

Office of the Manhattan Borough President

DIAMOND AND JEWELRY INDUSTRIES STUDY

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TABLE OF CONTENTS

Executive Summary	3
Major Findings	7
Introduction	9
I. Methodology	11
II. Economic Impact of the Diamond and Jewelry Industries	15
New York City as a Center for Diamond and Jewelry Trade	15
Direct Employment Impacts	17
Labor Force Composition	19
Indirect Employment Impacts	21
Tax Base Contribution	22
<i>Personal Income Tax</i>	22
<i>Property Tax</i>	22
<i>Sales Tax</i>	22
III. Industry Structure	23
Firm Size	25
Overall Trends	25
Manufacturing	27
<i>Distribution</i>	27
<i>Manufacturing Process</i>	27
Design	29
Fabrication	29
Setting	29
Finishing	30
<i>Trends</i>	30
Wholesale	31
<i>Trends</i>	32
Retail	32
<i>Trends</i>	33
IV. Diamond Pathway	35
Commodity Characteristics	35
Control of Supply: From Mines to Markets	35

Wholesale	39
<i>Wholesale to Wholesale</i>	41
<i>Wholesale to Retail</i>	42
<i>Wholesale to Manufacturing</i>	42
Manufacturing	43
<i>Studying the Stone</i>	43
<i>Cutting</i>	44
<i>Bruting</i>	45
<i>Faceting</i>	45
V. Competition: Threats and Lessons	47
International	47
<i>Belgium</i>	48
<i>Israel</i>	50
<i>India</i>	50
Regional	51
<i>Los Angeles</i>	52
<i>Miami</i>	53
Lessons for New York	54
VI. Relocation	57
VII. The Needs of the Industry	65
Rent and Space	68
Insurance	68
Crime and Security	69
Development of International Markets	70
Technology	72
Training	75
Labor Costs and Supply	76
Image	78
Succession	79
VIII. Recommendations	81
Recommendation #1 - Establish a Partnership	82
Recommendation #2 - Improve Neighborhood Appearance	83
Recommendation #3 - Increase Security	83
Recommendation #4 - Market Training Programs	84
Recommendation #5 - Promote Exporting	85
Recommendation #6 - Improve Image	85
Recommendation #7 - Facilitate Succession	86

Appendix A - Mail in Survey

Appendix B - Interview Survey

Appendix C - Mail Survey Results: Frequencies

Appendix D - Mail Survey Results: Cross-Tabs by Firm Type

Appendix E - Indirect Economic Impacts: Input-Output Analysis

FIGURES

Figure 1 - Survey Delivery	11
Figure 2 - SIC Code Description	12
Figure 3 - Concentration of Employment in Manhattan	15
Figure 4 - Location Quotients of NY Diamond and Jewelry Industries Compared to Miami and LA	16
Figure 5 - Jewelry Employment in Manhattan, 1991	17
Figure 6 - Manufacturing Employment, Manhattan, 1989	18
Figure 7 - Wholesale Employment, Manhattan, 1989	19
Figure 8 - Ethnic Background of Employees	20
Figure 9 - Where Employees Live	21
Figure 10 - Largest Customers	23
Figure 11 - Largest Suppliers	24
Figure 12 - Jewelry Employment in Manhattan, 1976-1991, By Sector	25
Figure 13 - Jewelry Establishments in Manhattan, 1976-1991, By Sector	26
Figure 14 - Manufacturing Distribution, 1986	27
Figure 15 - Jewelry Manufacturing Employment, Manhattan, 1976-1991	30
Figure 16 - Jewelry Wholesaling Employment, Manhattan, 1976-1991	32
Figure 17 - Jewelry Retailing Employment, Manhattan, 1876-1991	34
Figure 18 - World Diamond Production in Carats	36
Figure 19 - Final Demand for Diamonds, By Value, Retail Diamond Jewelry Sales	40
Figure 20 - Diamond Cutting	44
Figure 21 - Diamond Bruting	45

EXECUTIVE SUMMARY

This study provides a comprehensive picture of the New York City diamond and jewelry industries. It was initiated by Manhattan Borough President Ruth Messinger for several reasons. The diamond and jewelry industries combined represent the third-largest industry in Manhattan's manufacturing and wholesaling sectors based on employment, and the second-largest in wholesaling based on sales volume. The salient characteristics of the diamond and jewelry industries -- their highly-skilled workforces, low space demands, frequent firm interactions, and international nature -- make them particularly well-suited for success in New York. Despite the industries' importance and strengths, relatively little has been done to assist these industries, and relatively little has been known about them. This study documents the importance of the industries to New York, and provides a framework for their retention and expansion. With this information, government can make intelligent decisions about how to aid these industries.

