

THE AMERICAN UNIVERSITY LIBRARY

Manuscript Theses

Unpublished theses submitted for the Master's degree and Doctor's degree and deposited in The American University Library are open for inspection, but are to be used only with due regard to the rights of the authors. Bibliographical references may be noted, but passages may be copied only with permission of the author, and proper credit must be given in subsequent written or published work.

This thesis by _____ has been used by the following persons, whose signatures attest their acceptance of the above restrictions.

A library borrowing this thesis for use by its patrons is expected to secure the signatures of the users.

NAME AND ADDRESS	DATE
<i>Ross Caspell</i> 1923 N 5th. N.W.	3-15-54
<i>Joseph T. Korhanski</i> 1235 N. Quantana St Arlington Va	1-17-55
<i>W.D. Brookings, Jr.</i> 438 Belleview Drive, Falls Ch, Va	2-23-55
<i>Charles P. Shephard</i> 812 So. Cherokee Ave Alexandria, Va	29 April 1955
<i>Robert G. Vandevrede</i> 1008 10th A2 Alex Va	3 Dec 55
<i>W. G. Fyricovich</i> 601-19th St., N.W.	19 Dec 55
<i>D. G. Munnery</i> 2001 S. Gleason St., Alex	3 Aug 56
<i>Gunter H. Gifford</i> 2520 Woodley Rd.	9/20/58

**FACTORS AFFECTING INDUSTRIAL GROWTH
IN THE METROPOLITAN WASHINGTON AREA**

**A Thesis
Presented to
the Graduate Faculty
of the American University**

**In Partial Fulfillment
of the Requirements for the Degree
Master of Business Administration**

**by
Oscar Bessio
June 1953**

TABLE OF CONTENTS

CHAPTER	PAGE
I.	INTRODUCTION. 1
	The course of manufacturing. 1
	Washington fails to develop industry 4
	A renewed interest 6
	Suburban growth and attendant problems 7
	The city and its suburbs 9
	Economic ills force a review of industrial development 11
II.	GENERAL FACTORS THAT DETERMINE THE LOCATION OF INDUSTRY . 13
	Weber's theory of industrial location. 13
	The effect of transfer costs. 14
	The influence of the cost of labor. 17
	Concentrating tendencies 21
	The relationship of industrial processes 23
	Current trends in location. 24
III.	COMMUNITY INFLUENCE ON INDUSTRIAL LOCATION. 26
	Political boundaries as barriers to factors of production. 26
	The influence of public policy on industrial location. 27
	Taxes as locational factors. 31
	The granting of special inducements to industry. . . . 33
	Attitude towards special concessions. 35
	The practice of granting special inducements 36
	Trends in regional growth. 37
	Community pattern of industrial location 41
IV.	INDUSTRY IN WASHINGTON. 43
	Purposes of this study. 43
	Methods employed by this study 44
	The background of industry in Washington 46
	The nature of industry in Washington 51
	Comparative statistics 56
	The suburban locational pattern. 61
	Product diversification. 63
	District of Columbia. 63
	Alexandria. 64
	Arlington 64
	Fairfax 64
	Silver Spring 64
	Prince Georges. 64
	Bethesda. 64
	Current status of industrial growth. 65
	Land for industrial expansion. 68

CHAPTER

PAGE

V.	INDUSTRY VIEWS FRS PROBLEMS.	73
	Nature of the firms surveyed	75
	Results of the survey.	76
	Organizational units.	76
	Output sold locally	76
	Output sold to the Federal Government	82
	Locational study	82
	Supply of labor	83
	Local transportation.	87
	Adequacy of plant.	87
	Local taxes.	88
	The attitude of the local government towards industry.	88
	Nature of competition.	89
	The cost of labor	89
	Labor costs and outside competition	90
	Firms moving away from Washington	93
	Anticipated expansion of activity	94
	The attitude of lending institutions.	94
	Union activity.	95
	Reasons for locational preference	95
	Correlation of data.	96
	The geographical factor	97
	Major industrial groups	97
	The influence of the size of plant.	98
	Branch plants	98
	Firms selling to the Federal Government	99
	Industry's opinion of the locational value of Washington.	99
VI.	THE COMMUNITY VIEWS INDUSTRY.	102
	The role of the community.	102
	The basic attitude.	104
	The segments of opinion	106
	Revenue from industry	108
	Industry.	109
	Business	109
	Real estate	109
	Regional attitudes.	111
	Montgomery County.	111
	Prince Georges County	116
	City of Alexandria	118

CHAPTER		PAGE
VI.		
(Cont.)		
	Arlington County.	119
	District of Columbia.	120
	The availability of land	123
	The training of the labor force.	127
	The financing of industrial activity	128
	Labor and industry	130
	Industrial dispersion.	130
VII.	CONCLUSIONS AND RECOMMENDATIONS	132
	Washington and its factors of industrial location.	134
	Factors that affect the cost of manufacturing.	136
	The cost of labor.	137
	The effects of local taxes	141
	Land and zoning	142
	The movement towards industrialization	144
	The task of industrialization.	148

LIST OF TABLES

TABLE	PAGE
I. Desirability of Major Business Activities.	29
II. Detailed Manufacturing Statistics for the District of Columbia, 1947.	52
III. Growth of Manufacturing in Washington, 1899 to 1947 .	55
IV. Major Industry Groups in Washington, 1947	57
V. Proportions of Gross Wages by Groups, 1949	58
VI. Proportion of Gainfully Employed in Certain Activity Groups in Selected Cities of 250,000 or More	60
VII. Industry Evaluates its Locational Problems.	77
VIII. Union Scale of Wages in the Printing Trades	91
IX. Average Hourly Rate Paid by Private Industry, Clerical Occupations	92

LIST OF FIGURES

FIGURE		PAGE
1.	Industrial Locations in Suburban Washington	62
2.	Plant of Canada Dry Ginger Ale, Inc., Silver Spring	66
3.	Plant of Fisher Scientific Co., Silver Spring	67
4.	Pentagon Industrial Center, Arlington	69
5.	Metropolitan Washington, Land Zoned Industrial	70
6.	Industrial Blight	126

CHAPTER I

INTRODUCTION

A great belt of industrial activity lies adjacent to a long stretch of the Atlantic seaboard. It originates in New England which saw a new era of manufacturing begin at the same time that this country was created as a new nation. It spreads across most of the highly urbanized northeast and middle Atlantic states. It crosses the Mason and Dixon line and pushes a finger into Maryland. Major manufacturing areas as defined by the United States Bureau of the Census form an almost continuous band along this rich industrial region. The metropolitan Boston industrial area is followed in succession by the Worcester, Springfield-Holyoke, New Britain-Bristol, Waterbury, New Haven, and the Bridgeport manufacturing centers. The New York-northeast New Jersey region succeeds in bridging from the southernmost New England centers to the Philadelphia area with the aid of manufacturing activity centered in and around Trenton. The vast industrial area of Philadelphia is sufficiently large to almost reach out and meet that of York, Pennsylvania. Heavily industrialized Baltimore has attracted sufficient industry in its northern environments that it fills the gap between it and York.

The course of manufacturing. This great industrial belt in the northeast section of the country is a rich heritage of the past. It traces by its course the gradual movement and enveloping expansion of industry during the early periods of our industrial revolution. It is

anchored in the New England states where the new methods of manufacturing first took hold after they found their way across the Atlantic. The progress of the factory system in this country was comparatively slow during the first part of the nineteenth century. However, the second half of the century saw a tremendous expansion of American industry during which the United States rose from an inferior industrial position to the foremost place among the nations of the world.

From its inception in New England, manufacturing activity spread westward in the wake of the ever growing immigrations. The rapidly increasing population created an expanding home market. This was the predominant cause for anchoring in permanent locations the industry that had ventured to reach out into a virgin territory. The eagerness with which American inventors, engineers and manufacturers grasped the significance of the transfer of skill to the machine and their utilization of the best talent from other countries were responsible for the development of the uniquely American methods of mass production.

The heavy predominance of manufacturing activity in the eastern United States became established early. The development of the factory system in New England was abetted by extensive and readily available sources of cheap water power. Until the steam engine began to offer a competitive source of energy, manufacturing was restricted to small plants or otherwise remained at the source of water power. The steam prime mover and the discovery of extensive deposits of coal and iron in the middle Atlantic states permitted industry to extend beyond its birthplace. The heavy concentration of population along the Atlantic seaboard and the growth of large seaports

such as Boston, New York, Philadelphia and Baltimore required means for rapid communication. As a result, this region has enjoyed incomparable transportation facilities: an excellent railroad and highway network and a well established system of inland waterways which once played a major role in aiding the location of industrial concerns in the regions it served. The lack of natural barriers in this area has permitted an easy interchange of goods and materials at relatively low costs.

Immigration from abroad was a great impetus to American industrial growth. It in turn stimulated the movement of families and individuals from many European countries who sought a better mode of living. The early immigration¹ to America was almost exclusively from the British Isles, Germany and Scandinavia. This old immigration moved west just beyond the line of settlement and it built an agricultural civilization. Only a small portion of the immigrants settled in the towns or cities. On the other hand, the new immigration which began to assume large proportions in the early eighties of the nineteenth century came from south and central Europe. These immigrants were engaged primarily in agricultural pursuits but were attracted almost exclusively to industry in America. The high wages and the rapidly expanding industrial and mining centers of the East drew the new immigration to this country. Because most of the land for settlement was no longer available, hordes of immigrants were compelled to go to the cities and mining camps. This sudden heavy influx of foreign labor created many new social problems. A young and aggressive industry exploited the unwary immigrants without too much regard for personal

¹ Encyclopedia Americana, pp. 713-714, vol. 14, 1948 ed.

values. In spite of the tremendous progress made in human relations, this dark age of American industry created such an unsavory aura that the uninitiated still believes that the industrial environment still emanates the elements of substandard living and creates degrading surroundings.

Washington fails to develop industry. The city of Washington and its metropolitan area lies directly south of this great belt of industrial activity. It is separated from Baltimore, the southern terminal of this stretch, by only a few miles. Baltimore is a typical industrial city with forty percent of those gainfully employed engaged in manufacture. This city, with iron and steel the largest employer within the manufacturing category, is comparable in size to Washington. Despite its close proximity to a rich manufacturing area, Washington is not an industrial city as one would expect it to be from its size and location. The great industrial movements of the nineteenth century which blanketed such a wide area of the East stopped short of Washington and never penetrated further south. This large metropolitan center has been subjected to the same influences and has enjoyed virtually the same advantages as other cities in this great industrial area. However, it has failed to nourish and develop manufacturing activity in that same manner which has created the tremendous economic expansion of this country.

The nearly one and one-half million persons in Washington and its environments make this community one of the largest metropolitan areas in the United States. It enjoys excellent rail transportation and is an important exchange point in the main trunk lines between the north and

the south. Many of the important rail lines in the East terminate at the Potomac Yards in the city of Alexandria, one of the major railroad freight interchanges in the country. Washington is also the hub of a highway network that permits the easy transfer by truck of freight to many nearby industrial areas. Along with many commercial cities, Washington is situated at the head of a navigable river that once carried much transoceanic trade. As a further attraction to industry, the city can furnish at Georgetown quantities of water power from the Chesapeake and Ohio Canal with its thirty-three foot head above the Potomac River.

Washington as a large city has the advantage of concentration². Among these is the advantage of the market resulting from the centralization of a large population, business and commerce. Manufacturers selling to a localized market and not drawn to the source of materials find it advantageous to locate in a large city because of the massed buying power that is found there. Since centers of population naturally attract those who seek work, a large city usually provides a good supply of labor. Manufacturers recognizing their need for an elastic labor supply will therefore tend towards metropolitan centers. The city offers to labor educational facilities that cannot be excelled and provides housing and recreation. Industry finds that urban areas provide many experts in every line of endeavor which can furnish assistance with the operation of the firm. Due to concentration and the means for communication, the exchange of ideas is also facilitated in the large city.

² W. Gerald Holmes, Plant Location (McGraw-Hill Book Co., Inc., 1930)

In spite of these advantages of size and location, Washington has failed to materialize as a center of industrial activity. The favorable nature of its location was recognized as early as the second quarter of the nineteenth century when a number of diversified manufacturing enterprises attempted operations in this area. These flourished but a general growth trend failed to materialize. Manufacturing was slowly weeded out of the Washington scene since it was looked upon as a discordant element in the ever growing role of the city as an important center of national affairs. This feeling was expressed appropriately by Louise Latimer in 1924 when she wrote:³

Though business in the capital city, with its excellent transportation facilities, will without doubt grow, few would care to argue that the capital should ever become a manufacturing city. The capital, whatever may have been the intention of its founders, has evolved into a place for the work of the government, for residence, for study, and to a great extent for the pleasure of Americans visiting their own city.

A renewed interest. This attitude has been endorsed without reservation for several decades. However, today this is no longer true since the question of the role of industry in the Washington area is receiving considerable thought and is creating great interest in many. These are those whose responsibility is to administer to the public needs of the many inhabitants of this fast growing metropolitan area. The problems of introducing new industry in this region are uppermost in the minds of those who plan for the economic wellbeing and the best utilization of the assets of the community. The individual inhabitant is drawn

³ Louise Payson Latimer, Your Washington and Mine (Charles Scribner's Sons, 1924), p.323

strongly into these considerations and helps shape the future course by study, exchange of ideas, and participating with groups who wish to achieve the ends he desires. The business community is intimately bound with the question of the future prospects of industrial activity in metropolitan Washington since it will be vitally affected both by direct association and indirectly as a result of secondary influences. The educator cannot help but notice the trend, for he is aware that industry must draw upon the youth of the area who have been trained to think and who have the basic information which enables them to adapt themselves to their productive tasks and to the people with whom they work.

Suburban growth and attendant problems. This new and searching attitude which has arisen since the above-quoted statement was made with such an air of finality is undoubtedly the product of the current postwar era. It is one of the concomitant results of the tremendous reshaping of the Washington metropolitan area brought about by its recent growth and movement of population.

Along with other metropolitan areas, Washington has witnessed a large and steady movement of population towards its suburban areas. This has created a number of "bed-room cities" along the outskirts whose inhabitants seek their livelihood and satisfy their wants in the central city. Their growth is seriously affecting the central city. Studies reveal that these suburban areas are inhabited mostly by the middle and upper income groups who in many cases have migrated from the central city. The increase in population of the city proper resulted primarily from the lower income groups. Thus there is a two-fold loss to the city: a loss

of those most able to carry the local tax burden and a gain of those who are unable to shoulder today's high taxes. It is evident that this outward flow of population will cause a decline in property values in certain areas of the city with an adverse effect on the revenue that is raised by the property tax.

The growth of the suburbs is bringing a heavy demand on local governments for facilities and services which are essential to the general welfare of the new inhabitants. The rate of growth of the suburbs has outstripped that of the District of Columbia during the past decade. In 1953 for the first time the suburban population exceeded that of the District. It is estimated⁴ that 1,640,000 inhabitants reside within the confines of the metropolitan area of which approximately 835,000 persons, or about fifty-one percent of the total area population, are in the suburban counties and cities. An indication of the extent of the growth of the suburbs is obtained from the fact that in less than three years since the 1950 census was taken, some 50,000 new family units have been added in Arlington, Fairfax, Montgomery and Prince Georges Counties and in Alexandria and Falls Church. In contrast, the population of the District was 802,178 in 1950 and has changed but little since then. At the same time, the city is currently being stripped of about 4,500 white families a year. Of the 65,000 new dwelling units built in the metropolitan area in the past three years, seventy-nine percent, or 51,000 units, were built in the suburbs. The greatest increase in population has

⁴ Washington Post, January 28, 1953, the Washington Board of Trade's Business Outlook Conference.

occurred⁵ in Arlington County with a one hundred percent growth during the eight-year period starting in 1940. Similarly, Alexandria has recorded an increase of about seventy-five percent during the same period while the District of Columbia grew by only thirty percent. To further aggravate the burden on the suburban areas, it has been noted that there is an abnormally low percentage of white children under ten years of age in the District so that the suburbs have the expensive task of educating a disproportionate number of the white children of the metropolitan area.

The city and its suburbs. The District of Columbia has been able to achieve a measure of economic self-sufficiency. With about 250,000 Federal employees currently in the Washington area, of which about 200,000 are employed in the District of Columbia, the District is a large center of government activity. This has been long recognized and the economy of the city has been developed around this basic fact. As a result, each new Federal employee provides for five to seven additional people, his family and the families of the service workers whose jobs he creates by being a new customer.⁶ The pattern of job locations also favors the economic stability of the District over its suburbs, since in 1947 eighty-four percent of all jobs were inside the District, nine percent in Virginia and seven percent in Maryland.

5 Metropolitan Washington after 150 Years: Its Economic Expansion, Bureau of Business and Economic Research, University of Maryland, College Park, Maryland, Vol. IV, No. 1, June, 1950, p.5

6 Washington, Present and Future, A General Summary of the Comprehensive Plan for the National Capital and Its Environs, National Capital Park and Planning Commission, Washington, D.C., Monograph No. 1, April, 1950, p. 10.

Ninety-one percent of the income earners fourteen years of age and over living in Washington also worked within the District, while fifty-four percent of Virginians in the metropolitan area who are income earners worked in the District and forty percent in Virginia. Sixty-five percent of the income earners living in Maryland worked in the District and twenty-nine percent in Maryland⁷. The preponderance of business activity that is being conducted within the District is again illustrated by the division of the retail trade between the city and its suburbs.⁷ In 1948 the city of Washington accounted for seventy-five percent of the sales and receipts in the retail trade and seventy-nine percent of the full workweek employees.

The Washington area is characterized not only by its fast growing population but also as one that enjoys an above average income.⁸ On a per capita basis, income payments to individuals in 1948 were \$1,691 for Washington and \$1,410 for the United States. This large per capita income payment is due to the large number of salaried employees in Washington without agricultural pursuits to lower the city's average income. Furthermore, unemployment is minimized since Federal employees who are released return to their homes in other parts of the country. A high average is possible for Washington due to the large numbers of women who are gainfully employed and the relatively small size of the median family.

⁷ Washington, Present and Future, op. cit., p.8

⁸ Washington, Present and Future, op. cit., p.11

The Washington suburbs lead the District of Columbia by a considerable margin on the basis of income earned. The Bureau of the Census in its 1947 survey⁹ found that income earners fourteen years of age or older residing in metropolitan Maryland had median earnings of \$2,988 with earners from the Virginia area earning \$2,725, while the median earnings for Washington were \$2,268.

Economic ills force a review of industrial development. It is evident that the suburban metropolitan area has been transformed by the late war from a rural and agricultural region into one that is prized as the residence of the more prosperous elements of the population. The sudden influx of new inhabitants has not overcome the inertia inherent in institutional changes so that the outlying areas suddenly find themselves facing economic problems of a disproportionate nature. The heterogeneity of the metropolitan area and its diversity of interests prevent it from being knit into an integrated whole at this time. As a result, each local community must seek its own solution since it cannot expect to enjoy the same benefits as have ~~accrued~~ over a long period of years to the more stable central city. In addition, it must compete strenuously with the city proper when attempting to achieve a greater measure of economic self-sufficiency since business leaders in the District of Columbia are keenly aware of the loss of commercial activity to the suburbs that is now taking place and its cumulative effect on their business community.

⁹ Bureau of the Census, Series P-60, No. 4

It is this pressing current problem of having to achieve an economic balance between the need for public services for the new suburban population and the ability to furnish them that has catapulted the question of industrial development into the forefront. The re-discovery of the intentionally long neglected natural advantages of the Washington area coupled with a growing desire by the communities to welcome industry to use these assets and participate in the solution of area problems can have a very strong influence on the industrial growth and makeup of the metropolitan region. The evaluation of this very significant situation can best be made after gaining an understanding of the problems of industry that affect their location and the manner in which localities can attain a measure of control over locational change.

CHAPTER II

GENERAL FACTORS THAT DETERMINE THE LOCATION OF INDUSTRY

The choice of a suitable location for an industry may mean the difference between its success and failure. The industrialist is not the only one concerned with knowing what the requirements are for a good location. Financial and business institutions, railroads, utilities, local transit firms, community leaders and public administrators all have considerable interest in plant location and need to know how the various factors affect the location of different types of industries.

Weber's theory of industrial location. In 1909 Alfred Weber produced his classical treatise on the theory of the location of industries.¹⁰ In the course of developing his basic principles, he made several simplifying assumptions that tend to weaken the results for certain of the extreme cases. Nevertheless, Weber's theoretical framework is a model for departure in analyzing more complex situations and it approximates closely the general case.

The factors of location are numerous and varied in nature. They may be classified as general and special. The cost of transportation, of labor, and rent are considered to be general factors since they affect every industry. On the other hand, the perishability of raw materials and final product, the effect of atmospheric conditions upon manufacturing processes and the need for good quality water are special locational

¹⁰ English translation by Carl J. Friedrich, Alfred Weber's Theory of the Location of Industries, The University of Chicago Press, Chicago, Ill., 1929.

factors because their effect is pronounced only in the case of certain industries. There are also certain advantages of nature which draw activity to particular geographical locations and there are social or cultural phenomena, the consequence of particular economic or social conditions, which draw industries in one direction or another. Locational factors can be further classified according to their influence in scattering and in concentrating (or agglomerating) industry at certain points.

In arriving at the basic behavior of a mobile industry, it is necessary to determine those elements of cost which differ according to the location of the productive process. Locational factors are to be considered in terms of advantages in cost. They depend upon the places to which industry is attracted and therefore they pull it in various directions simultaneously with forces which vary inversely with the cost differential for each of the respective locations.

The effect of transfer costs. An important variable of the locational pattern is the cost of transferring the raw materials and supplies that an industry requires for its operation and the goods that it produces. Each manufacturing center has one or more sources of supply and furnishes its product to one or more markets. This movement to and from the work center involves transfer costs which must be borne by the enterprise and these in turn depend fundamentally on the tonnage to be transported and the distance it must traverse. The problem is to consider how transportation costs influence the distribution of industries, assuming that other factors have no influence.

With weight and distance the only factors of transportation costs, industry will be drawn to that location where the minimum number of ton-miles result from the process of supplying it and distributing its product. With production at such a place, the cost of transportation will be lowest. This general rule is a valuable tool in determining the distribution of productive activity. It affects industries differently, depending upon the characteristics and amounts of the materials they require and the nature of the productive process. As regards the nature of materials used, some appear everywhere. These are referred to by Weber as "ubiquities", general in the case of air which is worldwide and regional in the case of wood or clay. Materials which are not obtainable in the immediate vicinity of the process of production are known as localized materials and require transportation to make them available. During certain processes of manufacturing, materials will impart their total weight to the product while in others they will add only a fraction of their weight. In the former case, they are known as pure materials, and in the latter as weight-losing materials. Weight loss is incurred by mechanical or chemical changes during the process of transforming the raw materials into consumer goods. These classes of materials play an important role in assigning the most advantageous locations to specific industries. As a further distinction, the "material index" of an industry is defined as the ratio of the weight of the localized material to the weight of the product. This index is a measure of the quantity of material subject to transfer costs per unit weight of product produced from it.

