The Economic Base of Denver: Implications for Denver's Fiscal Future and Administrative Policy

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THE ECONOMIC BASE OF DENVER: IMPLICATIONS FOR DENVER'S FISCAL FUTURE AND ADMINISTRATIVE POLICY

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Charles P. Rahe

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SUMMARY AND CONCLUSIONS

This study deals with two related questions: (1) how does the economic base of Denver city and county influence city government, especially as regards revenue and expenditure, and (2) how does (and can) city government influence the economic base to bring about desired community goals?

The main finding of this study is that greater concern with local government policies designed to encourage or discourage (or both) business-economic activity is justified and could well be rewarded with beneficial results. The following paragraphs further develop this finding.

Impact of the Local Economy on Denver and Its Government

The economy of Denver city and county impacts the area by providing employment opportunities for residents and by providing a tax base for the local government revenues. Denver, unlike many large, Eastern cities in the United States, has been found to have a basically healthy economy. As compared with the situation in some of the declining cities in the nation, Denver's economic base is relatively stable and diverse.

Despite this finding of basic strength, there have emerged from this study a number of indicators which suggest that unfavorable trends observed in other cities may be gaining momentum in Denver. A few of these trends in employment, income and population are outlined below.

1. Population in Denver city and county has grown scarcely at all in recent years, and averaged only 0.1 percent per year from 1960 to 1970.

Employment, on the other hand, has managed to grow at about the national rate overall during the 1960s because of the large number of workers who commute daily to Denver. Whether Denver employment will continue to grow at the national average throughout the 1970s is debatable, and whether it will continue into the 1980s is very questionable for reasons outlined below. City administrators might consider the trends discussed below in terms of planning for the future.

2. Denver's employment growth has not been as great as that of the surrounding counties in the recent past, and this trend is expected to continue. As a result, Denver will account for a continually shrinking share of the economic activity of the Standard Metropolitan Statistical Area (SMSA) in terms of employment and other indicators.

3. While the trend in the past for firms to migrate out of Denver has not been great, evidence which emerged from surveys done in this study indicate that the trend may accelerate. More of the firms sampled, for example, would presently consider moving out of Denver than would consider moving in. Many firms in Denver feel a move from the city and county would result in lower rents, taxes and other costs while those outside the city feel it would cost more to move into the city. Since there is evidence that these impressions are accurate, over the long pull attitudes like this tend to be reflected in actual migration patterns.

4. In addition to intra-urban migration patterns, a tendency has been observed for new industry coming to Colorado to avoid the Denver city and county area locating instead in the other communities in the SMSA.

5. Related to employment change is the occupational structure of the city. Denver's share of the lower-paying and lower skilled occupations (e.g., laborers) is increasing over time while the share of professional,

technical, and other skilled, high income occupations is declining. This trend is seen as having a sizeable impact on tax collections over time as sales and property tax revenue growth is dampened.

6. Dramatic changes in income have been observed in Denver which indicate that the city is falling markedly behind both the nation and the rest of the SMSA in the rate of income increases. For example, the median family income in the four outlying SMSA counties has risen from a level $372 below that of Denver in 1950 to $1,801 greater in 1970.

7. This income trend is related not only to the occupational mix, but also to the age structure and educational characteristics of Denver. The population of Denver is getting relatively larger in the very young and very old age groups, but not in the more productive, higher income middle age groups. Also, a larger percentage of the labor force is in the two lowest educational categories in Denver and a smaller percentage is in the three highest categories than in the rest of the SMSA.

8. In sum, Denver's population characteristics, and trends in population change, are beginning to resemble those of older urban core cities. The trend observed overall is for Denver to be relatively more populated by: the less educated; the less easily employed; the elderly; and two additional groups discussed in Chapter 2, the poor and racial minorities. Each of these characteristics present unique problems to local government, and each is to some extent related to the economy in the sense that the economic base is either part of the cause or could be part of the solution to the problems created. (See additional details in Chapter 2).

It is clear that the population and employment trends now being observed in Denver could potentially have far reaching effects on the city and county government. For instance, the larger the dependent population the greater

may be the welfare burden. Also, the larger the percentage of those with low education and low-skill levels the greater the tendency for higher unemployment rates. Similarly, the higher the unemployment rate, the lower the average income level, and the smaller the economic base, the more difficult it is to generate revenues to support expanded public services. This is roughly descriptive of the problems that have beset central cities in other parts of the nation. It is alarming that these trends are being observed in their nascent stage in Denver, but it is fortunate that they are being observed early enough to allow time for corrective action.

In order to better understand the impact of business-economic activity on the city revenues and expenditures, three industries have been studied in some detail. The three industries selected were electrical equipment and supplies manufacturing (SIC 36), wholesale trade (SIC 50) and retail eating and drinking establishments (SIC 58). These industries were selected for a number of reasons including their healthy growth rate, the type of people they employ, their environmental cleanliness, and others (see Chapter 4).

These three "key industries" outperformed the national growth rate in recent years, and the reasons for this are presented in chapters 5, 6, and 7. The question raised in Chapter 11 is what was the impact on Denver revenue and expenditure due just to the higher growth rate in these key industries. The answer to this question, and other findings of that study are summarized below.

1. Revenue in Denver is significantly impacted by the three key industries. As much as $1,292,098 is estimated to have been realized directly by the city in 1970 in property, sales and occupational tax receipts (excluding school property taxes) from locally-induced growth in just these three industries. With school property taxes the total is estimated at $2,494,614.

(This revenue is due just to the growth in these industries in excess of the national rate.) Stated alternatively, if these industries had grown at just the national rate, none of this revenue would have been realized. If the three key industries had failed to grow at all, as has been the case in some older eastern cities, the revenue loss to the city would have been substantial.

2. Different industries have markedly different revenue impacts on the city and county government. In SIC 36 (electrical equipment and supplies manufacturing), for example, total revenue to the city and county from property tax, sales tax and occupational tax revenues was $686,927 in 1970, or $269 per employee. In SIC 58 (retail eating and drinking establishments) total revenue from the three sources was $391,745 in 1970, or $188 per employee. The contribution to revenue of SIC 50 (wholesale trade) was $312,426 in 1970, or $232 per worker.

3. In considering industries which might be appropriate to encourage in shaping Denver's economic base, the city might, among other criteria, consider the relative revenue impacts of the various industries, selecting those which best meet the overall needs and priorities of the city.

4. There is also a substantial impact on city expenditures from employment increases. However, due to the fact that many workers live out of Denver county and since some expenditure categories are individual and economies of scale and excess capacity in existing city systems further muddy the analytical waters, it is not possible to identify per worker incremental spending demands with much certainty. It has been estimated that Denver may have experienced a per worker average expenditure of $275 in 1970.

5. It is not clear what the net fiscal benefits are to growth in the key industries. However, it is possible that the city would experience a positive net revenue impact depending upon:

a. Where new industry locates--locations in existing facilities or areas already supplied with social overhead capital facilities would involve much lower net costs than locations in new, previously undeveloped areas that needed to be supplied with sewage, water, and other services. Especially in Denver, since there has been an observed tendency for some firms to prefer out-of-Denver locations, new industry might be encouraged to occupy facilities being vacated by out-migrants. In this case, it is fairly clear that the net effect of the new location would be positive in terms of local revenues.

b. The type of industry involved--industries with high fixed costs and thus high values of fixed assets contribute more in property taxes than more labor-intensive activities. Similarly, firms that pay higher than average wages will contribute more to the sales tax base (income) than lower paying activities. In a similar way, each industry will have a unique revenue contribution to make and the contributions of each can and should be weighed.

More research is needed aimed specifically at the revenue and cost aspects of new industry location in order to conclusively accept or reject the hypothesis that the net effect is positive. (See details in Chapter 11).

These results suggest the importance of the city's economic base to the city fisc. They also indicate that the mix of industries is significant in terms of their net revenue impact.

In addition to revenue impact, this study has suggested an additional group of criteria that might be considered by city decision-makers in choosing key industries. These criteria, listed below, were used to select key industries for this study, but are believed to have, in conjunction with other factors, a broader applicability.

1. Impact on Unemployment.--Extent to which the type of labor employed in the industry matches the characteristics of the unemployed in Denver.

Should such industry be encouraged it would tend to help correct the differentially high unemployment rate in Denver among selected groups.

2. Environmental Acceptability.--Extent to which the industry possesses unacceptable environmental externalities. Could be used to select industries to discourage, but in this study used to select industries lacking negative spill-overs for possible encouragement.

3. Susceptibility to Local Influence.--Extent to which the industry might be susceptible to policy tools and actions of local government. Effort made to key on industries with a high degree of local orientation.

4. Orientation to CBD-type Services.--Extent to which the industry depends upon central business district related suppliers and services. Rationale used to identify industries which might find locational advantages to central location. This relates to the local influence factor.

5. Income Generated.--Extent to which the industry pays wages which are high relatively. Higher income levels tend to be reflected in higher taxes and better community quality, but the criterion is partly offset by the need to provide jobs for unemployed which tend to be concentrated among lower income levels.

6. Growth Potential.--Extent to which the industry evidences a positive growth trend in the nation, rather than just in the region.

7. Prospect for Labor Displacing Technological Change.--Extent to which the industry has tended to lay off its labor force and replace the productive capacity with capital machinery. The greater this tendency the less the impact on employment, but the greater the impact on property tax revenue generation.

While it would be difficult to find many industries (or any, perhaps) that rank high on all criteria, these factors can serve as guidelines for

evaluating the contribution growth of the industry would make in the local economy (See Chapter 4 for details).

This still leaves unanswered the question what industries, aside from the three key industries studied herein, are likely candidates for addition to Denver's economic base. While the answer depends upon many factors, some guidance is provided by the shift-share analysis of employment presented in Chapter 3. This analysis, in essence, divides total employment increases over time into three parts: (1) that attributable to the overall national growth rate, (2) that due to the particular mix of industries in Denver, and (3) local forces which distinguish growth of an industry in Denver relative to other localities.

Using data for a recent three-year period, Tabls S-1 indicates a useful classification of industry in Denver.

1. The industries in Group 1 have both a positive industrial mix and a positive regional share (local growth) component. This means that these industries are not only outperforming the national growth rate but are growing more rapidly in Denver than elsewhere in the United States. For these reasons, these Group 1 industries might be considered good ones to focus on. The total change column in Table S-1 indicates that magnitude of absolute growth in each industry.

2. Group 2 is divided into two parts. Group 2a industries have a positive industrial mix component of employment growth and thus are industries which nationally are outperforming the overall rate of national growth. However, Group 2a industries have a negative regional share component which indicates that they are performing less well in Denver than in other parts of the nation. This fact could provide a clue that certain local factors might be

TABLE S-1

THREE GROUPS OF DENVER INDUSTRIES BASED ON CATEGORIES OF EMPLOYMENT CHANGE FROM 1968-1971

Industry	Employment 1968	Employment 1971	Components: Industrial Mix	Components: Regional Share	Total Change	Regional Share as a Percentage of Total Change
GROUP 1						
Agriculture, Forests, Fisheries	182	482	15	253	300	84.3
Transportation and Public Utilities	22403	27304	173	837	4901	17.1
Retail Trade						
Apparel and Accessories	2543	3106	20	101	563	17.9
Furniture and Furnishings	1339	1860	9	280	521	53.7
Eating and Drinking Places	8389	12325	1375	1104	3936	28.0
Finance, Insurance, Real Estate	19444	24452	1138	492	5008	9.8
Services						
Hotels and Lodging	3906	5125	312	229	1219	18.8
Misc. Business Services	6039	10232	2307	837	4193	20.0
Automobile Repair	2047	2623	91	129	576	22.4
Misc. Repair	915	1182	53	55	267	20.6
Amusement and Recreation	1306	1764	86	145	458	31.7
Legal Services	1093	1820	186	351	727	48.3
Misc. Services	2469	3842	458	486	1373	35.4
Unclassified Establishments	392	913	329	124	521	23.8
GROUP 2a						
Manufacturing						
Administrative and Auxiliary	1721	1874	301	-447	153	-292.2
Retail Trade						
General Merchandise	9074	9199	822	-2273	125	-1818.4
Food Stores	4651	4887	149	-721	236	-205.5
Auto Dealers and Service Stations	4613	5071	32	-375	458	-81.9
Misc. Retail Stores	4441	5254	94	-53	813	-6.5
Administrative and Auxiliary	2191	3225	763	-110	1034	-10.6
Services						
Motion Pictures	838	677	5	-312	-161	193.8
Medical and Health	12327	17199	4482	-1751	4872	-35.9
Non-Profit Organizations	4350	5681	1538	-962	1331	-72.3

TABLE S-1 (Continued)

Industry	Employment 1968	Employment 1971	Components: Industrial Mix	Components: Regional Share	Total Change	Regional Share as a Percentage of Total Change
GROUP 2b						
Mining	2687	3682	-503	1031	995	103.6
Contract Construction	12301	16450	-786	2799	4149	67.5
Manufacturing						
Ordnance and Accessories	297	1330	-6	987	1033	95.5
Textile Mills and Apparel	1420	1748	-239	320	328	97.6
Lumber, Wood, Furniture, Fixtures	1174	1723	-222	567	549	103.3
Paper Products	786	1093	-85	256	307	83.4
Printing and Publishing	5196	6071	-331	304	875	34.7
Chemicals	682	1458	-51	708	776	91.2
Petro, Coal, Rubber, Plastics, Leather	7619	8917	-1307	1282	1298	98.8
Stone, Clay and Glass	943	1038	-175	106	95	111.6
Primary and Fabricated Metals	2694	2957	-367	162	263	61.6
Machinery, exc. Electrical	2836	3240	-305	217	404	53.7
Electrical Equipment and Supplies	1622	3799	-155	2051	2177	94.2
Transportation Equipment	642	1214	-131	591	572	103.3
Instruments and Related Products	664	830	-17	67	116	40.4
Misc. Manufacturing	1020	1317	-154	273	297	91.9
Wholesale Trade	23651	30502	-321	3064	6851	44.7
Retail Trade						
Building and Farm Materials	1210	1495	-106	181	285	63.5
Services						
Personal Services	4506	4498	-894	104	-8	-1300.0
Educational Services	3598	5001	-318	1096	1403	78.1
GROUP 3						
Manufacturing						
Food and Kindred Products	7480	7052	-1323	-404	-428	94.4

GROUP 1 - Positive industrial mix and positive regional share.
GROUP 2 - Industrial mix and regional share with different signs; a is positive industrial mix and b is positive regional share.
GROUP 3 - Negative industrial mix and negative regional share.

Source: Table 3-2.

holding them back. The city might investigate what these factors are and what could be done to mitigate them.

Group 2b, on the other hand, contains industries with a negative industrial mix and a positive regional share. Thus, this situation is the reverse of Group 2a industries. This set of component conditions would seem to indicate that the industries themselves are not performing well nationally but are overcoming national trends locally. Here, too, local policy-makers might find grist for further analysis.

3. Group 3 industries have both a negative regional share and industrial mix. In this particular combination of characteristics it is difficult to perceive redeeming value.

The analysis of growth trends in these industries provided in Chapter 3, and the selection criteria discussed above and in Chapter 4, provide a useful framework for evaluating the overall impact of shifts in industries comprising the Denver economic base.

It is a major conclusion of this research that the economic base of Denver is so great a determinant of the future well-being of the city that it should be accorded close attention and high priority in governmental planning and decision-making.

Potential Impact of the City-County Government on the Economic Base of Denver

In view of the apparent importance of the Denver economic base to the future course of both private and public well-being, it is useful to consider some ways in which the city could influence the amount of activity and/or the mix of different activities constituting that base.

A number of viable alternatives suggested themselves as being consistent with appropriate city action. These might include: (1) encouragement of all or selected industry, (2) discouragement of all or selected industry, and

(3) encouragement of some and at the same time discouragement of some industry. All could contribute to the future vitality of the city if actions were chosen appropriately. One course of action which seems ill-advised is inaction.

Chapter 12 presents what has been learned from this investigation about policy alternatives and their relative efficacy in influencing industrial location. The use to which such policy tools can be put may be determined by proper authorities. In a pioneering study in this area, Ruth Mace said that ". . .there is little question that these (local) officials through action or inaction affect industrial location determinations."[1] It is a purpose of this analysis to present facts to help city administrators understand the implications of their decisions upon the industrial location decision process.

Categories of City Influence

While a large number of policies available to the city will be considered, they can be summarized well under seven main headings.

1. Efficient/effective municipal management
2. Continuing inventory of city facilities/services
3. Special city improvement efforts
4. Provision of information/public relations
5. Provision of industrial land/buildings
6. Other direct assistance (grants) to industry
7. Other areas of influence

Each of these categories is discussed in turn in Chapter 12 and related to findings concerning the economy.

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[1]Ruth Mace, Industry and City Government, Chapel Hill, N.C.: Institute of Government, 1963, p. 3.

Does the Denver City/County Government Have an Industrial Development Responsibility?

A question implicit in all that has been presented thus far is: does Denver have a responsibility for attempting to influence the economic base of the city through industrial location and expansion? This is clearly not a question which can be answered by research, but is, rather, a political question. As Ruth Mace has said:

> In each locality. . .the extent of municipal action will be conditioned by the preconception of the mayor as to his proper role in this area, and, of course, to a significant extent upon the competing demands for his time.[1]

There can be no conclusive answer to the question of municipal responsibility. All that has been attempted is to present an assessment of the consequences of assuming that responsibility for the city's economy.

In large Eastern cities in the throes of decay, a primary element in that decay is the erosion of the economic base, the outmigration of profitable industry and the people who run it. In Denver this has not yet happened, but the early warning signs of slower income gains and a larger dependent population are beginning to show. It is not entirely clear that urban decay will ever overtake Denver even without strong public policies to insure it, but the city can act in a positive fashion, within the confines of accepted public policy, to attempt to offset any potential decay and outmigration.

In a sense, the question as to whether the city has a responsibility is readily answered. As Mace has said:

> It has been suggested. . .that whether or not city officials agree that there is a municipal responsibility to promote industrialization, they are all involved either positively or negatively in the effort as they go about their chief function of providing urban services to the community.[2]

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[1] Ibid.

[2] Ibid.

In the final analysis the city does have a choice, however. It can govern the city more or less passively letting private market forces and federal/state government decisions largely determine its socio-economic and financial fate. Or it can govern actively, using the policy tools at its disposal to shape and form the economic base to conform to its view of what the city should be. The research team, making a political choice, feels that active governorship is called for. But this is clearly a political decision.

> In the final analysis the people of each community will determine how far they want their governments to go in activities of this nature. Their decisions will undoubtedly depend upon economic conditions.[1]

As a final note, it is important to stress that the choice for city government is not to either encourage activity or discourage it. The choice is not simply to grow or not to grow. The middle ground is the one which makes the most sense in view of the complex nature of the growth process itself. That middle ground consists of encouraging some industry in some areas to some extent while at the same time discouraging other, less desirable industries. The result is a gradual shaping and forming of the economic base to meet the city's needs whether those needs be reducing unemployment, increasing the tax base, rounding out the services provided, redeveloping deteriorated areas, or what have you. It is a conclusion of this research that the city can have some influence on the economic base: the wherewithal is extant if the will is also.

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[1] Ibid.

CHAPTER 1

PURPOSE, SCOPE AND METHOD OF THE STUDY

Introduction

A city, like a nation, is shaped by its economy. The economic base determines the number and mix of jobs, which in turn determine the level of income and its distribution, which subsequently sets limits to the quality of life which can be achieved. Not only does the economic base largely determine individual, private sector well-being, but also it significantly influences public sector revenues and expenditures. It is this public sector, local government impact that is of primary interest in this report.

Historically, cities have grown and declined almost entirely at the behest of market forces working through thousands of individual business and personal decisions within a framework set by federal and state governments. Generally, local government has exerted little influence on this process, but has simply worked in the midst of the growth-decline maelstrom putting out figurative "fires" and trying to raise sufficient revenue to balance the budget. This study addresses the question: Is there not some group of policies that city government could pursue to effect desired changes in the local economy?

Purpose of the Study

A primary purpose of this research, then, is to provide the Denver Mayor with an appraisal of policy alternatives applicable to future regional development in the city and county. To fulfill this objective it is first

necessary to provide local government officials with an evaluation and analysis of the economy of the city and of the salient factors currently influencing it. In order to suggest and evaluate policy alternatives it is necessary first to understand the local economy including, among other things, 1) labor force characteristics, 2) the identity of key industries, and 3) important locational determinants.

Scope of the Project

The research presented in this report consists of the following: 1) An evaluation and analysis of historical changes in the economic and demographic base of Denver, especially during the past two decades; 2) An analysis of key industries in Denver through application of the shift-share technique; 3) The selection of three key industries, based on a number of criteria, for in-depth study; 4) For each key industry, a profile utilizing secondary data designed to determine growth trends and locational characteristics; 5) Formulation of hypotheses about the key industries' locational characteristics and a field test of these hypotheses through survey research; 6) A preliminary assessment of revenues and costs associated with historical growth in the three key industries; and 7) An evaluation of policy tools available to the city government to influence location and thence the local economy.

Methodological Aspects of the Study

As indicated by the items just listed, reliance is placed on secondary data to discern population and employment growth trends, and to assess the present status of industries in Denver. Sources used include the decennial population censuses, the Census of Business, County Business Patterns, a number of state publications including retail sales reports, and information

published by Colorado University and local institutions like the Denver Chamber of Commerce.

Primary data were gathered from over 500 individual firms in the Denver Standard Metropolitan Statistical Area (SMSA). Details of the methodology used in sample selection and design of response instruments are contained in Chapters 8, 9, and 10. These primary data were used to test hypotheses about the determinants of industry location, and to draw inferences about alternative policy measures open to the city.

A wide range of specific methodologies were used throughout the report including a shift-share analysis of employment trends, and these are discussed in the chapters in which they are presented.

Overview

Chapters 2 and 3 provide the historical background, economic/demographic and shift-share analyses of employment change. Chapter 4 provides the criteria for selecting key industries, and Chapters 5 through 7 present profiles of the three key industries selected for detailed study. Chapters 8 through 10 present results of surveys of three key industries.

Chapter 11 contains a preliminary evaluation of the difficult subject of the relative revenue-generating and expenditure-creating aspects of industrial growth, and Chapter 12 analyzes the implications of the survey results in terms of city policy alternatives.

CHAPTER 2

AN ECONOMIC PROFILE OF DENVER

Introduction

The purpose of this chapter is to analyze the economy of Denver city and county, to study its population characteristics, and to compare and contrast industry composition and growth rates and trends with those in the surrounding metropolitan area. In later chapters, this information will provide building blocks with which to construct a model for economic base analysis and to make conclusions about the potential role of the city and county government in influencing that base.

A good deal of recent, prior research has been done in Denver in terms of cataloging economic base data. Most notable is a 1973 study, entitled Denver Economic Base Analysis conducted by the staff of the Denver Planning Office, Community Renewal Program. Since this investigation is recent, and since it has been made available to the Denver Mayor and his staff, this report includes a minimum of duplication of that effort. In the following pages highlights are presented of the most salient aspects of the Denver economy as they pertain to public policy. The chapter concludes with a summary of the findings of this and previous research.

Denver's Historic Economic Functions[1]

Useful insights are to be gained by initially considering Denver's historic growth trend. Denver was founded in 1858 by gold seekers, prompted

[1]Various sources including Metropolitan Denver published by the Junior League, Inc. (1966), and the World Almanac.

by the discovery of placer gold in the nearby mountains. This little frontier settlement quickly established itself as the supply and distribution center for all the local mining camps and grew rapidly during the mining boom, 1880-1910.

Prompted by gold mining, Denver became a center for the development and manufacture of mining equipment to extract gold from its ore. As the gold fever faded, the search for other metals continued . . . silver, lead, copper, zinc, and more recently, molybdenum, thorium and uranium. By the turn of the century, Denver had grown to be the largest city in the Rocky Mountains and between San Francisco and St. Louis. From this time forth Denver was known as the "Queen City of the Plains."

After the gold mining booms ended in 1910, population grew in Denver between 1 percent and 3 percent per year. Major industrial development in the Denver area was limited somewhat by two things--lack of water resources and an isolated location. World War II stimulated growth in Denver and transportation progress enabled Denver to become the home of many "smokeless industries," such as research and light manufacturing. Denver also remained the region's largest distribution center.

As the mountain region economy developed, Denver's central location within it attracted many companies, particularly airlines, railroads and trucking companies. In addition, many firms in recent years have made Denver a location for their national headquarters.

This influx of industry naturally brought many people, who quickly made Colorado's mountains the top tourist attraction in the area. Skiing in particular has helped tourism to be one of the most important industries in Colorado; Denver is the gateway to this vast recreational area.

The past decade has seen substantial growth in the suburban areas surrounding Denver, and in fact, if Denver had not annexed some 25 square miles of adjacent land during this time, its population would have actually decreased. But as far as its industrial base is concerned, Denver remains the major distribution center in the area, as well as the center for electronics manufacturing and research.

Analysis

The analysis in this report makes use of a number of different geographical entities, and these are defined in Table 2-1. Emphasis is placed throughout on the central city which is Denver city and county. The City of Denver and the County of Denver are the same entity and have the same boundaries. The suburban ring is defined as the four counties encircling Denver city and county, as enumerated in Table 2-1. The Denver Standard Metropolitan Statistical Area (SMSA) consists of all five counties. These and selected others areas are defined in Table 2-1, and reference may be made to Figure 2-1 which shows a map of the metropolitan area which is the subject for study herein.

Population Change. Table 2-2 shows that the pattern of population growth in the Denver SMSA is significantly different from the U.S. pattern of growth. Dramatic growth in the population of the SMSA in the early years (1870 to 1910) brought the total to approximately 277,000. In the years 1940 to 1970, the Denver population also experienced a growth rate significantly higher than that of the U.S.

Denver's population grew dramatically in the early years, far surpassing the U.S. in terms of average percentage change per year. The population of

Table 2-1

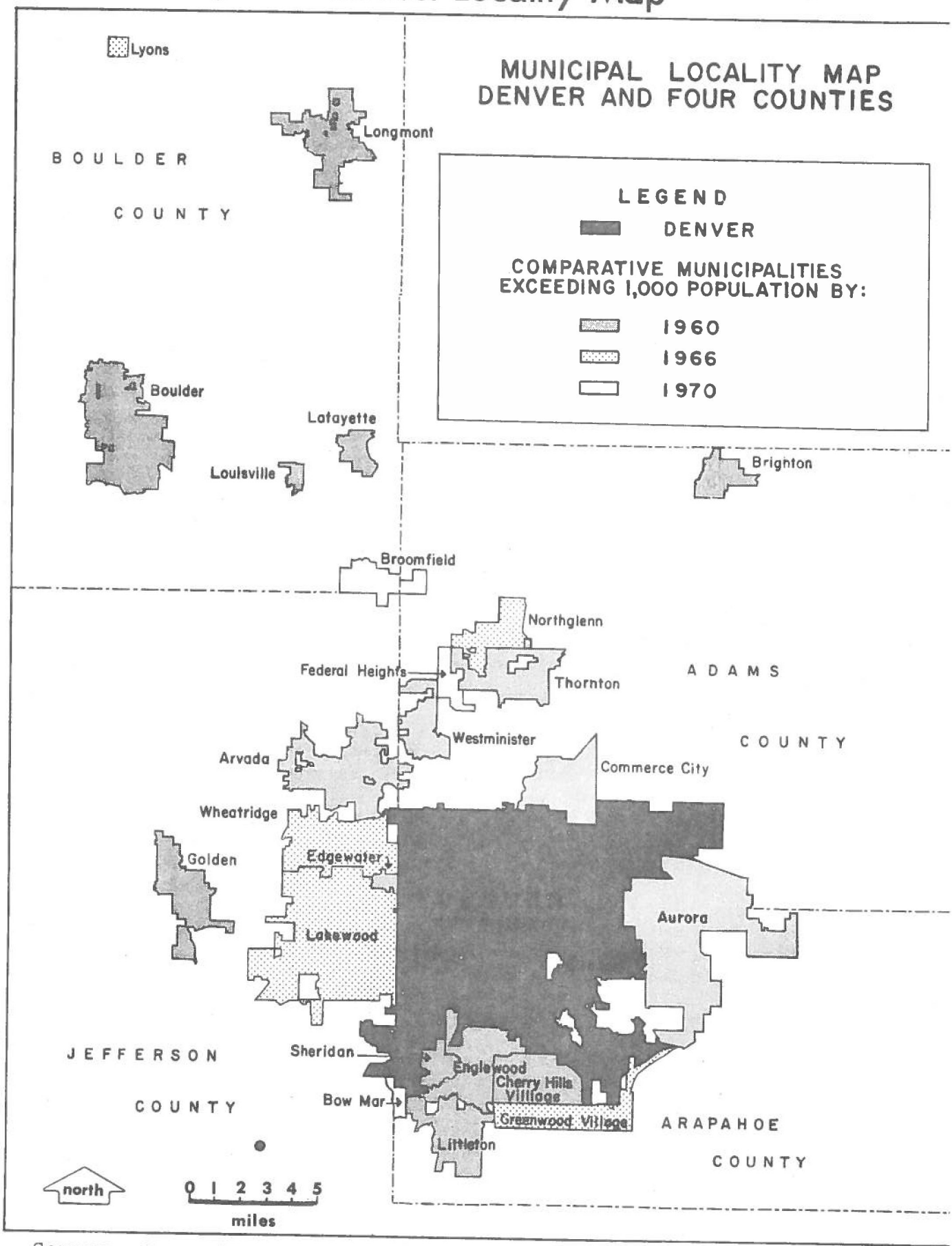
DEFINITIONS OF PLACES UTILIZED IN THIS REPORT[a]

Place	Definition
Central City	Denver City and County. The city and county are coterminous, and the area comprising them is taken as the central or core area in this report.
Suburban Ring	Consists of Adams, Arapahoe, Boulder and Jefferson counties. These, plus Denver County, constitute the SMSA. The four outlying counties in the suburban ring are also referred to in the report as the "suburbs," the "ring," and the "outlying area," and "metropolitan region."
SMSA	Standard Metropolitan Statistical Area. This consists of Denver County (the core) plus Adams, Arapahoe, Boulder and Jefferson counties. Douglas County has recently been added to the SMSA, but this addition does not materially influence the data used in this report.
City	Refers to Denver city and county unless specified otherwise.
County	Refers to Denver city and county unless specified otherwise.
Denver	May refer to either the city or county or both. In actual practice it makes no difference because the city and county are the same geographical area.
State	The state of Colorado.
Region	Generally refers to the Denver SMSA as defined above. Other uses of the term are defined at the point of use.
United States	This includes the 48 contiguous states for all years, plus Alaska and Hawaii from the dates of their admission to statehood.

[a]Also see map in Figure 2-1.

Figure 2-1

Denver Locality Map



Source: Community Renewal Program

Table 2-2

TOTAL POPULATION, DENVER, DENVER SMSA,
AND UNITED STATES, 1870 - 1970

Year	Denver		Denver SMSA		United States
	Population	Average Percent Changer Per Year	Population	Average Percent Change Per Year	Average Percent Change Per Year
1870	4,759	--	15,917		
1880	35,629	64.87	90,800	47.05	2.60
1890	106,713	19.95	161,380	7.77	2.55
1900	133,859	2.54	181,650	1.26	2.07
1910	213,381	5.94	277,097	5.25	2.10
1920	256,941	2.02	331,398	1.96	1.49
1930	287,861	1.22	385,019	1.62	1.61
1940	322,412	1.20	445,206	1.56	.72
1950	415,786	2.90	612,128	3.75	1.49
1960	493,887	1.88	929,383	5.18	1.85
1970	514,678	.42	1,227,529	3.21	1.33

Source: Census data for Colorado, Number of Inhabitants for the years 1950 through 1970.

Note: SMSA includes Adams, Arapahoe, Boulder, Denver and Jefferson Counties for 1910 on. Prior to 1910 the SMSA includes Arapahoe, Boulder, Denver and Jefferson Counties. Adams County established in 1902.

the City of Denver continues to grow but at a slower rate than either the Denver SMSA or the U.S. population in general.

Area and Population Density. The area of the City of Denver increased significantly between the years 1960 and 1970 because of a vigorous program of annexation of outlying areas to the city. This may be seen in Table 2-3. The area of the suburban ring decreased slightly during the period 1950 to 1970 with the annexation of part of Arapahoe County to Denver County. As would be expected, the density of the City of Denver is much greater than that of the suburban ring. However, the difference has narrowed in recent years as the density of the suburban ring has increased dramatically due to population growth in the suburban ring.

Age Structure. On the whole, the population of the City and County of Denver is getting younger as shown in Table 2-4. The proportion of the population in the 25 to 44 year old age group is falling while the portion in the 15 to 24 year old age group is on the increase. The median age of the population of Denver County is decreasing: from 31.2 years in 1960 to 28.6 years in 1970. This decrease is comparable to that of the U.S. median age.

The conclusions made about the age composition of the population of Denver County are also applicable to the total suburban ring population as shown in Table 2-5: it, too, is getting younger. Increases in the less than 15 and in the 15 to 24 year old age group are accompanied by decreases in the proportion in the remaining age groups. However, while the aged are an increasing proportion of the City's population they are a decreasing share in the ring.

Table 2-3

AREA AND POPULATION DENSITY, DENVER AND SELECTED AREAS, 1950 - 1970

Year	Denver Area (sq. miles)	Density per Square Mile	Suburban Ring Area (sq. miles)	Density per Square Mile	U. S. Population per Square Mile
1950	66	6,299.8	3,605	54.5	57.5
1960	66	7,493.1	3,599	121.0	50.6
1970	95	5,417.7	3,565	199.9	42.6

Source: Census data for Colorado, Number of Inhabitants for the years 1950 through 1970.

Note: Suburban Ring includes Adams, Arapahoe, Boulder, Jefferson Counties for all years.

Table 2-4

AGE STRUCTURE OF THE DENVER POPULATION, 1950 - 1970

Age Group	1950 Number	1950 Percent	1960 Number	1960 Percent	1970 Number	1970 Percent
0-15	95,872	23.06	142,247	28.80	130,422	25.34
15-24	59,044	14.20	65,246	13.21	98,203	19.08
25-44	132,315	31.82	130,045	26.33	121,462	23.60
45-64	89,382	21.50	103,066	20.87	105,805	20.56
65+	39,173	9.42	53,283	10.19	58,786	11.42
Total	415,786	100	493,887	100	514,678	100
Median Age			31.2		28.6	
U.S. Median	30.2		29.5		28.1	

Source: Census data for Colorado: 1950, General Population Characteristics, Table 33. 1960, General Population Characteristics, Table 24. 1970, General Population Characteristics, Table 24.

Table 2-5

AGE STRUCTURE OF THE DENVER SUBURBAN RING, POPULATION, 1950 - 1970

Age Group	1950 Number	1950 Percent	1960 Number	1960 Percent	1970 Number	1970 Percent
0-15	56,237	28.64	157,400	36.14	231,713	32.57
15-24	32,012	16.30	60,082	13.80	126,421	17.73
25-44	61,478	31.31	131,871	30.28	200,087	28.07
45-64	33,157	16.89	62,990	14.46	118,310	16.60
65+	13,458	6.85	23,153	5.32	36,260	5.09
Total	196,342	100	435,496	100	712,851	100

Source: General Population Characteristics, Census Data for Colorado. 1950, Tables 33 and 41; 1960, Table 24; 1970, Table 24.

Race-Sex Structure. In Denver County there has been an increase in the number of non-whites over the years 1950 to 1970. Regardless, the non-whites still do not compose a substantial portion of the county's population. Non-whites accounted for less than 10 percent of the population 16 years and older in all years.

In the four-county suburban ring, the non-white proportion of the population has remained stable, comprising approximately one percent of the population 16 years of age or older.

White females generally outnumber white males in both the central city and the suburban ring. Non-white females, however, outnumber the non-white males in Denver County by an increasing percent. Non-white males outnumbered non-white females in the suburban ring by as many as 29 percentage points in 1950.

Components of Population Change. Table 2-7 shows birth rates, death rates and rates of net migration by decades for the three regions of interest. From 1950 to 1960, all three regions experienced positive net migration, although that of the central city (Denver City and County) was much less than that for the suburban ring of the SMSA. From 1960 to 1970 the difference between the central city and ring was much more pronounced. Note that net migration into the suburban ring was 185,786 whereas the central city actually experienced a large net outmigration of 28,960. The importance of this migration trend is difficult to overestimate because it mirrors the experience of many Eastern cities in decline. Also, it has significant ramifications for the Denver economic base and local government tax collections and expenditures. More is said of this later.

Table 2-6

RACE - SEX STRUCTURE, DENVER AND SUBURBAN RING 1950 - 1970
(persons 16 years and older)

	1950		1960		1970	
	Denver	Suburban Ring	Denver	Suburban Ring	Denver	Suburban Ring
White	95.65	98.67	93.61	99.09	90.60	98.51
Male	47.39	50.91	46.71	49.69	45.96	48.85
Female	52.61	49.09	53.29	50.31	54.04	51.15
Non-white	4.35	1.33	6.39	.91	9.40	1.49
Male	49.16	64.89	48.28	54.26	46.68	52.33
Female	50.84	35.11	51.72	45.74	53.32	47.67

Source: Colorado Census Data, General Population Characteristics. 1970, Table 24. 1960, Table 20. 1950, Table 33.

Table 2-7

COMPONENTS OF POPULATION CHANGE, SELECTED AREAS, 1950-1970

Area	1950-1960 Population 1950	Age Adjusted Birth Rate 1950	Age Adjusted Death Rate 1950	Actual Population 1960	Net Migration 1950-60	1960-1970 Population 1960	Age Adjusted Birth Rate 1960	Age Adjusted Death Rate 1960	Actual Population 1970	Net Migration 1960-70
Central City	417,958	117,472	47,180	493,887	5,637 (1.35% increase)	493,887	103,162	53,411	514,678	-28,960 (-5.86% increase)
Ring	194,170	80,405	18,785	435,496	179,706 (25.23% increase)	435,496	122,174	30,605	712,851	185,786 (42.66% increase)
SMSA	612,128	197,877	65,965	929,383	185,343 (30.28% increase)	929,383	225,336	84,016	1,227,539	156,826 (16.87% increase)
U.S. SMSAs	87,581,609			112,885,178		112,885,178			127,417,000	5,280,000 (17.0% increase)

Source: Bureau of Census.

Education. The educational level of the labor force has been increasing in all three regions shown in Table 2-8 from 1950 to 1970. Interestingly, there is a larger percentage of the labor force in the two lowest education categories in Denver (central city). Denver also has lower percentages in the three highest categories. The average level of education of the central city labor force is falling relative to the suburban ring.

Occupational Distribution. Table 2-9 indicates the occupational distribution of the labor force in Denver and the suburban ring. In the four counties that comprise the suburban ring, the proportion of those employed in the crafts, as operatives and as laborers has decreased considerably. Those employed on farms in the suburban ring as managers or as laborers decreased approximately 9 percentage points in the twenty year period. The professional and the clerical occupations gained substantial employment in the suburban ring in the twenty years.

A similar pattern can be seen for the central city. The number employed in the professional, clerical and service occupations increased substantially while employment in managerial, craft and operative positions decreased.[1]

Changes in employment by occupation seen in Table 2-9 are summarized in the following tabulation.

Occupation	Denver	Suburban Ring
Professional	Increase	Increase
Managers and Admin.	Decrease	Stable
Sales	Stable	Stable
Clerical	Increase	Increase
Crafts	Decrease	Decrease
Operatives	Decrease	Decrease
Laborers	Stable	Decrease
Service	Increase	Increase
Private	Decrease	Decrease
Farm	Decrease	Decrease

[1]Note: 1950 data includes Boulder County in the suburban ring.
1950 and 1960 data are for persons 14 years old and older.
1970 data are for persons 16 years old and older.

Table 2-8

EDUCATIONAL COMPOSITION OF THE LABOR FORCE, SELECTED REGIONS, 1950-1970

(Persons 16 years or older)

Education Category	Central City Percentage			Suburban Ring Percentage			SMSA Percentage		
	1950	1960	1970	1950	1960	1970	1950	1960	1970
Less than 8 years	30.6	28.5	21.3	33.4	20.3	13.0	31.2	25.0	16.7
9 - 11 years	15.4	18.0	17.3	18.0	17.2	14.8	16.1	17.7	15.9
12 years	26.8	27.7	31.9	27.0	33.6	37.1	26.8	30.2	34.8
13 - 15 years	12.7	13.6	14.0	11.7	14.8	16.5	12.5	14.1	15.4
16+	10.9	12.2	15.5	7.9	14.1	18.6	10.2	13.0	17.2
Not reported	3.6			2.0			3.2		
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Bureau of the Census

Table 2-9

OCCUPATIONAL DISTRIBUTION, DENVER AND SUBURBAN RING, 1950-1970

	1950		1960		1970	
Occupation	Denver (%)	Suburban Ring (%)	Denver (%)	Suburban Ring (%)	Denver (%)	Suburban Ring (%)
Professional	13.36	11.05	14.19	16.14	18.43	20.98
Managers, Admin.	11.81	10.00	9.66	11.59	8.93	10.34
Sales	9.67	7.53	8.47	7.95	8.21	8.50
Clerical	19.24	12.09	20.31	16.57	22.76	20.03
Crafts	13.24	17.46	11.48	15.37	10.45	13.22
Operatives	13.66	14.35	12.61	12.47	11.95	11.16
Laborers	4.75	6.16	4.36	4.19	4.08	3.37
Service	10.27	8.47	10.17	8.01	13.58	10.47
Private	1.99	1.53	1.97	2.26	1.24	.73
Farm	.59	10.33	.50	2.79	.37	1.19
Not Reported	1.40	1.04	6.28	2.66	---	---
Total	100	100	100	100	100	100
	167,218	66,940	196,383	156,703	212,695	280,266

Source: Colorado Census Data. General Social and Economic Characteristics. 1970, Table 86. 1960, Table 74. General Population Characteristics, 1950, Table 43.

Family Income. The median income for both the four-county suburban ring and the county of Denver grew considerably in the years 1950 to 1970. The growth kept pace with the increase in the national median income. The most striking conclusion to emerge from the data in Table 2-10 is that although median income in Denver has been increasing rapidly, the rate of increase in the suburban ring has been even more rapid. Median income in the ring has risen from a level $372 below that of Denver in 1950 to $1,801 greater in 1970. This trend is no doubt a function of trends seen above which show the suburban ring with a higher educational level, a larger proportion of the labor force in white collar occupations, and a larger percentage of the population in the most productive 25-44 age group, among others. Also, in the ring these indicators are rising relatively more rapidly than in the city.

Labor Force Participation. Table 2-11 shows labor force participation rates for Denver and the suburban counties by race, sex and age. Many interesting trends emerge from a study of these data. In 1950 the central city showed a lower male participation rate and a higher female participation rate than the suburban ring. By 1970 this situation had reversed. Overall, however, the participation rate has historically been consistently higher in the central city than in the suburban ring.

Participation rates have been lower for younger workers, women and members of minority racial groups. Historical data are not available for Negroes and the Spanish-surnamed, but in 1970 participation rates were higher for the Spanish-surnamed in the suburban ring and for Negroes in the central city.

Table 2-10

FAMILY INCOME, DENVER AND SUBURBAN RING, 1950-1970

Income ($)	1950 Denver (%)	1950 Suburban Ring (%)	1960 Denver (%)	1960 Suburban Ring (%)	1970 Denver (%)	1970 Suburban Ring (%)
0- 2,000	18.10	22.00	8.04	5.71	4.98	2.69
2,000- 3,999	37.41	42.97	15.17	11.91	8.74	4.81
4,000- 5,999	23.28	20.78	22.51	22.60	10.81	7.04
6,000- 6,999	5.47	3.67	11.88	13.01	6.58	4.51
7,000- 9,999	5.86	3.85	23.64	27.59	21.15	19.83
10,000-14,999 (10,000 + for 1950)	4.30	2.48	12.83	14.25	26.29	33.86
15,000 +	NA	NA	5.94	4.94	21.45	27.25
Not Reported	5.57	4.25	---	---	---	---
Total	100	100	100	100	100	100
Median	3,554	3,182	6,361	6,703	9,654	11,455
U.S. Median	3,319		5,620		9,867	

Source: Colorado Census Data; General Social and Economic Characteristics, Table 86 for 1960. Table 89 for 1970. General Population Characteristics. 1950, Tables 37 and 45.