While this report profiles both the jewelry and diamond industries, particular attention is given to the diamond industry. Government statistics combine the two industries under the heading of "jewelry" industry; the diamond industry is both one of the largest segments of this jewelry industry, and its most lucrative component.

The jewelry industry is composed of firms involved in the manufacture, wholesale and retail sale of jewelry. We have used the same conventions to describe the diamond industry: in the manufacturing sector, the manufacture of the rough stone into a polished diamond; and in the wholesale sector, the trade of rough and polished diamonds by diamond dealers and wholesalers. The retail sector for the diamond industry cannot be said to exist independently of the jewelry industry; consumers purchase most diamonds in diamond jewelry.

In fact, 87 percent of jewelry that is set with some precious stone is set with diamonds, and the most popular materials used in producing precious jewelry are gold and diamonds¹. This underlines the close connections between the industries. For a jewelry manufacturer, being close to the source of the supply of diamonds is an advantage. Similarly, it is advantageous to a diamond merchant to have a large customer base located nearby. As both industries, one directly, the other indirectly, have the same customer base, they share similar concerns as business people in New York.

Unfortunately, in many cases it is virtually impossible to obtain statistical data on the diamond industry as distinct from the jewelry industry. Wherever appropriate, this report specifically states whether information is applicable to the diamond industry, the jewelry industry or both industries.

¹United States International Trade Commission, *A Competitive Assessment of U.S. Jewelry - Phase II: Precious Jewelry*, September 1987.

The study was conducted in five distinct phases: 1) a literature search; 2) a survey of 279 jewelers and diamond dealers throughout Manhattan; 3) personal interviews with 20 jewelers and diamond dealers; 4) a focus group with industry leaders and experts to review the statistical findings; and (5) statistical research and analysis.

New York City is home to many diamond and jewelry businesses, encompassing design, manufacturing, wholesale, and retail operations. The city is one of the world's four diamond capitals, and has two diamond "bourses" -- special kinds of exchanges -- that attract buyers from around the world. The proximity of various sectors of jewelry and diamond production provides dynamism to the industry. As businesses cluster together, competition pushes the price of supplies down, firms can quickly replenish their inventories, market trends are communicated rapidly, and the industries are able to respond extremely quickly to changing market demands.

The New York City diamond and jewelry industries are at a key juncture. The next decade will be crucial to the future of the industries both in the U.S. and abroad. The diamond industry worldwide is undergoing a period of transformation due to the emergence of new diamond centers, competitive pressure to use less expensive labor to process diamonds, growing markets, and the rise in new technology. Similar trends affect the jewelry industry. These trends will have a significant impact on the New York City industries.

In recent years, the interaction of these trends has caused the Diamond and Jewelry District to contract. The core of the industry remains in New York City, and the number of wholesale firms has even increased. There has been a significant decline, however, in manufacturing over the past decade.

The diamond and jewelry industries are an important component of New York City's economy. Contrary to popular belief, they provide well-paid employment opportunities for minorities and women. The diamond and jewelry industries provide substantial tax revenues and indirectly support related businesses. They produce very high-quality jewelry and diamonds for export. The presence of the industries in New York promotes New York City as a design capital, home to some of the world's most well-known fashion designers and artists, attracting tourists and consumers from around the world.

Jewelry and diamond firms in New York currently face serious problems that hurt their competitiveness. Many of the problems that affect these firms are similar to those other small businesses face, including high rents and overhead costs. However, jewelry and diamond firms have extra burdens because of the high value of their products. Insurance costs and security considerations are particularly burdensome. Many of these firms also face serious and unique problems finding new owners to replace retiring owners.

