12.2	10.6	8.8	6.8	5.4
Alberta.....	8.0	10.3	8.9	8.9	5.9	4.7
B.C.....	8.3	9.6	8.0	9.5	5.7	4.6
Yukon & N.W.T.....	9.8	10.9	26.3	23.4	21.4	11.6
Canada.....	9.9	11.1	9.5	10.4	7.3	5.7

Source: Registration data obtained from the Provincial Motor Vehicle Branches, through D.B.S.—The Motor Vehicle.

The striking growth of Canadian suburbs has been one of the most significant economic and social phenomenon of the postwar years. This growth has been both a cause and a result of the ownership of the automobile and has stimulated a secondary demand for cars that promises to have increasing importance. Growth of Canada's four largest cities and their surrounding suburbs between 1941 and 1951 is outlined in Table XII.

These cities showed a rate of growth in suburbs approximately six times that of the urban areas, with Toronto's suburban population increasing 82.2% during the period, compared with virtually no increase in the population

Table XII

POPULATION SHIFT—FOUR MAJOR CITIES
CITY PROPER—SUBURBS

1941-51
(000)

	City Proper		Suburbs		Metropolitan Area		Suburbs % Metropolitan Area		
	1941	1951	% Inc.	1941	1951	1941	1951	1941	1951
Montreal.....	903.0	1021.5	13.1	118.5	250.1	1145.3	1395.4	10.3	17.9
Toronto.....	667.5	675.8	1.2	242.4	441.7	909.9	1117.5	26.6	39.5
Winnipeg.....	220.0	237.7	7.1	79.9	118.4	299.9	354.1	27.0	34.5
Vancouver.....	275.4	344.8	25.2	102.0	185.9	377.4	530.7	27.0	34.5
Average.....			11.7					22.6	31.3

Source: Census of Canada—1941, 1951

of the city proper. One major reason why Toronto is twice as large a market for passenger cars as Montreal, despite a somewhat smaller population, undoubtedly lies in the fact that suburbs account for nearly 40% of Toronto's metropolitan population, compared with only 18% in the case of Montreal. While Montreal is still far behind the other cities in suburbanization, the trend progressed relatively more quickly in that city during the decade considered that it did either in Vancouver or in Toronto. Vancouver, with more room to expand within city limits, nonetheless experienced more than three times as rapid a growth in its environs as it did in its major urban districts. An analysis of recent automobile densities in the four metropolitan areas considered above is included in Table XIII.

Table XIII

AUTOMOBILE DENSITY
(*Four Major Metropolitan Areas*)
1951-1954

	Automobile Registrations(a)		Population Per Car(b)	
	1951	1954	1951	1954
	(000)			
Montreal.....	134.3	153.6	10.4	8.6
Toronto.....	207.8	289.8	5.4	4.3
Winnipeg.....	53.9	73.4	6.6	5.1
Vancouver.....	106.8	135.5	5.0	4.6
		Average	6.9	5.7

(a) D.B.S.—The Motor Vehicle.

(b) Based on metropolitan area population figures, Census of Canada, 1951, and various municipal sources.

Note: Car registrations do not conform exactly with population figures, e.g. Montreal registration figures are for the Island of Montreal and exclude certain suburbs on the mainland included in the population figures.

Linked directly with rising incomes and suburban living is the trend toward multiple car ownership. In this regard Canada is much closer to the U.S. than over-all car density figures suggest, with an estimated 5.1% of all families owning more than one car in September 1955 comparing with only 4.4% in the U.S. six years ago. Table XIV compares car ownership trends in Canada and the U.S. in recent years.

The number of families owning more than one car in the U.S. increased from 3.2% to 8.8% between 1948 and 1951, with the 1954 survey indicating no change in this figure. The high level of automobile sales in 1955 pushed U.S. multi-car ownership to 10.1% of all families, and 13.8% of car-owning families.

Canadian multiple car ownership appears to have progressed exceptionally quickly in terms of U.S. experience, although the absence of any detailed

Table XIV

MULTI-CAR OWNERSHIP, CANADA-U.S.

1953-1955

	% of Total Households with						% of Car-Owning Households with 2 or more cars	
	One or more cars		2 or more		No car		Canada	U.S.
	Canada	U.S.	Canada	U.S.	Canada	U.S.		
	%	%	%	%	%	%	%	
1953...	52.2	73.0	4.0	9.0	47.8	27.0	7.6	11.9
1954...	54.7	72.9	4.8	8.8	45.3	27.1	8.7	12.1
1955...	56.1	73.5	5.1	10.1	43.9	26.5	9.2	13.8

Source: D.B.S.—Household Facilities and Equipment, September 1955 and prior; Automobile Manufacturers' Assoc., Facts and Figures, 1955.

ownership data prior to 1953, together with the relatively high sampling error involved by virtue of the small magnitudes estimated, makes only a very qualified comparison possible. Ontario, with an estimated 8.5% of households owning two or more cars in 1955, was almost up to the 1954 U.S. average, while Quebec was far behind both Ontario and the country as a whole with only 1.9%. Despite reduced farm income and lower car sales, Saskatchewan is reported to have increased its multi-car ownership from 4.9% to 7.2% of total households between 1954 and 1955, while data for Alberta suggests a decline in that province from 5.0% to 3.8%. In view of the fact that sales of cars increased 28% in Alberta in 1955 while a decline of 8% was registered in Saskatchewan, it seems virtually certain that the available survey data does not accurately portray the trend of multi-car ownership in these provinces. This appears to be entirely due to the small absolute size of the estimates involved, in respect to which sampling errors may approximate 40%.

While Canada appears to have achieved a somewhat higher incidence of multi-car ownership relative to the U.S. than is suggested by per capita density comparisons, it is almost exactly equal to that indicated by the difference in per capita incomes. In 1954 estimates indicate that 8.7% of car owning households in Canada was included in this group, equal to 72% of the similar U.S. figure, a relationship which compares closely with the differential in per capita incomes existing in the same year.

Credit

The availability and cost of consumer credit is of major importance in determining the demand for passenger cars. The extent to which credit is a factor in the passenger car market is largely a function of the income levels of the regions concerned, with low incomes tending to result in relatively few credit-worthy potential buyers, poorly developed credit facilities and few passenger car sales. In both Canada and the U.S. high income levels have

generally resulted in relatively large numbers of the adult population being good credit risks, which has resulted in the evolution of extensive credit facilities and the greater use of instalment credit as consumers were enabled to satisfy their desire for car ownership by borrowing against future income.

Table XV outlines credit data with respect to passenger car sales in Canada since the war. Additional data with respect to automobile financing are included in Schedules 1, 4 and 6.

Automobile credit has increased approximately three times as fast as total consumer credit since 1947, and now represents something over 20% of the total compared with less than 6% in that year. This is still markedly below the situation prevailing in the U.S., where well over 40% of total consumer credit outstanding consists of automotive paper. It should be pointed out that statistics pertaining to automobile credit in Canada include only credit advanced on conditional sales contracts by sales finance companies, with no information available with respect to the amount of credit extended by banks, credit unions, etc. for the purpose of purchasing automobiles. It seems probable that inclusion of this data would tend to show Canadian experience to be somewhat closer to that of the U.S. since it is believed that indirect financing of automobiles through the banks is a larger factor in Canada than in the U.S. The much smaller relative amount of automotive financing in Canada is accounted for by the fact that new car sales per capita are nearly twice as high in the U.S., in addition to which a much larger proportion of U.S. car sales involve financing.

While the cost of credit is undoubtedly an important factor in its use, as long as it is held within reasonable limits it seems to have relatively little influence on automobile sales in comparison to other factors. Finance company rates with respect to the financing of new cars have remained substantially unchanged over the past 20 years, with a decline from around 8% (discount basis) to 7% between 1935 and 1936 made up in the early post-war years. Current rates approximate 7.75%, based on a flat rate for twelve months with principal and interest repayable in equal monthly instalments. The effective rate involved, is, of course, around 15%. Rates vary according to the amount financed (with somewhat lower rates charged for larger amounts), with the rate indicated above applying to finance amounts of between \$1,000 and \$2,000, the category which includes the bulk of new car financing. While direct comparisons with the U.S. are not available, it is understood that rates charged there tend to reflect the interest rate differential normally existing between the two countries of up to 1%.

Used car financing naturally involves a higher element of risk than the financing of new units, with considerably more discrimination made between the size of loans and the credit standing of the borrower. Rates average about one-third higher than for new cars, and at present tend to vary between 9% and 12¾% on a discount basis (loan and interest repayable in equal monthly

Table XV

AUTOMOBILE FINANCING

(\$ millions)

Selected Years, 1947-1955

	Consumer Credit				Passenger Cars Financed		Amount of Financing		
	Total	Extended on cars	Outstanding on cars	Apparent Repayments	Auto Credit % Total	New	Used	New	% New
						(000)	(000)	(000)	(000)
1947.....	\$ 628.0	\$ 62.0	\$ 36.2	N.A.	5.8%	27.4	56.0	\$ 32.4	52.3%
1951.....	1,120.0	248.9	160.7	\$256.0	14.3	81.7	239.1	110.1	138.8
1954.....	1,974.0	500.0	388.3	522.5	19.7	126.1	326.0	230.9	269.1
1955.....	N.A.	538.8	—	—	—	156.3	356.6	305.1	294.5

Source: D.B.S.—Canadian Statistical Review, 1955 Supplement.
New Motor Vehicle Sales and Motor Vehicle Financing, 1954 and prior.

instalments), depending on the amount. Effective interest rates charged thus approximate twice the nominal rate indicated.

Of probably more significance than the rates charged are the terms for which the credit is available and the size of the down-payment required. Again available information indicates that these have not changed importantly for many years, although the extremely competitive conditions that have existed over the past year have resulted in some relaxing of down-payment requirements and some extensions in terms. Standard practice in the industry is to require a one-third down-payment and involve a maximum term of 24 months on new cars, with recent pressures resulting in down-payments on contracts being reduced to 25% or lower and terms increased to 36 months.

Late model used cars are generally financed on a basis similar to that of new cars, while the financing of older cars normally involves some combination of higher down-payments and shorter terms, in addition to the higher rates imposed. A requirement of 40% down with 12 months to pay, at an effective interest rate cost of 22% might be considered reasonably typical of the financial conditions involved in the financing of a five year old car. However the extremely competitive automobile market that currently prevails has undoubtedly resulted in the financing of some conditional sales contracts on more liberal terms than indicated here, although the most reliable information obtained from the industry suggests that fewer sales are consummated on these "easy" terms than is popularly supposed.

While Canadians continued to utilize credit at a high rate in 1955, high repayments and a somewhat higher percentage of cash (including trade-in) sales appear to have reduced the relative importance of automotive paper to some extent. This is suggested by the decline in the share of consumer debt held by sales finance companies from 27.2% at September 30, 1954 to 26.1% at the same date last year. Later consumer credit figures are not available. Full year figures for 1955 indicate that new extensions of credit on passenger cars increased only 16.7% in the year, despite a 24.6% increase in new car sales. Extensions on used cars actually increased only 5.8%, while an average increase in the amount financed of \$130 per new car resulted in credit extensions on new cars rising 29.6%. The average amount of credit extended per used car remained virtually unchanged at \$825 in 1955, compared with an average amount of \$2,035 per new car financed. It should be pointed out that this latter figure is readily capable of misinterpretation due to the distortion provided by the financing of medium and high-priced models. It is probable that the average amount of financing involved in the purchase of a \$2,500 car would approximate \$1,200, assuming it involved the trade-in of a three year old car

Scrappage

The significance of this important factor in determining new car sales is very difficult to assess in detail, but unquestionably becomes of increasing

importance as the car population grows and general prosperity prevails. The absence of any direct information on vehicles scrapped prevents any current knowledge of scrappage trends and necessitates the use of residual methods that have led to considerable confusion in published data on the subject. This situation is discussed more fully in the appendix under the heading Density Analysis. The lack of information on scrappage is particularly regrettable in view of the fact that over one-third of new car sales in recent years has been attributable to the replacement of scrapped vehicles. Scrappage is stimulated by several factors other than extreme physical deterioration, including rising income levels, increased operating costs, technological developments and style changes. All these factors serve to reduce demand for older cars, to weaken the used car price structure and hence to increase the rate at which older vehicles are taken off the road. Since these are, to a large extent, the products of prosperity, scrappage does tend to increase under buoyant economic conditions. While insufficient data exists to clearly indicate this trend in recent years, it was well demonstrated by the experience of the 1926-1932 period, during which scrappage rates rose from 7.1% of registrations in 1926 to 8.4% in 1929 and declined to 6.7% in 1932. It is reasonable to assume that under conditions of severe economic stress present day cars would be scrapped at a much lower rate than that indicated in 1932, due to the improved construction of present day cars from a basic structural standpoint. Probably the most significant development has been that occasioned by all-steel construction that has resulted in the passing of the wooden door posts and fabric tops typical of models of the earlier era.

A factor that cannot be ignored in any consideration of scrappage is the proportion of total car population that has a commercial history. While accurate data are not available, it is estimated by D.B.S. that 20% of new car sales is accounted for by sales to business or to individuals for business purposes. Should the proportion of former business cars to total cars increase, it is assumed that a significant impact on scrappage rates could be experienced in view of the generally greater activity and shorter chronological life of these vehicles. This is not known to be the case, however, as a result of which this factor has not been considered separately as being of special significance in assessing scrappage trends. In this connection, an anomaly appears to exist between the 20% business use estimate and the household car ownership estimates indicated in a recent D.B.S. survey. This report shows household ownership of 2,174,000 cars, equal to 80% of an estimated car population of 2,730,000 at the date of the survey (September 30, 1955), whereas the more rapid scrappage of business cars would suggest that these vehicles represent a smaller proportion of total car registrations than they do of sales. In view of this situation it seems probable that business demand is somewhat higher than the 20% estimate used, which would be in general accord with estimated experience in the U.S. and Britain. It also may be

true that business cars are passed down to a greater extent than realized through the used car market, with their life perpetuated for several years during which the additional mileage on these vehicles is relatively low.

Certain historical data on automobile scrappage are included in Schedule 2. Some of these are summarized below, together with the available information concerning the age distribution of the automobile population in recent years.

Table XVI

CANADIAN SCRAPPAGE DATA—PASSENGER CARS
Selected Years, 1926-1953

	Indicated Scrappage	Scrappage % of		Car Population Age Distribution*—%			
		Prior Registrations	Sales	Less than 4 years old	Other Postwar	Total Postwar	Prewar
	(000)			%	%	%	%
1926..	45.6	7.1%	32.8%	N.A.	—	—	—
1941..	79.9	6.5	95.5	—	—	—	—
1946..	23.0	2.0	29.6	—	—	—	—
1949..	86.5	5.7	42.3	35.2	—	35.2	64.8
1953..	135.1	5.9	37.6	50.8	23.8	74.6	25.4

* Based on confidential industry figures.

The average age of cars on the road in Canada was 6.4 years at the end of 1953, at which time 51% was under five years of age and 25% was prewar models. While this was approximately the average of U.S. cars in 1953, the age distribution was noticeably different, with Canada having a considerably smaller percentage of early postwar models and a much higher percentage of cars over 15 years of age (14% versus 8.5%). Available information indicates that in recent years the average life of cars in Canada has approximated 18 years, compared with about 14 years in the U.S., and there is little real evidence that the differential will materially decline in the years immediately ahead. While the rising incomes have stimulated scrappage in the U.S. in recent years, it is felt that future prosperity will be reflected in Canada more by increased ownership, as low used car prices broaden the base of demand, than by rapidly accelerated scrappage rates. It is of some interest that scrappage of postwar cars in the U.S. to date has been lower than expected by industry analysts.

Prices and Taxes

These factors have an obvious, though frequently obscured, effect on passenger car demand. Their impact is largely a function of disposable income levels, without a consideration of which their actual levels are virtually meaningless.

A discussion of automobile prices and taxes is included in Part IV, Sections I & II. A precise attempt to correlate prices and taxes with passenger car sales is beyond the scope of the present study, and in any event

would probably assist little in accomplishing its main objectives. It appears sufficient to indicate that no uniform relationship exists, with the proviso that relatively low prices and taxes (in terms of income levels) are essential to the existence of a broad demand for motor vehicles.

The price of a full-sized automobile in Canada is lower than anywhere else in the world outside of the U.S., measured both by actual prices at retail and in terms of labour income. This is true despite the fact that the volume of production in Canada is only 5% that of the U.S., and federal taxes on a low-priced sedan approximate \$300, some \$160 more than comparable U.S. taxes. Prices have been held to relatively low levels in Canada by the efficiency of the Canadian automobile industry and its suppliers, both of which have benefited from access to U.S. research and technical knowledge, and by the pressure of competition which has reduced both factory and dealer profits from levels that might otherwise prevail (and in fact do in overseas markets). This, combined with rising levels of income, has been instrumental in promoting the rapid increase in car ownership typical of recent years.

It is difficult to estimate to what extent sales would have shown a more rapid increase had automobiles not been subject to substantial excise taxes in postwar years. While the present level of 10% (plus 10% sales tax) does not appear seriously restrictive, the imposition of drastically higher taxes ranging from 25% to 75% in November 1947 resulted in an immediate and sharp decline in car sales in the first half of 1948. This decline occurred despite the tremendous backlog of deferred demand that existed at the time (and which had contributed importantly to the drain on Canadian-U.S. dollar reserves that precipitated the drastic measures). Similarly the imposition of higher taxes in April 1951 resulted in contra-seasonal sales declines in April and May of that year, while their reduction the following year immediately stimulated demand. It appears, however, that the actual sales lost by the industry due to the use of excise taxes have been less than suggested by the industry, with sales lost in one period appearing to be made up rather quickly when more favourable conditions subsequently returned. While current sales are undoubtedly somewhat lower than would prevail in the absence of excise taxes, it can be argued that the presence of this deferred demand has definite advantages to the industry as a possible offset to declining sales in some future period.

Taxes of the "user" type appear to be more appropriately discussed in the following section.

Operating Costs

Operating costs are of secondary importance in determining the demand for passenger cars in Canada and the U.S., as witnessed by the size and power

Table XVII

HIGHWAY TRANSPORTATION* ESTIMATED COST¹ OF OWNING AND OPERATING
AN AUTOMOBILE IN CANADA—1954

	First Year		Second Year		Third Year		Fourth Year		Fifth Year		Sixth Year	
	Amount	Cost per mile	Amount	Cost per mile	Amount	Cost per mile	Amount	Cost per mile	Amount	Cost per mile	Amount	Cost per mile
	\$	¢	\$	¢	\$	¢	\$	¢	\$	¢	\$	¢
COST (Excluding Taxes)												
Depreciation.....	675.00	8.438	400.00	5.000	300.00	3.750	250.00	3.125	200.00	2.500	175.00	2.188
Repair & Maintenance.....	32.56	.407	42.32	.529	69.60	.870	98.56	1.232	99.68	1.246	160.72	2.009
Tires & Tubes.....	15.00	.188	12.00	.150	10.00	.125	68.00	.850	45.00	.563	27.00	.338
Accessories.....	16.50	.206	16.50	.206	16.50	.206	16.50	.206	16.50	.206	16.50	.206
Gasoline.....	148.50	1.856	148.50	1.856	148.50	1.856	148.50	1.856	148.50	1.856	148.50	1.856
Oil.....	17.60	.220	17.60	.220	17.60	.220	19.80	.248	22.00	.275	17.60	.220
Insurance.....	94.00	1.175	94.00	1.175	94.00	1.175	90.00	1.125	90.00	1.125	60.00	.750
Garage Tolls etc.....	100.00	1.250	100.00	1.250	100.00	1.250	100.00	1.250	100.00	1.250	100.00	1.250
Finance Charges.....	108.10	1.351	81.25	1.016	63.75	.797	50.00	.625	38.75	.484	29.40	.367
TOTAL.....	1,207.26	15.091	912.17	11.402	819.95	10.249	841.36	10.517	760.43	9.505	734.72	9.184
TAXES AND FEES:												
Gasoline Tax.....	54.00	.675	54.00	.675	54.00	.675	54.00	.675	54.00	.675	54.00	.675
Licence Fee.....	16.00	.200	16.00	.200	16.00	.200	16.00	.200	16.00	.200	16.00	.200
TOTAL.....	70.00	.875	70.00	.875	70.00	.875	70.00	.875	70.00	.875	70.00	.875
GRAND TOTAL.....	1,277.26	15.966	982.17	12.277	889.95	11.124	911.36	11.392	830.43	10.380	804.72	10.059

(Continued on page 35)

Table XVII (cont'd.)

	Seventh Year		Eighth Year		Ninth Year		Tenth Year		Ten-year Period	
	Amount	Cost per mile	Amount	Cost per mile	Amount	Cost per mile	Amount	Cost per mile	Amount	Cost per mile
	\$	¢	\$	¢	\$	¢	\$	¢	\$	¢
COST (Excluding Taxes)										
Depreciation.....	150.00	1.875	125.00	1.563	100.00	1.250	75.00	.938	2,450.00	3.063
Repair & Maintenance.....	147.44	1.843	126.24	1.578	72.88	.911	39.68	.496	889.68	1.112
Tires and Tubes.....	33.25	.416	33.25	.416	33.25	.416	33.25	.416	310.00	.388
Accessories.....	14.25	.178	14.25	.178	14.25	.178	14.25	.178	156.00	.195
Gasoline.....	148.50	1.856	148.50	1.856	148.50	1.856	148.50	1.856	1,485.00	1.856
Oil.....	17.60	.220	17.60	.220	19.80	.248	22.00	.275	189.20	.237
Insurance.....	60.00	.750	60.00	.750	60.00	.750	60.00	.750	762.00	.953
Garage Tolls etc.....	100.00	1.250	100.00	1.250	100.00	1.250	100.00	1.250	1,000.00	1.250
Finance Charges.....	21.25	.266	14.40	.180	8.80	.110	4.40	.055	420.10	.523
TOTAL.....	692.29	8.654	639.24	7.991	557.48	6.969	497.08	6.214	7,661.98	9.577
TAXES AND FEES:										
Gasoline Tax.....	54.00	.675	54.00	.675	54.00	.675	54.00	.675	540.00	.675
Licence Tax.....	16.00	.200	16.00	.200	16.00	.200	16.00	.200	160.00	.200
TOTAL.....	70.00	.875	70.00	.875	70.00	.875	70.00	.875	700.00	.875
TOTAL ALL COSTS.....	762.29	9.529	709.24	8.866	627.48	7.844	567.08	7.089	8,361.98	10.452

* Data developed by the Commission's Transportation Study group.