Table 2-11

LABOR FORCE PARTICIPATION RATES, CENTRAL CITY AND SUBURBAN RING, BY RACE, SEX AND AGE, 1950-1970

	Central City	Suburban Ring (Exc. Boulder County)
1950		
Total Men	n = 0.82	n = 0.85
16-24	.58	.84
25-44	.88	.85
45-64	.87	.86
Total Women	n = .39	n = .28
16-24	.45	.31
25-44	.39	.26
45-64	.36	.28
TOTAL	.60	.56
1960		
Total Men	n = 0.86	n = 0.85
16-24	.65	.59
25-44	.92	.93
45-64	.90	.92
Total Women	n = .47	n = .38
16-24	.46	.38
25-44	.45	.37
45-64	.49	.42
TOTAL	.66	.62
1970		
Total Men	n = 0.85	n = 0.82
16-24	.69	.53
25-44	.94	.91
45-64	.88	.92
Total Women	n = .55	n = .65
16-24	.54	.47
25-44	.56	.48
45-64	.54	.51
TOTAL	.69	.65

Table 2-11 (continued)

	Central City	Suburban Ring (Exc. Boulder County)
1970		
Negro Men	n = 0.80	n = 0.34
16-24	.54	.07
25-44	.92	.46
45-64	.87	.64
Negro Women	n = .61	n = .46
16-24	.51	.06
25-44	.66	.55
45-64	.62	.46
NEGRO TOTAL	.70	.39
1970		
Spanish Surname Men	n = 0.83	n = 0.83
16-24	.69	.60
25-44	.91	.94
45-64	.83	.88
Spanish Surname Women	n = .43	n = .46
16-24	.43	.46
25-44	.44	.46
45-64	.41	.43
SPANISH SURNAME TOTAL	.62	.64

Source: Bureau of the Census.

n = average for the sub-category.

Suburban Ring versus SMSA. Table 2-12 provides a useful summary of the relationship between employment and population in the suburban ring and the SMSA. The ring has gained over the central city in all categories shown. The proportion of the SMSA population in the ring has increased from 32.1 percent in 1950 to 58.1 percent in 1970. In terms of various categories of employment shown, the suburban ring's share of SMSA totals has increased from less than 30 percent in 1950 to more than 50 percent in 1970.

Additional Observations and Conclusions

The tables presented above are a limited though representative group selected from many reviewed for purposes of the analysis. The balance of this chapter provides an overview of conclusions regarding the population and economic structure of Denver and the SMSA. A recent study by the Denver Planning Office has chronicled relevant data in great detail, and permission has been kindly given to reproduce relevant conclusions here. In the following sections, all paragraphs which are numbered are verbatim transcriptions of conclusions presented in that study.[1] The conclusions are presented in two phases: 1) population; and 2) economic structure.

Population

The following comments serve to summarize major findings pertaining to the population characteristics of Denver City and County (the core area) and the Denver SMSA (which includes in addition to Denver County the counties of Adams, Arapahoe, Boulder, and Jefferson).

1. Since 1960, the population of Denver has grown more slowly than at any other time in the twentieth century. Between now and 1980, Denver's

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[1]The findings are based on analysis in Denver Economic Base Analysis, Denver: Community Renewal Program, March 1973, pp. 3-6 ff.

Table 2-12

SUBURBAN RING SHARE OF SMSA EMPLOYMENT AND POPULATION, 1950-1970

Item	1950 Percentage	1960 Percentage	1970 Percentage
Population	32.1	46.9	58.1
Employment*	28.6	44.4	56.9
Manufacturing	25.3	47.6	62.0
Wholesaling	20.0	39.0	55.0
Retailing	24.4	32.7	57.1
Services	29.3	41.7	52.8

*Note: Figures for employment are for persons 16 years old or older in 1960 and 1970. 1950 figures are based on persons 14 years old or older.

Source: Colorado Census Data. General Social and Economic Characteristics. 1970, Tables 86 and 87. 1960, Tables 75 and 74. General Population Characteristics. 1950, Tables 35 and 43.

total population is expected to continue to grow at very slow rates as inner-city areas continue to lose population and as recently annexed vacant land is developed for residential uses. When this new land has been fully developed, population growth will stop and start to decline somewhere near 1980.

2. In recent years, Denver's patterns of population change have begun to closely resemble those of older urban core cities, especially in the East and Midwest. The overall picture presented is one of Denver as an aging urban core city increasingly populated by: the poor; the less educated; the minorities; the less easily employed; the elderly; and the working young adult households. It is also one of Denver surrounded by a solid suburban ring populated by: the White majority; the affluent; the better educated; the family households with children and with adults in their most productive years; and the higher skilled and more easily employable.

3. Denver's low population growth rates of the future will continue to be considerably below the rates of natural increase (excess of birth over deaths) in Denver's population. As the result of a steady stream of net out-migration from Denver into the four surrounding counties will continue. Also, with population growth in the other four counties projected to be at relatively high rates, Denver's share of total regional population will continue to decline steadily.

4. Families with adults in the prime child bearing ages and their children will continue to migrate out of Denver into the four counties. The share of total Denver population represented by children, and possibly also the share represented by middle-aged adults, will therefore continue to decline.

5. The share of Denver's population represented by young adults should continue to increase over the next decade as the large numbers of young adults produced by the high birth rates of the period prior to 1964 continue to migrate into Denver.

6. Elderly persons will continue to migrate into Denver because of the relatively higher level of services Denver provides for these persons. The consequence will be that the share of total population represented by the elderly in Denver will continue to increase.

7. The Black and Chicano minority populations in Denver will continue to grow at high rates, although probably at rates below their growth rates during the 1960-1970 decade. Although high rates of net in-migration of these minority groups into Denver from rural areas and from other regions around the U.S. will continue, their rate of natural increase should decline, reflecting the national pattern of declining birth rates.

8. While the minority populations continue to migrate into Denver, the White, non-Spanish surnamed population will continue to migrate from Denver into the four surrounding counties. The result will be that the minority populations will continue to increase their share of Denver's total population at rapid rates.

9. The current median levels of educational attainment in Denver's adult population will probably remain stable or increase only slightly in the future. It is possible that high rates of in-migration of more poorly educated minority populations could even cause Denver's median level of educational attainment to decline slightly in the future.

10. The percentage of Denver's population in the labor force will probably remain at approximately today's levels. However, the unemployment

rate may climb slowly as less easily employable minority populations increase as a percentage of Denver's total population.

11. Unrelated individual households will continue to increase as a share of total Denver households as young adults and the elderly continue to migrate into Denver, and as family households continue to migrate out.

12. The already small average number of persons per Denver household should continue to decline slowly due to the projected low birth rates and the increase in unrelated individual households.

13. Denver's median household income will continue to decline further below the national averages. The recent historical shifts in Denver's household income distribution will continue in the future with more and more Denver households being concentrated toward the lower end of the household income spectrum. This continued shift will be caused by the continuing influx of minority and elderly households, which typically have lower incomes than the majority white family households with children.

Economic Structure

With regard to the economic structure of the Denver region, the following observations serve to focus attention on the major characteristics and trends.

Denver SMSA

1. The Denver SMSA has a broad and dynamic base of economic activity. It is characterized by a high rate of job creation relative to the rest of the Nation, which reflects the appeal of this area to a wide and expanding range of new firms. The trend can be expected to continue to 1980 and beyond as firms place increasing significance on amenity values in making national location decisions. New firms and population will, in turn, stimulate expansion of existing firms at higher-than-average rates.

2. While SMSA employment growth rates will probably slow down over the coming decade, they are expected to remain significantly higher than the national rates because of relatively higher in-migration of both employment sources and population in the region.

3. Employment in all major sectors of the regional economy grew at a faster rate than in the nation during the last half of the 1960's and will continue to grow faster throughout the 1970's. The fastest growing major economic sectors are expected to be government, finance, insurance, and real estate.

4. Export employment is dispersed through a broad range of economic subsectors. The SMSA has a relatively small concentration of manufacturing firms, but a few manufacturing activities are significant exceptions, such as machinery, electrical product, luggage and rubber manufacturing. These will continue as major concentrations of "export" activity; that is, activity that imports "new money" to the region. In addition, governmental service and trade activities provide a disproportionately large export element locally, since the SMSA is the major regional center providing specialized goods and services to a large, sparsely settled geographic area.

Denver

1. The City and County of Denver has a basically healthy and growing economy. Its employment grew at about the national rate during the latter half of the 1960's and will probably continue growing at the projected national rate to 1980. To be realized, however, projected growth will require strong local support. The principal objective of growth should be to provide Denver additional opportunities for employment, increasing economic diversity, greater stability, and an increasing tax base.

2. Denver is expected to have a declining share of total regional economic activity during the 1970's. The City's economic growth will not be as rapid as that of the other four counties in the region. By 1980, SMSA employment will be nearly evenly split between Denver and the four counties. Most of the four-county growth has come from outside the region. There has been only a small tendency among the many industries which have traditionally concentrated within Denver to decentralize to the four suburban counties, with the exception of selected population-following activities.

3. Denver's employment/population ratio is much higher than in any of the four surrounding counties because many persons live in the suburban counties and commute to work in Denver. As Denver's employment continues to grow and its population remains stable, this ratio will increase.

4. The following activities are concentrated in Denver and are expected to become increasingly important sources of employment throughout the 1970's because of the advantages of the City's central location in a region with a very large hinterland:

-- Textiles, apparel and leather manufacturing
-- Transportation by air
-- Wholesale trade
-- Insurance agents, carriers and brokers
-- Certain kinds of finance, insurance and real estate activities
-- Business and repair services
-- Professional services

5. Activities which will split their shares of high growth in employment between Denver and the other four counties in the region are:

-- General building contractors
-- Electrical equipment and supplies manufacturing
-- Rubber and plastics products manufacturing
-- Eating and drinking places
-- Banking and credit agencies
-- Medical and other health services
-- State and local governments

CHAPTER 3

SHIFT-SHARE ANALYSIS OF INDUSTRY EMPLOYMENT IN DENVER

Growth performance of local industry in Denver results from a variety of factors, including population changes, changing markets, business environment and other factors. To find the effect of each of these on local industrial growth would indeed be an ambitious undertaking. A simplification of the problem at hand is needed, and shift-share analysis provides a useful framework.

Shift-share analysis is a tool which can be effectively used to factor out the component parts of total local industrial growth without seriously reducing the analytical or inferential attributes of the results. The effectiveness of shift-share analysis stems directly from those factors selected as causing the components of local growth. These factors which are used as a complete set of determinants of local growth are (1) the overall growth of the national economy, (2) the overall growth of the regional economy or the growth of a regional industry with respect to the national growth rate for that industry, (3) the overall growth of individual industries with respect to the national growth rate.

It is easily seen how each of the above factors can add to or detract from the total growth of local industry. Shift-share analysis is flexible in that it can be used with different economic inputs, such as sales, income or employment. Denver industries are studied here using employment data.

National Growth. The first factor, national growth, is introduced on the assumption that, all other things being equal, every industry in every region will grow at the average national rate for all industry and proportionately increase its total employment. This factor is computed by determining the percentage increase in total employment in the national economy between the base year and the terminal year, and computing the local increase (or decrease) of this same percentage from the base year.

Industry Mix. The second factor is obtained from looking at the percentage increase or decrease in employment in a particular industry on a national level and comparing that figure to the growth rate of the rest of the economy. Thus, the growth rate and direction of a particular industry, whether it is growing faster or slower than the national economy, can be determined and this information can then be applied to local growth to discover just what effect these differences imply for the local economy given the particular set of industries located in it.

Regional Share. The third factor is in turn computed by comparing the percentage increase or decrease in the employment of the particular regional industry to the percentage change in employment in that particular national industry.

In this manner, the three selected components of local industrial growth are determined. It should be noted that these components may be independent of each other; that is, the regional share factor may be positive even though the industry may be declining on the national level.

As mentioned previously, these calculations are based on percentage changes in the employment of the national economy and are relative to each other in the sense that comparisons can be made to determine growth rates either greater or less than national rates. These figures cannot and should

not be used in an absolute or nomative sense. For the purposes of economic base analysis, shift-share application provides a breakdown of the local industrial growth rates and profiles local industries according to their growth characteristics and potential for influence by city planners and policy-makers. But before proceeding into the process whereby "key" industries in Denver are selected by shift-share analysis, an example of shift-share analysis applied to a specific industry and the mechanics involved in this process is appropriate.

For this example,[1] Colorado is selected as the region under study and mining as the industry to be analyzed. Employment figures are used throughout the analysis. The pertinent base information is shown below in Table 3-1.

The national growth component is determined by multiplying the national total employment percentage change times the base year employment in the regional industry. In this case, that is (5.18) x (12.4) = 64.0. That is if mining in Colorado had grown at the average rate of growth of all industry in the U.S., it would have added 640,000 jobs during the period.

The second component, termed the industrial mix component, is found by subtracting the percentage change in total national employment from the percentage change in national industry employment and multiplying this difference times the base year employment in the regional industry. In this case, that is (-1.11 = 5.18) x (12.4) = -78.0. That is, mining employment grew less rapidly than all employment over the period.

The third component, called the regional share component is found by subtracting the percentage change in employment in the national industry

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[1]This example is an adaptation of one published in James A. Eck, Shift-Share Study of Colo. Emp. 1960-67, Boulder: Business Research Division, 1970.

TABLE 3-1

NATIONAL TOTAL EMPLOYMENT, NATIONAL AND COLORADO
REGIONAL MINING EMPLOYMENT AND PERCENTAGE CHANGES, 1965-66

Category	Employment (000)		Employment Change	
	1965	1966	Number	Percentage
National Total Employment	60,832	63,982	3,150	5.18
National Mining Employment	632	625	-7	-1.11
Colorado Mining Employment	12.4	13.0	.6	4.84

from the percentage change in employment in the regional industry and multiplying this result times the base year employment in the regional industry. In this example, that is (4.84 - (1.11)) x 12.4 = 74.0. This indicates that mining fared better in Colorado than in the nation as a whole.

If these three components are totaled up, (.64 - .78 + .74), the sum is .6 which is the total absolute change in regional industry employment. This net gain of 6,000 jobs has been decomposed into three components which provide a means of comparing the local growth rate of this industry to both the growth rate of the individual industry in the nation as a whole and the growth rate of the national economy. These components give the researcher a clue as to what factors have had a positive or negative influence on local industry growth and also provides these magnitudes.

From this example, it is seen that the mining industry is declining on a national level, but Colorado mining has increased on a regional level as well as increasing due to national economic growth (simply growth of population, incomes, etc.). But mining in Colorado has increased by virtue of local influences more than by any other. Perhaps at this point, the reader should be cautioned again that shift-share analysis is not predictive and interpretation of its results are best used by the researcher in a subjective manner. For example, a negative industrial mix component does not necessarily mean that that particular industry declined on a national level. It may mean that this industry simply did not grow quite as rapidly as the national economy.

Following the approach outlined, this research concentrates on the industrial mix component and regional share component in determining key industries in Denver. The national growth component is not considered because as long as the total national economy is growing, the national growth component for any industry will be positive and directly related to the percentage change in total national employment.

Shift-Share Analysis

The procedure outlined above is based on a methodology recently popularized by Lowell Ashby of the United States Department of Commerce.[1] A computer program was prepared which performed the calculations necessary for a complete analysis for Denver. Data utilized covered the period 1959-1971 and were published in County Business Patterns. Shift-share results were generated for several sub-periods including 1959-1965, 1965-1971, 1965-1968, and 1968-1971. It was felt that this group of sub-periods provided a meaningful account of the historical trend, and permitted observation of relevant growth and change within the study period. Results are presented in Tables 3-2 through 3-6.

Interpretation of Results

The first step in the analysis consisted of comparing employment growth in Denver city and county with the United States as a whole. The results are shown in Table 3-2.

For the first period shown, 1959-1965, a few sectors evidenced especially notable absolute job growth as indicated in the column headed "total change." These high growth sectors included mining, printing, and publishing, electrical and non-electrical manufacturing, transportation and public utilities, and wholesale trade. Among the retail subsectors good growth was evidenced in general merchandise, food stores, eating and drinking places, and miscellaneous. High total change was observed also in finance, incurance and real estate, and in selected service categories

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[1] Lowell D. Ashby, "The Geographical Redistribution of Employment: An Examination of Elements of Change," Survey of Current Business, October 1964, pp. 13-20.

TABLE 3-2

SHIFT-SHARE ANALYSIS OF DENVER EMPLOYMENT CHANGE BY INDUSTRY, USING UNITED STATES AS COMPARISON ECONOMY, 1959-1965, 1965-1971

	DENVER COUNTY EMPLOYMENT			1959-1965					1965-1971				
				CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE	CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE
	1959	1965	1971	NATL GROWTH	IN DUSTRIAL MIX	REGIONAL SHARE			NATL GROWTH	IN DUSTRIAL MIX	REGIONAL SHARE		
Agriculture,Forests, and Fisheries	240	182	482	33	58	-150	-58	-91	32	15	253	300	268
Mining	1864	2687	3682	260	-540	1103	823	563	467	-503	1031	995	528
Contract Construction	12359	12301	16450	1722	-109	-1671	-58	-1780	2137	-786	2799	4149	2012
Manufacturing													
Ordnance and Accessories	173	297	1330	24	-35	135	124	100	52	-6	987	1033	981
Food and Kindred Products	8623	7480	7052	1201	-1534	-810	-1143	-2344	1299	-1323	-404	-428	-1727
Textile Mills and Apparel	1501	1420	1748	209	-112	-178	-81	-290	247	-239	320	328	81
Lumber, Wood, Furniture, and Fixtures	1158	1174	1723	161	-108	-37	16	-145	204	-222	567	549	345
Paper Products	645	786	1093	90	-48	100	141	51	137	-85	256	307	170
Printing and Publishing	4311	5196	6071	601	-113	398	885	284	903	-331	304	875	-28
Chemicals	1029	682	1458	143	-83	-407	-347	-490	118	- 51	708	776	658
Petro, Coal, Rubber, Plastics, Leather	7647	7619	8917	1065	-677	-416	-28	-1093	1323	-1307	1282	1298	-25
Stone, Clay and Glass	1365	943	1038	190	-141	-471	-422	-612	164	-175	106	95	-69
Primary and Fabricated Metals	3033	2694	2957	422	-307	-454	-339	-761	468	-367	162	263	-205
Machinery, exc. electrical	2290	2836	3240	319	63	164	546	227	493	-305	217	404	-89
Electrical equipment and supplies	827	1622	3799	115	134	545	795	680	282	-155	2051	2177	1895
Transportation Equipment	403	642	1214	56	-41	224	239	183	112	-131	591	572	460
Instruments and related products	521	664	830	73	-23	94	143	70	115	-17	67	166	51
Misc. Manufacturing	1010	1020	1317	141	-86	-45	10	-131	177	-154	273	297	120
Administrative and auxiliary	1950	1721	1874	272	860	-1361	-229	-501	299	301	-447	153	-146
Transportation and Public Utilities	20065	22043	27304	2795	-740	283	2338	-457	3891	173	837	4901	1010
Wholesale Trade	22330	23651	30502	3111	-633	-1156	1321	-1790	4108	-321	3064	6851	2743
Retail Trade													
Building and Farm Materials	1236	1210	1495	172	-234	36	-26	-198	210	-106	181	285	75
General Merchandise	7996	9074	9199	1114	646	-681	1078	-36	1576	822	-2273	125	-1451
Food Stores	3277	4651	4887	456	-20	938	1374	918	808	149	-721	236	-572
Auto Dealers and Service Stations	4527	4613	5071	631	160	-704	86	-545	801	32	-375	458	-343
Apparel and Accessories	2473	2543	3106	344	-352	78	70	-274	442	20	101	563	121
Furniture and Furnishings	1642	1339	1860	229	-277	-255	-303	-532	233	9	280	521	288

TABLE 3-2
(continued)

SHIFT-SHARE ANALYSIS OF DENVER EMPLOYMENT CHANGE BY INDUSTRY, USING UNITED STATES AS COMPARISON ECONOMY, 1959-1965, 1965-1971

	DENVER COUNTY EMPLOYMENT			1959-1965					1965-1971				
				CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE	CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE
	1959	1965	1971	NATL GROWTH	IN DUSTRIAL MIX	REGIONAL SHARE			NATL GROWTH	IN DUSTRIAL MIX	REGIONAL SHARE		
Retail Trade (continued)													
Eating and Drinking Places	7679	8389	12325	1070	945	-1305	710	-360	1457	1375	1104	3936	2479
Misc. Retail Stores	3783	4441	5254	527	7	124	658	131	771	94	-53	813	42
Administrative and auxiliary	1721	2191	3225	240	581	-351	470	230	381	763	-110	1034	653
Finance, Insurance and real estate	16272	19444	24452	2267	1040	-134	3172	905	3377	1138	492	5008	1631
Services													
Hotels and Lodging	2868	3906	5125	400	333	306	1038	638	678	312	229	1219	541
Personal services	4308	4506	4498	600	-93	-309	198	-402	783	-894	104	-8	-791
Misc. Business Services	3765	6039	10232	524	1732	17	2274	1750	1049	2307	837	4193	3144
Automobile repair	1857	2047	2623	259	340	-408	190	-69	356	91	129	576	220
Misc. Repair	676	915	1182	94	70	75	239	145	159	53	55	267	108
Motion pictures	868	838	677	121	-250	99	-30	-151	146	5	-312	-161	-307
Amusement and recreation	1280	1306	1764	178	131	-283	26	-152	227	86	145	458	231
Medical and health	8634	12327	17199	1203	2630	-140	3693	2490	2141	4482	-1751	4872	2731
Legal services	793	1093	1820	110	158	32	300	190	190	186	351	727	537
Educational services	2424	3598	5001	338	2738	-1902	1174	836	625	-318	1096	1403	778
Nonprofit organizations	4099	4350	5681	571	-50	-270	251	-320	756	1538	-962	1331	575
Misc. services	2093	2469	3842	292	456	-371	376	84	429	458	486	1373	944
Unclassified establishments	764	392	913	106	-325	-153	-372	-478	68	329	124	521	453
Totals	178379	199701	255512	24848	6150	-9676	21322	-3526	34688	6943	14180	55811	21123

Source: County Business Patterns data shown in first three columns.

TABLE 3-3

SHIFT-SHARE ANALYSIS OF DENVER EMPLOYMENT CHANGE BY INDUSTRY, USING UNITED STATES AS COMPARISON ECONOMY, 1965-1968, 1968-1971

	DENVER COUNTY EMPLOYMENT			1965-1968					1968-1971				
				CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE	CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE
	1965	1968	1971	NATL GROWTH	INDUSTRIAL MIX	REGIONAL SHARE			NATL GROWTH	INDUSTRIAL MIX	REGIONAL SHARE		
AGRICULTURE, FORESTS, AND FISHERIES	182	375	482	26	24	144	193	167	11	-15	111	107	96
MINING	2687	3491	3682	377	-449	876	804	427	102	-54	143	191	89
CONTRACT CONSTRUCTION	12301	13423	16450	1727	-455	-150	1122	-605	392	-314	2949	3027	2635
MANUFACTURING													
ORDNANCE AND ACCESSORIES[a]	297	2182	1330	42	227	1616	1885	1843	64	-924	8	-852	-916
FOOD AND KINDRED PRODUCTS	7480	7190	7052	1050	-886	-455	-290	-1340	210	-388	40	-138	-348
TEXTILE MILLS AND APPAREL	1420	1657	1748	199	-113	151	237	38	48	-135	178	91	43
LUMBER, WOOD, FURNITURE, AND FIXTURES	1174	1477	1723	165	-129	267	303	138	43	-109	312	246	203
PAPER PRODUCTS	786	993	1093	110	-50	146	207	97	29	-40	111	100	71
PRINTING AND PUBLISHING	5196	5871	6071	730	-251	196	675	-55	171	-76	104	200	29
CHEMICALS	682	1309	1458	96	-22	553	627	531	38	-49	160	149	111
PETRO, COAL, RUBBER, PLASTICS, LEATHER[b]	7619	8543	8917	1070	-431	286	924	-146	249	-893	1017	374	125
STONE, CLAY AND GLASS	943	1030	1038	132	-168	123	87	-45	30	-2	-20	8	-22
PRIMARY AND FABRICATED METALS	2694	3091	2957	378	-134	152	397	19	90	-242	17	-134	-224
MACHINERY, EXC. ELECTRICAL	2836	3183	3240	398	85	-137	347	-51	93	-377	341	57	-36
ELECTRICAL EQUIPMENT AND SUPPLIES	1622	2624	3799	228	144	630	1002	774	77	-400	1498	1175	1098
TRANSPORTATION EQUIPMENT	642	631	1214	90	12	-113	-11	-101	18	-121	686	583	565
INSTRUMENTS AND RELATED PRODUCTS	664	929	830	93	63	109	265	172	27	-92	-34	-99	-126
MISC MANUFACTURING	1020	1065	1317	143	-65	-34	45	-98	31	-84	305	252	221
ADMINISTRATIVE AND AUXILIARY	1721	1825	1874	242	302	-439	104	-138	53	-7	3	49	-4
TRANSPORTATION AND PUBLIC UTILITIES	22403	25479	27304	3145	-459	390	3076	-69	744	655	426	1825	1081
WHOLESALE TRADE	23651	28174	30502	3321	-711	1913	4523	1202	823	440	1065	2328	1505
RETAIL TRADE													
BUILDING AND FARM MATERIALS	1210	1259	1495	170	-150	29	49	-121	37	49	150	236	199
GENERAL MERCHANDISE	9074	8881	9199	1274	206	-1673	-193	-1467	259	513	-455	318	59
FOOD STORES	4651	4407	4887	653	-93	-804	-244	-897	129	207	144	480	351
AUTO DEALERS AND SERVICE STATIONS	4613	5098	5071	648	-122	-40	485	-163	149	156	-332	-27	-176
APPAREL AND ACCESSORIES	2543	2620	3106	357	3	-277	77	-280	77	21	389	486	409
FURNITURE AND FURNISHINGS	1339	1558	1860	188	21	10	219	31	45	-12	269	302	257
EATING AND DRINKING PLACES	8389	10930	12325	1178	317	1046	2541	1363	319	1159	-84	1395	1076
MISC RETAIL STORES	4441	5059	5254	624	-169	164	618	-6	148	277	-230	195	47
ADMINISTRATIVE AND AUXILIARY	2191	3291	3225	308	691	101	1100	792	96	54	-216	-66	-162
FINANCE, INSURANCE AND REAL ESTATE	19444	21113	24452	2730	-543	-518	1669	-1061	616	1657	1066	3339	2723

TABLE 3-3 (Continued)

SHIFT-SHARE ANALYSIS OF DENVER EMPLOYMENT CHANGE BY INDUSTRY, USING UNITED STATES AS COMPARISON ECONOMY, 1965-1968, 1968-1971

	DENVER COUNTY EMPLOYMENT			1965-1968					1968-1971				
				CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE	CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE
	1965	1968	1971	NATL GROWTH	IN DUSTRIAL MIX	REGIONAL SHARE			NATL GROWTH	IN DUSTRIAL MIX	REGIONAL SHARE		
SERVICES													
HOTELS AND LODGING	3906	4228	5125	548	51	-277	322	-266	123	244	530	897	774
PERSONAL SERVICES	4506	4655	4498	633	-316	-167	149	-484	136	-549	256	-157	-293
MISC BUSINESS SERVICES	6039	8378	10232	848	1185	306	2339	1491	245	1129	480	1854	1609
AUTOMOBILE REPAIR	2047	2284	2623	287	-74	23	237	-50	67	169	103	339	272
MISC REPAIR	915	1068	1182	128	50	-26	153	25	31	2	81	114	83
MOTION PICTURES	838	683	677	118	-29	-243	-155	-273	20	26	-52	-6	-26
AMUSEMENT AND RECREATION	1306	1403	1764	183	12	-98	97	-86	41	69	251	361	320
MEDICAL AND HEALTH	12327	14345	17199	1731	1815	-1531	2018	287	419	2359	76	2854	2435
LEGAL SERVICES	1093	1254	1820	153	17	-9	161	8	37	168	362	566	529
EDUCATIONAL SERVICES	3598	4691	5001	505	-620	1208	1093	588	137	431	-258	310	173
NONPROFIT ORGANIZATIONS	4350	5101	5681	611	978	-838	751	140	149	456	-25	580	431
MISC SERVICES	2469	6840	3842	347	105	-81	371	24	83	340	579	1002	919
UNCLASSIFIED ESTABLISHMENTS	392	636	913	55	53	136	244	189	19	349	-90	277	258
TOTALS	199701	230324	255512	28038	-80	2665	30623	2585	6725	6048	12415	25188	18463

Source: County Business Patterns data shown in first three columns

[a]Not included due to disclosure of individual firm.

[b]Rubber and leather estimated.

TABLE 3-4

SHIFT-SHARE ANALYSIS OF DENVER EMPLOYMENT CHANGE BY INDUSTRY, USING MOUNTAIN REGION AS COMPARISON ECONOMY, 1959-1965, 1965-1971[a]

	DENVER COUNTY EMPLOYMENT			1959-1965					1965-1971				
				CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE	CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE
	1959	1965	1971	MTN STATES GROWTH	IN DUSTRIAL MIX	REGIONAL SHARE			MTN STATES GROWTH	IN DUSTRIAL MIX	REGIONAL SHARE		
AGRICULTURE, FORESTS, AND FISHERIES	240	182	482	52	428	-538	-58	-110	58	-76	318	300	242
MINING	1864	2687	3682	401	-512	934	823	422	853	-658	801	995	142
CONTRACT CONSTRUCTION	12359	12301	16450	2658	-2497	-219	-58	-2716	3904	-540	784	4149	245
MANUFACTURING													
ORDNANCE, ACC, RUBBER, PLASTICS, LEA	7361	7587	9790	1583	-3835	2477	226	-1357	2408	3414	-3619	2203	-205
FOOD AND KINDRED PRODUCTS	8623	7480	7052	1855	-1525	-1473	-1143	-2998	2374	-1273	-1529	-428	-2802
TEXTILE MILLS AND APPAREL	1501	1420	1748	323	169	-573	-81	-404	451	1725	-1848	328	-123
LUMBER, WOOD, FURNITURE, AND FIXTURES	1158	1174	1723	249	-107	-126	16	-233	373	-264	440	549	176
PAPER PRODUCTS	645	786	1093	139	157	-155	141	2	249	-70	127	307	58
PRINTING AND PUBLISHING	4311	5196	6071	927	127	-169	885	-42	1649	-605	-169	875	-774
CHEMICALS	1029	682	1458	221	-96	-472	-347	-568	216	-113	672	776	560
PETROLEUM AND COAL	357	329	457	77	-160	56	-28	-105	104	-165	188	128	24
STONE, CLAY AND GLASS	1365	943	1038	294	-414	-301	-422	-716	299	-187	-18	95	-204
PRIMARY AND FABRICATED METALS	3033	2694	2957	652	-1031	39	-339	-991	855	-338	-254	263	-592
MACHINERY, EXC. ELECTRICAL	2290	2836	3240	493	1211	-1157	546	53	900	887	-1384	404	-496
ELECTRICAL EQUIPMENT AND SUPPLIES	827	1622	3799	178	2376	-1759	795	617	515	724	938	2177	1662
TRANSPORTATION EQUIPMENT	403	642	1214	87	-15	168	239	152	204	-311	679	572	368
INSTRUMENTS AND RELATED PRODUCTS	521	664	830	112	-51	82	143	31	211	1537	-1581	166	-45
MISC MANUFACTURING	1010	1020	1317	217	80	-287	10	-207	324	302	-329	297	-27
ADMINISTRATIVE AND AUXILIARY	1950	1721	1874	419	488	-1137	-229	-648	546	365	-758	153	-393
TRANSPORTATION AND PUBLIC UTILITIES	20065	22403	27304	4316	-2142	164	2338	-1978	7111	-2653	443	4901	-2210
WHOLESALE TRADE	22330	23651	30502	4803	-2532	-950	1321	-3482	7507	-2676	2020	6851	-656
RETAIL TRADE													
BUILDING AND FARM MATERIALS	1236	1210	1495	266	-306	14	-26	-292	384	-262	163	285	-99
GENERAL MERCHANDISE	7996	9074	9199	1720	858	-1500	1078	-642	2880	-26	-2729	125	-2755
FOOD STORES	3277	4651	4887	705	377	292	1374	669	1476	-621	-619	236	-1240
AUTO DEALERS AND SERVICE STATIONS	4527	4613	5071	974	580	-1468	86	-888	1464	-285	-721	458	-1006
APPAREL AND ACCESSORIES	2473	2543	3106	532	-298	-164	70	-462	807	-162	-82	563	-244
FURNITURE AND FURNISHINGS	1642	1339	1860	353	-365	-291	-303	-656	425	-74	170	521	96
EATING AND DRINKING PLACES	7679	8389	12325	1652	662	-1603	710	-942	2663	1740	-467	3936	1273
MISC RETAIL STORES	3783	4441	5254	814	-28	-127	658	-156	1410	-55	-542	813	-597
ADMINISTRATIVE AND AUXILIARY	1721	2191	3225	370	490	-391	470	100	695	-127	466	1034	339

TABLE 3-4
(Continued)

SHIFT-SHARE ANALYSIS OF DENVER EMPLOYMENT CHANGE BY INDUSTRY, USING MOUNTAIN REGION AS COMPARISON ECONOMY, 1959-1965, 1965-1971[a]

	DENVER COUNTY EMPLOYMENT			1959-1965					1965-1971				
				CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE	CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE
	1959	1965	1971	MTN STATES GROWTH	IN DUSTRIAL MIX	REGIONAL SHARE			MTN STATES GROWTH	IN DUSTRIAL MIX	REGIONAL SHARE		
FINANCE, INSURANCE AND REAL ESTATE	16272	19444	24452	3500	1592	-1920	3172	-328	6172	220	-1383	5008	-1164
SERVICES													
HOTELS AND LODGING	2868	3906	5125	617	475	-54	1038	421	1240	865	-886	1219	-21
PERSONAL SERVICES	4308	4506	4498	927	-249	-480	198	-729	1430	-894	-544	-8	-1438
MISC BUSINESS SERVICES	3765	6039	10232	810	2636	-1172	2274	1464	1917	101	2176	4193	2276
AUTOMOBILE REPAIR	1857	2047	2623	399	88	-298	190	-209	650	169	-243	576	-74
MISC REPAIR	676	915	1182	145	90	4	239	94	290	123	-146	267	-23
MOTION PICTURES	868	838	677	187	-376	159	-30	-217	266	-101	-326	-161	-427
AMUSEMENT AND RECREATION	1280	1306	1764	275	506	-755	26	-249	415	132	-88	458	43
MEDICAL AND HEALTH	8634	12327	17199	1857	3026	-1190	3693	1836	3913	3009	-2050	4872	959
LEGAL SERVICES	793	1093	1820	171	283	-153	300	129	347	216	164	727	380
EDUCATIONAL SERVICES	2424	3598	5001	521	1248	-596	1174	653	1142	418	-157	1403	261
NONPROFIT ORGANIZATIONS	4099	4350	5681	882	64	-695	251	-631	1381	3151	-3200	1331	-50
UNCLASSIFIED ESTABLISHMENTS	764	392	913	164	-233	-304	-372	-536	124	417	-21	521	397
TOTALS	178277	199701	255512	38347	1640	-18564	21424	-16923	63385	7398	-14972	55811	-7574

Source: County Business Patterns data.

[a]The Mountain Region consists of Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, and Nevada.

TABLE 3-5

SHIFT-SHARE ANALYSIS OF DENVER CITY-COUNTY EMPLOYMENT CHANGE BY OCCUPATIONAL GROUP, USING THE UNITED STATES AS THE COMPARISON ECONOMY, 1950-1960, 1960-1970

OCCUPATIONAL GROUP	DENVER COUNTY EMPLOYMENT 1950	1960	1970	1950-1960 CHANGES RELATED TO NATL GROWTH	IN DUSTRIAL MIX	REGIONAL SHARE	TOTAL CHANGE	NET RELATIVE CHANGE	1960-1970 CHANGES RELATED TO NATL GROWTH	IN DUSTRIAL MIX	REGIONAL SHARE	TOTAL CHANGE	NET RELATIVE CHANGE
PROFESSIONAL, TECHNICAL AND KINDRED WORKERS	22349	27875	39207	2130	6816	-3420	5526	3396	5463	9879	-4010	11332	5868
MNGRS AND ADMINISTRATORS EXC. FARM	19743	18971	18992	1882	253	-2907	-772	-2654	3718	-1985	-1712	21	-3697
SALES WORKERS	16176	16633	17461	1542	834	-1919	457	-1085	3260	-1001	-1431	828	-2432
CLERICAL AND KINDRED WORKERS	32176	39881	48399	3066	6285	-1646	7705	4639	7817	9261	-8560	8518	701
CRAFTMEN, FOREMEN AND KINDRED WORKERS	22141	22543	22226	2110	14	-1722	402	-1708	4418	-1767	-2968	-317	-4735
OPERATIVES AND KINDRED WORKERS	22850	24764	25408	2178	-2880	2617	1914	-264	4854	-2161	-2049	644	-4210
LABORERS EXC. FARM	7949	8558	8677	758	-1693	1544	609	-149	1677	-1956	397	-119	-1558
FARMERS AND FARM MANAGERS	383	336	196	36	-197	114	-47	-83	66	-222	16	-140	-206
FARM LABORERS AND FOREMEN	606	650	598	58	-305	292	44	-14	127	-373	194	-52	-179
SERVICE WORKERS EXC. PRIVATE HOUSEHOLD	17174	19966	28886	1637	3091	-1935	2792	1155	3913	4102	904	8920	5007
PRIVATE HOUSEHOLD WORKERS	3326	3875	2645	317	197	35	549	232	759	-2169	180	-1230	-1989
TOTALS	164873	184052	212695	15712	12415	-8948	19179	3467	36074	11608	-19039	28643	-7431

TABLE 3-6

SHIFT-SHARE ANALYSIS OF DENVER CITY-COUNTY EMPLOYMENT CHANGE BY OCCUPATIONAL GROUP, USING THE DENVER SMSA AS THE COMPARISON ECONOMY, 1950-1960, 1960-1970

OCCUPATIONAL GROUP	DENVER COUNTY EMPLOYMENT			1950-1960					1960-1970				
				CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE	CHANGES RELATED TO			TOTAL CHANGE	NET RELATIVE CHANGE
	1950	1960	1970	DENVER SMSA GROWTH	INDUSTRIAL MIX	REGIONAL SHARE			DENVER SMSA GROWTH	INDUSTRIAL MIX	REGIONAL SHARE		
PROFESSIONAL, TECHNICAL AND KINDRED WORKERS	22349	27875	39207	10198	7398	-12070	5526	-4672	12951	10559	-12178	11332	-1619
MNGRS AND ADMINISTRATORS EXC. FARM	19743	18971	18992	9009	-1014	-8767	-772	-9781	8814	-3276	-5517	21	-8793
SALES WORKERS	16176	16633	17461	7381	-1375	-5549	457	-6924	7728	-761	-6139	828	-6900
CLERICAL AND KINDRED WORKERS	32176	39881	48399	14682	5756	-12733	7705	-6977	18529	4909	-14920	8518	-10011
CRAFTMEN, FOREMEN AND KINDRED WORKERS	22141	22543	22226	10103	-1732	-7969	402	-9701	10473	-4352	-6438	-317	-10790
OPERATIVES AND KINDRED WORKERS	22850	24764	25408	10426	-2086	-6427	1914	-8512	11505	-4577	-6285	644	-10871
LABORERS EXC. FARM	7949	8558	8677	3627	-1620	-1398	609	-3018	3976	-2271	-1586	119	-3857
FARMERS AND FARM MNGRS	383	336	196	175	-297	75	-47	-222	156	-282	-14	-140	-296
FARM LABORERS AND FOREMEN	606	650	598	277	-474	242	44	-233	302	-336	-18	-52	-354
SERVICE WORKERS EXC. PRIVATE HOUSEHOLD	17174	19966	28886	7836	-570	-4475	2792	-5044	9276	6514	-6870	8920	-356
PRIVATE HOUSEHOLD WORKERS	3326	3875	2645	1518	833	-1801	549	-969	1800	-3225	194	-1230	-3030
TOTALS	164873	184052	212695	75232	4819	-60872	19179	-56053	85511	2902	-59770	28643	-56868

Source: Data in columns 1-3 from Bureau of the Census.

such as hotels and lodgings, miscellaneous business services, medical and health and educational services.

It is of special interest to note the industrial mix and regional share components for 1959-1965. A positive industrial mix component indicates that the industry in question is performing better than the average national rate of growth, and of those industries just listed as having a large absolute change, many do not have a positive industrial mix (e.g., mining, printing and publishing, etc.). The ones which do have a positive industrial mix may be presumed to have somewhat brighter prospects for growth.

The regional share component indicates the extent to which an industry in Denver is outperforming that same industry nationwide. This also may be used as an indicator of the extent to which an industry is affected by local conditions. While many industries do have a positive regional share component, it is worthwhile to note the figures for electrical equipment and supplies, food stores, and hotels and lodging. The net relative change column is the algebraic sum of the industrial mix and the regional share components.

For the period 1965-1971, many interesting comparisons can be made, but a few are mentioned here as particularly striking. Note that contract construction boomed during this period with a total gain of 4,149 jobs, and a majority of this growth is attributable to the regional share component. This is in stark contrast to the 1959-1965 period when total change was minus 58. Other sizeable gains were realized during the 1965-1971 period in ordnance and accessories, petroleum and coal products, electrical equipment and supplies, transportation and public utilities, wholesale trade, eating and drinking places, finance, insurance and real estate, medical and health services and others. Industrial mix and regional share analysis can also be performed.

It is interesting to note the totals in Table 3-2. From 1959-1965 the total employment change was 21,322 whereas it increased to 55,811 during the following six-year period. In the first period regional share was actually negative at 9,676 whereas in the latter period a strong positive regional share of 14,180 was observed. Clearly, the 1965-1971 period was a much more prosperous one for Denver city and county. Since the industrial mix component of growth was roughly the same for the two periods, it can be seen that most of the better performance during the latter period was related to the regional share, i.e., local growth component.

In view of the performance of the 1965-1971 period, a further breakdown was done and the results are shown in Table 3-3. Here, the interesting comparisons are to be made between the performance of an industry in the first half of the period versus the second half of the period. Total change for all industries was somewhat greater from 1965-1968, but the regional share component of change was much larger from 1968-1971. Consequently, it can be seen that most of the differentially larger regional share growth occurred in the late 1960's. Largely contributing to this performance were the construction, apparel and accessories, finance, insurance and real estate, hotels and lodgings, health and miscellaneous service industries.

Some industries performed relatively (to 1965-1968) poorly during the 1968-1971 period, however, including wholesale trade, eating and drinking places and miscellaneous business services. From the data in Table 3-3 it is possible to establish not only the overall performance of the local economy, but the industries which contributed to that performance either positively or negatively.

Mountain States Comparisons. A shift-share analysis was also performed using the Mountain States Region as a comparison economy.[1] The main purpose of this analysis was to discern how the performance of the Denver city and county economy compares with the region.

The results are shown in Table 3-4. The columns of interest are those showing the industrial mix and regional share components. The industrial mix was positive for both periods, but it was significantly greater during the second period. More striking is the fact that the regional share component is negative and large for both periods. This indicates that Denver city and county is growing less rapidly than the region as a whole. The individual industries which contribute to the differential growth rate can be seen in the table. Since the number of interesting comparisons is limited only by the imagination of the interpreter, details are left to the reader.

SMSA Comparisons. A similar conclusion emerges from shift-share results comparing Denver city and county with the Denver SMSA. A large negative regional share for Denver city and county can be seen relative to the SMSA which indicates that the city is not growing as rapidly. The results, at a higher level of aggregation than shown so far, can be seen in Appendix Table 3-1.

Analysis by Occupational Groups

An additional dimension was added to the shift-share analysis by performing calculations on the basis of occupational group. The relative change in the employment distribution by occupational groups was seen in Chapter 2. At this point, the purpose is to decompose the change over time into national,

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[1]The Mountain States Region consists of Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, and Nevada.

industrial mix and regional change components. The results of the analysis are shown in Table 3-5 using the United States as the comparison economy.