As a result of his analysis, Weber concludes¹¹ that in general industries having a high locational weight are attracted towards materials while those having a low locational weight are attracted towards their markets. Furthermore, pure materials by themselves can never cause production to locate at the source of materials. This is because an equal weight of material and product is involved and both exert nearly equal influences to divert the industry to source and points of consumption. On the other hand, weight-losing materials may pull production to their deposits. This may be possible when the weight of the weight-losing materials is equal to or greater than the weight of the product plus the weight of the rest of the localized materials. This may also be stated as that it is necessary that the material index be greater than one and that its weight-losing material portion of the index be equal to that of the remainder plus the weight of the product. Theoretically, therefore, the only factor upon which the choice of location depends, insofar as transfer costs are concerned, is the material index of the industry and the makeup of the index.

As a result of this theory it is possible to explain the orientation of several different industries. For example, beet-sugar refineries are invariably located near the fields where the sugar-beets are cultivated. Since only about one-sixth of the weight of the beets enters into the weight of sugar extracted, considerable savings in costs are realized by not transporting this bulky raw material. Similarly, the turpentine,

¹¹ Weber, *op. cit.*, p.61

rosin and cotton-seed crushing industry illustrate the use of weight-losing materials which involve considerable reductions in bulk during manufacture and make material-oriented industries a necessity. In contrast, processes that involve the use of large quantities of "ubiquities", such as water, will often make advisable a location that places the producer close to his market. Therefore, beverages and inks which contain a large proportion of water will have this added and be made in their final form close to their market.

Weber's theory on the effects of transportation costs on the locational pattern of industry was based on an elementary concept of the transportation network. However, in reality, the results may be modified somewhat by the rather complex rate structure of modern transport. Transfer costs do not vary only with distance. In general, rates per mile are less for greater distances than shorter ones. They are lower in the direction of lighter traffic flow, for large shipments and large shippers, for compact goods and for low cost, high density materials. Nevertheless, producers will in response to the effects of the costs of transportation attempt to locate themselves in relation to their sources of materials and supplies and to their consumers in a manner such as to make their total transfer costs as small as possible.

The influence of the cost of labor. Another locational factor that ranks in importance with transportation costs is the cost of labor. This cost affects all industries and it becomes a critical factor in a few. In 1947, the manufacturing industries in the United States paid wages and salaries that amounted to 53.4 percent¹² of the total value

¹² Census of Manufacturers: 1947 United States Department of Commerce

added by manufacture. This was an increase of 6.3 percent over the same ratio for 1939. If labor costs become excessive, it may be possible to economize in certain industries by resorting to greater mechanization. Wage rates are not the only criteria in determining the resulting cost of labor. It is also necessary to consider the productivity of the labor force. An energetic and capable type of personnel which commands a high rate of recompense may ultimately produce at a lower labor cost per unit of output than a lethargic and less skilled work force that receives lower wages. The labor force enjoys a certain amount of mobility which tends to offset any tendency to establish areas of differentials in labor costs.

Labor costs can only become factors in the location of industry by varying from place to place. In that event they can attract industry to particular localities and thus have an effect on the fundamental distribution of industry. The costs due to labor may differ from one industry to another and from one locality to another on account of two quite different sets of causes: (a) because the efficiency of labor and the level of wages paid vary; (b) because the effectiveness of the labor organization and the mechanical equipment at its disposal vary. The employer who is interested in low processing costs will seek the most desirable combination of these factors, taking into consideration the limitations of the labor force and the manufacturing process. A low-cost labor location may be found in a region which offers especially attractive housing conditions. These environmental and cultural advantages of such a location are conducive

in establishing workers who are willing to accept lower money wages than elsewhere. An overpopulated area where employment opportunities are lacking may also produce a low-cost region with persons accepting wages which are less than what comparable work elsewhere would demand. Another low-cost labor location results when an unusually productive or adaptable labor force is produced from the nature of the local occupations and the size and makeup of the labor force.

Due to the desires of processors to reduce their manufacturing costs, every geographical point that enjoys low labor costs becomes in an economic sense a center of attraction which tends to draw industry away from locations that permit transportation costs to be minimized. Under the simultaneous influence of forces that tend to draw it towards the minimal points of transportation costs and labor costs, an otherwise free industry will orient itself towards each in seeking equilibrium. In order to minimize the combined costs due to transportation and labor, an industry can be moved from its point of minimum transportation costs to a more favorable labor location, provided the savings in the cost of labor which this new location makes possible are larger than the additional costs of transportation that would result from this move. This law of labor orientation establishes in the limiting case of industry shifts an equality between increased transportation costs and reduced labor expenses. Weber in his locational theory has devised a graphical approach to the quantitative problem of limiting deviations when labor orientation prevails. He conceived of a plot where the transportation minimal point is encircled

by a number of contour lines which he called isodapanes. These connect geographical points of equal transport cost. Therefore, the distance between adjacent isodapanes represents the increase in the cost of transporting goods and materials of an industry that deviates by this distance. On such a model there will be a critical isodapane along which the cost of deviating from the minimal point will exactly equal the expected economies in labor costs per ton of product over the labor costs at the minimum point. If a labor location lies within the area of this isodapane, it will be able to attract industry to itself because the savings in labor costs will exceed the increased costs of transportation. If the labor location lies outside the critical isodapane, it cannot bring about the migration of the industry.

The locational response of an industry to variations in labor costs is indicated in part by its index of labor costs. The index of labor cost of an industry is the absolute amount of labor costs per ton or per unit of product produced which is subject to reduction or compression as a result of a more economical labor source. Therefore, if the index is one hundred dollars per ton, a compression of ten percent will produce a saving for this labor location of ten dollars per ton. However, an index of ten dollars per ton will cause a labor economy of only one dollar per ton with the same compression of ten percent. This illustrates that labor savings are in part dependent upon the extent that labor is used in producing each unit of output. A high index of labor costs makes a large amount of labor costs available for compression. Industries having high indices will therefore be more strongly attracted

to low labor cost areas than those that have lower indices. Of still greater significance in determining labor orientation is the coefficient of labor. The coefficient of labor of an industry is the amount of labor costs associated with the locational weight (weight of product plus weight of localized materials). The coefficient is the ratio of the index of labor costs to the locational weight and is expressed as $100/3$, or one hundred dollars of labor per ton of product to three tons locational weight. Weber in developing his locational theory has shown that the labor coefficient is an indicator of the general nature of an industry and determines the extent of its labor orientation. A high coefficient indicates that the industry will be attracted strongly to low labor cost locations and will concentrate at a smaller number of labor locations.

Any development of the transportation industry which is accompanied by a general reduction in transfer costs has a tendency to emphasize labor orientation by decreasing the relative importance of the forces exerted by transport pattern. Similarly, an increase in the density of population will produce greater labor orientation. On the other hand, greater mechanization of the process has a compound effect in converting a labor-oriented industry into a more pronounced transport-oriented one. It decreases the labor coefficient by diminishing both the amount of labor used and the amount of locational material per ton of product.

Concentrating tendencies. A producer who is beset by high transfer costs and high labor costs may avail himself of certain economies resulting from a more concentrated production. Weber refers to an "agglomerative" factor as a saving in production which is the outcome of

carrying on production on a large output scale at one place in contrast to undertaking this output in more than one place. Costs are reduced in a plant with a large output because: (a) more units of equipment and labor can be operated near their maximum efficiency; (b) a proportionally smaller quantity of materials, supplies and equipment must be held in reserve for variations in demand, routine maintenance, supply stoppages and accidents; (c) there is a reduction in the unit price of materials, supplies, and services which are purchased. These savings cause units of production to gravitate to one another so as to benefit from the advantages of integrated operation and the degree of the scale of operation.

However, a "deglomerative" factor may arise from the agglomerative tendencies, one which stems from increased expenses. The large concentrations of industry which result will cause a rise in land values due to the demand for land. This increase in ground rent sets up deglomerative tendencies.

To determine the economic desirability of the agglomeration of industry, it is necessary to equate the gains due to concentration to the losses from the need to deviate from transport and labor oriented locations. The deviation costs per ton of product must be smaller than the economies per ton of product. The general manufacturing costs are the ones most susceptible to reduction through agglomeration. In general, these manufacturing costs appear in the value added through manufacture of a product. If the coefficient of manufacture is defined as the value added through manufacture per locational ton, it is apparent that industries with high coefficients will show strong tendencies to agglomerate.

The relationship of industrial processes. It should be noted that an industry cannot always be conceived as consisting of an indivisible entity which can be drawn by locational forces from one point to another only as a whole. Industry is commonly concerned with two stages: (a) the first stage of production which provides workable materials; (b) the second stage which is concerned with the working of the materials. It is seen that, since the first stage of production involves the removal of much waste material and relatively little waste is removed during the second stage, the conditions leading to a common location for these two stages will not occur frequently. Therefore, the location of the entire productive process of an industry at one point will be the exception. A split of the process into several locations will generally be the case if division of the productive process is technically feasible.

The subdivision of an industry is aided by a number of factors. A segment of the process may be deviated by a labor location from following an adjacent stage. In general, the splitting is aided when the industry employs more materials and these are used in several technically independent stages. This permits an easy transport orientation of each of these segments. Therefore, it is seen that spinning is separated from weaving; that wood planing may be done elsewhere away from the sawmill and at a location other than where the finished product is produced; that wood pulp is sufficiently specialized to require its production away from the rest of paper manufacturing. However, as counter concentrating forces should be noted the effects of the mechanization of the industrial process and of the use of large capital resources. Large concentrations of completely integrated industrial processes at one location have come into being.

A strong influence in determining the location of certain industries is the need of one process for the products of another. These processes are connected by the fact that one creates a place for the consumption of the other or that a common market is created (such as where the main product requires wrapping material). The connection is based solely upon the linking of the market of the one with the other. Therefore, the location of the main industry is also the location of the auxiliary or satellite industry because the former is the place of consumption of the latter. As a special case, it may be mentioned that the auxiliary process may be drawn to the location of the main process because of the need for local contact with the production of the main process.

Current trends in location. The period that ensued between the two World Wars considerably altered the relative strength of the classic factors of location and has introduced others. For example, a system of delivered prices for many fabricated parts has reduced the emphasis on locating near raw materials. A suitable supply of manpower now tends to mean adaptable and relatively inexpensive rather than highly skilled labor.

In contrast, certain factors appear to be gaining strength in determining industrial location.¹³ Of these, nearness to market appears of primary importance. This is not due to the effects of transportation but rather the facilitation of a full and rapid consumer service. This is illustrated by the extensive use of supply points, warehouses and branch plants located near the customer. Many heretofore relatively insignificant items have come to exert increasing collective pressure now that transfer costs and labor are of less decisive influence. These include such considerations as the publicity value of a factory visible from the main

13 S. R. Dennison, The Location of Industries and the Depressed Areas (Oxford University Press, London, 1939) 216 pp.

highway, healthy surroundings of rural areas, peculiarities of city tax structures, or the pressure of local interests such as development boards. Due to these marginal elements, there is now a wider range of choice in location than formerly.

CHAPTER III

COMMUNITY INFLUENCE ON INDUSTRIAL LOCATION

Political boundaries as barriers to factors of production. A political boundary, whether municipal, county or state, hinders trade in a number of ways. Some of these barriers are imposed as a part of public policy. Discrimination by states may involve a preference for home state furnished supplies as well as taxes, inspection, labeling and interstate traffic regulations which favor local activities. The effect is to make outside material sources and markets more inaccessible to industry so that it must rely in some cases on the available domestic markets and supplies. This will cause industry to consider as optimum those locations which are within its political boundaries.

Boundaries also hinder the movement of labor, capital and enterprise and therefore have locational effects. Unusual situations often arise when political boundaries divide areas that are integrated economic units, such as the region that surrounds a large metropolis. Since these metropolitan areas exist with a delicate economic balance between the components of the area, a change imposed on one political segment will soon result in a realignment of related activities in the entire metropolitan region. In order to avoid unilateral actions that create widespread disturbances in the economic entity and to promote the development of the entire area, it has been found advantageous to create a single authority that directs certain specific activities in the metropolitan region. This is made possible by the relinquishing of certain powers by the local governments.

The influence of public policy on industrial location. The location of industries concerns not only the individual firms but also government. Because of the impact that industry has on the economic wellbeing of the community, local governments have become aware that their fixed investments and public programs may be jeopardized by unfavorable changes in the locational pattern. Since government has assumed an ever increasing role in the prevention and the amelioration of the effects of unemployment, it is greatly interested in means that will assure the existence of indigenous industries in the community. In spite of the large stake in locational development, few governments have ever produced and followed an effective policy in matters relating to location.¹⁴ Public direction in locational problems has stemmed usually from the employment of policies intended for other ends. Even when a conscious attempt has been made to affect location, it has frequently been hindered by conflicting government groups.

Locational policy must be used by government in a manner appropriate with the probable response from the different types of industries. Success in implementing a policy can be achieved only if a type of industry is selected that is sensitive to the efforts used to influence it. It will be found that material-oriented firms are rather insensitive to attempts to change their geographical locations, while service industries are much more responsive to efforts to locate them in centers of large population and high incomes. Activities that are growing and have not achieved maturity will be more attentive to locational opportunities

¹⁴ Edgar M. Hoover, The Location of Economic Activity (McGraw Hill Book Company, Inc., 1928), p. 112.

than those that are declining. In establishing policy to promote additional industrial population it is necessary first to determine the benefits that are desired by the community. Then the various types of industry must be studied to ascertain their ability to contribute towards these objectives before public control is tailored to fit the response characteristics of the desirable firms.

The criteria for evaluating the contribution of industrial activity will vary with the community and its specific economic problems. However, most communities find the wage structure of the prospective industry a prime factor in determining its desirability. Furthermore, the permanence of the employment to be offered is another important factor that is of general concern. Hoover¹⁵ has rated the major business activity groups on the basis of four generally applicable factors of desirability:

- (a) High median annual wages or salaries
- (b) High proportion of employees receiving \$2,500 or more per year
- (c) Seasonal stability
- (d) Cyclical stability

With each of the above factors varying from zero to a maximum index of desirability of three, the rankings of the activity groups are shown in Table I.

¹⁵ Hoover, op. cit., p. 249

TABLE I

DESIRABILITY OF MAJOR BUSINESS ACTIVITIES

<u>Activity Group</u>	<u>Rating</u>
1. Communication	11
2. Finance, insurance, and real estate	11
3. Utilities	11
4. Government	10
5. Wholesale trade	8
6. Transportation	6
7. Amusement, recreation and related services	5
8. Manufacturing	5
9. Professional and related services	5
10. Business and repair services	5
11. Agriculture, forestry, and fishing	4
12. Personal services	3
13. Retail trade	3
14. Mining	2
15. Construction	1

Government can influence the prospective profits that away the executive when deciding on the location of his plant. The tools at the disposal of public authorities that bear on the location problem are many. Transfer costs can be influenced through the nature of regulation, subsidy and taxation of carriers. The development of industry can be facilitated by governmental efforts to improve the mobility of investment capital. By manipulating such standards of labor as minimum

wages, maximum hours and other working conditions, it is possible to have considerable influence on industrial location. Considerable stimulation to industry can be given by providing employment services which make available a trained labor force at wages which have been equalized by the process of disseminating information about job opportunities.

Public control of private land use, or zoning, has a decided effect on industrial location. The heretofore piecemeal development of urban centers without regard to order and with slums and inaccessible suburbs has given impetus to the science of city planning. The primary objective of such planning is to balance the different elements which make up the community and to give a greater degree of comfort and pleasure to its inhabitants. City planning and its product, land zoning, is vitally concerned with the social, ethical and physical condition of the citizens. An effective and equitable apportionment of the facilities and resources of the municipality creates a greater sense of civic responsibility in the citizens and improves the morale of the entire community.

Zoning restrictions have as their primary objective the protection of real estate values such as residential property against the depreciating effects of noise, dirt, dust, objectionable smells, unsightly neighborhoods and street traffic. This is usually accomplished by segregating certain similar activities in areas where a minimum of interference exists with other segments of the community. Zoning also attempts to discourage any ill advised use of unsuitable land. It also tries to make available limited community services and resources in an economic manner so that they will be used by those groups who have the greatest need for them.

Government can also create a favorable industrial atmosphere through its sponsorship of certain aids to technological advance. Well staffed and equipped schools play an important role in the training of an adequate labor force. Libraries and laboratories foster research which is an important element in the development of industrial processes. These aids are beneficial to industry already established in the area but also serve to exploit the possibility of attracting new types of productive activity which are well suited to the community.

Taxes as locational factors. Of the many factors that influence plant location, the tax element is the one more amenable to control by the community than any of the others. Public authorities may hold industrial taxes at a low level by either holding public expenditures to a minimum or by designing the tax structure so as to minimize industrial taxes. If the latter method is employed, greater reliance must be placed upon personal taxes such as individual income and sales tax.

The level of industrial taxes has long been a subject of controversy. Many contend that higher than average industrial taxes discourage the selection of the community as a plant site. However, others believe that higher than average taxes do not prevent an adequate amount of industrial growth in the area. It is evident that if total costs, other than taxes, are approximately equal for a number of different locations, then tax cost differentials if large enough may be decisive in determining the choice of plant location.

If high industrial taxes make possible superior public services which directly benefit the taxed firms, it may be possible to effect cost reduction in the firm due to improvements in such services as fire and police protection. However, these cost reductions in most cases do not counterbalance the increased tax load. Revenues from higher than average industrial taxes are used generally for purposes that do not have an immediate benefit to the industry. Since most of the public spending is for schools, highways and public welfare, its benefits are diffused over a wide area and bring only indirect advantages to the industry that is taxed.

Industrial tax differentials are caused by the existence of wide differences between social and economical conditions in the various communities. Floyd¹⁶ attributes tax differentials to four basic causes: (a) the level of real income in the community; (b) the need of its citizens for public services; (c) the standard of quality demanded for such services; (d) the tax system used to obtain revenues. As a result, communities that do not enjoy a high level of income and do not have a large taxable wealth may have to levy heavy industrial taxes to raise the necessary revenue. Similarly, above average industrial taxes will be imposed by the municipality that has a large need for public services and wishes to maintain these services on a high standard of quality. In addition, localities vary in the makeup of their tax structure so that greater or less emphasis is placed on industrial wealth as a source of tax revenue.

¹⁶ Joe Summers Floyd, Jr., Effects of Taxation on Industrial Location (The University of North Carolina Press, 1952) Chap. II

The locational effect of taxes can be determined by computing and comparing the total costs of manufacturing activity at various prospective locations. Floyd¹⁷ computed the tax bills for selected industrial firms in specific cities and rural sites. He concluded that concerns which have low earnings relative to their property investment usually have larger tax variations between different locations within individual states than between median-tax sites of different states. The converse is also true. It also appears that only few locations offer uniformly high or low tax loads to all types of industrial concerns.

Tax differentials that exist between different locations are cause for concern, since they tend to have undesirable effects upon the economic development of the nation. The level of the industrial tax burden will cause a distortion of the most efficient pattern of industrial activity. Higher than average taxes will force industries to locate in areas where optimum utilization cannot be made of materials, transportation facilities and the factors of production. To the extent that the tax burden determines locational choices that prevent the most efficient utilization of materials and services, the factor of taxation must be classed as an uneconomical element in the locational process.

The granting of special inducements to industry. The offering of special inducements to industry to influence its location is a problem which interests both business and government. These special inducements may take the form of cash bonuses; local participation in financing; free sites; advance agreements on such matters as tax valuations; tax concessions and advance agreements on utility rates, services and utility

17 Floyd, op. cit., p.111

connections. These means of attracting industry are employed with varying emphasis by different sections of the country depending upon the community's need for expanding this form of economic activity. These special inducements may involve some form of contributions by business groups as well as tax or other agreements with the local governments. The granting of tax concessions is frequently restricted by the need to comply with the basic law of the state and with the local statutes. Therefore, advance agreements on tax valuations are not enforceable contracts but only gentlemen's agreements subject to change on any assessment date.

The desirability of using special inducements has been questioned severely. Unfortunate experiences with their use have resulted primarily from a lack of realization on the part of the manufacturer of the temporary effects of the grant and the difficulty of the community in estimating the long term return from this form of productive activity that located within its confines. The use of special inducements to subsidize an industry so that it barely becomes competitive cannot be justified from an economic standpoint. However, if concessions result in productive work in a location offering the advantages of efficient operation, the subsidy operates to reduce costs and perhaps lower prices with a subsequent net gain to society. In general, the social values that are produced from the new jobs and the contributions for the support of government created by the establishment of a new and soundly conceived enterprise are so great that special inducements may appear to be justified.

Attitude towards special concessions. A study of the problem of special inducements to industry was made by the Bureau of Business Research of the University of Oregon¹⁸ by surveying the attitudes and practices of the Oregon Chamber of Commerce. The following is a summary of the findings:

- (a) Few of the cities regarded the cash bonus with favor. Most considered this type of inducement as uneconomic.
- (b) Few Chambers of Commerce officially sponsor the local financing of new industry but rather lend their good offices or call such proposals to the attention of interested individuals.
- (c) There is a much greater tendency for small cities to offer free sites regularly. This is undoubtedly due to the availability of low cost locations in the smaller cities.
- (d) In general, more cities favor free sites than favor local financing or cash bonuses.
- (e) Several opinions appear to be unfavorable towards the exclusion of selected plant sites from the taxing district.
- (f) The Chambers of Commerce should assist industries in negotiating with utilities only to the extent of assuring reasonable rates. This opinion was affected by legal

¹⁸ Special Inducements in Industry Location in Oregon (Bureau of Business Research, School of Business Administration, University of Oregon, Eugene, Oregon, 1940)

difficulties which make it impossible to discriminate between users of the same class.

- (g) In the very large majority of cases, prospective industries have requested free sites and local participation in financing.

The practice of granting special inducements. The various states apply tax exemption to industrial property with wide limits of discretion. In general, liberal exemptions are characteristic of the South and New England. Only four states west of the Mississippi offer tax exemption. Over half the states practice little or no tax exemption or preference to industry both old and new. A few states employ a system of classified property taxation, with each class subject to a different rate of taxation or to a different ratio of assessment. This often means discrimination for industrial property. In a few states, all or part of the tangible personal property is tax exempt. The most common type of industrial exemption provides for either automatic or permissive exemption of new industries for a limited period of years. In the South where aggressive programs of industrialization have been developed, tax exemptions usually cover periods of from five to ten years.

Special inducements have been recognized by many communities as means for attracting desirable industries. However, the potentialities of this tool must be determined very carefully for each intended case so as to avoid its indiscriminate use. Firms that solicit a cash bonus are not worthy of attention because they are invariably unable to

exist without frequent recourse to a subsidy. Some circumstances merit the use of community participation in financing as an inducement. However, local financing should be small in relation to the capital investment of the industry and should be in the form of a short range loan. The judicious use of special concessions requires that they be aimed at improving those areas of the local industrial pattern that are least capable of producing new and acceptable sites.

Trends in regional growth. From its early inception, industry has constantly moved westward close in the wake of the pioneers who opened up a new inland empire. It left its mark on many communities during the course of its migration, creating large centers in some areas and leaving stagnant growth in others. The rate of growth has varied from industry to industry and from one region to another. While some form of manufacturing may be flourishing another may have entered a period of decline. The particular phase of its growth history that an industry may be entering is of particular importance in determining its susceptibility to locational change.

The most plausible explanation for the differences shown by various regions in their rate of industrial growth is the shift in population with its accompanying changes in the relative importance of the areas as consuming units. On the other hand, population movements are influenced by the rate of growth of industrial activity in the region. A more fundamental reason lies in the differences between areas in their costs of production of certain products and in the changes that occur among these differentials. This consideration of costs of production is considerably affected by the natural advantages found in the various

areas. Another important factor is the stage of economic development. Some sections are comparatively young, both in terms of the age of the settlement and the amount of industrial development, so that they have the large part of their development ahead of them. On the other hand, other areas are old and fully developed. New industries result from inventive genius, the lowering of the costs of production, and changes in consumer preferences. The location of these new industries depends largely upon the natural advantages offered by the various areas and the comparative effectiveness of local leadership.