(1) Based on an average life of 10 years and a utilization of 8,000 miles per year.

of most North American automobiles. This situation has been fostered by the fact that improved engines, fuels, tires, suspensions, etc., coupled with reasonable levels of taxation, have permitted larger and more powerful automobiles to be operated at a cost that was within the means of a large part of the populace. No completely reliable data are available with respect to automobile operating costs in Canada. However considerable work has been done in recent months on the subject in connection with the Commission's Transportation study. Table XVII summarizes the results of this investigation.

These figures are believed to reflect quite realistically the costs involved in operating cars of various ages in Canada today. However they perhaps tend to overstate the economic significance of passenger car operation in Canada, due to the fact that many cars in operation are not garaged or insured, and financial depreciation, being a non-cash item, has no immediate economic impact. Similarly the element of finance charges involved in operating costs has, of necessity, been rather arbitrarily applied and includes a theoretical interest element which is impossible to assess in economic terms. Assuming an average of 2.7 million passenger cars in operation in 1955 and an average car age of six years, the cost of passenger car operation in Canada last year approximated \$2.0 billion, equal to \$735 per car. Excluding depreciation and the imputed interest costs involved, and reducing the insurance and garaging charge arbitrarily by 50%, an estimated \$1.3 billion of direct expenditures, or an average of \$480 per car, was made. While the average cost of operating a six year old car is indicated to approximate 10½¢ per mile including depreciation, assuming average annual mileage of 8,000 miles, it should be emphasized that the cost of operation of a late model or new car is considerably in excess of this average, with the estimate of 16¢ per mile for a new car graphically illustrating the cost of the heavy first-year depreciation experienced in recent years. Available information on operating costs in the U.S. does not permit a direct comparison with the data included in Table XVII, but it seems certain that higher prices for gasoline, tires and accessories, in part the result of higher taxes, make car operation more expensive in Canada. It appears that depreciation also is somewhat higher in Canada, particularly on a "per mile" basis allowing for somewhat greater average mileage in the U.S.

While most noticeable with respect to the purchase of a new car, taxes are also a major item in the higher operating cost of an automobile in Canada, as the above table indicates. The principal tax borne by motor vehicle users in Canada is the gasoline tax, which last year raised \$235.6 million for provincial treasuries and probably accounted for 25% of all provincial revenues. While no accurate information is available, it appears that about 60% of all gasoline taxes collected last year were paid by the operators of passenger cars.

Next in importance to gasoline taxes are the provincial registration fees, which for passenger cars accounted for \$39.9 million of provincial revenues last year, an average of \$15 per car. Total licence fees paid on all classes of motor vehicles amounted to \$83.5 million, in addition to which operators' licences accounted for another \$6.1 million, miscellaneous taxes and licences an additional \$4.2 million, resulting in a grand total of \$329.6 million of special taxes of various types levied on motor vehicle operators (equal to \$90 for every registered vehicle). Table XVIII summarizes provincial automotive revenues in recent years.

The following passage from the Canadian Tax Foundation's recent study "Taxes and Traffic" serves to indicate the regional differences that exist with respect to the actual cost of various types of provincial taxes.

"For passenger vehicles in all provinces east of Ontario the combined gasoline tax and motor vehicle charges exceed 1¢ per mile. In the other provinces they are less than 1¢ per mile. The overall range is between a low of 0.83¢ per mile in Manitoba and a high of 1.28¢ per mile in Nova Scotia and New Brunswick. The charges per mile for the other provinces in order of magnitude are: Ontario, 0.58¢; Alberta, 0.87¢; Saskatchewan, 0.93¢; British Columbia, 0.99¢; P.E.I., 1.10¢; Quebec, 1.20¢; and Newfoundland, 1.23¢."

While the specific taxes involved in passenger car operation average about \$70 per automobile or about 0.9¢ per mile (the Tax Foundation's figures quoted above are based on average annual mileage of only 6,200 miles), the addition of the portion of excise and sales taxes that must be amortized in the first year of operation of a new car more than doubles the tax cost indicated above. Assuming that \$350 approximates the sales and excise tax element of the average new car sold at retail, \$87.50 of the first year depreciation charge shown in Table XVII represents the amortization of taxes. Accordingly the total tax cost of operating a representative new car during the first year approximates \$160 or 2.0¢ per mile, assuming 8,000 miles of driving.

Roads—Highways

The existence of an extensive and adequately maintained system of roads, streets and highways is of obvious importance in supporting a high level of automobile demand. An examination of the data at hand suggests, however, that rather than being a positive factor in promoting demand for passenger cars, roads tend to be built and improved to meet the requirements of existing traffic. Despite the fact that new road mileage decreased slightly between 1923 and 1928, passenger cars sales more than trebled. This rapid increase in car ownership however stimulated a 35% increase in surfaced road mileage during the same period. Conversely although surfaced road mileage increased

Table XVIII

MOTOR VEHICLE USER TAXES BY PROVINCES, 1952-54
(\$000)

	1952		1953		1954		Gasoline Tax/gal. 1955
	Regis- tration Fees, etc.	Gasoline Taxes	Regis- tration Fees, etc.	Gasoline Taxes	Regis- tration Fees, etc.	Gasoline Taxes		Total
Nfld.	836	1,795	1,018	2,138	1,163	2,598	17¢
P.E.I.	441	1,160	460	1,202	492	1,300	13
N.S.	3,658	8,820	3,914	9,555	4,093	10,314	17
N.B.	3,031	6,832	3,297	7,338	3,373	8,780	15
Quebec	20,864	50,517	23,096	56,590	25,322	59,703	13
Ont.	25,491	77,648	26,847	86,239	29,432	92,658	11
Man.	3,870	7,423	4,580	8,279	4,580	8,984	9
Sask.	4,811	11,758	5,468	14,088	5,830	14,470	11
Alta.	8,755	15,378	8,860	17,315	9,517	18,577	10
B.C.	9,281	15,364	10,247	16,936	9,934	18,107	10
Canada	81,119	196,886	87,788	219,876	93,850	235,702	11.7 (weighted)
		278,005		307,664		329,552	

Source: The Motor Vehicle, D.B.S. 1952-1954.

Table XIX

ROAD MILEAGE BY MAJOR TYPES

1946-52

	Highways and Rural Roads				Urban Streets			
	Surfaced Mileage		Paved Mileage		Surfaced Mileage		Paved Mileage	
	Total Mileage (000)	% of Total	Miles (000)	% of Total	Total Mileage (000)	% Surfaced	Total Mileage (000)	% Paved
1946.....	553.0	25.3%	140.0	3.3%	14.3	70.0%	14.3	44.2%
1947.....	554.5	26.3	145.8	3.4	14.7	70.0	14.7	44.6
1948.....	556.3	27.0	150.1	3.7	14.8	70.7	14.8	46.4
1949.....	561.3	28.8	161.8	4.1	15.0	71.4	15.0	47.1
1950.....	567.2	29.4	166.9	4.4	14.5	75.5	14.5	50.9
1951.....	568.8	30.8	175.4	4.6	14.9	76.5	14.9	52.0
1952.....	569.7	31.8	181.3	5.0	15.2	80.1	15.2	53.3

Source: D.B.S.—Highway Statistics; The Highway and the Motor Vehicle—obtained via The Canadian Tax Foundation, Taxes and Traffic, 1955.

21% between 1930 and 1936, and paved mileage more than doubled, car ownership actually declined.

Table XIX illustrates the growth and improvement in quality of Canada's road system in postwar years.

The increase of 58.0% in paved mileage between 1946 and 1952 is of particular importance in view of the continuing urgent need to improve the quality of the existing road system. Despite great efforts on the part of provincial and municipal authorities to meet the requirements of a rapidly growing motor vehicle population, the ratio of motor vehicles per mile of paved road increased regularly between 1945 and 1951, with 1952 showing the first indication that some real progress was being made in combating congestion. It is too early to tell as yet whether the increasingly heavy expenditures in recent years, approximating \$600 million in 1955, have been successful in continuing the trend established in 1952. The unfortunate fact of increased congestion in some of our larger municipal centres suggests that in some areas, at least, the battle continues to be a losing one.

In connection with the general problem of coping with the financing of facilities required by a growing motor vehicle population, it is of some interest to observe that provincial revenues from special taxes on motor vehicles and gasoline were estimated to cover 94.9% of the total costs of provincial road construction and maintenance in 1954.

Trucks

The above demand factors are also the principal factors influencing the demand for commercial vehicles, but they vary considerably in their relative importance in the two markets. Population and income growth stimulate truck demand as they necessitate the increasing use of vehicles to provide the facilities and services required by an expanding community. However, truck demand is more influenced by the actual expenditures made by the business sector than by personal incomes earned, and hence is more sensitive to general business activity than to levels of disposable income. As a result it is more cyclical than demand for automobiles and is more difficult to assess. Various truck data are included in Table I and in Schedules 3, 5 and 6. Some of these are summarized in Table XX, together with additional data indicating the relative importance of truck demand in Canada and the U.S.

Although in some areas of the U.S. the automobile may rival the truck in essentiality, such is not the case in Canada, much less the rest of the world. While the truck is essential to a rising standard of living today, the car is a conspicuous result of its successful achievement. This is graphically illustrated by the car/truck ratio of 5.3:1 that exists in the United States, in comparison with that of a ratio of 0.1:1 that prevailed in Russia in 1954.

Table XX

TRUCK STATISTICS, CANADA—U.S.
Selected Years 1926-1954

	Truck Production		Domestic Registrations		Trucks/1000 Labour Force		Scrapage % of Sales		Wholesale Value of Truck Output % of G.N.P.	
	No. (000)	% of Total Vehicle Output	Sales (000)	(000)	Canada	U.S.	Canada	U.S.	Canada	U.S.
1926.....	37.8	30.8	19.4	88.0	N.A.	N.A.	24.7	—	0.31	N.A.
1941.....	173.6	64.2	34.4	274.4	62	88	*	38.2	1.92	0.85
1946.....	79.7	46.4	42.3	360.9	75	107	4.3	29.4	0.68	0.50
1952.....	150.2	34.6	108.7	782.1	147	151	44.0	63.0	1.09	0.67
1954.....	69.9	19.6	72.1	867.9	160	157	—	—	0.51	0.46

* no scrapage indicated.
Source: Primarily D.B.S.—The Motor Vehicles Industry, 1954 and prior reports.
A.M.A. "Facts & Figures", 1955 and prior.

Table XX reveals that truck production represented a larger proportion of total industry output in Canada than in the U.S. in each of the years considered and that it has similarly bulked relatively larger in aggregate national production. This has resulted in a rapid increase in Canadian ownership in recent years, to the point where Canadian density now approximates that of the U.S. (actually exceeding it in terms of the national labour force). Table XXI outlines the growth in truck ownership by provinces since 1929.

Scrapage is less of a factor in the Canadian truck market than it is in the U.S., reflecting both the longer indicated life of Canadian vehicles and the relatively greater increases in density that have been achieved in Canada in recent years. The average age of Canadian trucks is believed to be somewhat less than that of U.S. vehicles, and probably approximates that of automobiles i.e. about six years.

While the available statistics indicate that at least as many trucks are bought on credit as cars (Schedules 4 and 5), it seems probable that the demand for trucks is less influenced by credit conditions than that of automobiles. In the early postwar period, a substantially higher percentage of trucks was bought on credit than automobiles, but the differential narrowed rapidly with the relaxing of post-Korean consumer credit controls in 1952. In that year the proportion of passenger cars financed through sales finance companies increased to 42.8% of total sales from 29.6% the preceding year, and came close to equalling the truck ratio of 43.9%. Dependence on credit has declined to some extent since that time, with 38.8% of trucks sold on time in 1954 and only 35.8% in 1955. In addition to the greater element of economic need inherent in truck demand, the fact that consumer credit controls can have an immediate and vital effect on new car sales serves to point up the much greater importance of credit to passenger car sales than to sales of trucks and other commercial vehicles.

As is the case with automobiles, the replacement truck market is of relatively less importance in Canada than in the U.S., due to the lower scrapage rates prevailing as indicated above. No recent data are available on the age distribution of Canadian trucks, but it is believed that the Canadian truck population may include a somewhat higher percentage of late-model vehicles. Despite the popular view that trucks are scrapped at an earlier age than cars, this is not borne out by the available evidence, which indicates that in recent years the average truck scrapped has been around twenty years old. This figure is heavily influenced by the large proportion of farm trucks (estimated to equal one-third of total truck registrations) which have a considerably longer life expectancy than highway or urban vehicles which average much higher annual mileages.

Taxes are a major problem to the truck operator, despite the fact that truck purchases are exempt from the 10% excise tax levied on automobiles.

Table XXI

TRUCK AND BUS REGISTRATIONS BY PROVINCES

Selected Years 1929-1954

	1929	1932	1939	1945	1950	1954	Percentage		1954 Population per Truck
							Increase 1945-54	of Total 1954	
Nfld.	N.A.	—	1,411	2,357	4,849	9,542	303.8%	1.1%	43.2
P.E.I.	504	801	1,236	2,091	3,651	5,738	174.4	0.7	18.8
N.S.	6,066	7,355	11,089	16,385	27,406	36,762	124.4	4.2	18.6
N.B.	3,725	4,014	7,659	12,783	19,438	22,886	79.0	2.6	24.4
Quebec	35,508	30,136	41,382	57,441	113,827	143,577	150.0	16.5	31.5
Ont.	67,849	68,674	89,198	107,258	209,228	289,801	170.2	33.4	17.9
Man.	8,899	10,150	18,358	23,490	41,179	53,397	127.3	6.2	15.9
Sask.	21,199	15,590	29,547	43,989	69,200	101,828	131.5	11.7	8.7
Alta.	14,163	14,799	25,186	37,819	70,777	112,405	197.2	13.0	9.5
B.C.	17,287	17,526	25,350	35,367	65,705	89,866	154.1	10.4	14.5
Canada*	175,266	169,148	250,635	339,380	627,198	867,923	155.7	100.0	17.5

* Includes Yukon & N.W.T.

Source: D.B.S.—The Motor Vehicle and earlier publications.

It is virtually impossible to summarize briefly the welter of provincial licensing regulations that exists with respect to the various types of public and private motor carriers. In general the higher road maintenance costs necessitated by truck traffic have caused provincial authorities to assess truck registration fees that increase substantially with the weight of the vehicle. Both the method employed to determine fees and their size vary considerably between provinces, with British Columbia tending to have the lowest rates, followed by Ontario, while the highest licensing fees tend to prevail in Manitoba and Newfoundland. High rates on public and private (non-farm) motor carriers in Manitoba reflect a measure of farm subsidization, indicated by the \$82.50 fees payable on a large truck operated within a fifteen-mile radius of its owner's residence, compared with the \$240 payable on an unrestricted vehicle of the same weight. Fees on pick-up trucks vary from \$12.50 per vehicle in Ontario to \$45 in Alberta, while the tax levied on a large truck-trailer combination of \$120 in B.C. compares with that of \$480 levied in Manitoba.

Operating costs are of major importance in influencing the demand for trucks, particularly non-farm vehicles. Due to the great variations that exist between vehicles both with respect to size and usage, the concept of average truck operating costs is meaningless. While no published data on truck operating costs in Canada are available, a comprehensive study on this subject has recently been conducted in connection with the Transport study previously referred to. Data with respect to 1954 experience developed in connection with this study are included in Table XXII.

Table XXII

TRUCK OPERATING COSTS PER MILE*
1954

Gross Vehicle Weight	Urban	Farm	Highway	
			Private	For-Hire
	¢	¢	¢	¢
0 - 2½ tons . . .	54.9	12.7	46.5	50.3
2½- 5 " . . .	59.1	14.5	43.9	40.6
5 - 7½ " . . .	64.4	16.8	40.9	36.2
7½-10 " . . .	66.3	21.1	38.2	34.4
10 -15 " . . .	55.7	23.9	37.8	35.6
Over 15 " . . .	68.5	—	39.3	41.4

* Prepared in connection with the R.C.O.C.E.P. Transportation study.

The figures in Table XXII are believed to be quite representative of recent costs involved in operating the various classes and types of vehicles indicated, subject to the obvious limitations inherent in this type of classification. Similarly it is assumed that they are based on the experience of efficient operators and are not necessarily representative of the numerous marginal operators, most of whom do not keep adequate cost data. Of particular interest is the high cost of urban transport indicated, especially with respect to the heavier

vehicles. The operating costs for the largest trucks in urban service of 68.5¢ per mile are nearly 75% higher than the operating costs for similar trucks engaged in private highway operations. This differential, indicated even more strikingly with respect to vehicles in the 7½-10 ton classification, graphically reflects the economic cost of urban congestion in our major cities. While no adequate operating costs data exist with respect to prior years, it appears evident that the operating cost of trucks employed in servicing metropolitan areas has increased importantly in recent years as a result of traffic congestion. This has resulted in not only reduced operating efficiency per vehicle but also in an increase in vehicles, drivers and helpers required to service a given area, which in turn compounds the problem.

The sharply lower operating costs indicated for farm vehicles largely result from the absence therein of any wage element, a major and growing factor in the cost structure of other operators. Additional reasons for the lower costs in connection with the operation of farm vehicles are the exemptions from gasoline taxes, lower registration fees and lower depreciation charges suggested by the older average age of farm vehicles.

Estimated average operating mileages by classes and types of vehicles are included in Table XXIII.

Table XXIII

ESTIMATED AVERAGE ANNUAL TRUCK MILEAGE* 1954

Gross Vehicle Weight	Urban	Farm	Highway	
			Private	For-Hire
0 - 2½ tons . . .	7,500	4,500	10,000	10,000
2½- 5 " . . .	7,600	5,000	12,000	14,000
5 - 7½ " . . .	7,700	5,500	15,000	19,000
7½-10 " . . .	9,000	6,000	19,000	25,000
10 -15 " . . .	15,000	7,000	24,000	32,000
Over 15 " . . .	13,000	20,000	35,000	50,000

* Prepared in connection with the Commission's Transportation study.

The Domestic Market

Sales of passenger cars in Canada totalled 386,937 in 1955, an increase of 24.6% over 1954 and some 7.7% higher than the previous record established in 1953. Truck sales rose to 78,692 units, up 9.6% in the year but substantially below the record of 110,000 vehicles sold domestically in 1951.

Seasonal factors are of considerable importance in influencing demand for motor vehicles in Canada, although there is no evidence that weather is a basic demand factor. During the last six years, an average of 57.8% of all sales of new cars in Canada has occurred in the first six months of the year, with individual years varying from 51.2% in 1950 to an artificially high 65.9% in 1951, stimulated more by anticipation of an increase in excise taxes than

by seasonal factors. Sales last year reflected the 1950-1955 average with 56.7% of sales accounted for through June. Automobile demand in the U.S. is less affected by considerations of weather, with an average of 52.0% of total sales accounted for during the first half of the year in the 1951-1954 period.

Ontario accounted for nearly 47% of total passenger car sales last year, with that province's relative position in the new truck market materially lower at 36%. Quebec accounted for approximately 21% of sales of both cars and trucks. The following table shows 1955 sales by provinces and indicates the size of the various provincial markets relative to their respective populations.

An examination of Table XXIV reveals that Ontario provides not only by far the largest market for automobiles in Canada, but a market some 40% larger than is indicated by its population. This reflects both the above-average per capita income of the province and the lower car prices generally prevailing, in addition to the greater relative importance of suburban living and multi-car ownership in Ontario compared with the other provinces. It is of interest to note that only in Ontario, Alberta and British Columbia are there more cars sold than the provincial populations would have suggested, although relatively greater sales increases have occurred, since 1949, in some of the Maritime Provinces and in Quebec, where motor vehicle densities are lower. Saskatchewan and Manitoba continue to reflect depressed farm income which, when combined with the existing high ownership levels, has resulted in a slower growth in sales in these provinces since 1949. Quebec has shown the largest gain in car sales over the past six years, (the result of higher real incomes in an area of relatively low car ownership), despite which the province continues to have the lowest automobile density outside of Newfoundland, equal to only 47% of that of Ontario. Alberta and British Columbia are the only other provinces to increase their shares of the national automobile market in postwar years, despite the fact that both provinces have enjoyed automobile densities well above the country's average for many years.

Truck sales comparisons reflect the exceptionally high level of sales that prevailed in the 1949-53 period when deferred demand was still a factor (Schedule 5), with sales in 1955 still some 6% below those of 1949. Shrinkage in the truck markets of Saskatchewan and Manitoba has been particularly severe, with sales in the former province in 1955 off more than 23% from 1954's depressed level, and equal to only 50% of those realized in 1949. As recently as 1952 Saskatchewan accounted for 12.3% of truck sales, compared with 5.9% last year. The Maritimes, Quebec and British Columbia were the only regions in which truck sales were greater last year than in 1949. Since the war, the provinces of Quebec, Alberta and British Columbia have increased their respective shares of total truck sales at the expense of Ontario, Manitoba and Saskatchewan, while the position of the Maritimes is virtually unchanged.

Table XXIV

THE CANADIAN MOTOR VEHICLES MARKET 1955

Province.....	Population			Sales*			Sales Increase or Decline			
	1955 (000)	%		Cars Units	Trucks Units	%	1955/54		1955/49	
		Cars	Trucks				Cars %	Trucks %	Cars %	Trucks %
Nfld.....	412	2.6	4,636	1,645	1.2	24.0	10.8	78.8	10.2	
P.E.I.....	108	0.7	1,490	554	0.4	35.3	-7.5			
N.S.....	683	4.4	12,413	3,175	3.2	11.8	-0.8			
N.B.....	558	3.6	9,799	2,846	2.5	23.5	16.8			
Quebec.....	4,520	28.9	80,918	16,181	20.9	23.3	12.0			
Ontario.....	5,183	33.2	180,889	28,286	46.8	28.1	13.3	119.9	14.0	
Man.....	849	5.4	16,476	3,698	4.3	9.0	1.1	100.4	-4.1	
Sask.....	889	5.8	14,813	4,604	3.8	-8.2	-23.3	48.7	-50.4	
Alta.....	1,066	6.8	27,774	8,769	7.2	25.6	-0.8	13.2	-17.4	
B.C.....	1,305	8.3	37,729	8,934	9.7	42.5	38.3	85.2	31.5	
Canada.....	15,601	100.0	386,937	78,692	100.0	24.6	9.2	91.2	-6.3	

*Source: D.B.S.—New Motor Vehicle Sales and Motor Vehicle Financing.

Concentration of automobile sales amongst a few manufacturers has been typical of the industry for many years, with the large manufacturers tending to increase their share of the market during periods of extreme competition, such as has typified the market since 1953. Approximately 70% of total sales was accounted for by the Big Three in 1930, a proportion which increased to 89% in 1936, declined to 71% in 1946 in response to the conditions prevailing in a sellers' market, and had moved up to 90% by 1955. Due to the larger position occupied by imports in the Canadian market, this concentration has not progressed to the extent prevailing in the U.S., where 95.2% of sales last year was accounted for by General Motors, Ford and Chrysler, with General Motors alone accounting for 50.7% of the market. Table XXV indicates the trend of sales by major groups over the past three years.