United States Comparison. The data shown in Table 3-5 are from the decennial census and are therefore not directly comparable to the County Business Patterns data utilized previously in the chapter. Denver city and county had an industrial mix which grew faster than the national growth rate throughout the 20-year period, and as a result the industrial mix component of employment change was large and positive for both periods. The regional share component, conversely, was negative for both periods. In terms of total change, professional-technical, clerical and service workers increased most reflecting national trends.

From 1950-1960, occupational groups which reflected a favorable regional share in Denver included operatives, laborers and farm employment. From 1960-1970 the only groups which had positive regional shares were the farm and laborer categories plus service workers.

A negative net relative change, which reflects the sum of the industrial mix and regional share components, was observed for 7 of the 11 groups from 1950-1960 and for 8 of the 11 from 1960-1970.

Denver SMSA Comparison. The same analysis was performed using the Denver SMSA as the comparison economy and the results are shown in Table 3.6. As might be expected, the regional share component was negative for both periods and larger than in the United States comparison. More striking yet, all eleven net relative change estimates were negative for both periods. In terms of total change professional-technical, clerical and service workers increased in greatest numbers. But again, this reflects national trends and trends in the industries which comprise the Denver city and county economy.

Conclusion. Tables 3-2 through 3-6 have presented a great deal of data which describe in some detail the employment growth characteristics of the Denver city and county economy. The test has mentioned specifically some of the highlights in the data, and the additional inferences which can be drawn are discussed throughout this report where applicable.

A Meaningful Grouping of Industries

The main purpose to which the shift-share analysis will be put is in the selection of key industries for additional study. This is elaborated upon in the next chapter, and the balance of this chapter provides a categorization of industries in terms of industrial mix and regional share components of change. This categorization is useful in providing a meaningful framework for analyzing the trends and patterns which emerge from the data.

Using the data in the tables, industries in Denver can be divided into three groups: (see Table 3-7) (1) those industries with a positive industrial mix component and a positive regional share component; (2) those firms with components of differing signs: (3) those industries with a negative industrial mix component and a negative regional share component.

As far as ranking these groups as being likely candidates for key industries, groups 1 and 3 occupy opposite ends of the scale. Group 1 industries demonstrate growth rates above the national economy on both a national and regional level and clearly are key industries in a regional economic base. Group 3 industries demonstrate growth rates below the national economy (or even negative growth rates) and are not considered to be key industries. These group 3 industries are considered to be beyond the influence of city government because their negative components are associated with a much larger nationwide trend over which the city can hope to have little or no control.

TABLE 3-7

THREE GROUPS OF DENVER INDUSTRIES BASED ON CATEGORIES OF EMPLOYMENT CHANGE FROM 1968-1971

Industry	Employment		Components		Total Change	Regional Share as a Percentage of Total Change
	1968	1971	Industrial Mix	Regional Share		
GROUP 1						
Agriculture, Forests, Fisheries	182	482	15	253	300	84.3
Transportation and Public Utilities	22403	27304	173	837	4901	17.1
Retail Trade						
Apparel and Accessories	2543	3106	20	101	563	17.9
Furniture and Furnishings	1339	1860	9	280	521	53.7
Eating and Drinking Places	8389	12325	1375	1104	3936	28.0
Finance, Insurance, Real Estate	19444	24452	1138	492	5008	9.8
Services						
Hotels and Lodging	3906	5125	312	229	1219	18.8
Misc. Business Services	6039	10232	2307	837	4193	20.0
Automobile Repair	2047	2623	91	129	576	22.4
Misc. Repair	915	1182	53	55	267	20.6
Amusement and Recreation	1306	1764	86	145	458	31.7
Legal Services	1093	1820	186	351	727	48.3
Misc. Services	2469	3842	458	486	1373	35.4
Unclassified Establishments	392	913	329	124	521	23.8
GROUP 2a						
Manufacturing						
Administrative and Auxiliary	1721	1874	301	-447	153	-292.2
Retail Trade						
General Merchandise	9074	9199	822	-2273	125	-1818.4
Food Stores	4651	4887	149	-721	236	-205.5
Auto Dealers and Service Stations	4613	5071	32	-375	458	-81.9
Misc. Retail Stores	4441	5254	94	-53	813	-6.5
Administrative and Auxiliary	2191	3225	763	-110	1034	-10.6
Services						
Motion Pictures	838	677	5	-312	-161	193.8
Medical and Health	12327	17199	4482	-1751	4872	-35.9
Non profit Organizations	4350	5681	1538	-962	1331	-72.3

TABLE 3-7
(Continued)

THREE GROUPS OF DENVER INDUSTRIES BASED ON CATEGORIES OF EMPLOYMENT CHANGE FROM 1968-1971

Industry	Employment 1968	Employment 1971	Components: Industrial Mix	Components: Regional Share	Total Change	Regional Share as a Percentage of Total Change
GROUP 2b						
Mining	2687	3682	-503	1031	995	103.6
Contract Construction	12301	16450	-786	2799	4149	67.5
Manufacturing						
Ordnance and Accessories	297	1330	-6	987	1033	95.5
Textile Mills and Apparel	1420	1748	-239	320	328	97.6
Lumber, Wood, Furniture, Fixtures	1174	1723	-222	567	549	103.3
Paper Products	786	1093	-85	256	307	83.4
Printing and Publishing	5196	6071	-331	304	875	34.7
Chemicals	682	1458	-51	708	776	91.2
Petro, Coal, Rubber, Plastics, Leather	7619	8917	-1307	1282	1298	98.8
Stone, Clay and Glass	943	1038	-175	106	95	111.6
Primary and Fabricated Metals	2694	2957	-367	162	263	61.6
Machinery, exc. Electrical	2836	3240	-305	217	404	53.7
Electrical Equipment and Supplies	1622	3799	-155	2051	2177	94.2
Transportation Equipment	642	1214	-131	591	572	103.3
Instruments and Related Products	664	830	-17	67	116	40.4
Misc. Manufacturing	1020	1317	-154	273	297	91.9
Wholesale Trade	23651	30502	-321	3064	6851	44.7
Retail Trade						
Building and Farm Materials	1210	1495	-106	181	285	63.5
Services						
Personal Services	4506	4498	-894	104	-8	-1300.0
Educational Services	3598	5001	-318	1096	1403	78.1
GROUP 3						
Manufacturing						
Food and Kindred Products	7480	7052	-1323	-404	-428	94.4

GROUP 1 - Positive industrial mix and positive regional share.
GROUP 2 - Industrial mix and regional share with different signs; a is positive industrial mix and b is positive regional share
GROUP 3 - Negative industrial mix and negative regional share.

Source: Table 3-2.

The industries classified in Group 2 in Table 3-7 present special problems of choice. Those with a negative industrial mix and a positive regional share are industries which are not strong performers overall but are doing quite nicely in Denver. It could be argued that since they are not strong performers nationally they would be poor bets for special attention locally; conversely, since they are doing well locally it could be argued they should be assisted and encouraged.

The industries with positive industrial mix and negative regional share components are strong industries overall, but are not doing as well in Denver as might be expected. Since the industrial mix is positive it might be argued that they should be encouraged, and since the regional share component is negative it could be argued that they should be discouraged since they don't seem to do well locally; conversely, it could be argued that with a little assistance and encouragement locally they might be potentially star performers.

In view of these somewhat conflicting goals and interpretations, it was concluded at this stage that all industries in Group 2 were to be considered potential key industries. The final choice among them was left until a larger group of selection criteria were considered as discussed in Chapter 4.

One more criterion, among the great many which were considered, which is worthy of special mention, is the regional share component as a percentage of total change. The rationale for looking at this indicator was that the larger the regional share relative to total change the better an industry is doing locally and therefore, a priori, the greater is the likelihood it can be positively influenced. The calculation are shown in the last column of Table 3-7. Of course, a large negative percentage could indicate an industry desperately in need of assistance and it, too, could be considered a key industry.

Conclusion. This analysis was helpful in achieving some indication of the relative importance of the different industries and the types of forces influencing the growth trend of each. However, to further narrow the list of industries to manageable proportions, the successive application of other criteria had to be made. This is done in the following chapter.

CHAPTER 4

CRITERIA FOR SELECTION OF KEY INDUSTRIES

Introduction

The purpose of this chapter is to extend the shift-share analysis of Chapter 3 to ultimately select three key industries for detailed study. In order to make the selection, a number of additional criteria were identified. These criteria, which are listed in Table 4-1, were derived from consultation with Denver city administrators. Initially a large number of additional criteria were considered and then narrowed to the factors shown in Table 4-1. It is felt that these criteria result in the selection of a group of industries which not only promise to be subject to local government influence, but would also have the potential for complying with important priorities of the local community.

The Selection Process

The analysis began with the industries listed in Table 4-2. These were selected from the shift-share analysis presented in Chapter 3 as being characterized by a regional share component of employment change which was large relative to total employment change. The process then was one of narrowing the list to one more manageable for detailed study by consideration of the criteria in Table 4-1.

It was felt that an important aspect of the "key industries" should be the extent to which they would provide employment opportunities for the unemployed in Denver. Data for Denver alone were not available, but the figures

TABLE 4-1

CRITERIA FOR SELECTION OF KEY INDUSTRIES IN DENVER

Criterion	Explanation
Impact on Unemployment	Extent to which the type of labor employed in the industry matches the characteristics of the unemployed in Denver. Should such industry be encouraged it would tend to help correct the differentially high unemployment rate in Denver among selected groups.
Environmental Acceptability	Extent to which the industry prossesses unacceptable environmental externalities. Could be used to select industries to discourage, but in this study used to select industries lacking negative spill-overs for possible encouragement.
Susceptibility to Local Influence	Extent to which the industry might be susceptible to policy tools and actions of local government. Effort made to key on industries with a high degree of local orientation.
Orientation to CBD-type Services	Extent to which the industry depends upon central business district related suppliers and services. Rationale used to identify industries which might find locational advantages to central location. This relates to the local influence factor.
Income Generated	Extent to which the industry pays wages which are high relatively. Higher income levels tend to be reflected in higher taxes and better community quality, but the criterion offset by need to provide jobs for unemployed which tend to be concentrated among lower income level.
Growth Potential	Extent to which the industry evidences a positive growth trend. This relates to a positive industrial mix component of shift-share analysis.
Prospect for Labor Displacing Technological Change	Extent to which the industry has tended to lay off its labor force and replace the productive capacity with capital machinery. The greater this tendency the less the impact on employment, but the greater the impact on property tax revenue generation.

Source: Study team in conjunction with Denver city administrators.

TABLE 4-2

POTENTIAL KEY INDUSTRIES FOR DENVER CITY AND COUNTY[a]

Industry	1971 Employment	1965-71 Regional Change	1965-71 Total Change
Manufacturing[b]	45,661	7,148	8,865
Textile mills and Apparel[b]	1,748	320	328
Lumber, Wood, Furniture	1,723	567	549
Paper Products	1,093	256	307
Chemicals	1,458	708	776
Petroleum, Coal, Rubber Plastics, Leather	8,917	1,282	1,298
Electrical Equipment	3,799	2,015	2,117
Transportation Equipment	1,214	591	572
Wholesale Trade	30,502	3,064	6,851
Retail Trade	46,422	-1,200	7,971
Eating and Drinking	12,325	1,104	3,963
Building and Farm Materials	1,495	181	285
Apparel and Accessories[b]	3,106	101	563
Furniture and Furnishings	1,860	280	521
Finance, Insurance and Real Estate	24,425	492	5,008
Services	59,911	-249	16,299
Miscellaneous Business and Repair Services	10,232	837	4,193
Amusement and Recreation[b]	1,764	145	458

[a]These industries were selected as "key" because of an employment growth pattern in Denver that deviates from national and regional trends.

[b]Has a negative "regional share" relative to the Mountain Region.

Source: Shift-share analysis presented in Chapter 3.

shown in Table 4-3, relating to the SMSA, was useful in focusing attention on the types of job skills possessed by the recently unemployed. Similarly, Table 4-4 indicates the occupations with the largest number of job openings for the period 1970-1975. Used together, these two tables gave some feel for the types of employment opportunities needed, in general, in Denver. This set of criteria was then applied in turn to the industries listed in Table 4-2.

For purposes of brevity, detailed discussion of the application of all seven criteria are not presented. Rather, suffice it to say that the criteria shown in Table 4-1 were considered one at a time, their relative importance was assessed (though not conclusively determined), and a number of industries chosen which complied to a greater or lesser extent with them. In fact, the selection process became very difficult, and largely subjective, after several rounds of applying the criteria; that is, several industries were identified which met all of the criteria more or less.

After much reconsideration and discussion with city decision-makers, the following group of industries was settled upon. Each is listed along with a brief overview of its main characteristics.

1. Electrical equipment -- This was the only manufacturing industry chosen. It has a very large regional share relative to total change from 1965 to 1971. It is a clean industry in terms of pollution, and evidences a significant growth potential. It is felt that the high value to weight ratio of the industry would tend to offset any possible transport diseconomies due to Denver's geographic location relative to national markets.
2. Wholesale trade -- This sector also showed a significant regional share. In addition, Denver has long been a regional wholesaling

TABLE 4-3

LAST OCCUPATION OF THE EXPERIENCED UNEMPLOYED IN THE DENVER SMSA[1]

Occupation	Male Number	Female Number	Total	Percent
Professional, technical	942	778	1,720	9.6%
Managers, administrators	609	163	772	4.3
Sales workers	653	606	1,259	7.0
Clerical	576	2,251	2,827	15.8
Craftsmen	2,504	169	2,673	14.9
Construction craftsmen	1,263	n.a.	1,263	7.1
Carpenters	571	n.a.	571	3.2
Mechanics, repairmen	305	n.a.	305	1.7
Operatives	1,359	1,009	2,368	13.2
Assemblers	116	144	260	1.5
Garage workers, gas station attend.	180	n.a.	180	1.0
Machine operatives	200	n.a.	200	1.1
Transport Equipment Operatives	742	11	753	4.2
Non-Farm Laborers	1,592	131	1,723	9.6
Farmers, farm managers	36	0	36	0.0
Farm laborers and foremen	222	35	257	1.4
Service workers (non household)	1,380	1,543	2,923	16.3
Cleaning workers	450	226	676	3.8
Food service workers	618	817	1,435	8.0
Personal service workers	118	155	273	1.5
Private Household workers	15	168	183	1.0
Unemployed--last worked prior to 1959	92	286	378	2.1
TOTAL, 16 years and over	10,758	7,150	17,908	100.0

[1]Data are for the SMSA including Adams, Arapahoe, Boulder, Denver and Jefferson counties.

Source: State of Colorado, Division of Employment, Research and Analysis.

TABLE 4-4

OCCUPATIONS WITH LARGEST NUMBER OF JOB OPENINGS, 1970-75

Occupation	Total Openings	Percent of Total Openings
Nurses, Professional	5,240	5.4%
Teachers, Elementary	4,010	4.1
Lawyers, Judges	3,420	3.5
Office Machine Operators	3,750	3.9
Bookkeepers, Hand	3,410	3.5
Cashiers	4,970	5.1
Sales workers	18,760	19.4
Foremen	3,090	3.2
Motor Vehicle Mechanics	3,320	3.4
Drivers, Bus, Truck, Tractor	4,050	4.2
Private Household workers	7,760	8.0
Policemen, Detectives, etc.	2,980	3.1
Cook, non household	4,120	4.3
Waiters and Waitresses	6,300	6.5
Attendants, Hospital, Other Institutions	8,070	8.3
Janitors and Sextons	4,080	4.2
Nurses, Practical	3,500	3.6
Laborers, non farm, non mine	5,940	6.1
TOTAL	96,770	100.0

Source: Colorado Division of Employment.

center, and growth in this sector is expected to continue to concentrate in the city because of its junction for air, rail and highway transportation. Concentration reflects and reinforces increasing availability of warehousing facilities. It should be noted that this industry did not fare well during the 1968-71 period.

3. Retail trade, eating and drinking establishments -- The regional share employment component for this subsector was positive, and Denver's position as a tourist attraction and area of high population growth promises growth for eating and drinking establishments.

4. Finance, insurance (and real estate) -- Denver has become and is becoming an important regional center for financial activities. The employment concentration in Denver has grown rapidly in the 1970's. As business and population grow in the SMSA, Denver will continue to be increasingly important as the dominant financial center because these firms will also prefer the central office locations provided downtown.

5. Miscellaneous business services -- Employment in this sector has been growing rapidly, and tends to concentrate in Denver city and county seeking a central location for serving the metropolitan area business community.

Note that all of the listed industries are environmentally clean, tend to be smaller and hence perhaps more subject to local government influences, are somewhat oriented to central locations, and have been growing in recent years.

In addition, these industries are engaged in hiring employees who correspond to a greater or lesser degree to the employment needs of the central city as indicated in Tables 4-3 and 4-4. Note especially the need for jobs for clerical, craft, operative and service employees.

Two points of clarification are needed. First, it might be wondered why Table 4-3 shows relatively large numbers of unemployed coming from occupations provided by key industries which have been shown to be performing relatively well. This might be explained by several factors including a relatively more rapid rate of increase in the labor force in these specific occupations or a higher employee turnover rate. In any case, more job opportunities would be a potentially offsetting factor. Second, Table 4-4 refers to projected future job openings and reflects the fact of a continuing need for employment opportunities in the occupations indicated.

Using this list as a starting point, detailed analyses such as those presented in the following three chapters were begun. It soon became clear that time and financial constraints of this study would not permit extending the analysis to all five industries shown. Consequently, the list was again narrowed on the basis of the Table 4-1 criteria, to electrical equipment manufacturing, wholesale trade, and retail eating and drinking establishments.

CHAPTER 5

A BRIEF PROFILE OF THE ELECTRICAL MACHINERY, EQUIPMENT AND SUPPLIES INDUSTRY IN DENVER (SIC 36)

Having selected the three key industries, the analysis now moves to a more detailed consideration of each one. This chapter deals with SIC 36, and the two chapters which follow treat SICs 50 and 58.

The purpose of the analysis is to discern trends in the growth of industry sales and employment and other indicators. These trends, as they are reflected by secondary empirical data, can provide the basis for hypothesis of this type, the analysis can proceed with field research designed to verify trends and test hypotheses. This field work is summarized in chapters 8, 9 and 10.

The present chapter provides a profile of the electrical machinery, equipment and supplies industry in Denver. Emphasis is placed on identifying sources of data and presenting tabulations of data which are most relevant. Space limitations preclude presentation of a detailed discussion of all factors relevant to the present study. Rather, main points are discussed and data are presented.

County Business Patterns data have many gaps, yet it is the best source of trend data for SIC 36, at least in comparing the United States, Colorado, and Denver. However, some additional data such as the cost and value added inputs and the sales outputs for some 85 industries shed considerable light in our probe of this industry. Other useful data include sales estimates for the three profiled key industries.

The data are presented in 10 tables and are referred to by number; the following sources are utilized and the text refers to the letters shown by each source.

(a) County Business Patterns, 1956-1971, published by the Census Bureau.

(b) Location Analysis, a book by Harris and Hopkins.

(c) Survey of Current Business, November 1969 and April 1973. Presents a discussion of the Input-Output Structure of the US Economy: 1963, Volumes I-III, U. S. Dept. of Commerce.

(d) Personal Factors Influencing Small Manufacturing Plant Locations, by the University of Connecticut, 1961.

(e) Denver Economic Base Analysis, by the City and County of Denver, March 1973.

From these sources and the tabulated data which follow, some inferences on trends over time (mostly 15 years) can be made. The discussion is purposely brief, and many insights and conclusions which were learned from the data are not discussed specifically in the interest of brevity.

The average size of electrical manufacturing firms, as determined by the number employed, has shifted from the 0-7 employee category to the 8-49 category in Denver as shown in Table 5-1. The shift is much the same for the State of Colorado. For the United States as a whole, the distribution is more evenly spread out among the 4 categories with some predominance in the 59-249 group. Hence Denver and Colorado, on the average, have smaller firms concentrated in the second category. The trend for the 4-county suburban ring cannot be determined because of the sparse data caused by reporting and disclosure problems.

Table 5-2 reflects several important trends. Denver and Colorado have experienced an increase in number of firms by 144 percent and 238 percent respectively, from 1956 to 1971. This may be compared with a United States

TABLE 5-1

PERCENTAGE DISTRIBUTION OF SIC 36 FIRMS
BY EMPLOYMENT SIZE CLASS, SELECTED REGIONS,
SELECTED YEARS, 1956-1971

Year/Region	Percentage of Firms by Employment Size Class				
	0-7	8-49	50-249	250↑	Total
1956					
United States	31.5	33.2	21.7	13.6	100.0
Colorado	48.3	34.5	10.3	6.9	100.0
Adams	--	--	--	--	100.0
Arapahoe	--	--	--	--	100.0
Boulder	--	--	--	--	100.0
Jefferson	--	--	--	--	100.0
4-County	--	--	--	--	100.0
Denver	44.4	44.4	5.6	5.6	100.0
5-County	44.4	44.4	5.6	5.6	100.0
1959					
United States	31.8	35.5	20.6	12.0	100.0
Colorado	54.2	33.3	6.3	6.3	100.0
Adams	--	--	--	--	100.0
Arapahoe	--	--	--	--	100.0
Boulder	--	--	--	--	100.0
Jefferson	--	--	--	--	100.0
4-County	--	--	--	--	100.0
Denver	53.3	40.0	3.3	3.3	100.0
5-County	53.3	40.0	3.3	3.3	100.0
1962					
United States	31.9	36.0	20.4	11.6	100.0
Colorado	37.7	46.4	8.7	7.2	100.0
Adams	--	--	--	--	100.0
Arapahoe	--	--	--	--	100.0
Boulder	20.0	70.0	10.0	0.0	100.0
Jefferson	--	--	--	--	100.0
4-County	20.0	70.0	10.0	0.0	100.0
Denver	35.1	48.6	10.8	5.4	100.0
5-County	31.9	53.1	10.6	4.3	100.0

TABLE 5-1
(Continued)

Year/Region	Percentage of Firms by Employment Size Class				
	0-7	8-49	50-249	250↑	Total
1965					
United States	30.8	35.4	21.3	12.5	100.0
Colorado	50.6	42.9	11.7	7.8	100.0
Adams	--	--	--	--	100.0
Arapahoe	--	--	--	--	100.0
Boulder	--	--	--	--	100.0
Jefferson	83.3	--	--	16.6	100.0
4-County	83.3	--	--	16.6	100.0
Denver	48.6	37.8	10.8	2.7	100.0
5-County	53.5	32.6	9.3	4.7	100.0
1968					
United States	27.9	35.5	23.0	13.5	100.0
Colorado	39.1	33.7	20.7	6.5	100.0
Adams	--	--	--	--	100.0
Arapahoe	62.5	12.5	25.0	--	100.0
Boulder	35.7	28.6	35.7	--	100.0
Jefferson	54.5	36.4	--	9.1	100.0
4-County	48.4	27.3	21.2	3.0	100.0
Denver	43.9	39.0	14.6	2.4	100.0
5-County	45.9	33.8	17.6	2.7	100.0
1971					
United States	29.1	29.1	37.2	11.5	100.0
Colorado	32.7	45.9	14.3	7.1	100.0
Adams	--	--	--	--	100.0
Arapahoe	62.5	25.0	12.5	--	100.0
Boulder	35.7	50.0	14.3	--	100.0
Jefferson	14.3	71.4	--	14.3	100.0
4-County	37.9	48.3	10.3	3.4	100.0
Denver	31.8	52.3	11.4	4.5	100.0
5-County	34.2	69.9	15.1	4.1	100.0

Source: County Business Patterns, U. S. Census Bureau, selected years.

TABLE 5-2

NUMBER OF SIC 36 FIRMS AND PERCENTAGE CHANGE
FOR SELECTED REGIONS, SELECTED YEARS, 1956-1971

Region	Number of Firms	Percent Δ From Prior Period	County/Region as Percentage of SMSA	U.S.	Colorado
1956					
United States	6,166	--	--	--	--
Colorado	29	--	--	.5	--
Adams	ND	--	--	--	--
Arapahoe	ND	--	--	--	--
Boulder	ND	--	--	--	--
Jefferson	ND	--	--	--	--
4-County	ND	--	--	--	--
Denver	18	--	100.0	.3	62.1
Denver SMSA	18	--	--	.3	62.1
1959					
United States	8,080	31.0	--	--	--
Colorado	48	65.5	--	.6	--
Adams	ND	--	--	--	--
Arapahoe	ND	--	--	--	--
Boulder	ND	--	--	--	--
Jefferson	ND	--	--	--	--
4-County	ND	--	--	--	--
Denver	30	66.7	100.0	.4	62.5
Denver SMSA	30	66.7	--	.4	62.5
1962					
United States	9,240	14.4	--	--	--
Colorado	69	43.8	--	.7	--
Adams	ND	--	--	--	--
Arapahoe	ND	--	--	--	--
Boulder	10	--	21.2	NC	14.5
Jefferson	ND	--	--	NC	--
4-County	10	--	21.2	NC	14.5
Denver	37	23.3	78.7	.4	53.6
Denver SMSA	47	56.7	--	.5	68.1

TABLE 5-2
(Continued)

Region	Number of Firms	Percent Δ From Prior Period	County/Region as Percentage of SMSA	U.S.	Colorado
1965					
United States	9,678	4.7	--	--	--
Colorado	77	11.6	--	.8	--
Adams	ND	--	--	--	--
Arapahoe	ND	--	--	--	--
Boulder	ND	--	--	--	--
Jefferson	6	--	13.9	NC	7.8
4-County	6	--	13.9	NC	7.8
Denver	37	0.0	14.0	.4	48.1
Denver SMSA	43	-8.5	--	.4	55.8
1968					
United States	10,488	8.4	--	--	--
Colorado	92	19.5	--	.9	--
Adams	ND	--	--	--	--
Arapahoe	8	--	--	NC	8.7
Boulder	14	--	10.8	NC	15.2
Jefferson	11	83.3	18.9	NC	11.9
4-County	33	450.0	14.9	.3	35.9
Denver	41	10.8	44.6	.4	44.6
Denver SMSA	74	72.1	55.4	.7	80.4
1971					
United States	11,315	7.8	--	--	--
Colorado	98	6.5	--	.9	--
Adams	ND	--	--	--	--
Arapahoe	8	0.0	11.0	NC	8.2
Boulder	14	0.0	19.2	NC	14.3
Jefferson	7	-36.4	9.6	NC	7.1
4-County	29	-12.1	39.7	.3	29.6
Denver	44	7.3	60.3	.4	44.9
Denver SMSA	73	-1.4	--	.6	74.5

Source: County Business Patterns, U. S. Census Bureau, selected years.

figure of 83 percent. Denver's share of Colorado's total number of firms has fallen from 62.1 percent to 44.9 percent in the 15 year interval. Although the data for the 4-county area is incomplete, it makes up between 30 percent and 35 percent of Colorado's total number of firms in 1968 and 1971. However, in reference (e) and Table 5-3 there appears to be an upward surge in Denver's share of Colorado's total firms from 1968-1971. One other point, Colorado's share of the United States market has risen from 0.5 percent to 0.9 percent while Denver records a 0.3 percent to a 0.4 percent increase from 1956-1971.

In terms of total employment data, Denver's share of state total employment in SIC 36 has fallen from 60.8 percent in 1959 to 33.2 percent in 1971. These data are shown in Table 5-3. However, as mentioned in the last paragraph, there has been a slight increase in Denver in recent years. From 1965-1971, SIC 36 employment in Denver increased from 30.3 percent of the Colorado total to 33.2 percent. In reference (e), over the 1966-1970 period an 18.8 percent employment growth rate was noted by Denver as compared to the SMSA rate of 30.0 percent. Hence, Denver is growing relative to the state as shown in Table 5-3, but it is not growing as fast as the 5-county Denver SMSA as shown in reference (e) in recent years.

The electrical industry accounts for 1.1 percent of the total labor force in the Denver SMSA whereas, in Denver it accounts for 1.3 percent of the total. There are problems with regard to data for the 4-county suburban ring (and consequently the 5-county Denver SMSA area) so the qualified conclusion is reiterated as follows: the 4-county ring is growing faster than Denver, but in recent years Denver has managed to grow faster than Colorado and the United States. Also, Denver's share of Colorado total SIC 36 employment declined considerably from 1956 to 1971 but increased slightly from 1968 to 1971. Thus, there was a time period when the 4-county area grew tremendously accounting for a large chunk of state growth. However, for the past few years the

TABLE 5-3

EMPLOYMENT, WAGES AND EARNINGS IN SIC 36, FOR SELECTED GEOGRAPHIC AREAS

Year/Region	Number of Employees	Percent Δ From Prior Period	County/Region as a Percentage of SMSA	State	U.S.	1st Quarter Taxable Payroll (000)	Average Wage	Percent Δ From Prior Period
1956								
United States	1,060,676					$1,205,950	$1,136.96	
Colorado	1,698				.2	1,496	881.03	
Adams	ND							
Arapahoe	ND							
Boulder	ND							
Jefferson	ND							
4-County	ND							
Denver	1,033		100.0	60.8	.1	1,007	974.83	
5-County	1,033			60.8	.1	1,007	974.83	
1959								
United States	1,183,155	11.5				1,491,311	1,260.45	10.9
Colorado	1,730	1.9			.1	1,841	1,064.16	20.8
Adams	ND							
Arapahoe	ND							
Boulder	ND							
Jefferson	ND							
4-County	ND							
Denver	827	-20.0	100.0	47.8	.1	1,090	1,318.01	35.2
5-County	827	-20.0		47.8	.1	1,090	1,318.01	35.2

TABLE 5-3
(Continued)

Year/Region	Number of Employees	Percent Δ From Prior Period	County/Region as a Percentage of SMSA	State	U.S.	1st Quarter Taxable Payroll (000)	Average Wage	Percent Δ From Prior Period
1962								
United States	1,405,382	18.8				$1,988,988	$1,415.26	12.2
Colorado	3,662	111.7			.3	4,645	1,268.43	.6
Adams	ND							
Arapahoe	ND							
Boulder	343		14.6	9.4	NC	372	1,084.54	
Jefferson	ND							
4-County	343		14.6	9.4	NC	372	1,084.54	
Denver	2,012	94.8	85.4	54.9	.1	2,746	1,364.81	3.6
5-County	2,355	128.0		64.3	.2	3,118	1,323.99	.5
1965								
United States	1,540,040	9.6				2,342,087	1,520.79	7.5
Colorado	5,350	46.1			.3	7,402	1,383.55	9.1
Adams	ND							
Arapahoe	ND							
Boulder	ND							
Jefferson	D					D		
4-County	ND							
Denver	1,622	-19.4	100.0	30.3	.1	2,694	1,660.91	21.7
5-County	1,622	-31.2		30.3	.1	2,694	1,660.91	25.4

TABLE 5-3
(Continued)

Year/Region	Number of Employees	Percent Δ From Prior Period	County/Region as a Percentage of SMSA	State	U.S.	1st Quarter Taxable Payroll (000)	Average Wage	Percent Δ From Prior Period
1968								
United States	1,893,007	22.9				$3,336,003	$1,762.27	15.9
Colorado	9,201	72.0			.5	15,054	1,636.12	18.3
Adams								
Arapahoe	168		5.4	1.8	NC	244	1,452.38	
Boulder	335		10.7	3.6	NC	490	1,462.68	
Jefferson	D					D		
4-County	503		16.1	5.5	NC	734	1,459.24	
Denver	2,624	61.8	83.9	28.5	.1	4,928	1,878.04	13.1
5-County	3,127	92.8		34.0	.2	5,662	1,810,68	9.0
1971								
United States	1,660,498	-12.3				3,403,119	2,049.45	16.3
Colorado	11,460	24.6			.7	22,823	1,991.53	21.7
Adams								
Arapahoe	117	-30.4	2.8	1.0	NC	158	1,350.42	-8.0
Boulder	287	-14.3	6.8	2.5	NC	556	1,937.28	32.4
Jefferson	D					D		
4-County	404	-19.7	9.6	3.5	NC	714	1,767.32	21.1
Denver	3,799	44.8	90.4	33.2	.2	7,904	2,080.44	10.8
5-County	4,203	34.4		36.7	.3	8,618	2,050.44	13.2

ND = No Data
NC = Not Calculated
D = Disclosure

Source: County Business Patterns, U. S. Census Bureau, selected years.

evidence is inconclusive as to whether this trend will continue. Since there are no data on sale or capital investment it is not possible to check the trends indicated by employment figures.

Table 5-3 also indicates that per worker wages and earnings are higher in the United States than in Colorado but that the gap is narrowing. Denver, on the other hand, has higher average wages than Colorado, the United States and the 4-county suburban ring.

Tables 5-4 through 5-9 give the direct cost breakdowns and value added for the major divisions of SIC 36 per dollar of output. This indicates the percentage of costs (inputs) required from other industries to produce one dollar of output plus the value added by the producing industry in coming up with the final product. Of value, in addition, would be intra- and inter-industry comparisons; for example, various components of the electrical industry depend heavily on each other to produce. In almost all cases, the highest percentage costs are intra-industry requirements. Policy implications might be the impact of strikes, the opportunity for collusion and the strength of policy tools by affecting key costs. Also, note that electrical goods are used in almost every industry.

The following points summarize some of the locational factors peculiar to the electrical industry:

1. The technology (especially of capital equipment) of the electrical industry has greatly improved, thus requiring less skilled and more unskilled workers in its labor requirements. Firms would then seek areas with an abundance of cheap, unskilled available labor (reference b).
2. Because of interdependence among firms, the electrical industry is becoming more geographically concentrated. Therefore, if a

TABLE 5-4

COST STRUCTURE AND VALUE ADDED FOR THE ELECTRIC TRANSMISSION AND DISTRIBUTION EQUIPMENT AND ELECTRICAL INDUSTRIAL APPARATUS (INPUT-OUTPUT CODE 53 - SIC CODES 361, 362)

Input-Output Code	SIC Code	Title	Percent Costs per Dollar of Output
53	362	Electrical Industrial Equipment and Apparatus	6.9
38	333, 334, 335	Primary Nonferrous Metal Manufacturing	6.4
37	331, 332, 339	Primary Iron and Steel Manufacturing	6.0
44-52	353, 352, 354, 355, 356, 357, 358, 359	Machines and Equipment	3.3
69	50, 52-59, 7396	Wholesale and Retail Trade	3.0
57	367	Electronic Components and Accessories	2.5
42	342, 347, 348, 349	Other Fabricated Metal Products	2.0
54	363	Household Appliances	1.8
41	345, 346	Stamping, Screw Machine Products and Bolts	1.4
73	73, 81, 89 (excluding Business Services 7396, 7394, 7699), 381, 382, 384, 387	Scientific and Controlling Instruments	1.4
56	365, 366	Radio, Television and Communication Equipment	1.3
43	351	Engines and Turbines	1.2
81	--	Business Travel, Entertainment and Gifts	1.1
65	40, 41, 42, 44, 46, 47	Transportation and Warehousing	1.1
55	364	Electric Lighting and Wiring Equipment	1.0

TABLE 5-4
(Continued)

Input-Output Code	SIC Code	Title	Percent Costs per Dollar of Output
36	324, 325, 326, 327, 328, 329	Stone and Clay Products	.9
71	65, 66	Real Estate and Rental	.9
80	--	Gross Imports of Goods and Services	.8
27	281 (excluding 28195), 287, 286, 289	Chemical and Selected Chemical Products	.7
70	60-64, 67	Finance and Insurance	.7
61	373, 374, 375, 379	Other Transportation Equipment	.7
24	261, 262, 263, 264	Paper and Allied Products Except Containers	.6
7, 9, 12, 13, 16, 17, 18, 20, 21, 23, 25, 26, 28, 29, 30, 31, 33, 35, 40, 58, 59, 60, 63, 64, 72, 75, 77, 78, 79, 82		Miscellaneous[1]	7.1
		TOTAL DIRECT COSTS[2]	54.2
		Employee Compensation	35.9
		Indirect Business Taxes	.7
		Property Type Income[3]	9.2
		TOTAL VALUE ADDED[4]	45.8
		GRAND TOTAL	100.0

TABLE 5-4
(Continued)

[1]Miscellaneous Costs are totaled for those industries with percentages less than .5 percent.

[2]Total Direct Costs are the values of all direct inputs (other than labor) to produce one dollar of output.

[3]Property Type Income includes proprietors' income, corporate profits, net interest, business transfer payments and capital consumption allowances.

[4]Value added represents Employee Compensation, Indirect Business Taxes and Property Type Income and this reflects the increased value of the produce over input costs attributable to the industry.

Source: Survey of Current Business, "Input-Output Structure of the U.S. Economy: 1963," by the National Economics Division, November 1969, and "The Composition of Value Added in the 1963 Input-Output Study," by Albert S. Walderhaug, April 1973.

TABLE 5-5

COST STRUCTURE AND VALUE ADDED FOR THE HOUSEHOLD APPLIANCES INDUSTRY (INPUT-OUTPUT CODE 54 - SIC CODE 363)

Input-Output Code	SIC Code	Title	Percent Costs per Dollar of Output
53	361, 362	Electric Industrial Equipment and Apparatus	9.1
73	73 (excluding 7369, 7694, 7699), 731, 81, 89 (excluding 8921)	Business Services	5.2
32	30	Rubber and Miscellaneous Plastics	5.1
38	333, 334, 335, 336, 339	Primary Nonferrous Metal Manufacturing	4.3
41	345, 346	Stampings, Screw Machine Products and Volts	4.2
42	342, 347, 348, 349	Other Fabricated Metal Products	4.0
69	50, 52-59, 7396	Wholesale and Retail Trade	3.8
62	38	Scientific and Controlling Instruments	2.3
52	358	Service Industry Machines	2.2
54	363	Household Appliances	1.5
25	265	Paperboard Containers and Boxes	1.4
36	324, 325, 326, 327, 328, 329	Stone and Clay Products	1.2
65	40, 474, 41, 42, 473, 44, 45, 46, 47 (excluding 473, 474)	Transportation and Warehousing	1.3
47	354	Metalworking Machinery and Equipment	1.0
55	364	Electric Lighting and Wiring Equipment	1.0

TABLE 5-5
(Continued)

Input-Output Code	SIC Code	Title	Percent Costs per Dollar of Output
64	391, 396, 393, 394, 395, 398, 399	Miscellaneous Manufacturing	1.0
59	371	Motor Vehicles and Equipment	.9
30	285	Paints and Allied Products	.9
51	357	Office, Computing and Accounting Machines	.8
81	--	Business Travel, Entertainment and Gifts	.8
49	356	General Industrial Machinery and Equipment	.8
27	281 (excluding 28195) 286, 287, 289	Chemicals and Selected Chemical Products	.7
68	49	Electric, Gas, Water and Sanitary Services	.7
44	352	Farm Machinery and Equipment	.7
60	372	Aircraft and Parts	.6
71	65	Real Estate and Rental	.5
7, 9, 12, 13, 14, 16, 18, 20, 21, 22, 24, 26, 28, 29, 31, 33, 34, 35, 46, 48, 50, 57, 58, 61, 63, 66, 70, 72, 75, 77, 79, 82		Miscellaneous[1]	2.0
		PERCENT TOTAL DIRECT COSTS[2]	58.0
		Employee Compensation	21.8

TABLE 5-5
(Continued)

Input-Output Code	SIC Code	Title	Percent Costs per Dollar of Output
		Indirect Business Taxes	3.5
		Property Type Income[3]	6.7
		PERCENT TOTAL VALUE ADDED	32.0
		GRAND TOTAL	100.0

[1]Miscellaneous Costs are totaled for those industries with percentages less than .5 percent.

[2]Total Direct Costs are the values of all direct inputs (other than labor) to produce one dollar of output.

[3]Property Type Income includes proprietor's income, corporate profits, net interest, business transfer payments and capital consumption allowances.

Source: Survey of Current Business, "Input-Output Structure of the U. S. Economy: 1963," by the National Economics Division, November 1969, and "The Composition of Value Added in the 1963 Input-Output Study," by Albert S. Walderhaug, April 1973.

TABLE 5-6

COST STRUCTURE AND VALUE ADDED FOR THE ELECTRIC LIGHTING AND WIRING EQUIPMENT (INPUT-OUTPUT CODE 55 - SIC 364)

Input-Output Code	SIC Code	Title	Percent Costs Per Dollar of Output
38	333, 334, 335, 336, 3399	Primary Nonferrous Metal Manufacturing	7.8
37	331, 332, 3392	Primary Iron and Steel Manufacturing	6.5
69	50, 52-59, 7396	Wholesale and Retail Trade	4.1
35	321, 322, 323	Glass and Glass Products	3.6
55	364	Electric Lighting and Wiring Equipment	3.3
53	361, 362	Electric Industrial Equipment and Apparatus	3.1
58	369	Miscellaneous Electric Machinery, Equipment and Supplies	3.1
41	345, 3461	Stampings, Screw Machine Products	2.7
32	301, 302, 303, 3069, 3079	Rubber and Miscellaneous Plastics Products	2.6
42	342, 347, 348, 349	Other Fabricated Metal Products	2.2
73	73 (excluding 7396, 7694, 7699), 731, 81, 89 (excluding 8921)	Business Services	2.1
25	265	Paperboard Containers and Boxes	1.8
65	40, 41, 42, 44, 45, 46, 47	Transportation and Warehousing	1.4
57	367	Electronic Components and Accessories	1.1

TABLE 5-6
(Continued)

Input-Output Code	SIC Code	Title	Percent Costs Per Dollar of Output
81	--	Business Travel, Entertainment and Gifts	1.1
36	324, 325, 326, 327, 328, 329	Stone and Clay Products	1.1
31	291, 295, 299	Petroleum Refining and Related Industries	1.0
28	282	Plastics and Synthetic Materials	1.0
71	65 (excluding 6561), 66	Real Estate and Rental	.8
47	354	Metalworking Machinery and Equipment	.7
40	343, 344	Heating, Plumbing and Structural Metal Products	.7
27	281 (excluding 28195), 287, 286, 289	Chemicals and Selected Chemical Products	.6
30	2851	Paints and Allied Products	.5
5, 7, 12, 17, 18, 20, 21, 22, 24, 26, 29, 33, 45, 46, 49, 50, 51, 52, 54, 56, 60, 61, 63, 64, 66, 70, 72, 75, 77, 78, 79, 82		Miscellaneous[1]	5.6
		PERCENT TOTAL DIRECT COSTS[2]	58.5
		Employee Compensation	27.3
		Indirect Taxes	1.2

TABLE 5-6
(Continued)

Input-Output Code	SIC Code	Title	Percent Costs Per Dollar of Output
		Property Type Income[3]	13.0
		PERCENT TOTAL VALUE ADDED[4]	41.5
		GRAND TOTAL	100.0

[1]Miscellaneous Costs are totaled for those industries with percentages less than .5 percent.

[2]Total Direct Costs are the values of all direct inputs (other than labor) to produce one dollar of output.

[3]Property Type Income includes proprietor's income, corporate profits, net interest, business transfer payments and capital consumption allowances.

[4]Value Added represents Employee Compensation, Indirect Business Taxes and Property Type Income and this reflects the increased value of the product over input costs attributable to the industry.

Source: Survey of Current Business, "Input-Output Structure of the U. S. Economy: 1963," by the National Economics Division, November 1969, and "The Composition of Value Added in the 1963 Input-Output Study," by Albert S. Walderhaug, April 1973.