Historically, the first manufacturing activities to settle in a new community were those supplying consumer goods for local use. Consequently, the extent of manufacturing was a function of the size of the community and the industries that first gained importance were those that made clothing, processed foods, built furniture and supplied other household and personal needs. With time, industry began to exploit local resources and began to supply a national market instead of only the needs of local consumers.

The suburbanization of industrial activity has characterized American manufacturing for the past four or five decades. The reasons for this shift to the suburbs are many and varied. The development of road transport and the extension of power lines have permitted the location of plants away from the centers of cities. Housing shortages in cities, the increased valuation of property and congestion of the central city have increased the costs of production and have hampered the expansion of plants in the downtown area and have emphasized the advantages of suburban locations. The extent of the suburban movement

of manufacturing is illustrated by the case of Pittsburgh¹⁹ which was the central city that lost the most in local importance from 1879 to 1929.

At the beginning of this period, the city proper accounted for eighty-one percent of the value added by manufacture in the area. At the end of the period, the city contributed less than thirty percent of the total.

The older industries are considerably influenced by changes in cost factors and will seek new locations to equalize these differentials. Many new industries have become highly localized in one or in a very few industrial centers. On the other hand, consumer industries are found to be widespread. The location of new industries can be influenced by the availability of capital. Newer industrial areas will attract new industries because they may have accumulated an excess of capital which may be risked more willingly in new ventures.

In general, the rate of industrial growth in an area will depend on the extent of its natural advantages and on the rapidity with which these advantages are exploited. The rate of industrial growth may be slowed or reversed by changes in the importance of an area's natural advantages. This is apparently the case of Alexandria, Virginia, which enjoyed an appreciable industrial development and a large waterborne commerce during the first half of the nineteenth century. However, the construction of the rail network removed the advantage of river transport from Alexandria and diverted its commerce to cities such as Baltimore and Philadelphia. Industry soon followed the lead of commerce.

¹⁹ Glenn E. McLaughlin, Growth of American Manufacturing Areas (University of Pittsburgh, Bureau of Business Research Monographs, No. 7, 1938)

The existence of wage differentials has been the primary cause for the movement of certain industries. Such is the case of the cotton textile industry which moved from New England to the South. However, the comparative mobility of labor tends to decrease these differentials. Industry also has greater freedom of choice of location since the importance of large numbers of skilled laborers being available in an area has been lessened by the mechanization of industry.

Superior leadership will stimulate the industrial life of an area by providing innovations, promotional activity and an enlightened and effective form of industrial management. As an example, New York City was predestined by nature to become a great industrial center. On the other hand, Los Angeles had an inadequate water supply, lacked sufficient water supply, lacked sufficient rainfall for agriculture, possessed no natural harbor, was hemmed in by high mountains and by deserts and had no supplies of coal nor iron nearby. Nevertheless, by great engineering effort and much advertising of its major advantage, its climate, Los Angeles has become a great population center and an important manufacturing area. This is evidenced by the fact that Los Angeles has led all other industrial areas since 1899 in the rate of growth of the number of manufacturing wage earners, the value added to the product by its manufacturing firms, and by the rapidly expanding nature of its population.

The availability of adequate capital is very essential for the success of local industrial ventures. Much may depend on the resources and attitude of the local banking groups. If an area is dominated by a single, conservative banking group, promotional efforts are likely to be

at a minimum despite the opportunities that may exist in the region for new ventures.

Community pattern of industrial location. In general, industries will group themselves in an urban area depending upon their transfer and processing requirements. Each section offers certain characteristic advantages. Heavy manufacturing which involves the movement of large quantities of materials and goods requires access to rail lines and dock facilities for water transport. The central parts of the city with their high rentals attract small plants who make intensive use of their site and accommodate the older concerns who acquired their locations before effective land use made this area prohibitive to them. Here the industrial belts are narrow and become wider farther out where rents are lower. Trucking permits the location of light manufacturing away from the railroads and the water front. Because of the freedom they enjoy in selecting their sites, light manufacturing will be found among the commercial and the inferior residential users.

The Chicago Plan Commission²⁰ has analyzed the industrial locational pattern and distinguishes between four major varieties of industry. The first type includes the light manufacturing plants which are found generally in multistory buildings concentrated on the fringe of the central business district. Since they are not too concerned with the transport of raw materials, these industries try to improve their labor supply by locating close to local transportation facilities. Another type of industry consists of the manufacturing plants in organized

²⁰ Master Plan of Residential Land Use of Chicago, The Chicago Plan Commission, pp. 20-21, Chicago, 1943.

and integrated industries. These are located along railroad lines in the terminal and switching district and are accessible for direct trucking. Since industry in these large scale districts is segregated, the possible blighting effect on residential areas is minimized. The large primary processing industries such as steel and cement mills compose the third type. They require large acreage, handle large quantities of bulky materials, create noise and produce obnoxious odors. Therefore, they locate in open areas where large sites are available and along rail lines and near water transport. The last type of industry is represented by the new large production and assembly plants which were built during and since the late war. These plants are located on belt and trunk lines and on major arterial highways away from built-up suburban areas. These newer plants are characterized by extensive land areas and huge one-story buildings which adapt themselves best to straight line assembly operations.

CHAPTER IV

INDUSTRY IN WASHINGTON

Purpose of this study. Industry has played a great role in shaping the destiny of this nation. It has had a pronounced effect on many communities which depend upon it for much of their livelihood. It has been noted that manufacturing has gravitated to large centers of urban population and has extended itself to distant suburbs. Since the prevalence of this strong economic factor has great local influence, a study of its effects on the life and economy of the Washington metropolitan area should prove to be of considerable value.

This is a study of the industry that has located in this area and the environment upon which it is dependent for its growth. It attempts to identify the types of productive activity that prevail and the structural characteristics of this industry. This study concerns itself with the basic forces that shape industrial activity, both those that are inherent in its structure and those that originate in the community. An analysis of these forces will provide the basis for a prediction of future trends in the industrial development of Washington.

The recent rapid growth of the metropolitan area has caused considerable concern to planning officials. Because of the great influx of new inhabitants in the suburbs and the threatened denuding of the central city, a considerable dislocation of public services has occurred. Currently, much data concerning this process are being gathered and are subject to study. However, nearly all of this effort has been directed along lines

dictated by the historical concept of the economic balance of the area. The Federal government is recognized as the chief basic support of the entire metropolitan region and trade is the factor that should be manipulated to assure satisfactory stability. These studies have failed to assign an active role to industry in regional planning. In emphasizing the function of government and trade, full cognizance has not been taken of the inability of the former to contribute to the local tax revenue and the serious limitation of the latter due to its primary dependence upon population density and distribution. Many fail to recognize the importance of local industry primarily due to a lack of information on its nature and extent. An economic activity that employs about 18,000 and has produced an annual income of over \$100,000,000 should not be disregarded, especially if its future potential is appraised.

This study is expected to evaluate the industrial scene with the intent of learning how best it can contribute to the solution of the current local problems. It will furnish some data which may be of interest to regional planners. It is hoped that it will arouse some interest in the community to permit making a thorough investigation of the future role of industry.

Methods employed by this study. Information on the many facets of the Washington industrial scene is completely lacking. Only general statistics on the operational nature of industry are provided by the United States Census of Manufactures. Therefore, it has been necessary to obtain by personal contact the data required to base the conclusions of this study.

Manufacturing activities are the primary objects of the study. Research and development have been investigated not only because of the difficulty of dissociating them from productive activities but because of their importance in local industrial matters. Strictly service industries such as bakeries and public utilities have been omitted from consideration because of the obvious nature of their locational problems.

Since the future prospects of manufacturing are largely dependent upon its current makeup, a number of representative firms were contacted for data and opinions. These firms were selected on the basis of type of activity, size and location so as to give indications of the industrial pattern. A questionnaire, shown with its forwarding letter in Appendix A, was prepared and was addressed to sixty-five concerns. A total of thirty-six replies was obtained. In order to better understand the basis of the replies to the questions, personal visits were made to twenty-seven additional concerns distributed throughout the area. In view of the general nature of the questions, they were addressed to the chief executive of each of the companies for reply. Because of the small size of the sampling, it is not expected that the results which are summarized here can be accepted as demonstrated facts but give valuable opinions and indications.

In addition to conducting a survey of industry, many interviews were held with key persons in various activities. This was intended to produce information on the attitude of the community towards industry and its problems. The chief public administrator of each of the suburban counties and cities and of the District of Columbia was contacted for

expressions of opinion. Local business was canvassed through the many Chambers of Commerce and Boards of Trade in the area. The presidents of several local citizens' associations were contacted to determine the attitudes of the inhabitants towards industrialization. Labor expressed itself through their representatives in the labor unions. Several public educators, who would play a vital role in any large scale industrial development, contributed information and knowledge on the training of the labor force. The availability of such a labor force and future employment trends were checked with the local United States Employment Service. The local practice and the philosophy of industrial zoning were obtained by interviews with several regional planning directors. Bank officials were asked to give their views of the problems of financing industrial ventures. Real Estate Boards and real estate operators offered information on current land values and land availability. The experiences of local public utilities, builders and railways were checked on the prospects of further industrialization. In this manner it has been possible to compare and verify certain basic facts. In view of the controversial nature of some of the data which were obtained, it is believed advisable in these cases to identify their sources only in a general manner.

The background of industry in Washington. The city of Washington was not started by settlers who believed that it would provide the best means for earning a livelihood. The city was born by decree and began to grow by mandate. The early inhabitants of the area were not attracted to the region now occupied by the city, undoubtedly due to its generally unattractive nature with swamps and low-lying land. This is borne out by the fact that when Washington became the seat of the new government in 1800, it

was ringed by the thriving ports and trading towns of Alexandria to the south, Georgetown to the west and Bladensburg to the east. In spite of its then unwelcome appearance, George Washington displayed some keen insight when he helped to select the site of the city that was to bear his name. He knew the topography well and was convinced that this location had sufficient natural advantages to hold a large population.

From what might be called an artificial start, the city of Washington was destined to play its major role as the Capital of the nation. However, the Federal government did not always loom large and encompassing in the economic life of the community as it now does. The executive establishment had a very modest start in June, 1800, when 136 public servants took up residence in the new capital. For many years the operations of the Federal government represented the prevailing activity in the city of Washington, but it was not sufficiently large to provide all in this growing community with an occupation. Therefore, a substantial number of the citizens became engaged in pursuits that had little or no dependence on the government. As a result, Washington became a trading center of some importance. From 1815 to 1835 products valued at \$4,077,708 were exported from Georgetown to foreign markets and nearly five million dollars worth of products were shipped to other American cities from 1826 to 1835. This latter quantity included a million barrels of flour and 5,400 hogsheads of tobacco.

Industrial activity began to assume respectable proportions during the second decade of the city's existence.²¹ In December 1810,

²¹ William Tindall, Standard History of the City of Washington (H. W. Crew Co., Knoxville, Tenn., 1914)

Philip Pyfer opened an establishment on Pennsylvania Avenue for the manufacture of hides. This was not the only establishment of its kind in Washington, since John Hellman operated a similar one opposite the house of Dr. Thornton who had no recourse at that time to city zoning regulations. As the result of an invention by an inhabitant, fire engines were manufactured as early as 1812. Washington's first brewery came into existence in 1811. Further diversity to the city's products was given by the erection of a factory in 1813 for the making of spinning and carding machinery. Two mills were established in 1817 for the manufacture of woollen goods and a window glass factory began operations in 1811 and produced three hundred thousand square feet of glass per year. An early industrialist was Henry Foxall who founded Foxall's Foundry in 1800 which cast most of the heavy guns used in the War of 1812.

An important and lasting industry was initiated in 1848 when the Washington Gas Light Company was formed. It built a coal gas plant which began to furnish gas to the city in 1851. Not only was the Georgetown area of Washington noted for its waterborne commerce but it also engaged in shipbuilding. Esby's Shipyard had produced many fine vessels by 1848. Another important yard was established in 1851 for the construction of steam vessels.

The Chesapeake & Ohio Canal was constructed at considerable expense and effort in the hope that it would become an important trade route. When it was completed in 1851, the canal made available in Georgetown large quantities of water power as a result of its being located thirty-three feet above the level of the Potomac River. This attracted many industries to the banks of the canal. This power was

used extensively in the manufacture of flour by mills which were admirably well located for this type of activity. Grain from farms in nearby Maryland and Virginia was shipped by barges plying the Chesapeake & Ohio Canal to Georgetown. The flour that was produced through the use of cheap water power was either sold locally or shipped by boat down the Potomac River to domestic and foreign markets. This desirable arrangement was shared by at least eight flour mills and three grist mills with an aggregate capacity of from 150 to 300 barrels of flour per day and capable of shipping from Georgetown as much as 300,000 barrels in one year. Flour milling also became a leading industry in Alexandria which did more business in grain before the Civil War than did Baltimore. However, this excellently located industry lost most of its advantages when the railroad network spread sufficiently to tap western wheat producing states and made possible the economic shipment of this commodity to more developed ports. As a result, much of the grain and flour traffic moved to Baltimore which was more accessible to rail and water transportation than Washington. Today, only one remnant of this once thriving activity remains in Georgetown. It has occupied its site since before 1800 and still draws large quantities of water power from the canal. However, barge traffic has given way to the shipment of grain by truck from farms as far away as one hundred miles.

In addition to the flour mills, the canal accommodated a cotton factory equipped with one hundred looms and 3,007 spindles and employing about one hundred persons. In 1865, a paper company found the banks of

the canal sufficiently advantageous to establish a mill. Until the first decade of the present century, ice was imported into Washington from the Kenebec River to Georgetown in coasting vessels which in turn carried back to New England cargoes of Cumberland coal which had been floated down the canal. However, the advent of mechanical refrigeration in the city caused the abandonment of this traffic.

It is apparent that Washington during its first century of existence responded to its environment and began to produce an industry commensurate with the demands of the community and the advantages of its location. It exploited its resources to an extent that enabled other localities to benefit from its productive labor. However, the growth and the increasing prominence of the Federal government in the city of Washington began to overshadow the industrial development that was occurring in the area. At the turn of the century, the activity of the executive department of the government made sufficient demands on the resources of the community that it brought to a virtual halt the further expansion of industry. It also began a selective process to eliminate those manufacturing activities that were not compatible with the new role of the city as the National Capital. This selective process accompanied by evolutionary economic changes caused the withdrawal from the local industrial scene such activities as the tanning of hides, the heavy working of metals and the manufacture of textiles. In its place has risen a well regulated nucleus of a new industry consisting of numerous printing and publishing firms, concerns that produce perishable commodities and companies that furnish the heavy and bulky materials required by the local construction industry. As far back as

1914²² this new pattern began to show its form. It is noted that in that year there were upward of 500 industries located in the District of Columbia, among which there were about 150 printing concerns, over seventy bakeries, five malt liquor factories, about twenty-five foundries and machine shops, ten lumber factories, fifteen stone works and seven flour and grist mills.

The nature of industry in Washington. In spite of the closely controlled conditions under which industry must operate in Washington, it is by no means a negligible segment of the economic life of the city. The latest available statistics for manufacturing activity in the city of Washington are shown in Table II.²³ They highlight the essential features of the structure of the local counterpart of the huge industrial enterprise of this country. These data are based on manufacturing establishments which are defined as those engaged in the mechanical or chemical transformation of inorganic substances into new products for the wholesale market. This excludes the production by public utilities of electric power or gas, repair and other service activities, engineering design and research and development work, and establishments owned and operated by the United States Government.

It is noted from Table II that the average establishment in the District of Columbia employed 41.6 persons in 1947. This compares to the national average of 59.4 persons per establishment. This outstanding characteristic of manufacturing activity in Washington is borne

22 Findall, op.cit.

23 Census of Manufactures: 1947, U. S. Department of Commerce

TABLE II²⁴

Detailed Manufacturing Statistics
for the District of Columbia
1947

Item	Total
1. Number of establishments	428
2. Number of employees (average for the year)	17,815
3. Salaries and wages, total	\$55,872,000
4. Value added by manufacture	\$99,067,000
5. Establishments by employment size groups:	
1 to 4 employees	122
5 to 9	87
10 to 19	63
20 to 49	91
50 to 99	25
100 to 249	26
250 to 499	9
500 to 999	2
1,000 to 2,499	3
2,500 and over	—
6. Number of employees for pay period ended nearest October 15, all employees	17,097
Male	12,736
Female	4,361
Production Workers	9,399
Male	7,864
Female	1,535

24. Census of Manufactures, 1947, U.S. Department of Commerce

out further by Table II which shows that the largest group of establishments employed only one to four employees each. Furthermore, those firms that engage from one to forty-nine persons account for the extremely high total of eighty-five percent of all manufacturing firms in the city. Industry in Washington is also characterized by a large average per capita salary. An average of \$3,130 was paid to each employee of manufacturing firms in this city in 1947 in contrast to \$2,780 for the nation. The results of this discrepancy between city and national salary averages are further aggravated by the fact that each dollar paid in wages and salaries in Washington was capable of producing only \$1.77 of value added by the manufacturing process as compared to \$1.87 for the United States. This is a deterrent to industrial expansion because it results in high wages and lowered productivity. To a large extent, the reduced productivity of manufacturing in this city is due to the large number of very small establishments that exist which cannot benefit from the economies inherent in large scale operations. Another predominant characteristic of the local industry is the large number of non-production workers who are used to support manufacturing production. In Washington the production workers account for only 56.2 percent of the total labor force while the United States average is 83.5 percent. This index is likewise strongly affected by the relatively small size of the typical local establishment which requires a larger number of supervisory and clerical employees per direct laborer than larger units of production. It is also interesting to note the role of women as production workers. In Washington, women accounted for only 16.4 percent of the

total production labor force, while the national labor force consisted of 26.2 percent women. This fact is evidence of the great attraction of Federal employment to the women of the city.

The growth of manufacturing in the District of Columbia is illustrated by Table III. Although the number of local firms engaged in production decreased since 1899, the total number of persons employed by them has increased by 250 percent. This indicates the introduction of a large number of medium sized concerns in the intervening period and a few large companies in the industrial scene. Table III also evinces the fact that the two late wars provided much of the stimuli for industrial growth in the city. The interim between the two wars saw but little increase in manufacturing employment. The value added by manufacture has increased many times over the value that prevailed in 1899. A large portion of this increase is a spurious one since it is accounted for by the decreased value of the monetary standard. However, a great deal of this increase is due to the higher production that has been achieved and by the larger amount of labor and equipment that is required to produce the commodities of today. The increasing use of office and supervisory personnel as compared to production workers is clearly shown by Table III. In 1899, one "white collar" worker was used for each 6.44 production workers. In 1947 this ratio had changed to one "white collar" worker for each 1.28 employees engaged in production. This local characteristic is only an illustration of a national trend which has resulted from the adoption of the principles of scientific management and the use of modern business practices.

TABLE III²⁵

Growth of Manufacturing in Washington
1899 to 1947

Year	Number of Establishments	All Employees		Production Workers		Value added by Manufacture
		Number	Salaries & Wages	Number	Wages	
1947	428	17,815	55,872	10,007	27,691	99,067
1939	452	14,377	24,920	7,676	11,525	43,367
1929	547	14,002	25,449	9,752	15,513	52,773
1919	568	13,327	18,537	10,268	12,960	37,404
1909	518	9,283	6,835	7,707	4,989	15,043
1899	491	7,112	3,895	6,155	3,023	8,951

Money shown in thousands

²⁵ Census of Manufactures: 1947, U. S. Department of Commerce

The predominant industrial group in the city of Washington is the printing and publishing business. It accounts for half of the industrial establishments in the area and fifty-five percent of all the employees. The rise and continued strength of this industry is due to the existence in Washington of many news gathering groups and national associations who maintain headquarters in the city close to the source of Federal legislative making. These organizations require the dissemination on a nationwide basis of large quantities of printed material. The printing industry has found it economically advantageous to situate itself close to this news making activity and distribute its product by mail. Table IV shows the relative position of this and other manufacturing groups in the Washington industrial community.

Many of the industries in the Washington area produce products for local consumption. The stabilizing influence of Federal employment and the basic service nature of these industries produces a remarkably steady seasonal employment in the manufacturing activities of the area. In 1947, the peak month of employment was July with a total of 17,657 employed. The low point in employment occurred in December with 17,327 engaged in manufacturing. Therefore, the seasonal pattern produced a mere two-tenths of one percent fluctuation in employment.

Comparative statistics. Manufacturing in Washington is relatively small when compared to the aggregate economic activity of the area. Its importance varies from one community to another as shown by Table V. It is seen that in this grouping trade is the predominant activity of the area and is two to three times as important as manufacturing. It is

TABLE IV²⁶

Major Industry Groups in Washington

1947

Major Industry Group	: All Employees			: Production Workers:		
	: Number of Establishments	: Number (Avg. for year)	: Salaries & Wages Total	: Number (Avg. for year)	: Wages Total	: Value Added by Manufacture
All industries, total	428	17,815	55,872	10,007	27,691	99,067
Food & kindred products	87	5,185	15,002	3,166	7,724	26,800
Apparel & related products	18	242	486	209	387	676
Paper & allied products	7	729	2,439	638	1,993	5,027
Printing & Publishing	213	9,847	32,896	4,512	13,888	58,557
Chemicals & allied products	14	178	556	115	234	1,216
Stone, clay, glass products	12	293	748	271	646	1,438
Fabricated metal products	23	464	1,263	412	1,042	1,896
Electrical machinery	5	175	472	140	341	615
Instruments and related products	10	154	390	116	264	667
Miscellaneous Manufactures	17	147	442	116	336	658
All other major industry groups	22	401	1,170	312	836	1,517

Money shown in thousands

TABLE V²⁷

Proportion of Gross Wages by Groups

1949

	Manufac- turing	Trade	Service	Construc- tion
District of Columbia	9.4%	40.3%	20.5%	9.6%
Prince Georges County, Md.	13.5	30.5	13.9	27.6
Montgomery County, Md.	11.1	31.3	16.9	29.1
Arlington County, Va.	5.5	31.3	7.3	17.6
Fairfax County, Va.	4.0	31.5	7.5	27.9
Alexandria, Va.	14.4	34.0	10.6	13.9

²⁷ Metropolitan Washington After 150 Years: Its Economic Expansion
Studies in Business and Economics, Bureau of Business and Economic
 Research, College of Business and Public Administration, University
 of Maryland, College Park, Md., Vol. IV, No. 1, June 1950, p. 10.

significant to note that the District of Columbia with half of the population of the area is led by Alexandria, Prince Georges and Montgomery Counties on the basis of the local importance of manufacturing as an income producer. Manufacturing exerts the least influence in Arlington and Fairfax Counties in Virginia.