Table XXV

CONCENTRATION OF SALES, PER CENT, 1953-55

	Big Three(a)		(a) Other Canadian Manufacturers		U.K. & European Importers		Importers of Miscellaneous U.S. Makes		Total
	Cars	Trucks	Cars	Trucks	Cars	Trucks	Cars	Trucks	
1953.....	87.2	78.5	4.6	12.9	7.3	1.5	0.9	7.1	100.0
1954.....	88.4	79.2	3.3	11.8	6.5	2.2	1.8	6.8	100.0
1955.....	89.9	72.8	2.8	13.2	5.7	3.2	1.6	10.8	100.0

(a) includes imports of small volume, higher priced vehicles not made in Canada.

Note: figures are compiled from a combination of registration and sales data which are not entirely comparable, as a result of which the "Miscellaneous" column is not necessarily an accurate indication of sales of other U.S. makes.

The gains of the Big Three have occurred at the expense of both the smaller Canadian manufacturers (Studebaker, Nash and Hudson) and the importers of British vehicles, with both of the latter groups suffering to some extent from the rising popularity of the West German Volkswagen. Additionally there have been relative changes of competitive position within the Big Three, with Ford losing some ground since 1953, while Chrysler, following a disastrous decline in 1954, regained a large part of its lost position last year. Based on preliminary registration data, General Motors accounted for 42.2% of passenger car sales in 1955, Ford accounted for 25.1% and Chrysler for 22.5%. These percentages compare with those of the parent companies in the U.S. of 50.7%, 27.7% and 16.8% respectively. Independent manufacturers accounted for only 2.9% of Canadian sales last year, compared with 11.0% in 1939 when they relied even more heavily on imported vehicles.

THE POSITION OF THE INDUSTRY TODAY

THE CANADIAN automotive industry consists primarily of three major automobile and truck manufacturers, three independent automobile manufacturers (one of whom also produces trucks), one large independent truck manufacturer, several relatively small bus and specialty truck manufacturers, and over 400 firms engaged in the fabrication of automotive parts and the supplying of automotive materials. It includes, as well, the network of manufacturers' dealers which extends into virtually every community and which represents more employment and possibly more capital investment than the basic industry. In addition important segments of the industry are engaged in the importation and sale of vehicles from the U.S., Britain and Europe, and in the servicing of motor vehicles. The size of the automotive industry, in its broadest sense, is indicated by a recent estimate that one dollar in five of all retail sales in Canada is related to the purchase or use of motor vehicles. Tending to confirm this thesis is the present situation in the U.S., where it is estimated that one business in six is automotive.

The Motor Vehicle Manufacturers

Passenger car assembly operations are conducted in Windsor by Chrysler, in Oshawa by General Motors, in Oakville by Ford, in Hamilton by Studebaker-Packard and in Toronto by Nash-Hudson. While various attempts to decentralize assembly operations from southern Ontario were made in prewar years, notably with the establishment of branch assembly plants in St. John, New Brunswick, Montreal, Winnipeg and Vancouver by Ford, and in Regina by General Motors, these operations generally proved uneconomic and were discontinued either prior to or during the last war. An exception was Ford's Vancouver plant which was reopened in the postwar period but subsequently closed down in 1950. Important factors militating against geographic decentralization at the present time are limited volume, the seasonal pattern of automobile demand and the concentration of parts suppliers in the general vicinity of the existing plants. It is questionable whether the

decentralization of the prewar years was ever well advised, and it seems certain that the industry's preoccupation with costs will combine with the factors mentioned above to prevent any similar move in the foreseeable future.

The three major manufacturers, General Motors, Ford and Chrysler, accounted for 95.5% of total industry output in 1955, a percentage which compares with 92.7% in 1950 and 94.2% in 1954. Even these figures do not fully indicate the degree of dominance enjoyed by the Big Three, since they were achieved despite the fact that Ford did not produce a car in November or December 1954 or in January 1955, while General Motors was strike-bound for half of September and the entire fourth quarter of 1955. Over 97% of passenger car production has been accounted for by the majors in both of the last two years, although their relative positions with respect to truck manufacture was considerably lower at 87%.

The limited size of the Canadian market has been a contributing factor to the difficulties that have plagued the smaller automobile manufacturers for many years. More fundamental, however, has been their inability to produce and sell their products profitably in a highly competitive market. It is significant that the parent companies in the U.S. have had no more success than their Canadian offspring, although operating in a market 20 times as large.

The so-called independents have suffered increasingly in recent years from the competitive pressures generated by the comeback of Ford in its drive to challenge General Motors for industry leadership in both the United States and Canada. This move resulted in the violent return of real competition to the industry in 1953 after seven years of a sellers' market that had permitted many dealers and some manufacturers to operate profitably despite their relative inefficiencies.

In the extremely competitive period that followed, these deficiencies rapidly reduced the independents, as well as one of the majors, to a position that threatened their corporate existence. Sweeping measures were taken by these companies to improve their operating positions, including the consolidation of the six smaller American manufacturers into the "Little Three" of Studebaker-Packard Corporation, American Motors, and Kaiser Motors Corporation. Advantages inherent in the mergers for the smaller companies include benefits from manufacturing efficiencies stemming from the consolidation of facilities and the standardization of parts, the strengthening of dealer organizations and the pooling of advertising budgets to achieve a more effective national coverage. Of particular importance from a manufacturing standpoint has been the ability to reduce the number of body shells used to produce the companies' models, thus diminishing a basic manufacturing weakness compared with the large manufacturers. Of perhaps equal importance has been the re-assessment by these companies of their positions in industry and the decision of at least one company to concentrate more on

building automobiles of special appeal in particular markets, to reduce the direct competition with the majors. Despite the positive steps taken by these companies to improve their positions, it appears unlikely that they will be able to continue long in their existing corporate form as automobile manufacturers. One of the manufacturers, Kaiser Motors, which had earlier joined with Willys, has already announced that it has withdrawn from passenger car production, while both American Motors and Studebaker-Packard continue to operate at substantial losses.

Only the subsidiaries of American Motors Corporation have been affected from a manufacturing standpoint in Canada by the mergers referred to above, with Studebaker-Packard in Hamilton continuing to assemble the Studebaker car, while importing the Packard. Nash and Hudson have consolidated their assembly operations in Toronto, following the shut-down of Hudson's assembly operation at Tilbury. While some manufacturing economies have undoubtedly been affected, activities continue to be unprofitable, with the companies' sales organizations apparently unable to generate the demand necessary to support even assembly operations.

Although an obviously relevant matter, it is extremely difficult to consider the industry's production of 454,000 motor vehicles last year in terms of manufacturing capacity. This is primarily because of the difficulty in defining the term "capacity" in the industry, due to the flexibility that exists within the framework of the industry's normal operating practices. One of the major complications is due to shift work. It is not accurate to consider any particular number of shifts as being "normal" for the industry, since this is determined entirely by the vehicle demand (real or anticipated), itself influenced in large measure in Canada by seasonal factors. It is not unusual for the factories of the large manufacturers to be operated three shifts a day, six days a week during the early months of the year in anticipation of heavy Spring sales, in preparation for which dealer stocks are rebuilt. Similarly late summer lay-offs are normal, even when model changeovers are not extensive, reflecting the decline in vehicle demand usually experienced at this time of year. Due to the very limited space available at the factories for the storage of complete vehicles, virtually all inventory must be either in field stocks (i.e. dealer hands) or in transit to them. Accordingly when dealer stocks are low, the factories are able to operate at high levels for extended periods as these are rebuilt, but once this has occurred, production must be closely geared to changes in demand. The industry thus must be prepared to meet heavy periodic demand, while retaining sufficient flexibility to permit rapid readjustment to reduced operating levels.

Sufficient data have not been obtained to permit more than a very broad generalization with respect to car-building capacity in the industry, but it appears that the Big Three manufacturers could theoretically produce about 600,000 cars per year on a three-shift basis, assuming demand of this magni-

tude spread reasonably evenly throughout the year. In actual practice, these companies were operating at practical capacity in the second quarter of last year, when combined monthly production approximated 45,000 automobiles. Truck-building capacity is larger relative to demand than automobile capacity, but no meaningful estimate is available at the present time.

The Parts Industry and Integration

Of the several hundred Canadian firms engaged in automotive parts fabrication, a number of the larger manufacturers specializing in highly engineered components are subsidiaries of American companies. Substantial parts manufacturing facilities are also operated by the Big Three, in addition to their basic assembly activities. Firms range in size from small metal-working establishments representing an investment of several thousand dollars to multi-million dollar operations employing as many as five thousand people.

The fact that the Canadian content of the average low-priced passenger car probably does not exceed 65% tends to understate the amount of manufacturing actually done in the Canadian automotive industry. This is largely due to the fact that around 25% of the industry's basic steel requirements is imported, as a result of which raw material costs partially offset the value added in Canadian plants. For example, a parts fabricator using exclusively a specialty steel imported from the U.S., whose operation is such that 60% of production costs is accounted for by raw material, is able to establish a Canadian content of only 40% in his product, despite the fact that 100% of the actual manufacturing of the part concerned occurred in this country.

While many parts and sub-assemblies continue to be obtained exclusively from established sources in the U.S., a much greater number is being made in Canada and sold in competition with dutiable imports. Principal parts not made in Canada include most large body stampings; frames; axle assemblies, brakes and clutches for heavy trucks; engines for the more expensive, low volume cars and trucks; and automatic transmissions. In addition imports are relied upon for certain types and sizes of components made in Canada, as well as for many specialty items e.g. windshield wipers and carburetors.

The ownership of parts manufacturing facilities has obvious advantages to the motor vehicle manufacturers, particularly where it permits cost savings through a reduction in materials handling and more efficient utilization of indirect labour. These stem primarily from the improved location of plant facilities. Additional advantages in increased integration lie in having better protection against shortages, price increases and similar problems during periods of tight supply. Integration in the automobile industry is only profitable where the volumes involved are very large, as a result of which it is completely beyond the grasp of the smaller Canadian manufacturers and is possible for the larger companies only to a limited extent.

There has been a noticeable trend toward integration in the U.S. automobile industry since the war, as evidenced at Chrysler by recent construction of foundry and forge facilities and by major acquisitions of automotive body facilities. Chrysler has historically been the least integrated of the major automobile manufacturers, until recently being primarily an engine builder and assembler. At Ford, the pioneer in industrial integration, the company's philosophy is indicated on Page 9 of the common stock Prospectus dated January 17, 1956, which reads in part, "The company is preparing to increase its production of some items which it has purchased in part from outside sources and to produce certain other items for which it has relied entirely on outside suppliers". General Motors has for some years manufactured, directly and through subsidiaries, a larger part of its requirements of automotive parts and components than any other U.S. automobile manufacturer.

There have naturally been fewer opportunities for the manufacture of components by Canadian automobile manufacturers. As is stated in the Preface, no statistics are available that indicate the extent to which this has occurred, and efforts to develop information on the subject met with only limited success. Canadian Content Legislation has greatly stimulated independent parts manufacture in Canada, and it appears that it has also resulted in somewhat more parts fabrication by the manufacturers than might otherwise have occurred. The growth in volume of parts made by the automobile companies in recent years appears, however, to have come more from the tendency to manufacture a larger proportion of the increased requirements of parts already made, rather than from commencing the manufacture of parts formerly purchased entirely. Where volume has permitted it, the manufacture of some parts not previously made by the company has been started, in accordance with the manufacturers' natural desire to provide insurance against the possible failure of a supplier resulting in disruption of assembly lines.

The amount of integration amongst the Big Three in Canada varies considerably, generally reflecting the policies of the parent companies. Chrysler is still primarily an assembler, with the company's manufacturing operations until recently largely confined to body building and the machining and assembly of six-cylinder engines. However with the opening of the company's new engine plant in Windsor in 1955, Chrysler now makes close to 90% of the component parts required for its V-8 engines, which represents an increasing percentage of total engine requirements. Cylinder blocks, cylinder heads, crankshafts, connecting rods, pistons, etc. are now purchased as rough castings and forgings from Canadian suppliers and are machined into finished components in the new facilities. Prior to the completion of the latter, V-8 engine parts were imported in finished form from Detroit and only the final motor assembly took place in Windsor. Despite this increase in the com-

pany's manufacturing activities, Chrysler purchases a larger volume of parts from Canadian suppliers than it did before the war.

Ford has for many years operated extensive body building, machining and stamping facilities in the Windsor area, in addition to a large engine plant. During the 1930's, the company built a foundry and heat-treating facilities to supply the major part of its requirements for castings, particularly engine blocks. Since that time some further integration has been achieved through the manufacture of a larger percentage of the requirements of certain parts and components as volume has grown, although, as in the case of Chrysler, orders placed with outside suppliers have also shown substantial growth. Passenger car and truck assembly facilities were gradually moved from Windsor to Oakville in 1953-54, together with certain activities necessarily conducted concurrently with final assembly, including body building, painting, trimming, etc.

General Motors of Canada Ltd., together with its associate McKinnon Industries of St. Catharines (a subsidiary of General Motors Corporation), in addition to operating the types of facilities indicated above, manufactures a variety of parts and types of equipment not made by the other automobile manufacturers. In its Oshawa plants General Motors manufactures many stampings including such major items as Pontiac front fenders, and conducts the final assembly of all cars and trucks produced in Canada. The company's engine plant at Walkerville (Windsor), which for many years accounted for G.M.'s entire output of engines, has been supplemented with a new V-8 engine plant operated by McKinnon. The latter company has been the largest automotive parts manufacturer in Canada for many years employing a broad range of parts and equipment, as well as operating a large forge shop and both grey iron and malleable iron foundries. Components made include transmissions, differentials, brake assemblies, fuel pumps, to name some of the more important, as well as a broad range of electrical equipment. The latter includes generators, distributors, ignition coils, voltage regulators, starting motors, spark plugs and car radios. Approximately 85% of McKinnon's output is for General Motors' account, with most of the remainder, perhaps 10%, accounted for by non-automotive customers.

Raw Materials

No comprehensive figures exist with respect to the consumption of raw materials by the automotive industry in Canada. On the basis of representative data developed from industry, it appears that various types of iron and steel account for approximately 80% of the weight of the average passenger car. A comprehensive survey of the industry conducted by the Canadian Automobile Chamber of Commerce in 1955 revealed that consumption of basic iron and steel shapes by the automotive industry, in connection with parts fabrication, was 437,000 tons in 1953 and 234,000 tons in 1954.

These figures represent approximately 10% and 6.5% respectively of total Canadian shipments (including imports) of iron and steel in those years. While these percentages are large, they compare with automotive consumption in the U.S. of 18.7% of total steel shipments in 1954, reflecting the fact that the Canadian industry still relies heavily upon imports from the U.S. for certain major components and some types of steel. Imports of basic shapes accounted for 27% of total industry consumption in 1953-54, according to data developed through the C.A.C.C. survey.

It appears that automotive uses accounted for about 400,000 tons of primary iron and steel in 1955, somewhat below the record 1953 consumption due to reduced truck output. Approximately 60% of the iron and steel content of the average four door sedan is obtained from Canadian sources, according to information obtained from two of the major manufacturers. Some indication of the importance of automobile and truck manufacturing to the primary metal working industries is an unofficial estimate that 75%-80% of all closed-die forgings and about 75% of the output of malleable and grey iron castings are produced to meet automotive requirements.

Next to iron and steel, rubber is the raw material used in the greatest quantities by the automobile and truck manufacturers. According to D.B.S., production of tires and tubes accounted for 107 million pounds of natural and synthetic rubber in 1954, equal to two-thirds of the rubber industry's total rubber consumption in that year. In addition to tires and tubes other automotive uses of rubber include insulation, matting, and repair materials, all of which are consumed in very large quantities and substantially increase the importance of the motor vehicle to the rubber industry. One manufacturer indicated that 178 pounds of rubber and rubber compounds were used in the company's low-priced four door sedan. Supply arrangements tend to reflect the pattern in the U.S., with Dominion Rubber company (a subsidiary of U.S. Rubber Company) being the principal supplier of tires to General Motors of Canada Limited, Firestone the major Ford supplier, and Goodyear the supplier of Chrysler and the independents. While Chrysler's requirements are met entirely by Goodyear, probably close to one-half of the tire requirements of the other major manufacturers are accounted for by other than the principal supplier.

Estimates of the consumption of base metals and aluminum in the manufacture of cars and trucks in Canada have no official endorsement. Copper is used primarily in radiator cores and electrical wiring, and it has been estimated by one large base-metal producer that the industry used approximately 7,000 tons of copper last year. Lead is used primarily in batteries, while zinc and zinc alloys are used in a wide variety of die-castings. Lead consumption by the industry is estimated to have been 22,000 tons last year, while that of zinc is calculated to have been around 4,000 tons. It appears that aluminum consumed in the manufacture of motor vehicles last

year approximated 5,000 tons, with that metal finding increased applications in the manufacture of pistons, cylinder heads, brake drums, trim, etc. and the automatic transmission constituting a new major use of growing importance. The relative use of the various metals differs widely amongst the manufacturers, and the absence of accurate data on the metallic composition of parts imports further complicates the problem of assessing industry use, directly and indirectly, of these metals. An example of the limitations of the "average per car" concept with respect to the usage of various metals is seen in the comparison between the indicated average industry use of aluminum of 35 pounds per car and the actual usage, which varies from nine pounds to nearly 200 pounds between different makes, depending on equipment.

In addition to the large consumption of the metals and of rubber indicated above, the automotive industry is also a major consumer of glass and textiles. It is estimated in the United States that the industry uses over 50% of all plate glass consumed, and it is probable that the situation is roughly comparable in Canada. Use of glass in cars has increased materially in recent years, with the amount of glass used in the basic model of one manufacturer increasing from 62 pounds per car in 1946 to 97 pounds in 1955. On the basis of an assumed average of 90 pounds of glass per car and 50 pounds per truck, consumption of automotive glass exceeded 20,000 tons last year.

Use of textiles by the industry has also increased in recent years, with the average car today embodying between 60 and 80 pounds of various types of natural and synthetic materials and total industry consumption approximating 15,000 tons.

While the above items probably account for about 90% of the weight of the average automobile, information from one manufacturer indicated consumption of the following additional materials: plastics—10 pounds, sound deadener—12 pounds, paper—35 pounds, and lubricants—17 pounds. While no data on paint consumption were obtained from the industry, it is understood from a leading supplier that the average car requires 3½ gallons of automotive paints and lacquers.

Research and Engineering

The Canadian automobile industry has done no basic research on motor vehicles due to its cost relative to volume and the ready recourse to that of the U.S. industry, although a certain amount of what may be termed "research engineering" has been undertaken to modify standard U.S. vehicles to meet the exigencies of Canadian conditions. An example of this has been the development of heavy-duty shock absorbers for passenger cars designed for use in western Canada where road conditions have been such that standard equipment frequently resulted in unsatisfactory service. In addition, some

major design modifications have been carried out by the larger Canadian manufacturers on both passenger cars and trucks, primarily with a view to improving their respective competitive positions. Some of this work was stimulated by the necessity of giving all dealers a low-priced volume car and resulted in the re-styling of several U.S. models into superficially different "Canadian" automobiles. These include Chrysler's small Dodge, Ford's Meteor and Monarch, and G.M.'s Canadian Pontiac. These cars are rather superficial design modifications of basic volume lines, with the rather minor engineering changes involved also carried out by Canadian personnel.

At the present time the three principal Canadian manufacturers all carry out their own layout engineering with respect to production facilities. General Motors and Ford have done this type of work for many years, while Chrysler has progressed and built up its production engineering staff in the postwar period to the point where all manufacturing layout is now done by Canadian personnel. The companies have naturally profited in this regard from the experience of their U.S. parents, who continue to furnish valuable engineering assistance with respect to production techniques for a nominal fee as required. Production processes in the Canadian plants are broadly similar to those employed in the U.S., with major modifications frequently required due to the limited scale of operations. A typical example of the latter is the Chrysler assembly plant at Windsor, where all car models and body types are assembled on a single line, necessitating major changes in fixtures and layout from those employed in Detroit.

The automobile companies have made a major contribution to the development of engineering and technical skills in Canada, both through expansion of their own staffs and through the stimulus afforded to other industries, particularly the parts industry. Canadian employees have access to the extensive engineering facilities operated by the parent companies in the Detroit area, and every encouragement is given to employees to further their technical educations. Courses leading to recognized certificates, and in some cases to degrees, are provided in various types of engineering, electrical, plastics, rubber and other technologies, and in business administration. Technical courses normally include both classroom and in-plant training, and usually are available free of cost to the individual.

In addition to the more formalized training indicated above, apprenticeship programmes appear to be rather general in the industry, designed to ensure future supplies of skilled workmen of all types. Technical skills particularly utilized in the industry include those of the toolmaker, electrician, plumber, pipefitter, millwright and machinist. Refresher courses are also provided to keep technical personnel abreast of technological developments in their respective fields, in connection with which correspondence and night courses are normally available. A more recent development with the larger automobile companies has been the establishment of service training centres

across the country which provide training facilities for dealer service personnel. Presumably these have been necessitated by the increasing complexity of new vehicles and growing service requirements for equipment and accessories with which most mechanics have had little or no experience.

Although the industry has been the chief beneficiary of the engineering skills it has developed, it has nonetheless made major contributions in this regard to many other Canadian industries. Similarly the familiarity with problems involved in mass production permitted both the automobile and the parts manufacturers to assume major roles in the production of a wide range of armaments during the last war. Witness to the continuing nature of this contribution is seen in the relatively high turnover of engineering graduates in the industry today. One major manufacturer reports that 49% of the company's engineering graduates have graduated within the last five years, a percentage which compares with 34% indicated as an average for 49 large firms covered in a recent N.R.C. "Survey of Professional Salaries".

Employment and Wages

An historical summary of employment in the industry is included in Table XXVI.

Employment in the motor vehicle manufacturing industry has normally been typified by seasonal fluctuations particularly evident in the late summer during the period of model changeover. These have been very pronounced in the postwar period, as indicated in Table XXVII.

The decline in vehicle demand in 1954, coupled with unusually long shutdowns for model changeovers and the Ford strike, resulted in hourly-rate employment dropping rapidly through the year to a level of 13,400 in November, only 46% of the February peak. The settlement of the Ford strike, together with record automobile demand, spurred a rapid return to peak employment levels early in 1955. Employment of wage-earners reached a high of 31,000 in May, some 9.4% above the previous high reached in the same month of 1953. Normally seasonal lay-offs reduced industry employment through the summer and served to dampen the impact of the General Motors strike in September. Following the walk-out at G.M. in the middle of September, the number of production workers employed in the industry declined to 20,500, some 10,500 below the year's peak. Despite the fact that the strike remained unsettled, hirings by other automobile manufacturers had increased industry employment modestly above the September level by the year-end.