TABLE 5-7

COST STRUCTURE AND VALUE ADDED FOR THE RADIO, TELEVISION AND COMMUNICATION EQUIPMENT (INPUT-OUTPUT CODE 56 - SIC CODE 365, 366)

Input-Output Code	SIC Code	Title	Percent Costs Per Dollar of Output
57	367	Electronic Components and Accessories	15.8
56	365, 366	Radio, Television and Communication Equipment	6.2
69	50, 52-59, 7396	Wholesale and Retail Trade	3.1
73	73 (excluding 7396), 731, 81, 89 (excluding 8921)	Business Services	2.6
53	361, 362	Electric Transmission and Distribution Equipment	1.9
80	--	Gross Imports of Goods and Services	1.9
41	345, 346	Screw Machine Products, Bolts, Nuts and Metal Stamping	1.8
38	331, 332, 3391, 3399	Primary Iron and Steel Manufacturing	1.8
22	251	Household Furniture	1.6
42	342, 347, 348, 349	Other Fabricated Metal Products	1.4
60	372	Aircraft and Parts	1.3
55	364	Electric Lighting and Wiring Equipment	1.1
81	--	Business Travel, Entertainment and Gifts	1.0
71	65 (excluding 6561), 66	Real Estate and Rental	1.0

TABLE 5-7
(Continued)

Input-Output Code	SIC Code	Title	Percent Costs Per Dollar of Output	
13	192, 1931, 1941, 1951, 1961, 1911, 1999	Ordnance and Accessories	.9	
32	30	Rubber and Miscellaneous Plastic Products	.8	
47	354	Metalworking Machinery and Equipment	.8	
66	48 (excluding 483)	Communications, Except Radio and Television Broadcasting	.6	
37	331, 332, 3391, 3399	Primary Iron and Steel Manufacturing	.6	
7, 12, 16, 18, 19, 20, 21, 24, 25, 26, 27, 28, 29, 30, 31, 33 34, 35, 36, 40, 44, 45, 46, 48, 49, 50, 51, 52, 54, 58, 59, 61, 62, 63, 64, 66, 68, 70, 72, 75, 77, 78, 79, 82		Miscellaneous[1]	6.0	
		PERCENT TOTAL DIRECT COSTS[2]		52.2
		Employee Compensation	39.8	
		Indirect Business Taxes	2.2	
		Property Type Income[3]	5.8	
		PERCENT TOTAL VALUE ADDED[4]		47.8
		GRAND TOTAL		100.0

TABLE 5-7
(Continued)

[1]Miscellaneous Costs are totaled for those industries with percentages less than .5 percent.

[2]Total Direct Costs are the values of all direct inputs (other than labor) to produce one dollar of output.

[3]Property Type Income includes proprietor's increase, corporate profits, net interest, business transfer payments and capital consumption allowances.

[4]Value added represents Employee Compensation, Indirect Business Taxes and Property Type Income and this reflects the increased value of the product over input costs attributable to the industry.

Source: Survey of Current Business, "Input-Output Structure of the U. S. Economy: 1963," by the National Economics Division, November 1969, and "The Composition of Value Added in the 1963 Input-Output Study," by Albert S. Walderhaug, April 1963.

TABLE 5-8

COST STRUCTURE AND VALUE ADDED OF THE ELECTRONIC COMPONENTS AND ACCESSORIES INDUSTRY (INPUT-OUTPUT CODE 57 - SIC CODE 367)

Input-Output Code	SIC Code	Title	Percent Costs Per Dollar of Output
56	365, 366	Radio, Television and Communication Equipment	5.3
57	367	Electronic Components and Accessories	4.7
38	333, 334, 335	Primary Nonferrous Metals Manufacturing	4.2
69	52-59, 7396	Wholesale and Retail Trade	3.9
35	3211, 3229, 3231, 3221	Glass and Glass Products	3.0
41	345, 3461	Screw Machine Products, Bolts, Nuts, etc. and Metal Stampings	2.8
53	361, 362	Electric Transmission and Distribution Equipment	2.5
42	342, 347, 348, 349	Other Fabricated Metal Products	2.2
73	73 (excluding 7396), 7694, 7699, 731, 81, 89 (excluding 8921)	Business Services	2.2
55	364	Electric Lighting and Wiring Equipment	2.1
32	301, 302, 303, 307	Rubber and Miscellaneous Plastic	1.8
37	331, 332, 3391, 3399	Primary Iron and Steel Manufacturing	1.7
27	281 (excluding 28195), 2871, 2872, 2879, 2861, 289	Chemicals and Selected Chemical Products	1.6
81	--	Business Travel, Entertainment and Gifts	1.4

TABLE 5-8
(Continued)

Input-Output Code	SIC Code	Title	Percent Costs Per Dollar of Output
24	261, 262, 263, 264, 266	Paper and Allied Products except Containers and Boxes	1.4
80	--	Gross Imports of Goods and Services	1.2
71	65 (excluding 6561), 66	Real Estate and Rental	1.0
47	354	Metalworking Machinery and Equipment	.8
68	49	Electric, Gas, Water and Sanitary Services	.8
65	40, 41, 42, 44, 45, 46, 47	Transportation and Warehousing	.8
49	356	General Industrial Machinery and Equipment	.8
36	324, 325, 326, 327, 328, 329	Stone and Clay Products	.6
66	48 (excluding 483)	Communications, except Radio and Television Broadcasting	.6
54	363	Household Appliances	.6
25	265	Paperboard Containers and Boxes	.6
28	282	Plastics and Synthetic Materials	.5
7, 9, 12, 13, 18, 20, 21, 22, 26, 29, 30, 31, 33, 40, 46, 48, 50, 51, 58, 59, 60, 62, 63, 64, 70, 72, 75, 77, 78, 82		Miscellaneous[1]	4.2

TABLE 5-8
(Continued)

Input-Output Code	SIC Code	Title	Percent Costs Per Dollar of Output
		PERCENT TOTAL DIRECT COSTS[2]	53.3
		Employee Compensation	39.0
		Indirect Business Taxes	1.1
		Property Type Income[3]	6.6
		PERCENT TOTAL VALUE ADDED[4]	46.7
		TRAND TOTAL	100.0

[1]Miscellaneous Costs are totaled for those industries with percentages less than .5 percent.

[2]Total Direct Costs are the values of all direct inputs (other than labor) to produce one dollar of output.

[3]Property Type Income includes proprietor's income, corporate profits, net interest, business transfer payments and capital consumption allowances.

[4]Value Added represents Employee Compensation, Indirect Business Taxes and Property Type Income and this reflects the increased value of the product over input costs attributable to the industry.

Source: Survey of Current Business, "Input-Output Structure of the U. S. Economy: 1963," by the National Economics Division, November 1969, and "The Composition of Value Added in the 1963 Input-Output Study," by Albert S. Walderhaug, April 1973.

TABLE 5-9

COST STRUCTURE AND VALUE ADDED FOR THE MISCELLANEOUS ELECTRICAL MACHINERY, EQUIPMENT AND SUPPLIES (INPUT-OUTPUT CODE 58 - SIC CODE 369)

Input-Output Code	SIC Code	Title	Percent Costs Per Dollar of Output
38	333, 334, 28195, 3339, 3341, 3351, 3352, 3356	Primary Nonferrous Metals Manufacturing	11.2
58	369	Miscellaneous Electrical Machinery, Equipment and Supplies	4.4
32	301, 302, 303, 3069	Rubber and Miscellaneous Plastics Products	4.0
69	50, 52-59, 7396	Wholesale and Retail Trade	3.9
59	371	Motor Vehicles and Equipment	3.1
37	331, 332, 3391, 3399	Primary Iron and Steel Manufacturing	2.7
53	361, 362	Electric Transmission and Distribution Equipment	2.6
56	365, 366	Radio, Television and Communication Equipment	2.4
27	281 (excluding 28195), 287, 286, 289	Chemicals and Selected Chemical Products	2.1
80	--	Business Travel, Entertainment and Gifts	2.0
49	356	General Industrial Machinery and Equipment	1.3
73	73 (excluding 7396), 7694, 7699, 731, 81, 89 (excluding 8921)	Business Services	1.3
42	342, 347, 348, 349	Other Fabricated Metal Products	1.2
65	40, 41, 42, 44, 45, 46, 47	Transportation and Warehousing	1.1

TABLE 5-9
(Continued)

Input-Output Code	SIC Code	Title	Percent Costs Per Dollar of Output
54	363	Household Appliances	1.1
57	367	Electronic Components and Accessories	1.1
44	3522	Farm Machinery	1.0
47	354	Metalworking Machinery and Equipment	1.0
55	364	Electric Lighting and Wiring Equipment	1.0
81	--	Business Travel, Entertainment and Gifts	.9
25	265	Paperboard Containers and Boxes	.8
62	381, 382, 384, 387	Professional, Scientific and Controlling Instruments and Supplies	.8
68	491, 492, 493, 494, 495, 496, 497	Electric, Gas, Water and Sanitary Services	.7
36	324, 325, 326, 327, 328, 329	Stone and Clay products	.7
52	358	Service Industry Machines	.6
71	65 (excluding 6561), 66	Real Estate and Rental	.6
7, 9, 12, 16, 18, 20, 21, 24, 26, 28, 29, 30, 31, 33, 35, 40, 43, 45, 46, 50, 60, 61, 64, 66, 70, 72, 75, 77, 78, 79, 82		Miscellaneous[1]	3.2

TABLE 5-9
(Continued)

Input-Output Code	SIC Code	Title	Percent Costs Per Dollar of Output	
		PERCENT TOTAL DIRECT COSTS[2]		56.8
		Employee Compensation	28.0	
		Indirect Business Taxes	2.3	
		Property Type Income[3]	12.9	
		PERCENT TOTAL VALUE ADDED[4]		43.2
		GRAND TOTAL		100.0

[1]Miscellaneous Costs are totaled for those industries with percentages less than .5 percent.

[2]Total Direct Costs are the values of all direct inputs (other than labor) to produce one dollar of output.

[3]Property Type Income includes proprietor's income, corporate profits, net interest, business transfer payments and capital consumption allowances.

[4]Value Added represents Employee Compensation, Indirect Business Taxes and Property Type Income and this reflects the increased value of the product over input costs attributable to the industry.

Source: Survey of Current Business, "Input-Output Structure of the U. S. Economy: 1963," by the National Economics Division, November 1969, and "The Composition of Value Added in the 1963 Input-Output Study," by Albert S. Walderhaug, April 1973.

region has a strong electronics industry, chances are it will grow at an accelerated rate, that is, if the industry as a whole is growing. For example, Tucson, Arizona, has an abundance of unskilled, cheap labor; yet, because there are no existing electronics firms in the area it finds it difficult to develop this industry (reference b).

3. The industry in the past has been very mobile as it has become concentrated. That is, many plants have virtually moved to its suppliers or buyers as the case may be (reference b). As it becomes more concentrated, this mobility may diminish. The midwestern United States produces the majority of all output in this industry. Colorado ranks 7th as the leading producer of electric light and wiring equipment and 6th as a producer of household appliances (reference b).

4. For all manufacturers (reference e), far and away the leading reasons for surveyed firms leaving or moving into an area was put in terms of costs. A site selection had to show cost advantages over others before a new plant was built. Reasons for moving away from an old location, generally, had to do with inadequate size and facilities of the old plant. Land and availability of buildings has become an increasingly important variable in location analysis, whereas proximity to the ultimate consumer has retreated in importance.

The information compiled in Table 5-10 is based on a Department of Commerce survey of industrial location determinants. These data are significant to the present study in two ways. First, they tend to indicate that SIC 36 is an auspicious choice as a key industry in Denver. Second, the data suggest a number of factors which are included in the surveys discussed in chapters 8, 9 and 10.

TABLE 5-10

SURVEY OF INDUSTRIAL LOCATION DETERMINANTS OF SIC 36 FIRMS
(NUMBER OF FIRMS = 189)

	Yes	No	No Response
I. New or Expanded Manufacturing Plants Firms with tentative plans to expand existing facilities or establish plants at new location between 1971-1975	21%	71%	6%
II. Location of New or Expanded Establishment (Respondent could select more than one preference)			
A. Geographic preference:			
(1) Central city of a metropolitan area	8	65	25
(2) Metropolitan suburban area	44	34	22
(3) Non-metropolitan area	46	31	23
B. Industrial park preference	42	38	21
III. Community Size Preference (Community includes city and surrounding areas)			
(1) Under 25,000 population	17		
(2) 25,000 - 49,999	14		
(3) 50,000 - 99,999	23		
(4) 100,000 - 249,999	14		
(5) 250,000 - 499,999	11		
(6) 500,000 - 999,999	8		
(7) 1,000,000 or more	8		
(8) No response	5		
IV. Plant Site Size Preference (Plant site includes total land area including physical facilities, parking, outside storage, etc.)			

TABLE 5-10
(Continued)

	Yes	No	No Response
(1) Less than one acre	5%		
(2) 1-4 acres	20		
(3) 4-20 acres	48		
(4) 21-50 acres	15		
(5) 51-100 acres	4		
(6) Over 100 acres	3		
(7) No response	5		
V. Approximate Number of Employees at Fully Operational New or Expanded Plant			
(1) 500 or more employees	26		
(2) 250-499 employees	28		
(3) 100-249 employees	32		
(4) Under 100 employees	9		
(5) No response	5		

VI. Community Attributes Considered in Plant Location (Community attributes will be rated based on importance to respondent: A) of critical value; B) of significant to average value.)	A%	B%
(1) Air passenger service	18%	46%
(2) Local industrial bonds	3	33
(3) Vocational training facilities	1	62
(4) Higher educational facilities	3	59
(5) Tax incentives or tax holidays	8	65
(6) Fire protection	46	47
(7) Contract trucking	23	52
(8) Public warehousing	1	22
(9) Public refrigerated warehousing	0	3

TABLE 5-10
(Continued)

	A%	B%
(10) Police protection	31%	59%
(11) Local industrial development group	4	56
(12) Pool of trained workers	14	68
(13) Pool of unskilled workers	25	57
(14) Lenient industrial zoning	3	71
(15) Strict industrial zoning	5	53
(16) Community population, as preferred in Item III	2	74
VII. Plant Site Features (Rating scale same as Item VI)		
(1) Highway access (within 30 minutes of major highway interchange)	29	63
(2) Scheduled air freight service	18	65
(3) Water transportation	1	5
(4) Scheduled rail service	6	35
(5) Piggy back facilities (rail)	3	31
(6) Industrial water supply (processed)	21	56
(7) Industrial water supply (raw)	12	46
(8) Natural gas service	23	57
(9) Industrial sewage processing	19	59
(10) Solid waste disposal	14	59
(11) Soil load-bearing capabilities	6	55
(12) Plant site size, as preferred in Item IV	16	70
VIII. Locational Objectives to be Achieved (Percentage of firms selecting item. Respondent could select as many as three objectives.)		
(1) Improvement in transportation efficiency or economy	35	
(2) Availability of larger parcel of land	19	
(3) Closer proximity to resources and/or major suppliers	33	

TABLE 5-10
(Continued)

	%
(4) Closer proximity to other plants of your company . . .	14%
(5) Closer proximity to your distributors and/or your customers	35
(6) Closer proximity to other firms in same or related industries	3
(7) Ability to serve new and/or expanded markets	53
(8) Minimize competition from other plants for labor force	44
(9) To secure factors of location unique to your industry (special energy requirements, etc.)	6

Source: Economic Development Administration, United States Department of Commerce, Industrial Location Determinants, 1971-1975, February 1973, selected pages.

CHAPTER 6

A BRIEF PROFILE OF EATING AND DRINKING ESTABLISHMENTS IN DENVER

To discern trends in this industry, a substantial amount of data were collected and, although some of it is incomplete and therefore not as useful as it could be, some inferences can be made as to the industry profile. To assume it possible to draw any behavioral inferences would be erroneous at this point due to the nature of the industry and the absence of requisite data. The eating and drinking industry is very diverse entailing the entire hamburger-stand-to-fine-night-club spectrum. The data reflects this diversity, and behaviorally reference can be made to (1) drinking only, (2) drinking-eating, (3) eating only and (4) the chain-quick-order eating place. In addition, all of these could have various subcategories.

This leads to the conclusion that it would be inappropriate to hypothesize an individual firm's behavior at this point. This indicates a need for a survey. The data presented in this chapter, along with other inputs provides information with which to create a meaningful survey. Based on telephone interviews with the Health Department, the Colorado-Wyoming Restaurant Association, Denver University's School of Hotel and Restaurant Management and the Denver License Bureau, it was determined that the survey would center on zoning, building permits, health standards, fire standards, liquor/restaurant licensing, tourism and, of course, location theory in comparing segments of the industry throughout the Denver SMSA. In other words, the survey is aimed at digging out direct policy tools as it relates to firm behavior.

Below are presented the data, the problems and some conclusions from the information at hand. Reference is made to the data by tables. Some of the data problems are as follows: the eating industry falls under Standard Industrial Code (SIC) 5812 which includes all establishments primarily engaged in the sale of food; similarly, 5813 categorizes the drinking industry or those places which primarily sell drinks; 5812 could also include a substantial amount of drinks and 5813 a substantial amount of food. Excluded would be, for example, department store restaurants, hospital cafeterias, hotel restaurants, etc. Most of the data used in detecting trends came from County Business Patterns published by the Census Bureau. These data are used to compare Denver city and county, the 4-county area of Adams, Arapahoe, Boulder and Jefferson, the Denver SMSA and the State of Colorado. Here, the absolute figures are not important (even though exact figures could be helpful). Since the same procedures and definitions are applied from year to year, percentage changes and time trend comparisons can be made. For example, in 1971 the County Business Patterns reported 797 (5812 and 5813) units in Denver; the Sales Tax Statistics Summary averaged 904 returns/month and the Health Department recorded 1,571 eating and drinking places as of the 2nd quarter 1971. Each source has a different set of rules, direct comparisons were not possible and the decision was made to use the County Business Patterns figures because it was the easiest to obtain, covered the longest time period and was the most consistent.

The Sales Tax Statistics Summary calculated by the Department of Revenue Office, State of Colorado, was the only source of sales data (aggregate only and not broken down by firm size). Unfortunately, the summary was started in 1965 under the Industrial Codes and Titles system (0306 was taverns, restaurants, catering) and changed over to the SIC classification

system in July of 1971. Hence, the longest period of comparison was from 1965-1970. Population figures were those estimates calculated by the Business Research Division of the University of Colorado in 1971 entitled Colorado Population Trends. Therefore, we bring together three sources of information all using a different but consistent set of rules but comparable and divisible when showing growth rates, changes, etc.

The following unordered list of inferences and conclusions are those determined from observation of the figures.

1. In Denver, the 4-county area, Denver SMSA and the State of Colorado there has been a continual shift to larger eating and drinking places by employment size as shown in Table 6-1. From 1956-1971 we can see a constant, uniform shift in firm size from the (1-3) and (4-7) to the larger (8-19) and (20-49) categories as the percentages reflect. This is consistent with the lower percentage changes in number of firms (Table 6-4), the higher sales figures (Table 6-5), and population growth (Table 6-6). However, the firms are not becoming more concentrated and there is no trend towards an oligopoly-type of market.
2. Denver is by far the leading county in per capita sales (see Table 6-5) and percent of total sales although it has lost some ground since 1965 as illustrated.

Year	Percentage of the Denver Retail Sales as a SMSA Total
1964	61%
1967	56
1970	53

The trend appears to be slowing down, and the SIC figures for 1972 shows Denver with 56 percent of the SMSA sales. Perhaps

TABLE 6-1

DISTRIBUTION OF SIC 58 FIRMS BY EMPLOYMENT SIZE CLASS,
FOR SELECTED AREAS, SELECTED YEARS, 1956-1971

County	Number of Employees	(%Δ)	Taxable Payrolls	(%Δ)	Reporting Units	(%Δ)	1-3	(%Δ)	4-7	(%Δ)
1956										
Denver	7,248		3,629		749		282		240	
Adams	430		164		31		19		10	
Arapahoe	500		214		51		35		13	
Boulder	627		265		45		21		17	
Jefferson	581		258		50		27		19	
TOTALS	9,396		4,530		892		384		299	
State	15,690		6,941		2,272		1,043		700	
4-County	2,148		901		177		102		59	
1959										
Denver	7,679	5.9	3,987	9.9	786	4.9	304	7.8	244	1.7
Adams	457	6.3	171	4.3	69	86.5	33	73.7	23	130.0
Arapahoe	594	18.8	289	35.1	84	265.2	28	-20.0	35	169.2
Boulder	707	12.8	293	10.6	83	112.8	32	52.4	18	5.9
Jefferson	883	52.0	434	68.2	105	138.6	46	70.4	28	47.4
TOTALS	10,320	10.0	5,174	14.4	1,127	26.4	443	15.4	348	16.4
State	17,264	10.0	7,969	14.8	2,368	4.2	1,063	1.9	687	-1.9
4-County	2,641	23.5	1,187	31.7	341	92.7	139		104	
1962										
Denver	8,754	14.0	5,010	25.7	828	5.3	299	-1.6	249	2.1
Adams	615	34.6	318	86.0	91	31.9	4	24.2	30	30.4
Arapahoe	962	62.0	449	55.4	101	20.2	32	14.3	37	5.7
Boulder	830	17.4	404	37.9	89	7.2	46	43.8	14	-32.0
Jefferson	1,050	18.9	573	32.0	117	11.4	42	-8.7	40	42.9
TOTALS	12,211	18.3	6,754	30.5	1,226	8.8	460	3.8	370	6.3
State	19,878	15.1	10,055	26.2	2,487	5.0	1,086	2.1	704	2.5
4-County	3,457	30.9	1,744	46.9	398	16.7	161		121	

TABLE 6-1
(Continued)

County	8-19	(%Δ)	20-49	(%Δ)	50-99	(%Δ)	100-249	(%Δ)	250-500	(%Δ)
1956										
Denver	156		46		20		4		1	
Adams	1		0		1		0		0	
Arapahoe	2		1		0		0		0	
Boulder	6		1		0		0		0	
Jefferson	3		1		0		0		0	
TOTALS	168		49		21		4		1	
State	400		98		25		5		1	
4-County	12		3		1		0		0	
1959										
Denver	150	-3.9	64	39.1	21	5.0	3	-25.0	0	
Adams	11	1000.0	2	∞	0	-∞	0	∞	0	∞
Arapahoe	14	600.0	6	500.0	1	∞	0	∞	0	∞
Boulder	24	300.0	8	700.0	1	∞	0	∞	0	∞
Jefferson	23	666.7	4	300.0	4	∞	0	∞	0	∞
TOTALS	222	32.1	84	71.4	27	28.9	3	-25.0	0	
State	458	14.5	126	28.6	30	20.0	4	-20.0	0	
4-County	72		20		6		0		0	
1962										
Denver	169	12.7	87	35.9	18	-16.3	6	100.0		
Adams	12	9.1	8	300.0	0		0	0		
Arapahoe	18	28.6	12	100.0	2	100.0	0	0		
Boulder	16	-33.4	9	12.5	4	300.0	0	0		
Jefferson	23	0	8	100.0	4	0	0	0		
TOTALS	238	7.2	124	47.6	28	3.7	6	100.0		
State	472	3.1	183	45.2	36	20.0	6	50.0		
4-County	69		37		10		0			

TABLE 6-1
(Continued)

County	Number of Employees	(%Δ)	Taxable Payrolls	(%Δ)	Reporting Units	(%Δ)	1-3	(%Δ)	4-7	(%Δ)
1965[1]										
Denver	8,631	-1.4	5,011	0	792	-4.4	281	-6.0	236	-5.2
Adams	933	51.7	445	39.9	122	34.1	44	7.3	41	36.7
Arapahoe	1,409	46.5	729	62.4	134	32.7	44	37.5	41	10.8
Boulder	1,132	36.4	568	40.6	109	22.5	43	-6.5	23	64.3
Jefferson	1,873	78.4	1,018	77.7	175	49.6	68	61.9	45	12.5
TOTALS	13,978	14.5	7,771	15.1	1,332	8.7	480	4.4	386	4.3
State	22,984	15.6	12,311	22.4	2,675	7.6	1,140	5.0	715	1.6
4-County	5,347	54.7	2,760	58.3	545	36.9	199		150	
1968										
Denver	10,930	26.6	6,679	33.3	803	1.4	245	-12.8	232	-1.7
Adams	1,300	39.3	685	53.9	125	2.5	36	-18.2	38	-7.3
Arapahoe	1,913	35.8	995	36.5	141	5.2	42	-4.5	33	-19.5
Boulder	1,771	56.5	876	54.2	131	20.2	37	-14.0	30	30.4
Jefferson	2,417	29.0	1,346	32.2	186	6.3	54	-20.6	38	-15.6
TOTALS	18,331	31.1	10,581	36.6	1,386	4.1	414	-13.8	371	-3.9
State	30,141	31.1	16,477	33.8	2,727	1.9	960	-15.8	704	-1.5
4-County	7,401	38.4	3,902	41.4	583	7.0	169		139	
1971										
Denver	12,325	12.8	8,759	31.1	797	-.8	215	-12.2	199	-14.2
Adams	1,949	49.9	1,239	55.3	160	28.0	57	58.3	31	-18.4
Arapahoe	2,473	29.3	1,513	52.1	138	-2.1	27	-35.7	38	15.1
Boulder	2,184	23.3	1,127	28.7	136	3.8	31	-16.2	34	13.3
Jefferson	3,245	34.3	1,944	44.4	209	12.4	44	-18.5	49	29.0
TOTALS	22,176	20.1	14,582	37.8	1,440	3.9	374	-9.7	351	-5.4
State	37,498	24.4	23,196	40.8	2,916	6.9	928	-3.3	679	-3.5
4-County	9,851	33.1	5,823	49.2	650	11.5	159		152	

TABLE 6-1
(Continued)

County	8-19	(%Δ)	20-49	(%Δ)	50-99	(%Δ)	100-249	(%Δ)	250-500	(%Δ)
1965										
Denver	165	-2.4	85	-2.3	20	11.1	7	16.7		
Adams	28	133.3	9	12.5	1	0	0	0		
Arapahoe	32	77.8	14	16.7	3	50.0	1	∞		
Boulder	27	68.8	13	44.4	4	0	0	∞		
Jefferson	38	65.2	18	125.0	7	75.0	1	∞		
TOTALS	290	21.9	139	12.1	35	25.0	9	50.0		
State	555	17.6	214	16.9	43	19.4	11	83.3		
4-County	125		54		15		2			
1968										
Denver	180	9.1	108	27.1	29	45.0	8	14.3		
Adams	31	10.7	18	100.0	2	100.0	0	0		
Arapahoe	35	9.4	24	71.4	7	133.0	0	0		
Boulder	33	22.2	25	92.3	6	50.0	0	0		
Jefferson	59	55.2	24	33.3	11	57.1	0	0		
TOTALS	338	16.6	199	43.2	55	57.1	8	-11.1		
State	654	17.8	324	51.4	71	65.1	13	18.2		
4-County	158		91		26		0			
1971										
Denver	199	10.6	139	28.7	33	13.8	12	50.0		
Adams	31	0	34	88.9	4	100.0	0	0		
Arapahoe	38	8.6	29	20.1	11	57.1	1	0		
Boulder	34	3.0	31	24.0	8	33.3	1	0		
Jefferson	59	0	48	100.0	8	-27.3	1	0		
TOTALS	361	6.8	281	41.2	64	16.4	15	87.5		
State	732	11.9	467	44.1	89	25.4	21	61.5		
4-County	162		142		31		3			

[1]No data available for 1965; the average of '64 and '66 was used as a proxy.

Source: County Business Patterns, Bureau of Census, selected years.

TABLE 6-2

PERCENTAGE DISTRIBUTION OF SIC 58 FIRMS BY EMPLOYMENT SIZE CLASS, FOR SELECTED AREAS, SELECTED YEARS, 1956-1971

Year/Region	Number Employed (% of Region)						
	1-3	4-7	8-19	20-49	50-99	100-249	250+
1956							
Denver	37	32	21	6	3	1	0
4-County	58	33	7	2	0	0	0
Denver SMSA	41	32	18	5	2	1	0
State	46	31	18	4	1	0	0
1959							
Denver	39	31	19	8	3	0	0
4-County	40	30	21	6	2	0	0
Denver SMSA	39	30	20	7	2	0	0
State	45	29	19	5	1	0	0
1962							
Denver	36	30	20	11	2	1	0
4-County	40	30	17	9	3	0	0
Denver SMSA	38	30	19	10	2	0	0
State	44	28	19	7	1	0	0
1965							
Denver	35	30	21	11	3	1	0
4-County	37	28	23	10	3	0	0
Denver SMSA	36	29	22	10	3	0	0
State	43	27	21	8	2	0	0
1968							
Denver	31	29	22	13	4	1	0
4-County	29	24	27	16	4	0	0
Denver SMSA	30	27	24	14	4	1	0
State	35	26	24	12	3	0	0
1971							
Denver	27	25	25	17	4	1	0
4-County	24	23	25	22	5	0	0
Denver SMSA	26	24	25	20	4	1	0
State	32	23	25	16	3	1	0

Source: Percentages calculated from figures given in County Business Patterns, Bureau of the Census, selected years.

TABLE 6-3

TOTAL EMPLOYMENT AND WAGES IN SIC 58, AND PERCENTAGE CHANGES, FOR SELECTED AREAS, SELECTED YEARS, 1956-1971

Year	Denver County		4-County Area		Denver SMSA		State	
	Number of Employees	Percentage Δ From Prior Period	Number of Employees	Percentage Δ From Prior Period	Number of Employees	Percentage Δ From Prior Period	Number of Employees	Percentage Δ From Prior Period
1956	7,248		2,138		9,386		15,690	
1959	7,679	+5.9	2,641	+23.5	10,320	+10.0	17,264	+10.0
1962	8,754	+14.0	3,456	+30.9	12,211	+18.3	19,878	+15.1
1965	8,631	-1.4	5,347	+54.7	13,978	+14.5	22,984	+15.6
1968	10,931	+26.6	7,401	+38.4	18,331	+31.1	30,141	+31.1
1971	12,325	+12.8	9,851	+33.1	22,176	+20.1	37,498	+24.4
Total %Δ '56-'71		+70.0		+360.8		+136.3		+38.9
Ave. %Δ '56-'71		+11.6		+36.1		+18.8		+19.2

	1st Quarter (1,000) Taxable Payroll	Percentage Δ From Prior Period	1st Quarter (1,000) Taxable Payroll	Percentage Δ From Prior Period	1st Quarter (1,000) Taxable Payroll	Percentage Δ From Prior Period	1st Quarter (1,000) Taxable Payroll	Percentage Δ From Prior Period
1956	$3,629		$ 901		$ 4,530		$ 6,941	
1959	3,987	+9.9	1,187	+31.7	5,174	+14.4	7,969	+14.8
1962	5,010	+25.7	1,744	+46.9	6,754	+30.5	10,055	+26.5
1965	5,011	0.0	2,760	+58.3	7,771	+15.1	12,311	+22.4
1968	6,679	+33.3	3,902	+41.4	10,581	+36.6	16,477	+33.8
1971	8,759	+31.1	5,823	+49.2	14,582	+37.8	23,196	+40.8
Total %Δ '56-'71		+141.4		+546.3		+200.4		+234.2
Ave. %Δ '56-'71		+20.0		+45.5		+28.8		+27.7

TABLE 6-3
(Continued)

Year	Denver County Average Wage	Denver County Percentage Δ From Prior Period	4-County Area Average Wage	4-County Area Percentage Δ From Prior Period	Denver SMSA Average Wage	Denver SMSA Percentage Δ From Prior Period	State Average Wage	State Percentage Δ From Prior Period
1956	$500.70		$419.46		$482.12		$442.38	
1959	519.21	+3.6	449.45	+7.1	501.36	+4.0	461.60	+4.3
1962	572.31	+10.2	504.48	+12.2	553.11	+10.3	505.84	+9.5
1965	580.58	+1.4	516.18	+2.3	555.95	+0.5	535.64	+5.8
1968	611.07	+5.2	527.23	+2.1	577.22	+3.8	546.66	+2.0
1971	710.67	+16.2	591.11	+12.1	657.56	+13.9	618.59	+13.1
Total %Δ '56-'71		+41.9		+40.9		+36.4		+39.8
Ave. %Δ '56-'71		+7.3		+7.1		+6.4		+6.9

Source: County Business Patterns, U. S. Census Bureau, selected years.

TABLE 6-4

NUMBER OF FIRMS IN SIC 58 AND PERCENTAGE CHANGE,
FOR SELECTED AREAS, SELECTED YEARS, 1956-1971

Year	Denver County		4-County Areas		5-County Area		State	
	Absolute Number	% Change From Past Year	Absolute Number	% Change From Past Year	Absolute Number	% Change From Past Year	Absolute Number	% Change From Past Year
1956	749		177		892		2,272	
1959	786	+4.9	341	+92.7	1,127	+26.4	2,368	+4.2
1962	828	+5.3	398	+16.7	1,226	+8.8	2,487	+5.0
1965[1]	792	-4.4	545	+36.9	1,332	+8.7	2,675	+7.6
1968	803	+1.4	583	+7.0	1,386	+4.1	2,727	+1.9
1971	797	-0.8	650	+11.5	1,440	+3.9	2,916	+6.9
Totals ('56-'71)	4,755	+5.8%		+290.6%	7,403	+38.4%	15,445	+27.8%
Average/Year	793	+1.3%		+32.0%	1,234	+10.4%	2,573	+5.1%

Summary

Range	749-793	177-650	892-1,234	2,272-2,573
% Change From 1956 to 1971	+5.8%	+90.6%	+38.4%	+27.8%
Ave. % Change From 1956 to 1971	+1.3%	+32.0%	+10.4%	+5.1%

[1]Average for 1965 + 1966 (no data for 1965).

Source: County Business Patterns, U. S. Bureau of the Census, selected years.

TABLE 6-5

SALES AND NUMBER OF FIRMS IN 0306 (RESTAURANTS, TAVERNS, CAFETERIAS AND CATERING), FOR SELECTED REGIONS AND YEARS, 1964-1970

Year/County/State	Sales[1]	Population[2]	Sales Per Capita	(%Δ)	Number of Units[3]	Average Sales	(%Δ)
1964/Adams	$ 10,198,781	155,000	$ 65.80		115	$ 88,685	
Arapahoe	10,792,471	137,000	78.80		126	85,654	
Boulder	8,726,516	94,200	92.60		110	79,332	
Jefferson	17,112,912	178,000	96.10		160	106,956	
4-County Total	46,830,680	564,200	83.00		511	91,645	
Denver	74,387,151	503,000	147.90		787	94,520	
Denver SMSA	121,217,831	1,067,200	113.60		1,298	93,388	
Colorado	206,461,557	1,970,000	104.80		2,608	79,165	
1967/Adams	13,517,495	169,000	80.00	(21.6)	122[4]	110,799	(24.9)
Arapahoe	12,466,460	146,000	85.40	(8.4)	134[4]	93,033	(8.6)
Boulder	10,731,530	112,000	95.80	(3.5)	109[4]	98,454	(24.1)
Jefferson	20,416,307	201,000	101.60	(5.7)	175[4]	116,665	(9.1)
4-County Total	57,131,792	628,000	91.00	(9.6)	540[4]	105,800	(15.4)
Denver	72,561,343	496,000	146.30	(-1.1)	792[4]	91,618	(-3.1)
Denver SMSA	129,693,135	1,124,000	115.40	(1.6)	1,332[4]	97,367	(4.3)
Colorado	223,006,788	2,050,000	108.80	(3.8)	2,683[4]	83,118	(5.0)
1970/Adams	19,267,590	185,789	103.70	(29.6)	140	137,626	(24.2)
Arapahoe	25,027,513	162,142	154.40	(80.8)	135	185,389	(99.3)
Boulder	15,856,311	131,889	120.20	(25.5)	137	115,740	(17.6)
Jefferson	29,391,363	235,300	124.90	(22.9)	206	142,677	(22.3)
4-County Total	89,542,777	715,120	125.20	(36.7)	618	144,891	(36.9)
Denver	99,729,415	514,678	193.80	(32.5)	795	125,446	(36.9)
Denver SMSA	189,272,192	1,229,798	153.90	(33.4)	1,413	133,951	(37.6)
Colorado	327,155,962	2,209,528	148.10	(36.1)	2,797	116,967	(40.7)

[1] State of Colorado, Department of Revenue, Sales Tax Statistics Summary (code 0306).
[2] Colorado Population Trends, Business Research Division, University of Colorado, Boulder, Colorado.
[3] County Business Patterns, U. S. Bureau of the Census, SIC used here.
[4] 1966 and 1968 average.

TABLE 6-6

POPULATION ESTIMATES FOR SELECTED AREAS AND YEARS, 1962-1971

Year	Denver #/%Δ	4-County Area #/%Δ	5-County Area #/%Δ	State #/%Δ
1962	512,000	515,300	1,027,300	1,900,000
1965	491,000 -4.1	580,800 +12.7	1,071,800 +4.3	1,990,000 +4.7
1968	510,000 +3.9	662,000 +14.0	1,172,000 +9.3	2,120,000 +6.5
1971	514,000 +0.8	752,000 +13.6	1,266,000 +8.0	2,277,000 +7.4
%Δ '62-'71	+0.4	+45.9	+23.2	+19.8
Ave. %Δ '62-'71	+0.2	+13.4	+7.2	+6.2

Source: Colorado Population Trends, Business Research Division, University of Colorado, Boulder, Colorado.

the downward trend was due to a prior disequilibrium; however, nothing definite can be said because of the short time span covered by the data. Per capita sales indicate even less of a trend; in 1970 Denver experienced a 32.5 percent increase as compared with 33.4 percent for the SMSA from 1964.

3. Denver wages are considerably higher than in the 4-county area (see Table 6-3) and show no signs of diminishing in difference. A possible explanation for this fact, considering the 4-county area as higher in cost of living (housing value and median income used as indicators in Table 6-9), is that Denver imports wage earners from the outlying counties by offering higher wage rates. This does seem somewhat contradictory in principle since the eating and drinking industry is essentially a low-skill, low-paying sector in the economy.
4. The eating and drinking industry experiences little in the way of seasonality (Table 6-7). However, Denver County suffers less fluctuation (small as it may be) than the outlying county areas. This may be due to the stabilizing influence of Denver's labor force, the diversified downtown area, or perhaps it is a function of the class of restaurants which self-generate and hold on to their customers. Possible overtones may be greater profits and higher wages for good steady workers as it applies to (3) above.
5. Eating and drinking places tend to locate with the population movements (see Table 6-4 and Table 6-6). This is reflected by both growth in numbers and by sales as reflected in Table 6-5. For example, as Denver declined in population from 1965-1967 so did total sales and per capita sales; from 1967-1970 popu-

TABLE 6-7

PERCENTAGE DISTRIBUTION OF ANNUAL GROSS SALES IN SIC 58
IN DENVER AND THE 4-COUNTY RING, BY QUARTERS, 1964, 1967, 1970

Region	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Range		Difference
1964							
Denver	23.8	24.7	26.7	24.5	26.7-23.8	=	2.9
4-County	21.9	24.1	28.7	25.1	21.9-28.7	=	6.8
1967							
Denver	22.3	24.6	27.3	25.6	27.3-22.3	=	5.0
4-County	21.5	24.2	27.7	26.4	27.7-21.5	=	6.2
1970							
Denver	23.9	25.4	26.7	23.7	26.7-23.9	=	2.8
4-County	22.6	25.4	27.7	25.0	27.7-22.6	=	5.1

Source: State of Colorado, Department of Revenue, Sales Tax Statistical Summary.

TABLE 6-8

SALES BY FIRMS IN SIC 58, POPULATION AND SALES PER CAPITA, 1972

County	Sales[1]	Population[2]	Per Capita	Number of Units[3]	Average Sales
Adams	$ 30,813,489	202,000	$152.50	No Data	No Data
Arapahoe	46,230,835	179,000	258.30		
Boulder	25,608,398	148,000	173.00		
Jefferson	48,099,366	265,000	181.50		
4-County Total	150,752,088	794,000	189.90		
Denver	191,440,192	515,000	371.70		
Denver SMSA	342,192,280	1,309,000	261.40		
Colorado	553,632,708	2,357,000	234.90		

[1]State of Colorado, Department of Revenue, Sales Tax Statistics Summary.

[2]Colorado Population Trends, Business Research Division, University of Colorado, Boulder, Colorado.

[3]County Business Patterns, U. S. Department of Interior, Bureau of the Census, SIC used here.

TABLE 6-9

MEDIAN FAMILY INCOME IN THE DENVER SMSA, BY COUNTY, 1960-1970

County	Median Income		Percentage Change
	1960	1970	
Adams	$6,848.77	$10,515.05	53.5
Arapahoe	8,426.79	12,307.18	46.1
Boulder	6,997.67	11,337.39	62.0
Denver	7,551.51	9,653.38	27.8
Jefferson	8,271.22	12,217.46	47.7
SMSA	7,620.85	10,898.37	43.0

Source: Profile of the Denver Region 1960-70, Denver Regional Council of Governments.

TABLE 6-10

MEDIAN HOUSING VALUES IN THE DENVER SMSA, BY COUNTY, 1960-1970

County	Median Value		Percentage Change
	1960	1970	
Adams	$12,662	$18,998	50.0
Arapahoe	15,750	29,581	87.8
Boulder	14,539	28,271	94.5
Denver	13,238	19,070	44.1
Jefferson	17,457	29,653	69.9
SMSA	13,775	23,058	67.4

Source: Profile of the Denver Region 1960-70, Denver Regional Council of Governments.

lation rose slightly and so did per capita sales (which more than compensated for population, perhaps indicating a general boom in the eating/drinking business).

While a number of additional observations and conclusions could be drawn from the tables presented, the five above are the most apparent and significant.

A number of additional observations to come from research are worth mentioning here.

1. From the Sales Tax Statistics Summary it is observed that eating and drinking as a percent of total retail sales increased slightly during the 1960s. It is interesting to note that eating and drinking firms account for roughly 5-6 percent of total retail sales.
2. Mr. Martin Murry, License Bureau, City of Denver, stated that restaurant licenses are governed by city ordnance #702 and vary according to the type of establishment and the seating capacity. For example, a restaurant whose seating capacity is 75 pays a $100/year fee. The city must work within the confines of the State liquor laws which issue quotas on the liquor licenses. Dr. Douglas C. Keister, Director of Denver University's School of Hotel and Restaurant Management, also agreed that State liquor quotas prevent a lot of good restaurants from locating. The license fees have no relationship to location.
3. Dr. Keister also stated the best thing a city could do for policy is to make entry as easy as possible. One way to do this is to take the politics out of liquor laws and consolidate building permits, health, licensing, etc., under one simple control.

4. Standard and Poors published an industry survey (November 1971) showing the percent of disposable income in the United States spent for eating and drinking.

	1962	1963	1964	1965	1966	1967	1968	1969	1970
% of disposable income for eating and drinking	4.3	4.2	4.2	4.3	4.3	4.3	4.3	4.1	4.1
% of eating and drinking accounted for by chain sales	6.9	6.9	8.6	8.8	10.1	10.9	8.4	9.6	9.6

This indicates the importance of the individual restaurant and there seems to be no trend of giant chain restaurants taking all the industry sales.

5. The Denver County Health Department closed 84 eating places for lack of cleanliness in 1972. They inspect each establishment every two months.

The discussion in this chapter provides a broad outline of the relevant considerations pertaining to location of eating and drinking establishments. Based on the information presented here, a survey was designed and more specific policy conclusions were drawn. This is the subject of a later chapter.

CHAPTER 7

A BRIEF PROFILE OF THE WHOLESALE TRADE SECTOR IN DENVER

The approach in compiling a wholesale industry profile stems from the conclusions reached in the eating and drinking analysis of the previous chapter. An attempt is made to show industry trends from national and state publications and to draw some inferences and conclusions from the available data. Before presenting the data it is necessary to briefly discuss relevant categorization problems and data sources.

The following five sources provided the data presented in this analysis; each source is referred to in the text by the letter indicated below.

(a) County Business Patterns published by the Census Bureau, 1956-1971.

(b) Census of Business, Colorado Wholesale Trade published by the Census Bureau for the years 1958, 1963, and 1967.

(c) Denver Wholesale Trade Area Survey published by the Denver Chamber of Commerce in 1969.

(d) Denver Community Renewal Program published by the Denver Planning Office in March 1973.

(e) Sales Tax Statistics Summary compiled by the State Department of Revenue.

All of the data in the tables were derived from the five sources above.

Most of the references and data come from the County Business Patterns for several reasons: it coveres the longest time span (1956-1971), its figures are roughly comparable to those published in the Census of Business

and Colorado Manpower Review, and its many details on employment, wages and industry size are good indicators of trends and changes.

All of the data has been organized into the Standard Industrial Code 50 which includes only those firms primarily engaged in wholesaling. This excludes firms secondarily engaged in wholesaling as determined by sales percentages; and this fact may pose analysis problems. The following data indicate the effect of these secondary wholesalers.