The uniqueness of the industrial pattern of metropolitan Washington becomes apparent when it is compared to national averages and to other large cities. Manufacturing income in the United States approximates twenty-three percent of the total income payments, while in the District of Columbia it accounts for only three percent. In the average American city, 29.3 percent of the employed persons are working in manufacturing industries and 4.7 percent are working in government. In Washington these proportions are almost exactly reversed, as twenty-nine percent are working in government and 7.2 percent in manufacturing.²⁸ On the basis of the value of manufactured products, Washington ranked sixty-sixth in a list of one hundred and eleven cities in 1943 when the value of its manufactured products reached \$191,700,000.²⁹

A comparison of manufacturing activity in Washington with other selected cities is shown by Table VI. The District of Columbia showed a steady rise in the proportion employed in government during the period between 1920 and 1940, while industry suffered an almost identical change in reverse. Manufacturing employment in Washington in 1940 is by far the

28 People and Land, National Capital Park and Planning Commission, Washington, D.C., Monograph No. 2, June 1950, p. 10

29 Value of Manufactured Products, 1943, Sales Management, L III, No. 10, May 1944, p.76

TABLE VI³⁰

Proportion of Gainfully Employed in Certain Activity Groups
in Selected Cities of 250,000 or More

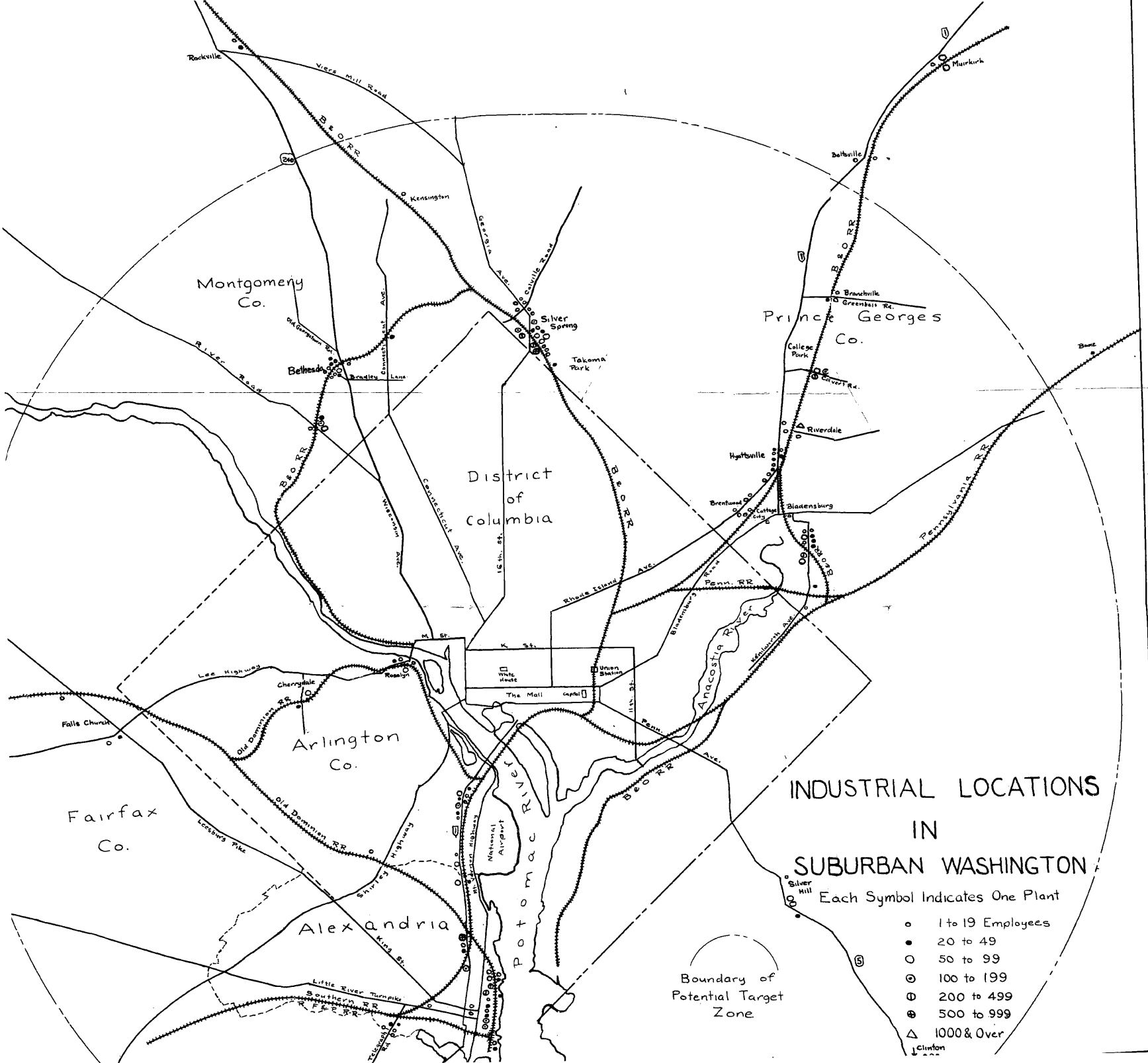
Activity	Washington	Philadelphia	New York	Detroit	Baltimore	Atlanta
Manufacturing						
1920	30.4					
1930	17.4					
1940	7.4	35.3	26.3	47.2	31.6	18.1
Transportation						
1920	11.4					
1930	8.8					
1940	7.2	7.3	8.9	5.8	9.9	9.9
Trade						
1920	15.6					
1930	17.2					
1940	16.3	21.5	21.9	18.7	20.3	23.3
Public Service						
1920	10.9					
1930	21.6					
1940	28.8	4.1	4.5	3.1	5.1	4.4
Professional Service						
1920	13.2					
1930	11.6					
1940	9.6	7.8	8.7	6.0	7.5	7.3
Personal & Domestic						
1920	18.0					
1930	20.2					
1940	13.9	9.3	10.4	7.5	11.3	21.0

30 Adapted from Warren A. Thompson, Population Trends Towards Concentration and Decentralization; Slums, Large-Scale Housing and Decentralization (Washington, the President's Conference on Home Building and Home Ownership, 1932) p. 214; and U. S. Bureau of the Census, Sixteenth Census of the U. S.: 1940, Population, Vol. II (Washington, Government Printing Office, 1942)

lowest of any of the cities listed while, in all except one, it is the largest activity group. Washington has comparable activity in transportation, trade, and professional services and leads all but one in personal and domestic services.

The suburban locational pattern. Figure I illustrates the industrial distribution that currently exists in the environments of Washington. The concentration of manufacturing firms follows closely the land use prescribed by industrial zoning in the various communities. It is apparent from this figure that nearness to the central city is sufficiently important to cause most plants to be erected in a few concentrated areas. It is also noted that, with very few exceptions, manufacturing activity is conducted adjacent to the rail lines that transverse this area. This is occasioned in most cases not by dependence upon rail transport but by the restrictions imposed by zoning regulations.

The heaviest concentration of industry in the suburbs exists in Bethesda in a crowded area of a few square blocks; in Silver Spring where a more generous use of land has produced a well distributed and oriented industrial community; in Bladensburg where a rural industrial center is growing; and along the riverfront in Alexandria which once bustled with the activity of a previous industrial regime. Manufacturing has also favored the land area in Prince Georges County between the Baltimore and Ohio Railroad line to Baltimore and United States Route No. 1. A scattering of small service establishments exists along the main route through Hyattsville and Brentwood. The largest manufacturing establishment in the area which employs about 2,100 persons is located near Riverdale. In College Park are found several instrument and electronic equipment firms



INDUSTRIAL LOCATIONS IN SUBURBAN WASHINGTON

Each Symbol Indicates One Plant

- 1 to 19 Employees
- 20 to 49
- 50 to 99
- ⊙ 100 to 199
- ⓪ 200 to 499
- ⊕ 500 to 999
- △ 1000 & Over

Boundary of
Potential Target
Zone

Clifton

that employ several hundred employees each. Muirkirk, Silver Hill, Clinton, and several other intermediate locations in Prince Georges County exploit natural deposits of sand, gravel and clay and give rise to one of the county's leading activities, the building materials industry. At present, Fairfax County in outlying Virginia lays claim to only a few small local industries.

Approximately 150 manufacturing establishments are located in the environments of Washington. This represents about one-third of all such firms in the metropolitan area. Prince Georges County leads all suburban communities with about fifty establishments, followed by Montgomery County with about forty firms and Alexandria with approximately thirty concerns within its city limits.

Product diversification. The following is an indication of the variety of manufactured products and activities in the Washington area:
District of Columbia: structural iron, printing, map making, cut glass, arch supports, varnishes and enamels, scales, book-binding, dentures, bedding, pharmaceuticals, typesetting, concentrates, beverages, engraving, lithographing, ink, paper, machine works, electric coils, macaroni, ice cream, paper boxes, embalming chemicals, shirts, candy, artificial limbs, welding, abattoir, industrial clothing, mixed concrete, truck bodies, tanks, industrial brushes, cinder blocks, scrap metal, cleaning compounds, paper tubes, soda straws, building stone, neon signs, electroplating, artificial eyes, dairy products, leather goods, plastic products, ice, smelting-refining, jewelry, bricks, store fixtures, coffee and tea, flour, braces, fats and tallow.

Alexandria: printing, machine works, structural iron, fertilizers, concrete products, mixed asphalt, research, beverages, dehumidification equipment, electroplating, polishing, concrete pipe, electronic equipment, scientific instruments, ice, meat products, vegetable and animal oils, flour, feed, sand and gravel, neon signs, foundry castings, dairy products, sheet metal fabrication.

Arlington: structural iron, concentrates, concrete blocks, ice, mixed concrete, concrete pipe, cut glass, beverages, neon signs, cinder blocks, sheet metal fabrication.

Fairfax: radiant heating coils, flagstones, building stone, sheet metal fabrication.

Silver Spring: instruments, printing, wooden cabinets, machinery works, electric heaters, candy, ice cream, sand and gravel, lithographing, mixed asphalt, sheet metal fabrication, electric drives, electronic equipment, photo engraving, screens, neon signs, beverages.

Prince Georges: automatic control devices, structural steel, printing, instruments, stampings, sheet metal fabrication, dry cleaning chemicals, mixed concrete, machinery works, cinder blocks, ice, sand and gravel, insecticides, oxygen and industrial gases, machine tools, aircraft equipment, pottery, brooms, scrap metal, concrete roof slabs, restaurant equipment, food salads, electronic equipment, building stone, paint pigments, chemicals, wooden cabinets, welding and welding equipment, cutlery, screens, dies, jigs and fixtures, bricks.

Bethesda: cinder blocks, printing, instruments, oil filters, plastic packaging, lighting equipment, foundry supplies, paint test equipment, electronic equipment, rubber goods.

Current status of industrial growth. Industrial growth in the metropolitan area received some impetus from the World War II demand for military equipment. The tremendous post-war emphasis on research and development on this equipment has created many new firms in this area. The sizable industrial community in Silver Spring dates from the close of the war. It definitely reflects the current trend in the type of productive activity in this area. Industrial plants in Silver Spring are mostly of new construction and blend well with their surroundings as illustrated by Figures 2 and 3. The four-block industrial area in Bethesda has received several new firms in the last three years. Some have followed the nationwide post-war decentralization movement and have transferred their operations from overcrowded Washington to Bethesda. In spite of the large increase in suburban industrialization following the close of the war, changes in industries during the past year have been insignificant. Fairfax County will soon gain a large research laboratory when a three million dollar structure is completed which will house the firm on a forty-four acre tract. However, this large increase to the county's industrial community will not reflect too much of a gain for the metropolitan area, since it involves a relocation from an existing site in Alexandria.

Plant expansion by existing concerns in the Washington region has been at a virtual standstill during the current months. There are indications of plans to increase available facilities, but no evidence of such activity has been obtained. There is only one instance of the construction of new industrial facilities. This employs an approach to the problem of furnishing industrial facilities which is new locally and



Figure 2. Plant of Canada Dry Ginger Ale, Inc., Silver Spring, Md.



Figure 3. Plant of Fisher Scientific Co., Silver Spring, Md.

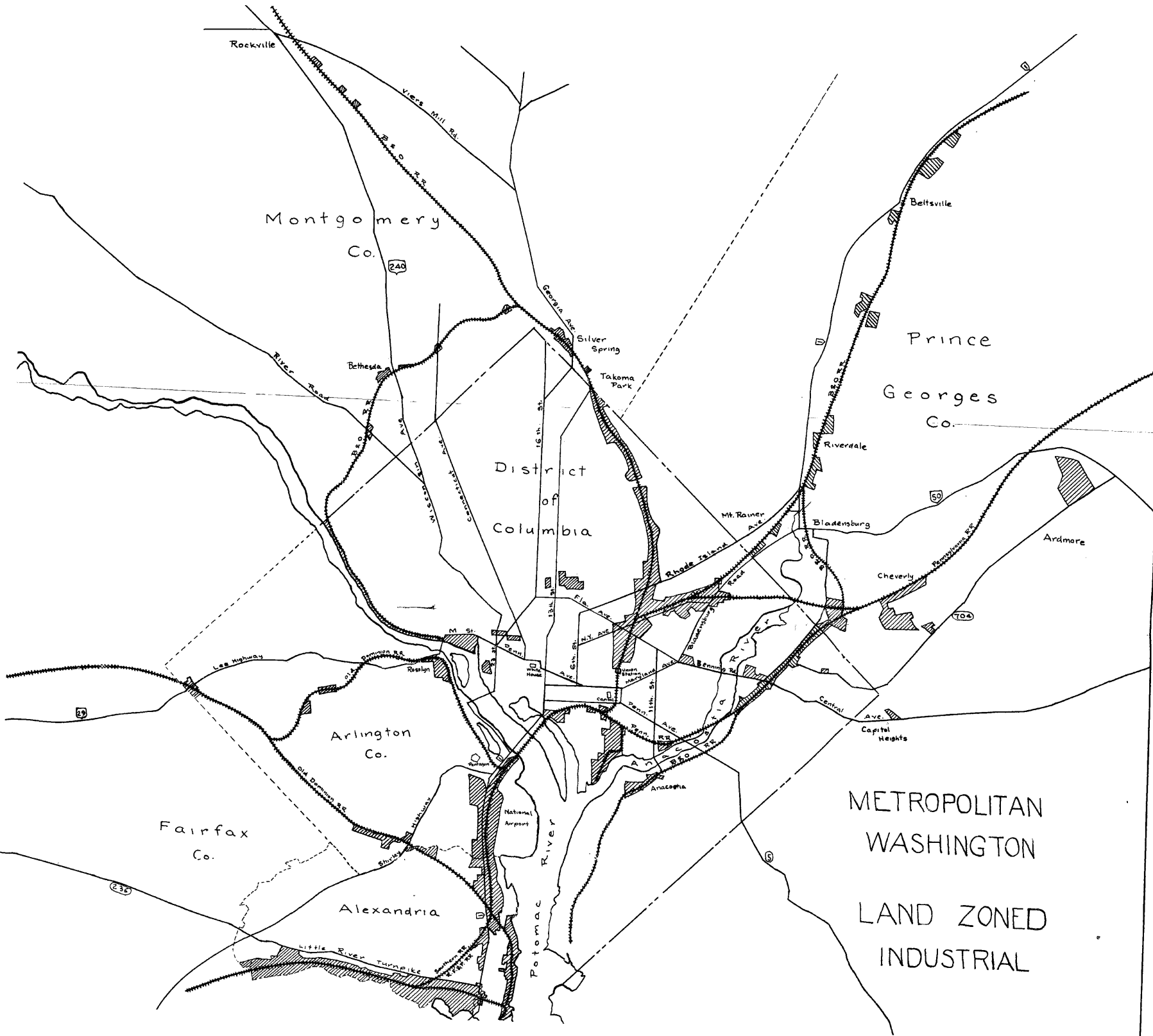
appears very promising for the Washington area. Figure 4 shows the Pentagon Industrial Center under construction in Arlington on a large thirty-five acre tract. This is the first of perhaps five identical units each consisting of eight buildings which provide about 200,000 square feet of floor space for office, warehousing, light and heavy industrial activity. The Industrial Center is being built by a local group which plans to lease or sell the buildings to those who wish to use them. The open type of construction permits great freedom in arranging the work area to suit a large variety of needs. The furnishing of suitable quarters to concerns who are seeking locations should prove to be a considerable incentive to industrial expansion in this area.

Land for industrial expansion. The availability of suitable land is an important element of industrial location. The land should be accessible to materials and goods as well as to personnel. It should be suitable for the type of activity contemplated and be sufficient for efficient operation and for future expansion.

Land for industrial activity is under the control of regional planning commissions who are responsible for determining and recommending the use to which it is put. Each locality in the metropolitan area has prepared a zoning ordinance and has allocated the land under its jurisdiction to residential, commercial and industrial uses. The areas that can be employed for industrial purposes in metropolitan Washington are shown by Figure 5. Land zoning is under the jurisdiction of the Maryland Park and Planning Commission in Montgomery and Prince Georges Counties while the National Capital Planning Commission performs a similar function



Figure 4. Pentagon Industrial Center, Arlington, Va.



for the District of Columbia. The Arlington County Planning Commission and the Alexandria Planning Commission each have zoning jurisdiction over their respective areas.

It is seen from Figure 5 that land for industrial use has been located along the rail lines that traverse this region. It should be noted that the areas shown include a large proportion of land that is currently being used by the railroads and is not available for industrial use. The area in the District of Columbia also includes land zoned second commercial which can accommodate certain types of light industry but does not exclude commercial activities. The general lack of land for industrial expansion is apparent from this map. In outlying areas where much undeveloped land exists, additional manufacturing sites can be made available by petitioning the zoning group for rezoning from other uses and convincing the local citizens and the public officials of this need and giving assurances that the arrangement will be compatible with other neighborhood uses.

In the city of Washington, with only eleven percent³¹ of its land area undeveloped, industrial expansion would be badly hampered. Only 3.3 percent of the total land area, or 1,310 acres, is in use by industry and the railroads. This is divided into 434 acres, or 1.1 percent of the total land area, for light industry; 198 acres, or 0.5 percent, for heavy industry; 678 acres, or 1.7 percent, for railroad use. This 3.3 percent of the total area of the District of Columbia dedicated to industrial and railroad use compares to an average of 9.0 percent for four other cities: Dallas, Louisville, St. Louis, and Memphis. Of the 4,360 acres of vacant land remaining in the District, only 370 acres remain unoccupied that can be used for industrial purposes.

³¹ People and Land, op. cit., p. 42

A similar situation exists in Arlington County. The industrial area takes up only 1.69³² percent of the developed area of the county. A total of 713 acres are zoned for industrial use while 534 acres are actually used for industries.

³² The Economic Survey of the Land Uses of Arlington County, Virginia, prepared by Homer Hoyt Associates, September, 1951.

CHAPTER V

INDUSTRY VIEWS ITS PROBLEMS

Not all is well with the industrial scene in Washington. This fact is not surprising and would be of little value unless it was used to analyze the industrial potential of the area. If the existing situation is to be improved, it is necessary to diagnose the ills that afflict it. This will be extremely useful in determining how the region can be made more attractive to those seeking sites to locate new enterprises. One of the most effective promotional means is to display a well stabilized and thriving industry to those who wish to launch a new venture or wish a more favorable environment for the conduct of their business. This stimulates confidence in the future of the undertaking, since it demonstrates that local circumstances can be employed advantageously. On the other hand, if the existing afflictions go unattended, they will either become apparent to outsiders who investigate the area as a potential site or the firm falls prey to them and becomes a liability to the community. A study of the problems that face local industry is essential to preserve it from blight. A campaign to attract newcomers will prove an empty success if the industrial structure that is to receive them deteriorates from neglect.

The survey of local industry that was conducted in conjunction with this study disclosed several major handicaps to economical operation. They are largely responsible for shaping the industrial pattern in its present form. These impediments are major since their effects are felt

to a lesser or greater extent by all. The factors that give rise to them must be investigated if the appeal and the advantages of the region are to be exploited further. Many irritants which act only in selected circumstances have been reported by manufacturers. These are more difficult to eliminate, since their effect depends upon the type of industrial activity, the community, the personalities involved, etc. Their effects may be minor in many cases, but a sufficient number of them may create a very undesirable situation.

It was one of the major objectives of this survey to note the discordant influences on an otherwise efficient business operation. Only those impediments that were related to the locational aspect of the operation were considered. This task was a difficult one because these problems were usually not obvious and had to be sought out by careful and discreet questioning. Nevertheless, it is believed that some of the answers that were received do not indicate a truly correct situation and some interpretation of the results has to be made. In this respect, the personal interview approach was more successful in appraising the problems than the results from the mailed questionnaires.

The inquiries put to industry were intended to produce information on: (a) the nature of the firm and its product; (b) the locational procedure that was employed; (c) how locational factors affect operations. The locational survey questionnaire shown in Appendix A was employed in conducting the personal interviews and for distribution by mail. The response of the firms was excellent and not a single interview request was denied. The nature of the replies varied from sincere frankness to cases where an attempt was made to offer a somewhat distorted but more agreeable impression.

Nature of the firms surveyed. The results from sixty-two firms have been tabulated and analyzed. These establishments are distributed as follows: (a) fourteen firms in the District of Columbia; (b) thirteen in Prince Georges County; (c) twelve in the city of Alexandria; (d) ten in Silver Spring; (e) six in Bethesda; (f) five in Arlington County; (g) one each in Falls Church and Chevy Chase. These concerns represent seventeen industrial groupings:

Beverages: 2 firms	Machinery (except electrical): 4
Printing & Publishing: 6	Electronics (research): 6
Artificial Ice: 1	Instruments: 4
Meat Products: 1	Miscellaneous: 2
Other Food Products: 4	Fabricated Metal Products: 6
Lumber & Products: 3	Paving Materials: 1
Chemicals & Allied Products: 5	Pharmaceuticals: 2
Building Materials: 8	Apparel: 1
Structural Metal Products: 6	

The sixty-two firms that have been surveyed have a total employment shown by the following groups:

From 1 to 19 employees: 13 firms	From 200 to 499: 8 firms
From 20 to 49: 13	From 500 to 999: 3
From 50 to 99: 12	Over 1,000: 1
From 100 to 199: 12	

These firms have been in operation in the Washington area from two to 160 years. They show the following distribution based on the number of years that operations have been conducted in metropolitan Washington:

From 1 to 3 years: 3 firms	From 16 to 25 years: 12 firms
From 4 to 6 years: 10	From 26 to 50 years: 7
From 7 to 10 years: 7	From 50 to 100 years: 12
From 11 to 15 years: 10	Over 100 years: 1

Results of the survey. The results of the survey of selected manufacturing firms in the Washington metropolitan area are tabulated in Table VII. The items that are listed correspond to those that appear in questionnaire shown in Appendix A. An analysis of the results follows under the item headings of the table.

(a) Organizational units. Nearly three-fourths of the firms studied operate only one plant and it is located in the metropolitan area. It is significant to note that outside interests have not attempted to exploit the local market to any large extent by establishing branch plants. On the other hand, it is interesting to note that some local companies have thrived sufficiently well to have reached out into distant areas to set up their own branches. Some of these firms operate as far away as Canada and produce products such as pharmaceuticals, paper products, industrial gases, sheet metal fabrication and electronic equipment.

(b) Output sold locally. It is noted from Table VII that not all that is produced locally is for local consumption. A surprising amount of the output of Washington industries goes beyond the metropolitan area. However, care must be exercised in interpreting the result, since the market area of most firms which report the sale in Washington of only a fraction of what they manufacture extends only into rural Virginia and Maryland and not into areas dominated by other industrial centers. However, a few local plants enjoy a national market.