Total employment, including salaried personnel, in the motor vehicle industry increased from 24,500 in January to 39,000 in May, during which period salaried employees increased from 6,800 to 8,000. Although industry employment of hourly-rate workers declined by one-third between May and September, salaried employment actually increased 6% in the period. Total

Table XXVI

EMPLOYMENT—CANADIAN AUTOMOTIVE INDUSTRY
Selected Years, 1929-1954

	Automobile Industry			Wage Earners			Parts Industry			Total, Including Salaried Personnel*		
	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Autos	Parts	Combined
	1929	20,151	9,209	14,145	6,119	2,317	4,178	16,435	4,708	21,143	4,708	11,910	16,626
1933	7,421	5,068	6,491	3,500	2,928	3,196	8,134	3,776	11,910	3,776	23,362	27,136
1937	14,466	8,681	12,777	7,736	6,528	7,390	14,946	8,416	23,362	8,416	22,546	45,896
1939	14,105	8,220	12,209	7,585	5,940	7,009	14,427	8,119	22,546	8,119	35,305	43,425
1943	22,159	19,871	20,901	19,381	18,922	19,164	24,265	21,631	45,896	21,631	36,995	82,887
1945	19,226	3,564	14,736	17,435	10,981	14,976	17,915	17,390	35,305	17,390	15,348	50,643
1946	20,454	15,257	18,320	13,568	11,849	12,938	21,647	15,348	36,995	15,348	41,324	51,676
1947	21,658	17,887	20,373	15,642	14,157	14,928	23,837	17,487	41,324	17,487	16,388	57,812
1948	21,764	19,680	20,456	15,199	11,520	13,820	24,703	16,388	41,091	16,388	44,920	61,011
1949	23,267	19,055	22,061	15,689	14,388	15,151	27,022	17,898	44,920	17,898	49,074	63,818
1950	26,966	18,907	23,758	18,146	14,991	16,743	29,355	19,719	49,074	19,719	51,676	101,350
1951	28,285	18,064	24,821	19,205	16,028	17,850	30,479	21,197	51,676	21,197	52,893	104,569
1952	26,457	22,479	25,177	19,050	16,915	18,201	31,102	21,791	52,893	21,791	56,308	109,191
1953	28,358	24,871	26,890	21,090	16,312	19,001	32,973	23,335	56,308	23,335	18,990	75,298
1954	29,349	13,416	21,518	17,059	11,365	14,626	27,944	18,990	46,934	18,990		

* Average for year.

Source: D.B.S.—Iron and Steel and Their Products; The Motor Vehicles Industry; Employment and Payrolls.

Table XXVII

**PRODUCTION WORKERS IN THE MOTOR VEHICLES INDUSTRY
BY MONTHS**

1948-1955

	1948	1949	1950	1951	1952	1953	1954	1955
January	20,056	19,055	22,637	27,460	22,479	26,392	28,797	17,698*
February	20,588	20,548	23,042	28,044	23,491	27,176	29,349	27,617
March	20,267	21,442	20,141	28,285	24,875	27,946	28,101	30,158
April	19,680	21,913	19,937	27,757	25,612	27,871	27,472	30,961
May	19,790	21,966	24,510	27,297	26,027	28,358	23,659	31,036
June	20,323	22,492	25,050	26,546	26,400	27,026	21,441	30,661
July	19,218	22,666	26,117	25,178	26,457	27,804	20,481	29,985
August	20,420	22,861	18,907	18,064*	26,137	26,809	16,119	23,000
September	21,619	23,193	26,204	23,338	25,702	25,883	15,133	20,482*
October	21,764	23,267	25,650	22,700	24,238	25,256	18,563	21,300*
November	21,721	22,609	25,934	22,091	25,534	24,871	13,416*	21,947*
December	20,024	22,723	26,966	21,092	25,201	27,298	15,677*	N.A. *
Average	20,456	22,061	23,758	24,821	25,177	26,890	21,518	25,895

(11 mos.)

* Major strikes in the industry.

Source: Dominion Bureau of Statistics, unpublished.

industry employees numbered 30,400 at December 1st, of which 72% was non-salaried.

Employment in the parts industry has normally been somewhat more stable than that in the automobile industry in recent years, although the limitations of the establishment concept make a direct comparison unreliable. D.B.S. data indicate that employment fluctuated narrowly between 20,400 and 22,500 during 1955, prior to the General Motors strike, during which employment remained virtually constant at 16,600. These figures compare with the wartime peak of 20,300 reached in 1942, and with average employment of 23,300 in 1953.

The parts suppliers are considerably less tied to the seasonal pattern of motor vehicle demand than are the vehicle manufacturers, with many of the companies able to maintain a reasonably even level of production and employment throughout the year. This reflects both a conscious effort to spread orders and deliveries, to the extent possible, and also the fewer problems inherent in the build-up of parts inventories compared with those of finished vehicles.

Total employment in the plants of the vehicle manufacturers and the parts companies reached a high of 61,400 last May, an increase of 36.7% from the strike-depressed levels of January. Although the General Motors strike idled approximately 17,000 production workers in September, aggregate employment in the automotive industry of 45,500 in that month was still slightly

above that of January, with combined employment having moved up somewhat to 47,100 by December.

The average number of hours worked per week in the automobile industry in the postwar period has ranged from a low of 37.7 hours in 1946 to a high of 42.2 hours in 1950, with an average of 40.6 hours being worked in 1955. Average hours worked in the industry are quite comparable with those prevailing in the U.S., although seasonal factors tend to be reflected in the somewhat shorter work week in Canada. These figures do not account for workers idled by strikes, which probably cost the industry over 8 million man-hours of employment last year. They similarly do not adequately account for seasonal lay-offs, a normal feature of employment in the industry. An historical summary of employment and wage data in the automotive industry during the postwar years is included in Table XXVIII.

In interpreting data presented in this table, the comments on the number of shifts included early in this chapter should be kept in mind. Automobile workers as a group have traditionally been amongst the highest paid workers in industry, although the differential has narrowed in recent years. Average hourly earnings of \$1.79 in December, 1955 compared with \$1.57 earned by the average of all workers in durable goods industries and only \$1.46 for all manufacturing industries combined. In addition, employee fringe benefits are well above the average of industry generally. This reflects the relative efficiency of the industry, the high degree of union organization prevailing and the fact that periodic seasonal lay-offs are the rule. Most hourly-rate employees are members of the International Union United Automobile, Aircraft, Agricultural Implement Workers of America, the dominant automotive union in the U.S. Canadian wage rates have varied between 75% and 80% of those in the U.S. industry in recent years, with the differential narrowing between 1946 and 1952, and subsequently widening somewhat through 1955. The recent wage settlements negotiated in the industry involving supplemental wage compensation and additional fringe benefits make indicated average hourly earnings an increasingly inadequate guide to employee income and wage costs in the industry.

The automotive industry lost the equivalent of more than 1,000,000 man-days of employment during 1955, equal to 55% of all time lost in labour disputes by Canadian industry, as a result of strikes at Ford and General Motors in 1955. The industry's labour record in the postwar years prior to 1954 was not outstanding, and with two major strikes in less than a year, the industry has accounted for an average of 43% of all time lost in labour disputes in 1954-55, in addition to which some 750,000 additional man-days were lost in 1956 prior to settlement of the General Motors strike.

The industry's contribution with respect to the training of technical personnel has already been discussed. From the evidence available, it appears

Table XXVIII
AUTOMOTIVE INDUSTRY SUPPLEMENTARY EMPLOYMENT AND WAGE DATA 1946-1955

	Average Hours Worked*				Average Hourly Wage				Man-days Lost in Labour Disputes % All Industries	
	Motor Vehicle Mftg.		U.S.		Motor Vehicle Mftg.		U.S.			
	Canada	U.S.	Transport Equipment	Durable Goods	Canada	U.S.	Transport Equipment	Durable Goods		
1946.....	37.7	37.8	41.7	42.8	\$1.02	\$1.34	\$0.88	\$0.76	267	5.9%
1947.....	39.4	39.0	42.1	42.7	1.13	1.47	0.98	0.87	1	—
1948.....	38.8	38.4	41.9	42.3	1.24	1.61	1.08	0.98	172	19.4
1949.....	40.0	38.9	42.2	42.5	1.31	1.70	1.16	1.07	102	9.6
1950.....	42.2	41.2	42.5	42.5	1.37	1.78	1.21	1.12	16	1.2
1951.....	40.2	39.5	41.9	42.0	1.48	1.91	1.34	1.26	127	14.1
1952.....	39.9	40.6	41.2	41.6	1.63	2.04	1.47	1.40	49	1.7
1953.....	40.8	41.1	41.5	41.6	1.69	2.14	1.57	1.47	1	—
1954.....	39.3	40.6	40.5	40.9	1.71	2.20	1.62	1.52	456	30.9

* per week.

Source: D.B.S.—The Canadian Statistical Review, 1955 Supplement; U.S. Dept. of Commerce, Business Statistics, 1955.

that between 10% and 15% of production workers have some technical training, with this relationship not having changed importantly in recent years. Probably 80% of production workers in the industry may be considered semi-skilled, with most jobs requiring only a few days experience to be discharged satisfactorily. Although total employment in the industry has not increased noticeably in recent years, the number of graduate engineers employed by one of the large automobile companies has increased approximately 50% since 1952. This increase presumably reflects a move toward decentralization of operations within the company concerned, as well as the increasing complexities of modern production equipment and the trend toward developing larger Canadian engineering staffs as volume permits.

Capital Expenditures

Substantial expansion programmes have been conducted by the major automobile manufacturers in recent years, with the capital expenditures involved largely accounting for the \$146 million invested by the industry between 1950 and 1954. During the same period maintenance and repair items accounted for close to an additional \$50 million. Table XXIX summarizes these expenditures, classified between construction expenditures and those for machinery and equipment. Financing has been primarily internal, with some temporary accommodation obtained from the banks, to be subsequently repaid out of earnings.

Machinery and equipment of \$74.2 million accounted for 51% of all capital expenditures in the years considered, of which the equivalent of 51% was charged to income under maintenance and repairs during the period. Because of the fact that major model changes are instituted every two or three years, the automobile industry is subject to heavy additional expense due to the necessity of writing-off the cost of many special machines, tools, dies, fixtures, etc. over a short period of operations. The above figures do not include the expense involved due to this situation, which is further aggravated by the periodic obsolescence of standard tools and equipment prior to the end of their useful lives, a development which may occur as a result of a drastic model change or major technological developments embodied in new machine tools.

It is impossible to equate accurately capital expenditures in the automobile industry with increases in productive capacity. In addition to the problems of defining capacity outlined in sub-section (1), there exists the obvious difficulty of assessing the value of the improved products and productive facilities obtained, without a consideration of which capacity has little meaning. On the basis of information obtained largely from one company, interpreted in the light of the industry data available, it appears that daily car-building capacity has been increased about 40% since 1950. One of the major manufacturers started an extensive expansion and modernization programme prior

Table XXIX

CAPITAL AND REPAIR EXPENDITURES MOTOR VEHICLES INDUSTRY

1950-1954
(000)

	Capital Expenditures		Repair and Maintenance		Aggregate Expenditures	
	Construction	Machinery and Equipment Total	Construction	Machinery and Equipment Total	Construction	Machinery and Equipment Total
1950.....	\$ 3,140	\$ 7,636	\$ -1,719	\$ 6,146	\$ 4,859	\$ 13,782
1951.....	7,442	12,094	1,778	6,477	9,220	18,571
1952.....	20,920	11,122	2,284	7,257	23,204	18,379
1953.....	26,981	27,141	3,019	9,388	30,000	36,529
1954.....	13,341	16,312	1,980	8,694	15,321	25,006
	\$71,824	\$74,305	\$10,780	\$37,962	\$82,604	\$112,267
		\$146,129		\$48,742		\$194,871

Source: D.B.S., The Motor Vehicles Industry, 1954.

to this time, so that productive capacity in the industry appears to have expanded about 60% in the postwar period, with total capital expenditures since the war amounting to over \$200 million. In addition to the amounts spent by the automobile and truck manufacturers, capital expenditures by the automotive parts industry, as defined by D.B.S., totalled \$60 million between 1949 and 1953.

Gross fixed assets directly employed by the manufacturers of automobiles and trucks approximate \$275-\$300 million. In addition, it appears that the value of assets utilized by the parts industry exceeds \$200 million and many well exceed the investment of the manufacturers if all automotive suppliers are included.

Distribution—Retail and Wholesale

Retail

Motor vehicles are sold in Canada through an extensive system of independent dealerships, estimated to include 5,450 authorized new car dealers and an indeterminate (though much smaller) number of dealers handling exclusively used cars. An analysis of information obtained from the industry, supplemented by a recent survey conducted by the Federation of Automobile Dealers Associations, indicates that approximately 61% of franchised dealers handle models of the Big Three, 29% sells vehicles of the smaller Canadian manufacturers, and 10% handles one or more makes imported from abroad. The provincial distribution of the industry's dealerships is determined more by population density factors than by the relative sizes of the various provincial markets. For example Ontario, with 45% of total industry sales in 1955, had only 30% of Big Three dealerships, while Saskatchewan, with 4.2% of total sales, had 17.5%.

Despite the fact that sales volume has tripled since the late 1930's, the number of dealerships appears to have increased only slightly since that time, attesting to the trend toward higher volume selling that has typified the industry in recent years. Dealers of the large manufacturers do approximately 2½ times the new car volume of the average import dealer, and six times that of the dealer representing the smaller Canadian automobile manufacturers. On the basis of preliminary figures, car sales varied from 80 to 126 per dealer amongst the Big Three last year, compared with around 40 and 18 for import dealers and dealers of the independents respectively. Truck sales per dealer in 1955 varied from a high of 24 to a low of 8 amongst major dealers, with the latter figure also approximated by dealers of the largest independent truck manufacturer. No specific information is available with respect to the truck sales ratios of import dealers and the dealers of the small truck manufacturers, but it is probable that these sold an average of only 3 to 4 trucks each in 1955.

The increased emphasis placed on volume selling by the majors in recent years has resulted in a type of consolidation within dealership ranks that has not necessarily strengthened the industry's retail selling organization, as indicated by recent bankruptcies amongst large, as well as small, dealerships. The fact that the present record volume of sales is being obtained through about the same number of dealers utilized fifteen years ago reinforces the view that factory pressure for volume has contributed importantly to the rather general decline in merchandising methods and dealer morale that clouds automobile retailing today. The publicity that has been given to this situation in recent months, together with the welter of conflicting evidence presented by the dealers on one hand and the factories on the other, makes it difficult to assess the extent to which dealers as a whole have suffered from the extremely competitive conditions that have prevailed since 1953. While the factories have undoubtedly fostered the high volume/low mark-up concept of merchandising, it is also apparent that there is little real evidence that dealers as a group have been coerced into achieving volume sales by adopting selling methods that they themselves believed to be unsound. The bootlegging, price-packing and over-allowance, misleading advertising and unsound credit terms that typify automobile retailing today seem to be attributable at least as much to the desire for profit and prestige on the part of a minority of dealers as to selling pressure from the factories. There can be no doubt, however, that the manufacturers are in a position to restrain the more extreme elements in their retail organizations if they so desire, and the fact that they have not done so places the prime responsibility for the present situation upon them. Dealers are naturally attracted to volume selling by the series of discounts normally granted by the factories as dealer sales increase, ranging from 23% to 26% of factory suggested list prices. These are supplemented periodically with special bonuses of various types, with all incentives designed to make it financially attractive for dealers to sell more cars. The manufacturers are vitally aware that a bankrupt dealer is no asset in the struggle for industry leadership, as a result of which it appears that some of the excesses apparent since 1953 may be in the process of correction. The new dealer contract recently introduced by General Motors, partly as a result of Congressional pressure to assist in the correction of the many abuses currently prevailing, appears to mark a new milestone in that company's dealer relations. While the major manufacturers remain firm in their allegiance to the volume concept of selling, it appears that they now have an improved appreciation of its limitations, a fact that may be expected to be reflected in improved factory/dealer relations over the intermediate term. While many features of the new General Motors contract may well be "window dressing", the assumption by the factory of 100% of the labour cost involved in repairs under new car warranties (where formerly the liability was only 65%), together with the improved protection afforded dealers with respect to obsolete parts and car stocks on hand when new models are an-

nounced, are examples of basic improvements understood to be included in the new document. It is of interest to observe that while some informed individuals are of the opinion that recent market conditions threaten to upset the conventional system of franchise dealers upon which the industry has always relied, there is little evidence that difficulty has been experienced in attracting new capital into the dealership field to replace that lost through bankruptcies.

No accurate data are available with respect to capital invested in automobile dealerships in Canada. However information obtained from the major manufacturers indicates that approximately \$260 million is presently invested in dealerships of the Big Three. On the assumption that these dealers have a somewhat higher ratio of unit sales to capital than the industry as a whole, it seems reasonable to assume that the total investment in automobile dealerships in Canada approximates \$325-\$350 million. In addition to this capital investment, it is probable that working capital employed would be in the vicinity of \$150-\$200 million. Similarly there is no comprehensive information with respect to the employment provided in dealerships throughout the country. On the basis of estimates provided by General Motors, Ford and Chrysler, it appears that their dealers collectively employ around 65,000 people. Making what appear to be reasonable assumptions with respect to the rest of the industry, it appears that total employment afforded by automobile dealerships in Canada approximates 75-80,000.

Wholesale

There has been a major shift in the industry's basic methods of wholesale distribution since the late 1930's. Even by that time the railway's virtual monopoly on factory shipments to regional distributors and dealers had begun to weaken, due to rising cost competition from road transport. General Motors was the first of the large manufacturers to ship a major portion of factory production by highway transport. During the late 1920's and the early 1930's, a major part of industry was driven away from the factory under its own power, aided by the existence of several regional assembly plants at that time. While data on this movement are not complete, it is understood that over 60% of General Motors production in 1933 was directly driven to retail outlets, compared with about 28% in 1928. By 1938 that company had developed distribution through highway transport facilities to the point where 57% of total vehicle shipments was moved by transport in that year. Ford had not yet begun to use haulaway equipment at this time, with 66% of the company's shipments conducted by rail in 1938, and the remainder delivered under their own power to both dealers and retail customers. Chrysler was still primarily utilizing rail distribution in 1938, although truck transport had increased to account for 15% of all deliveries by this time.

By 1950, although General Motors' methods of regional distribution remained largely unchanged (reflecting the earlier use of road transport), both Ford and Chrysler had reduced their dependence on the railways to only 54% of total shipments. Ford has greatly stepped up its use of haulaways in the last five years, with 76% of all shipments being made by truck-trailer in 1955. Both General Motors and Chrysler have continued to increase their use of highway transport in recent years, with only 30%-40% of shipments over the past two years being made by rail. However it appears that the decision of the major companies to enter into an agreed charge contract with the railways, with respect to shipments to western Canada, has restored a competitive balance between the carriers, suggesting that little more of this important traffic will be lost by the railroads.

Some use has been made of water transport by the industry, but this form of regional distribution does not seem to be too well suited to the needs of the dealer organization.

TRENDS IN PRICES AND COSTS

Comparative Prices—Canada and the United States

A comparison of the major price elements in a typical four door sedan in both 1935 and 1955 is provided in Table XXX.

The list price of this composite car has declined about 15% in Canada, relative to the U.S. since 1935. This has occurred despite a seven-fold increase in federal taxes, to a level well over twice that prevailing in the U.S. The principal reason for the decline has been the substantial relative reduction in Canadian factory selling prices from 25.1% to only 11.2% above comparable U.S. prices. Also contributing to the improvements has been the reduction in gross dealer mark-ups indicated above. Of the \$404 price differential between U.S. and Canadian prices in 1955, little more than one-third was accounted for by higher manufacturers' prices, in sharp contrast to 68% in 1935. Taxes now account for 40% of the difference, where 20 years ago they actually reduced relative prices between the two countries.

Since Canadian factory prices contain an element of freight designed to subsidize remote markets, while the U.S. prices compared above do not, the comparison actually over-states the price differential on the cars compared. U.S. factory prices were increased between \$20 and \$30 per unit early in 1956, in line with the move to eliminate phantom freight in that country, as a result of which factory prices in both countries are now on a roughly comparable basis. Assuming a \$25 increase in the price of the U.S. composite car, the difference in factory prices between the two countries is reduced to 9.1%. Price comparisons are still not strictly accurate, however, since Canadian prices include certain equipment (e.g. the air cleaner) that continues to be regarded as an extra in the U.S.

New car prices cannot be interpreted adequately without a consideration of the used-car price structure, in view of the fact that between 80% and 90% of new car purchases involve a trade-in. The value of a used car fluctuates between seasons of the year and is importantly influenced by the

Table XXX
PRICE COMPARISON COMPOSITE FOUR DOOR SEDAN — CANADA — UNITED STATES
 1935-1955

	Canada		United States		Excess of Canadian Item Over U.S.			
					1935		1955	
	1935(a)	1955(c)	1935(b)	1955(c)	Amount	%	Amount	%
Factory selling price.....	663	1,464	530	1,317	133	25.1	147	11.2
Federal Taxes.....	38	292	40*	132	(2)	—	160	121.2
Cost to Dealer.....	701	1,756(d)	570	1,449(d)	131	23.0	307	21.2
Dealer mark-up.....	213	436	150	339	63	42.0	97	28.6
Retail list(e).....	914	2,192	720	1,788	194	26.9	404	22.6

* includes Michigan state tax.

(a) composite model—comparable to 1955 models above; data obtained from the Tariff Board Report, Reference no. 91, The Automotive Industry, 1936.

(b) price breakdown estimated from data included in the Tariff Board Report, 1936, to correspond to the composite Canadian car included in (a).

(c) information supplied by the manufacturers—includes Chevrolet 150, Plymouth Plaza, Ford Mainline.

(d) based on the lowest dealer discount bracket i.e. 23% in Canada and 20.5% in the U.S. In maximum Canadian discount bracket of 26%, cost to the dealer would approximate \$1,700.

(e) ex-freight, handling and delivery charges, and local taxes.

size of a dealer's inventory, his financial position, the desire of the purchaser to make a "good" deal, and a host of other factors. However, comparisons of used-car prices in Canada and the U.S. are possible in very broad terms. The traditionally higher dealer mark-up in Canada is indicated in Table XXX. Despite the fact that competitive conditions in both countries are such that dealer margins are no longer maintained, there is little evidence that this development enables the Canadian buyer to obtain a relative advantage over his U.S. counterpart. It does appear, however, that cash buyers in both countries tend to make a better deal than buyers with trade-ins, due to the losses normally experienced by new car dealers in disposing of used cars. It is of interest to note in this connection that once the higher price of car ownership in Canada has been paid, ownership can be maintained through successive car purchases with little additional relative cost. This is so because used car prices naturally tend to reflect the fact that new car prices are higher in Canada than in the U.S. This situation is similar to that prevailing at the time of the Tariff Board report in 1936.