Fourth Quarter 1971 Wholesale Sales

	SIC 50	All	SIC 50 Sales as a Percentage of All Sales
Adams	$ 15,215,756	$ 60,574,610	25.1
Arapahoe	5,127,356	22,736,175	22.6
Boulder	1,192,182	12,422,719	9.5
Jefferson	5,708,007	16,565,282	34.4
4-County	27,243,301	112,299,786	24.2
Denver	172,729,320	348,308,094	49.5
State	252,928,000	693,983,189	36.4

Source: Reference (e).

As can be seen, secondary wholesalers account for the majority of total sales. Furthermore, of those firms primarily engaged in wholesaling (SIC 50), 30 to 50 percent of gross sales are retail in nature (see reference e). Hence, when considering the wholesale industry, the data in the SIC 50 categorization must be recognized to represent only a portion of the total. It is unclear the extent to which this fact alters the conclusions which emerge from this analysis.

Following the pattern of previous chapters, only summary observations of the most salient points are presented here, along with the tabulated data upon which they are based.

1. The wholesale industry in Colorado and the Denver region is highly concentrated in Denver County (tables 7-1, 7-2, 7-3, 7-4). Although Denver's share of the market is declining, the rate of decline is very gradual. As indicated in Table 7-1, Denver's share of Colorado wholesale sales fell from 75.4 to 66.7 percent and its share of SMSA sales fell from 92.8 to 86.1 percent. The declining SMSA share may be attributable in part to population growth trends as wholesalers need to locate closer to retail outlets in the burgeoning 4-county ring.

2. Denver is a wholesale center for a large midwest and western market as indicated in reference c. The reasons are probably geographical, and the extent of trade appears to be inversely proportional to distance and nearness to other trade centers (tables 7-6 and 7-7). No trends or absolute sales figures are available, but the data shown below are indicative.

Wholesale Employment as a Percent of Total Employment[d]

	1959	1966	1970
Denver SMSA	8.2	7.7	7.3
U. S.	5.5	5.4	5.5

As can be seen in Table 7-6, 9.1 percent of wholesale firms in Denver do not trade in Denver but exclusively export wholesale. The Denver regional market may be saturated with wholesalers since none of the surveyed firms listed Denver as a market potential.

3. Wholesale firms in Denver are larger than those in the State as a whole as measured by number of employees and shown in Table 7-2. The trend is toward larger firms in both Denver and Colorado; this is also reflected in Table 7-3 which shows that the absolute

TABLE 7-1

WHOLESALE SALES FOR COLORADO AND SELECTED AREAS, SELECTED YEARS, 1958-1972

Year/Region	Sales (1,000)	%Δ	Percentage of Total Sales in the SMSA	Percentage of Total Sales in the State
[1]1958/Colorado	2,955,309	--	--	--
Adams	73,878	--	3.1	NC
Arapahoe	64,186	--	2.7	NC
Boulder	16,718	--	0.7	NC
Jefferson	18,102	--	0.8	NC
4-County	172,884	--	7.2	5.8
Denver	2,229,644	--	92.8	75.4
5-County	2,402,528	--	--	81.3
[1]1963/Colorado	3,623,190	22.6	--	--
Adams	94,993	28.6	3.2	NC
Arapahoe	79,720	24.2	2.7	NC
Boulder	29,787	78.2	1.0	NC
Jefferson	44,371	45.1	1.5	NC
4-County	248,871	44.0	8.5	6.8
Denver	2,692,152	20.7	91.5	74.3
5-County	2,941,023	22.4	--	81.2
[1]1967/Colorado	4,385,769	21.0	--	--
Adams	164,779	73.5	4.6	NC
Arapahoe	113,080	41.8	3.2	NC
Boulder	33,391	12.1	0.9	NC
Jefferson	60,308	35.9	1.7	NC
4-County	371,558	49.3	10.5	8.4
Denver	3,179,786	18.1	89.5	72.5
5-County	3,551,344	20.8	--	81.0
[2]1972/Colorado	1,215,944	NC	--	--
Adams	70,486	NC	7.5	NC
Arapahoe	26,665	NC	2.8	NC
Boulder	6,572	NC	0.7	NC
Jefferson	27,252	NC	2.9	NC
4-County	130,975	NC	13.9	10.8
Denver	814,444	NC	86.1	66.7
5-County	945,419	NC	--	77.8

NC = not calculated and/or not comparable

[1]For the years 1958, 1963 and 1967 the data is from the Census of Business, Bureau of Census.

[2]For 1972 the data comes from the State Tax Summary.

TABLE 7-2

EMPLOYEES AND PAYROLL IN SIC 50 FOR SELECTED AREAS AND YEARS, 1956-1971

1956	# of Employ	%Δ	% of State/ Denver	1st qtr. Payroll (000)	Ave. Wage	%Δ	% of Report Units Employing 0-7	8-49	50	Total Units	%Δ	% of State/ Denver
Colorado [b] (total)	31,721	--	--	33,401	1,053	--	69	28	3	3,048	--	--
501	2,513	--	7.9	2,506	997	--	63	32	5	196	--	6.4
502	964	--	3.0	1,028	1,066	--	70	26	4	77	--	2.5
503	456	--	1.4	460	1,009	--	69	22	8	36	--	1.1
504	1,795	--	5.7	1,678	934	--	67	30	3	170	--	5.6
505	1,437	--	4.5	1,052	732	--	63	34	3	139	--	4.6
506	999	--	3.1	1,176	1,177	--	54	41	5	78	--	2.6
507	723	--	2.3	759	1,049	--	56	39	3	59	--	1.9
508	3,169	--	10.0	3,817	1,204	--	64	33	3	318	--	10.4
509	5,740	--	18.1	5,353	932	--	64	33	3	573	--	18.8
Denver	20,255	--	[a] 63.9	22,657	1,118	--	63	32	6	1,466	--	[a] 48.1
501	1,742	--	8.6	1,818	1,044	--	55	36	9	86	--	5.9
502	649	--	3.2	712	1,097	--	65	31	4	49	--	3.3
503	442	--	2.2	451	1,020	--	65	26	10	31	--	2.1
504	1,142	--	5.6	1,169	1,024	--	56	39	6	70	--	4.8
505	573	--	2.8	515	899	--	61	38	2	61	--	4.2
506	804	--	4.0	936	1,164	--	49	46	5	59	--	4.0
507	480	--	2.4	519	1,081	--	47	50	3	38	--	2.6
508	2,517	--	12.4	3,109	1,235	--	72	39	3	218	--	14.9
509	3,842	--	19.0	3,728	970	--	57	38	5	298	--	20.3

TABLE 7-2
(Continued)

1959	# of Employ	%Δ	% of State/ Denver	1st qtr. Payroll (000)	Ave. Wage	%Δ	% of Report Units Employing 0-7	8-49	50	Total Units	%Δ	% of State/ Denver
Colorado [b] (total)	33,693	6.2	--	41,345	1,227	16.5	69	27	3	3,282	7.7	--
501	3,687	46.7	10.9	4,365	1,183	18.7	61	35	4	295	50.1	9.0
502	1,675	73.7	5.0	2,141	1,218	14.2	74	23	3	175	27.3	5.3
503	647	41.8	1.9	666	1,029	2.0	75	15	13	48	33.3	1.5
504	4,370	43.5	13.0	4,097	937	0.3	64	33	3	428	51.8	13.0
505	1,768	23.0	5.2	1,362	770	5.2	67	32	1	225	61.9	6.9
506	2,380	38.2	7.1	2,973	1,249	6.1	66	29	5	149	91.0	4.5
507	1,177	62.8	3.5	1,407	1,195	13.9	68	28	4	122	106.8	3.7
508	5,736	81.0	17.0	7,623	1,329	10.4	65	31	3	535	68.2	16.3
509	10,329	79.9	30.7	12,172	1,178	26.4	74	24	2	1,158	6.8	36.1
Denver	22,330	10.2	[a]66.3	28,775	1,228	15.2	62	32	5	1,650	12.6	[a]50.3
501	2,601	49.3	11.6	3,313	1,274	22.0	48	43	9	137	59.3	8.3
502	946	45.8	4.2	1,375	1,453	32.5	69	28	3	99	2.0	6.0
503	620	40.3	2.8	640	1,032	1.2	69	17	14	35	12.9	2.1
504	2,353	6.0	10.5	2,637	1,121	9.5	57	39	2	187	67.1	11.3
505	335	-41.6	1.5	449	1,340	49.1	66	32	3	38	62.3	2.3
506	2,165	69.3	9.7	2,687	1,241	6.6	64	29	11	113	91.5	6.9
507	922	92.1	4.1	1,114	1,208	11.7	63	32	5	81	28.9	5.3
508	4,243	68.6	19.0	5,768	1,359	10.4	63	33	3	358	64.2	21.7
509	7,017	82.6	31.4	8,974	1,279	31.9	65	31	1	532	78.5	32.2

TABLE 7-2
(Continued)

1962	# of Employ	%Δ	% of State/ Denver	1st qtr. Payroll (000)	Ave. Wage	%Δ	% of Report Units Employing 0-7	8-49	50	Total Units	%Δ	% of State/ Denver
Colorado	34,203	1.5	--	45,794	1,338	9.0	67	30	3	3,375	2.8	--
501	3,808	3.3	11.1	5,114	1,342	13.4	63	33	4	331	12.2	9.8
502	1,964	17.3	5.7	3,183	1,620	33.0	79	26	4	193	10.3	5.7
503	744	15.0	2.2	882	1,185	15.2	75	18	7	55	14.6	1.1
504	4,247	-2.8	12.4	4,763	1,121	19.6	66	32	2	433	1.2	12.8
505	1,993	12.7	5.8	1,742	874	13.5	66	32	2	215	-4.5	6.4
506	2,155	-9.5	6.3	3,339	1,549	24.0	62	34	4	173	16.1	5.1
507	1,493	26.8	4.4	2,081	1,393	16.6	63	34	3	148	21.3	4.4
508	6,607	15.2	19.3	9,873	1,494	12.4	66	31	3	591	10.5	17.5
509	10,278	-.5	30.0	13,471	1,310	11.2	70	28	2	1,184	-.1	35.1
Denver	22,902	2.6	[a]67.0	32,525	1,420	10.2	60	35	5	1,729	4.8	[a]51.2
501	2,595	-.2	11.3	3,719	1,433	12.5	50	41	9	145	5.8	8.4
502	1,074	13.5	4.7	1,637	1,524	4.9	64	32	4	102	3.0	5.9
503	704	13.5	3.1	833	1,183	14.6	63	26	11	35	.0	2.0
504	2,318	-1.5	10.1	2,930	1,264	12.8	64	33	3	195	4.3	11.3
505	561	67.5	2.4	556	991	-26.1	66	30	4	47	23.7	2.7
506	1,858	-14.2	8.1	2,892	1,556	25.3	58	37	5	125	10.6	7.2
507	1,172	27.1	5.1	1,673	1,427	18.1	50	38	12	110	26.4	6.4
508	5,264	24.1	23.0	7,923	1,505	10.7	60	36	4	398	11.2	23.0
509	6,583	6.2	28.7	9,127	1,386	8.4	60	35	5	536	.8	31.0

TABLE 7-2
(Continued)

1965	# of Employ	%Δ	% of State/ Denver	1st qtr. Payroll (000)	Ave. Wage	%Δ	% of Report Units Employing 0-7	8-49	50	Total Units	%Δ	% of State/ Denver
Colorado	36,520	6.8	--	54,863	1,502	12.2	66	30	4	3,683	9.1	--
501	4,397	15.5	12.0	6,436	1,463	9.0	65	14	21	382	15.4	10.3
502	1,954	-.5	5.4	3,292	1,684	4.0	66	29	5	183	-5.2	5.0
503	738	-.8	2.0	1,039	1,407	18.7	74	16	10	62	12.7	1.7
504	4,944	16.4	13.5	6,511	1,316	17.4	62	34	4	440	1.6	11.9
505	1,316	-34.0	3.6	1,271	965	10.4	72	27	1	189	-12.1	5.1
506	2,638	22.4	7.2	4,488	1,701	9.8	67	30	3	229	32.4	6.2
507	1,623	8.7	4.4	2,437	1,501	7.8	63	35	2	175	18.2	4.8
508	7,654	15.8	21.0	13,057	1,705	22.4	67	29	4	681	15.2	38.5
509	10,642	3.5	29.1	15,247	1,432	9.3	69	29	2	1,306	10.3	35.5
Denver	23,651	3.3	[a]64.8	37,575	1,588	11.8	58	37	5	1,788	3.4	[a]48.5
501	3,024	16.5	12.8	4,618	1,527	6.6	52	39	9	161	11.0	9.0
502	1,137	5.9	4.8	1,815	1,596	4.7	59	34	7	83	-18.7	4.6
503	661	-6.2	2.8	908	1,374	16.1	63	21	16	38	8.6	12.1
504	2,840	22.5	12.0	4,182	1,472	16.5	56	37	7	199	2.1	11.4
505	172	-69.3	.7	235	1,360	37.8	68	32	0	25	-46.8	1.4
506	2,035	9.5	8.6	3,479	1,709	9.8	64	31	5	149	19.2	8.3
507	1,123	-4.2	4.7	1,739	1,548	-.5	57	41	2	115	4.5	6.4
508	5,835	10.8	24.7	10,074	1,726	14.7	60	35	5	427	7.3	23.9
509	6,326	-4.0	26.7	9,659	1,526	10.1	58	39	3	564	5.2	31.5

TABLE 7-2
(Continued)

1968	# of Employ	%Δ	% of State/ Denver	1st qtr. Payroll (000)	Ave. Wage	%Δ	% of Report Units Employing 0-7	8-49	50	Total Units	%Δ	% of State/ Denver
Colorado	42,404	16.1	--	73,175	1,725	14.8	63	34	3	3,638	-1.2	--
501	4,846	10.2	11.4	8,083	1,667	13.9	59	37	4	380	-.5	10.4
502	2,081	6.5	4.9	4,109	1,974	17.2	61	34	5	174	-5.0	4.8
503	841	14.0	2.0	1,272	1,512	7.5	70	22	8	63	1.6	1.7
504	6,118	23.7	14.4	9,480	1,549	17.7	57	37	6	428	-2.7	11.8
505	1,728	31.3	4.1	1,736	1,004	4.0	59	37	4	170	-10.1	4.7
506	2,814	6.7	6.6	5,223	1,856	9.1	69	28	3	238	3.9	6.5
507	1,489	-8.3	3.5	2,595	1,742	16.1	61	37	2	157	-10.3	4.3
508	8,430	10.1	19.8	16,515	1,959	14.9	62	34	4	720	5.7	19.8
509	12,132	14.0	28.6	19,802	1,632	14.0	65	32	3	1,259	-3.6	34.6
Denver	28,174	19.1	[a]66.4	51,553	1,829	15.2	55	39	6	1,814	1.5	[a]49.9
501	3,092	2.2	11.0	5,476	1,771	16.0	46	45	9	157	-2.5	8.7
502	1,401	2.3	5.0	2,729	1,947	22.0	53	39	8	86	3.6	4.7
503	721	9.1	2.6	1,061	1,471	7.1	57	30	3	37	-2.4	2.0
504	3,443	21.2	12.2	5,738	1,666	13.2	54	39	7	194	-2.5	10.7
505	294	70.9	1.0	399	1,357	-.4	52	39	9	23	-8.0	1.3
506	2,381	17.0	8.5	4,413	1,853	8.4	65	30	5	161	8.1	8.9
507	1,118	-.1	4.0	2,005	1,793	15.8	59	38	3	113	-1.7	6.2
508	6,226	6.7	22.1	12,523	2,011	16.5	55	39	6	442	3.5	24.4
509	7,686	21.5	27.3	13,090	1,703	-10.4	54	40	6	567	.5	31.3

TABLE 7-2
(Continued)

1971	# of Employ	%Δ	% of State/ Denver	1st qtr. Payroll (000)	Ave. Wage	%Δ	% of Report Units Employing 0-7	8-49	50	Total Units	%Δ	% of State/ Denver
Colorado	46,097	8.7	--	94,436	2,048	18.7	61	34	5	3,736	3.5	--
501	5,518	13.8	12.0	10,571	1,915	14.9	59	37	4	432	13.7	11.6
502	1,994	-4.2	4.3	4,822	2,418	22.4	64	31	5	173	-.6	4.6
503	814	-3.2	1.8	1,530	1,879	24.3	64	30	6	61	-3.2	1.6
504	6,412	4.8	13.9	11,508	1,794	15.8	55	37	8	405	-3.4	10.8
505	1,580	-8.6	3.4	1,911	1,209	20.4	57	40	3	164	-3.5	4.4
506	2,914	3.6	6.3	6,364	2,183	17.6	68	28	4	249	4.6	6.7
507	1,762	18.3	3.8	3,652	2,072	18.9	57	42	1	172	9.6	4.6
508	9,755	15.7	21.2	23,097	2,367	20.8	63	33	4	739	2.6	19.8
509	13,583	12.0	29.5	26,274	1,934	18.5	63	34	3	1,291	2.5	34.6
Denver	30,502	8.3	[a]66.2	66,313	2,174	25.7	54	39	7	1,829	.8	[a]49.0
501	3,466	12.1	11.4	7,126	2,055	16.0	51	39	10	178	13.4	9.7
502	1,375	-1.9	4.5	3,301	2,400	23.3	49	43	8	79	-8.1	4.3
503	685	-5.9	2.2	1,191	1,738	18.2	47	42	11	36	-3.3	2.0
504	3,850	11.8	12.6	7,626	1,980	18.8	51	38	11	188	-3.1	10.3
505	258	-12.3	.8	444	1,720	26.8	68	23	9	22	-4.3	1.2
506	2,406	1.0	7.9	5,257	2,184	17.9	63	31	6	164	1.9	9.0
507	1,359	21.1	4.5	2,887	2,124	18.5	53	45	2	120	6.2	6.6
508	6,905	10.9	22.6	16,478	2,386	18.6	56	38	6	438	-1.0	23.9
509	8,536	11.1	28.0	17,570	2,058	20.8	53	40	7	572	.9	31.3

[a]% of state
[b]Sub-totals will not add up to totals

501 = Motor vehicle and automotive equipment
502 = Drugs, chemicals, and allied products
503 = Dry goods and apparel
504 = Groceries and related products
505 = Farm product, raw materials
506 = Electrical goods
507 = Hardware, plumbing, and heating
508 = Machinery, equipment, and supplies
509 = Miscellaneous wholesales

TABLE 7-3

NUMBER OF FIRMS IN SIC 50, FOR SELECTED AREAS AND YEARS, 1956-1971

Region	1956 # of Units	1956 %Δ	1956 % SMSA	1956 % State	1956 % U.S.	1959 # of Units	1959 %Δ	1959 % SMSA	1959 % State	1959 % U.S.	1962 # of Units	1962 %Δ	1962 % SMSA	1962 % State	1962 % U.S.
U.S.	261,531	--	--	--	--	280,984	7.4	--	--	--	283,978	1.0	--	--	--
Colorado	3,048	--	--	--	1.16	3,282	7.6	--	--	1.16	3,375	2.8	--	--	1.18
Adams	46	--	2.7	NC	NC	65	41.3	3.3	NC	NC	69	6.1	3.4	NC	NC
Arapahoe	52	--	3.1	NC	NC	79	50.0	4.1	NC	NC	90	13.9	4.4	NC	NC
Boulder	49	--	2.9	NC	NC	63	28.5	3.2	NC	NC	69	9.5	3.4	NC	NC
Jefferson	35	--	2.1	NC	NC	59	68.5	3.0	NC	NC	61	3.3	3.0	NC	NC
4-County	182	--	11.1	5.9	NC	266	46.1	13.8	8.1	NC	289	8.6	13.8	8.5	NC
Denver	1,466	--	88.3	48.0	.56	1,650	12.5	86.1	50.2	.58	1,729	4.7	85.6	51.2	.60
Denver SMSA	1,648	--	--	54.0	.63	1,916	16.0	--	58.3	.68	2,018	5.3	--	59.7	.71

Region	1965 # of Units	1965 %Δ	1965 % SMSA	1965 % State	1965 % U.S.	1968 # of Units	1968 %Δ	1968 % SMSA	1968 % State	1968 % U.S.	1971 # of Units	1971 %Δ	1971 % SMSA	1971 % State	1971 % U.S.
U.S.	303,510	6.9	--	--	--	300,077	-1.1	--	--	--	293,568	-2.2	--	--	--
Colorado	3,683	9.1	--	--	1.21	3,638	-1.2	--	--	1.21	3,736	2.7	--	--	1.27
Adams	100	44.9	4.5	NC	NC	97	-3.0	4.3	NC	NC	118	21.6	4.9	NC	NC
Arapahoe	151	67.8	6.8	NC	NC	168	11.3	7.4	NC	NC	165	-1.8	6.8	NC	NC
Boulder	81	17.4	3.7	NC	NC	87	7.4	3.8	NC	NC	93	6.9	3.8	NC	NC
Jefferson	99	62.3	4.5	NC	NC	106	7.1	4.7	NC	NC	136	28.3	5.6	NC	NC
4-County	431	49.1	19.4	11.7	NC	458	6.3	20.2	12.6	NC	512	11.8	21.2	13.7	NC
Denver	1,788	3.4	80.6	48.5	.58	1,814	14.5	79.8	49.9	.60	1,829	.8	74.7	49.0	.62
Denver SMSA	2,219	10.0	--	60.2	.60	2,272	2.4	--	64.2	.75	2,416	6.3	--	64.7	.82

Source: County Business Patterns, U. S. Bureau of the Census, selected years.

TABLE 7-4

NUMBER OF EMPLOYEES AND TAXABLE PAYROLL IN SIC 50, FOR SELECTED AREAS AND YEARS, 1956-1971

Year/Region	Number of Employees	%Δ	% SMSA	% State	% U.S.	1st qtr. Taxable Payroll	Average Wage	%Δ
1956								
U.S.	3,019,188	--	--	--	--	3,389,455	$1,122	--
Colorado	31,721	--	--	--	1.1	33,401	1,053	--
Adams	355	--	1.6	NC	NC	369	1,039	--
Arapahoe	475	--	2.2	NC	NC	525	1,105	--
Boulder	301	--	1.4	NC	NC	249	827	--
Jefferson	201	--	.9	NC	NC	188	935	--
4-County	1,332	--	6.2	4.2	NC	1,331	999	--
Denver	20,255	--	93.8	63.9	.7	22,657	1,118	--
5-County	21,587	--	--	68.1	.7	23,988	1,111	--
1959								
U.S.	3,092,243	2.4	--	--	--	3,864,865	1,249	11.3
Colorado	33,683	6.2	--	--	1.1	41,345	1,227	16.5
Adams	905	154.9	3.6	NC	NC	1,215	1,342	29.2
Arapahoe	523	10.1	2.0	NC	NC	591	1,130	2.3
Boulder	336	11.6	1.3	NC	NC	299	890	7.6
Jefferson	212	5.5	.9	NC	NC	224	1,056	12.9
4-County	1,976	48.3	8.1	6.2	NC	2,329	1,178	17.9
Denver	22,330	10.2	91.5	66.3	.7	28,775	1,288	15.2
5-County	24,306	12.6	--	72.5	.8	31,104	1,279	15.1
1962								
U.S.	3,239,698	4.8	--	--	--	4,590,023	1,416	13.4
Colorado	34,203	1.5	--	--	1.1	45,794	1,338	9.0
Adams	786	-13.1	3.2	NC	NC	1,066	1,348	.4
Arapahoe	586	12.0	2.4	NC	NC	707	1,206	6.7
Boulder	383	14.0	1.5	NC	NC	420	1,096	23.1
Jefferson	234	10.4	.9	NC	NC	268	1,145	8.4

TABLE 7-4
(Continued)

Year/Region	Number of Employees	%Δ	% SMSA	% State	% U.S.	1st qtr. Taxable Payroll	Average Wage	%Δ
1962 (Continued)								
4-County	1,989	.7	8.0	5.8	NC	2,461	$1,237	5.0
Denver	22,902	2.7	92.0	67.0	.7	32,525	1,420	10.2
5-County	24,891	2.4	--	72.8	.8	34,986	1,405	9.9
1965								
U.S.	3,434,925	6.0	--	--	--	5,262,275	1,531	8.1
Colorado	36,520	6.8	--	--	--	54,863	1,502	12.3
Adams	1,098	39.7	4.1	NC	NC	1,648	1,500	11.3
Arapahoe	1,015	73.2	3.8	NC	NC	1,596	1,572	30.3
Boulder	397	3.6	1.5	NC	NC	531	1,337	22.0
Jefferson	543	32.1	2.0	NC	NC	759	1,397	22.0
4-County	3,053	53.5	11.4	8.4	NC	4,534	1,485	20.0
Denver	23,651	-1.1	88.6	64.8	--	37,575	1,588	11.8
5-County	26,704	7.3	--	73.1	--	42,109	1,576	12.2
1968								
U.S.	3,813,670	11.0	--	--	--	6,921,906	1,815	18.5
Colorado	42,404	16.1	--	--	1.1	73,175	1,725	14.8
Adams	1,209	10.1	3.8	NC	NC	2,197	1,817	21.1
Arapahoe	1,243	22.5	3.9	NC	NC	2,144	1,724	9.6
Boulder	626	57.7	2.0	NC	NC	859	1,372	2.6
Jefferson	766	41.1	2.4	NC	NC	1,249	1,630	16.6
4-County	3,844	25.9	12.0	9.1	NC	6,449	1,677	6.1
Denver	28,174	19.1	88.0	66.4	.7	51,553	1,829	15.1
5-County	32,018	19.9	--	75.5	.8	58,002	1,811	14.9
1971								
U.S.	3,984,787	4.5	--	--	--	8,455,116	2,120	16.8
Colorado	46,097	8.7	--	--	1.2	94,436	2,048	18.7
Adams	1,269	5.0	3.6	NC	NC	2,744	2,162	19.0

TABLE 7-4
(Continued)

Year/Region	Number of Employees	%Δ	% SMSA	% State	% U.S.	1st qtr. Taxable Payroll	Average Wage	%Δ
1971 (Continued)								
Arapahoe	1,541	24.0	4.4	NC	NC	3,019	$2,047	18.7
Boulder	967	54.5	2.7	NC	NC	1,979	2,046	49.1
Jefferson	975	27.3	2.8	NC	NC	1,782	1,827	12.1
4-County	4,752	23.6	13.5	10.3	NC	9,524	2,004	19.5
Denver	30,502	8.3	86.5	66.2	.7	66,313	2,174	18.2
5-County	35,254	10.1	--	76.5	.9	75,837	2,151	18.8

Source: County Business Patterns, U. S. Bureau of the Census, selected years.

number of firms has increased only slightly to take up the far greater increases in sales.

4. SIC 508 and 509 accounts for the largest portion of SIC 50 employment and payroll as shown in Table 7-2. Relative breakdowns of the wholesale industry have remained constant from 1956-1971.
5. The seasonal breakdown in Table 7-5 shows no significant differences when excluding the 1st quarter sales. The 1st quarter sales are not comparable because a portion of firms only file annually and hence come due in January.
6. As expected, wages are higher in Denver than in the rest of the SMSA and State but lower than the U. S. average as shown in Table 7-4. SIC 502 and 508 possess the highest average wage. The nine divisions of SIC 50 have not shown any pronounced shifts in relative importance according to the data in Table 7-2 except for SIC 505 which has decreased in percent of total Denver wholesale employment.

A number of observations and/or hypotheses can be made based on the data and analysis pertaining to SIC 50. Three of these conclude this portion of the study.

1. The location of wholesale firms appears to be less closely tied to population trends than do eating and drinking firms. From 1958 to 1972, Denver's share of SMSA wholesale sales fell from 92.8 to 86.1 percent which may reflect the effect of suburban retail outlets drawing wholesale firms to serve an expanding population.
2. Wholesalers locate near transportation centers which might account for Denver's huge share of the wholesale industry in both the state and SMSA. In a publication entitled Highways, Trucks and New Industry, prepared by the Department of Research and Transport

TABLE 7-5

PERCENTAGE DISTRIBUTION OF ANNUAL TOTAL SALES OF SIC 50
BY QUARTERS, FOR COLORADO AND SELECTED AREAS, 1971-1973

	% July-Sept. 1971	% Oct.-Dec. 1971	% Jan.-March 1972	% Apr.-June 1972	% July-Sept. 1972	% Oct.-Dec. 1972	% Jan.-March 1973	% Apr.-June 1973
Denver	23.0	22.1	31.8	23.1	22.4	23.0	31.4	23.1
4-County	19.6	23.7	30.9	25.8	19.7	20.1	30.5	29.2
Colorado	22.4	22.1	31.7	23.8	No Data			

Source: State of Colorado, State Tax Summary.

TABLE 7-6

NUMBER OF DENVER WHOLESALE FIRMS TRADING IN VARIOUS CITIES, SURVEY RESPONSE, 1969[a]

City	Number of Firms Responding	Percentage of Total Firms Responding
Primary Trade Area		
Denver	868	90.9%
Eastern Colorado	743	77.8
Western Colorado	699	73.2
Cheyenne	677	70.9
Casper	635	66.5
Scottsbluff	529	55.4
Sheridan	465	48.7
Albuquerque	415	43.5
Salt Lake City	335	35.1
Rapid City	315	33.0
Billings	300	31.4
Secondary Trade Area		
Alamagordo	228	23.9
Great Falls	225	23.6
El Paso	182	19.1
Boise	160	16.8
Tertiary Trade Area		
Wichita	127	13.3
Omaha	120	12.6
Amarillo	116	12.1
Phoenix	108	11.3
Topeka	92	9.6
Tucson	91	9.5
Bismarck	85	8.9
Lubbock	81	8.5
Flagstaff	81	8.5
Sioux Falls	79	8.3
Pierre	76	8.0
Oklahoma City	76	8.0
Kansas City	69	7.2
Fargo	68	7.1
Dallas	65	6.8
Odessa	62	6.5
Tulsa	61	6.4
Los Angeles	60	6.3
Elko	59	6.2

TABLE 7-6
(Continued)

City	Number of Firms Responding	Percentage of Total Firms Responding
Houston	53	5.5%
Grand Forks	50	5.2
Wichita Falls	49	5.1
Abilene	48	5.0
Total Firms Responding	955	100.0

[a]Denver includes five counties in Metro Area. Sample response of 955 represents 38.2 percent of all Denver Metro wholesalers.

Source: Denver Wholesale Trade Area Survey, Denver Chamber of Commerce, 1969.

TABLE 7-7

NUMBER OF DENVER WHOLESALE FIRMS CITING POTENTIAL MARKETS IN VARIOUS CITIES, SURVEY RESPONSE, 1969[a]

City	Number of Firms Responding	Percentage of Total Firms Responding[b]
Primary Potential Market		
Western Colorado (6)	55	21.5%
Eastern Colorado (18)	34	16.0
Casper (12)	45	14.1
Sheridan (4)	60	12.2
Albuquerque (2)	64	11.9
Salt Lake City (1)	74	11.9
Cheyenne (19)	31	11.2
Scottsbluff (12)	45	10.6
Secondary Potential Market		
Rapid City (5)	58	9.1
Billings (8)	52	7.9
Omaha (3)	62	7.4
Boise (7)	54	6.8
Great Falls (10)	49	6.7
Wichita (6)	55	6.6
Flagstaff (9)	51	6.3
Topeka (11)	48	5.6
Alamagordo (15)	40	5.5
El Paso (16)	39	5.3
Phoenix (13)	43	5.1
Tertiary Potential Market		
Amarillo (14)	41	4.9
Sioux Falls (15)	40	4.6
Pierre (16)	39	4.4
Tucson (17)	36	4.2
Bismarck (20)	30	3.4
Lubbock (21)	28	3.2
Grand Forks (22)	27	3.0
Oklahoma City (23)	26	3.0
Tulsa (24)	25	3.0
Fargo (24)	25	2.8
Lawton (25)	22	2.4
Odessa (26)	21	2.4

TABLE 7-7
(Continued)

City	Number of Firms Responding	Percentage of Total Firms Responding[b]
Kansas City (27)	20	2.3
Las Vegas (28)	19	2.1
Seattle (28)	19	2.1
Wichita Falls (28)	19	2.1

[a]Denver includes five counties in Metro Area.

[b]The number of firms identifying each city as a potential trade area is expressed as a percentage of total respondents (955) minus the number of respondents currently trading in the city.

Source: Denver Wholesale Trade Area Survey, Denver Chamber of Commerce, 1969.

Economics, American Trucking Association, Inc., in May 1963, several hundred U. S. firms were surveyed by SIC group on "who's moving where?"; that is, they asked firms "Are you in a city or suburban location?" and "Does your present location involve a move from a city or suburb?" Wholesale trade firms ranked first in the percentage located in the suburbs (43.6 percent). Of those located in the suburbs, 53.3 percent migrated from the city and rural locations.

These results are remarkable when compared with the profile of wholesale trade in the Denver SMSA. Denver's share of SMSA wholesalers declined from 92.8 in 1958 to 86.1 in 1972; Denver's share of total SMSA wholesale employment declined from 93.8 in 1956 to 86.5 in 1971. None of these figures approach the survey findings. It is felt that the lack of substantial out-migration of Denver wholesalers up to the present may be due to Denver's transportation facilities.

3. The availability of warehousing and storage facilities plays an important part in the wholesaler's choice in location. Again, cursory study indicates that Denver is much stronger in this respect than is the suburgan ring.

CHAPTER 8

SURVEY OF ELECTRICAL MANUFACTURING FIRMS

This and the following two chapters present the results of surveys of the three key industries. Based on the knowledge of these industries which has been gained from secondary sources (including location theory), a number of hypotheses were postulated and a questionnaire was developed to gather information with which to evaluate the hypotheses. This chapter treats the development of hypotheses and construction of the questionnaire, and presents results of the electrical manufacturing survey response. The next two chapters present results of the surveys of wholesale and retail eating and drinking firms.

Formulation of Hypotheses

Since the main purpose of the study is to discern areas in which the Denver city and county government can influence the location of business-industry, the scope of factors to be considered could be narrowed appreciably at the outset. For example, all demand factors (e.g., shape of demand curve, location of competitors, size of the market, and so on) could be discounted inasmuch as they are beyond the purview of the city government.

As a result, attention was directed initially to cost factors which tend to vary across the SMSA. The analysis commenced with a review of relevant literature in location theory. Especially helpful at this point were the

works of Melvin Greenhut, Edgar Hoover, and Walter Isard among others.[1] Based on these scores an exhaustive list of cost-oriented location factors was compiled. These factors were then considered individually in terms of their hypothesized relevance to the location of the three key industries.

The relevance of specific location factors was evaluated in terms of several analytical frameworks. For instance, by observing the trends in industry growth which emerged from the analysis in chapters 3, 5, 6, and 7, it was possible to make some inferences about the importance of various costs. For instance, Denver has historically paid relatively lower wages than the United States in electrical manufacturing as shown in Chapter 5. This, combined with the relatively high educational level of Denver-area workers may account for the past strong performance of this industry locally. However, the gap in wages appears to be narrowing recently at the same time that Denver has been experiencing a relatively small share of electrical manufacturing employment growth. It can be surmised, therefore, that wages may be a significant location determinant for firms in this industry. Other analyses have also suggested that labor costs are an important location determinant.

Also of great benefit to the present analysis was the Department of Commerce publication, Industrial Location Determinants, 1971-1975. Table 8-1 presents a summary at the 2-digit SIC level for SIC 36 (these data were aggregated from 5-digit tables in the original source). These data reflect location preferences, community size preferences, plant site preferences, and number of

[1]Melvin Greenhut, Plant Location in Theory and Practice: The Economics of Space, Chapel Hill, N.C.: University of North Carolina Press, 1956, pp. 263-281; E. M. Hoover, Location of Economic Activity, New York: McGraw-Hill Book Company, 1948; Walter Isard, Methods of Regional Analysis: An Introduction to Regional Science, New York: John Wiley and Sons, Inc., 1960; also, Isard, Location and Space Economy, Cambridge: The MIT Press, 1956.

TABLE 8-1

SURVEY OF INDUSTRIAL LOCATION DETERMINANTS OF SIC 36 FIRMS
(NUMBER OF FIRMS = 189)

	Yes	No	No Response
I. New or Expanded Manufacturing Plants Firms with tentative plans to expand existing facilities or establish plants at new location between 1971-1975	21%	71%	6%
II. Location of New or Expanded Establishment (Respondent could select more than one preference)			
A. Geographic preference:			
(1) Central city of a metropolitan area	8	65	25
(2) Metropolitan suburban area	44	34	22
(3) Non-metropolitan area	46	31	23
B. Industrial park preference	42	38	21
III. Community Size Preference (Community includes city and surrounding areas)			
(1) Under 25,000 population	17		
(2) 25,000 - 49,999	14		
(3) 50,000 - 99,999	23		
(4) 100,000 - 249,999	14		
(5) 250,000 - 499,999	11		
(6) 500,000 - 999,999	8		
(7) 1,000,000 or more	8		
(8) No response	5		
IV. Plant Site Size Preference (Plant site includes total land area including physical facilities, parking, outside storage, etc.)			

TABLE 8-1
(Continued)

	Yes	No	No Response
(1) Less than one acre	5%		
(2) 1-4 acres	20		
(3) 4-20 acres	48		
(4) 21-50 acres	15		
(5) 51-100 acres	4		
(6) Over 100 acres	3		
(7) No response	5		
V. Approximate Number of Employees at Fully Operational New or Expanded Plant			
(1) 500 or more employees	26		
(2) 250-499 employees	28		
(3) 100-249 employees	32		
(4) Under 100 employees	9		
(5) No response	5		
VI. Community Attributes Considered in Plant Location (Community attributes will be rated based on importance to respondent: A) of critical value; B) of significant to average value.)		**A%**	**B%**
(1) Air passenger service		18%	46%
(2) Local industrial bonds		3	33
(3) Vocational training facilities		1	62
(4) Higher educational facilities		3	59
(5) Tax incentives or tax holidays		8	65
(6) Fire protection		46	47
(7) Contract trucking		23	52
(8) Public warehousing		1	22
(9) Public refrigerated warehousing		0	3

TABLE 8-1
(Continued)

	A%	B%
(10) Police protection	31%	59%
(11) Local industrial development group	4	56
(12) Pool of trained workers	14	68
(13) Pool of unskilled workers	25	57
(14) Lenient industrial zoning	3	71
(15) Strict industrial zoning	5	53
(16) Community population, as preferred in Item III	2	74
VII. Plant Site Features (Rating scale same as Item VI)		
(1) Highway access (within 30 minutes of major highway interchange)	29	63
(2) Scheduled air freight service	18	65
(3) Water transportation	1	5
(4) Scheduled rail service	6	35
(5) Piggy back facilities (rail)	3	31
(6) Industrial water supply (processed)	21	56
(7) Industrial water supply (raw)	12	46
(8) Natural gas service	23	57
(9) Industrial sewage processing	19	59
(10) Solid waste disposal	14	59
(11) Soil load-bearing capabilities	6	55
(12) Plant site size, as preferred in Item IV	16	70
VIII. Locational Objectives to be Achieved (Percentage of firms selecting item. Respondent could select as many as three objectives.)		
(1) Improvement in transportation efficiency or economy	35	
(2) Availability of larger parcel of land	19	
(3) Closer proximity to resources and/or major suppliers	33	

TABLE 8-1
(Continued)

	%
(4) Closer proximity to other plants of your company . . .	14%
(5) Closer proximity to your distributors and/or your customers	35
(6) Closer proximity to other firms in same or related industries	3
(7) Ability to serve new and/or expanded markets	53
(8) Minimize competition from other plants for labor force	44
(9) To secure factors of location unique to your industry (special energy requirements, etc.)	6

Source: Economic Development Administration, United States Department of Commerce, Industrial Location Determinants, 1971-1975, February 1973, selected pages.

employees. Most interesting, the tabulated data provide insights on community attributes considered in plant locations. Most significant for SIC 36 are police and fire protection, labor force characteristics (pool of unskilled workers) and trucking. Also helpful to the analysis were the list of plant site features and their relative importance. Since emphasis is placed throughout the study on factors that the city government can influence, this list of location determinants provided valuable insights in the process of hypothesizing. The factors listed in Table 8-1 were considered in the light of growth trends discerned in previous chapters, and evaluated in terms of available data on costs across the SMSA.

Additional useful data are those shown in Table 8-2. Here the location determinants shown in Table 8-1 are compared with actual plant characteristics from a June 1973 Commerce Department study. This provides a contrast between what firms want in a location and what they actually have. It can be seen, for example, that firms generally would opt for a somewhat larger community than they are located in. There seems to be a relatively great demand for site locations in the 5-20 acre category. And truck transportation is seen as an overwhelming preference for shipping with air a distant second. These results have also been considered in formulating hypotheses.

In addition to the factors mentioned above, it was also felt that personal factors may play an important role in many location decisions. An effort was consequently made to incorporate tests as to the importance of these factors in the questionnaire.[1]

A recent, contemporary discussion of location determinants has been given by Maurice Fulton in The Harvard Business Review.[2] Fulton maintains

[1]Zenon Molinowski and William Kinnard, Personal Factors Influencing Small Manufacturing Plant Location, University of Connecticut, SBA, Washington, D. C., 1961.

[2]Maurice Fulton, "New Factors in Plant Location," Harvard Business Review, May-June 1971, p. 4+.

TABLE 8-2

COMPARISON OF INDUSTRIAL LOCATION DETERMINANTS WITH MANUFACTURING PLANT CHARACTERISTICS (SIC 36)

Number of firms surveyed

Industrial Location Determinants (ILD)	189
Manufacturing Plant Characteristics (MPC)	249

I. Community Size Preference
(Community includes city and surrounding areas.)

	ILD	MPC
(1) Less than 50,000 population	31%	47.8%
(2) Greater than 50,000	64	52.8
(3) No response	5	0.0

II. Plant Site Size Preference and Plant Site Size
(Plant site includes total land area including physical facilities, parking, outside storage, etc.)

	ILD	MPC
(1) Less than 1 acre	5%	6.8%
(2) 1-4 acres	20	28.5
(3) 5-20 acres	48	36.9
(4) 21-50 acres	15	17.3
(5) 51-100 acres	4	5.2
(6) over 100 acres	3	5.2
(7) no response	5	0.0

III. Transportation Preferences (MPC)

Shipping		Receiving	
Air	10.8%	Air	3.7%
Rail	0.0	Rail	0.4
Water	4.6	Water	2.9
Truck	84.6	Truck	93.0

IV. Plant Location
(Data includes only those firms in I(1) which are located in a community of population 50,000 or less.

Distance from a city with 50,000 or more people

Less than 50 miles	72.3%
Greater than 50 miles	27.7

V. Industrial Park Locations (MPC)
(Located in an Industrial Park?)

	Yes	No	No Response
MPC	16.6%	82.7%	1.2%
ILD	42	38	21

Source: U. S. Department of Commerce, Industrial Location Determinants 1971-1975, Washington: Economic Development Administration, Feb. 1973, various paging. U. S. Department of Commerce, Manufacturing Plant Characteristics, 1970, Washington: Economic Development Administration, June 1973, various paging.

that besides the classic considerations of lowest cost location, reasonable costs of transportation, cost of labor, utilities and living, plentiful supply of labor and a healthy tax structure, firms are now starting to use new elements in considering their location decisions. These include:

1. Preservation or improvement of the environment
2. Employment of minority groups
3. Reliance on automobile commuting
4. Greater educational and technical demands on the labor force
5. Rapidly rising land costs and competition for non-industrial land uses
6. Impact of inflation in labor costs on the automation decision
7. Supply and quality of utilities
8. Insurance considerations
9. Greater pressure from foreign competition
10. More costly municipal services with all levels of government levying increased tax liabilities
11. Rail service curtailment or abandonment in many areas.

Based on considerations like those outlined above, a number of hypotheses were formulated. In terms of policy decisions made by the City and County of Denver toward industry within its boundaries:

Hypothesis 1 - the cost of land, including rent and taxes, is important in the location decision process of firms in SIC 36 within the Denver SMSA.

Hypothesis 2 - the quality of police and fire protection is important in the location decision process of firms in SIC 36 within the Denver SMSA.

Hypothesis 3 - the availability of water is important in the location decision process of firms in SIC 36 within the Denver SMSA.