TABLE VII

INDUSTRY EVALUATES ITS LOCATIONAL PROBLEMS

1. Type of Organizational Unit:

(a) Main Plants: 7 firms or 11%

(b) Branch Plants: 8 13%

(c) Only Plants: 47 74%

2. Portion of total output sold locally:

(a) None: 12 firms or 19%

(b) 1/3 : 8 13%

(c) 2/3 : 11 18%

(d) All : 31 50%

3. Portion of total output sold to the Federal Government:

(a) None: 41 firms or 66%

(b) 1/3 : 12 19%

(c) 2/3 : 3 5%

(d) All : 6 10%

4. Was a locational study made?

(a) Yes : 10 firms or 20%

(b) No : 35 71%

(c) Do not know: 4 9%

5. Supply of labor:

(a) Unskilled

Ample:	26	Just Enough:	18	Not Enough:	10
	48%		33%		19%

TABLE VII, Continued

(b) Skilled

Ample: 9	Just Enough: 18	Not Enough: 32
15%	31%	54%

(c) Clerical

Ample: 15	Just Enough: 27	Not Enough: 12
28%	50%	22%

(d) Supervisory and Professionals:

Ample: 12	Just Enough: 12	Not Enough: 23	Imported: 10
22%	21%	40%	17%

6. Local transportation:

- (a) Adequate: 36 firms or 58%
- (b) Inconvenient: 23 37%
- (c) Not adequate: 3 5%

7. Is plant adequate?

- (a) Yes: 44 firms or 71%
- (b) No: 18 29%

8. Are local taxes high?

- (a) Yes: 23 or 41%
- (b) No: 33 59%

9. Is attitude of local government helpful?

- (a) Yes: 35 firms or 58%
- (b) No: 25 42%

10. Nature of competition:

- (a) Light: 13 firms or 21%
- (b) Moderately heavy: 23 38%
- (c) Heavy: 25 41%

TABLE VII, Continued

11. Are labor costs higher than elsewhere?
- (a) Yes: 40 firms or 69%
- (b) No: 18 31%
12. Effect of labor costs on ability to compete outside area.
- (a) No effect: 23 firms or 50%
- (b) Moderate effect: 15 33%
- (c) Strong effects: 8 17%
13. Does firm plan to move away?
- (a) Yes: 8 firms or 13%
- (b) No: 53 87%
14. Expect appreciable expansion of activity during next five years.
- (a) Yes: 29 firms or 48%
- (b) No: 32 52%
15. Will expansion require moving away?
- (a) Yes: 4 firms or 10%
- (b) No: 32 firms 75%
- (c) Undetermined: 6 firms 14%
16. Will expansion require additional plant facilities?
- (a) Yes: 24 firms or 59%
- (b) No: 17 41%
17. Attitude of financial institutions.
- (a) Willing to finance industry: 27 firms or 51%
- (b) Reluctant to finance industry: 13 25%
- (c) Do not know: 13 24%

TABLE VII, Continued

18. Union status of plant.

(a) Completely unionized:	14 firms	or	25%
(b) Partly unionized:	7		13%
(c) Not unionized:	35		62%

19. Relations with unions.

(a) Satisfactory:	16 firms	or	53%
(b) Some irritations:	14		47%

A number of plants find Washington an advantageous location from which to distribute their goods to a number of eastern states. The area has several concerns which collect the scraps and the remains of the city's large meat industry and process these into grease and tallow. These are then furnished to the widely spread chemical industry for the manufacture of soaps and related products. This is an example of an industry which has been drawn to the source of its materials in Washington. A paper product concern in the District of Columbia which manufactures over two thousand mass produced articles ranging from paper tubes to plastic tooth picks sells all of its output out of the city. It has become a leader in this field and provides several nationally known producers with their only source of these products. A sheet metal fabricator operating in suburban Washington engineers construction projects as far away as the deep South and the Mid-west. A number of firms producing scientific instruments and laboratory equipment sell on a nationwide basis. Several fertilizer firms manufacture their products in metropolitan Washington and distribute to the agricultural areas of several neighboring states. Washington, with its fine transportation system for bulky materials, is a good distribution point for agricultural products for a large adjoining area.

The metropolitan region, with its excellent libraries, educational facilities, government and private laboratories, offers facilities to research organizations that cannot be matched elsewhere. A large and growing research activity is concentrated in Washington and makes its many services available to the government agencies that are located here.

However, it also conducts work that originates beyond the metropolitan area. This ability to compete successfully for this work is the result of the locational advantages that the research industry enjoys locally. There are found also a number of producers of industrial products who have little or no interest in the Washington market. These manufacture products such as industrial gases, electrical dehumidifiers for industrial use, plastic packaging, portable lighting equipment, foundry paints, maintenance paints, wood preservatives, liquid sprays, and industrial heaters. Those firms that use Washington as a central distribution point for their manufactured goods are generally content with this location. However, it has been noted that those not engaged in research activity and whose market extends into distant areas find competition difficult to meet.

(c) Output sold to the Federal Government. Only about fifteen percent of the local concerns sell two-thirds or more of their output directly to the Federal Government. Nearly all conduct research in the mechanical, chemical and electronic sciences under contract to a number of Federal agencies and in particular to the Department of Defense. In spite of the relatively small number of concerns furnishing their services directly to the government, many others in the construction and fabrication industries benefit indirectly by providing materials and equipment to prime contractors.

(d) Locational studies. Only one-fifth of the concerns surveyed acknowledged that the selection of their sites was made after a study of the comparative advantages of a number of competing localities. In most cases, the locational survey was a perfunctory one made usually by the

head of the firm. There is no evidence that any of the studies was made in an unbiased and exhaustive manner by experts in such fields as transportation, labor, real estate, and industrial economics. In no case was consideration given to more than two or three closely related areas. Information about the locational procedures employed by firms which were established fifty or more years ago is, of course, completely lacking.

(e) Supply of labor. The lack of an adequate labor force in the metropolitan area which is sufficiently skilled and versatile is undoubtedly one of the major problems that confronts local industry. This is a serious problem because it greatly affects operating efficiency and profits; it prevents rapid expansion of industrial output; it renders very difficult the accommodation of most new firms who wish to locate in the Washington area.

Table VII indicates that none of the major employee categories is free from a shortage of adequately trained personnel. The skilled classification of workers is considered by industry to be the hardest hit by the lack of a sufficiently large labor force. Next in line is the supervisory and professional group. Here the shortage is so acute that many firms must import personnel from outside the area. Many of those that reported an ample supply of supervisory officials based their replies on their ability to train this class of employee in their own plants, since local sources could never furnish the specialized skills required for these positions. The clerical category was found to be barely sufficient to meet requirements. The difficulty encountered in obtaining an ample supply of personnel in the clerical classification is ascribed to the strong drawing power of the Federal Government. The unskilled class of workers was found in most cases to meet the needs of industry.

The consensus obtained by the survey is almost unanimous in that skilled labor is severely lacking in this area. However, an accurate appraisal of this situation is not possible because the availability of labor could not in all cases be objectively determined by the individual firms. A number of factors influence the availability of labor: the wages that are paid; working conditions; stability of employment, etc. An appreciable number of concerns in metropolitan Washington combat labor shortages successfully by attracting the best and achieving an extremely low labor turnover. In these firms the wages that are offered are above the average for the area. In addition, a benevolent attitude and pleasant working conditions are furnished as well as on-the-job training for future advancement. Such a personnel policy permits the company to build up a permanent skilled working force and makes it unnecessary for it to compete in the open labor market. Nepotism is another successful device that is used extensively in many of the smaller establishments to circumvent the labor problem. Therefore, these firms invariably reported sufficient numbers of personnel in most categories because of their unfamiliarity with the competitive labor market. As a result, it can be expected that actual conditions concerning the availability of labor in Washington are somewhat worse than shown by Table VII.

The Reports Analysis Section of the District of Columbia local office of the United States Employment Service corroborated many of the points brought out by the survey on the state of the local labor supply. The availability of unskilled labor generally depends upon the season of the year. Since the building industry is at its lowest ebb during the winter months, unskilled workers are most plentiful during the cold season.

Spring sees the beginning of a growing shortage of unskilled help. The common clerical (filing) help is currently plentiful. The clerk-typist category has become more plentiful recently because of reduced government hiring. Secretaries and stenographers are and have always been in short supply. Similarly, skilled help has always been acutely short. This trend is not local in character but is widespread throughout the nation. Skilled machinists, toolmakers and instrument makers are not to be found and the local government establishments are resorting to the training of unskilled help to furnish the major supply of these men. Due to the persistent drying up of large construction projects in and around the metropolitan area, there is now an ample supply of structural steel workers. However, it is expected that many of these will migrate if their trade does not improve sufficiently. Professional employees are extremely scarce, especially in the electronics field.

Due to the number of unsolicited opinions that have been expressed, some credence must be given to the possible deleterious effects of government employment on the productive and creative ability of the worker. With government activities in the area employing large numbers of skilled production workers, they have a marked effect on the local labor market. Private industry finds itself both losing and gaining employees from the government. It has been noticed that a number of private industrial firms ascribe their loss of trained men to government employment, due to the leisurely work pace and the many job benefits offered by the latter. On the other hand, an appreciable number of firms regard government activities as providing only a poorer grade of "skilled" worker due to the failure of the government to properly

discriminate between poor and high quality work. This belief severely limits the possible stabilizing effect on the local labor supply of the large reservoir of government production workers.

Many of the comments which were received on the local labor supply are individual in character. Certain industrial locations will not attract women employees due to a lack of drug store and restaurant facilities in the neighborhood. The printing and publishing industry finds an ample supply of skilled help during the summer months when many organizational periodicals are not published. Its need for professional employees is eased somewhat by the courses in printing engineering which are offered by some of the universities. While most concerns manage full production with staffs which out of necessity must include a number of not fully qualified employees, the instrument and research industries cannot compromise the high quality of their product by employing unskilled help. Therefore, they frequently find themselves unable to acquire large quantities of new work. One large suburban research firm has experienced considerable difficulty when recruiting engineers and scientists outside of Washington due to the reluctance of the prospective employees to entrust their children to what they consider a substandard area school system. Some firms noted the current irresponsible nature of laborers who, without references, impulsively take and leave employment. This comment is undoubtedly universally true, but the Washington area is affected in a unique manner due to the large number of employed wives of servicemen who must leave on short notice. A problem faced by many branch plants arises due to the policy of the home office of setting a uniform

company-wide pattern of wage rates. As a result, in Washington the relatively high cost of living places the local branch plants in an unfavorable position when competing for labor.

(f) Local transportation. The Washington area depends on private transportation for moving most of its employees. The answers to item 6 of Table VII gave consideration to the problem of accommodating employee automobiles near the plant site. In general, the transportation problem is not too severe. Many firms located in the District of Columbia and near downtown Alexandria suffer due to insufficient parking facilities. Those located in suburban areas enjoy unlimited space, but in a number of cases the commutation problem is causing considerable concern due to inadequate access roads. It has been noted that suburban firms employing large proportions of unskilled labor find the lack of public transportation a decided drawback in their attempts to attract sufficient employees.

(g) Adequacy of plant. The high rate of post-war industrial activity has permitted most firms to renovate and expand their production facilities. Therefore, the Washington industrial plant has not become obsolescent to any alarming extent. In the large majority of cases, firms have reported a lack of sufficient space to carry on production in an efficient manner because their plants are in locations which prevent easy expansion. During the seven years that it has been in the Washington area, one of the larger concerns has had to spill over into seven widely scattered buildings because the main plant is hemmed in by other users of the adjacent land. This is clearly an alarming situation for economical operation.

(h) Local taxes. This important factor of the locational problem is difficult to evaluate in an objective manner. Even though this is a comparative question, not many local industrial operators are sufficiently acquainted with the tax structure of other localities to be able to offer more than an opinion of how the tax load affects their profits. The results of Table VII show that the taxes levied on the industry in the Washington metropolitan area are considered by many to be unjustifiably high. That they are considered to be in excess of the economic limit by a very large group of companies is particularly significant.

(i) The attitude of the local government towards industry.

The attitude and actions of the local government can influence to a large extent the location and growth of industrial activity within its jurisdictional area. The results of the survey indicate that a large segment of industry believes that government is a decided hindrance to their continued progress. Many who favored the attitude of the local administration merely desired non-interference from government groups rather than an active consideration and action to relieve some of their public and operating problems. Most of the antagonism expressed against government stems from a persistent neglect to correct serious deficiencies in services due to the firms as taxpayers. These include the failure to provide sewers, to repair access roads and to provide street lighting. The overzealous enforcement of inapplicable building codes and health regulations has created considerable friction between industry and government. The lack of proper consideration for industrial zoning applications and the continuous badgering by community groups over certain industrial practices has created much common ill will. The sensitive nature of these

relations was quite evident in a number of cases where the companies consider themselves as having been victimized by government and public groups for extended periods.

(j) Nature of competition. In view of the industrial environment that exists in Washington, this area has attracted only a limited number of manufacturing classifications. This lack of industrial diversification has resulted in a concerted exploitation of certain profitable activities. This accounts to a large extent the intensity of competition that exists in manufacturing industries in the metropolitan area.

(k) The cost of labor. It is apparent from the results shown in Table VII and from personal contacts with manufacturing firms that the Washington area has one of the highest industrial labor wage rate structures of the country. The impression of this factor that is gained by the individual concern depends to a considerable extent on the makeup of its labor force. One firm employing a predominant amount of unskilled help will reflect lower labor costs than one that must use large numbers of difficult to obtain skilled and professional personnel. The glaring discrepancy that exists in labor rates between Washington and other cities is illustrated by the \$2.50 per hour paid to a local metal polisher and as low as \$1.25 to certain classes of polishers in Philadelphia. This is, of course, not a typical wage differential. Unskilled help demands five to ten percent more in Washington than in northern cities and twenty-five percent more than in Richmond, Virginia, while local machinists receive about twenty percent more than they would in Baltimore. However, this comparison is not always one-sided, since the cost of skilled production workers in Washington is reported as being less than Detroit and

equal to that of Philadelphia.

The nature of these labor cost differentials is illustrated further by Table VIII and Table IX which show comparative rates paid in the printing trades and in clerical occupations for several selected cities. Table VIII shows vividly the large difference in the labor rates paid in the printing trades in Washington and its neighboring cities of Baltimore and Richmond. This fact undoubtedly produces a considerable impact on the local industry which tries to stem the flow of work which leaves Washington for the two competing cities. Nevertheless, Washington labor commands wages which are appreciably less than Chicago and New York. In the clerical occupations, Washington's industry is required to pay considerably more for women employees than firms in Richmond. However, in the male classification the Richmond rates are somewhat higher than the corresponding Washington ones. It is seen from Table IX that local wages for office workers do not vary much from those paid in New York, Philadelphia and Chicago. Washington industry is competitive with most other cities in the cost of clerical work, but it accomplished this at the expense of considerable difficulty in procuring office workers in the face of the higher wages paid to them by the Federal Government.

(1) Labor costs and outside competition. Industry is realizing the limitations of the Washington area has engaged primarily in those activities which are local in nature and mostly invulnerable to outside competition. Therefore, although most local labor costs are higher than those found elsewhere, the large majority of firms report them to have little or no effect in limiting their sales. Those concerns that indicate

TABLE VIII³³

**Union Scale of Wages in the Printing Trades
Book and Job**

Rate per Hour as of July 1, 1952

Trade or Occupation	Washington	Baltimore	Richmond, Va.	New York	Chicago
Bindery Women	1.23	1.04	1.05	(1.15) (1.38)	(1.48) (1.53)
Bookbinders	2.42	1.97	2.02	(1.12) (2.83)	(2.45) (2.78)
Compositors, Hand	2.61	2.22	1.95	2.75	2.88 ^(a)
Electrotypers	2.90	2.29	2.38	3.16	3.16
Machine Operators	2.61	2.22	1.95	2.76	2.92 ^(a)
Machine Tenders (Machinists)	2.61	2.22	1.95	2.76	2.92 ^(a)
Photoengravers	2.80	(2.64) (2.95)	2.13	3.51	3.36
Press Assts. & Feeders	(1.83) (2.34)	(1.45) (1.85)	(1.15) ^(b) (1.53)	(1.75) (2.39)	(2.50) (2.77)
Pressmen, Cylinder	(2.60) (3.14)	(2.06) (2.32)	(1.68) (2.00)	(2.62) (3.09)	(2.50) (2.92)
Pressmen, Platen	(2.38) (2.51)	1.89	(1.25) (1.63)	(2.42) (2.58)	(2.30) (2.83)
Mailers	2.57 ^(a)	1.91	-	(2.88) (3.09)	2.48

(a) Day

(b) Excludes junior assistants

³³ U. S. Department of Labor, Bureau of Labor Statistics, Preliminary Reports on Union Scales of Wages and Hours in the Printing Trades from various regional offices.

TABLE IX³⁴

Average Hourly Rate Paid by Private Industry
Clerical Occupations
1949

Occupation	Washington	Philadelphia	New York	Richmond, Va.	Chicago
Mens:					
Bookkeepers, Hand	1.71	1.71	1.85	1.67	1.73
Clerks, Accounting	1.23	1.28	1.47	1.37	1.42
Clerks, File, Class B	.96	.89	1.00	-	.97
Clerks, General	1.37	1.51	1.54	1.36	1.49
Clerk-Typists	1.19	.99	1.12	-	1.10
Clerk, Order	1.23	1.35	1.49	1.33	1.47
Womens:					
Bookkeepers, Hand	1.55	1.25	1.60	1.26	1.43
Calculating Mach. Op. (Comptometer)	1.15	1.03	1.22	1.01	1.16
Clerks, Accounting	1.21	1.03	1.22	1.07	1.15
Clerks, File, Class B	.97	.81	.92	.76	.93
Clerks, General	1.22	1.23	1.32	.99	1.22
Clerk-Typists	1.04	.92	1.07	.86	1.04
Stenographers, Gen.	1.26	.78	1.23	1.08	1.21
Switchbd. Operators	1.04	1.45	1.21	1.00	1.13
Typists, Class A	1.16	1.04	1.19	.99	1.16

Description of Occupations:

Clerks, File, Class B - A worker who performs routine filing of material already classified or locates material in files.

Typist, Class A - A worker who types material in final form from very rough and involved draft; copies from copy which contains technical and unusual words.

³⁴ Salaries of Office Workers in Large Cities, 1949, Bulletins Nos. 96C-1, 96C-2; 96C-3; 96C-4; U.S. Department of Labor, Bureau of Labor Statistics.

that higher labor costs severely hamper their operations are engaged in most cases in distributing outside the Washington area in competitive territories.

(m) Firms moving away from Washington. Although only thirteen percent of the concerns surveyed indicated plans to move from their present sites, the reasons given for these relocations are very significant indicators of the local industrial situation. Three Bethesda companies are in various stages of arranging for moves to other localities away from the Washington area. Two cannot find proper space in Bethesda and find skilled help difficult to obtain and commanding exorbitant wages. The third company wishes to retain its advantage of being close to the government agencies that direct its work and will retain its main office here. However, it will locate a production and assembly branch away from this area of high taxes and high labor costs.

A large and long-established instrument firm in Montgomery County is currently preparing building plans for a site near Baltimore. The high tax load imposed on this company is the primary reason for the move. One large manufacturing firm that has been operating in Washington for over seventy years has completed plans to leave the city and establish a new site in Prince Georges County. The causes that make this move necessary are the inability to expand at the present location, high District of Columbia taxes, and annoyances from local ordinances. An Arlington company expects to move to Alexandria when its present lease expires in order to locate in a more suitable building. In turn, an Alexandria firm intends to establish itself outside the Washington area to obtain the necessary supply of skilled labor that it requires in the conduct of its work. In contrast to the above, a firm now located in Prince Georges

County will soon move its activities into the District of Columbia to obtain a better distribution point for its products.

(n) Anticipated expansion of activity during the next five years. The optimism born of the prosperous post-war era is evident in the opinions of nearly fifty percent of the firms surveyed that they anticipate an appreciable increase in their business activity. Most of the older companies expect only the regulated slow growth of the past to continue. Only a few of the firms that expect a considerable increase in the volume of their business will require moving out of their present plant. Those that do not require a relocation will accommodate the increased activity by expanding their present plant and adding to its equipment.

(o) The attitude of lending institutions. The survey has brought out the fact that lending institutions are not always sympathetic to the problems of industry. This is of great concern, since the availability of capital dictates the rate of industrial expansion. Not all firms are affected in the same manner. The younger members of the industrial community reported a reluctance on the part of the local banks to make loans to them. Industry laments the fact that the area's banks are not conversant with industrial problems and have sufficient commercial business to employ all of their funds. Older firms are generally in a better position since they have been able to establish their credit and have built up appreciable assets that may be used to secure loans. Establishing long-term relations with one neighborhood bank has aided many with their financial problems. Most branch plants are unaffected by the local financial situation since their needs are arranged for by the parent company.

(p) Union activity. Industry in the Washington area has been relatively free from disturbances arising from union activity. Table VII shows that only one-fourth of the plants in the area are completely unionized. The only segment of industry that is extensively unionized is that represented by the printing and publishing industries. Relations with the labor unions have been satisfactory in most cases and very few attempts have been made to unionize outside of the printing and publishing trades.

(q) Reasons for locational preference. Industry in the Washington metropolitan area is characterized by many firms whose founders and operators are long-established residents of the area. Nineteen firms surveyed reported that the selection of the Washington area as a business site was dictated by the desire of the founder to locate a plant conveniently in his own community. Other reasons given for a Washington location are also largely dominated by the underlying desire not to have to establish a new home away from a favored community. Therefore, twelve companies indicated that their founders saw the potentialities of a local business establishment while a number of these pointed out that those that formed the present firm did so by expanding a strictly neighborhood type of activity.

Several of the newer companies stated that the current expansion in population attracted them to this area, and because the existing firms cannot furnish all of the services demanded of them. All of the companies engaged in research activities selected this area because of the excellent liaison possible with the government agencies that are responsible for assigning work to them and directing its progress. Three firms entered

this area by taking over existing businesses under favorable conditions. In two cases, government agencies who were anxious to undertake a special class of work in the metropolitan area influenced the companies to locate here. As was to be expected, all of the branch plants have cited nearness to the customer as their reason for locating here. Several firms gave considerable weight to the past ability of the area to weather a depression cycle with little dislocation.

The strong influence on the Washington locational preference of the founder's desire to remain a local resident is also evident in the reasons given for industrial location in New England. A recent survey³⁵ of companies that located in New England during the period of August 1945 to June 1948 shows that personal reasons similar to those cited for the Washington area played a dominant role in influencing regional locations. Out of a total of 118 reasons given, thirty-seven were based on personal desire. The next largest group of reasons for locating in New England was given twenty-eight times and was based on the advantages of the site in serving the contemplated markets. Nineteen reasons which were given were due to decisions that the region furnished desirable production relationships with other firms. Eleven quoted material availability as a primary cause for regional location and only five were influenced by an available plant.

Correlation of data. Table VII presents the opinions expressed by the industries of the Washington metropolitan area about problems that influence strongly the desire of a company to select this region as a

35 Why New Manufacturing Establishments Locate in New England: August 1945 to June 1948, by George H. Ellis, Monthly Review, Federal Reserve Bank of Boston, Vol. 31, No. 4, Apr. 1949.

business site and its willingness to continue operating in it. Further study of these data have disclosed several interesting relations between various segments of industry and its environment.