To round out the above picture of retail prices in Canada and the U.S. some consideration of relative freight costs, handling and delivery charges and local taxes is necessary. Freight costs will be discussed below in Section III, where reasons for the existing price differential are considered. Handling, pre-servicing and delivery charges are designed to cover dealer expenses involved in taking cars from shipment points to the dealers' premises and in inspecting and preparing them prior to retail delivery. While these charges vary to some extent, typical charges are in the area of \$35-\$60 per car, and are not believed to vary materially between Canada and the U.S. Local taxes, including state taxes in the U.S., appear to vary up to a high of around 5% in both countries, with the industry of the opinion that for all practical purposes no differential exists. It was the presence of relatively high state taxes, at a time when federal taxes were low, that was mainly responsible for the slightly higher tax element in the U.S. composite car in 1935.

Automobile Price Trends in Canada

Although suggested list prices of automobiles in Canada have increased slightly in recent years the actual prices at retail undoubtedly have declined since 1952. This has been due to the extremely competitive conditions discussed earlier, which have resulted in profit margins of both the dealers and the factories being reduced to minimum levels. This is indicated by the trend of the D.B.S. automobile price index (unpublished) in recent years, 1949 prices—100:

	1950	1951	1952	1953	1954	1955
Automobile Index	100.8	115.4	117.8	115.8	116.3	107.8

It is practically certain that prices at retail have declined more than suggested

above, particularly when consideration is given to the decline in used-car prices that has occurred.

While actual used-car prices in the major U.S. markets are readily available, the only reliable source of used-car price data in Canada is the National Used Car Guide, published by the Federation of Automobile Dealers Associations of Canada. Table XXXI outlines suggested trade-in values for representative cars of various ages and price ranges since 1949.

These prices, while not based on actual transactions, nonetheless are believed to be a reasonable indication of trends in used-car prices during the period covered. The rapid deterioration in used-car prices since 1953 is evident, both in the direct comparison of prices between 1953 and 1954 and in a comparison of cumulative depreciation on a two year old car in 1950 and in 1955. Price declines on the representative 1948 models chosen averaged 35.3% between 1953 and 1954, a higher rate of depreciation than experienced cumulatively in their two years of life, despite the fact that these cars were 5-6 years old at the time. Similarly in the last two years, a typical 1953 model has depreciated about 50%, more than half again as much as experienced by a two year old car in 1950. It is probable that financial depreciation to a new-car buyer in 1955 who traded in a 1953 model was somewhat less than indicated above, due to the fact that he may have purchased his previous car at a discount. Furthermore, since prices in Table XXXI are presumably designed to protect dealer margins, it is to be expected that a smaller pay-up than suggested here would have been necessary.

At the present time passenger cars are subject to an excise tax of 10% (reduced from 15% in the spring of 1955) in addition to the general sales tax of 10%. As has been indicated above, the level of taxation of automobiles in Canada is the principal reason for their higher cost in relation to the U.S. Federal taxes on motor vehicles in recent years are outlined in Table XXXII. Despite the reduction in excise taxes in 1955, the increased sales taxes paid, as a result of the trend to higher priced models and more accessories (particularly automatic transmissions), resulted in a somewhat higher tax burden being borne by the new car purchaser last year. The small increase in truck taxes reflects the somewhat greater sales of heavy vehicles that occurred.

While it is not possible to discuss relative price trends over the years with any degree of accuracy, due largely to the great quality improvements that have been embodied rather regularly in new cars, it is believed that the following comparison has some interest as a guide to the minimum improvement that has occurred in automobile prices in relation to incomes since prewar.

It is evident that despite the low level of prices in 1939 and the much greater tax element in the present day car, a low-priced car is cheaper today, in terms of the labour involved to obtain it, than it was in 1939. The comparison

Table XXXI

USED CAR PRICES* REPRESENTATIVE MODELS

1949-55

	1955		1954	1953	1952	1951	1950	1949	Suggested List Price
	Fall	Spring							
1948 Ford.....	\$ 320	410	475	750	900	1,110	1,185	1,305	1,714
—Cum. Deprec.....	%81.3	76.1	72.3	56.2	47.5	35.2	30.9	23.9	
1948 Oldsmobile.....	\$ 415	515	600	930	965	1,140	1,410	1,645	2,096
—Cum. Deprec.....	%80.2	75.4	71.4	55.6	54.0	45.6	32.7	21.5	
1948 Chrysler.....	\$ 500	615	685	1,035	1,205	1,390	1,580	1,910	2,511
—Cum. Deprec.....	%80.1	75.5	72.7	58.8	52.0	44.6	37.1	23.9	
1953 Ford.....	\$ 1,165	1,435	1,535						
—Cum. Deprec.....	%49.6	37.9	33.6						
1953 Oldsmobile.....	\$ 1,550	1,930	1,950						
—Cum. Deprec.....	%51.2	39.2	38.5						
1953 Chrysler.....	\$ 1,705	2,030	2,250						
—Cum. Deprec.....	%48.8	39.1	32.5						

* obtained from the F.A.D.A. publication "Used Car Guide" for the years 1949-55. Prices refer to clean cars not requiring repairs and equipped with heaters. Upon addition of appropriate freight differential, prices indicated would presumably form the basis on which individual negotiations would commence.

Table XXXII
SALES AND EXCISE TAXES CANADIAN AUTOMOBILE INDUSTRY
 1953-1955

	Sales Tax		Excise Tax		Combined	
	Per Unit		Per Unit		Per Unit	
	Car	Truck	Car	Truck	Car	Truck
	Total	Total	Total	Total	Total	Total
	(000)	(000)	(000)	(000)	(000)	(000)
1953.....	\$80,091	\$175	\$165	\$230	\$405	\$165
1954.....	66,130	172	175	231	403	175
1955.....	91,671	201	178	208	409	178

Source: The Motor Vehicle, D.B.S.

Note: Taxes per unit are estimated over-all averages and include taxes on accessories, all of which are arbitrarily charged to passenger cars. No official breakdown of sales taxes between cars and trucks is available.

Table XXXIII
AUTOMOBILE PRICES RELATIVE TO INDUSTRIAL EARNINGS
 1939-1955

	Suggested Average Retail Price*	Retail Price Excl. Taxes		Average Industrial Weekly Wage	No. of Weeks to Earn a Car Incl. Taxes		Relative Time Required to Earn Car Incl. Taxes	
		Taxes	Excl. Taxes		Incl. Taxes	Excl. Taxes	Incl. Taxes	Excl. Taxes
1939.....	\$ 957	\$ 60(a)	\$ 897	\$23.44	40.8	38.3	114.3	123.9
1955.....	2,192	292(b)	1,900	61.46 (Oct.)	35.7	30.9	100.0	100.0
							2.6	4.8
							Weeks to Earn Tax	Weeks to Earn Tax

* 3 low-priced models, ex freight, delivery and handling charges.
 (a) 8% Sales; 5% excise on excess of factory price over \$650.
 (b) 10% sales, 10% excise.

shown above is even more favourable when allowance is made for the reduction in the number of hours worked per week since 1939. Were it not for the fact that sales and excise taxes are now nearly five times as large, the relative improvement in the consumer's position would have approximated 25%. Although this apparent improvement is considerably less than that which has occurred in many other durable goods lines, quality improvements in passenger cars since 1939 have exceeded those of most durable consumer products.

The Problem of Costs

Car prices are higher in Canada than in the U.S. for three basic reasons: (a) Taxes are higher; (b) Manufacturing costs are higher; (c) Costs of both wholesale and retail distribution are higher.

Taxes have been considered above and were seen to account for about 40% of the differential in the price of the composite car in Table XXX.

Manufacturing Costs

It is the general opinion of the industry that automobile manufacturing costs in Canada are roughly 15% higher than those in the U.S. It did not prove possible to develop any reliable cost data of a comparative nature, in part because Canadian firms in most instances had no information on U.S. costs. An effort to develop a composite picture of manufacturing costs for the composite automobile above did not succeed, largely because differences in production methods prevented an adequate consolidation of car information. For the same reasons it was not possible to examine output per worker on the basis of actual experience.

Canadian automobile manufacturing costs are higher than those of the U.S. industry primarily because of the smaller scale of operations involved. In addition, steel prices and many parts made from steel, are generally higher in Canada as a result of both limited volume and the tariff. Stemming from low volume, also, is the higher relative labour cost per car, despite lower Canadian wage scales. The latter is of particular significance in view of the popular misconception that lower Canadian wage scales are a net advantage for the domestic industry. While they are obviously some help in keeping costs in hand, their actual value is greatly reduced due to the relatively low direct labour content of the industry's products and the problems that exist with respect to the effective employment of indirect labour in Canada.

Although some automotive parts, for example small door stampings, are made in Canada and sold at prices no higher than those of comparable parts in the U.S., in general this is not the case. Canadian content requirements have unquestionably increased automobile prices in Canada to some extent, but it is impossible to determine how much. A reasonable guide is that of relative factory selling prices in Canada and the U.S., the comparison of which showed a differential of around 11% existing in favour of the U.S.

Another criterion is the 15% premium over U.S. prices considered by the automobile manufacturers to be the maximum acceptable on parts obtained from domestic suppliers. When consideration is given to the fact that normal automotive volumes in Canada are about 5% of those in the U.S., it appears that the Canadian parts industry as a whole is relatively efficient.

In addition to the higher cost of steel, ranging from 2% to 30% above U.S. prices, the Canadian parts industry is faced with all the basic manufacturing problems inherent in low volume. These include particularly the high cost of tool, die and machine set-ups and the frequent necessity of amortizing tool and die costs prior to the end of their useful lives. Although the latter are normally charged directly to the customer's account, they are a basic cost factor to the supplier and frequently determine whether this bid is considered acceptable or not.

Table XXXIV

EXAMPLE OF EFFECT OF VOLUME OF FORGING COST PART:
CAM ROLLER FOR HYDRAULIC DUMP MECHANISM

	As Low Volume Part	As Medium Volume Part	Cost Increase Due to Low Volume	
			Unit Increase	%
Total Estimated Requirement	4,000 Pcs.	40,000 Pcs.		
Quantity to be made in one run	1,000 "	8,000 "		
Expected Die Life	8,000 "	8,000 "		
Cost Breakdown	Cost Each	Cost Each	Unit Increase	%
Raw materials	\$1.10	\$1.10	—	—
Labour to set dies (6 hrs.) . . . . .	.07(a)	.01(d)	.06	600.0
Overhead to set dies (6 hrs.) . . . . .	.18(b)	.02(e)	.16	800.0
Labour to forge each piece . . . . .	.13	.13	—	—
Overhead to forge each piece . . . . .	.31	.31	—	—
Material handling . . . . .	.14	.14	—	—
Die Maintenance & Replacement . . . . .	.21	.21	—	—
Factory Cost	\$2.14	\$1.92	.22	11.5
Administration & Sales; 5% . . . . .	.11	.10	.01	10.0
Profit; 10% of total cost . . . . .	.22	.20	.02	10.0
Selling Price	\$2.47	\$2.22	.25	11.1
Amortization of Get-ready Charge for dies; to cover designing & sinking first set . . . . .	.42(c)	.04(f)	.38	950.0
True cost per forging, including Amortization of die charge	\$2.89	\$2.26	.63	27.9
(a) \$ 73.30 + 1,000	(d) \$ 73.30 + 8,000			
(b) 181.50 + 1,000	(e) 181.50 + 8,000			
(c) 1,680.00 + 4,000	(f) 1,680.00 + 40,000			

Table XXXIV outlines the effects of these factors on the cost of a small forged part (information supplied by an independent parts firm). This comparison does not attempt to indicate the cost differential existing between a

U.S. and a Canadian operator making the same part, although the situation indicated is perhaps reasonably typical. In addition a Canadian operator would be faced with somewhat higher steel costs, which may have a partial offset in somewhat lower wage costs. In this connection it is important to bear in mind that where direct costs are low relative to the cost of raw materials (as in the case of the forging industry), substantial reductions in wage rates could be more than offset by a relatively small increase in the price of a major raw material. Although a number of commodities is normally obtainable at slightly lower or no extra cost in Canada, e.g. the base materials, they constitute a relatively insignificant part of the industry's total raw material requirements and are not a substantial offset to higher steel costs.

The difficulties of efficiently employing indirect labour (employees engaged in materials handling, clean-up, etc.) where production volumes are small has been emphasized. Direct labour is also affected, but to a lesser extent. The direct labour content of the average low-priced car in Canada is estimated to be only around 9% of factory cost. A study prepared by the O.E.E.C.* indicated that direct labour accounted for 10.4% of a representative U.S. automobile in 1952. The direct labour content is higher in the U.S. car than in the car made in Canada largely because of the fact that the latter is more integrated and many direct man-hours of labour are employed in U.S. plants on components that appear as purchased items in the accounts of the Canadian factory.

The less efficient use of both direct and indirect labour, the high cost per unit of equipment setup and changeover, and the periods of reduced operations due to seasonal factors combine to make the cost of factory burden relatively higher in Canada than in the U.S. It is in this general field that the Canadian industry is hardest pressed in its efforts to reduce manufacturing costs, and it is here that volume increases promise to bring the greatest cost savings. It is of some interest to observe that the importation of automotive parts from the U.S. results in the U.S. industry indirectly carrying a portion of Canadian factory burden. Were this not to occur i.e. should 100% of the passenger car be made in Canada, the increased factory burden resulting would increase manufacturing costs prohibitively.

Changes in integration and manufacturing processes make it impossible to measure output per man-hour in the industry in any useful manner. The concept of "value added per worker" was considered as a rough guide to efficiency in the industry, but the intrusion of cost factors over which the industry has little or no control makes comparisons based on this data misleading.

The Canadian automobile industry is obviously not as efficient a production organization as that of the U.S., as indicated by the differential in costs

*"Some Aspects of the Motor Vehicle Industry in the U.S.A." (Paris, 1952).

that has prevailed historically. However the decline in the spread between factory selling prices of representative models in Canada and the U.S. (see Table XXX) from around 25% in 1935 to about 9% today shows the relative improvement of the Canadian industry since that time. This improvement has been made possible by volume increases and a more acute cost consciousness stimulated by growing competition.

Although the industry has succeeded in reducing its cost differential with the U.S. in the past 20 years, it appears that costs have not declined as much as suggested by the comparison of factory selling prices. As has been indicated, the general industry opinion is that Canadian costs, for an average type of operation, are around 15% above those in the U.S. If this is approximately correct, profit per unit in the Canadian industry is obviously lower. When allowance is made for the fact that sales volumes in the U.S. are many times those in Canada, it is apparent that automobile manufacturing in Canada is less profitable than in the U.S. This is generally borne out by an examination of the available data on earnings of the Ford Motor Co. of Canada, Ltd. compared with those of Ford Motor Co. (U.S.). Compared with pre-tax earnings on net worth of 53% for the parent company in 1955, Ford of Canada's domestic earnings on the same basis were only 6.5%. For the purposes of this comparison, pre-tax earnings have been adjusted to exclude dividends from subsidiaries, while net worth figures have been reduced by the book value of investments in subsidiaries. Those adjustments were made to exclude the foreign earnings of Ford of Canada, which in the past two years have accounted for 66% of the company's pre-tax income. While the company's domestic earnings in 1955 were depressed below normal levels due to a strike and some non-recurring capital charges, even in 1950, the most profitable postwar, pre-tax earnings reached only 35% of adjusted net worth. Unlike its parent company, Ford of Canada's profit margins have declined each year since 1950, pointing up the problems involved in striving for volume in a market that, in spite of its recent growth, continues to be small.

Distribution Costs

It did not prove possible to obtain comprehensive data on the industry's costs of distribution, but it is apparent that the necessity of servicing a relatively small, widely dispersed market involves high distributional costs.

The fact that retail distribution is more expensive in Canada than in the U.S. is shown in a comparison of dealer margins* in the respective countries for 1955. Despite the higher gross mark-ups that prevail in Canada, the average trading profit per new vehicle was \$2 higher in the U.S., \$420 versus \$418 in Canada. Trading profit per new car eliminates the problem of reconciling cash discounts, price packs and the used car over-allowance, and hence

*Data obtained from "Operating Averages for the Automobile Retailing Industry, 1955", published in the U.S. by the N.A.D.A. and in Canada by the F.A.D.A.

is the real gross profit item. Selling expenses of the average Canadian dealer were 37% higher than those of his American counterpart, at \$226 per new car sold, leaving a profit before taxes and overhead of \$192. This latter figure compares with \$255 for the average U.S. dealer in 1955. When allowance is made for the fact that average dealer volumes in the U.S. are approximately twice as high as in Canada, the greater relative profitability of automobile retailing in the former country is evident.

Canadian activities are assisted, to an important extent, by the high volume of servicing revenue which results in part from the greater relative number of over-age cars on the road than in the U.S. Gross service profit per new car sold in Canada was, on the average, sufficient to offset the higher selling expenses on new cars and permit aggregate dealer profits per new car to approximate those in the U.S.

The specific data obtained on the industry's costs of wholesale distribution were of a rather limited nature, but are believed adequate to support certain general observations. It appears that "phantom" freight is no longer charged on automobiles in Canada as it was by some companies in the 1930's when a number of regional assembly plants was operated. Information supplied by one company indicated that its dealers are now billed only actual freight costs, with the exception of dealers located west of Winnipeg, who are billed for less than actual freight costs. For example dealers in Toronto, Montreal, Halifax and Winnipeg are billed costs for \$10.80, \$50.76, \$84.16 and \$112.33 per car respectively, while dealers further west are charged a flat rate of \$146.75, although actual freight costs vary from \$153.27 in Regina to \$247.26 per car in Vancouver.

The same company's dealers in 1935 were billed \$27 per car in Montreal against costs of \$24.80, \$47 in Halifax compared with actual freight of \$44.64, and \$139 in Vancouver versus a freight cost there of \$148.80. It appears that since 1935 increased freight costs have generally been passed along to car buyers in eastern Canada, while those in western Canada have enjoyed an increasing measure of freight subsidization.

The above data suggest that this company is now subsidizing remote dealers for amounts ranging up to \$100 per car, whereas former policy was designed to permit an equalization of freight costs on an approximately break-even basis. However, it is understood that when the present system of assessing costs of distribution was undertaken factory selling prices were increased by an amount calculated to recover the cost of the freight subsidization involved, having in mind the fact that only about one-sixth of total volume was subject to the subsidized freight billings. The practical effect of this change in industry practice appears to have been that buyers east of Manitoba subsidize those in western Canada by an amount equal to \$15-\$20 per car sold in eastern Canada, with a portion of freight costs now included in all factory selling prices.

Information provided by one major company indicates that freight charged to the New Brunswick-Maine border to Canadian dealers in 1955 was some \$38 below that charged on a comparable U.S. automobile shipped to that point. This occurred despite the location of a parent company assembly plant in Massachusetts and the fact that Canadian cars were shipped from Ontario. Similarly the transport charge of \$10.80 per car at Toronto compared with a freight charge of \$47.50 for a comparable U.S. vehicle at Buffalo, New York (the site of another parent company assembly operation). Although this company must ship all vehicles from Ontario, its freight charge at New Westminster, B.C. in 1955 was only \$1.25 per car higher than that charged to parent company dealers at Bellingham, Washington, some twenty-five miles away. The revision in pricing practices in the U.S. that occurred early in 1956, with a view to the reduction of phantom freight, has altered the above comparison. Despite a factory selling price increase of \$25 per car, it appears that U.S. consumers in areas remote from Detroit will now benefit to a much larger extent than formerly from the regional decentralization that exists in the American industry.

The evidence suggests that Canadian automobile manufacturers are at best coping with high distributional costs on a no better than break-even basis, with no measurable profit existing due to the industry's pricing methods. It appears that the Canadian consumer is paying a surprisingly small part of the high costs involved in servicing a small, widely scattered market. While an apparent cost is involved through higher dealer mark-ups than prevail in the U.S., this is reduced or eliminated through discounts and trade-in practices. On balance it appears that higher distributional costs in Canada are reflected in the relatively lower earnings of the Canadian manufacturers and dealers rather than in the prices at which cars are sold at retail.

In summary, although both manufacturing costs and costs of distribution are higher in Canada than in the U.S., only a part of these additional costs is reflected in the price of cars to the Canadian public. Volume is the key to cost reductions in the automotive industry, with the increased volumes in recent years being reflected in a marked reduction in both factory and retail selling prices (excluding taxes), relative to the U.S. since 1935.

THE OUTLOOK: 1960-1980

AN EXAMINATION of the long-term prospects of the Canadian automotive industry necessarily hinges on a forecast of the probable level of motor vehicle demand in Canada. With respect to the estimates made, it is apparent that they are primarily indications of the probable trend of the factors considered over the years, rather than specific predictions as to their magnitudes, at any point in time. It is possible that drastic changes in automotive technology may influence vehicle demand in a manner to which past experience provides no guide, although we have the assurance of a leading motor company executive, made before the present Commission, that "Although there may be some startling transformations, the vehicle of 1980 still will be an automobile in the basic sense of having wheels, a body, and a means of propulsion". Within this broad framework, the accelerating pace of research undoubtedly promises to produce some amazing results.

Future Demand for Motor Vehicles

Passenger Cars

As has been discussed more fully in Part II, the traditional prime determinants of automobile demand have been population and income. Population estimates made available by the Commission's staff indicate a population of 26.7 million people in Canada (assuming net immigration of 75,000 per annum) by 1980, of which it is estimated that 16.2 million will be adults. Thus we have an estimated increase in both total population and adult population of approximately 72% over the next twenty-five years. In view of the changing age distribution of the country's population and the fact that virtually all new car buyers are included in the 20 and over age group, adult rather than total population has been used as a preferable guide to future automobile demand. Table XXXV summarizes the population estimates in connection with the present projections. As is pointed out in the Appendix, the belief that demand for individual mobility will be a more important factor in determining automobile demand over the longer term than the demand for

family transportation similarly has made the "adult" concept a more useful yardstick than the more commonly used "household".

Table XXXV

POPULATION PROJECTIONS*

(000)

	(a)			(b)			(c)		
	Total	Adults	Labour Force	Total	Adults	Labour Force	Total	Adults	Labour Force
1960...	17,367	10,251	6,148	17,508	10,349	6,210	17,648	10,446	6,213
1965...	19,215	11,258	6,854	19,518	11,455	6,983	19,821	11,653	7,114
1970...	21,159	12,541	7,707	21,643	12,848	7,915	22,128	13,155	8,123
1975...	23,314	14,055	8,614	23,989	14,476	8,902	24,665	14,897	9,192
1980...	25,793	15,645	9,561	26,653	16,200	9,935	27,535	16,737	10,309

(a) Assumed immigration: 50,000 per annum (net).