Hypothesis 4 - the quality of public transportation is important in the location decision process of firms in SIC 36 within the Denver SMSA.

Hypothesis 5 - pollution, particularly air pollution, is important in the location decision process of firms in SIC 36 within the Denver SMSA.

Hypothesis 6 - commuting frustrations and parking problems are important in the location decision process of firms in SIC 36 within the Denver SMSA.

Hypothesis 7 - the availability of skilled labor, including the cost of labor (wages) is important in the location decision process of firms in SIC 36 within the Denver SMSA.

Hypothesis 8 - cultural, social and educational advantages and disadvantages are important in the location decision process of firms in SIC 36 within the Denver SMSA.

Hypothesis 9 - zoning laws are important in the location decision process of firms in SIC 36 within the Denver SMSA.

Other hypotheses could be included, but these are felt to constitute a representative list of location factors which are meaningful from the perspective of Denver city government.

Development of Questionnaire

Given the above set of hypotheses, a questionnaire was designed to gather information from the particular group of firms mentioned (SIC 36) in order to test these hypotheses. A copy of the questionnaire is shown in Exhibit 8-1. Firms located outside Denver city and county in Adams, Arapahoe, Boulder and Jefferson counties were used as one study group (hereafter referred to as ODC) and those firms in Denver city and county were used as

EXHIBIT 8-1
SURVEY OF ELECTRICAL MACHINERY, EQUIPMENT
AND SUPPLIES INDUSTRY

Business Research Division
University of Colorado
Boulder, Colorado 80302

(Takes about 4 minutes)

1. How long have you been the owner or manager of this firm? _____years
   Owner or manager not available to respond_____

   1a) Were you the original owner or manager of this firm? Yes___ No___

2. How important was it to you to have your business located near your home?
   Very Important___ Not very important___ Undecided___

   2a) What is the distance from your residence to this firm? _____miles

3. Was this firm ever located in a different county? Yes___ No___

   3a) What county? _____

4. Have you ever considered or would you consider relocating your business outside Denver City and County? Yes___ No___

   4a) Have you ever considered or would you consider expanding your firm:
   Within Denver___ Outside Denver___ Neither___

5. What do you feel the City and County of Denver's policy is toward industrial expansion within its boundaries?
   Encourage___ Discourage___ Doesn't care___

6. Is your firm currently located in an industrial park? Yes___ No___

   6a) If not, would you like it to be? Yes___ No___ Not sure___

7. What is the number of persons currently employed by your firm? _____

8. What is the size in square feet of your present facility? _____

IF YOU RENT YOUR FACILITY, PLEASE ANSWER 9 & 9a, IF YOU OWN, PLEASE ANSWER 10 & 10a.

9. What is your annual rent on land and building (if you lease)? _____

   9a) Have rental rates influenced your decision to locate your firm where it is? Yes___ No___ Not sure___

10. What is your annual property tax liability? _____

    10a) Have property tax rates influenced your decision to locate your firm where it is? Yes___ No___ Not sure___

11. In viewing your present location or possible relocation/expansion site, how important to you are the following factors?

	Very important	Moderately important	Not at all
Purely economic factors (dollars and cents)	___	___	___
Purely personal factors (your own preferences)	___	___	___

12. A relocation in an identical facility out of Denver City and County could benefit our firm by:

Agree	Disagree	Not sure		
_____	_____	_____	a)	lowering the taxes we pay.
_____	_____	_____	b)	lowering the cost of land (if owned).
_____	_____	_____	c)	lowering the rent on land (if leased).
_____	_____	_____	d)	easing zoning restrictions.
_____	_____	_____	e)	improving employee access to firm.
_____	_____	_____	f)	lowering the wages we must pay.
_____	_____	_____	g)	specify other _____

13. Please indicate if you agree, disagree or have no opinion regarding the following statements:

Agree	Disagree	No Opinion		
_____	_____	_____	a)	The low quality of police protection in the vicinity of this firm is serious enough to pose a threat to its well-being.
_____	_____	_____	b)	The low quality of fire protection in the vicinity of this firm is serious enough to pose a threat to its well-being.
_____	_____	_____	c)	The level of air pollution at our present location is excessive.
_____	_____	_____	d)	The water supply at our present location is adequate.
_____	_____	_____	e)	We experience some difficulty in finding and hiring suitably trained employees.
_____	_____	_____	f)	Our employees experience parking problems (limitations) at our present location.
_____	_____	_____	g)	Travel to and from work in private autos is somewhat difficult for our employees due to our location.
_____	_____	_____	h)	The quality of the educational system near our plant location is of concern to us.
_____	_____	_____	i)	Our firm would move out of Denver City and County but the risk of relocating within the Metropolitan area is too high.
_____	_____	_____	j)	The quality and quantity of cultural opportunities near our firm (libraries, museums, etc.) is of concern to us.
_____	_____	_____	k)	We are satisfied with our present location.
_____	_____	_____	l)	The availability of entertainment and shopping facilities near our firm is of concern to us.
_____	_____	_____	m)	Mass transit serving our present location (buses in particular) is inadequate.

EXHIBIT 8-2

UNIVERSITY OF COLORADO
GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
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BOULDER, COLORADO 80302

BUSINESS RESEARCH DIVISION

TELEPHONE: 443-2211
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October 30, 1973

Good day! I am currently conducting a study of the Electrical Machinery, Equipment and Supplies Industry in the Denver metropolitan area for the University of Colorado. Will you assist me? It is important that the person who is the most familiar with the establishment and location of your firm fill out the enclosed, brief survey.

Your answers will be strictly confidential and only the overall results will be used in our final report.

Because of the limited time in which I have to conduct this study, I would appreciate your returning the survey in the enclosed business reply envelope this week, or not later than November 9, 1973.

Again, thanks for your help and cooperation. The information you provide will contribute immensely to the completion of this report.

Sincerely,

Allen C. French
Research Assistant

ACF:ljs

enc.

the other study group (hereafter referred to as IDC). The questionnaire shown in Exhibit 8-1, which was sent to IDC firms, was modified slightly to accommodate the ODC firms sampled.

In the following paragraphs each question is discussed briefly in terms of its purpose. Reference may be made to Exhibit 8-1 to see the questions to which the commentary pertains.

Question 1 was intended to determine if older firms tend to remain in their original locations, such as the City of Denver while the newer firms move out to the suburbs. There is no doubt that a loyalty builds up between most firms and their surroundings and local customers which makes relocating much harder for the older firm and much riskier in the mind of the owner or manager. Question 1a allows a determination of the age of the firm, and also indicates if the respondent was instrumental in making the location decision he is commenting on.

Questions 2 and 2a together provide useful information concerning a general feeling about plant location in that many managers or owners may locate a plant in a large city but live outside in the suburbs. Thus, plant location may have less to do with the owner's or manager's personal feelings about the location of his home if he commutes a sizable distance to work in a large city such as Denver. Here lies an important personal factor and area of interest to the city wishing to attract businesses. Improved commuter facilities may attract firms to the inner city while owners and managers continue to settle in the outlying counties.

Question 3 provides an idea of how much relocating has been done and also singles out firms for possible in-depth interviews. For example, a firm which has moved out of Denver may have constructive or destructive suggestions for city administrations regarding city programs and policies

influencing business locations. Question 3a pinpoints those firms which have moved out of or into Denver.

Questions 4 and 4a carry this point further and indicate those firms which may be "ripe" for a relocation. It was felt these firms would be worth interviewing personally to acquire more detailed response. Both expansion and relocation are considered, because most firms in SIC 36 in the Denver area are small and can relocate easily and have a good chance of expanding in the near future because of their demonstrated growth potential.

Question 5 was intended to uncover sentiments toward the City and County of Denver's administration and its policies, which is in effect the focal point of this study. Here again, those firms with particularly strong feelings for or against the City and County of Denver could be helpful in suggesting future policy modifications.

Question 6 concerns preferences for industrial park locations. This question was included because it was found significant in previous studies, and also because industrial park development is a process over which the City and County of Denver could exert direct control.

Questions 7 and 8 are information questions concerning the number of employees in each firm and each plant's size, both valuable for purposes of comparison and identification of the two different groups of firms (IDC and ODC).

Questions 9, 9a, 10 and 10a concern rents and taxes, two important cost factors, and will show any gradient in these costs between Denver and the surrounding counties. To a degree, the importance of these costs to the firms surveyed will also be obtained from the results of these questions.

Question 11 was included to try to test a hypothesis (suggested by previous studies) that location decisions may tend to be motivated as much

by personal factors as by economic factors. This could be especially true in Denver where most SIC 36 firms are relatively small. It is felt that in most cases, the owner or manager of a small firm will locate in a particular place because of personal reasons more than the desire to maximize to the fullest extent the long-run value of his firm. This is not to say that cost factors are not considered, but rather that the decision process is more informal (and perhaps more personal) and not as thorough as that which is more often used in a larger firm. It was anticipated that many owners and managers would not admit to subverting rational decision criteria, even if that were the case. Nevertheless the question was included.

Question 12 explores the perceptions which exist in this industry regarding differences in costs between Denver and the surrounding counties. Using the cost data obtained from questions 9 and 10, comparisons may be made with the results of question 12 and one possible conclusion may be that these firms, or their owners and managers, do not really know how costs vary across these five counties.

Finally, question 13 probes the respondent's subjective feelings about factors such as police and fire protection, air pollution, water supply, labor pool, parking problems, commuting difficulties, schools, cultural opportunities, entertainment, mass transit and the riskiness of moving. A question about overall location satisfaction was also included to indicate firms which might be dissatisfied with their location. A follow-up survey on these firms would be helpful in isolating what they believe to be weaknesses in what Denver has to offer in terms of industrial location sites.

The Sample

The questionnaire was mailed to the owners/managers of 112 firms in the Denver area, a list obtained from the Directory of Colorado Manufacturers,

1972 and believed to be the most complete source available. The firms contacted are listed in Appendix Exhibit 8-1. In this case, the sample included the entire known population because of the relatively small number of firms in it. It was felt that the owners or managers would be most likely to be able to provide the information asked for in the questionnaire.

The population of firms in SIC 36 was divided into two groups as previously indicated: (1) firms outside Denver City and County (including Boulder, Adams, Arapahoe and Jefferson counties), and (2) firms located within the city and county. The reason for this division of the population was that out-migration of firms from Denver may have tended to produce two rather distinct populations and this idea should be tested. This division is natural to a degree in that the two groups exist in two different environments.

Analysis of Survey Results

The questionnaires were mailed with stamped return envelopes. The returned replies were tabulated, analyzed using a Chi-square test, and interpreted. This section presents the results.

The following tabulation indicates the nature of the response.

TABLE 8-3

SUMMARY OF SURVEY RETURNS, SIC 36

IDC	2	not engaged in SIC 36 manufacture (3.6%)
	33	usable returns (60.0%)
	20	no response (36.4%)
	55	
ODC	1	firm being dissolved (1.8%)
	1	moved, no forwarding address (1.8%)
	1	not engaged in SIC 36 manufacture (1.8%)
	32	usable returns (56.1%)
	22	no response (38.6%)
	57	
TOTAL	5	not usable (4.5%)
	65	usable (58.0%)
	42	no response (37.5%)
	112	

Chi-Square Analysis. As a first step in the analysis, chi-square tests were performed on the data to determine if there was any significant difference in the population of firms surveyed in Denver City and County (IDC) and the population of firms outside Denver (ODC). The chi-square test gives an indication of how likely it is that two sets of data were "picked" from the same population. In this case, we are comparing the results IDC and ODC to see if it is possible that they were drawn from the same population, i.e., that there is no difference in the two groups as far as their locational preferences are concerned. The chi-square coefficient is found using the following formula:

$$\chi^2 = \sum_{i=1}^{n} \frac{(F_i - E_i)^2}{E_i}$$

where F_i = the actual value of the result

E_i = the expected value of the result, given that all the data came from the same population.

The number of degrees of freedom is found next, and finally the level of significance of the test is found by using standard tables. As an example of the procedure, Question 12a is tested as follows: Question 12a - A relocation in an identical facility out of Denver could benefit our firm by lowering the taxes we pay.

Response Group	Results			
	Agree	Disagree	Not Sure	Total
IDC	11	10	10	31
ODC	3	12	15	30
TOTAL	14	22	25	61

To determine the degrees of freedom associated with these results, we start with the total number of response categories which is 6; 3 for IDC

and 3 for ODC. But these responses are constrained in several ways. The two rows must add to 31 and 30, respectively (2 restraints) and the three columns must add to 14, 22 and 25 respectively (3 restraints). But if we restrict 2 columns and 2 rows instead of restricting all columns and all rows, the third column is uniquely determined and we need not place a restriction on it as that would be redundant. Therefore, since we originally had 6 choices for data but were constrained 4 ways, we are left with 6 - 4 = 2 degrees of freedom.

To determine the expected values, consider how many "Agree" results both IDC and ODC would have, given a total of 14 "Agree" responses, if they were part of the same population and both groups had identical characteristics. IDC "Agree" responses would be 31/61 of the total "Agree" responses while ODC "Agree" responses would be 30/61 of the total "Agree" responses. Thus, the expected value for IDC "Agree" responses is (31/61)14 = 7.115 and the expected value of the ODC "Agree" responses is (30/61)14 = 6.885. The rest of the expected values are determined in a similar manner.

Response Group	Expected Values			
	Agree	Disagree	Not Sure	Total
IDC	7.155	11.180	12.705	31
ODC	6.885	10.820	12.295	30
	14.000	22.000	25.000	61

Now using the equation for χ^2 the coefficient is determined as follows:

$$\chi^2 = \frac{(11-7.155)^2}{7.155} + \frac{(3-6.885)^2}{6.885} + \frac{(10-11.180)^2}{11.180} + \frac{(12-10.820)^2}{10.820}$$

$$+ \frac{(10-12.705)^2}{12.705} + \frac{(15-12.295)^2}{12.295} = 5.7384$$

Using a standard table to find the level of significance for this result, a figure of .06 is obtained. Thus, there is only a very small chance

that the IDC results and ODC results came from the same population. The conclusion is that there is a marked difference in the group of firms ODC and those IDC considering their feelings toward Question 12a. Other questions are analyzed accordingly and the results of these tests are shown in Table 8-4.

The importance of determining if there is a difference between IDC and ODC should not be understated. If a difference does exist, then the idea that the out-migration of firms from Denver has caused a stratification of the population is well founded and valuable in this study.

A computer program (see Appendix Exhibit 8-2) was created to test each question to see how likely it was that the two groups of responses, IDC and ODC, came from the same population. Thus, the higher the level of significance, the more likely it is that there is no difference between the groups.

If a .90 level of significance were used as a cutoff, the results of only three questions show no significant difference in their answers. The results of the chi-square test indicate overwhelmingly that there is a significant difference in IDC and ODC firms in terms of their locational preferences.

With this in mind, the next step in the analysis is to characterize each group from the answers given to the surveys and then finally to draw conclusions from these characteristics which might help influence the location decisions of each group. The identification of each group is very important in that a "plane of attack" must be formulated considering the peculiarities of the groups in order to be effective.

Tabulation of Results. Responses of SIC 36 firms are presented in this section.

TABLE 8-4

CHI-SQUARE STATISTICS AND SIGNIFICANCE LEVEL
FOR QUESTIONNAIRE RESPONSES, SIC 36 FIRMS

QUESTION	CHI-SQUARE	DEGREES OF FREEDOM	LEVEL OF SIGNIFICANCE
1A	.7450	1	.406
2	.9086	2	.642
3	7.8592	1	.005
4	18.9703	1	*000
4A	14.9473	3	*000
5	8.8623	2	.013
6	.9048	1	.354
6A	2.7526	2	.258
9A	7.4493	2	.024
10A	11.0090	2	*000
11E	.1329	2	.936
11P	2.4889	2	.290
12A	5.7384	2	.059
12B	12.1038	2	*000
12C	12.3473	2	*000
12D	6.0477	2	.049
12E	2.9870	2	.229
12F	9.0000	2	.012
13A	1.1617	2	.567
13B	4.2667	2	.125
13C	4.8941	2	.090
13D	1.9851	2	.383
13E	8.4863	2	.016
13F	41.3022	2	*000
13G	2.2561	2	.330
13H	.3912	2	.823
13I	.1575	2	.925
13J	1.6134	2	.456
13K	4.2179	2	.128
13L	.0074	2	.999
13M	2.6364	2	.272

Question 1 - How long have you been the owner or manager of this firm?

	Ave. # years	Responses	% of Total
IDC	13.9	32	58.2
ODC	9.9	30	52.6
	11.9	62	55.4

Question 1 clearly shows that firms outside Denver are an average of 4 years younger than those in Denver. Industrial development in the surrounding counties is relatively new and so are firms located there. This is opposed to the older population of firms in Denver who are more firmly rooted and perhaps more dependent on the city environment. This age difference may reflect the fact that relocating firms choose the surrounding counties over Denver as a location; if so it is indicative of the problem at hand. These results indicate that the age characteristics of IDC and ODC firms are significantly different.

Question 1a - Were you the original owner or manager of this firm?

	Yes	%	No	%	Total	%
IDC	23	69.7	10	30.3	33	60.0
ODC	23	79.3	6	20.7	29	50.9
	46	74.2	16	25.8	62	55.4

Question 1a shows that both populations have firms with original owners or managers more often than not. The X^2 test on these results yielded a significance level of .29, higher than most other questions tested. Therefore, it is concluded that there is no real difference in the two populations, and single ownership/managership is a characteristic of the firms in SIC 36 as a whole.

Question 2 - How important was it to you to have your business located near your home?

	Very Important	%	Not Very Important	%	Undecided	%	Total	%
IDC	12	36.4	19	57.6	2	6.1	33	60.0
ODC	15	46.9	16	50.0	1	3.1	32	56.1
	27	41.5	35	53.8	3	4.6	65	58.0

A X^2 test of the above results yielded a significance level of .65, quite a bit higher than most, indicating again that the responses to Question 2 characterize SIC 36 as a whole. There is no real majority of respondents who feel that distance to residence is very important or not very important, so it is concluded that distance between home and residence is not an important locational factor.

Question 2a - What is the distance from your residence to this firm?

	Ave. Distance	Responses	% of Total
IDC	7.92	33	60.0
ODC	4.56	32	56.1
	6.27	65	58.0

Results here show that owners and managers of IDC firms live an average of almost twice as far from their businesses as their counterparts ODC do. Obviously, this is indicative of the large number of owners and managers who establish their firms in the city, but choose to live in the suburbs. The conclusion drawn here concurs with that drawn in Question 2: in the Denver metropolitan area commuting distance to work is not an important factor for owners and managers. The preferences for suburban living overshadows preferences for proximity to work for most respondents. A cross-tabulation of results in Questions 2 and 2a demonstrates that the feelings of the

respondents concerning commuting distance corresponds to the actual distances involved.

Distance From Home for Respondents answering:

	Very Important	Not Very Important	Undecided
IDC	3.98	10.82	4.00
ODC	2.33	6.66	4.00
	3.19	8.91	4.00

Question 3 - Was this firm ever located in a different county?

	Yes	%	No	%	Total	%
IDC	1	3.0	32	97.0	33	60.0
ODC	9	28.1	23	71.9	32	56.1
	10	8.9	55	49.1	65	58.0

Previous locations:

IDC 1 from Stamford, Connecticut
ODC 4 from Denver
1 each from Boulder, Adams, Larimer counties
1 each from Los Angeles, Chicago

These results are not inconsistent with the idea that Denver is experiencing a net out-migration of firms to the suburbs (4) and also that a firm from out-of-state is more likely to locate in the suburbs initially rather than Denver (1). The small number of responses prevent conclusive interpretation of results.

Question 4 - Have you ever considered or would you consider relocating your business outside/inside Denver City and County?

	Yes	%	No	%	Total	%
IDC	21	65.6	11	34.4	32	58.2
ODC	4	12.5	28	87.5	32	56.1
	25	22.3	39	34.8	64	57.1

Question 4 reinforces the idea that more firms are considering a relocation in the suburbs than are considering a relocation into Denver. The high X^2 coefficient pertaining to this question ($_X^2$ = 18.97, significance level of .000) means that the two groups are in strong agreement that the direction of location is away from Denver City and County. The intensity of these feelings will determine how easy or difficult it would be for Denver City and County to reverse this trend.

Question 4a - Have you ever considered or would you consider expanding your firm?

	Within Denver	%	Outside Denver	%	Neither	%	Both	%	Total	%
IDC	7	21.2	6	18.2	6	18.2	14	42.4	33	60.0
ODC	0	0.0	17	54.8	12	38.7	2	6.5	31	54.4
	7	6.3	23	20.5	18	16.1	16	14.3	64	57.1

The results from this question reinforce those in question 4, but here an expansion is considered instead of a complete relocation. It was thought that expansion location sites would be important in a profitable, growing industry such as SIC 36. It is noted that no IDC firms would consider expanding in Denver, while 18.2 percent of the firms responding would consider expanding outside Denver.

Question 5 - What do you feel the City and County of Denver's policy is toward industrial expansion within its boundaries?

	Encourage	%	Discourage	%	Doesn't Care	%	Total	%
IDC	17	58.6	5	17.2	7	24.1	29	52.7
ODC	6	20.7	8	27.6	15	51.7	29	50.9
	23	20.5	13	11.6	22	19.7	58	51.8

Question 5 gives some insight into how these groups feel about the City and County of Denver, but the results are not surprising. Firms outside Denver are indifferent while many firms in Denver feel encouraged by the City. This might be expected since firms outside Denver show no inclination to move back and thus do not concern themselves with Denver's policies, and the firms in Denver which were malcontent with city policy may have already moved out. The chi-square results indicate that there is a significant difference in the two groups (significance level 0.013) views of Denver policy.

Question 6 - Is your firm currently located in an industrial park?

	Yes	%	No	%	Total	%
IDC	6	18.2	27	81.8	33	60.0
ODC	9	28.1	23	71.9	32	56.1
	15	13.4	50	44.6	65	58.0

The Survey of Industrial Location Determinants, shown in Table 8-1, indicates that industrial park preference is an important locational factor, but the results from Question 6 indicated that few firms preferred an industrial park location in the Denver area. As the results of question 6a show, the response was sufficiently negative as to largely rule out the use of industrial park development by Denver City and County as an inducement for firms to locate there.

Question 6a - If not (located in an industrial park), would you like to be?

	Yes	%	No	%	Not Sure	%	Total	%
IDC	0	0.0	16	61.5	10	38.5	26	47.3
ODC	2	8.7	11	47.8	10	43.5	23	40.4
	2	1.8	27	24.1	20	17.9	49	43.8

Question 7 - What is the number of persons currently employed by your firm?

	Average Number	1st Round*	2nd Round**	Responses	% of Total
IDC	36.39	28.41	23.56	33	60.0
ODC	133.81***	18.57	17.54	32	56.1
	84.35	25.93	22.00	65	58.0

* Excludes 2 highest and 2 lowest
** Excludes 4 highest and 4 lowest
***Includes IBM (3700 employees)

Response to question 7 shows that the average firm in Denver has approximately 33 percent more employees than the average firm outside Denver.

Question 8 - What is the size in square feet of your present facility?

	Average Square Feet	1st Round*	2nd Round**	Responses	% of Total
IDC	20,626	17,424	16,688	33	60.0
ODC	6,837***	6,260	5,964	31	54.4
	13,947	11,613	10,000	64	57.1

* Excludes 2 highest and 2 lowest
** Excludes 4 highest and 4 lowest
***Excludes IBM (1,000,000 sq. ft.)

Response to question 8 shows that IDC plants are, on the average, about three times larger than ODC firms. Thus, larger firms seem to dominate the IDC population in both number of employees and square footage.

Question 9 - What is your annual rent on land and building (if you lease)?

	Annual Ave. Rent/ft^2	1st Round*	2nd Round**	Responses	% of Total
IDC	1.12	1.09	1.08	14	25.5
ODC	1.50	1.36	1.32	16	28.1
	1.32	1.24	1.14	30	26.8

* Excludes highest and lowest
**Excludes 2 highest and 2 lowest

The results here show lower rents for IDC firms. Since Denver has been found to have higher industrial land values than outlying areas, and since land value is a significant part of rent, this result is surprising. Further study suggests the cause of this seeming paradox. A location plot of IDC firms surveyed indicate that most are not located in the heart of the central city but are located more towards the periphery of the city limits where land values are somewhat lower. Further, the IDC firms are older (see question 1) so they may have long-term leases reflecting lower rents than more recently established firms. Thus, a firm moving into Denver today might well pay higher, not lower, rents than in the suburbs.

Some IDC firms are also located in older industrial sections of Denver which command a lower rent on the average than the newer, more luxurious industrial parks which have recently appeared in the surrounding counties.

Question 9a - Have rental rates influenced your decision to locate your firm where it is?

	Yes	%	No	%	Not Sure	%	Total	%
IDC	6	37.5	8	50.0	2	12.5	16	29.1
ODC	14	82.4	3	17.6	0	0.0	17	29.8
	20	17.9	11	9.8	2	1.8	33	29.5

These results show a relatively greater influence of rents on location for ODC firms. Most IDC firms responded that rents did not influence their location.

Question 10 - What is your annual property tax liability?

	Annual Prop. Tax/ft^2	1st Round*	2nd Round**	Responses	% of Total
IDC	0.24	0.22	0.23	16	29.1
ODC	0.78	0.45	0.43	11	19.3
	0.46	0.32	0.29	27	24.1

* Excludes highest and lowest
**Excludes 2 highest and 2 lowest

As expected, taxes are lower on the average in Denver, due to the lower mill levy. However, this is only applicable to property taxes. Denver also has a head tax which was cited as a disadvantage by several respondents.

Question 10a - Have property tax rates influenced your decision to locate your firm where it is?

	Yes	%	No	%	Not Sure	%	Total	%
IDC	2	9.5	19	90.5	0	0.0	21	38.2
ODC	8	42.1	8	42.1	3	15.8	19	33.3
	10	8.9	27	24.1	3	2.7	40	35.7

The results of question 10a indicate that taxes have not influenced location decisions for a large majority of firms in Denver, while more ODC firms reported taxes as an influence. This may reflect the fact that taxes are higher there on the average. Thus, although most IDC firms have not considered rents or taxes as location factors, ODC firms certainly do.

Question 11 - In viewing your present location or possible relocation/ expansion site, how important to you are the following factors?

1. Purely economic factors (dollars and cents)
2. Purely personal factors (your own preferences)

Economic factors rating

	Very Important	%	Moderately Important	%	Not at All	%	Total	%
IDC	18	58.1	12	38.7	1	3.2	31	56.4
ODC	20	62.5	11	34.4	1	3.1	32	56.1
	38	33.9	23	20.5	2	1.8	63	56.3

Personal factors rating

	Very Important	%	Moderately Important	%	Not at All	%	Total	%
IDC	7	22.6	17	54.8	7	22.6	31	56.4
ODC	11	35.5	17	54.8	3	9.7	31	54.4
	18	16.1	34	30.4	10	8.9	62	55.4

These responses show similar feelings in both IDC and ODC populations, and this is reflected in the chi-square analysis significance coefficient. This question does not yield any directly useful information but can give a clue as to the nature of the firms' location decision processes. Because of the highly subjective nature of the question, the results may be suspect as to their validity in a strictly quantitative situation.

Question 12 - A relocation in an identical facility in/out of Denver City and County could benefit our firm by:

a) lowering the taxes we pay

b) lowering the cost of land (if owned)

c) lowering the rent on land (if leased)

f) lowering the wages we must pay

		Responses	%	Agree	%	Disagree	%	Not Sure	%
a)	IDC	31	56.4	11	35.4	10	32.2	10	32.2
	ODC	30	52.6	3	10.0	12	40.0	15	50.0
		61	54.5						

		Responses	%	Agree	%	Disagree	%	Not Sure	%
b)	IDC	29	52.7	14	48.3	5	17.2	10	34.4
	ODC	29	49.1	3	10.7	15	53.5	10	35.7
		53	50.9						
c)	IDC	24	43.6	10	41.7	6	25.0	8	33.3
	ODC	29	50.9	1	3.5	16	55.1	12	41.4
		53	47.3						
f)	IDC	30	54.5	6	20.0	21	70.0	3	10.0
	ODC	30	52.6	0	0.0	21	70.0	9	30.0
		60	53.6						

The above questions are concern conceptions of costs held by IDC and ODC managers and owners. For example, IDC firms feel a move outside Denver would lower their taxes and rents, while ODC firms feel that a move into Denver would not lower their taxes and rents. Since some data suggest that all costs may not be lower outside Denver in all cases, these overwhelming responses are somewhat surprising. Perhaps a public relations campaign enlightening these managers and owners as to Denver's true cost position could be carried out by Denver City and County as a way to better inform business decision-makers.

Question 12 - A relocation in an identical facility in/out of Denver City and County could benefit our firm by:

d) easing zoning restrictions

e) improving employee access to firm

		Responses	%	Agree	%	Disagree	%	Not Sure	%
d)	IDC	30	54.5	7	23.3	16	53.4	7	23.3
	ODC	30	52.6	3	10.0	11	36.7	16	53.3
		60	53.6						

		Responses	%	Agree	%	Disagree	%	Not Sure	%
e)	IDC	31	56.4	8	25.8	15	48.4	8	28.5
	ODC	31	54.4	3	9.7	20	64.5	8	25.8
		62	55.4						

The results of Question 12d indicate that owners and managers have knowledge of zoning laws in other areas which is somewhat less than perfect, because the responses show that both populations either do not know the effects of a relocation or feel that any move would result in more strict zoning. Question 12e also yielded similar results concerning employee access to the firm.

Question 13 - Please indicate if you agree, disagree or have no opinion regarding the following statements.

a) The low quality of police protection in the vicinity of this firm is serious enough to pose a threat to its well-being.

b) The low quality of fire protection in the vicinity of this firm is serious enough to pose a threat to its well-being.

		Responses	%	Agree	%	Disagree	%	Not Sure	%
a)	IDC	32	58.2	3	9.4	26	81.2	3	9.4
	ODC	32	56.1	1	3.1	27	84.4	4	12.5
		64	57.1						
b)	IDC	32	58.2	0	0.0	32	100.0	0	0.0
	ODC	32	56.1	1	3.1	28	87.5	3	9.4
		64	57.1						

Finally, question 13 sheds some light on the remaining of the hypotheses. Both groups agree almost unanimously that police and fire protection (parts a and b) are adequate in their respective areas. If there were a significant difference in level of services this could be an important location factor

(see Survey of Industrial Location Determinants, op cit.). Also, if the level of services was perceived as being inadequate in both groups these could be important. However, significance in either case does not seem to exist.

Question 13 - Please indicate if you agree, disagree or have no opinion regarding the following statements:

c) The level of air pollution at our present location is excessive.

d) The water supply at our present location is adequate.

		Responses	%	Agree	%	Disagree	%	Not Sure	%
c)	IDC	32	58.2	8	25.0	22	68.7	2	6.3
	ODC	32	56.1	2	6.3	29	90.6	1	3.1
		64	57.1						
d)	IDC	33	60.0	30	90.9	3	9.1	0	0.0
	ODC	32	56.1	30	93.8	1	3.1	1	3.1
		65	58.0						

Dissatisfaction with the levels of air pollution was slightly higher in Denver; however, judging from the low absolute response rate, it is doubtful that air quality improvement would have a substantial impact on location.

Part d indicates that the water supply is not a major problem, but as in parts a and b, this does not mean that it is not a major concern because the Denver area has historically had a good supply of water.

Question 13 - Please indicate if you agree, disagree or have no opinion regarding the following statements:

e) We experience some difficulty in finding and hiring suitably trained employees.

		Responses	%	Agree	%	Disagree	%	Not Sure	%
e)	IDC	32	58.2	22	68.8	9	28.1	1	3.1
	ODC	31	54.4	10	32.2	18	58.1	3	9.7
		63	56.3						

Part e indicates that firms in Denver experience much more trouble in finding suitable employees than those firms outside Denver. The nature of the industry may explain some of this in that the electrical manufacturing industry in this area is comprised of mostly small firms. Since the firms in Denver tend to be larger, it would follow that they would have a harder time finding employees in the city. Many of the more prosperous (and more skilled) inhabitants of this area are moving to the suburbs to find homes and jobs there. Therefore, a migration of skilled labor out of Denver City and County is a serious problem to firms located in the city.

Question 13 - Please indicate if you agree, disagree or have no opinion regarding the following statements:

f) Our employees experience parking problems (limitations) at our present location.

g) Travel to and from work in private autos is somewhat difficult for our employees due to our location.

		Responses	%	Agree	%	Disagree	%	Not Sure	%
f)	IDC	32	58.2	9	28.1	23	71.9	0	0.0
	ODC	31	54.4	4	12.9	3	9.7	24	77.4
		63	56.3						
g)	IDC	32	58.2	3	9.4	29	90.6	0	0.0
	ODC	31	54.4	2	6.5	27	87.0	2	6.5
		63	56.3						

Part f shows that employee parking problems are a significant concern of firms in Denver. This is a case where the city could perhaps exert some positive influence to the extent that public parking could be provided in key areas. The IDC firms appear indifferent about parking conditions.

There is not a significant difference between the two groups as regards travel to and from work. This does not appear to be an area of special concern.

Question 13 - Please indicate if you agree, disagree, or have no opinion regarding the following statements:

h) The quality of the educational system near our plant location is of concern to us.

j) The quality and quantity of cultural opportunities near our firm (libraries, museums, etc.) is of concern to us.

l) The availability of entertainment and shopping facilities near our firm is of concern to us.

		Responses	%	Agree	%	Disagree	%	Not Sure	%
h)	IDC	31	56.4	6	19.4	18	58.0	7	22.6
	ODC	31	54.4	8	25.8	17	54.8	6	19.4
		62	55.4						
j)	IDC	32	58.2	5	15.6	19	59.4	8	25.0
	ODC	32	56.1	9	28.1	15	46.9	8	25.0
		64	57.1						
l)	IDC	32	58.2	5	15.6	22	68.8	5	15.6
	ODC	31	54.4	5	16.1	21	67.8	5	16.1
		63	56.3						

Parts h, j, and l similarly do not seem to be a source of exceptional dissatisfaction for either group, and the chi-square tests on these parts

resulted in relatively high levels of significance. However, it is worth noting that a somewhat larger proportion of ODC firms than IDC firms express concern for the quality of educational, cultural, entertainment and shopping opportunities in their vicinity. While far from conclusive, this may reflect an area in which Denver has a comparative advantage.

Question 13 - Please indicate if you agree, disagree or have no opinion regarding the following statement:

i) Our firm would move in/out of Denver City and County but the risk of relocating within the Metropolitan area is too high.

		Responses	%	Agree	%	Disagree	%	Not Sure	%
i)	IDC	30	54.5	7	23.3	16	53.4	7	23.3
	ODC	31	54.4	6	19.4	17	54.8	8	25.8
		61	54.5						

The results from part i do not appear to support the hypothesis that most small firms would avoid moving due to the high risk of relocation. Over 50 percent of the firms in both groups answered that they would risk a move.

Question 13 - Please indicate if you agree, disagree or have no opinion regarding the following statement:

k) We are satisfied with our present location.

		Responses	%	Agree	%	Disagree	%	Not Sure	%
k)	IDC	33	60.0	25	75.8	7	21.2	1	3.0
	ODC	32	56.1	30	93.8	2	6.2	0	0.0
		65	58.0						

Part k shows that overall satisfaction is higher outside Denver. The data also reflect a higher proportion of dissatisfied firms in Denver. A significance level of 0.128 indicates a substantial difference exists between the two groups of firms. This indication of an attitude bias against Denver substantiates the earlier finding that most firms would favor relocating or expanding outside of Denver City and County.

Question 13 - Please indicate if you agree, disagree or have no opinion regarding the following statement:

m) Mass transit serving our present location (buses in particular) is inadequate.

		Responses	%	Agree	%	Disagree	%	Not Sure	%
m)	IDC	32	58.2	15	46.9	14	43.7	3	9.4
	ODC	32	56.1	21	65.7	8	25.0	3	9.4
		64	57.1						

Finally, part m shows that mass transit is of greater concern to the ODC firms. This is not surprising inasmuch as Denver proper has the best bus system in the SMSA. Denver relies heavily on automobile commuting and mass transit is not as pressing a problem to most firms as might otherwise be the case. Pollution standards and energy shortages (gasoline) may change this situation in the years to come, and as population density increases mass transit may take on more importance as a locational factor in the future.

Summary. A number of findings which emerge from this analysis are germane to Denver policy-makers. SIC 36 firms in Denver tend to be older (by an average of 4 years) and larger (in terms of employment and square footage) than those outside the city in the SMSA.

Of those firms identified as having relocated in the SMSA, four had moved out of Denver County and none had moved into the county.

Only 12.5 percent of firms outside Denver would consider relocating in the city and none would consider expanding within the county proper. Conversely, 65.6 percent of the SIC 36 firms in Denver would consider relocating outside the city, and 18.2 percent would consider expanding there. It is clear that owners and managers of these firms strongly favor locations out-of-Denver regardless of where they are now located. These attitudes could well shape the future course of firm migration in the SMSA, perhaps to the detriment of the City and County of Denver.

Among firms outside Denver, 27.6 percent feel Denver discourages industrial expansion within its boundaries; 51.7 percent feel the city doesn't care one way or another.

It was found that despite generally higher land values in the city and county, annual rent per square foot was lower among Denver firms. Also, taxes per square foot are lower among Denver firms than those outside the city and county. This could in part be due to the fact that Denver firms are older.

Most respondents feel that it is cheaper in terms of taxes, land cost, rent and wages to locate outside Denver City and County. This may explain in part the widespread preference for suburban locations.

Firms in Denver tend to be more concerned about air pollution, the availability of suitably trained employees, and parking problems. Firms outside the city are more concerned about the quality and availability of educational, cultural, entertainment and shopping facilities. On balance more firms outside Denver are satisfied with their location (93.8 percent are satisfied) than are firms inside Denver (75.8 percent satisfied).

These findings seem to indicate that policies designed to attract firms back into the city from the suburbs would be futile; however, policies designed to retain firms already in Denver and to foster their growth and profitability are both necessary and justified. Such policies are necessary to offset a clear trend toward relocating out of Denver; they are justified because failure to act could indanger the long-term viability of the city's economy.

APPENDIX EXHIBIT 8-1

1. Tipco
   1523 E. Easter Circle
   Littleton 80122
   B. M. Cropley, Pres.

2. Tecnetics, Inc.
   Boulder Industrial Park
   Boulder 80302
   M. C. Pogue, Pres.

3. Electric Power Equipment Co.
   5151 E. 56th Ave.
   Commerce City 80022
   R. G. Gutru, Pres.

4. Mundix Co.
   5495 Marion St.
   Denver 80216
   R. E. Munz, Pres.

5. Barlow and Company
   411 S. Public Road
   Lafayette 80026
   N. Barlow, Owner

6. Denver Pump and Mfg. Co.
   11950 Wadsworth Blvd.
   Broomfield 80020
   D. A. Kesler, Pres.

7. Mobilectric of America
   13454 Braun Road
   Golden 80401
   K. D. Hall, Owner

8. Phyl-Up Remote Control
   7580 Osceola
   Westminster 80030
   Wylvan Teel, Owner

12. Delltronics Inc.
    3620 S. Huron St.
    Englewood 80110
    D. K. Tautz, Pres.

13. Petroleum Systems, Inc.
    3925 S. Kalamath St.
    Englewood 80110
    W. D. Baker, Pres.

14. Engineering Measurements Co., Inc.
    1840 Valley View Road
    Boulder 80302
    C. E. Miller, Pres.

15. Scientific Enterprises Inc.
    2801 Industrial Lane
    Broomfield 80020
    R. E. Bolasny, Pres.

16. Air-Electro Panels, Inc.
    5612 Kendall Ct.- Suite B
    Arvada 80002
    Ray R. Mascarenas, Pres.

17. Hallco, Inc.
    1020 Washington
    Golden 80401
    Warren D. Hall, Pres.

18. Andron Electric
    9947 W. 25th
    Lakewood 80215
    Dean Nicholson, Owner

19. Systems Engineering Associates
    12096 W. 50th Pl.
    Wheatridge 80033
    K. P. Dixon, Owner

20. Trueline Instruments, Inc.
    4002 S. Clay
    Englewood 80110
    C. M. Haworth Jr., Pres.

21. Chaparral Industries, Inc.
    5995 Washington
    Denver 80216
    D. L. Smith, Pres.

22. E. F. Industries, Inc.
    Hwy 42
    Louisville 80027
    J. A. Yoblin, Pres.

23. Storm Products Co.
    205 Commerce St.
    Broomfield 80020
    J. Beal, Div. Manager

24. Empire Lighting & Supply Co.
9937 W. 25th Ave
Lakewood 80215
R. C. Hunton, Pres.

27. Seals Enterprises, Inc.
Rt. 3
Golden 80401
P. E. Seals, Pres.

28. Electro Machanical R. & D. Corp.
5680 S. Curtice
Littleton 80120
R. E. Evans, Pres.

29. Audio Design Laboratory
885 Waite Dr.
Boulder 80303
Haskell Scott, Owner

30. Crisman Speaker Co.
835 Walnut
Boulder 80302
W. H. Luden, Pres.

31. Reed Speaker Co.
7530 W. 16th
Lakewood 80215
S. M. Reed, Pres.

32. Western Electronics Co.
10551 W. 41st Ave.
Wheatridge 80033
T. B. Olsen, Owner

33. American Teledata Corp.
7290 Samuel Dr.
Denver 80221
R. W. Goard, Pres.

34. Western Electric Co.
1200 W. 120th Ave.
Denver 80234
J. D. Custy, Gen. Manager

35. ARF Products Inc.
2559 N. 75th St.
Boulder 80303
A. B. Przedpelski, V.P.

36. Ball Brothers Research Corp.
Boulder Industrial Park
Boulder 80302
O. E. Bartoe, Jr., Pres.

37. Colorado Video Inc.
3245 Prairie Ave.
Boulder 80302
G. Southworth, Pres.

38. Rela Designs Inc.
819 9th Street
Boulder 80302
Brian Underhill, Gen. Mgr.

39. Sontrix Inc.
4593 Broadway
Boulder 80302
T. A. Waibel Jr., Pres.

40. Udy Analyzer Company
734 Pearl St.
Boulder 80302
Dr. Doyle C. Udy, Pres.

41. Monolithic Systems Corp.
2700 S. Shoshone St.
Englewood 80110
C. J. Kunz Jr., Pres.

42. Cryogenic Research Co., Inc.
5401 Western Ave
Boulder 80302
B. J. Hunter, Pres.

43. Frost Engineering Dev. Corp.
3900 S. Kalamath
Englewood 80110
R. H. Frost, Pres.

44. Circuit Science Corp.
2700 S. Shoshone St.
Englewood 80110
C. J. Kunz Jr., Pres.

46. Fab Tool Inc.
3790 S. Jason
Englewood 80110
J. J. Bond, Pres.

47. Colorado Development Labs, Inc.
7014 S. Kendall Ct.
Littleton 80123
A. Kessell, Pres.

48. Hartech Inc.
6882 S. Prince Cir.
Littleton 80120
James W. Hart, Pres.

50. Astro Engineering
2655 Pearl St.
Boulder 80302
D. E. Leitner, Pres.

51. Baseline Industries Inc.
3024 Valmont Road
Boulder 80302
Kenneth E. Forsberg, Pres.

52. Center Line Specialties
North of Boulder
Boulder 80302
J. W. Conway Jr., Pres.

54. The Etchart Co.
4980 Pearl
Boulder 80302
Vernon L. Bauer, Pres.

55. International Business Machines
6300 Diagonal Hwy
Boulder 80302
R. J. Whalen, Gen. Mgr.

56. Meyer Engineering
Sugarloaf Star Route
Boulder 80302
E. P. Meyer, Owner

57. Spardun Inc.
2105 30th Street
Boulder 80301
R. Sparks, Pres.

58. Triangle Electronics
3455 Walnut
Boulder 80302
J. E. Broan, Gen. Mgr.

59. Bunker Ramo Corp
Amphenol Cadre Div.
Longmont Industrial Park
Longmont 80501
R. Beckvold, Gen. Mgr.

60. Burmanco Inc.
P. O. Box 555
Longmont 80501
J. E. Burman, Pres.

61. Colorado Circuits Corp
6827 W. 56th Ave
Arvada 80002
W. C. Hansen, Pres.

62. Geoco, Inc.
4601 Indiana St.
Golden 80401
D. H. Christopher, Mgr.

64. V.T.A. Inc.
1912 Pearl St.
Boulder 80302
Ted Van Vorous, Pres.

65. Eason Service System Inc.
6425 Brighton Blvd
Commerce City 80022
M. V. Eason, Gen. Mgr.

66. Electronic Processors Inc.
5050 S. Federal Blvd
Littleton 80120
J. J. Doherty, Pres.

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RUN  VERSION NOV 71 D   15:54 74/02/20.