(a) The geographical factor. The transportation of employees was found most inadequate in Arlington, Prince Georges and Bethesda. This is occasioned by relatively poor public transit and poor access roads to the plants. The question of high taxation shows a very strong correlation with Montgomery County. Out of fifteen companies, thirteen, or eighty-seven percent, believe that local taxes are excessive. This compares with twenty-five percent for Arlington; eight percent for Alexandria; thirty-three percent for the District of Columbia, and twenty-five percent for Prince Georges that consider taxes too high. In Montgomery County, Bethesda reported seventy-two percent of its industrial firms as believing that local attitudes are injurious to their progress. In contrast, neighboring Silver Spring shows only twenty percent of the companies as dissatisfied with local conduct towards them. Prince Georges also reports high dissatisfaction with the community, with fifty-four percent of the firms reporting an unfriendly attitude. Firms located in the District of Columbia enjoy easy credit relations, since only twelve percent indicated a reluctance on the part of the banks to lend to them. On the other hand, fifty percent of Alexandria's concerns have noted reluctance on the part of banks.

(b) Major industrial groups. The lack of an adequate local labor supply has hit the research and instrument industries the hardest with sixty-six percent reporting not enough employees to operate efficiently. The fabricated goods industry has fifty percent of its firms

reporting insufficient labor and fifty percent acknowledging they have just enough. The construction materials industry reports an ample and sufficient supply in the large majority of cases. Local taxes were found excessive by a large number of companies engaged in the fabricated products, printing and research industries. It is noted that these industries are highly mechanized and provide a high tax base. The construction materials industry turned in the largest percentage of complaints against the local attitude. The heavy nature of operations in this industry with its heavy local trucking and the creation of dirt and dust makes it prone to local indignation. Competition was reported heaviest in the construction materials industry, with seventy-five percent assessing the competition heavy and twenty-five percent as medium heavy. The least competitive industrial group is the research group, with fifty percent of the firms claiming competition as light. This group also encountered the most difficulty with local financing, with sixty percent of the firms finding the banks reluctant to grant loans to them.

(c) The influence of the size of plant. The companies that found taxes unduly high were not the smallest or largest. Fifty percent of plants employing twenty to forty-nine and seventy-five percent of those employing 200 to 499 reported excessive taxes. Those firms that have between fifty and ninety-nine employees found the most fault with the local attitude. The anticipated expansion in business activity will occur primarily in the smallest plant group (one to nineteen employees) with sixty-six percent reporting an appreciable expansion anticipated.

(d) Branch plants. A much higher percentage of the branch plants (sixty percent) made a locational study, as compared to only seventeen percent of all the other plants. Seventy-five percent of the branch plants

claimed no knowledge of credit conditions in this region because their banking is arranged by the home office.

(e) Firms selling to the Federal government. Of the companies that sell from two-thirds to all of their output to the Federal government, eighty-six percent reported as expecting an appreciable expansion in their volume of activity. This compares to forty-eight percent for the entire industrial group.

Industry's opinion of the locational value of Washington. The firms that were surveyed were invited to suggest means by which the metropolitan area could be made more attractive to industry. A number of those contacted failed to offer suggestions, since they believed that they were not sufficiently versed with regional problems. Others by their replies showed a lack of knowledge of the factors that operate on an industry and regional basis. A number of the recommendations offered by individual firms are included as a summary which reflects the many aspects of the locational problems. Industry recommends that:

New industry should be invited to locate here since it will attract a greater labor force and expand the market of the existing industry.

Washington is a desirable place to live in and should be an inducement to new labor and industry.

Companies engaged in government work suffer most from the local banks. They should find Reconstruction Finance Corporation loans attractive, since they are subject to government regulation and control and will not find Reconstruction Finance Corporation's haddlesome tactics disagreeable.

Taxes are beginning to drive industries away. The local governments should grant a tax reprieve. The personal property tax in Montgomery

County is unfair. Many of the Maryland communities do not have it.

The cost of real estate in desirable locations is beyond the reach of most companies that wish to expand. Rezone to make more land available for industrial purposes.

Metal industries will find scrap metal cheap and in large quantities in Washington because there is no one to use it.

Small plants should be preferred because during depression periods they manage to keep going, while large plants dump large numbers of unemployed on the community on the slightest pretext.

There is a pressing need to educate government and the community on the benefits to be derived from industry. A promotional campaign to advertise this area should be undertaken. Stop discouraging local industry.

Unskilled labor should be unionized because now it is extremely irresponsible.

The local business interests should acquire new and promising products for manufacture in this area.

A better understanding of industry by government is essential to improve the present attitude towards industry.

Uniformity should be achieved throughout the metropolitan area on regulations affecting judgments and liens. There are six different political subdivisions in this region, each with different building codes and collection laws.

Educational institutions should aid in easing the critical shortage of skilled and professional personnel by the use of training programs.

Building permits should be easier to obtain. When an industry applies for rezoning, individuals five or ten miles away from the project should not be permitted to protest unless they can prove financial injury.

The area is short of first class supply and distributing houses to furnish industry.

CHAPTER VI

THE COMMUNITY VIEWS INDUSTRY

The role of the community. The previous chapter has presented the results of industry's analysis of those problems that are inherent in its locational environment. These are disturbing elements that conflict with proper industrial management and must be understood not only to improve the existing situation but to render the region more receptive and more attractive to further industrialization, if that is desired.

These problems that industry must cope with stem from the community and have their counterparts in the local scene. The lack of an adequate labor supply, the high cost of labor, insufficient low-cost industrial land, the irritating local attitude, and the conservative character of capital investors are industrial obstacles because of the reaction of the community to the local brand of manufacturing activity and to other economic and social phenomena. Additional knowledge of the basic causes that give rise to the manifestations that have been reported can be obtained by a study of those elements of the community that influence the industrial environment.

The survey that has already been reported was accompanied by the interview of representatives of the many local groups and organizations that concern themselves with one or more aspects of industrial location. An important and decisive influence in the community is that exerted by the local administrators of governmental authority. The public administrator as a representative of the citizens must respect their wishes and those of the many special interest groups. He must reflect

an attitude on community questions that is compatible with the desires of the constituents. The long range welfare of the region and the accrual of substantial benefits to the community are the guides of municipal policy. The control that government can exercise over the factors of industrial location is a major force that can determine the type of adjustment that firms must make to their environment.

Because of the importance of government, the chief administrator of each political subdivision in the metropolitan area was contacted personally for an evaluation of the existing situation and a prediction of the future course of industrialization. As heads of their municipal governments, they are in a position to rally opinions and initiate far reaching programs. Therefore, the views expressed by these officials are valuable indications of what may be forthcoming that can materially affect the industrial environment.

Business exerts a strong influence in regional matters. With industry playing a minor role, business creates local incomes that are second only to the Federal government. Business is well organized in this area with a number of active Chambers of Commerce and Boards of Trade which can study and initiate action on problems which affect their members and the community. Because of its natural interest in industrial matters, business was surveyed through its local associations.

The inhabitants of the region are, in the last analysis, the determinants of industrial policy. Industrial firms cannot usurp the land and obtain public services unless the citizens of the community condone it. Manufacturing is dependent upon the inhabitants for employees to man its processes and therefore must be acceptable to them. Because of the strong influence that the citizens exert in industrial problems,

their attitudes and opinions were assessed by interviewing the heads of several citizens' organizations.

In addition to the above determinants of public attitude, a number of other groups were canvassed for opinions and information about specific industrial problems. Several banks gave an insight into the local credit situation that has irked many manufacturing firms. The lack of industrial land was investigated by a study of zoning regulations, by discussions with planning officials and by checking with owners of real estate. The problem of the labor market was discussed with educators in the field of vocational training. A representative expression from labor was difficult to obtain because only a small percentage of the total labor group is unionized. However, pertinent labor problems were discussed with officials of the unions involved with the printing and publishing industries.

The basic attitude. The survey of the community failed to disclose expressions of opinion that were detrimental to local industry in toto. This fact was not expected, since many were found who were certain that someone else was opposed to the spread of industry. Industry gave strong evidence of the existence of groups and institutions that resented its activities. A number of business organizations and business leaders attested to the same. These indications were followed, but instead of finding firm opposition to the industrial development of the region, understanding and a desire to aid the solution of the attendant problems was expressed. Not all those contacted exhibited the same enthusiasm, nor were they completely unreserved in commending industry and its role in the community.

Evidence had pointed to certain citizen organizations, certain planning groups and some area governments as following a policy of stifling industry and preventing its spread. The careful tracking down of these rumors has served to show that an open and organized campaign against industry does not exist. However, it is necessary to emphasize that, while industry in the Washington area is not considered objectionable, cases of individual firms being at odds with the community are not too uncommon.

The citizens of metropolitan Washington show the same admiration and respect for the wonders and benefits created by American industry as do those in other parts of the country. With the deep significance that industrialization has as the chief factor of the rapid growth of this country, it is not surprising that it is not looked upon with suspicion but is often welcomed to become a respected member of the community. Therefore, it is to be expected that the heads of government, business and civic life will admit a friendly feeling towards industry as an entity. This basic attitude towards industry in Washington is a very significant one.

The local population is not hostile but can be aroused to show resentment when circumstances prevail that may indicate that some of the benefits of one's home life may be jeopardized by some industrial operation. The inhabitants of the Washington area are predominantly owners of private residences. Enjoying above average incomes, they are careful in selecting neighborhoods to live in that exemplify the opposite of what prevails in a downtown business district: freedom from noise, dirt, traffic and odors. Having invested large sums in his home, the average citizen is

always suspicious of any new element that may be introduced into his neighborhood for it might deprive him of some of those values that he prizes most. It is the intrusion of industry in established neighborhoods that creates much of the friction between the two. It is the pride of home ownership and a desire to enjoy pleasant home surroundings that make citizens encourage industry if it will settle in some neighborhood other than their own. This is a real problem in community relationships but one that can be solved by a willing cooperation of all concerned rather than suspicion and recrimination.

The segments of opinion. As in the case of the survey of industry, the canvass of community problems and attitudes was made on a regional basis. Corresponding officials, civic and business leaders were approached in the District of Columbia, Montgomery, Prince Georges and Arlington Counties and in the city of Alexandria. The economic and social makeup of the metropolitan area varies from one locality to another. Therefore, it is expected that the attitudes and opinions that are expressed concerning the location and operation of industry may vary with the community.

One obvious division of sentiment would depend upon whether industry in the central city or the suburbs was involved. These two segments of the metropolitan area are subject to different economic pressures. The city of Washington is fully developed and is tenant to a huge plant operated by the Federal government which is tax exempt. The suburban areas are fast growing and possess many acres of undeveloped land.

The heavy and sudden influx of new population into the environments of Washington has created a fiscal crisis in each of the communities. The school facilities are overtaxed to a point where school costs and the requirements for new school construction account for fifty to sixty percent of the budgets of the outlying communities. Budgets currently being made for fiscal year 1954 expenditures show sharply increased costs and at the same time county councils are pledging to press vigorously for economy. In Prince Georges County, the budget as presented to the county commissioners would require an increase in the tax rate of from forty-five to sixty cents above the present rate of \$1.98 per \$100 of evaluation. If this were done, it is the opinion of the commissioners that many people would leave the county.³⁶

The inability of the Washington suburban area to provide those services which are essential to its expanded population is due to the narrow tax base from which revenue must be obtained. In many localities, retail trade and business activities are sparse, since the central city supplies most of the suburban wants. Therefore, the home owner must bear the brunt of the heavy and steadily increasing tax burden. The local governments are faced with the dilemma of either placing a disproportionate tax load on whatever business and industry it may have and thus discourage the further expansion of very desirable activities with high tax potentials, or cause the depreciation of property values and the attendant exodus of the inhabitants. The inability of the individual family to contribute sufficient taxes to pay for its school costs is illustrated by

³⁶ The Washington Post, February 21, 1953, p.13

the case of Montgomery County. It is estimated that each family has two school age children. It requires \$187 per year to educate one child, or a school cost of \$374 for each family in the county. Since each family pays only \$190 in taxes each year, the county must receive \$184 for each family from other sources to avoid a deficit.

This situation has caused the outlying areas to turn their attention to industry as a means of improving their fiscal position. The concentrated capital investment, represented by industrial plants and the creation of large quantities of wealth and incomes by the manufacturing process, makes these enterprises extremely attractive for purposes of taxation.

Revenue from industry. The tax structure employed by the city of Alexandria illustrates the manner by which the local communities can raise revenue from industry. A real estate tax is levied which is based on fifty percent of the 1945 cost to construct a similar plant. Manufacturing concerns are charged a capital tax which is computed as seventy-five cents on each one hundred dollars of value represented by the inventory and the difference between the accounts receivable and the accounts payable. The capital tax is determined yearly as of the first of January. In addition to the above taxes, Alexandria collects a plant equipment tax of three dollars for each one hundred dollar value of the depreciated equipment.

The relative merits of industry, business and real estate as revenue producers are indicated by the following random examples from the files of the Commissioner of Revenue of the city of Alexandria.

(a) Industry

Case 1: A dairy which occupies a total of 40,568 square feet of land paid to the city a tax totaling \$3,681 in on year. This yields revenue at the rate of 9.1 cents per square foot of land per year.

Case 2: A bottling plant occupies 28,100 square feet and paid taxes totaling \$3,508. Revenue is at the rate of 12.5 cents per square foot of land per year.

Case 3: A power plant with 1,742,400 square feet of land area contributed a total of \$288,000 in taxes. This is at the rate of 16.5 cents per square foot per year.

(b) Business

A large variety chain store grossing three million dollars per year in sales is located on 15,380 square feet of land and produced \$7,439 in tax revenue to the city. This is at the rate of 48.4 cents per square foot per year.

(c) Real Estates:

Case 1: A large apartment house project covers 157 acres and houses 1,500 families. This project contributed \$143,000 in real estate tax and the tenants paid about \$8,000 in personal property taxes, or a total of \$151,000. This represents a revenue rate of 2.2 cents per square foot per year.

Case 2: A private home valued at \$15,000 occupies 7,200 square feet and pays \$160 in real estate and personal property taxes. This is at the rate of 2.2 cents per square foot per year.

The above examples illustrate the definite superiority as a source of revenue of land used for industrial purposes as compared to its use for dwellings. This comparison is significant, since the largest portion of the area is employed for residential purposes and the tax revenue obtained from it is greater than from all other sources. The examples show the distinct advantage to the city of the large commercial firm over the typical industrial establishment. It should be noted that the example cited in the business category is not representative of the smaller, lower sales volume retail outlets which are common in suburban areas.

A comparison of the tax potential of the various classes of land users must also consider the services that each demands from the local government. The low return from dwelling units is usually turned into a deficit when the cost of providing schools, police and fire protection, garbage collection, etc. for the inhabitants is considered. The larger and prosperous retail businesses are located in downtown areas where heavy pedestrian and vehicular concentrations make heavy demands on public services.

The revenue appeal of retail establishments is well recognized. Municipalities strive to create environments that will attract them. However, retail trade is local in nature and its market area is severely limited by heavy competition from neighboring regions. With suburban

retail establishments relegated primarily to serving a local neighborhood, most communities soon reach the saturation point of such facilities and cannot support others unless the local area increases in population or its inhabitants change their buying habits. The virtually unlimited area that industry can supply effectively removes it from depending upon a strictly local purchasing power. Therefore, manufacturing firms with potential national markets can be accommodated in a community as long as the factors of production are available locally.

Regional attitudes. The survey of community attitudes towards local industrialization has disclosed the following opinions. Most of these expressions are founded on the type of reasoning given above.

(1) Montgomery County

(a) Government: The County Manager disclosed that the individual citizen is fearful of heavy industrialization because of the civic problems, lowered standards of living, and the creation of sub-standard neighborhoods that may follow in its wake. Many have moved from the city to Montgomery County to escape from these problems and are apprehensive that these may occur in their new community. The confusion in certain localities of the county due to their sudden phenomenal growth may permit undesirable types of industry to gain a foothold there. However, the impression that most inhabitants are reluctant to welcome industry to the county may be due to the preponderance of complaints that the office of the County Manager is normally subjected to. Therefore, this impression may not be entirely correct. As a result of the belief that the citizens fear the encroaching of industry, the government of Montgomery County cannot at this time assume a very

enthusiastic attitude towards further industrial progress. Up to now this problem has been neglected and official attitude cannot be more forthright until study has indicated the desirability of more industrialization. Such a study is getting under way in the form of an economic base survey of Montgomery and Prince Georges Counties.

Industry must be carefully screened and controlled to avoid creating undesirable living conditions. The government believes that scientific laboratories and white collar industries employing a high caliber of professional personnel can be a decided asset to the community. The county could use a number of this type of industry because of the large tax revenue they can contribute. However, industrialization, when judged desirable, must be preceded by an educational campaign directed at the citizens. At present the county lacks an effective zoning ordinance. The one industrial category in the zoning regulations is insufficient for proper segregation and the lack of definition of what is considered desirable and what activity is not acceptable can give entry to the wrong establishment. Control can be exercised by the Maryland-National Capital Park and Planning Commission when it reviews the plans of the industry that applies for a site and by the public who can request the rezoning of an industrial area if the applicant is considered unsatisfactory. The Park and Planning Commission which, with its zoning control, can influence greatly the location of industry, has been the center of political contention. It is believed that the technical staff of the Commission is a capable one, but the appointed Commissioners lack certain qualifications.

The County Manager strongly condemned all forms of economic concessions to attract new firms, since only the economically undeveloped forms of industry would respond to their appeal. Only a few incorporated communities in the county (Takoma Park, Rockville, Gaithersburg) have the authority to grant tax concessions, and only on municipal taxes. The major centers of population and industry in the county (Silver Spring and Bethesda) are under county rule and cannot promise reduced taxes.

(b) Business: The Silver Spring Board of Trade and the Bethesda Chamber of Commerce furnished information on the position of business on the problems of industrialization. The Silver Spring Board of Trade has noted a decided change in public opinion. Prior to the summer of 1952, the citizens were generally antagonistic towards new industry. At that time a five-year reassessment of much of the property in Montgomery County took place. As a result, some of the business firms had their assessments raised from a previous figure of forty percent to a new high of eighty percent of current market value. Residential property was affected in a similar manner. This fact has convinced many that new industries, more trade and commerce must be brought into the county to broaden the tax base and to reduce taxes.

Business in Silver Spring is anxious to bring new industry into the county. However, it is necessary to acquaint the public of the benefits that will derive from industrialization and to allay its fears that property values will be affected adversely. It is expected that the recently formed County Commerce Association of Montgomery County will play an important role in determining the need for this type of activity in the community and may sponsor a movement to attract it. This association,

with representation from seventeen county business groups, can operate through the services of its Industrial Planning Group to accomplish this. The County Commerce Association will use the data to be obtained by the two-county economic base survey. This survey, which will develop facts on which to base and develop a sound economy for the region, is the key to the action that government and business will take on the question of further industrialization. The results will become available towards the end of 1953.

Montgomery County with its limited water supply cannot accommodate the type of manufacturing whose processes require large amounts of it. The business groups favor the "garden" type of industry for the area. This is a plant with pleasant exteriors, landscaped grounds and without external indications of the work that is going on within. The garden industries that are preferred include pharmaceutical plants, scientific instrument companies, and printing establishments. The labor problem in Montgomery County is expected to be unusually severe, since nearly all the inhabitants are white-collar minded and look upon industrial work with scorn. A new industry must import a nucleus of trained workers from outside the area to train the local labor. The case of a nationally known company that wished to locate in the county but had to change its plans, because it could not see how several thousands of new employees could be located, emphasizes the seriousness of the labor problem.

The inadequacy of industrially zoned land is considered to be the most important problem by the Silver Spring Board of Trade. The effects of the high cost of land could be countered by inducing owners to grant rent-free land to new firms who would be required to pay a rental

only on the buildings. However, business does not favor tax concessions. It was indicated that Silver Spring would become a more attractive location if it became a corporate city. This would sever many ties with the conservative government and give more freedom to local interests in exploiting the assets of the community.

(c) Civics: The head of a civic group which represents thirty-five citizens' associations in Silver Spring admitted that the local inhabitants are convinced that their city would benefit from an expansion in industrial activities. This sentiment stems from the progressive nature of the community and its inhabitants. This is in contrast with neighboring Bethesda where, according to business, the people are against everything and care little about their industry.

The position of the citizens of Bethesda was expressed in a frank manner by the president of a large and typical local civic association. The members of this group are influentially wealthy, are successful in the professions, the military services, government and in diplomacy. They occupy a large area of fine residences and have very strong family ties. The members of the association are strongly determined to preserve their homes and their community. They have never objected to tax increases and favor them to the alternative of jeopardizing the local manner of good living through the introduction of new activities.

This Bethesda civic association has fought the business interests to a standstill on many occasions. The members' residences are close to the business area and they are always alert for any threat to their privacy. This and other groups in the area are formidable opponents with their very capable and militant memberships. With this antagonistic

attitude towards commercial venture, it was surprising to note that the association holds a tolerant attitude towards industry. It does not campaign for new industry but it is not driving it to the wall. It feels that an adequate control can be exercised over it with the present zoning regulations. However, some concern was expressed over the possibility of a desirable company being absorbed by an undesirable form of activity and leaving no recourse to the community. The membership of the association recognize the unsavory nature of the present industrial area in Bethesda and desires to clean it up by improving it. The resulting higher land values would drive out some of the industries and force those remaining to improve their properties.

(2) Prince Georges County.

(a) Government: An interview with the Chairman of the Board of County Commissioners disclosed that industry is considered a necessity in Prince Georges County and that the Commissioners will soon take a firm stand in its favor. This action may alienate some of their constituents, but the problem of introducing new manufacturing firms is important enough for the Commissioners to accept this risk. Prince Georges County undoubtedly has the most critical need for additional revenue and a more equitable distribution of the tax burden of any metropolitan community. The county has little commerce and industry so that the home owner must bear most of the tax load. In addition, it has a large population of families whose income is less than \$5,000 per year. During the last five years, taxes have increased over sixty percent and the owners of low cost homes may be faced with foreclosure if they increase such more.

The immediate contribution of the County Commissioners to industry is to advocate better industrial zoning and to provide good access roads to plant sites which are suitable for heavy trucking. Special inducements to new industry are, as a general rule, not favored but may be considered in some exceptional case. The county government tends to favor industry in questions of zoning and will then act in opposition to the recommendations of the Maryland-National Capital Park and Planning Commission. The Commissioners wish to encourage the cleaner types of industry, but they do not object to heavy industry or large plants if properly located. The possibility of lowering the standard of living of the community by admitting industrial workers causes only mild concern, since the predominantly white collar population will be able to assimilate the labor element.

The Chairman of the Board believes that due to the close relationship between business and industry, the county's business organizations should spearhead a promotional campaign for new industry with the aid of the county government. However, this does not appear a wise choice, since the business groups in this county do not appear to be sufficiently aggressive to assume such leadership. The Chairman is certain that the economic base survey will emphasize the need for additional industrial growth but fears the survey may not attain enough of its objectives. Future industrial growth may continue to be slow but it is expected to go far if a promotional drive is initiated.

(b) Civic: The head of the Prince Georges County Civic Federation provided an insight into the attitude of the citizen towards the industrial problem. He and the Federation that he represents are unanimously in favor of additional industry for the county. Not only must

additional funds for school expenditures be raised, but local real estate taxes must not be raised further and preferably should be decreased. Further industrialization is the only solution to this problem. This fact should be impressed on all so that a concerted effort can be made to attract industry by advertising the county's locational advantages. Special inducements should be employed if they are considered necessary. The only obstacle to a successful drive is the apathy and obstructive nature of a small group of people.

(3) City of Alexandria.