Other diamond capitals receive significant amounts of government support. Given both the importance of the industries to New York City and their growth potential, the

diamond and jewelry industries should receive similar help. The study makes the following recommendations:

- ◆ Establish a public-private partnership between New York City and the diamond and jewelry industries to determine industry needs and develop and implement responsive programs.
- ◆ Improve the image of the Diamond and Jewelry District.
- ◆ Increase security.
- ◆ Expand and market training programs.
- ◆ Promote the export of diamonds and jewelry.
- ◆ Promote research into emerging technologies utilized in diamond and jewelry manufacturing.
- ◆ Establish training programs for individuals involved in the diamond and jewelry industries.
- ◆ Facilitate succession -- the transfer of business at an owner's retirement.

The public-private partnership between the City and the jewelry and diamond industries will serve as an umbrella organization to coordinate on these and others issues as they arise.

MAJOR FINDINGS

New York City is a world center for diamond and jewelry manufacturing and marketing. These industries have a significant impact on the New York City economy:

- ◆ Approximately 30 percent of the world's diamond jewelry is sold in the United States. 95 percent of the diamonds that enter the United States pass through New York City.
- ◆ Jewelry and diamonds are significant export industries for New York City.
- ◆ 84 percent of firms agree that a Manhattan location is crucial to their businesses and 71 percent report that they are not likely to move in the next two years.
- ◆ 23,124 people were employed in the diamond and jewelry industry in Manhattan alone in 1991.
- ◆ 11,220 additional jobs were created in the region as a result of jewelry industry activity and employment in New York City.
- Almost 25 percent of all national employment in the jewelry and diamond industries is in New York City.

Contrary to popular perception, this industry is an important employer for many communities in New York City:

- ◆ 57 percent of diamond and jewelry employees are non-white or Latino.
- ◆ The ratio between male and female employees is 57:43.

However, the industry faces large obstacles:

- ◆ 45 percent of the business owners responding to our survey did not have a successor planned for the business.
- ◆ 43 percent of the firms had problems attracting or finding skilled workers.
- ◆ The most important problems facing the industries reported by 75 percent of firms surveyed were: the cost of doing business (taxes, rent and insurance); the state of the economy; and crime.
- ◆ International competition was also a major problem for diamond and jewelry firms.

Significantly:

- ◆ 91 percent of the respondents felt that the City has not made significant efforts to keep the jewelry industry in New York.

INTRODUCTION

As products, jewelry and diamonds have all the characteristics that economic development professionals and academics suggest are necessary for manufacturing to succeed in such a high cost environment as New York City. The diamond and jewelry industries require an extraordinarily highly-skilled workforce and relatively little production space. New York offers critically important proximity to suppliers and customers. Finally, because of the skill required both in design and production, jewelry and diamonds are high value-added commodities.

Though a very visible force on several prime blocks of midtown Manhattan and other areas, the jewelry and diamond industries have received little attention from government. While there are many popular stereotypes about their workforce, until now there has been little hard information. Without such information, government cannot make intelligent decisions. Public officials cannot predict the effect of a program or determine if additional assistance is justified without knowing the structure and economic impact of an industry.

Finally, if additional assistance is justified, the most efficient way to deliver those services must be mapped out. While all businesses may have some common needs, each industry also has its own unique needs. Government assistance should be responsive to these needs and not be based on the preconceived notions of policy makers or on an idealized or generic model of a business.

The study had the following specific objectives:

1. To determine the economic impact of the jewelry and diamond industries;
2. To determine the needs of these industries; and,
3. To develop mechanisms to meet industry needs.

While this report is concerned with meeting these objectives for both the diamond and jewelry industries, particular attention is given to the diamond industry. These industries, though extremely interrelated, are nonetheless distinct. Much as the rubber industry is distinct from the automobile industry, even though rubber is used primarily for auto tires, diamonds are a distinct commodity, mined, manufactured and traded before entering the jewelry manufacturing process.

For the purpose of this study, a jeweler buys and sells finished pieces with a broad variety of gem stones while a diamond dealer or diamantaire buys and sells loose stones. Wherever appropriate, this report specifically states whether information applies to diamonds, jewelry, or both.

Sequence of the Report

The study is divided into seven parts. The **Introduction** describes the objectives of the study. The **Methodology** chapter outlines information sources and methods of analyzing this information. The **Economic Impact of the Diamond and Jewelry Industries** section documents the economic contribution of the industries to New York City. The **Industry Structure** section describes the different sectors of the New York City jewelry industry, the interrelationships between these sectors, and industry trends. The **Diamond Pathway** section focuses on the diamond industry, describing the relationship between the New York industry and the international diamond market, and the different sectors within this industry. The section on **Competition: Threats and Lessons** examines the diamond industries in Antwerp, Ramat Gan, and Bombay and draws parallels and distinctions between these industries and the New York industry. The **Relocation** section assesses the relative threat of relocation on the jewelry and diamond industries. The section on **The Needs of the Industry** examines the needs of the industries. Lastly, the **Recommendations** section addresses mechanisms for change.