                PROGRAM CHI(INPUT,OUTPUT)
          C        THIS PROGRAM CALCULATES CHI-SQUARE COEFFICIENTS FOR RESPONSES
          C        TO QUESTIONS ANSWERED BY TWO GROUPS.  PROGRAM WILL ACCEPT UP
          C        TO FOUR RESPONSE CATEGORIES FOR EACH QUESTION ANSWERED BY THE
          C        TWO GROUPS.  DATA IS ENTERED IN FIELDS OF 3 WITHOUT SPACING
          C        (RIGHT JUSTIFIED, BLANKS FILLED WITH ZEROS) IN THE FOLLOWING
          C        ORDER - QUESTION NUMBER (MAY BE ALPHANUMERIC), TOTAL RESPONSES
          C        FOR GROUP A, TOTAL RESPONSES FOR GROUP B, GROUP A RESPONSES
          C        TO CATEGORY 1, GROUP B RESPONSES TO CATEGORY 1, GROUP A
          C        RESPONSES TO CATEGORY 2, AND SO ON.  IF ONLY 2 OR 3 RESPONSE
          C        CATEGORIES ARE USED, FILL REMAINDER WITH ZEROS.  DEGREES OF
          C        FREEDOM ARE ACCOUNTED FOR.  END DATA WITH CARD AS FOLLOWS - 0
          C        IN COLS. 1-33 EXCEPT COLS. 5-6 WHICH ARE 99.  EACH DATA CARD
          C        HAS COLS. 1-33 FILLED - CHECK.  LEVEL OF SIGNIFICANCE OF RESUL
          C        AND DEGREES OF FREEDOM ARE ALSO GIVEN.  PROGRAM TELLS HOW
          C        LIKELY IT IS THAT THE TWO GROUPS ARE PICKED FROM THE SAME
          C        POPULATION - THAT IS, THAT THEY HAVE THE SAME CHARACTERISTICS.
          C        PROGRAM WILL ACCEPT UP TO 99 SETS OF DATA.
 000003         DIMENSION CHI(100),Z(100),SIG(4,16)
 000003         INTEGER FRED(100)
 000003         N=0
 000004         DO 100 I=1,100
 000006         READ 50,Z(I),A,B,AF1,AF2,DF1,DF2,SF1,SF2,TF1,TF2
 000037      50 FORMAT(A3,10F3.0)
 000037         IF(A.EQ.99)GO TO 120
 000042         FACT=A/(A+B)
 000044         AE1=(AF1+AF2)*FACT
 000047         AE2=AF1+AF2-AE1
 000051         CHI1=((AF1-AE1)**2)/AE1
 000053         CHI2=((AF2-AE2)**2)/AE2
 000056         DE1=(DF1+DF2)*FACT
 000061         DE2=DF1+DF2-DE1
 000063         CHI3=((DF1-DE1)**2)/DE1
 000065         CHI4=((DF2-DE2)**2)/DE2
 000070         SE1=(SF1+SF2)*FACT
 000073         SE2=SF1+SF2-SE1
 000075         IF(SE1.EQ.0.AND.SE2.EQ.0)GO TO 80
 000102         CHI5=((SF1-SE1)**2)/SE1
 000105         CHI6=((SF2-SE2)**2)/SE2
 000107         FRED(I)=2
 000111         TE1=(TF1+TF2)*FACT
 000114         TE2=TF1+TF2-TE1
 000116         IF(TE1.EQ.0.AND.TE2.EQ.0)GO TO 82
 000123         FRED(I)=3
 000125         GO TO 85
 000125      80 CHI5=0
 000126         CHI6=0
 000127         FRED(I)=1
 000131      82 CHI7=0
 000132         CHI8=0
 000133      85 CHI(I)=CHI1+CHI2+CHI3+CHI4+CHI5+CHI6+CHI7+CHI8
 000144         N=N+1
 000146     100 CONTINUE
 000150     120 READ 152,(SIG(1,J),J=1,16)
 000162     152 FORMAT(16F4.3)
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RUN  VERSION NOV 71 D   15:54 74/02/20.