(a) Government: The City Manager and the Director of Planning furnished information on the official position. It was noted that the City Manager assumed a viewpoint based on the economic problems of the city and the need to raise additional revenue without creating severe dislocations. As a result, the potentialities of industrialization make it appear a desirable means for bolstering the financial position of the city. The city council is generally sympathetic towards the question of industrial growth, but it is not expected that it will take decisive action to promote additional manufacturing establishments for the city. The council has never granted special inducements and probably never will. The city will consider all types of manufacturing if they are properly located. It was pointed out that a tract of land newly zoned industrial, containing about 600 vacant acres, will remain idle, since the city has no plans to promote its use.

(b) Business: The Alexandria Chamber of Commerce finds that there is a real need to invite new industries to locate in the city. Light industries such as tool and instrument manufacture, electronic

equipment and needle work are preferred. The local labor shortage could be eased through the use of housewives. The Chamber of Commerce has organized an Industrial Committee which plans to use the only direct approach mentioned by any of the communities. The Committee expects to use a perpetual revolving fund, originally obtained from investors, to construct industrial buildings. These structures are to be empty shells and will be finished to suit the tenant. The rent paid by the tenant will be used to build additional buildings. This revolving fund plan for industrial construction has been used successfully by a number of cities. The Chamber of Commerce does not advocate the use of special inducements.

(4) Arlington County.

(a) Government: The County Manager indicated that the county needs more revenue and additional sources of revenue. Since industry brings in more tax revenue than is used in providing it with services, the county wishes to attract more manufacturing establishments. Some people object to industry, but their fear is primarily about heavy industry. The county government in general objects to furnishing special inducements for locational purposes. It has no plans to undertake a promotional campaign, since it believes that the Chamber of Commerce should assume the initiative.

(b) Business: The Arlington County Chamber of Commerce pointed out that the county had a net tax revenue of one and one-quarter million dollars from payments made by business firms, while it lost twenty-six dollars per individual after the cost of public services that were rendered was considered. The Chamber of Commerce wishes to

promote industrialization and plans to set up an advertising board to make known the benefits of the county. However, it must first obtain funds from the County Board. Again, the light industries are preferred. It is believed that the current County Board composed of several business people will be more sympathetic than the old one which enforced zoning and building codes in a stringent manner.

(c) Civics: The president of the Arlington County Civic Federation emphatically stated that the membership is not against industry in the county. The Federation advocates the use of land zoned industrial for use by industry of the garden or laboratory type where noise, smoke and smell are not produced. Some friction results when it appears that applications are made to rezone residential land into industrial, when there is much of the latter that is not being used. This is a misconception arising from ignorance of the fact that much of the available industrial land is prohibitively priced. Another irritant arises from poor zoning which causes a heavy industry to transport through residential streets to reach the highway, with considerable annoyance to the neighborhood.

(5) District of Columbia.

(a) Governments: The District of Columbia also faces a serious problem in being unable to obtain sufficient revenue to meet the heavy demand for additional public services. However, unlike the suburbs, the District with its large \$140 million annual budget cannot expect industry to provide but an insignificant contribution. Therefore, the city must look to the Federal government for financial relief. The

situation does not appear to be a just one when the citizens are required to support ninety-two percent of the cost of operating the city, while the Federal government, who occupies forty percent of the taxable land area, pays only an eight percent share.

Because of the need to maintain the city as a veritable show place for the Federal establishment, many restrictive zoning regulations, health and smoke ordinances have been put into effect and are enforced with vigor. However, the Chairman of the District Commissioners wished to point out that industry is not being discriminated against when these regulations are enforced. Industry that is now located in the District is welcome to remain and some new firms engaged in light manufacturing could be accommodated in the city. The District feels the lack of the heavy revenue contribution that industry makes in other cities and the large donations that it makes to community charity services. However, the city cannot plan for additional industrialization, since its land is almost completely developed and it cannot annex additional areas.

(b) Business: If called upon, the members of the Washington Board of Trade would endorse a move to aid industrial progress in the city of Washington. However, such a plan must provide for a careful selection of new industrial firms to assure that they meet the high standards imposed by local regulations. The problem of free labor is unusually severe in Washington since the city has more wage earners per family than any other community. The Board of Trade attempts to aid further industrialization by referring locational inquiries to the appropriate suburban groups. The newly formed Metropolitan Area Council, which is composed of

representatives from each Chamber of Commerce in the metropolitan area, can exert a strong unified influence on industrial problems.

The old concept of the role of industry in metropolitan Washington was evident by the attitude expressed by a number of business and commercial firms. Notably among these is the large and progressive local electric power company which will not undertake promotional campaigns to induce industry to locate in the metropolitan area. It firmly believes that such an action would be futile, since government has decreed a policy against further industrialization. This unfortunate belief has resulted in a lethargic attitude which is in glaring contrast with the highly successful promotional efforts of most public utilities in other cities.

(c) Planning Commissions: The National Capital Planning Commission has been accused by many of intimidating industry and keeping it away from the city. The director of planning of this Federal agency acknowledged that the Federal government is the stable industry of the District of Columbia and there is little need to encourage additional private industry. However, the city should welcome service industries required by the local population and any others that do not conflict with the basic purpose of Washington as the home of the Federal government. For example, a printing plant, although not a service industry, does not detract from the basic occupation of the city, while an odor-producing plant located at one of the gateways to Washington would be considered undesirable. That the National Capital Planning Commission does not follow a policy of suppressing local manufacturing is further demonstrated by the fact that its recently prepared comprehensive plan for the National Capital shows that a modest increase of

fifteen percent in industrially zoned land will be required to meet needs in 1980.³⁷

The availability of land. Figure 5 on page 70 is an indication by regional planners of the needs of industry for sites in the metropolitan area. Not only is the amount of land allocated to this purpose only a very small portion of the total area set aside for other uses, but nearly all of it is presently occupied. Industrial zoning is a residual process whereby industry is assigned those land areas that are wanted by no one else. The largest undeveloped tract in metropolitan Washington is located in Alexandria, adjacent to Fairfax County, in a narrow, low-lying valley along the railroad. Besides the rail line, a high tension power line with a one hundred and twenty-five feet wide right-of-way runs the entire length of the valley. This industrial tract will be further dissected by a proposed high-speed highway. Its 600 acres contain a city dump, marshes and low land that is periodically submerged by rain water. Because this land was judged to be entirely unsuited for residences and for business, it was zoned industrial. As pointed out by Walter H. Blucher,³⁸ Executive Director of the American Society of Planning Officials, this practice of assigning to industry only those lands which are not fit for anything else is one that was abandoned many years ago by progressive communities who are concerned about their finances.

A prominent local city planner believes that the suburban governments, planning groups and zoning officials are not sufficiently well qualified to act wisely on industrial matters. This is due to

³⁷ People and Land, op.cit., p. 59

³⁸ Trends and Forecasts in Planning, Walter H. Blucher in Public Management, Journal of the International City Managers' Association, December 1952.

their inexperience, since most of their communities have only recently changed from their previous rural character. The lack of proper planning has resulted in a pronounced scarcity of land for manufacturing sites and has been accompanied by the evil of exorbitant prices. Firms faced with the need for expanding their plants find it extremely difficult to locate suitable tracts for new sites and must resort to moving away from their communities. The failure to sell land to industry causes owners to be reluctant to agree to zone their property for industrial use and makes realtors unwilling to attempt to attract buyers.

The unavailability of industrial land is most pronounced in Montgomery County where heavy residential construction has claimed all desirable land. The few sites that remain for industrial firms are priced as high as seven dollars a square foot. In the District of Columbia, realtors are quoting about two to three dollars per square foot, while in Alexandria the price of land adjacent to the railroad and along United States Highway No. 1 is from \$1.50 to \$2.00 per square foot. Therefore, improved land with a convenient access would cost from \$174,000 in Alexandria and the District of Columbia to \$609,000 in Montgomery County for a small plant requiring two acres. Many firms would find their operations uneconomical when faced with such large land rents.

Land of intermediate quality can be located which will sell from fifty to seventy-five cents per square foot. This is land that is not too close to the city, may be filled or low-lying so that special construction will be required, access roads must be built, and power, water and sewers must frequently be extended to reach the site. Large

woodland tracts which are along the outskirts of the metropolitan area may be had for as low as five cents per square foot. A unique situation is found in the Washington area due to the large amount of land zoned industrial that is owned by the railroad companies. Information obtained from a railroad which owns much of the new Alexandria industrial tract disclosed that the price asked for the land will depend largely on the nature of the industry that would locate there. The railroad wishes to sell only to a company that will ship heavy tonnage over its lines. It does not advertise the availability of this property and the prospects are that it may remain idle as it has for many years in the past. The reluctance of the railroads to make their large holdings available for sites, unless a heavy producer of rail revenue is found, contributes to making the land problem a serious one.

The lack of industrial land, coupled with unwise zoning practices, has created an aggravated problem in several communities. Without choice, many firms have been herded into small and inadequate neighborhoods with the ultimate formation of industrial ghettos. One is shown by Figure 6 which is a doubly unfortunate instance, since it runs into the main business section of the town and is only a few blocks from the finest residences in the area. Since land is at a premium, space is held at a minimum. The cost of operation is reduced by the construction of cheap and temporary facilities. The streets are totally inadequate for passage, parking and loading so that the sidewalks must be used. This creates an eye sore which causes indignation among the local citizens and subsequent resentment towards industry.



Figure 6. Industrial Blight

Unsavory industrial neighborhoods are generally created by a lack of vision on the part of the community. As shown by Figures 2 and 3 on pages 66 and 67, industry is naturally proud to operate in pleasing structures which, with modern means of construction, can be built almost as economically as the eye sores that the citizens abhor. Given the proper surroundings and a measure of encouragement, industrial firms will maintain appearances that are an asset to any neighborhood. However, if they are forced into squalid areas, it will take more than public resentment to improve the surroundings.

The training of the labor force. Vocational education, which trains the student to acquire sufficient skills to work at a trade, is limited primarily to the public high schools of the District of Columbia where both day and evening courses are offered. Although such industrial courses of study as machine shop, sheet metal work, drafting, electricity and electronics, printing and welding are offered, the majority of the students prepare themselves for employment in either the service industries or the building trades. The labor unions in the printing and construction industries sponsor evening training for their apprentices. The District vocational schools have cooperated with industrial firms in the metropolitan area to give special training to groups of employees to prepare them for work which they were hired to perform. However, industry makes very few requests of this kind.

A problem of vocational training in this area is how to attract a sufficient number of young men to enroll in these courses. Not only are excellent opportunities for employment cutting formal schooling short,

but there is also the traditional attitude towards trade education that keeps many students away from it. It is common for many parents to encourage their children to enter the professions and not to engage in a trade. This is a universal problem but with cooperation from industry it can be solved with excellent results. In Buffalo, industry creates interest in both the parents and the children by opening their plants for their inspection and presenting appropriate programs in the schools. As a result, Buffalo is unique in that it has more pupils enrolled in vocational training than in the academic high schools. If approved by the Board of Education, the schools could place a greater emphasis on vocational education in their guidance programs for the students and can inform the parents of the excellent opportunities that exist in the various trades.

The financing of industrial activity. Banks located in Washington and in the suburbs were invited to discuss the reluctance of financial institutions to grant industrial loans. A large bank in Washington admitted that the experience of local institutions with loans for manufacturing firms is very limited, due to the infrequency of such requests. Therefore, they lack a certain amount of understanding of industrial problems. Most area banks are conservative and must be so to remain solvent. This is in contrast to industrial cities such as New York where large banks have industrial credit departments organized by commodities, by type of activity and have experts covering each geographical area. Washington banks are engaged primarily in the real estate market and do not have such excess capacity for other types of loans. However, a large loan can be covered by having more than one institution participate in making it.

A number of the requests from industry do not come under the heading of bank loans and therefore cannot be granted. Banks ordinarily furnish funds to carry a business over its seasonal demand peaks. Industrial loans running three or more years are capital loans. Since they basically form an investment in the business, they fall outside the scope of banking operations and should be met by capital produced by the firm from within itself or from stockholders. Even banks in industrial cities are reluctant to grant capital loans. As a general rule, finance firms are willing to lend for the purchase of equipment and will take a chattel mortgage on the equipment. A firm involved with government contracts can arrange for a Defense or V-Loan in which the government guarantees a part of the loan and receives a portion of the interest paid on it. A bank must be equipped to grant V-Loans because of the many requirements imposed by the government.

The suburban banks that have grown up with the community tend to be less conservative than the city institutions. Their primary limitation is due to their size. By federal law, the maximum that can be given to any one borrower by a bank equals ten percent of the bank's capital plus surplus. In Montgomery County, the lending capacity of the banks ranges from \$10,000 to \$340,000 for a single loan. Many loans are denied because of the inability of the borrower to invest a sufficient amount of his funds in his own venture. This situation would be eased if a firm transacted its business with a neighborhood bank and maintained its credit by additional loans.

Labor and industry. A representative opinion from labor could not be obtained, but the expression from the unions in the printing industry is probably a good indication of labor's attitude towards the problems of local industry. Labor decidedly wants more plants in this area. The unions have organizing committees to increase union membership and always extend a welcome to new firms coming to this city. They have not been too successful in inducing new shops to locate in Washington because of the high area wages. However, a recent notable successful attempt in drawing a new industry to this area involved the cooperation of local industry and the unions. It was decided that the Washington area needed more typographical shops to stop the large flow of business going out of the city to Baltimore and elsewhere. Therefore, the unions and the Graphic Arts Association, an association of print shop employers, collaborated to bring an outside plant to Washington. Significantly, they sought the plant in a city that had a wage scale higher than the local one. There is every indication that the labor unions will cooperate in any move to attract new industry to Washington.

Industrial dispersion. A national policy for industrial dispersion was announced by the President in August 1951 for the purpose of assuring greater security to the nation's industrial plants from an atom-bomb attack through the proper spacing of additions to the productive capacity. It provides that new defense-supporting production facilities must be located at least ten miles from highly industrialized or densely populated sections or from major military installations. The Federal government will not grant defense-production assistance to a new defense

plant unless it is located in accordance to this policy.³⁹ This assistance is in the form of certificates of necessity which permit the amortization of the plant and its facilities at a faster than normal rate and defense loans.

According to the District of Columbia Civil Defense, the potential population target zone is bounded by the White House, the Capitol, the Mall and K Street, N.W. The Pentagon in Virginia is considered a potential target due to its military significance. Figure 1 on page 62 shows the ten-mile dispersion area. It is seen that future defense plants locating in metropolitan Washington must seek sites which are away from existing industrial zones. A number of local firms would be affected by this policy if they intend to relocate their plants.

³⁹ Industrial Dispersion Guidebook for Communities, Domestic Commerce Series No. 31, U. S. Department of Commerce

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

This study has identified and concerned itself with a relatively obscure segment of the economic life of the nation's Capital City. It is unknown because, to most people, the Capital City is comprised of the vast Federal establishment, of the people who man it and business activity that provides for the day-to-day needs of the Federal employees. The suburbs are places in which to get away from the discomfort of the city and many are therefore going there to live. The area produces nothing it needs except those commodities that are perishable, such as ice, dairy products and newspapers. Everything else is brought in from many places by rail, truck and air.

This is a gross, but fairly accurate, picture of the economic life of this large community. One usually evokes amused surprise when inquiries are made about the nature of industry in Washington, because it is taken for granted that there is no place for it in the make-up of this city. With nearly everyone working for the government and everyone else providing him with services, it appears as though there is no need for any other form of economic activity. However, the resourcefulness of local enterprise has found a place for industry in the life of Washington.

The city attracts many from all parts of the country because it gives pleasure to them to see that a beautiful and appropriate environment has been created for their government. Therefore, the city must be

devoid of blemishes that detract from these pleasant surroundings, and industrial plants cannot locate near the centers of government and business and cannot belch sooty smoke. With the inhabitants of the area carefully guarding the residential nature of their neighborhoods, industry cannot locate within sight of them. Therefore, industry finds itself relegated to narrow strips of land adjacent to railroad tracks, not because it depends upon rail transport but mainly because no one else wants to be there.

It is the inobtrusive nature of local industry that leads many to believe that there is none in the Washington area and that none is needed. By national standards, local manufacturing is small. However, it has a heritage that dates back to the time the city was founded and is sufficiently progressive to respond quickly to changing conditions. Many of the firms produce items that are retailed to the public by local business while others provide service activities with the means to operate. Extensive construction in the area has given rise to heavy industries supplying these projects. The Federal government, whose preference for Washington has imposed severe restrictions on industrial growth, is indirectly responsible for the area's largest and foremost manufacturing group. The printing and publishing industries thrive because Congress and the Executive Department of the Federal government attract many national business, trade and civic organizations which wish to inform their memberships by news published locally. In recent years, the government has directly caused the introduction of the laboratory

type of industry into this area because of the ease of administering research projects when the directing agency and the research staff maintain close contacts.

Washington and its factors of industrial location. The location of industry in the Washington area is generally in agreement with locational theory. Most firms employ materials or semi-fabricated goods which, because of their weight, form and point of origin, do not contribute excessively to the value of the manufactured product. Therefore, they can forsake a material orientation and have been attracted to Washington to gain the advantages of a better distribution of their products. This is the case of firms manufacturing pharmaceuticals, instruments, truck bodies, tanks, store fixtures, electronic equipment, sheet metal products, concrete pipe and jewelry. Due to extensive local deposits of sand, gravel and clay, which materials are heavy and relatively expensive to transport as compared to the value of the finished product, the metropolitan area has an extensive industry which is located at the source of these materials and transports mixed concrete, washed gravel and clay bricks.

The soft drink beverage industry illustrates the use of ubiquities. Many beverage firms are located locally since the transportation cost of concentrates is much less than the cost of shipping the prepared drink. Therefore, bottling works add the major weight of the drink from the local water supply and market it directly from the plant. This is also true of the manufacture of inks and certain chemicals.

Heavy industries are particularly sensitive to transportation costs since they play a major role in establishing the source of the raw materials, the location of the plant and the extent of the competitive market. Extremely bulky and heavy concrete pipe manufacturing in Washington is limited to receiving supplies of bulk cement from certain mills, and competition from other firms located in Baltimore and Richmond becomes keener as the local product is transported over longer distances from the plant towards these cities. Economies in the cost of cement, transportation, and manufacture all tend to shift this delicate competitive balance and rearrange the market area for this local product. A similar situation exists with the marketing of mixed concrete where several local firms resort to the erection of temporary depots and mixing plants near the center of the job area they supply. This decreases truck hauling to a minimum and makes the product more competitive.

The locational effects of the cost of labor are well demonstrated by the local industrial situation. The prevailing high cost and the inadequate supply of labor in this area are serious deterrents to the further industrialization of metropolitan Washington. It not only discourages new firms from locating here, but it is also driving some local firms to other areas which enjoy a better labor supply. On the other hand, a sufficient and a relatively low cost supply of unskilled labor has attracted some industries that employ large proportions of this type of help to Washington. This is the case of the fertilizer industry which prefers the advantages of this type of labor supply over the long hauls to and from their plants.

The agglomerative or concentrating tendencies of industry are not too well illustrated in the Washington area. Industry in Washington is characterized by a predominant number of small companies. In spite of the heavy competition that exists within the local area and the inability of many firms to compete outside of Washington due to the high cost of production, there appears to be little or no tendency to create more efficient units by combining a number of small companies. Some form of agglomeration exists in the printing and publishing industry where a measure of integrated operation and a resulting economy is possible for the various plants through the use of common services such as typesetting.

Factors that affect the cost of manufacturing. A comparison of the performance of local industry with national averages shows that manufacturing in the Washington area is a relatively inefficient process. It is seen that locally larger labor costs are required for a unit of manufacturing value produced than the median for the country. More non-productive workers are required per productive worker by Washington industry than by the balance of the country. The predominant local marketing of the products manufactured in this area also attests to the need of Washington's industry to offset high production costs with economies of distribution.

The cost of manufacturing an article is composed of the cost of the materials that become a part of the article, the cost of labor directly engaged in its manufacture and a host of manufacturing expenses which are often referred to as overhead costs. The overhead cost of

manufacturing includes as principal items the cost of indirect labor, such as supervisory and administrative help; the depreciation of plant and equipment, which reflects their initial cost; the expenditures for power and supplies, taxes and insurance, repairs and upkeep, and land rent. Since industry attempts to select those locations which offer the greatest opportunities of decreasing its cost of manufacturing, an analysis of the factors that contribute to this cost is useful in assessing the industrial potentiality of the Washington area.

Many of the expenditures of manufacturing are specific in nature, since they depend on many elements, such as the process involved, the product produced and the managerial procedures employed by the individual firms. This is the case of the cost of materials, depreciation of facilities, the cost of power, supplies, insurance and plant maintenance. On the other hand, labor costs, taxes and land rent are general manufacturing costs since they are determined primarily by regional considerations. The specific cost factors are under the control of management and their variation is almost unrelated to the location of the industry. Therefore, the general cost factors are the pertinent ones that tend to establish the drawing power of the region.

The cost of labor. The high cost of Washington labor is one of the major hindrances to further industrial progress in this area. This is, of course, coupled with the highly competitive nature of the local labor market which raises the general wage level to points which are higher than those that exist in many cities. The relatively high cost of living and the high standard of living for the area force wage rates above comparable averages. The shortage of trained or adaptable personnel

for positions in manufacturing is due to insufficient industrial activity to justify the existence of a reservoir of available man power. In turn, this fact deters economic operation and discourages the location of new firms in this area. There have been several recent instances of desirable industries that wished to obtain sites in metropolitan Washington that had to abandon their plans when they were confronted with this labor problem.

Several approaches are available to improve the serious labor shortage that exists in metropolitan Washington. An obvious way to accomplish this is to increase the labor supply by inducing more persons to accept industrial employment. In this case, the expanding nature of this area's population is more of an aid than a hindrance. To make more labor available, it will be necessary to have young people who are preparing themselves for employment consider the advantages that industry has to offer them. The greatest drawback to the recruiting of personnel is the total lack of information in the community about local industrial efforts. A prospective employee tends to seek a career in an occupation that has appeal and whose future he can appraise. Since he has little or no idea about the operations of industry in his community, he will enter the employ of firms ^{with} which he is familiar.

It is necessary that the community be informed about the nature of local industry if it is to provide additional man power for its operation. This educational campaign should be conducted by the individual firms, both singly and in groups. An awakening of the interest of the inhabitants in the objectives and problems of productive activity in their city is essential if many of the hindrances which impede manufacturing efforts are

to be removed. Modern industry has found that it has great public appeal and frequently creates a friendly and understanding attitude in its neighbors by inviting them to witness and learn about factory operations. The industrial education of the citizens of Washington has been sadly neglected and therefore has great potentiality.

The schools are an excellent medium for reaching both the young people that are required for industrial operations and their parents. It is expected that most parents do not wish their children to engage in manual trades but want them to gain greater social recognition through the professions. Nevertheless, Buffalo has shown that the fine career opportunities offered by industry can overcome this natural reluctance. But it is important to note that it is industry that must take the initiative to make its case known and Washington firms have been notably involuble in this respect.

Not only must raw recruits be obtained for industrial positions but they must be trained to accomplish their job well. This can be done in Washington by the employer cooperating with the public school system. The local schools are equipped for training workers but cannot lead a trend in preparing students for a particular vocation if the promise of employment does not exist. Therefore, industry must provide their occupational requirements to the educators and assist them with the establishment of training material. Since this has been attempted in only a few cases, it is believed that Washington area firms are not aware of this opportunity and have failed to avail themselves of a much needed service.