(b) Assumed immigration: 100,000 per annum (net).

* Summarized from estimates provided by the Commission staff.

On the basis of the preliminary Gross National Product estimates used, personal disposable income will increase about 200% in the period from 1954 to 1980, while disposable income per adult is expected to rise by over 75% as indicated in Table XXXVI.

These projections are predicated on the assumptions of continuing full employment and no outbreak of hostilities on a major scale. The combined effect of an expanding population and higher per capita income is expected to permit average automobile sales to increase around 130% by 1980, to a level approximating 890,000 cars per annum in the 1976-80 period as compared with 385,000 in 1955. Table XXXVI summarizes estimated passenger car sales in the forecast period, together with projections of registrations and ownership levels expected to be reached at future dates. A discussion of the methods used in arriving at these estimates is contained in the Appendix.

The estimates in Table XXXVI, while on the average more optimistic than those presented by the motor industry, are nonetheless believed to be realistic. They may well prove to be conservative. Although sales of 890,000 cars in 1980 would represent 34 new car sales per one thousand of population, a relative increase of 36% from the 25 per thousand that prevailed in 1955, it compares with sales in the United States of nearly 44 per thousand last year. This reflects the fact that many Canadians are prepared to drive older cars than Americans, which means that a given level of ownership has been achieved in Canada with a lower volume of sales. The above estimates assume that this tendency will lessen in the future, as indicated by rising scrappage rates and higher sales ratios, but that it will continue to be a factor in keeping automobile sales in Canada at somewhat lower levels than exist in the U.S.

Table XXXVI

G.N.P. AND DISPOSABLE INCOME PROJECTIONS
(billions)

	G.N.P. in 1949 \$				Average G.N.P.		Average Personal Disposable Income*			
	(A)	(B)	(C)	(D)	Amount		Per Adult		'49 \$	'54 \$
					'49 \$	'54 \$	'49 \$	'54 \$		
1960.....	\$25.2	\$25.7	\$26.4	\$26.9	\$26.1	\$31.9	\$17.7	\$21.7	\$1,710	\$2,097
1965.....	30.8	32.0	32.6	33.9	32.3	39.5	22.0	26.9	1,921	2,348
1970.....	37.9	40.0	41.3	43.7	40.7	49.8	27.8	33.9	2,164	2,639
1975.....	45.7	48.8	51.5	55.1	50.3	61.5	34.2	41.8	2,363	2,888
1980.....	54.9	59.5	64.0	69.3	61.9	75.7	42.1	51.5	2,600	3,180

(A) Commission estimate, net immigration 50,000 productivity 2.50% p.a.
 (B) " " " " 100,000 " 2.50% p.a.
 (C) " " " " 50,000 " 3.25% p.a.
 (D) " " " " 100,000 " 3.25% p.a.

Table XXXVII

PASSENGER CAR SALES PROJECTIONS*
REGISTRATIONS—DENSITY

	Average Annual New Car Sales (000)		Final Estimate	Average Annual Scrappage (000)	Total Car Registrations (a) (000)	Scrappage % Registrations	Cars Per		Population per Car (b)
	Density Basis	Disposable Income Basis					1,000 Adults	Household	
1956-60.....	372	373	375	193	3,715	5.9	359	0.80	4.7
1961-65.....	452	463	460	258	4,725	6.1	412	0.92	4.1
1966-70.....	587	570	580	345	5,900	6.5	459	1.01	3.7
1971-75.....	751	719	735	465	7,250	7.1	501	1.12	3.3
1976-80.....	889	888	890	590	8,750	7.4	540	1.18	3.0

* Based on estimates outlined in Appendix.

(a) At end of period.

(b) Assuming 75,000 p.a. net immigration.

(c) Assuming 75,000 p.a. net immigration, with average size of household of 3.8 persons in 1960 declining to 3.7 in 1970 and 3.6 in 1980.

It will be observed that, on balance, no increase is expected in new car sales over the next five years. It is in the short-run that statistical analysis has its greatest limitations, particularly where it is consciously aimed at long-term objectives. The 1956-60 sales estimates may be more properly considered in the light of 1951-55 average car sales of 325,000 units, where the exceptionally high level of sales last year is reduced to its proper perspective. Rather than expecting sales to hover around the 375,000 level over the intermediate term, it seems more probable to assume that they will fluctuate in a fairly broad range from a low of perhaps 350,000 units to a high of 425,000, with the immediate outlook for 1956 suggesting automobile sales in the order of 375,000-400,000.

Analysis of the sales estimates included in the above table reveals that sales are expected to increase, in the five periods covered, somewhere in the order of 15%, 23%, 26%, 27%, and 21% respectively. The substantial increase in automobile sales commencing in the early 1960's reflects the impact of the sharply higher birthrate in the postwar period which will result in an above-average increase in adult population through these years. The maintenance of a high level of births through 1955 suggests that a strong basis is being laid for almost as strong relative gains after 1975 as will be experienced in the prior decade, although the above forecast has assumed some moderate decline.

The estimates of automobile registrations and ownership were obtained by applying the indicated scrappage rates to the estimates of sales, which in turn include certain assumptions with respect to scrappage. The results are again somewhat higher than those presented to the Commission by the industry, while being less optimistic than those included in some independent briefs. The estimate of 8,750,000 passenger cars in use by 1980 would represent one car for every three persons, assuming a population of 26.7 million. This compares with the present ratio of 3.2 persons per car estimated for the United States, and an existing ratio in Canada of 5.7. Although, as pointed out in the Appendix, it must be assumed that automobile density in Canada will lag U.S. experience by an increasing number of years over the intermediate term, there appears no real reason for believing that this lag should develop to exceed twenty years, with the probabilities suggesting something less.

One of the major supporting reasons for anticipating an important impact on new car sales as per capita incomes rise is the growth expected in the number of people entering the \$5,000 and over income bracket. The tremendous increase in this group in recent years has already been discussed. In brief, it is anticipated that this will continue at a somewhat reduced rate in the future, with a number of taxpayers earning over \$5,000 having increased to 2,625,000 by 1980, equal to 36.1% of the estimated number of taxpayers

in that year. Table XXXVIII illustrates the projected growth of these groups in the future.

Table XXXVIII

ESTIMATED NUMBER OF TAXPAYERS AND NUMBER
ABOVE NEW CAR-BUYING THRESHOLD

	Total Taxpayers	% of Adult Population*	With Incomes Over \$5,000	
	(000)		Number	% of Total
1960.....	4,150	40.0%	760	18.3%
1965.....	4,800	42.0	1,125	23.4
1970.....	5,650	44.0	1,575	27.9
1975.....	6,500	45.0	2,075	31.9
1980.....	7,275	45.0	2,625	36.1

* Ratio of taxpayers to adult population expected to increase as incomes rise—arbitrary ratios assigned on basis of the trend in recent years.

While the suggested increase of 635% in the crucial \$5,000 plus income group by 1980 (from 1953) may appear high, it is believed realistic in terms of the increase in real incomes of 58% expected in the period, and the fact that a large portion of this increase will probably be concentrated in the hands of people very close to achieving new car ownership. Additionally, the aggregate increase is influenced by the rapid percentage growth that has been characteristic of this income group in recent years e.g. it expanded 56% between 1951 and 1953, and increased 23% in 1953 alone, despite some modest price deflation in that year. Actually the above estimates assume a conservative increase of 50,000 per annum in this group between 1955 and 1960 (compared with 66,700 in 1953), gradually increasing to 110,000 per annum after 1975, with the increase in 1976 reduced to only 5.3%. While it is perhaps unwise to attempt to estimate car sales in terms of rising income levels in other than very broad terms, it seems reasonable to assume that with a fourfold increase in the number of people financially able to buy new cars, an increase of 125% in new car sales should prove attainable. Although it is believed that too much significance is frequently attached to past relationships, it is of interest to observe the close correlation that has existed in some recent years between new car sales and the number of taxpayers in the \$5,000 and over annual income group. In 1948 the relationship was 1.15:1, in 1952 it was 1.01:1, and in 1953 the exceptionally close correlation of 1952 was again realized. An additional factor inherent in rising income levels that suggests much higher automobile sales over the long term is the tendency, previously discussed, for a larger percentage of income to be spent on cars as annual incomes rise.

Another factor that will contribute to the realization of the above sales estimates is the continuation of the relative growth of suburban communities. Indication that the rapid growth of the nation's suburbs, as outlined in Table XII, will continue has been contained in the submissions of many municipalities to the present Commission. Indicative of the type of expansion anticipated in future years is contained in the brief of the City of Toronto, which estimates that the population of Toronto proper will increase only 7.8% by 1980, while that of the three major suburban townships is expected to grow 265%. Similar trends are expected to prevail, and appear inevitable, in Montreal, Vancouver and other urban areas. While the high degree of priority accorded automobile ownership in a suburban community is obvious, the impact on automobile sales may prove to be greater than generally realized. Contributing to this possibility is the fact that the number of households should increase at a more rapid rate than population, new suburban families will be young, they will enjoy relatively higher incomes than urban families, and they will embrace multi-car ownership as soon as it is within their financial means. An estimate of the type of expansion in multiple car ownership that may be expected in the future is contained in Table XXXIX.

The relatively rapid growth of multiple car families in Canada has already been discussed. Based on the limited record of Canadian experience available (only three years), the incidence of families owning more than one car suggested above appears conservative. However, the fact that experience in the U.S. did not progress as rapidly as might have been expected between 1950 and 1955 suggested that some discount of recent trends was in order. Having done this, the results indicated are still striking. The estimate of 935,000 households that will own two or more cars by 1980 compares with approximately 200,000 today, an increase of 370%. During the same period it is expected that the total number of car-owning families will increase by nearly 150%, while the number of families without a car will certainly increase too, but much more slowly. It seems possible that the estimated increase in the number of car-owning households, to approximately 73% of the aggregate, will prove low since it is just about in line with the present situation in the United States, and incomes of Canadians in 1980 will be above those now prevailing there, in real terms. The expansion of multi-car ownership to equal 12.6% of all households by 1980 compares with estimates of 10.1% for the U.S. and 5.1% for Canada last year. While the response accorded the small car in Canada has not been overwhelming, it is reasonable to assume that its ease of handling, low costs of operation and general convenience, particularly in urban areas where congestion is a problem, will permit it to occupy a position of growing importance in a two-car society. Similarly recent sales figures attest to the growing popularity of the station wagon, and it seems certain that a vehicle so well suited to suburban living will continue to displace the conventional sedan in the years ahead.

Table XXXIX

ESTIMATED CAR OWNERSHIP 1960-1980

	Number of Households (000)			% Total Households			% Car-Owning Households		
	Total	Car-Owning	With No Car	With More Than One	Car-Owning	With No Car	With More Than One	With One Car	With More Than One
1960.....	4,600	2,760	1,850	305	60.0%	40.0%	6.6%	89.0%	11.0%
1965.....	5,150	3,295	1,855	415	64.0	36.0	8.1	87.3	12.7
1970.....	5,850	3,920	1,930	560	67.0	33.0	9.6	85.8	14.3
1975.....	6,490	4,545	1,945	720	70.0	30.0	11.1	84.2	15.8
1980.....	7,400	5,400	2,000	935	73.0	27.0	12.6	82.7	17.3

Although the above are expected to prove to be the principal stimuli to future new car sales, developments with respect to the other demand factors discussed in Part II are also generally expected to contribute. Credit is expected to increase in importance as a factor assisting higher automobile sales in the future. It is probable that it will prove to be of growing importance since expanding incomes increase the number of credit-worthy individuals and provide more income at the margin available for debt service. In addition, since some form of general wage guarantee appears likely, it seems reasonable to assume that more stable levels of purchasing power will permit higher levels of consumer debt to be borne with greater ease in the future than current levels are today. Where consumer credit levels equal to 12% of personal disposable income seem high today, a level of 15%, 20%, or even higher may prove capable of being carried soundly in the future. This situation will be fostered further by the increasing tendency of the public to demand more services from government which, while reducing disposable income due to the higher taxes necessitated, nevertheless free a larger portion of the former for discretionary spending.

The anticipated trend of scrappage, and the important influence exerted on the sales estimates by this factor, have been discussed elsewhere. While the assumptions chosen will probably prove to be too conservative, it is interesting to observe the increasing importance of replacement sales, even on the basis of the rates used. It is estimated that 65% of 1976-80 sales will be a direct result of scrappage, compared with probably less than 40% last year, providing a strong basis for the expectation of smaller fluctuations in automobile demand than now exist. Should scrappage rates increase to as much as 10%, a theoretical possibility as a result of major technological developments and highly prosperous times, yearly scrappage in 1976-80 could approximate 800,000 cars, replacement of which would push sales to an annual rate approximating 1.1 million units. An additional factor that could bring about a sudden, and substantial increase in the scrappage of motor vehicles is the enactment of legislation prohibiting the licensing of over-age vehicles on the grounds of public safety. Such a measure has recently been actively considered in Great Britain and must be recognized as a possibility over the longer term in every country that enjoys a rising standard of motor vehicle ownership. Since a high percentage of over-age vehicles is undoubtedly located on farms, the political problems inherent in legislation of this type in Canada are very great. However, the growing awareness of the social and economic costs involved in accidents and highway deaths directly attributable to remedial causes suggests that more effective regulation of the public's driving habits is inevitable.

It is not possible to provide other than general comments on prices, taxes, roads and operating costs with respect to their likely impact on automobile demand. The estimates arrived at have assumed that none of these factors

will change in a manner that will depress automobile demand more in the future than it does today. The evidence suggests that they may rather militate in the direction of higher sales, should the recent high level of capital expenditures and continuing technological progress permit the burden of government, and the taxes which result, to be borne more easily in the future than is the case today.

Lower automobile prices resulting from reduced factory costs do not appear very likely over the intermediate term, due to the present inadequate earnings levels of the manufacturers, together with the likelihood that any reasonable opportunities to improve industry margins will be taken. Should excise taxes be reduced or eliminated over the next few years, prices at retail could be reduced substantially while also permitting some increase in factory selling prices, a desirable development if the manufacturers are to be able to adequately finance the high level of capital expenditures indicated over the long term. With dealer profits reduced to what appear to be minimum levels, and with no reasonable likelihood of important reductions in distribution costs over the next few years, the only way in which lower automobile prices can be obtained short-term is through the medium of tax reductions. Longer term it may be expected that the manufacturing advantages to be derived from larger volume will permit further relative reductions in factory prices similar to those that have occurred in the past.

A discussion of the adequacy, or otherwise, of the country's future system of roads and highways is outside the scope of the present study. However a few general observations appear justified. In view of the increasing awareness of the economic and social costs of traffic congestion by all levels of government (indicated concretely by the rising provincial budgets for highway and road construction), together with the progress that has been made in some metropolitan areas toward combatting the problem, it seems probable that improvements in the present road system will be effected to the extent necessary to keep reasonably abreast of the requirements. As has been suggested in Part II, this problem may well be of less importance with respect to future passenger car demand than is commonly supposed. To the extent that urban congestion compels improvements in public transportation systems (such as have been undertaken in Toronto in recent years), automobiles will become relatively less of a factor in creating congestion in down-town areas. Similarly, the continuing growth of the suburbs will tend to reduce the problem in our major cities as both workers and their work move out of town. Should these developments not be successful in preventing the problem from becoming worse, vehicle activity, but not necessarily automobile demand, will be reduced. To the extent that they are successful, an environment more propitious to car ownership and use will be created. In either event, it is believed that the people will continue to buy cars when they are financially able to do so, with, however, the progress made in combatting the growing traffic problems that must inevitably result having an important in-

fluence on the annual mileage these cars are driven. Regardless of traffic conditions, it appears probable that average passenger car mileage will decline somewhat as multi-car ownership becomes more general. U.S. data on the subject reveal that in 1953 the average passenger car mileage was 9,370 miles, slightly below that estimated for 1952 and also below that averaged in 1946-1949. It is estimated that the average U.S. passenger car mileage was 8,975 miles in 1939, only about 4% below that of 1953.

Operating costs may be expected to have even less significance with respect to automobile demand in the future than they have at the present time. While the cost of all the elements that constitute operating costs may be expected to rise over the longer term, it is believed that, in general, they will increase at a slower rate than real incomes. While data on the subject are incomplete, it is virtually certain that this has occurred in the past, although the trend has been obscured by the major developments that have been effected in product quality and by price movements. This conclusion is generally supported by the evidence developed by the Commission's Transportation study which has indicated average operating costs of 10.5¢ per mile today, compared with those of 7.8¢ per mile in 1936, an increase of only 35% despite an increase of around 72% in real disposable income per capita since that time. While labour costs involved in repairs may increase faster than incomes, this should be more than offset by reductions in the amount of maintenance and repair work required on the average automobile. Given proper servicing, many recent-model cars have been driven well over 100,000 miles without any major repairs, a mileage that compares with that of 58,000 miles driven by the average vehicle scrapped in the United States in 1935. It is reasonable to assume that cars in the future will continue to reflect this trend, with a larger percentage of the maintenance dollar being accounted for by routine servicing and less by repairs than currently is the case, with the whole expected to represent a smaller proportion of the driver's total operating expense dollar.

Trucks

The problems involved in forecasting future truck demand are discussed briefly in the Appendix. An approach broadly comparable to that used for passenger cars was adopted, with density factors being related to the size of the labour force and truck sales being analyzed in relation to the Gross National Product. Table XL outlines the final truck sales estimates obtained by a somewhat arbitrary combination of the various methods used.

The estimate of average sales of almost 196,000 trucks in the years 1976-80 represents an increase of 150% over sales of 79,000 in 1955, a somewhat larger increase than that expected for automobiles. Superficially this may appear high in view of the high truck density currently prevailing, both absolutely and in terms of U.S. experience. It similarly may appear high in

terms of the increase in sales registered last year. However the estimates appear much less impressive when viewed in the light of domestic truck sales of 110,000 in 1951 and actual production of 150,000 units attained the following year.

Table XL

**COMMERCIAL VEHICLE SALES PROJECTIONS
FINAL SALES ESTIMATES***

*Average Annual Sales
(000)*

	Estimate A Density Basis		G.N.P. Basis Estimate		Final Estimate
	(a)	(b)	B	C	
1956-60.....	85.7	90.5	87.3	87.6	87.8
1961-65.....	104.6	116.4	109.2	108.9	109.8
1966-70.....	129.5	143.8	137.0	114.0	131.1
1971-75.....	154.8	180.8	170.6	141.5	161.9
1976-80.....	183.9	215.2	210.3	174.5	196.0

* Based on several estimates discussed in the Appendix, Section II. See Tables A-6 to A-8.

There appear to be three major expansionary forces suggesting that sales of trucks will increase substantially over the longer term. These are the growing vehicle requirements of the service industries as population expands and moves farther out, the continued development (probably at an increasing rate) of our natural resources, and the increased industrial requirements for movement of raw materials and products in connection with expanding manufacturing operations. It is beyond the province of the present report to discuss these subjects in detail. However, it is believed that evidence submitted before the Commission has indicated a rate of development for the country as a whole that would prove difficult without an expansion of the truck population such as is suggested by the sales estimates above, and by the estimates of total truck registrations as outlined in Table XLI.

Table XLI

**COMMERCIAL VEHICLE PROJECTIONS—REGISTRATIONS—
SCRAPPAGE—DENSITY**

	Total Registrations (000)	(a) Indicated Average Annual Scrappage (000)	Scrappage % Registrations	Trucks per 1,000 Lab. Force	Population per truck
1960.....	1,085	50.8	5.1	175	16.1
1965.....	1,315	63.8	5.3	188	14.8
1970.....	1,605	73.1	5.0	203	13.5
1975.....	1,945	93.9	5.3	218	12.3
1980.....	2,340	117.0	5.5	236	11.3

(a) During preceding five-year period.

The projections made on the basis of the density analysis required the arbitrary adjustment of past trends to estimates of future labour force figures, and necessarily resulted in estimates which, while reasonable, were not capable of being checked against actual experience in the U.S. due to our relatively high levels of truck ownership at present. The analysis based on G.N.P., however, is capable of being tested against recent U.S. experience. It is of interest to note that sales of 190,000 vehicles in 1980 represent a ratio of 2.6 trucks per \$1 million of G.N.P. (see table XXXVI), compared with a ratio of 3.0 in Canada and 3.2 in the U.S. last year.

Truck scrappage estimates reflect the circumstances outlined in the Appendix. They are somewhat below those expected by the industry, and may well prove to be low, in which event sales must rise above those indicated if density levels are to be met. Alternatively, higher scrappage will tend to maintain sales at indicated levels should these prove optimistic on other grounds. An increase in the average scrappage rate in 1976-80 from 5.5% to 6.5% would result in additional sales of some 23,000 units. The increasing importance of the replacement truck demand should tend to dampen the wide fluctuations that have existed historically, with over 70% of truck sales in 1976-80 probably accounted for by the replacement of scrapped vehicles, compared with around 50% last year.

The impact of future trends in prices, taxes, operating costs and traffic congestion on sales of trucks is expected to be less favourable than for passenger cars. It is anticipated nevertheless that these will not combine in a manner to reduce sales below indicated levels. Truck prices should continue to decline relative to purchasing power and the improved ability of trucks to do the jobs required of them. Taxes, particularly of the user variety, will probably be an increasing problem to commercial vehicles as the necessity for financing highway and road construction becomes more of a burden on local and provincial governments. It seems likely that the heavy expenditures required will necessitate additional sources of revenue than will result from the present tax structure superimposed on a growing motor vehicle population. Toll roads are an obvious solution to the problems of highway finance, but to date this method has not been adopted in Canada,³ although popular in the U.S. Higher gasoline taxes and excise taxes on tires, oil, batteries, etc., as well as higher licensing fees for both cars and trucks are possibilities for raising the additional funds required, and all measures may be resorted to during the forecast period. While the prospect of the additional operating costs involved must be viewed with concern by truck operators as a group, it is extremely unlikely that the increases required will prove of sufficient magnitude to offset the great advantages to the trucking industry of the improved road system that should result. A further force tending to counter the expected higher tax element in operating costs is the possibility that further technological developments, such as the gas turbine engine, will

result in operating cost reductions and improved vehicle utilization that could actually reduce the operating costs of some classes of motor carriers.

On the basis of the information available, it is not possible to project truck sales by classes or sizes of vehicles. It seems probable that urban service vehicles will continue to show the relative gains that have characterized recent years, fostered by the growth of suburban areas and the higher levels of purchasing power that will be reflected in the greater movements of goods of all types as consumption increases. Similarly, heavier vehicles may be expected to be in increased demand as a result of the resources development that will play a major part in Canada's future. Additionally they will benefit from the cost advantage that exists in favour of the larger vehicles, which has been an important contributor to the reduced demand for medium-weight vehicles over the past few years. The latter has also been assisted by the decline in sales of farm vehicles, a decline which is not expected to be reversed over the intermediate term and which may well be reflected in a farm truck population in 1980 little larger than now exists.