 )162          READ 154,(SIG(2,J),J=1,16)
000174      154 FORMAT(3F7.6,5F4.3,7F5.2,F4.1)
000174          READ 156,(SIG(3,J),J=1,16)
 00206      156 FORMAT(7F4.3,9F5.2)
000206          READ 158,(SIG(4,J),J=1,16)
000220      158 FORMAT(5F4.3,11F5.2)
 00220          PRINT 159
 00224      159 FORMAT(1H1,69HQUESTION    CHI-SQUARE    DEGREES OF FREEDOM    LEVE
               CL OF SIGNIFICANCE)
 00224          DO 200 I=1,N
 00226          K=FRED(I)+1
000230          DO 160 J=1,16
000232          IF(CHI(I)-SIG(K,J))162,162,160
 00237      160 CONTINUE
000241      162 IF(J.EQ.1)GO TO 163
000243          IF(J.EQ.16)GO TO 164
 00245          CALC=SIG(K,J)-CHI(I)
 00251          CALD=SIG(K,J)-SIG(K,J-1)
000256          CALE=SIG(1,J-1)-SIG(1,J)
 00260          SIGL=SIG(1,J)+(CALC/CALD)*CALE
 00264          GO TO 170
000265      163 SIGL=.999
000267          GO TO 170
 00267      164 SIGL=.000
000270      170 PRINT 175,Z(I),CHI(I),FRED(I),SIGL
000304      175 FORMAT(3X,A3,7X,F7.4,15X,I1,20X,F4.3)
 0304       200 CONTINUE
 00307          STOP
000311          END
```

CHAPTER 9

SURVEY OF THE EATING AND DRINKING INDUSTRY IN THE DENVER AREA

The purpose of this research was to gather data relating to costs of doing business for eating and drinking establishments in the five-county Denver area, including Adams, Arapahoe, Boulder, Denver, and Jefferson counties. It was hoped that an understanding of where costs are high and low, or where they differ significantly, would serve as a basis for forming hypotheses about business location behavior for these establishments. The hypotheses would then be tested through field research.

Keeping in mind the possible use of this study as a policy tool the specifics of the research included examination of zoning laws, building permits, health standards, licensing, insurance, and of course land values, utilities, taxes, wages, and transportation as they relate to the eating and drinking industry in the Denver area. It was felt that background research in these areas would point out possible problem areas which could then be attacked more directly by a field study. Direct cost differences, or factors which might result in cost differences between locations, were the object of this research.

Background

Land Values. Land values were felt to be an important consideration for eating and drinking establishments. For purposes of comparison, market values of like parcels (in terms of size, zoning, etc.) in the five counties

were sought, but to no avail. One of the real problems in comparing land values is that there are many variables which determine the value of a particular location, and no two locations have the same set of value-determining variables. These variables include factors such as zoning, location of property relative to transportation, utilities, etc. Because of the measurement difficulties involved with land values, hypotheses concerning location due to land values were felt to be untestable, and therefore, were not formulated. Furthermore, as a policy tool land values are not directly subject to control by local government.

Transportation. Since most transportation connected with the eating and drinking industry is by truck, the main focus will be upon trucking rates within the five-county area. Trucking rates are set nationally (for interstate transportation) and local rates are set by the Colorado Motor Carriers Association. Therefore, transportation costs (both local and interstate) may be assumed to be constant in the Denver area. In addition, transportation does not lend itself to quick and easy application as a local policy tool and no hypotheses concerning this are formulated or tested.

Zoning. A preliminary study of zoning laws and regulations in the five-county Denver area yielded results similar to the land value investigation. In particular, no overall zoning information is available for comparison of like parcels of land between counties, and only information regarding specific sites is obtainable. The factors which determine zoning regulations are many and varied, making specific site comparisons difficult. Zoning was studied with the goal of trying to find whether zoning regulations result in additional costs of any significance to eating and drinking establishments. From the limited amount of information available, it is concluded that zoning is not of prime importance to firms in the industry regarding location.

Utilities. A preliminary study of utility rates across the five counties showed that there are no significant differences. These rates included utilities such as water, gas, electricity, phone, and sewer facilities. Due to a very small range in such costs, it is concluded that utility rates are not of prime importance in the location decision process of eating and drinking establishments in the Denver five-county area.

Wage Rates. Considerable research in this area showed that only one agency in the Denver area has performed and reported a comparative study on wages. The Career Service Authority (City and County of Denver) uses their study to determine appropriate wages for city employees as compared to non-city employees. However, the Career Service Authority does not have any quantitative data regarding differences among the five counties concerning eating and drinking establishments. Because of this lack of secondary data, primary data was sought from the field study.

The Colorado State Employment Office furnished information concerning typical job requests and wages specified for positions in the eating and drinking industry. These are useful for comparison with results of the field study.

Head cooks in fine restaurants - $600-700/month

Waitress/waiter - $20 tips, $1.00/hour (if tips are less, then hourly wages are usually higher)

Busboys/kitchen maintenance - $2.00/hour

Bartender - $2.50/hour

These wages are determined exclusively by the employer as there is no union of employees or outside regulation. The eating and drinking industry is essentially a relatively low-skill, low-paying sector of the economy. This fact tends to reduce the importance of wage rates in the location decision process of eating and drinking establishments.

Taxes. There is much secondary data concerning taxation, in contrast to the categories studied so far. Assessed valuations and mill levys show Denver as having the lowest mill levy and by far the highest assessed valuation in the SMSA, indicative of a much broader tax base than the four surrounding counties. This significant difference in tax rates is partially offset by a higher level of assessment in Denver. Firms in this industry tend to be rather small and taxes may have a greater impact on their earnings (and location) than on the earnings and location of larger firms.

Viewed as a possible tool for city policy, tax rates are more appealing than most other tools discussed already in that application is broad, there can be good control on the part of the city, and application is also fast and can be changed with relative ease.

Health Standards. The Denver County Health Department inspects each establishment every two months and has the authority to close an eating place for lack of cleanliness. In 1972, 84 such places were closed by the Health Department for uncleanliness. Health inspections are therefore felt to be rather important to these firms and a more strict inspection policy in a locality may deter firms from that location. If health inspection procedures are considered to be overbearing by a majority of Denver eating and drinking establishments, a reevaluation may be in order.

Closing a small eating place down would generally result in financial hardship for the owner. For this reason, inspection procedures are considered to be one of the more important parts of the location process and, at the same time, can be a powerful policy tool if used properly

Licensing. The following are procedures for opening an eating and drinking establishment in Denver City and County.

A. Liquor License

1. Apply for zoning permit
2. Furnish copy of plans of business
3. Furnish copy of letter of intent
4. Court hearing to approve issuance of liquor license
5. Post notice of application outside business structure for 30 days
6. Fees (not pro-rated, expire December 31)
   a. $300 application fee, includes court costs, unused portion returned to applicant
   b. $325 city licensing cost
   c. $25 state licensing cost
   d. $200 Sunday licensing cost (optional)
7. Renewal of existing license (b, c, d above)
8. Beer and wine license
   a. $300 application fee
   b. $150 annual fee

B. Restaurant license

1. Application fee of $15
2. License based on seating capacity (annual, pro-rated)

Seating Capacity	Fee
1 - 10	$ 20
11 - 25	30
26 - 50	50
51 - 100	75
100+	100

3. Approval from following departments
   a. Zoning
   b. Fire

c. Health

d. Building

4. Disapproval does not mean rejection, applicant has time to comply with ordinances, laws

5. Above applies even though liquor license is not desired

C. Sales tax license - application for collecting 3% sales tax - no fee imposed

D. Occupational tax collection (head tax) - must collect $2/month/employee

E. Trade name file - protection of use of name - $2 charge for affidavit - one time charge (optional)

Denver City and County receives approximately 10 applications for restaurants per month. There were 21 liquor licenses approved in 1972.

The procedures listed above are sufficiently straight-forward as not to be a major deterrent to licensing. However, the City of Denver must work within the confines of the State liquor laws which establish quotas on the number of liquor licenses approved. This point was stressed by Dr. Douglas C. Keister, Director of Denver University's School of Hotel and Restaurant Management, who stated that the State liquor quotas prevent a lot of good restaurants from locating in Denver. Since licensing is a prerequisite for locating in Denver, the importance of the procedure and its administration cannot be ignored in the context of firm location. Prime consideration should be given to this area as a policy tool.

Summary - Suggested Policy Tools. Background research would seem to indicate several possible policy tools which would be more powerful than others for purposes of influencing location decisions of eating and drinking establishments in the Denver area. These are health standards and liquor/restaurant licensing procedures. Other important considerations not pre-

viously mentioned are population growth, activity clusters, and average income in an area.

These additional considerations are especially important to the eating and drinking industry which, ceteris paribus, would want to locate at a site accessible to large numbers of high income families. Activity clusters, such as shopping centers and main transportation arteries, are equally important to the success of these firms. Income in an area will also certainly attract eating and drinking places.

In order to test these ideas, hypotheses are formed concerning them and then these hypotheses are tested through field surveys which yield primary data.

Hypotheses

Based on background research, the following hypotheses were formulated concerning the importance to the location decision process of certain factors which lend themselves to policy use by Denver City and County:

Hypothesis 1 - Liquor/restaurant licensing procedures in Denver are important in the location decision process of eating and drinking places.

Hypothesis 2 - Health standards and inspection procedures in Denver are important in the location decision process of eating and drinking places.

Hypothesis 3 - Population, activity clusters, and income of inhabitants are important in the location decision process of eating and drinking places in the Denver area.

Hypothesis 4 - Insurance costs, taxes, wage rates, utility rates, transportation costs, and land values are of secondary importance in the location decision process of eating and drinking establishments in the Denver area.

Hypothesis 5 - Zoning laws, insofar as they inhibit location in preferred areas like activity clusters, are important in the location decision process of eating and drinking establishments in Denver

Development of Questionnaire

Two questionnaires were created, one designed to be answered by eating and drinking places in Denver and one for those outside Denver County. Both had similar format featuring short answers designed to elicit a high response rate. A sample questionnaire is shown in Exhibit 9-1.

Questionnaires were mailed to 125 eating and drinking places in the Denver metropolitan area; 25 in Denver County and 25 to each of the four surrounding counties - Boulder, Adams, Arapahoe, and Jefferson. The Colorado State Department of Health was the only city or state organization which had a complete file of restaurant applications, by county, so the mailing list was selected randomly from that source. A personal letter, similar to the SIC 36 survey, was also enclosed with the questionnaire. (See Exhibit 8-2.)

Survey Results and Evaluation

Of the 125 surveys which were originally mailed out, 15 were returned which were usable. A second mailing yielded 2 additional completed questionnaires. The distribution of returns is as follows:

	Questionnaires		Percentage
County	Mailed	Returned	Returned
Denver	25	4	16.0%
Boulder	25	4	16.0
Jefferson	25	2	8.0
Adams	25	2	8.0
Arapahoe	25	5	20.0
TOTAL	125	17	13.6%

EXHIBIT 9-1

SURVEY OF EATING AND DRINKING ESTABLISHMENTS

Business Research Division
University of Colorado
Boulder, Colorado 80302

(takes about 4 minutes)

1. How long have you been the owner of this restaurant? _____(years)
   Owner not available to respond _____

   1a. Were you the original owner of this restaurant? Yes___ No___

2. How important was it to you to have your business located near your home?
   Very important___, Not very important___, Undecided___.

   2a. What is the distance from your residence to this restaurant?
   _____(miles)

3. Was this restaurant ever located in a different county? Yes___ No___

   3a. In what county? _____

4. How many total full-time employees do you have now? _____

5. Does this restaurant have a liquor license? Yes___ No___

6. What is the size in square feet at this restaurant facility? _____

7. What average hourly wage do you pay waiters and waitresses to start?

   _____(dollar per hour)

   7a. What is the approximate amount of money received in tips by waiters and waitresses for a paid 8-hour shift on a typical Saturday at your restaurant? _____

8. If your business were located outside Denver County, would wage rates in #7 be: Higher___, lower___, about the same___, undecided___

9. Did wage rates have any influence on your decision to locate your business where it is? Yes___ No___ Undecided___

IF YOU RENT YOUR RESTAURANT PROPERTY, PLEASE ANSWER 10, 11, 12, THEN GO TO 15

10. What is your annual or monthly rental for the premises you now operate out of: _____(indicate monthly or yearly)

11. If your business were located in an identical facility outside Denver County, would the rental rate in #10 be:
    higher___, lower___, about the same___, undecided___.

12. Did rental rates have any influence on your decision to locate your business where it is? Yes___ No___ Undecided___.

IF YOU OWN THIS RESTAURANT PROPERTY, PLEASE ANSWER 13, 14, THEN GO TO 15

13. Did the purchase cost of building and land have any influence on your decision to locate your business where it is? Yes___ No___ Undecided___

14. What is the annual general property tax for this particular restaurant? _____

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15. If you could improve only ONE aspect of your present restaurant location (for example, busier street, nicer building, larger facility, better neighborhood, cheaper rent, closer to shopping center, closer to bus line, better parking, better employees), what would it be?
_____(indicate only ONE)

16. If you encountered any difficulties or problems in opening your establishment, please check all of the following that apply:
___obtaining restaurant license
___obtaining liquor license
___obtaining proper zoning
___obtaining approval by health, fire and building departments
___finding appropriate employees for needs
___finding suitable building
___finding suitable land for construction
___other (please elaborate):_____
_____
_____

17. Please indicate if you agree, disagree or have no opinion regarding the following statements:

GENERALLY AGREE	GENERALLY DISAGREE	NO OPINION	
_____	_____	_____	a. There is room for improvement in liquor and restaurant licensing procedures in Denver County.
_____	_____	_____	b. Overall, operating expenses for my business would be lower outside of Denver County.
_____	_____	_____	c. Gross revenues would be greater for my business outside Denver County.
_____	_____	_____	d. Space availability (land and building) would be greater outside of Denver County.
_____	_____	_____	e. Competition from other restaurants would be greater outside Denver County than at present location.
_____	_____	_____	f. Opportunities for growth would be greater outside Denver County.
_____	_____	_____	g. There would be greater growth in the eating and drinking industry if the City of Denver would provide some assistance.

The low number of survey returns was disappointing and difficult to explain in view of high response rates on the other surveys. Perhaps the owners are not concerned with possible problems in the eating and drinking industry, or perhaps the informal organizational structure characteristic of the industry may have resulted in the owners never seeing the surveys.

While concrete conclusions could not be drawn from the results, several general observations about specific questions can be offered. There appears to be little mobility among those firms answering. Only one firm responding had been located elsewhere in the SMSA. Half of the firms responding have liquor licenses reflecting the relative importance of this factor.

In response to question about improving their location, the most common improvements suggested were a nicer building, a location on a busier street or nearer a shopping center, and better employees. Of the problems encountered when opening their businesses, the most frequently mentioned were finding suitable employees and obtaining a liquor license.

For purposes of policy, the background research and the survey results suggest that the most viable tools available to the City and County of Denver are liquor/restaurant licensing procedures and possibly zoning procedures as they apply to prospective restauranteers.

CHAPTER 10

SURVEY OF THE WHOLESALE INDUSTRY IN THE DENVER AREA

Introduction

The wholesale industry was chosen as a third key industry in the Denver area. As with the studies conducted on the two other key industries, (the electrical manufacturing industry and the eating and drinking industry), the purpose is to study costs and other factors effecting location in an effort to provide the City and County of Denver with some workable policy tools. Background research was undertaken to suggest possible areas of study, hypotheses were formulated and then tested using field research. Locational factors under study are limited to those factors easily influenced by city policies.

The wholesale industry is assumed to be concerned with many of the same factors which concerned those firms studied in SIC 36 (Electrical Manufacturers) and therefore reference is made to the background study in that section of this report. These is one major difference, though, which is worth noting. Wholesale firms tend to locate near retailers, who are their customers. Also, these firms are highly dependent on transportation, especially trucking. Therefore, these two points will be discussed in more detail.

There is also a problem of identification concerning the wholesale firms. Many firms identified as wholesalers in fact are only partially wholesalers, and many firms not identified as wholesalers are in fact partially wholesalers. There is no universally accepted definition of a wholesaler. That

is, there is no fixed percentage of total sales a firm must specify as resulting from wholesaling in order for that firm to be called a wholesale firm. For example, firms classified in SIC 50 include only those primarily engaged in wholesaling. All other firms which do some wholesaling are termed secondary wholesalers. To illustrate the importance of these secondary wholesalers, sales by primary (SIC 50) wholesalers are compared to total sales in Table 10-1. As shown, secondary wholesalers account for the majority of total sales. Further, even those firms in SIC 50 average only 70 to 80 percent wholesale sales with the remaining 20 to 30 percent retail.

The effect which this identification ambiguity will have on the results of this study may be significant. A firm which has a substantial portion of retail sales may use a different set of location criteria from a firm which is largely wholesale. On the other hand, background research may indicate that wholesalers and retailers tend to locate in clusters and while they may have different reasons for doing so, the end result is the same.

Background

Preliminary research using existing data on SIC 50 produces a profile of this industry which is of value in formulating hypotheses about firm behavior. First, the wholesale industry in the Denver area is highly centralized in Denver city and county. Table 10-2 shows SIC 50 sales for selected counties and regions. The decrease in Denver's share of sales in both the state and the SMSA from 1958 to 1972 is probably due to the expanding suburbs. The increase in retail outlets in the suburbs will naturally tend to draw some wholesalers from the city. But there does not appear to be any excessive out-migration of wholesale firms from Denver to the surrounding counties.

TABLE 10-1

RETAIL SALES BY SIC 50 FIRMS AND ALL FIRMS,
FOR METROPOLITAN DENVER COUNTIES, FOURTH QUARTER, 1971

	SIC 50	All	SIC 50 as a Percentage of All
Adams	$ 15,215,756	$ 60,574,610	25.1%
Arapahoe	5,127,356	22,736,175	22.6
Boulder	1,192,182	12,422,719	9.5
Jefferson	5,708,007	16,565,282	34.4
Denver	172,729,320	348,308,094	49.5

TABLE 10-2

TOTAL SIC 50 SALES FOR COLORADO AND SELECTED COUNTIES, 1958-1972

Year/Region	Sales (000)	Percent Change	Percentage of SMSA Total	Percentage of State Total
1958/Colorado[a]	$2,955,309	--	--	--
Adams	73,878	--	3.1	NC
Arapahoe	64,186	--	2.7	NC
Boulder	16,718	--	0.7	NC
Jefferson	18,102	--	0.8	NC
4-County	172,884	--	7.2	5.8
Denver	2,229,644	--	92.8	75.4
5-County	2,402,528	--	--	81.3
1963/Colorado[a]	3,623,190	22.6	--	--
Adams	94,993	28.6	3.2	NC
Arapahoe	79,720	24.2	2.7	NC
Boulder	29,787	78.2	1.0	NC
Jefferson	44,371	45.1	1.5	NC
4-County	248,871	44.0	8.5	6.8
Denver	2,692,152	20.7	91.5	74.3
5-County	2,941,023	22.4	--	81.2
1967/Colorado[a]	4,385,769	21.0	--	--
Adams	164,779	73.5	4.6	NC
Arapahoe	113,080	41.8	3.2	NC
Boulder	33,391	12.1	.9	NC
Jefferson	60,308	35.9	1.7	NC
4-County	371,558	49.3	10.5	8.4
Denver	3,179,786	18.1	89.5	72.5
5-County	3,551,344	20.8	--	81.0
1972/Colorado[b]	1,215,944	NC	--	--
Adams	70,486	NC	7.5	NC
Arapahoe	26,665	NC	2.8	NC
Boulder	6,572	NC	.7	NC
Jefferson	27,252	NC	2.9	NC
4-County	130,975	NC	13.9	10.8
Denver	814,444	NC	86.1	66.7
5-County	945,419	NC	--	77.8

NC = not calculated and/or not comparable

[a]For the years 1958, 1963 and 1967 the data are from the Census of Business, Bureau of Census.

[b]For 1972 the data come from the State Tax Summary.

Denver city and county has remained the major wholesale center during a time when many wholesale firms in other metropolitan areas are leaving the central city for the suburbs. Since the wholesale industry is heavily dependent upon trucking for transportation, it may be inferred that Denver city and county possesses an advantage over surrounding counties concerning transportation facilities. These include a network of interstate highways (I-25 and I-70) and other roads which make Denver very accessible by truck. A comparative advantage in transportation may have kept the out-migration of firms from Denver at a minimum. The hypothesis that wholesale firms have a propensity to locate near transportation centers may be tested through the field study.

The availability of warehouses is also important to wholesalers, and Denver city and county may be expected to possess an advantage over the suburban ring in this respect. Although no data is presented to support this, the idea that wholesalers and transportation centers and warehouse facilities should be located in clusters is intuitively appealing. The effect of costs of doing business, such as taxes, insurance, etc., which were discussed in detail in the electrical manufacturing industry study, on location decisions will be considered on the questionnaire but not discussed here. It is assumed that wholesale firms will act to maximize their value. The importance of costs to the firms in achieving this goal should help determine possible ways of influencing their behavior.

Thus, this brief discussion of the peculiarities of the wholesale industry, together with the cost considerations common to both wholesalers and electrical manufacturers and discussed previously in the SIC 36 report, provide enough information to construct a questionnaire to test the following hypotheses. These hypotheses relate to location factors considered to be

important by wholesale firms and deemed usable as possible policy tools by the city and county of Denver.

Hypothesis 1 - Proximity to highway transportation is important in the location decision processes of firms in SIC 50 in the Denver area.

Hypothesis 2 - Costs of doing business, such as taxes, insurance, rent, etc. are of secondary importance in the location decision processes of firms in SIC 50 in the Denver area.

Development of Questionnaire

A questionnaire was designed to test the above hypotheses, a copy of which is presented in Exhibit 10-1. As was done with the other studies, those firms located outside Denver city and county in Adams, Arapahoe, Boulder and Jefferson counties were used as one study group (hereafter referred to as ODC) and those firms in Denver city and county were used as the other study group (hereafter referred to as IDC). This questionnaire is very similar to the previous questionnaires in design and format.

Questions 1, 1a and 1b were intended to tell who was answering the survey, how long he was associated with the firm and if he was the original owner or manager, and to determine the age of the firm. An accompanying letter of introduction (see Exhibit 8-2) asked that the person most familiar or most closely responsible for the major decisions made in that firm respond to the questions. It was felt that in small firms, which comprise most of the sample, only one or maybe two persons make the location decisions and it is this information which is valuable to this research.

When the results of question 3 and 3a were combined with the results obtained from question 1, a fairly good location history can be constructed

EXHIBIT 10-1

SURVEY OF WHOLESALE ESTABLISHMENTS
Business Research Division
University of Colorado
Boulder, Colorado 80302

1. How long have you been the owner or manager of this firm? _____ years

   1a. Owner or manager not available to respond __

   1b. Were you the original owner or manager of this firm? Yes __ No __

2. What is the distance from your residence to this firm? _____ miles

   2a. How important was it to you to have your business located near your home? Very important __ Not very important __ Undecided __

3. Was this firm every located in a different county? Yes __ No __

   3a. In what county? _____

4. What do you feel the Denver City and County's policy is toward expansion of the wholesale industry within its boundaries?

   encourage ___ discourage ___ doesn't care ___ not sure ___

5. What percentage of your firm's sales volume is a result of wholesaling? ____%

6. Is most of your wholesaling activity directed at Denver City and County ____ or surrounding counties _____ ?

7. What is the size in square feet at your present facility? _____

IF YOU RENT YOUR FACILITY, PLEASE ANSWER 8, 9, 10, THEN GO TO 13

8. What is the monthly rent for the land and building you now operate from? _____

9. If your business were located in an identical facility outside Denver County, would the rental rate in #8 be:

   higher __, lower __, about the same __, not sure __

10. Did rental rates have any influence on your decision to locate your business where it is? Yes ___ No ___ Undecided ___

IF YOU OWN YOUR WHOLESALE FACILITY, PLEASE ANSWER 11, 12, THEN GO TO 13

11. Did the purchase cost of building and land have any influence on your decision to locate your business where it is? Yes __ No __ Undecided __

12. What is the annual general property tax for this establishment? _____

EXHIBIT 10-1 (Continued)

13. A relocation to an identical facility outside Denver City and County could benefit your firm by:

	YES	NO	NOT SURE
a. lowering the taxes on your business	___	___	___
b. lowering the cost of land (if owned)	___	___	___
c. lowering the rent on land (if leased)	___	___	___
d. easing zoning restrictions	___	___	___
e. improving employee access to firm	___	___	___
f. lowering the current wages you must pay	___	___	___

14. Please indicate if you agree, disagree, or have no opinion regarding the following statements:

	AGREE	DISAGREE	NO OPINION
a. the quality of police and fire protection inside Denver is detrimental to the well being of this firm	___	___	___
b. we have some difficulty in hiring suitably trained employees	___	___	___
c. public transportation is adequate for our employees and clients	___	___	___
d. our employees experience parking problems at our present location	___	___	___
e. we would consider a move outside of Denver City and County	___	___	___
f. we would consider expanding our business outside of Denver City and County	___	___	___
g. our overall operating expenses would be lower if our facility were located outside Denver City and County	___	___	___

of both the firm and the industry as a whole. Migration patterns can be established and general trends of movement show up in this information.

Questions 2 and 2a should provide information on where owners and managers choose to locate their places of residence in relation to their businesses. The importance of being near their businesses is probed here.

Question 4 was included in the questionnaire in an effort to characterize the general atmosphere of city-industry relations in Denver. Some firms are expected to view this question as incriminating and possibly give false answers, while other firms (mostly ODC) will most likely not know anything about Denver's attitudes. However, it is felt that most owners and managers will express their feelings in a fashion which will be adequate for drawing conclusions about these city-industry relations.

Question 5 pertains to the problem of identification discussed earlier. The percentage of wholesaling conducted by a firm should be directly related to its behavior as a wholesaler, although at this point, it is not known just how much difference there is between the behavior patterns for retailers and wholesalers.

Question 6 attempts to profile the wholesale industry concerning its markets. Location preferences may be different for wholesale firms with a local market as opposed to wholesale firms with a state-wide or a multi-state market. Question 7 characterizes responding firms according to size, which may also have its own effect on location preferences.

Questions 8, 9 and 10 probe for cost information and its effect on wholesale locations. Specifically, rents are studied here by gathering primary data and then comparing the perceptions of the owners and managers to what actually exists. Questions 11 and 12 are similar questions aimed at those wholesalers who own their facilities and whose costs consist of property taxes instead of rent.

Question 13 concerns the predilections and ideas which owners and managers possess about cost differences between the two areas being studied, Denver (IDC) vs. surrounding counties (ODC). These questions do not provide direct information concerning the importance of the costs in location decisions, but do provide information which could help determine the direction of city policy toward this industry.

Question 14 concludes the questionnaire with a solicitation of opinions concerning some social aspects of various locations and an overall comparative cost advantage of various locations. This question investigates the desirability (as viewed by the wholesale firms) of a move into or out of Denver city and county, which may also serve as an aid to policy planning.

A mailing list for this survey was obtained from Contacts Influential (1973) which provided a complete listing of all wholesalers in the Denver SMSA. This list was numbered consecutively and those firms selected for study were chosen by means of a computer-generated random number list. Three-hundred firms in Denver city and county (IDC) were chosen and 100 firms in Adams, Arapahoe, Boulder and Jefferson counties (ODC) were chosen. Two mailings of this survey resulted in the following returns.

IDC (In Denver County)	120 or 36.0%
ODC (Outside Denver County)	59 or 52.2%[1]

The reason for the lower response rate in Denver is not immediately obvious. However, it is felt that both rates are sufficiently high to permit conclusions concerning location decisions in the Denver area. Results of a chi-square analysis (described in Chapter 8) is presented in Table 10-3.

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[1]This percentage is based on a total of 113 instead of 100 due to the addition of IDC firms who claimed to be outside Denver County.

In general, there appears to be a significant difference between the two response groups on a majority of questions (the lower the level of significance, the more significant the difference).

Analysis of Results

Question 1 - How long have you been the owner or manager of this firm?

	Average Years	Number of Respondents	Percentage of Total
IDC	11.49	119	99.2
ODC	11.72	54	91.5

Unlike the firms in SIC 36 (Electrical Equipment, Manufacturing and Supplies Industry), the firms in the Wholesale Industry do not show any particular location pattern according to length of ownership or managership. On the average, both populations of SIC 50 firms are the same age. There has been no apparent migration to or preference for the surrounding counties on the part of younger firms in this industry. A preliminary conclusion may be that the surrounding counties offer no comparative advantage to wholesalers.

Question 1a - Owner or manager not available to respond.

	Respondents	Percentage of Total
IDC	1	0.8
ODC	5	8.5

These results indicate that a sufficient number of managers and owners did respond to lend credibility to the results obtained

Question 1b - Were you the original owner or manager of this firm?

	Yes		No		Total	
	Number	Percent	Number	Percent	Number	Percent
IDC	66	56.9	50	43.1	116	96.7
ODC	31	55.4	25	44.6	56	94.9

For both groups, slightly over half of those owners and managers responding were the original owners and managers. This information, together with the average length of ownership of almost 12 years, is indicative of a rather stable industry and one which is geographically uniform with respect to age.

Question 2 - What is the distance from your residence to this firm?

	Average Miles	Respondents	Percentage of Total
IDC	10.14	115	95.8
ODC	9.50	57	96.6

The wholesale firms show a sharp contrast to SIC 36 firms in that both groups report similar distances from their businesses to their homes. In the SIC 36 study, it was seen that ODC firms were located much closer to the owner's residence than IDC firms. In this study, the differences in the two groups is hardly significant. This may be indicative of the fact that wholesale firms tend to cluster near industrialized sections with good transportation facilities, and that these sections and their immediate surroundings are not desirable for residential living whether IDC or ODC. These results further point out the uniformity in this industry.

Question 2a - How important was it to you to have your business located near your home?

	Very Important		Not Very Important		Undecided		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
IDC	17	14.8	91	79.1	7	6.1	115	95.8
ODC	23	42.8	30	54.5	2	3.6	55	93.2

Average Distances to Residence According to Responses Above (miles)

	Very Important	Not Very Important	Undecided
IDC	4.47	11.46	7.50
ODC	3.64	12.58	26.00

A majority of both IDC and ODC firms rated nearness to business as being not very important. However, a large portion (41.8 percent) of ODC firms rated this as very important, demonstrating their preferences for residential location outside Denver city and county. The fact that 79.1 percent of ODC owners and managers do not feel strongly about living near their businesses may indicate that they do not live in Denver (average distance is 11.46 miles) but commute to work. This might eliminate that aspect of their location decision from the possible use as a policy tool by the city and county of Denver.

Question 3 - Was this firm ever located in a different county?

	Yes		No		Total	
	Number	Percent	Number	Percent	Number	Percent
IDC	10	8.5	107	91.5	117	97.5
ODC	23	39.0	36	61.0	59	100.0

Question 3a - In what county?

IDC		ODC	
1	Adams	1	Adams
1	Arapahoe	4	Arapahoe

IDC		ODC	
1	Grand	1	Jefferson
5	Jefferson	16	Denver
1	Moffat	1	Out-of-State
1	Out-of-State		

These results show considerable inter-county movement, especially on the part of ODC firms and especially movement out of Denver city and county, although there is some influx also.

Question 4 - What do you feel the Denver city and county's policy is toward expansion of the wholesale industry within its boundaries?

	Encourage		Discourage		Doesn't Care	
	Number	Percent	Number	Percent	Number	Percent
IDC	33	28.7	12	10.4	25	21.7
ODC	9	15.3	8	13.6	0	15.3

	Not Sure		Total	
	Number	Percent	Number	Percent
IDC	45	39.1	115	95.8
ODC	33	55.9	59	100.0

Although slightly more wholesale firms in Denver feel that city policies are favorable, most firms either think that Denver does not care or are not sure. This could indicate that there is a lack of awareness on the part of these firms towards any manifestation of city policy or on the other hand, there could be a lack of manifestation of city policy altogether. In either case, a public relations program could remedy this situation should Denver ever wish to influence these firms using its policies as tools.

Question 5 - What percentage of your firm's sales volume is a result of wholesaling?

	Average Percent	Respondents	Percentage of Total
IDC	74.47	118	98.3
ODC	73.98	57	96.6

These results demonstrate the identification problem spoken of previously, but since the average percent of wholesaling is almost 75 percent for both groups, it is felt that the respondents can be considered to be primarily wholesalers for purposes of location decision analysis.

Question 6 - Is most of your wholesaling activity directed at Denver city and county or surrounding counties?

IDC		ODC	
18.3%	Denver (20)	16.4%	Denver (9)
33.0	Surrounding counties (36)	49.1	Surrounding counties (27)
23.9	Both (26)	10.9	Both (6)
24.8	Other (state, etc.) (27)	23.6	Other (state, etc.) (13)
90.8	(109)	93.2	(55)

From these results, the Denver area is seen to be a wholesale center for regional business as well as local wholesale trade. Also, there appears to be a significant difference between the responses of IDC and ODC firms (chi-square significance level - 0.136). Support is given to the hypotheses that these firms locate near transportation centers (i.e., that transportation is a primary concern in their location decision process as opposed to actual market served or specific county chosen as a location).

Question 7 - What is the size in square feet at your present facility?

	Average Square Foot	1st Round	2nd Round	Respondents	Percentage of Total
IDC	20,346	15,560*	13,038**	110	91.7
ODC	18,681	12,342***	9,129*	53	89.8

* Minus 4 highest and 4 lowest
** Minus 8 highest and 8 lowest
***Minus 2 highest and 2 lowest

The average size of facility is the first characteristic in this study which distinguishes the two groups. IDC firms are larger on the average than ODC firms. Better transportation facilities in Denver may attract the larger firms, especially the firms that deal with a state-wide or out-of-state market.

Question 8 - What is the monthly rent for the land and building you now operate from?

	Avg. Annual Rent/Ft.^{2}	1st Round	2nd Round	Respondents	Percentage of Total
IDC	$1.99	$1.73*	$1.59**	73	60.8
ODC	2.67	2.44***	2.20*	28	47.5

* Minus 4 highest and 4 lowest
** Minus 8 highest and 8 lowest
***Minus 2 highest and 2 lowest

The higher rents reported by ODC firms may be accounted for by the fact that this group uses smaller buildings on the average and may not achieve the economies of scale of a larger building. Therefore, from information gathered so far, it is assumed that rents are a function of building size only and consequently not subject to use as a policy tool for purposes of influencing location decisions.

Question 9 - If your business were located in an identical facility outside/inside Denver County, would the rental rate in #8 be:

	Higher		Lower		About the Same	
	Number	Percent	Number	Percent	Number	Percent
IDC	14	17.1	21	25.6	26	31.7
ODC	19	54.3	1	2.9	8	22.9

	Not Sure		Total	
	Number	Percent	Number	Percent
IDC	21	25.6	82	68.3
ODC	7	20.0	35	59.3

A majority of ODC firms perceive higher rents inside Denver when in fact survey data shows ODC firms as paying the highest rents. Comparative rental information is not available and since in practice, there is no such thing as an identical facility, the respondents must be answering based on personal feelings and experiences. These feelings and conceptions lend themselves readily to outside influence and are a possible way for the city of Denver to attract firms. The city of Denver could supply rental information to prospective firms since this information is hard to obtain otherwise.

Question 10 - Did rental rates have any influence on your decision to locate your business where it is?

	Yes		No		Undecided		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
IDC	32	38.6	46	55.4	5	6.0	83	69.2
ODC	17	45.9	16	43.2	5	10.8	37	62.7

Although the affirmative response to the above question was not overwhelming, it does indicate that a good percentage of SIC 50 firms do include rental rates in their location decision processes.

Question 11 - Did the purchase cost of building and land have any influence on your decision to locate your business where it is?

	Yes		No		Undecided		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
IDC	21	55.3	16	42.1	1	2.6	38	31.7
ODC	19	61.3	9	29.0	3	9.7	31	52.5

As in the previous question (#10), these results concerning the influence of land and building costs on location decisions indicate that the wholesale firms surveyed do include these costs in their location decisions. But land

costs and building costs are even less controllable by the city of Denver than rents and therefore cannot be considered to be a very useful policy tool.

Question 12 - What is the annual general property tax for this establishment?

	Property Tax/Ft^2	1st Round*	2nd Round**	Respondents	Percentage of Total
IDC	$.24	$.20	$.20	23	19.2
ODC	.31	.29	.28	20	33.9

* Minus highest and lowest
**Minus 2 highest and 2 lowest

As expected, taxes in Denver city and county are lower than outside because of the lower mill levy.

Question 13 - A relocation to an identical facility outside/inside Denver city and county could benefit your firm by:

a. lowering the taxes on your business

	Yes		No		Not Sure		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
IDC	27	26.5	33	32.4	42	41.2	102	85.0
ODC	2	4.0	26	52.0	22	44.0	50	84.7

b. lowering the cost of land (if owned)

IDC	24	29.6	21	25.9	36	44.4	81	67.5
ODC	22	4.7	26	60.5	15	34.9	43	72.9

c. lowering the rent on land (if leased)

IDC	28	30.4	26	28.3	38	41.3	92	76.7
ODC	4	8.2	25	51.0	20	40.8	49	83.1

d. easing zoning restrictions

IDC	10	10.4	46	47.9	40	41.7	96	80.0
ODC	2	4.8	27	67.3	13	31.0	42	71.2

	Yes		No		Not Sure		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
e. improving employee access to firm								
IDC	16	17.6	51	56.0	24	26.4	91	75.8
ODC	11	21.6	30	58.8	10	19.6	51	86.4
f. lowering the current wages you must pay								
IDC	6	6.1	72	73.5	20	20.4	98	81.7
ODC	2	4.1	37	75.5	10	20.4	49	83.1

The series of questions given above were intended to give a picture of how costs, zoning and employee access are viewed by the two groups of firms. If the city of Denver wishes to influence wholesale firms, it must first understand how these firms feel about different factors which might have some influence on location.

Feelings about taxes are expressed in part a. Oddly enough, one half of the ODC population feels that taxes would not be lower in Denver, contrary to fact. Most of the other half of ODC firms are not sure, indicating that much misinformation and lack of any information exists in this industry. In part b, land values are perceived to be higher in Denver by the ODC firms. Land values were not previously studied in this survey, but this information may aid the policy-maker. Again in part c, rents are seen to be higher in Denver by ODC firms. As explained before, the rent differential may be explained by different economies of scale and in fact, rents may not vary appreciably across the five-county area. In parts a, b and c, IDC firms were just above evenly divided between "yes" and "no" answers, with the majority responding "not sure."

Part d deals with zoning restrictions. There is no comparative zoning data (each site must be compared separately with another) but again the fact that zoning is seen as being stricter in Denver by both populations may help the policy-makers.

Part e indicates that employee access may not be an important problem in the wholesalers' location decision process as most firms indicate that employee access could not be improved by a relocation in either direction. Likewise in part f, both groups feel overwhelmingly that a relocation would not lower the wages they must pay. That is, both groups feel that the other group is being forced by the labor market to pay higher wages. Thus, it is doubtful that firms in either group, IDC or ODC, could be influenced to any great extent by application of city policy in this area.

Question 14 - Please indicate if you agree, disagree or have no opinion regarding the following statements:

a. the quality of police and fire protection inside/outside Denver is detrimental to the well-being of this firm

	Agree		Disagree		No Opinion		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
IDC	12	10.4	88	76.5	15	13.0	115	95.8
ODC	6	11.1	35	64.8	13	24.1	54	91.5

b. we have some difficulty in hiring suitable trained employees

IDC	58	50.0	50	43.1	8	6.9	116	96.7
ODC	19	33.9	27	48.2	10	17.9	56	94.9

c. public transportation is adequate for our employees and clients

IDC	49	42.2	50	43.1	17	14.7	116	96.7
ODC	12	21.4	35	62.5	9	16.1	56	94.9

d. our employees experience parking problems at our present location

IDC	26	22.4	87	75.0	3	2.6	116	96.7
ODC	5	8.9	47	83.9	4	7.1	56	94.9

e. we would consider a move outside/inside Denver city and county

IDC	36	31.6	59	51.8	19	16.7	114	95.0
ODC	3	6.1	37	75.5	9	18.4	49	83.1

f. we would consider expanding our business outside/inside Denver city and county

	Agree		Disagree		No Opinion		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
IDC	46	51.8	46	51.8	18	16.4	110	91.7
ODC	13	26.0	28	56.0	9	18.0	50	84.7

g. our overall operating expenses would be lower if our facility were located outside/inside Denver city and county

IDC	20	17.2	53	45.7	43	37.1	116	96.7
ODC	1	1.9	35	69.2	15	28.8	52	88.1

Finally, question 14 presents a series of statements designed to collect responses to several other location factors besides costs and to give overall responses to relocating. Part a shows very little dissatisfaction with police and fire protection in any area. This is not to say that these factors are not important in a location decision, but merely says that these needs are satisfied and policy changes in this area would not be advantageous.

Part b indicates that a sizable portion of wholesale firms in both groups have the same degree of difficulty in hiring suitable employees. Labor supply does not appear to be an important location factor for this industry.

Part c concerns public transportation and as expected, dissatisfaction is expressed by ODC firms because in the surrounding counties public transportation (buses) is not as developed as it is in Denver. Commuting in the Denver area is done mainly by automobile but as part d reveals, parking is not a problem for either group. Thus, it does not offer an effective tool.

Part e shows a decided unwillingness on the part of ODC firms to even consider a move into Denver, but also shows that one-third of IDC firms would consider moving out of Denver. This merely outlines the problem under

study and confirms a net out-migration of wholesale firms from Denver city and county. Part f concerns expansion as opposed to relocation, and the fact that one-fourth of the ODC firms would consider expanding into Denver seems to indicate that Denver does have something to offer a wholesale firm. This figure should indicate that there is hope for attracting firms into Denver should it be determined that this would be advantageous for the city of Denver.

Part g reinforces the conclusions drawn from Question 13 (parts a, b, c and f) which indicate a general idea among firms in the wholesale industry that costs are higher in Denver than in the surrounding counties when in fact costs are really no higher and in some cases (taxes) are actually lower.

As in the study of SIC 36, chi-square tests were performed on the responses to the questions to see how likely it was that the samples were drawn from the same population (see Electrical Equipment, Manufacturing and Supplies Study for explanation of X^2 tests). Table 10-3 gives the X^2 coefficient, degrees of freedom and level of significance for each applicable question. On the whole, the levels of significance are quite low, indicating that IDC and ODC firms are indeed different groups in their demographic characteristics and their ideas and perceptions of Denver as a location.

The meaning which should be attached to individual levels of significance extracted from Table 10-3 is the following: a level of 1.000 indicates that there is very little doubt that the two groups being compared, IDC and ODC firms, were the results of samples taken from the same population and therefore have similar characteristics. A level of .858 (question 1b) indicates that there is an 85.8 percent chance that the two samples came from the same population and so on. A level of .000 indicates that there is a negligible probability that the two samples were picked from the same population; that

TABLE 10-3

STATISTICAL SUMMARY OF WHOLESALE SURVEY RESULTS, BY QUESTION[a]

Question	Chi-square	Degrees of Freedom	Level of Significance
1b	.0364	1	.858
2a	15.1392	2	.000
3	23.8494	1	.000
4	4.0891	3	.257
6	5.6758	3	.136
9	19.4579	3	.000
10	1.8589	2	.408
11b	2.3743	2	.307
13a	12.2800	2	.000
13b	17.8230	2	.000
13c	11.5682	2	.000
13d	3.4277	2	.185
13e	.9422	2	.632
14a	3.4063	2	.187
14b	6.7349	2	.037
14c	7.5383	2	.024
14d	6.1239	2	.048
14e	12.6233	2	.000
14f	3.8819	2	.152
14g	11.1992	2	.000

[a]See detailed discussion of this analysis in Chapter 8, and the complete program utilized in Appendix Exhibit 8-2.

is, there is almost no doubt that the IDC and ODC firms surveyed come from significantly different groups.

Conclusions and Recommendations

Results from the questionnaire reveal that costs of doing business for wholesale firms is a part of their location decision processes, but because this industry is so dependent on transportation, proximity to highway transportation is judged to be the most important factor. This conclusion is based on the response of question 2 which indicates strong preferences for locations in or near Denver city and county. Denver has much better highway access than surrounding counties and because all other factors studied failed to give Denver a clear comparative advantage in terms of location, it is felt that highway access is the prime reason.

Thus, while costs such as taxes, rent, wages, utilities and insurance are not to be neglected in analyzing the location decisions of firms in SIC 50 in the Denver area, they are secondary to access to highway transportation in determining location. Transportation is the largest incentive in attracting wholesale. Centrality with respect to market seems to be related to availability of transportation, and Denver is central with respect to the surrounding counties as well as several western states.

In conclusion, this chapter has yielded information from which inferences useful to policy formulation and strategy by Denver city and county were drawn. First and deemed most important, is the inference that warehouses and transportation centers are prime locational factors to wholesalers and tend to be found in groups. To encourage the continued growth of the wholesale industry in Denver, future city policies should be geared to maintaining a superior transportation network for highway truck travel. Warehouses must not be discouraged in or near wholesale trade centers. Trans-

portation by rail, with an eye on the continuing energy shortage, must be provided as a viable alternative to trucking. High quality transportation is the key to maintaining the wholesale industry in Denver.

Second, it may be inferred that given a choice of two locations with equal transportation facilities, a wholesaler will then consider cost factors in picking a location. Because of improving transportation facilities in the surrounding counties (increased competition for wholesale relocations or establishments), Denver city and county's policy toward industry must deal with maintaining an adequate level of public services such as police and fire protection, water supply, etc. and most important, must provide for a means of advertising its cost and other advantages to prospective firms.

CHAPTER 11

KEY INDUSTRY GROWTH AND ITS IMPACT OF CITY REVENUES AND EXPENDITURES

Introduction

The growth of the three key industries in Denver, as indicated by the shift-share analysis in Chapter 3, has been greater than would have occurred from 1959-1971 if they had grown only at the national rate. The main question raised in this chapter is what was the impact of this differentially high growth on the revenues and expenditures of the Denver city and county government. It is hypothesized that the net effect of growth in these industries on the city fisc has been positive, e.g., that revenues have increased more than expenditures. If, on the basis of the estimates generated from available data, the hypothesis can be accepted, there is reason to suggest, a priori, that the city might look more carefully at the net effect of its policies on the industrial base.

Method and Scope of the Analysis

The method followed in this chapter consists of estimating both revenues and expenditures for each of the three key industries. First, per employee estimates are generated and then these are multiplied by the number of additional employees that Denver experienced from 1959-1971 due to a differentially high regional growth component as defined by shift-share analysis. For example, if the three key industries had grown only at the national rate from 1959-1971, they would have added 5,548 fewer jobs than they actually did. The additional revenue which these incremental employees brought to the fiscal

coffers of Denver less the additional expenditures they gave rise to provides a rough and ready estimate of their net fiscal effect on the city.

Estimates of Revenues

The revenue of local government is affected in basically four ways by growth as defined: (1) sales tax receipts, (2) occupational tax receipts, (3) property taxes on businesses as applied to inventories and fixed assets, and (4) property taxes as levied on individual residential properties. Each of these is considered in turn.

Sales Tax Receipts. Table 11-1 indicates the calculation procedure for estimating sales tax receipts. Line (3) in the table shows the number of employees in each industry which may be attributed to local factors. The number is a residual derived by subtracting employment due to national trends from total employment. For each industry, calculations begin with the average wage per worker as published by County Business Patterns. Several deductions are made from this to arrive at an estimate of personal expenditures subject to the sales tax. These include social security taxes, income taxes, savings, and expenditures for other than sales taxable items. The notes to Table 11-1 indicate the sources for the data and estimates. In line (10) an adjustment is made for the estimated 15 percent of income which is spent outside of Denver, and in line (11) the city sales tax per worker of 3 percent is calculated. This is then multiplied in line (12) by the number of employees due to local factors. The results are an estimate of sales tax Denver collected due to its higher rate of employment growth in the three key industries.

Note that the amount varies among the three industries based on the number of local-factor employees (the greater the number the greater the taxes collected), and the average wage. Thus, for example, despite a relatively low average wage, SIC 58 (retail eating and drinking establishments) contributed a relatively large amount of revenue due to sizeable local employment growth.

TABLE 11-1

CALCULATION OF DENVER SALES TAX RECEIPTS FROM EMPLOYEES OF THREE KEY INDUSTRIES, 1971

Item	Amount by SIC		
	SIC 36	SIC 50	SIC 58
(1) Total Number of Employees[a]	3,799	30,502	12,325
(2) Employees due to National Growth[a]	1,247	29,585	10,246
(3) Employees due to Local Factors[a]	2,552	917	2,079
(4) Average Wage per Worker[b]	$ 8,320	$ 8,696	$ 2,843
(5) Less Social Security Tax[c]	300	313	102
	8,020	8,383	2,741
(6) Less Income Tax[d]	1,206	1,261	412
(7) Disposal Personal Income	6,814	7,122	2,329
(8) Consumption Expenditure (91%)	6,200	6,481	2,119
(9) Expenditure Subject to Sales Tax (68%)[f]	4,216	4,407	2,882[g]
(10) Proportion spent in Denver[h]	3,584	3,746	2,450
(11) City Sales Tax Collected (3%)[i]	107	112	73
(12) Total Sales Tax Due to Local Employment (3) times (11)[j]	$273,064	$102,704	$151,767

[a]Shift-share analysis of Chapter 3.

[b]County Business Patterns, payroll as of March 15, 1971.

[c]Calculated at 3.6 percent. Source: Statistical Abstract of the United States, and Survey of Current Buying Power.

[d]Source same as C. Calculated at 14.5 percent.

[e]Source same as C. Calculated at 91 percent of disposable personal income.

[f]Source same as C. Calculated at 68 percent of personal consumption expenditures.

[g]Includes addition of tips estimated at 50 percent of income.

[h]Estimated at 85 percent.

[i]The Denver city sales tax rate is 3 percent.

[j]Employees due to local factors (3) times city sales tax per worker (11).

Occupational tax receipts. The city and county levies a flat-rate tax of $2 per month per worker for all employees within the local jurisdiction. At an annual rate of $24, SIC 36 employees contributed $61,248 (2,552 employees times $24) in 1971; SIC 50 employees contributed $22,008; and SIC 58 employees contributed $49,896. The amount is clearly a direct function of the absolute size of the local growth factor in employment increase. The total contribution of the three key industries in 1971 was $133,152.

Property taxes on business. Business has two types of property subject to tax: inventory and fixed assets. Table 11-2 presents the procedure used for estimating these two components of business property taxes. Using national data for sales and employment a sales per employee ratio was calculated for each industry. This was then multiplied by the total local-factor employment figure to get a total sales figure attributable to each industry. Using Dun and Bradstreet business ratios, inventories and fixed assets were calculated according to the details reflected in the notes to Table 11-2. Property taxes were then calculated directly by assuming an assessment level of 5 percent for inventory and 30 percent for fixed assets. The assessed value for each category for each industry was then multiplied by the city-county average total mill levy for 1970 to give the tax estimates shown in the last three rows of the table. It should be mentioned that these totals exclude revenue of the Denver school district since it is a separate jurisdiction from the city and county. City administrators are presumed to be primarily interested in revenues over which they have authority.

As can be seen in Table 11-2, SIC 36 (electrical machinery and supplies manufacturing) contributes a much larger amount of property tax than do the other two industries. This is so because of the heavy investment by this industry in inventory and fixed assets. The total property tax contribution

TABLE 11-2

CALCULATION OF DENVER PROPERTY TAXES ON INVENTORIES AND FIXED ASSETS OF THREE KEY INDUSTRIES, 1970

Item	Amount by SIC		
	SIC 36	SIC 50	SIC 58
(1) Total U.S. sales (000,000)[a]	$ 50,819	$246,643	$ 27,872
(2) U.S. Employment (000)[a]	1,268	3,824	2,483
(3) Ratio of Sales per Employee[b]	$ 40,078	$ 64,499	$ 11,225
(4) Employees due to Local Factors[c]	2,552	917	2,079
(5) Sales Needed to Support Local-Factor Employees (000)[d]	$102,279	$ 59,146	$ 23,337
(6) Inventory Needed to Support Sales in (5) (000)	$ 21,762[e]	$ 4,970[g]	$ 732[i]
(7) Fixed Assets Needed to Support Sales in (5) (000)	17,136[f]	1,923[h]	4,746[i]
(8) Tax on Inventory[j]	$ 29,258	$ 6,682	$ 984
(9) Tax on Fixed Assets[k]	$138,233	$ 15,512	$ 38,286
(10) Total City Business Property Tax	$167,491	$ 22,194	$ 39,270

[a]Source: Business Statistics, United States Department of Commerce.

[b]Row (1) divided by row (2).

[c]Based on shift-share analysis. See also Table 11-1 row (3).

[d]Row (3) times row (4).

[e]Based on a ratio of sales/inventory of 4.7. Source: Dun and Bradstreet, Key Business Ratios.

[f]Based on a sales/total net worth ratio of 2.68 and a fixed assets/total net worth ratio of 44.9. Source sames as e.

[g]Based on a sales/inventory ratio of 11.9. Source same as e.

[h]Based on a sales/total net worth ratio of 6.15 and a fixed asset/total net worth ratio of 20.0. Source same as e.

[i]Based on the following ratios: sales/net worth 5.9; fixed assets/net worth 1.2; inventory/net worth 0.185. Source: Statements of Robert Morris Associates, 1969.

[j]Taxed as personal property: assessed at 5 percent and taxed at a county mill levy of 26.89 mills.

[k]Taxed as commercial real property: assessed at 30 percent of market value and taxed at a mill levy of 26.89 mills.

to the city and county from business can be seen to be $228,955.

Individual property taxes. Individuals who both work and live in Denver city and county also contribute to the Denver treasury by paying property taxes on their private residences. This amount is difficult to estimate because of a number of unknowns including the percentage of employees who live and work in Denver in each industry, the average home value per worker by industry, and others. For purposes of this estimating procedure, it is assumed that each worker represents a breadwinner for a family (separate family and residence for each worker), and that a typical "worker" is the same in all three key industries.

Table 11-3 illustrates the procedure followed in estimating the tax revenue from this source. The proportion of total local-factor employment that both lives and works in Denver is estimated at 59.4 percent or 3,295. Dividing this group into both those who own and those who rent homes in the same proportion as the general population, then multiplying the number in each group by the median value of each type of residence provides estimates of gross property values for owners and renters. Applying the 30 percent assessment rate and the 26.89 mill local city-county levy produces the estimates of property taxes shown in lines (8), (10) and (11). In sum, $402,456 was realized by the city and county from private residences of these employees in 1970. Had Denver's rate of employment growth in the three key industries been only the national average, this amount of revenue would not have been realized in 1970.

Summary of revenue. A summary of the four main revenue sources discussed so far is presented in Table 11-4. This table includes only revenue realized by the city and county and excludes local school district revenue. This is presented in this way because the administrators for whom this report was

TABLE 11-3

CALCULATION OF DENVER PROPERTY TAXES ON RESIDENCES
OF KEY INDUSTRY EMPLOYEES WHO LIVE AND WORK IN DENVER, 1970

Item	All Key Industries
(1) Total Employement due to Local Factors[a]	5,548
(2) Proportion of Denver Employees Who Both Live and Work in Denver[b]	594
(3) Local-factor Employment Living and Working in Denver[c]	3,295
(4) Number Living in Owner-Occupied Housing (61.5%)[d]	2,026
(5) Number Living in Renter-Occupied Housing[e]	1,269
(6) Median Value of Owner Occupied Housing[f]	$ 19,100
(7) Gross Value of Owner-Occupied Housing (000)[g]	$ 38,697
(8) Property Tax Collected on Owner-Occupied Housing[h]	$312,165
(9) Gross value of Renter-Occupied Housing (000)[i]	$ 11,193
(10) Property Tax Collected on Renter-Occupied Housing	$ 90,291
(11) Total Individual Property Tax	$402,456

[a]Based on shift-share analysis of Chapter 3 (see Table 11-1).

[b]Of 278,139 total employees in 1970, 165,240 lived and worked in Denver for a percentage of 59.4 percent. Source: Colorado Population Project, Investigation of Commuting Patterns, 1970, Bureau of Census data, Business Research Division, University of Colorado, Boulder.

[c]Row (1) times row (2).

[d]Source: Bureau of the Census, General Housing Characteristics, 1970. Colorado 7-7.

[e]Row (3) minus row (4).

[f]Source same as d.

[g]Row (4) times row (6).

[h]Calculated as 30 percent assessed value of row (7) times 26.89 mills/total average Denver County mill levy for 1970 of 80.84 mills minus school levy of 53.95 mills).

[i]Calculated from data in source shown in note d as follows: median contract rent $105 per month times 12 months given annual rent of $1,260 times multiplier of 7 gives capitalized value of $8,820 (a reasonable multiple for the Denver market). $8,820 times 1,269 renters is a total value of $11,192,600.

TABLE 11-4

SUMMARY OF ESTIMATED DENVER TAX REVENUE IN 1970
DUE TO LOCAL GROWTH TREND IN THREE KEY INDUSTRIES

Source of Tax	Estimated Tax Collection, by SIC[a]			
	SIC 36[b]	SIC 50[b]	SIC 58[b]	Total
City Business Property Tax[c]	$167,491	$ 22,194	$ 39,270	$ 228,955
Inventory	29,258	6,682	984	36,924
Fixed Assets	138,233	15,512	38,286	192,031
Sales Tax	273,064	102,704	151,767	527,535
Occupational Tax	61,248	22,008	49,896	133,152
City Individual Property Tax[d]	185,124	66,520	150,812	402,456
Grand Total	$686,927	$213,426	$391,745	$1,292,098

[a]Due only to local employment growth in excess of national rate or increase. That is, if Denver employment had grown at the national rate, values in this table would be zero.

[b]SIC 36 is electrical equipment and supplies manufacturers; SIC 50 is wholesale trade; SIC 58 is retail eating and drinking establishments.

[c]Includes city and county mill levy only (excludes school district).

[d]Total allocated to SICs on basis of local-factor employment. Excludes school district portion.

Source: Summary of Tables 11-1, 11-2 and 11-3.

prepared are concerned only with city and county functions. Totals including school district property tax revenue are presented for reference purposes in Table 11-5.

Note in Table 11-4 that the individual property tax contributes the most revenue among the four categories, followed by the sales tax and the business property tax. In sum, $1,292,098 or $233 per worker was realized in 1970 from these four sources.

There are a number of additional, smaller fees and payments made by individuals to the Denver coffers. Denver city and county figures for 1970 would seem to indicate that these total in the neighborhood of $90 per worker.[1] Taking per worker figures, then, the total revenue per worker without schools is estimated at $323. Total revenue with school district funds is estimated at $540.

Estimates of Expenditures

The previous section identified the amount of revenue that local government realized from experiencing a growth rate in three key industries which was greater than the national trend. It is clear from that estimating procedure that the city/county has realized significant revenue.

Determining the amount of expenditure to allocate to that key industry growth is not so methodologically manageable. This is due to a number of conceptual problems. First, it is not clear how to allocate current versus capital spending. For the local-share growth of 5,548 jobs which was experienced in

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[1] Other revenue sources include: auto ownerhsip tax, franchise tax, business licenses and permits, non-business licenses and permits, fines and forfeits, charges for current services, revenue from other sources, and other revenue (general). Excluded is revenue from other governmental agencies. For 1970, the total amount in these categories was $24,888,080, or about $90 per worker. Source: Auditor's Annual Report, 1970. City and County of Denver, Colorado, p. 34.

TABLE 11-5

ESTIMATED DENVER CITY AND SCHOOL DISTRICT TAX REVENUE DUE TO LOCAL GROWTH TREND IN THREE KEY INDUSTRIES, 1970

Source of Tax	Estimated Tax Collection, by SIC[a]			
	SIC 36[b]	SIC 50[b]	SIC 58[b]	Total
Total Business Property Tax[c]	$ 456,573	$ 60,513	$107,059	$ 624,145
Inventory	79,757	18,216	2,683	100,656
Fixed Assets	376,816	42,297	104,376	523,489
Sales Tax	273,064	102,704	151,767	527,535
Occupational Tax	61,248	22,008	49,896	133,152
Total Individual Property Tax[d]	556,482	199,959	453,341	1,209,782
Grand Total	$1,347,367	$385,184	$762,063	$2,494,614

[a]Due only to local employment growth in excess of national rate or increase. That is, if Denver employment had grown at the national rate, values in this table would be zero.

[b]SIC 36 is electrical equipment and supplies manufacturers; SIC 50 is wholesale trade; SIC 58 is retail eating and drinking establishments.

[c]Includes school district property tax revenue.

[d]Allocated to SICs on basis of local-factor employment.

Source: Tables 11-1, 11-2, and 11-3.

the three industries it is doubtful that extensive additional capital demands were put on the city, especially in view of the fact that much of the employment increase came in the form of people who lived in suburban counties and commuted to Denver to work. At some point, however, it would become necessary to expand streets, sewer treatment capacity, fire station facilities and other relatively fixed or semi-variable costs. It is not clear to what extent capital expenditure should be included in the present calculations.

Another point of uncertainty lies with regard to specific spending categories to be included. From the point of view of the city and county, education spending should not be included since it is out of the jurisdiction of that body. Public welfare, it would seem, should be excluded since it is a county function which is funded almost entirely with federal and state shared funds. There are, in addition, a number of expenditure categories for which sufficient fees and user charges are realized by the city to make them self-supporting. In this category would fall water and sewer, hospitals (Denver General Hospital receives large amounts of revenue from patient services which cover much of the costs incurred), and airports (in Denver Stapleton International Airport provides revenue to the city from rental income and other fees to nearly pay for itself). In these cases it does not seem appropriate to include the very sizeable amounts of spending in the total allocable to the key industries.

After deliberation on the points outlined above and others, it was decided to include the following categories of spending in the expenditure total: general government, public safety (police, fire, correction, etc.), public works (highways, streets, parking), sanitation, recreation, health and hospitals, libraries, public employee retirement fund. In each of these cases only general expenditures were calculated (special revenues were excluded).[1]

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[1] Auditor's Annual Report, 1970, City and County of Denver, Colorado. p. 35.

On the basis of the categories listed, per worker expenditure for 1970 is estimated at $275. When education is included, total per worker spending is estimated at $553.[2] These estimates are subject to much judgement, and by varying assumptions about what is most realistically included in total expenditures the per worker amount can be varied substantially.

At this stage in the research it is not possible to conclusively accept the hypothesis that the net fiscal effect of key industry growth has been positive. However, it does appear that based on the assumptions made in this analysis there may be a small net reserve surplus ($323-$275 = $48) per worker for city and county workers. When school district revenue and expenditure is added there is a small deficit ($540-$553 = $-13).

Summary and Conclusions

The investigation reported in this chapter can be summarized in the following points.

1. Revenue in Denver is significantly impacted by the three key industries. As much as $1,292,098 has been estimated as having been realized directly by the city in 1970 just from the incremental growth Denver realized in excess of the national growth rate.

2. Different industries have markedly different revenue impacts on the city and county government. In SIC 36 (electrical equipment and supplies manufacturing), for example, total revenue was $686,927 from the four main sources, or $269 per employee. In SIC 58 (retail eating and drinking establishments) total revenue from four sources was $391,745 in 1970, or $188 per worker. The contribution of SIC 50 (wholesale trade) was $213,426 in 1970, or $232 per worker.

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[2]Total current expenses for the Denver County School District were $77,429,125 in 1969-1970, or $278 per worker. Source: Financial Information Colorado School Districts 1969-1970, Statistical Series No. 71-5, Denver: Colorado Dept. of Education, March, 1971, p. 15.

3. In considering industries which might be appropriate to encourage in shaping Denver's economic base, the city might consider the relative revenue impacts of the various industries, selecting those which best meet the overall needs and priorities of the city.

4. There is also a substantial impact on city expenditures from employment increases. However, due to the fact that many workers live out of Denver county and since some expenditure categories are indivisible and economies of scale and excess capacity in existing city systems further muddy the analytical waters, it is not possible to identify per worker incremental spending demands with much certainty. It has been estimated that Denver may have experienced a per worker average expenditure of $275 in 1970.

5. It is not clear what the net fiscal benefits are to growth in the key industries. However, it is possible that the city would experience a positive net revenue impact depending upon

a. Where new industry locates--locations in existing facilities or areas already supplied with social overhead capital facilities would involve much lower net costs than locations in new, previously undeveloped areas that needed to be supplied with sewage, water, and other services. Especially in Denver, since there has been an observed tendency for some firms to prefer out-of-Denver locations new industry might be encouraged to occupy facilities being vacated by out-migrants. In this case, it is fairly clear that the net effect of the new location would be positive in terms of local revenues.

b. The type of industry involved--industries with high fixed costs and thus high values of fixed assets contribute more in property taxes than more labor-intensive activities. Similarly, firms that pay higher than average wages will contribute more to the sales tax base (income) than lower

paying activities. In a similar way, each industry will have a unique revenue contribution to make and the contributions of each can and should be weighed.

More research is needed aimed specifically at the revenue and cost aspects of new industry location in order to conclusively accept or reject the hypothesis that the net effect is positive.

CHAPTER 12

IMPLICATIONS FOR DENVER GOVERNMENT POLICY AND ANALYSIS OF POLICY TOOLS

Introduction

The preceeding chapters have laid the groundwork for understanding the three key industries from the point of view of why they locate where they do. The purpose of this concluding chapter is to analyze the implications of the study for local government policies which can influence the location of industry.

It was suggested in Chapter 1 that an effort would be made to discover policies that the city could consider to influence location, keeping in mind that in the past the posture of local government has been largely passive. In Chapter 11, it was shown that growth in key industry activity in Denver has contributed significantly to the city's revenue base. Moreover, although estimates of per worker cost to the city must be interpreted with caution, it has been shown that there could well be a net positive financial benefit to the city per worker in some industries. If further analyses verified this hypothesis, it could perhaps be beneficial for responsible city decision-makers to consider the possibility of instituting policies to encourage selected industry growth.

Even if current attitudes stressing no-growth or slow-growth should prove to dominate in the long-run, it might still behoove city administrators to consider the possibility of policies which could be used to influence the mix of industry composing the existing economic base. The intended result of such an analysis might be the encouragement of industry with a greater positive fiscal contribution and the discouragement of industry with a net negative fiscal impact while maintaining the economic base at roughly the present level.

In any event, this chapter presents what has been learned about policy alternatives and their relative efficacy in influencing industrial location. The use to which such policy tools can be put may be determined by proper authorities. In a pioneering study in this area, Ruth Mace said that ". . .there is little question that these (local) officials through action of inaction affect industrial location determinations." It is a purpose of this analysis to present facts to help city administrators understand the implications of their decisions upon the industrial location decision process.

Categories of City Influence

While a large number of policies available to the city are to be considered in this chapter, they can be summarized well under seven main headings.

1. Efficient/effective municipal management
2. Continuing inventory of city facilities/services
3. Special city improvement efforts
4. Provision of information/public relations
5. Provision of industrial land/buildings
6. Other direct assistance (grants) to industry
7. Other areas of influence[1]

Each of these categories is discussed in turn, and related to each of the key industries.

Municipal Management. This category refers to the activities of the city in providing necessary city services in sufficient quantity, quality and variety. It extends to the areas of efficiency in terms of holding down costs of city

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[1]This list is based on a framework cited in Ruth Mace's, Industry and City Government, Chapel Hill, N.C.: Institute of Government, 1963, p. 3.

industrial buildings have been purchased and given away or sold to industry. Activities of this type have no doubt been effective in the past, and in some cases they have perhaps been justified. This is certainly an option available to Denver, but it is not a recommendation of this study. Rather, the conclusion which seems justified by the analysis in this report is similar to that stated in a Michigan report:

> . . .there is widespread appreciation of the need for providing adequate community facilities through enlightened action at the state and local levels. This does not seem to indicate a need for direct financial aid; rather, a genuine spirit of interest and cooperation in assisting the new firms to become established.[1]

There is another sense in which the provision of land and/or buildings could be facilitated by local government. To prospective new industry or existing industry considering an expansion a crucial element is enough land which is (1) located near transportation, and (2) served with utilities and all other city services, and (3) priced correctly and fairly. Victor Roterus has said:

> Failure to provide sufficient land for industry at good locations and to protect these reserves has not been recognized as a serious mistake. New industry, although it may prefer a central location, and is in a position to buy a premium site, is not likely to build in an area where land assembly is difficult.[2]

Denver, through application of planning and zoning functions, could make meaningful strides in this regard, especially as land continues to be used up and density increases. Participation of this type would differ from existing planning and zoning functions, which are being performed with great professionalism in Denver, in that it would have as its goal the facilitation of industry insofar as it improves the economic base. The emphasis would

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[1]Thomas P. Bergin and William F. Eagen, "How Effective are Industrial Development Programs?," Michigan Business Review (January 1960) p. 24.

[2]Victor Roterus, "Assembly of Land for Industry," an address. Washington, D. C.: United States Department of Commerce, 1961.

be on cooperation for mutual advantage rather than on regulation and control per se which accompanies much zoning.

Just having land available in suitable parcels and appropriately zoned is frequently a necessary though not a sufficient condition for effecting desired changes in the economic base. It is also necessary to have information on such land compiled and readily available, perhaps even distributed or publicized. This returns to the discussion of the previous section.

A specific type of land planning activity consists of the creation of planned industrial districts, or industrial parks. The Department of Commerce study of locational determinants discussed previously found that industry is very interested in this type of facility. However, from the surveys completed in this study, it has been determined that neither firms in Denver or in the surrounding counties have great interest in locations in industrial parks. Consequently, this is not a recommended policy tool for Denver. This statement does not abrogate, however, the suggestion that the City consider using its planning and zoning functions to identify and set aside, and perhaps even purchase, parcels of land which could then be pointed out to industry (or sold to industry if the city had purchased it.)

Other Direct Assistance to Industry. This category subsumes a wide range of activities that Denver could engage in. None of these is specifically recommended, but they are suggested as possibilities for the city's consideration. A partial, though not exhaustive, list might include the following:

1. Present general economic data on the local economy -- this is related to, but goes beyond, providing or publicizing information on city facilities and services.

2. Perform special feasibility studies -- this might consist of assigning staff members to gather data on, say, labor force characteristics or

availability for a particular firm. In view of the unemployment problem in Denver, which may get worse rather than better if trends continue as outlined in Chapter 2, this could be an opportunity for the city to help solve or mitigate a social problem which contributing to the growth of the tax base through acquisition of new industry.

3. Provide transportation -- this refers to providing complimentary cars or the like to those considering Denver as a location.

4. Provide escort -- this might range from having a staff member accompany a person throughout the city providing information and other assistance to meeting someone at the airport and assisting them find lodging.

5. Provide help in locating building or rental sites -- this is related to the efforts to assemble, gather and publicize land mentioned previously, but includes, in addition, continuing assistance to a person weighing alternative sites, etc.

While the list of tasks (policies) that the city government might engage in is almost without limit, it might be worthwhile to suggest a few more ideas for consideration.

1. Design and implement a set of incentives (tax forgiveness, e.g.).
2. Perform industrial engineering studies.
3. Provide cost accounting service.
4. Engage in trade promotion.
5. Provide management training.[1]

Another area for consideration might be training employees. This could be interpreted as a human resource-type of program as well as an industrial growth-type program.

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[1]This partial list was published in "Profile of the Jamaica Industrial Development Corporation," Industrial Research and Development News, Vol. II, No. 1 (January 1968), p. 36.

Item number one in the second list above is merely the tip of an iceberg in terms of what could be done by the city by way of making financial incentives available to the private sector. It is not a recommendation of this study that such activities be undertaken. It is felt that with all of the other advantages that Denver has and could have, such incentives are neither necessary nor warranted.

Other Areas of Local Government Influence. There are a number of additional policies which would be followed by Denver city and county government to influence the economic base through locating industry. Some of these could be used to encourage and some to discourage new industry. The purpose of this final section is to list and discuss some of these for consideration by local decision-makers.

Licensing. The city and county of Denver, through its licensing regulations and procedures, could exert significant influence on locating industry. Results of the survey of eating and drinking establishments, particularly, indicate that liquor licenses constitute an important factor in determining the success of such establishments. In many restaurants, the greatest profit margin is realized on liquor. Inability to acquire liquor licenses may discourage some firms from ever opening, and may result in marginal operations or failure for some others. It is suggested that encouragement could be given to restaurant establishments by making liquor licenses easier to acquire. Conversely, the limitation of such licenses could act as a partial deterrent to new eating/drinking establishments.

The city also has a licensing program for restaurants themselves, but it is felt that the requirements are realistic by most firms sampled. According to Dr. Keister at the Denver University School of Hotel Management, licensing procedures are negligible in their effect on new firms, provided,

of course, that they are reasonable. Very restrictive procedures and requirements could be used to discourage new restaurants no doubt. Among possible suggestions might be the consolidation of some licensing procedures (e.g., building permits, health, food licensing and others) to facilitate ease of entry to the industry.

Fees. The city and county charges a number of fees, for example, for opening new restaurants. These fees are not useful policy tools for encouraging new industry (according to Dr. Keister), but they could certainly be used to limit entry of new firms. By and large this investigation indicates that fees are not an important locational factor, and not an important policy tool to use in influencing new industry.

Does the Denver City/County Government Have an Industrial Development Responsibility?

A question implicit in all that has been presented thus far is does Denver have a responsibility for attempting to influence the economic base of the city through industrial location and expansion. This is clearly not a question which can be answered by research; it is, rather, a political question. As Ruth Mace has said:

> In each locality. . .the extent of municipal action will be conditioned by the preconception of the mayor as to his proper role in this area, and, of course, to a significant extent upon the competing demands for his time.[1]

There can be no conclusive answer to the question of municipal responsibility. All that can be done is to present an assessment of the importance of economic activity to the city, indeed, to the revenue which permits a city to operate, and then provide a range of options for possible action. This has been done.

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[1] Ibid.

To help in answering the question, it is to be emphasized that research has shown that the economic base of Denver is important to the well-being of the city. In large eastern cities in the throes of decay, a primary element in that decay is the erosion of the economic base, the outmigration of profitable industry and the people who run it. In Denver this has not yet happened, but the early warning signs of lower income gains and greater dependent population are beginning to show. It is not entirely clear that urban decay will ever overtake Denver even without strong public policies to insure it, but it is clear that the city can act in a positive fashion, within the confines of accepted public policy, to attempt to offset any potential decay and outmigration.

In a sense, the question as to whether the city has a responsibility is answered already. As Mace has said,

> It has been suggested. . .that whether or not city officials agree that there is a municipal responsibility to promote industrialization, they are all involved either positively or negatively in the effort as they go about their chief function of providing urban services to the community.[1]

In the final analysis the city does have a choice, however. It can govern the city more or less passively letting private market forces largely determine its socio-economic and financial fate. Or it can govern actively, using the policy tools at its disposal to shape and form the economic base to conform to its view of what the city should be. The research team, making a political choice, feels that active governorship is called for. But this is clearly a political decision.

> In the final analysis the people of each community will determine how far they want their governments to go in activities of this nature. Their decisions will undoubtedly depend upon economic conditions.[2]

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[1] Ibid.

[2] Ibid.

As a final note, it is important to stress that the choice for city government is not to either encourage activity or discourage it. The choice is not simply to grow or not to grow. The middle ground is the one which makes the most sense in view of the complex nature of the growth process itself. That middle ground consists of encouraging some industry in some areas to some extent while at the same time discouraging other, less desirable industries. The result is a gradual shaping and forming of the economic base to meet the city's needs whether those needs be reducing unemployment, increasing the tax base, rounding out the services provided, redeveloping deteriorated areas, or what have you. It is a conclusion of this research that the city can have some influence on the economic base; the wherewithal is extant if the will is also.

government so as to maintain stable and reasonable taxes and a safe rate of low-level bonded indebtedness. This is not a specific policy tool, but it is a factor of over-arching importance. In fact, in trying to achieve their goal the city government could be thwarted by a deteriorating economic base which could result in much higher tax demands on remaining businesses and individuals. On a more positive side, by paying close heed to the significance of the economic base in influencing taxes and expenditures, the city could facilitate its efforts to achieve good, efficient local management. Also, if it were deemed beneficial to encourage selected business-economic activity, a local government "household in order" would be a first prerequisite in accomplishing that end.

It is worthwhile noting that studies indicate that firms are aware and concerned about the overall quality of a community in making location decisions. For example, a study by Ruth Mace indicated a significant concern on the part of locating firms as well as those already situated in a community about city services like fire and police protection, transportation and others.[1] This is also verified by the survey results presented in chapters 8, 9 and 10 of this report. Electrical manufacturing firms in Denver, for example, are concerned about air pollution and parking problems, in particular. In addition, a United States Department of Commerce study entitled "Industrial Location Determinants, 1971-1975" also finds that city quality and city services are major location factors.[2]

In a sense this "good management" criterion prevades and undergirds all of the notions discussed in this chapter; it is considered to be very important based on the analysis presented.

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[1] Ruth Mace, Industry and City Government, op. cit.

[2] United States Department of Commerce, Industrial Location Determinants, 1971-1975, February 1973.

Continuing Inventory of City Facilities-Services. Essentially this category includes efforts to compile inventories of available services provided by the city, extant facilities (their quantity, location, cost, and others) and other factors. Such a set of inventories are vital for city planning, assessing impacts of growth on the government, providing information to the private sector and assisting in effective programs to influence the economic base. In effect, this consists of a continuous monitoring of government activities that potentially influence the economic base.

The research team conducted a preliminary and cursory investigation of the activity of this type done by the Denver city/county government. In fact, a considerable amount of valuable information is available from various sources, most notably the Planning Office. In addition, there are a number of sources (like the Denver Chamber of Commerce) which compile and make available a wide range of data. It would appear that a good information base exists, and that it is for the most part current. In terms of evaluating this as a policy tool, the city could consider more specific situations. Should a greater emphasis be placed on economic-base matters through establishment of official responsibility in one office, more detailed analysis of available data on city services and facilities might be undertaken. It is clear, also, that current, comprehensive inventories of data on facilities and services can serve as a valuable planning-management tool for the city in day to day operations as well.

One conclusion to emerge from the surveys presented in chapters 8, 9 and 10 was that business owners/managers appear to have distorted views of the relative costs as between Denver and the surrounding counties. The view that costs in Denver are sufficiently greater as to discourage location/expansion is not entirely born out by available data. The city could engage in efforts

to measure these costs more precisely and pass the resulting facts on to business sector decision-makers. This might serve, in part, to counteract the misconceptions which exist and which may tend to reinforce outmigration from the city.

Service-Facility Improvements. Of all the services which Denver local government provides, industry values most highly police protection and fire protection. Another important factor is zoning regulations. In general, firms in Denver are satisfied with the quality of these services at present. However, indications are that local services are important, and should the level of quality slip, it could influence future location patterns of industry. It is therefore important for the city to monitor and maintain public service systems.

Transportation emerges as perhaps the most important factor because of growing density in the central city and the importance of inter-urban distribution systems. This is best and most dramatically exemplified by respondents in the wholesale trade industry. Transportation is of prime importance in both the warehouse and distribution aspects of this industry. Especially significant are highway and expressway arteries, but rail and air facilities are also important. In many central cities across the country wholesale activity has tended to move to suburban locations in very great proportion. In Denver, however, the exodus has been relatively small as seen in Chapter 7. It has been concluded that the main reason for Denver's relatively good position at present is to be found in its excellent transportation facilities. For example, the interstate expressway system provides good truck access to the central city, and Stapleton International Airport can be reached from the center of town in as little as 20 minutes.

From the point of view of policy, Denver decision-makers would no doubt be well advised to maintain a high level of ground transportation access. Also, the relocation of Stapleton further away from Denver might cause a significant amount of economic activity to move out toward it, to the detriment of Denver city and county. Another factor to consider is that as mass transport efforts increase, there might be a tendency to relegate street improvements and maintenance to a lower priority position. This research suggests that such a move might be a mistake. Economic goods probably cannot be feasibly distributed by mass transportation facilities, and a growing, viable distribution system requires easy access and generally good transportation overall.

Some firms expressed concern with inadequate parking facilities near their establishments. Notably, firms in Denver city and county are much more concerned than those elsewhere in the metropolitan area. The provision of adequate parking, again related to higher density, is something the city might study more closely. Parking does tend to be a more or less localized problem, and will no doubt need to be approached on that basis.

A study is presently underway in the Denver Fire Department to determine ways to cut costs and improve service in the department. Utilizing University of Colorado research capability, the study promises to help effect sizeable cost savings. This type of activity is highly laudable in that it not only saves money in the long run, but it also improves the level of service offered and thereby has impacts on the city's economy. It is believed that additional efforts of this kind on the part of city government will have indirect spillover effects influencing the local economy.

Provision of Information/Public Relations. Activity of this type could be of two types: (1) delegating a department in city government with responsibility for collecting and providing information when requested, and (2) instituting an office to actively publicize various aspects of location.

Both of these assume that the overall policy goal is to encourage economic activity, and neither would be appropriate if the goal were active discouragement.

The first type of activity listed above is practiced in many cities, whereas the second is more controversial and may extend beyond the scope some think proper for city government.

Nonetheless, there is evidence to suggest that the business community is not aware of much that is relevant for location in Denver, and is, further, laboring under some misconceptions about city government and its attitudes and role relative to economic activity. In both cases efforts by local government to project a clear attitude or policy of encouragement and to publicize information which is favorable to Denver locations would tend to offset the observed misconceptions.

Examples of business attitudes and perceptions which may be working to the detriment of a strong economic base in Denver were discussed in chapters 8, 9 and 10. Among electrical equipment and supply manufacturing firms in Denver, for example, 41.3 percent feel the city government either discourages or "doesn't care" about its economy (industrial expansion). Moreover, there are more firms in the survey which are presently considering moving from Denver than there are firms outside Denver who would consider moving into Denver. This seems to suggest that the business community may consider it something of a liability to be located in Denver. Since this may not, in fact, be true, it might behoove the city to try to counter this attitude through publicity or other means should overall policy deem improved economic conditions to be a viable goal.[1]

[1]Cost data gathered for this study (which reflect higher costs in the suburbs) are based on past and present costs while plant location requires a judgment about future costs. These expectations may account for the inconsistencies which have been observed.

For purposes of discussion, it is interesting to note that some cities have extended the notion of public relations to the limit. Garwood, for example, notes that Colorado Springs really went out of the way for the Nestle Company.

> When the headquarters of the Nestle Candy Company was moved to Colorado Springs, approximately 120 members of the company were permanently moved to Colorado. Officials of the company cannot forget the warm welcome accorded to them by the city. Each member of the company and his family were met at the railroad depot by individual hosts, and they were escorted to their new homes or apartments, which had been secured for them by the civic officials of the city.[1]

Despite the fact that this took place several years ago, it is exemplary of the extent to which some have gone in the name of civic economic improvement. It is not proposed that Denver undertake to effect a policy of this specific kind, but it is suggested that research has shown that business is sensitive to local government attitudes and some overt effort to project a clear attitude can influence business location.

The Mace study alluded to earlier concluded in part by saying that:

> . . .city governments should make it their business to know what industry wants of them, and where they may be falling down in meeting legitimate needs. Where demands are fair and reasonable, and it is possible to do so, they should be met. Where it is not feasible to comply, the city's position should be made clear. . .[2]

What is being suggested, in essence, is that Denver be cognizant and sensitive concerning industry in the city and strive to keep open lines of communication.

Provision of Industrial Land and Buildings. A frequently observed practice in some smaller cities has been the assembling of industrial land which is then sold, sold at a reduced price, or given away to industry. Also,

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[1] As reported in Ruth Mace, op. cit., p. 6.

[2] Ibid, p. 6.