The confining effects of a short labor supply as exists in Washington can be rendered less severe in a number of ways. With the existing highly competitive labor market, personnel turnover should be

reduced to a minimum. This does not necessarily imply higher wages but rather pleasant working surroundings and a considerate personnel policy. Continued on-the-job training permits employees to improve their position within the company without the costly recourse of seeking a position and advancement elsewhere. Several area firms reported considerable success with this type of approach to the labor problem.

The productivity of labor has a great influence on the cost of manufacturing. The capacity of an employee to produce can be increased by either: (a) improving his skill so he can turn out a better product in a shorter period of time, or (b) eliminating unnecessary waste effort, thereby simplifying the task and making a greater output possible. In the first case the unit cost of the product is reduced through the use of a well paid, skilled employee while in the latter case, a low priced employee can achieve the same result through work simplification. It is also common practice to resort to greater process mechanization whenever labor costs soar. This is economically feasible when the savings from the displacement of labor exceeds the cost of the machinery. These methods of reducing costs due to labor have been used successfully in many cases and should be attempted whenever applicable in those industries where the lack of labor, unqualified labor and high wage rates create severe operational problems.

Industrial firms in Washington find the competition with the Federal government for employees exceedingly keen. This is the case of office workers where the government is able to offer higher salaries than the private concerns. In the mechanical trades, it is claimed that the

lowered standards of quality and production of the local government plants have caused capable men in industry to accept employment in government and have returned a poorer grade of worker to the area labor market. In addition, private industrial firms resent the competition from what they consider to be the higher wages paid to skilled help by the government activities. This observation appears to be at variance with the basic method used by the government in setting its labor rates. It is the cardinal principle of the Navy Wage Board System that the wage rates for the mechanical trades are to be set so as to conform with comparable jobs in private employment in the immediate vicinity. This system which is followed by the Navy as well as other services, makes use of periodic area wage surveys. In this manner, Federal pay should follow the pattern set by private industry. The feeling of private firms that the government sets higher wages than they do can be substantiated only if the wage surveys use weighted averages which are not directly applicable. By regulation, these surveys cannot consider wage data from job shops, thus eliminating most private plants in the area from participating in the setting of the average rates. Therefore, data collectors must resort to approximating jobs and rely on the railroads, public utilities, bus lines, air lines, and some of the larger research and instrument companies of the area as their source of information.

The effects of local taxes. All of the outlying communities in the metropolitan area have indicated a need for further industrialization based on the revenue potentialities of this form of economic activity. Nevertheless, the survey of local industry has disclosed that taxation has reached the critical point in certain localities and is given as the

primary cause for the pending relocation of several plants. Since the local tax is an important locational factor, this appears to be at variance with the professed interest of governments to draw new firms into the area. If attempts are to be made to canvass far away states for new industries to bring back, it is shortsighted to give no attention at all to the fine industries that have already grown in the home community.

Land and zoning. The rental that must be paid by a manufacturer for his plant site is a general item of manufacturing cost which must be reflected by the selling price of the product. High land costs result in higher selling prices and decreased ability to compete with a rival product. In Washington, the related questions of the availability of land for industrial use and its cost are problems of considerable magnitude for the expansion of manufacturing. Prices as high as seven dollars per square foot are quoted for developed land in certain localities. These exorbitant prices are caused by the inadequate supply of land that has been set aside for industry.

Suburban area planners have been impressed by the heavy influx of new residents into their communities and the slow growth of industry. Therefore, the zoning process has set aside most of the land area for residential use and very little for industry. Furthermore, in nearly all cases, the allocation to industry has been whatever was left over after the needs of the residential group and of business had been taken care of. The resulting poor quality and high price of most industrially zoned land has caused firms to request rezoning actions with subsequent misunderstanding on the part of residents who cannot appreciate why new

industrial land is required when the old is not used. This land is insufficient because of the reluctance of most owners to have it zoned for industrial use since it would not be sold as quickly as if it were intended for other purposes. This unsatisfactory condition is made worse by the attitude of many realtors in the area. Because of the little interest shown to purchase this land, real estate operators have become convinced that this region will not support industrialization and therefore their valuable promotional efforts are not being made available.

The real estate situation is also conditioned by the fact that industrial zoning invariably follows the rail lines and much of the available land is owned by the railroads. Inquiry has disclosed that the railroads generally insist that the buyer be capable of originating large quantities of rail traffic for their lines before a sale is made. This position is an unfortunate one since Washington's industry is composed of many small plants whose small volume of freight is usually trucked. On the other hand, a shipper of bulk commodities may be in an enviable position since the railroads will make their land available to him at a cost based on the expected size of his shipments.

In most localities, zoning has been a very restrictive instrument. With the exception of one community, the zoning regulations are negative in character in that they prohibit industrial activity by class rather than by considering each case on its own merits. Although the nuisance value of a stockyard cannot be questioned, modern equipment, processes and construction methods can make a once objectionable glue factory as inoffensive and acceptable as a laboratory project. Many activities are banned by zoning regulations because of the belief which

was once widespread that they would always contaminate a neighborhood. Progressive zoning as employed in other sections of the country recognizes the advances made in industrial practice and bases its classification of activities on functional factors. This method evaluates each firm by determining the amount of noise, dust, smoke and smell that its processes will emit. Area planners in Washington are aware of this trend but believe that government bodies will have to continue to exercise good judgment when reviewing individual zoning applications, since it will be many years before the performance rating system gains local acceptance.

The failure of zoning to provide sufficient land for industrial purposes has caused many concerns to crowd into small areas. The resulting high demand for sites has created high land values and rentals so that construction has been inferior and land has been used very sparingly. Inadequate parking and storage facilities have made these industrial areas uneconomical to operate and impossible to expand. They have become blighted areas and have been held up by the citizens as examples of the degenerative effects of industrialization on the community. This is an unfortunate attitude and is the one that has colored much of the relations between industry and the inhabitants of the area. Understanding of the basic causes and cooperative effort by industry, government and the citizens can produce a more harmonious and a more mutually profitable situation.

The movement towards industrialization. The post-war movement of large populations to the suburbs has created an intense problem for the governments of the outlying areas. The phenomenal and rapid growth of the Washington suburbs has severely dislocated public services. In turn, the

urgent need for new schools, larger police forces and more public works requires the raising of additional revenue at an unprecedented rate. With the suburbs being predominantly residential in nature, the tax load has fallen heavily on all and such clamor has been made to find new sources of local revenue. This situation has been gathering momentum only during the past few years and its magnitude is only now becoming apparent. Government was first to notice the serious shortage of public services and the need to finance remedial measures. Business soon became aware and attempted to ease the problem by creating greater wealth in the communities through the introduction of new business and commercial enterprises. Faced with further increases in the tax rate and continued discontent from the citizens and business, the municipalities of suburban Washington are investigating with considerable interest the revenue potentialities of industry.

All of the governments in the Washington metropolitan area, including the District of Columbia, now favor increased industrialization of their communities. The enthusiasm for this action varies with the locality and depends upon the need for increased revenue, the effectiveness of industry's contributions in relieving the problem and the political situation existing in the community. A county government operating under a ten to fifteen million dollar budget can readily relieve much of its concerns over fiscal matters if some of its unoccupied land area is made available to carefully screened industrial firms having a high tax potentiality. On the other hand, the District government with its annual budget of about \$140 million would require an enormous amount of industrial development to appreciably affect its fiscal situation. Therefore,

the District of Columbia with its limited amount of undeveloped land area will not play an aggressive role in promoting new industry. On the other hand, Prince Georges County, with perhaps the most serious financial problem, has the greatest incentive to attract new firms to the county. Of all the communities that were investigated, Prince Georges County is the only one that has leaders in government and among its citizens that are convinced that industrial growth is a prime necessity and have demonstrated this conviction by assuming an understanding attitude towards industrial problems. A campaign to aid industry in locating in this area can be expected to be waged sooner and with more vigor than elsewhere.

Because of the economic character of its inhabitants, Montgomery County will resist industrialization the most. Most of the discontent in industry is found in this county, especially in Bethesda. Much post-war industrial development took place in the county. However, this has been stopped and a trend is being established in which firms are re-locating elsewhere. Returns from industry show that unrest over local taxes is much more prevalent in Montgomery County than elsewhere. The attitude of the inhabitants is still not sufficiently wholesome to assure full success to a campaign to invite new industry to the county. No group of citizens is outspokenly against industrialization, but their requirements will be difficult to meet by prospective firms. Silver Spring, with its progressive attitude of wanting to grow and become self-sufficient, has sufficiently good leadership among its business population to go a long way in achieving a measure of industrialization. This would be aided

if the community became an incorporated city and thereby became more independent in deciding its future. The county government, while favoring industrialization, must assume a conservative attitude because of a lack of complete unity among its citizens on this question. It wishes to educate the inhabitants of the county on the benefits to be derived from industry as a precedent to any action by the government to invite new firms. The county will wait for the economic base survey to be completed before taking a firm stand on industry.

From the standpoint of natural attributes, the city of Alexandria has the greatest industrial potentiality. It is excellently located for the economical and fast transport of both bulk and small commodities. It is a rail center; it has a large international airport a short distance from its downtown section; it has river docking facilities for ocean going vessels and has a good through highway. The city has acquired recently the best industrial tract in the metropolitan area and can be opened to large scale industrial development with ease. The city once had a thriving industry and now has one that is appreciable in size. The industrial atmosphere of the city is complemented by a large number of resident railroad families who would not be averse to engaging in manufacturing employment in contrast to the reluctance of those communities with a predominant white collar population. Alexandria, being a city, has the further advantage of greater unity of purpose among its inhabitants so that a program of industrialization should not meet with too many diverse reactions. The organized business community of Alexandria is the only one in the metropolitan region that is actively engaged in

sponsoring its area as a site for industry. The businessmen of the city have an active plan to build structures to house manufacturing firms, an action that should appeal very strongly to industry. The city government, while favoring industrialization, currently suffers from a lack of unity among its conservative and more progressive elements so that strong action to exploit the area's natural advantages may not be forthcoming in the immediate future.

Arlington County is also faced with a serious fiscal problem and all groups favor some industrial expansion. However, due to very limited land facilities and the prevailing interest in the promotion of additional retail trade areas, it is not expected that much promotion will be undertaken by the county to attract industry. Due to its accessibility to the downtown area of Washington, it is expected that a number of small service industries will find the county a suitable site. Neighboring Fairfax County has little industrial activity now but may benefit considerably from the desire to locate activity on large tracts of land away from disturbing neighborhood influences. It offers an area which is mostly outside the critical industrial dispersion zone and should attract defense oriented plants.

The task of industrialization. It is evident that there is need for additional industrial activity in metropolitan Washington. Only a few years ago the suggestion would have been met with wonderment, but today it is a cold reality. Organized groups look upon industrialization with favor but many individuals are not aware of the role that it is expected to play in the community. It is evident from this study that industry will not expand if environmental conditions are not improved.

There is a sizable task to be accomplished not only in seeking new industries but in making the region suitable to receive them.

The metropolitan area is not presently organized to undertake the many tasks involved in the pending industrialization. Government and business are expected to assume most of the responsibility for accomplishing the objectives of such a program with the aid of an occasional spirited group of citizens. All of the communities desire to attain the same goal and face the same problems, but there is no indication of joining forces to make the accomplishment of the job easier and more complete. Therefore, it would be highly desirable if the newly formed Metropolitan Area Council, with its representation from all Chambers of Commerce in the area, took the lead by preparing an appropriate program and by coordinating the efforts of the individual communities. Lacking unified direction, the respective campaigns may cause confusion, resentment and a considerable amount of duplicated effort.

To succeed in drawing additional industry to Washington, it is necessary that those engaged in directing the project understand fully the nature of industry and its locational problems. In 1929, an extensive survey was conducted to determine the reasons for the choice of location of different manufacturing groups. The survey covered more than ten thousand plants and the results are summarized below with the reasons shown in their order of importance:⁴⁰

Food Group

1. Markets
2. Materials
3. Transportation

Lumber Group

1. Markets
2. Labor
3. Transportation

⁴⁰ Gerard W. Holmes, Plant Location (McGraw-Hill, 1930)

Food Group, Cont.

4. Labor
5. Living conditions
6. Available factory buildings
7. Power
8. Near related industries

Leather Group

1. Labor
2. Available factory building
3. Markets
4. Materials
5. Near related industries
6. Transportation
7. Living conditions
8. Financial aid

Machinery Group

1. Markets
2. Labor
3. Transportation
4. Available factory buildings
5. Financial aid
6. Materials
7. Living conditions
8. Power

Lumber Group, Cont.

4. Materials
5. Available factory buildings
6. Living conditions
7. Power
8. Near related industries

Textile Group

1. Labor
2. Markets
3. Available factory buildings
4. Transportation
5. Power
6. Materials
7. Living conditions
8. Financial aid

Chemical Group

1. Markets
2. Transportation
3. Labor
4. Materials
5. Available factory buildings
6. Living conditions
7. Power
8. Near related industry

It is seen from the above list of locational factors that each industrial group is motivated by a different set of desires. Therefore, it is necessary for the communities to make a careful study of the extent and nature of industrialization that they require. Some of the outmoded concepts about industry that are prevalent in this area should be carefully reviewed to prevent them from becoming perpetuated in the new regime. Then the type of industrial firm that can be accommodated should be determined based on the needs of the community and its ability to furnish the industry the necessary economic environment. Most communities in the area have expressed a desire for the laboratory type of activity because of its pleasant atmosphere and the high caliber of its employees. However, it might prove that a more concentrated form of industry such as an automobile assembly plant, a food preparation plant or a television factory may be more effective in solving the area problems. The Washington metropolitan area with its large population can attract many regional distributing plants whose products must now be shipped to the city over long distances. Furthermore, with some improvements in the local land and labor problems, this area can support a large number of manufacturing plants that furnish a national market. When the desirable type of industry has been identified, it will be possible to study it in detail to ascertain the relative importance of the factors that determine its location and select a site in the metropolitan area that will approximate its needs. With a knowledge of the requirements of industry and the advantages of a Washington location, it will be possible to determine which individual firm is susceptible to relocation.

Industry has been neglected so long in Washington that there is a universal belief that it is not wanted and will not thrive here. If a promotional campaign is to succeed, it is necessary to dispel this belief. Not only must this information be spread through all industrial channels but a great deal of convincing must be done in local circles since, as in the past, much of the response to the appeal for new industrial firms will come from local residents. The campaign should make strong use of local industry since it has the best understanding of environmental conditions and will gain considerably from the new industrialization. Although not in high favor, special inducements should be considered whenever the community is expected to gain appreciably from a new industry which would otherwise be hampered severely if it located there due to local conditions. The construction of industrial buildings by the community to sell or lease to industry would simplify considerably the problems of a firm that is seeking a new site and would act as a strong inducement to attract it.

Much can be learned from other localities about successful methods for assuring the continued development of local industry. Business can go far in relieving the problem of many of the smaller firms who encounter difficulty with local banks when arranging for credit. A revolving fund initiated and supervised by business with or without the aid of industry will permit the easy expansion of industrial activity. The active search by organized business and industry for new and promising products to be manufactured locally creates a very beneficial effect in the industrial community. Organized efforts to advertise the local products on a national scale also aids industrial development.

Industry in Washington must subsist alongside the many agencies of the Federal government. This fact is immensely important in the case of research and development work being accomplished by private firms under the direction of the government. Because of the unpredictable nature of this type of work, it is essential that frequent and close contacts be maintained between the research personnel and the government agency that directs it. Therefore, the Washington area has great possibilities as a research and development center. This attraction of Washington has been recognized by a number of firms who must coordinate their efforts closely with the government and have therefore located in the area. This natural advantage of metropolitan Washington should be exploited because it will increase the number of firms engaged in a highly desirable form of activity and will also attract a group of companies that are necessary to produce the equipment and material required by those engaged in research and development.

In order that the industrialization of the Washington area be effective, it must be motivated by a sincere desire to aid the community and to offer industry the best operating conditions possible. Industry will not only help to relieve the financial problems that face the municipalities, but it will offer the residents of the area increased economic opportunities. With the current lack of diversity in occupational pursuits, young people in Washington are faced with the prospect of either being employed by the government or entering some phase of business activity. An increased emphasis on industry will open large fields of opportunity to the youth of Washington as it has done elsewhere with admirable results.

BIBLIOGRAPHY

A. Books

- Holmes, Gerard W., Plant Location, McGraw-Hill Book Co., Inc., 1930
- Latimer, Louise Payson, Your Washington and Mine, Charles Scribner's Sons, 1924
- Friedrich, Carl J., Alfred Weber's Theory of the Location of Industries, The University of Chicago Press, Chicago, Ill., 1929.
- Dannison, S. R., The Location of Industries and the Depressed Areas, Oxford University Press, London, 1939, 216 pp.
- Hoover, Edgar M., The Location of Economic Activity, McGraw-Hill Book Co., Inc., 1948, 310 pp.
- Floyd, Joe Summers, Jr., Effects of Taxation on Industrial Location, The University of North Carolina Press, 1952.
- McLaughlin, Glenn E., Growth of American Manufacturing Areas, University of Pittsburgh, Bureau of Business Research Monographs No. 7, 1938
- Tindall, William, Standard History of the City of Washington, H. W. Gray Co., Knoxville, Tenn., 1914.

B. Periodical Articles

- Value of Manufactured Products, 1943, Sales Management, L III, No. 10, May 1944
- Why New Manufacturing Establishments Locate in New England: August 1945 to June 1948, by George H. Ellis, Monthly Review, Federal Reserve Bank of Boston, Vol. 31, No. 4., April 1949
- Trends and Forecasts in Planning, Walter H. Blucher, Public Management, Journal of the International City Managers' Association, Dec. 1952.

C. Encyclopedic Articles

- Encyclopedia Americana, Vol. 14, 1948 edition.

D. Bulletins

- Metropolitan Washington After 150 Years: Its Economic Expansion, Bureau of Business and Economic Research, University of Maryland, College Park, Maryland, Vo. IV, No. 1, June, 1950.

Washington, Present and Future, A General Summary of the Comprehensive Plan for the National Capital and its Environs, National Capital Park and Planning Commission, Washington, D.C., Monograph No. 1, April 1950.

Bureau of the Census, Series P-60, No. 4

Census of Manufactures: 1947, U. S. Department of Commerce

Special Inducements In Industry Location in Oregon, Bureau of Business Research, School of Business Administration, University of Oregon, Eugene, Oregon, 1940.

Master Plan of Residential Land Use of Chicago, The Chicago Plan Commission, Chicago, 1943

People and Land, National Capital Park and Planning Commission, Washington, D. C., Monograph No. 2, June 1950

The Economic Survey of the Land Uses of Arlington County, Virginia, prepared by Homer Hoyt Associates, September, 1951.

Union Scales of Wages and Hours in the Printing Trades, Preliminary Reports from Various Regional Offices, U. S. Department of Labor, July 1952.

Salaries of Office Workers in Large Cities, 1949, Bulletins Nos. 960-1; 960-2; 960-3; 960-4; U. S. Department of Labor, Bureau of Labor Statistics.

Industrial Dispersion Guidebook for Communities, Domestic Commerce Series No. 31, U. S. Department of Commerce

E. Newspapers

The Washington Post, January 28, 1953

The Washington Post, February 21, 1953

A P P E N D I X

A

Washington, D. C.
January 5, 1953

Mr. W. R. Kline

Washington, D. C.

Dear Sir:

In conjunction with a graduate research project at American University, I am conducting a survey to determine the factors that cause industry to locate in Metropolitan Washington. Besides its academic value, this study is expected to offer data for better industrial planning in the Washington area.

To gather material for this project, I am circulating the enclosed questionnaire to certain selected firms. The data will be treated in a confidential manner and will be used primarily in preparing group statistics. I hope you will find it possible to furnish this information. The enclosed self-addressed, stamped envelope is for your convenience in returning the questionnaire.

Please accept my thanks for your help in making this survey possible. I shall be glad to make a copy of the results available to you.

Sincerely yours,

LOCATIONAL SURVEY OF INDUSTRY
IN METROPOLITAN WASHINGTON

1. Name of firm -

2. Total number of persons presently employed -

3. (a) Nature of product or service produced -

(b) Is product manufactured in your plant? Yes _____ No _____

4. Number of years that firm has engaged in this activity -

5. Number of years in metropolitan Washington -

6. (a) Type of organizational unit:

This is the main plant _____ Branch plant _____ The only plant _____

(b) If this is the main plant, give location of branches -

7. Portion of total output of plant which is sold in metropolitan

Washington: None _____ 1/3 _____ 2/3 _____ All _____

8. Portion of total output of plant which is sold to the Federal

Government: None _____ 1/3 _____ 2/3 _____ All _____

9. What were the reasons that caused your firm to establish itself
in the Washington metropolitan area?

(Use reverse side for additional space)

10. Were you influenced to locate here by the advice of government or
business groups? Yes _____ No _____ Do not know _____

11. Was a study made of the desirability of location in other industrial areas before selecting your present site?

Yes _____ No _____ Do not know _____

12. Is the supply of good quality labor sufficient?

Unskilled: Ample _____ Just enough _____ Not enough _____

Skilled: Ample _____ Just enough _____ Not enough _____

Clerical: Ample _____ Just enough _____ Not enough _____

Supervisory, professional and administrative:

Ample _____ Just enough _____ Not enough _____ Imported into area _____

13. Transportation facilities for employees -

Adequate _____ Some inconvenience _____ Not adequate _____

14. (a) Is your plant adequate for your present work? Yes _____ No _____

(b) Why is it deficient?

15. By comparison with other areas, is your local tax cost too high?

Yes _____ No _____ May cause moving away _____

16. Does the attitude of the local government and the community towards your business contribute to your progress? Yes _____ No _____

17. Nature of competition with other firms for sales:

Light _____ Moderately heavy _____ Heavy _____

18. (a) Are your labor costs generally higher than those that prevail in other industrial areas? Yes _____ No _____

(b) Do they affect your ability to compete outside this area?

Have no effect _____ Moderate effect _____ Strong effect _____

19. (a) Does your firm plan to move away? Yes _____ No _____

Will move within metropolitan area _____ Moving out of area _____

(b) Reasons for considering moving away -

20. (a) Do you expect an appreciable expansion of activity during the next 5 years? Yes _____ No _____
- (b) Will this require moving away? Yes _____ No _____ Undetermined _____
- (c) Will this require expansion of your plant? Yes _____ No _____
21. Financial institutions in this area have been:
- Willing to finance industrial activity _____ Reluctant to grant credit _____
- Do not know _____
22. (a) Plant is: Completely unionized _____ Partly unionized _____
- Not unionized _____
- (b) Relations with unions have been:
- Satisfactory _____ Have caused some irritation _____
23. How can the Washington metropolitan area be made more attractive to industry?

Questionnaire prepared by:

Company titles

ProQuest Number: 28796761

INFORMATION TO ALL USERS

The quality and completeness of this reproduction is dependent on the quality and completeness of the copy made available to ProQuest.



Distributed by ProQuest LLC (2021).

Copyright of the Dissertation is held by the Author unless otherwise noted.

This work may be used in accordance with the terms of the Creative Commons license or other rights statement, as indicated in the copyright statement or in the metadata associated with this work. Unless otherwise specified in the copyright statement or the metadata, all rights are reserved by the copyright holder.

This work is protected against unauthorized copying under Title 17, United States Code and other applicable copyright laws.

Microform Edition where available © ProQuest LLC. No reproduction or digitization of the Microform Edition is authorized without permission of ProQuest LLC.

ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346 USA