Table XLII outlines estimated total sales and registration of cars and trucks in the 1960-1980 period together with estimated motor vehicle density.

Table XLII

TOTAL SALES—REGISTRATIONS—DENSITY—CARS AND TRUCKS

	Total Sales (a) (000)	Combined Registrations (000)	Population per Motor Vehicle
1960.....	463	4,800	3.6
1965.....	570	6,040	3.2
1970.....	711	7,505	2.9
1975.....	897	9,195	2.6
1980.....	1,086	11,090	2.4

(a) Annual average for preceding five-year period.

*Future Trends in the Industry**Production—Exports—Imports*

During the years 1950-1955, production of motor vehicles equalled 100.2% of sales. In view of the impossibility of evaluating future trends in either imports or exports of motor vehicles in any precise manner, it has necessarily been assumed that industry production and sales will be equal through the forecast period. While exports showed some improvement in 1955, it is doubtful whether the principal remaining markets in Australia and South Africa will permit any significant expansion in future years. In fact these markets may well decline both absolutely and relatively as a result of measures taken in those countries to enforce domestic manufacture of motor vehicles. It is possible that increased economic aid to Southeast Asia and Africa will stimulate an export market of substantial proportions, particu-

larly for trucks, but competition for all international markets may be expected to be keen, and Canadian exporters are generally not well situated with respect to markets outside the Commonwealth.

A factor that could tend to offset the possible loss of export markets is the probability that, as volume grows, some of the more expensive cars now imported from the U.S. will be made in Canada. Although these now account for only a very small part of the total Canadian market, rising incomes will permit these models to enjoy a larger share of an increasing demand. On the other hand, it is possible that increased sales of small cars, stimulated by the desire for multiple car ownership, may cause imports to rise relatively in early future years, to the detriment of domestic production. To date this has not been a significant factor in the U.S. market, and it is possible that most Canadians will similarly prefer the combination of a full-sized sedan plus a station wagon or another standard car to the more practical one including the small import. Should demand for these cars increase substantially it is likely that some assembly operations would be established in Canada. On balance it seems likely that automobile production in Canada may be somewhat below the sales levels indicated, while truck production could be stimulated by export demand above the levels indicated for domestic sales.

The Independents—The Big Three

The plight of the small automobile manufacturers has little prospect of becoming less in the years ahead. Preliminary 1955 results indicate that the recent mergers designed to improve the competitive positions of the U.S. independents have not been noticeably successful, with the three resulting companies continuing to operate at a loss. In Canada, Nash and Hudson show little prospect of becoming profitable operations, with the real possibility existing that they will be forced to suspend manufacturing operations in the near future. The position of Studebaker-Packard superficially appears to be somewhat better, although the deteriorating position of the parent company is almost certain to affect the operating status of the Canadian company before long. This may well occur through merger with American Motors, in which event it would seem reasonable to assume that manufacturing operations of Nash, Hudson and Studebaker would be combined in Studebaker's facilities at Hamilton, with production confined to the Studebaker car, and perhaps the Rambler.

While it proved possible for Chrysler to achieve a phenomenal success in the automobile industry between 1925 and the beginning of the war, it appears extremely doubtful that this feat is possible of duplication in the industry today. Whereas Chrysler gained success by way of a product that afforded a number of significant advances over existing models, the tremendous developments in automotive technology that have occurred since that time have resulted in a rapid narrowing of the fields in which further progress

can readily be made. In this environment, it seems probable that the huge research and engineering expenditures of the majors will ensure their dominance in the future, particularly when coupled with advertising budgets that have demonstrated their efficiency in perpetuating the public acceptance of the products of the Big Three. Although some possibility exists that a final merger of the independents will permit the formation of an effective operating unit, the economics of the industry make this doubtful. Accordingly, unless extraordinary measures are adopted to assist these companies, the probability exists that all passenger car production will be accounted for by General Motors, Ford and Chrysler over the longer term. Should this occur, the public will lose the benefits that arise from a broader choice of products and an independent approach to the problems of satisfying the public's demand for automobile ownership. The overwhelming majority of the public indicate, by their buying habits, that these are considerations for which they are not prepared to pay the going price. For the few who are, some loss will be involved, ameliorated by the improved protection with respect to re-sale values obtainable in most products of the Big Three and by the opportunity of enjoying the advantages inherent in a broader service organization. These individuals will be further compensated by getting more "basic" value for their money than appears likely to exist in the products of the independent manufacturers. As has been indicated in a previous section, it is this last factor that is the root of the problems of the small manufacturer, and while it may be debated by some, it is a question on which the public has already passed judgment and on which it inevitably must be the final arbiter.

Integration—The Parts Industry—The Tariff

The slow and uneven trend toward increased manufacturing integration that has characterized the industry in recent years may be expected to continue indefinitely. While this has been very slow in Canada, the automobile manufacturers may be expected to continue to expand their own parts fabrication facilities where volume increases permit this to be done economically, keeping in mind their natural desire to have alternative sources of supply of all materials, where this does not involve corresponding cost penalties of major importance. The limitations to the implementation of this policy have been discussed and it is impossible to forecast with any degree of accuracy the extent to which larger volume will permit it to be realized in the future.

Given the existing tariff framework, it is inevitable that increased quantities of automotive parts will be manufactured in Canada. This will occur as a direct result of increased vehicle demand and will be occasioned, in the absence of other factors, by the present Canadian content requirements superimposed on larger output. Should the Canadian content of the average car rise to as high as 90%, a possibility in view of the volume increases expected and the greater use of Canadian raw materials, parts production would be stimulated accordingly. Although any economic opportunities to increase

integration are expected to be taken by the manufacturers, this is not expected to affect the growth of the efficient independent parts companies adversely. These firms have a basic function to perform in the industry, particularly those supplying specialty products the manufacture of which requires industrial skills of a high order. Technological developments will continue to cause consolidation within the industry. An example of the type of operation that may be seriously affected over the near term is the grey iron foundry. The increasing use of zinc and aluminum die-castings in the fabrication of automotive parts, including the recent development of a commercial process for die-casting engine blocks, suggests that this business may cut into the market of the foundries more in the future than has occurred in the past. This is further reinforced by the desire on the part of the automobile and truck manufacturers to reduce weight wherever economically possible.

The present uncertainty surrounding the automatic transmission has been referred to earlier. It seems probable that this item will eventually be made in Canada. The major practical consideration involved the physical volume necessary to permit economic manufacture, and some standardization of design. The available data do not permit an objective analysis of the arguments for and against domestic manufacture. The parts industry has expressed the view that Canadian manufacture at this time would involve additional costs of as much as 25%. While the manufacture of this complex assembly would stimulate a significant amount of economic activity, this can be purchased at too high a price. Just what would constitute the latter is, of course, a matter of opinion. There is evidence that a piece-meal solution will be found that will permit parts of the transmission to be made in Canada over the short term, pending manufacture of the complete assembly when volume permits.

Although Canadian manufacture of many automotive parts entails some increased cost as compared with the cost of parts imported from the U.S., it appears possible that a larger part of factory output will be made in Canada in the future at no greater relative cost than the present proportion is today. This will hinge on the extent to which production volumes increase in future years, and on the ability of the industry to adapt improved technologies to volumes that will continue to be small in terms of U.S. experience. The Canadian industry undoubtedly will not be able to use much of the automatic, single-purpose equipment that is expected to continue to lower production costs in the U.S. However, it seems possible that modifications will be found that will compromise with volume, in the manner that has occurred in the past, to permit Canadian costs at least to maintain their relative position.

Raw Material Requirements

The inadequate information with respect to the industry's present requirements (and sources) of various raw materials makes it very difficult to estimate probable trends in consumption of these items in the future. Assum-

ing that (a) 80% of industry output (including trucks) in 1976-80 is actually "made-in-Canada", (b) the domestic steel industry has the necessary capacity to produce the types of steel required, (c) steel maintains 75% of its present relative importance in the weight of the motor vehicle, and (d) the absolute weight of the industry's product is reduced 25% over the longer term, estimated automotive demand for steel in Canada at the end of the forecast period should approximate 740,000 tons annually. This would be more than double estimated automotive consumption in 1955, and an increase of about 175% over estimated usage of domestic steel by the industry.

The use of aluminum in automotive parts will unquestionably rise rapidly over the longer term. While it will undoubtedly find increased applications in truck and trailer bodies, it is not expected that it will replace sheet steel in passenger car bodies to a major extent. Assuming that the average car in 1980 embodies 200 pounds of aluminum, with truck use varying with the different weight of vehicles as outlined in the submission of the aluminum industry, total use of aluminum in automobile and truck manufacturing in Canada might approximate 140,000 tons by 1976-80.

It does not appear worthwhile to attempt to estimate future automotive use of the industry's other raw materials. Use of copper may be expected to decline over the years, as may that of zinc, assuming aluminum makes the inroads suggested. Consumption of glass will probably continue to increase relatively, in line with the industry's apparent determination to make the automobile a virtual gold-fish bowl on wheels. Textiles also will be in greater demand and variety, as the automobile designers exploit the "boudoir" concept and style their cars to meet their conception of feminine demand. Use of rubber by the industry seems slated to expand more quickly than indicated by the growth in vehicle sales. This will be stimulated by the expected growth in demand for heavy trucks and trailers, and by changes designed to produce a better riding car with more power, smaller wheels and the larger tires required to provide even minimum clearance.

Capital Expenditures

Future capital expenditures in the automotive industry cannot be estimated with any degree of accuracy at this time. The complications posed by existing capacity have been indicated, as have those inherent in the upgrading of manufacturing facilities where production capabilities are not necessarily directly increased. Superficially it appears that expenditures over the next ten years may be somewhat less than those of the postwar period to date, although estimated 1956 expenditures of \$27 million by the manufacturers and \$17 million by the parts industry are 10% above those of last year. The industry will always have much higher capital requirements than appear necessary on the basis of demand compared with theoretical capacity, due to seasonal requirements and continued modernization of production facilities.

While automation (a term coined in the industry) will not have the applications in Canada so much publicized in the U.S., technological improvements will be introduced as volume permits, and new equipment will be increasingly expensive. To the extent that the Canadian content of the industry's production is increased, capital requirements similarly will grow. Manufacture of the automatic transmission alone could represent new capital investment of at least \$25 million over the intermediate term, and ultimately far more. In the light of these factors, it seems possible that total capital expenditures by 1965 may approximate the \$350 million estimated for the 1946-55 period. Assuming that in the latter part of the forecast period 90% of the average automobile is made in Canada, capital requirements in 1970-80 might be guessed at between \$750 million and \$1 billion. While these figures might seem large in terms of recent expenditures and existing facilities, they refer to a much more integrated domestic industry than exists today, and one which would be producing over 1 million vehicles annually, conceivably enjoying some measure of regional decentralization. The above estimates are put in improved perspective when it is realized that one U.S. manufacturer, with annual volume only moderately exceeding 1 million vehicles, spent over \$700 million on property additions between 1951 and 1955.

Unless rising efficiency permits some relative improvement in earnings, it is possible that the industry will be compelled to go to the capital market for a portion of its future capital needs.

Employment

Forecasts of employment in the industry are necessarily as tenuous as those with respect to capital expenditures, on which they in part rely. In view of the fact that the major part of the industry's contribution to employment is indirect, any estimate with respect to the direct employment provided in the future is of limited value. The problems of relating employment to production have already been intimated, and the small increase in total industry employment postwar has been commented upon. It appears reasonable to expect that production increases in the future will be reflected somewhat more directly in the industry's employment figures than has occurred in the postwar period. Since production increases involve expansion of parts production that is not reflected in vehicle sales figures, and since this is expected to increase relative to vehicle sales (in line with increasing Canadian content), direct employment opportunities provided by the industry may be greater than are suggested by the vehicle sales projections. In all probability employment will also be increased by further reductions in the length of the average work week. Technological factors will undoubtedly work against these factors and serve to reduce employment requirements.

With an increase in sales of cars and trucks approximating 85% between 1946-48 and 1951-55, total employment increased 31%. Assuming the same

ratio of employment to production, total employment in the industry would increase to over 60,000 in 1961-65, and to 80,000 by 1976-80, an aggregate increase of approximately 45%, compared with a total increase in vehicle production of about 135%. Should the Canadian content of the industry's output increase one-sixth by 1961-65 i.e. to equal 75% of the typical car, employment might be expected to increase to the vicinity of 70,000 during that period. Similarly, should 90% Canadian content be attained by 1976-80, total employment could reach 95,000 in those years, some 70% above recent levels. This latter increase is roughly equal to that expected in the labour force over the next 25 years. It assumes the same rate of improvement in the utilization of labour that has occurred in the postwar period, an expectation supported by continuing levels of capital investment in the industry and by the industry's demonstrated management and engineering skills. These could result in a relatively greater rate of improvement in labour efficiency and consequently in lower employment requirements than suggested above, but this seems doubtful in view of the present efficiency of the industry in terms of its 1946-48 position.

It is probable that employment in the industry will be somewhat less affected by seasonal factors in the future than has been true of the past, reflecting increased efforts on the part of the industry to control this factor. It is virtually certain that the industry's requirements for technical people will increase more quickly in the future than has occurred in recent years. Although this will vary a great deal between companies, particularly in the parts industry, use of more advanced types of machinery and equipment will require an increasingly high ratio of technically trained personnel to the total working force. Within the framework of increased requirements for technical personnel, it is expected that an even greater demand for graduate engineers will exist. This suggests that the industry's existing technical facilities will require substantial expansion as existing education facilities appear destined to lag further behind in meeting the requirements of industry.

In addition to the manufacturing employment provided, some expansion of employment in dealerships and service establishments will occur. In line with U.S. experience, where average dealer volume is more than twice the Canadian average, employment in dealerships might be expected to increase 40%-50% by 1976-80, to around 100,000. Although employment in garages is expected to increase relatively less, that in service stations will increase at a more rapid rate. Despite the fact that future vehicles will give many more miles of trouble free driving than present models, a threefold increase in vehicle population by 1980 will probably require close to a doubling of present service station employment.

One of the major problems that will continue to confront industry in the future is that of industrial relations, the course of which it is difficult to predict. Assuming no relaxation in efforts designed to increase industrial

efficiency, the automotive industry may be expected to stay competitive with respect to wages and supplementary employee benefits. It seems probable that although these will undoubtedly increase in the future, greater volume and use of improved technologies actually will permit a reduction in the direct labour cost of the industry's products.

Summary

In a typical year between 1975 and 1980, the Canadian automobile industry may be expected to produce and sell 890,000 passenger cars and 196,000 commercial vehicles of various types. Quality improvements embodied in the 1980 automobile promise to be as great, in terms of the present day car, as those effected since the Model A. The great majority of these vehicles will be sold in a domestic market of some 26 million people, approximately 16 million of whom will be adults enjoying real incomes some 50% above those prevailing today.

By 1980 Canadians can be expected to own around 8,750,000 automobiles, approximately 7,000,000 of which will be owned by private households, some 17% of which will be operating at least two cars. Despite the fact that there will be more than one car per household at that time, 27% of all households will not own a car. Passenger car density will be in the vicinity of 540 per thousand adults, about 75% above current levels and there will be approximately three people per car, slightly below present levels in the U.S. Although farm truck population will show little increase, total trucks in operation will approximate 2,340,000, equal to 236 per thousand of labour force, a relative increase in density of 39%. Total population per truck will be reduced to 11.3, while population per motor vehicle will be reduced to 2.4.

Prices of both cars and trucks are expected to decline relative to real incomes during the forecast period despite the great improvement expected in vehicle quality, with the extent of the decline expected to be importantly influenced by developments in taxation. The cost of operating motor vehicles is also expected to be lower relative to incomes in the future, although the necessity of financing higher expenditures for roads and highways promises to bring higher "user" taxes over the years.

Indications are that there will be a greater concentration of industry production in the plants of the Big Three, unless extraordinary steps are taken to support the smaller manufacturers. Export markets, except possibly for trucks, show little likelihood of approaching their former importance. Imports of low-volume passenger cars and trucks may show some increases over the intermediate term but, as these grow, the possibility of Canadian assembly of these vehicles becomes greater. Parts manufacturing is expected to increase more than proportionately with vehicle production, in line with expected increases in the percentage of industry output actually of domestic

origin. It is believed that volume increases might support domestic manufacturing content of as high as 90% of the low-priced cars by 1980, with Canadian manufacturing costs declining through the period. Higher Canadian content is expected to be achieved, in part, by increased use of Canadian raw materials. Consumption of domestic steel (assuming it is available) by the automotive industry in 1980 might approximate 740,000 tons, while that of aluminum could equal 140,000 tons.

Capital expenditures cannot be related in any direct manner to increased production requirements. However, it is possible that expenditures in the 1970-80 period might average \$75-\$100 million annually, much of which will be spent on improved machinery that would reduce costs and/or improve quality, without being directly related to production volumes.

Employment in the automotive manufacturing industry, in spite of the improved utilization of indirect labour, will probably increase from 40% to 70% to between 80,000 and 100,000 by 1980, depending on the amount of Canadian content attained in factory output. In addition, employment in dealerships might increase 45%, while that in service stations could conceivably double.

In summary, it appears that the factors which have allowed the automotive industry to make a major contribution to the Canadian economy in the past will prevail largely undiminished over the longer term. The desire for car ownership is a fundamental aspect of modern society; satisfaction of this desire promises to be of increasing importance to the Canadian society of future years.

METHODS USED TO FORECAST NEW CAR SALES

Due to a rather strong conviction that the increase in income levels typical of recent years has importantly expanded the potential new car market in Canada, and that this trend will continue to create potential new car buyers at what will historically appear to be high rates, little use has been made of prewar historical data in the present estimates. The record of the postwar period has been studied with a view to determining reasonable yardsticks on which to base future expectations, with the experience of the 1951-1955 period frequently emphasized, due to the relative absence of inflation, the reduced importance of deferred demand and the belief that these years will prove more typical of the future than any other.

Density Analysis

The two principal methods used are summarized below:

This is basically a residual method of obtaining estimates of future sales by projecting future registrations (vehicle population) on the basis of certain population and ownership, or "density", assumptions. This involves initially a calculation of the penetration sales needed to achieve the density projected, and adding to the result the replacement sales expected on the basis of the likely trend of scrappage. Sales may thus be calculated for any year in the future, or annual averages may be obtained for particular periods as desired. In view of the fluctuating nature of demand for automobiles, estimates of average annual sales in five-year periods have been chosen as the preferable guide to long-term demand possibilities in the industry.

After some experimentation in relating passenger car registrations to various population aggregates, including total population, households (families), and adult population, it was decided to use the ratio of passenger car registrations to adult population (population over twenty years of age) as the most useful measure of automobile density. This was chosen because the size of the adult population is obviously a more exact guide to the potential new car market than total population, particularly where the age composition of the population is undergoing important changes. Moreover this concept is felt to have definite advantages over the more frequently used "household" aggregate, in the belief that the desire for individual mobility will be a more important determinant of new car sales in the future than the demand for family mobility that has characterized sales in the past. Two adult population forecasts were used, one assuming net immigration of 50,000 per annum, the other assuming net immigration of 100,000 per annum. The former is felt to represent a conservative minimum population expectation, while the latter is felt to be the more realistic, particularly in view of the declining impact of a constant level of immigration as total population expands. Where

per capita comparisons have been used, the above estimates were averaged or the Commission's preliminary figures based on 75,000 per annum net immigration were used.

During the ten years 1945-1954, automobile density in Canada increased at an annual average rate of 15.1 cars per one thousand adults. This rate was duplicated in 1953-1955 despite the fact that the backlog of deferred demand generated during the war years was fully dissipated by that time. This suggests that other factors, particularly high per capita real incomes, have combined to offset the loss of this important postwar sales stimulant. On the assumption that new ownership will not be achieved in the future as rapidly as has occurred in recent years, despite strong evidence that this could occur, two reduced density assumptions were employed, one including an estimated increase in car ownership of ten per thousand adults over the forecast period, the other assuming this rate to 1960, declining thereafter to seven per thousand adults. While the first assumption may appear optimistic with respect to later years, it is of interest to observe that it resulted in a density by 1970 somewhat below that of the United States in 1954, indicating a lag in Canadian experience of about seventeen years, compared with the ten-year lag (admittedly distorted) currently prevailing. It is to be expected that this apparent time lag will increase for some years to come since the present relationship is artificial, due to the relative impact of postwar sales in the Canadian figures, but recently trends in density in the two countries do not suggest that it will necessarily exceed the 17 years indicated. Passenger car density in Canada increased 83% between 1946 and 1954, compared with 49% in the United States, while in the 1950-1955 period, the rate of increase in Canada was nearly double that of the U.S.

The data on automobile scrappage are so incomplete as to furnish no more than a tenuous basis for projecting scrappage rates in the years ahead. In addition to the absence of direct information on the subject, the published D.B.S. data are misleading. The official data on vehicles withdrawn from use (i.e. not re-registered) are improperly conceived in that they are based on available supply rather than on sales, which introduces the complications of inventory fluctuations, and have the additional disadvantage of being attributed to the year subsequent to the year in which the indicated scrappage actually occurred. This has resulted from the use of published registration figures as though the latter were analogous to vehicle population at the end of the indicated period, which they are not. This is so since published registration figures actually include all surviving cars at the beginning of the period, as well as all new cars registered and those scrapped throughout the period. Until it is possible to determine the actual number of cars in operation at the end of a year, it is obviously impossible to calculate scrappage for the particular year in question. Accordingly no scrappage figures are as yet available for 1954 and 1955, with the D.B.S. scrappage estimate of 137,200 for 1954

actually pertaining to 1953. Scrappage data calculated on the adjusted basis are included in Schedule 2.

With respect to age distribution, an obviously important factor bearing on scrappage, automobile counts by model years were taken as at December 31, 1949 and 1953, with a more recent one understood to be underway. An analysis of the available data, summarized in Table XVI, indicates a considerably higher average age for cars scrapped in Canada than in the U.S., but until more current data are available, it is impossible to project scrappage rates with any degree of certainty. Due to the difficulty of assessing the probable impact of scrappage induced by technological and economic factors (which promises to be of increasing importance in the future), it is possible that even substantially more information with respect to recent experience would not clarify the future trend. In line with industry practice, increasing scrappage rates have been assumed which, in general, are somewhat below those expected by the industry. While prosperity has undoubtedly increased scrappage in the U.S., it is equally true that it induces higher density patterns as pressure is put on the used-car price structure and automobile ownership is made easier. Since between 80% and 90% of new (i.e. first time) ownership is incurred through purchase of used cars, and present cars have vastly more built-in mileage than prewar cars, it is felt that density may well increase at a greater rate, and scrappage at a somewhat slower rate, than has been assumed by the industry. This belief is reflected in the assumptions made, which has resulted in car ownership estimates higher than those suggested by the industry.

A series of eight forecasts was made combining the two estimates each of population, density and scrappage. One series of two estimates, that incorporating the maximum density and population assumptions, was discarded since it is unlikely that these would be combined in actual practice. The remaining six estimates were averaged to form the "Summary Estimates—Density Basis" outlined in Table A-4 appended. This in turn was averaged with Sales Estimate D, based on disposable income, to form the Final Estimate included in Table XXXVII. Tables A-1, A-2, and A-3 outline the six estimates resulting from the various assumptions described above.

A brief discussion of Estimate D follows.

Disposable Income—Personal Expenditure Analysis

The substantial portion of new car sales, estimated by D.B.S. at 20%, that is assumed to be for business purposes makes sales/disposable income ratios an inadequate guide to future new car sales. Estimates of personal expenditures on new passenger cars were obtained from D.B.S. and related to personal disposable income. Influenced by experience in the past five years and the fact that surveys indicate that consumers spend relatively more on

cars as incomes rise (up to around \$7,500 per annum) several estimates of personal expenditures on new cars were obtained. Expenditure figures were divided by the average 1954 retail price of automobiles to obtain units purchased by individuals, of which an additional 20% was added to obtain total sales figures. These results are summarized in Table A-5, and checked-out well with projections made via the density analysis. To the extent the sales "mix" contains relatively larger numbers of higher priced cars in the future, the number of sales units indicated will be reduced. While this latter trend appears firmly established and may be expected to continue with higher income levels, sufficient latitude is felt to exist in the 4% ratio used to permit maintenance of unit sales at around indicated levels.

Methods Used to Forecast Sales of Trucks

The broad variety of trucks produced, together with the absence of comprehensive data on commercial vehicle usage, makes any forecast of future demand inherently less accurate than that for passenger cars.

In general, a similar approach was adopted to that followed for passenger cars, with historical data examined, and assumptions importantly influenced, by the expected trend of future density and expenditure patterns. The phenomenal growth of Canada's truck population between 1936 and 1954 of 370% has resulted in Canadian truck density today comparable to that of the U.S. Since anything approximating this type of growth over the next 25 years would result in density figures of unrealistic proportions, assumptions have been made which resulted in projections of registrations at a rate equal to about one-third of that prevailing in the above period i.e. 3% versus 9%. Density was calculated in terms of the labour force, believed to be the most useful population aggregate for these purposes, while scrappage assumptions reflecting the low rates of recent years were used. While these are conservative, it is felt that considerably higher assumptions do not adequately reflect the present age, and age distribution, of the truck population. The results of this analysis are included in Table A-6.

While truck sales normally do not show a close correlation with G.N.P. from year to year, it is evident that the relationship between the two is a factor worthy of consideration in attempting to gauge the probable limits of the future truck market. After examining historical relationships, it was decided that experience in the two years 1954 and 1955 probably furnished as good a clue to future experience as that of any period available, with the relatively small gain in truck sales in 1955, despite a very high level of economic activity, pointing up the abnormality of the high level of sales in 1949-53. During those years the value of truck sales varied between 1.07% and 1.24% of G.N.P., compared with 0.80% in 1954 and about the same figure in 1955. For the postwar period as a whole, the ratio averaged 0.98%. A series of projections based on maximum and minimum G.N.P. estimates and

assumed expenditures on trucks equal to 0.80% (1954 average prices) were considered reasonable, and compared satisfactorily with estimates obtained by other methods. These estimates, summarized in Table A-7, should not, however, be interpreted as indicating maximum and minimum sales for the respective periods.

A variation of the above method that appears to have some merit was that of relating physical sales of trucks to G.N.P. in constant dollars. Several estimates were obtained by arbitrarily assuming various rates, as shown in Table A-8, which rates compare with postwar experience varying between 2.3 and 5.0 units per million (constant) dollars of G.N.P., and with a ratio of 2.8 in 1937. In order to reflect the possibility that recent levels of truck expenditures may prove high for the long term, the low estimates obtained were arbitrarily used for the 1965-80 period in arriving at the Final Sales Estimates of Table XXXIX. While sales estimates are generally in line with recent estimates from the industry, suggested ownership rates are, as with cars, somewhat higher as a result of the lower scrappage rates assumed.

Table A-1
Estimate A

CANADIAN AUTOMOTIVE INDUSTRY
PASSENGER CAR SALES PROJECTIONS

DENSITY—SCRAPPAGE BASIS

Average Annual Sales
(000)

	(a)			(b)		
	Penetration Sales	Replacement Sales	Total	Penetration Sales	Replacement Sales	Total
1956-60.....	155	202	357	155	221	376
1961-65.....	185	276	461	185	299	484
1966-70.....	230	374	604	230	403	633
1971-75.....	280	500	780	280	536	816
1976-80.....	318	612	930	318	656	974

- (a) Assuming Increase in automobile density (i.e. penetration) of 10 per 1,000 Adults per annum; Annual immigration of 50,000 (net) per annum.
Scrapage of 5.5% to 1960, increasing by 0.5% of registrations in 5 year periods to 7.0% in 1975.
- (b) Same as (a), with scrapage of 6.0% to 1960, increasing to 7.5% by 1975.

Table A-2
Estimate B

PASSENGER CAR SALES PROJECTIONS

DENSITY—SCRAPPAGE BASIS

Average Annual Sales
(000)

	(a)			(b)		
	Penetration Sales	Replacement Sales	Total	Penetration Sales	Replacement Sales	Total
1956-60.....	155	202	357	155	221	376
1961-65.....	151	266	417	151	288	439
1966-70.....	189	350	539	189	377	566
1971-75.....	228	456	684	228	489	717
1976-80.....	257	546	803	257	585	842

Assumptions same as for Estimate A, except that increase in automobile density is taken at 7 per 1,000 adults after 1960.

Table A-3
Estimate C

PASSENGER CAR SALES PROJECTIONS
DENSITY—SCRAPPAGE BASIS
Average Annual Sales
(000)

	(a)			(b)		
	Penetration Sales	Replacement Sales	Total	Penetration Sales	Replacement Sales	Total
1956-60.....	168	206	374	168	225	393
1961-65.....	168	275	443	168	298	446
1966-70.....	210	367	577	210	395	605
1971-75.....	254	484	738	254	518	772
1976-80.....	289	585	874	289	626	915

Assumption same as for Estimate B, except that annual immigration of 100,000 (net) per annum is assumed.

Table A-4
Summary Estimates

PASSENGER CAR SALES PROJECTIONS
DENSITY BASIS
Average Annual Sales
(000)

	Estimate A		Estimate B		Estimate C		Average
	(a)	(b)	(a)	(b)	(a)	(b)	
1956-60.....	357	376	357	376	374	393	372
1961-65.....	461	484	417	439	443	466	452
1966-70.....	604	633	539	566	577	605	587
1971-75.....	780	816	684	717	738	772	751
1976-80.....	930	974	803	842	874	915	889

See notes to Tables A-1—A-3.

Table A-5
Estimate DPASSENGER CAR SALES PROJECTIONS
INCOME BASIS*

	Personal Disposable Income(a)	Personal Expenditures On New Cars(b)	Average Annual New Car Sales	
	(\$ billions)	(\$ millions)	Personal Cars	Total
1956-60.....	20.0	800	311	373
1961-65.....	24.8	992	386	463
1966-70.....	31.0	1,240	483	570
1971-75.....	38.5	1,540	599	719
1976-80.....	47.5	1,900	740	888

* Based on Disposable Income Estimates summarized in Table XXXVI.

(a) \$1,954 average for the period.

(b) 4% of (a).

(c) Including additional 20% for sales to business.

Table A-6
Estimate ACOMMERCIAL VEHICLE SALES PROJECTIONS
DENSITY—SCRAPPAGE BASIS*Average Annual Sales*
(000)

	Penetration Sales*	Replacement Sales		Total	
		(a)	(b)	(a)	(b)
1956-60.....	37.0	48.7	53.5	85.7	90.5
1961-65.....	45.9	58.7	70.5	104.6	116.4
1966-70.....	58.2	71.3	85.6	129.5	143.8
1971-75.....	67.9	86.9	112.9	154.8	180.8
1976-80.....	79.0	104.9	136.4	183.9	215.4

* Assuming increase in density of 1½% per annum.

(a) Assuming scrappage of 5.0% per annum.

(b) Assuming scrappage of 5.5% to 1960; 6.0% between 1961-70; and 6.5% thereafter.

Table A-7

Estimate B

COMMERCIAL VEHICLE SALES PROJECTIONS

G.N.P. BASIS

Average Annual Sales

	Minimum G.N.P.(a)		Maximum G.N.P.(a)		Average	
	Retail Value(b) (\$MM)	Units (000)	Retail Value(b) (\$MM)	Units (000)	Retail Value (\$MM)	Units (000)
1956-60.....	227.2	85.3	237.6	89.2	232.4	87.3
1961-65.....	278.4	104.5	303.2	113.9	290.8	109.2
1966-70.....	342.4	128.6	387.2	145.4	364.8	137.0
1971-75.....	416.7	156.5	492.0	184.8	454.4	170.6
1976-80.....	500.0	187.8	620.0	232.8	560.0	210.3

(a) Calculated from minimum G.N.P. estimates restated in 1954. (See Table XXXVI).

(b) Assuming retail value of truck sales equal to 0.80% of G.N.P.; 1954 average price/vehicle=\$2,663.

Table A-8

Estimate C

COMMERCIAL VEHICLE SALES PROJECTIONS

G.N.P. BASIS*

Average Annual Sales
(000)

	(a)	(b)	(c)
1956-60.....	73.0	87.6	102.2
1961-65.....	90.8	108.9	127.1
1966-70.....	114.0	136.8	159.6
1971-75.....	141.5	169.8	198.1
1976-80.....	174.5	209.4	244.3

* Assuming the following ratios of new vehicle sales per \$1 million of average G.N.P. (1954) as indicated in Table XXXVI.

(a) 2.5.

(b) 3.0.

(c) 3.5.

GENERAL ECONOMIC STATISTICS

Selected Years 1926-1955

	Population		Adults % Total	Labour Force (000)	Gross National Product			Personal Disposable Income			Personal Savings		Consumer Credit			
	Total (000)	Adults (000)			1954 \$		1954 \$		Actual (\$MM)	Amount (\$MM)	Per Adult	Amount (\$MM)	% P.D.I.	Total (\$MM)	% P.D.I.	Automobile Paper (\$MM)
					Actual (\$MM)	Per Adult	Actual (\$MM)	Per Adult								
1926...	9,436	5,395	57.2	N.A.	5,294	9,328	1,729	4,039	6,559	1,216	352	8.7	n.a.	n.a.		
1929...	10,016	5,808	58.0	N.A.	6,166	10,946	1,885	4,589	7,546	1,299	196	4.3	—	—		
1932...	10,496	6,169	58.8	4,165	3,767	8,401	1,362	3,001	5,461	885	107	—	—	—		
1941...	11,506	7,188	62.5	4,417	8,517	15,344	2,135	5,600	9,628	1,339	547	9.8	381	6.8		
1945...	12,055	7,639	63.4	4,483	11,850	19,105	2,501	8,430	13,271	1,737	1,619	19.2	297	3.5		
1946...	12,268	7,778	63.4	4,824	12,026	18,551	2,385	8,965	13,632	1,753	988	11.0	411	4.6		
1947...	12,527	7,927	63.3	4,914	13,768	18,797	2,371	9,599	13,287	1,676	426	4.4	628	6.5		
1948...	12,799	8,068	63.0	4,996	15,613	19,357	2,399	11,121	13,726	1,701	1,009	9.1	748	6.7		
1949...	13,423	8,408	62.6	5,071	16,462	19,940	2,371	11,968	14,147	1,683	1,005	8.4	892	7.5		
1950...	13,688	8,551	62.5	5,181	18,203	21,079	2,465	12,674	14,360	1,680	645	5.1	1,135	8.9		
1951...	13,984	8,686	62.1	5,255	21,474	22,428	2,582	14,663	15,110	1,740	1,390	9.5	1,120	7.6		
1952...	14,405	8,917	61.9	5,329	23,255	23,950	2,686	15,891	15,999	1,794	1,525	9.6	1,534	9.7		
1953...	14,781	9,118*	61.6	5,387	24,473	24,913	2,732	16,700	16,867	1,849	1,588	9.5	1,860	11.1		
1954...	15,195	9,297*	61.2	5,426	24,317	24,317	2,615	16,788	16,788	1,805	965	5.8	1,974	11.8		
1955...	15,601	9,517*	61.0	5,558	26,769	26,608	2,795	18,200	18,091	1,900	1,312	7.2	—	—		

* Estimated.

Primary Sources: D.B.S.—National Accounts, 1926-1950; 1950-1955; Canadian Statistical Review, 1955 Supplement. Bank of Canada, Statistical Survey.

CANADIAN AUTOMOTIVE INDUSTRY PASSENGER CARS REGISTRATIONS—DENSITY—SCRAPPAGE

Selected Years 1926-1955

	Registrations(a)		Population		Cars Per Household	Indicated Scrappage (000)	Scrappage % of	
	Total (000)	Per 1,000 Adults	Per Pass. Car	Prior Year's Registrations %			Sales %	
1926.....	736.7	137	12.8	N.A.	45.6	7.1	32.8	
1929.....	1,021.8	176	9.8	—	78.1	8.4	44.1	
1932.....	945.6	153	11.1	—	68.2	6.7	176.6	
1941.....	1,279.5	178	9.0	—	79.9	6.5	95.5	
1945.....	1,160.1	152	10.4	—	3.8	0.3	84.0	
1946.....	1,234.0	159	9.9	—	23.0	2.0	29.6	
1947.....	1,370.2	173	9.1	—	19.4	1.6	21.9	
1948.....	1,496.4	185	8.6	—	34.4	2.5	23.5	
1949.....	1,671.7	199	8.0	—	86.5	5.7	42.3	
1950.....	1,910.1	223	7.2	—	91.1	5.4	28.0	
1951.....	2,094.6	241	6.7	0.61	90.2	4.7	32.8	
1952.....	2,296.5	258	6.3	0.64	142.7	6.8	48.8	
1953.....	2,513.1	276	5.9	0.68	135.1	5.9	37.6	
1954.....	2,688.5	288	5.7	0.71	N.A.	—	—	
1955.....	2,935.4	308	5.3	—	—	—	—	

(a) D.B.S.—The Motor Vehicle and prior reports.

Schedule 3
CANADIAN AUTOMOTIVE INDUSTRY REGISTRATIONS — DENSITY — SCRAPPAGE — TRUCKS AND BUSES
Selected Years 1926-1955

	Registrations		Population Per Vehicle	Indicated Scrappage	Scrappage % of	
	Total (000)	Per 1,000 Labour Force			Prior Year's Registrations	Sales
1926.....	88.0	n.a	107.2	4.8	6.4%	24.7%
1929.....	155.6	—	64.4	9.9	7.6	35.7
1932.....	157.2	—	66.8	9.2	5.6	127.7
1941.....	274.4	62	41.9	—	—	—
1945.....	321.6	72	37.4	3.0	1.0	15.2
1946.....	360.9	75	34.0	1.8	0.6	4.3
1947.....	432.6	88	29.0	18.0	5.0	25.3
1948.....	488.3	98	26.2	20.3	4.7	26.9
1949.....	546.0	108	24.6	23.5	4.8	28.0
1950.....	627.2	121	21.8	26.4	4.8	25.2
1951.....	700.7	133	20.0	27.3	4.4	24.8
1952.....	782.1	147	18.4	47.8	6.8	44.0
1953.....	837.6	155	17.6	27.8	3.6	26.9
1954.....	867.9	160	17.5	—	—	—
1955.....	925.9	167	16.9	—	—	—

Source: Primarily D.B.S.—The Motor Vehicle and prior reports.

CANADIAN AUTOMOTIVE INDUSTRY SALES DATA—PASSENGER CARS

Selected Years 1926-1955

	New Car Sales(a)									
	Personal Expenditures on New Cars					New Car Sales(a)				
	Retail Value New Car Sales(a) (\$MM)	(b) Amount (\$MM)	% Disp. Income	% of Pers. Expenditures	Av. Indicated Retail Price	Number (000)	Number Financed (000)	No. Financed % of Sales	Amount of Financing	Amount % Retail Value
1926.....	N.A.	—	—	—	—	139.2	N.A.	N.A.	N.A.	N.A.
1929.....	—	—	—	—	—	177.2	—	—	—	—
1932.....	56.2 Est.	46.8	1.3%	1.5	1,008	38.6	—	—	—	—
1941.....	108.9	90.9	1.6	1.8	1,302	83.6	—	—	—	—
1945.....	N.A.	.2	—	—	N.A.	4.5	—	—	—	—
1946.....	120.3	100.4	1.2	1.3	1,548	77.7	11.1	10.6	8.8	
1947.....	283.2	236.5	2.6	2.6	1,779	159.2	27.4	32.4	11.4	
1948.....	282.9	236.2	2.1	2.3	1,942	145.7	29.9	37.7	13.3	
1949.....	412.3	344.2	2.9	3.1	2,038	202.3	53.2	71.0	17.2	
1950.....	661.7	552.6	4.4	4.7	2,037	324.9	97.1	131.0	19.8	
1951.....	683.2	569.6	3.9	4.3	2,478	275.7	81.7	110.1	16.1	
1952.....	725.2	605.3	3.8	4.2	2,483	292.1	124.9	194.4	26.8	
1953.....	899.7	750.2	4.5	5.0	2,505	359.2	146.4	252.2	28.0	
1954.....	797.6	663.6	4.0	4.2	2,568	310.5	126.1	230.9	28.9	
1955.....	1,023.4	—	—	—	2,644	387.0	156.2	305.1	29.8	

(a) D.B.S.—New Motor Vehicle Sales and Motor Vehicle Financing, 1954 and prior reports.

(b) Unpublished D.B.S. estimates.

SALES DATA—COMMERCIAL VEHICLES
Selected Years 1926-1955

	Retail Value	Retail Value	Net Commercial	Average	Number	New Vehicle Financing		% Retail Value
	Comm. Veh. Sales (\$MM)	Value % of G.N.P.	Vehicle Sales ('000)	Indicated Retail Price (\$)	Financed ('000)	% Sales	Amount of Financing (\$MM)	
1926.....	N.A.	N.A.	19.4	N.A.	N.A.	N.A.	N.A.	N.A.
1929.....	6.3	.17	27.7	875	—	—	—	—
1932.....	42.9	.50	34.4	1,247	—	—	—	—
1941.....	N.A.	—	19.8	—	—	—	—	—
1945.....	73.0	.61	42.3	1,726	11.8	27.8	17.4	23.8
1946.....	133.0	.97	71.1	1,873	19.3	27.1	33.0	24.8
1947.....	156.3	.61	75.6	2,067	21.9	29.0	36.1	23.1
1948.....	176.4	1.07	84.0	2,100	28.3	33.7	44.5	25.2
1949.....	224.0	1.24	104.8	2,137	38.3	36.5	60.4	27.0
1950.....	267.0	1.24	110.0	2,427	44.5	40.5	81.1	30.4
1951.....	277.4	1.19	108.7	2,552	47.7	43.9	98.0	35.3
1952.....	262.7	1.07	103.4	2,541	42.6	41.2	90.1	34.3
1953.....	192.0	.79	72.1	2,663	28.0	38.8	61.4	32.0
1954.....	232.5	.87	78.7	2,954	28.9	36.7	70.9	30.5
1955.....								

Source: D.B.S.—New Motor Vehicle Sales and Motor Vehicle Financing, 1954 and prior reports.

COMPARATIVE STATISTICS — AUTOMOTIVE INDUSTRY — CANADA — UNITED STATES

Selected Years 1926-1955

	Passenger Car Registrations		Population Per Car		Truck and Bus Registrations		Population per Truck and Bus		Personal Expenditures on Automobiles*				Consumer Credit % Disposable Inc.		
	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.	Total	Canada(a)	U.S.(b)	Canada	U.S.	Canada	U.S.
	(000)	(000)			(000)	(000)			(\$MM)	(\$MM)	(\$MM)	%	%	%	%
1926.....	737	19,221	12.8	6.1	88.0	2,831	107.2	41.5	N.A.	N.A.	—	—	—	N.A.	—
1929.....	1,022	23,060	9.8	5.3	155.6	3,442	64.4	36.4	2,588	—	—	—	3.1	—	7.8
1932.....	946	20,832	11.1	6.0	157.2	3,291	66.8	38.0	635	32.9	1.1	1.1	1.3	—	7.3
1941.....	1,279	29,524	9.0	4.5	274.4	4,948	41.9	27.0	22,706	106.8	1.9	1.9	2.9	6.8	10.0
1945.....	1,160	25,691	10.4	5.4	321.6	5,242	37.4	26.7	357	9.4	0.1	0.1	0.2	3.5	3.7
1946.....	1,234	28,100	9.9	5.0	360.9	6,160	34.0	23.0	2,436	113.8	1.3	1.3	1.5	4.6	5.3
1947.....	1,370	30,719	9.1	4.7	432.6	6,996	29.0	20.6	4,587	263.3	2.8	2.8	2.7	6.5	6.8
1948.....	1,494	33,214	8.6	4.4	488.3	7,735	26.2	18.7	5,646	268.2	2.4	2.4	3.0	6.7	7.6
1949.....	1,672	36,312	8.0	4.1	546.0	8,237	24.6	18.1	7,768	374.2	3.1	3.1	4.1	7.5	9.1
1950.....	1,910	40,185	7.2	3.8	627.2	8,862	21.8	17.1	10,078	584.5	4.6	4.6	4.9	8.9	10.1
1951.....	2,095	42,525	6.7	3.6	700.7	9,266	20.0	16.7	8,693	623.9	5.9	5.9	3.8	7.6	9.5
1952.....	2,296	43,654	6.3	3.6	782.1	9,483	18.4	16.5	8,315	672.3	4.2	4.2	3.5	9.7	10.9
1953.....	2,513	46,289	5.9	3.5	837.6	9,853	17.6	16.2	10,696	815.2	4.8	4.8	4.3	9.9	11.8
1954.....	2,688	48,324	5.7	3.4	867.9	10,123	17.5	16.0	10,224	719.4	4.3	4.3	4.0	11.8	11.9
1955.....	2,935	—	5.3	—	925.9	—	16.9	—	—	—	—	—	—	—	—

* Includes estimated expenditures on new cars and "mark-up" portion of used car sales.

Primary Sources: D.B.S.—The Motor-Vehicle, 1955 and prior reports.

U.S. Dept. of Commerce—Survey of Current Business, 1954 Supplement.
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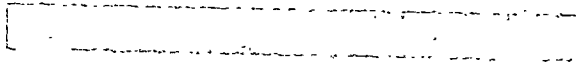
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