Though this study was originally conceived of and initiated by the Manhattan Borough President, it reflects a "group effort." An undertaking of this magnitude would be very difficult without the assistance of many parties. Much of the survey and interview data was gathered by graduate students from Columbia University's Graduate Program in Public Policy and Administration under the direction of Professor Robert Bailey. Equally essential for this effort was the industries's participation, which took many forms: the cooperation of individual firm owners; the advice and assistance of industry experts and representatives of industry organizations; and the sponsorship and support of specific tasks by industry organizations. Finally, the support of other public agencies in the collection and interpretation of data filled in important informational gaps.

Such a group effort not only helps to leverage limited government resources; it also produces a better product. Assisting businesses to articulate their own needs and involving them in the decision-making process helps to ensure that the recommendations and programs are responsive and successful, and helps to improve communications between government and the business community. The process of undertaking the study should itself begin to help the industry.

I. METHODOLOGY

A variety of research tools was used to provide a comprehensive profile of the New York City diamond and jewelry industries. These tools included a survey of 279 jewelry and diamond firms, 20 interviews, a literature review, and an analysis of statistical information obtained from federal, state, and local government sources.

Direct feedback from the industries was obtained via a mail-in questionnaire and a series of face-to-face interviews based on a survey instrument. The results of the surveys and interviews were presented to a focus group composed of industry leaders, business owners, and manufacturers. The focus group provided a "reality check" to examine whether the analysis of the statistics corresponded with their view of the industry.

The salient variables in both the mail-in and oral questionnaires included: longevity of business activity in New York; type of business (manufacturing, wholesale, and retail); the needs of the industry; market trends; employment practices; and general impressions of doing business in New York City (see Appendices A and B).

The mail-in survey was sent to 3,819 owners of firms involved in the manufacture, wholesale, and retail of diamonds and jewelry (see Figure 1). While ideally the sample sought to capture a representative cross-section of the New York City diamond and jewelry industries, the survey is weighted towards wholesalers and manufacturers of diamonds and jewelry (under-representing retailers). Because the majority of surveys were sent to members of the Diamond Dealers Club (DDC), all of whom deal in loose diamonds, generally on the wholesale and manufacturing levels, diamond firms are better represented than jewelry firms. The only place retailers would be represented would be in the membership of the New York State Jewelers Association which also was surveyed. The Manufacturing Jewelers and Silversmiths of America represents jewelry manufacturers who work with a diversity of materials and also were surveyed. Finally, firms classified as dealing in gemstones (emeralds, rubies and sapphires) and pearls, or jewelry manufacturing from the 10036 zip code (generally recognized as the Jewelry and Diamond District) were surveyed from the Diamond Gem and Jewelry Trade Directory.

Figure 1

Affiliation	Number of Surveys Sent
Diamond Dealers Club	2,000
Diamond Gem and Jewelry Trade Directory	619
New York State Jewelry Association	700
Manufacturing Jewelers, and Silversmiths of America	500

The mail-in survey data was quantitatively analyzed. Frequency distributions and cross-tabulations on firm type were prepared (see Appendix C and D).

Firms were selected for interview from a random sample taken from the Diamond Gem and Jewelry Trade Directory. Some of these firms refused to be interviewed. To supplement this list, some associations provided additional referrals for interviews. The face-to-face questionnaire data is used mainly as background material and as textual support for quantitative results. Experts in the field were also interviewed, as were some of the heads of diamond and jewelry organizations. In all, over 30 persons were interviewed for this study.

A literature review was conducted at various libraries, including the New York Public Library, the Census Repository, and the Export Library of the Department of Commerce. A magazine and newspaper search was conducted for the years 1980 to 1992. The literature review also includes industry periodicals.

We have used statistical data generated by federal, state and city agencies to measure the size of New York's diamond industry and its economic impact. Published federal reports include the Department of Commerce's *County Business Patterns*, and the *Censuses of Manufactures, Retail Trade and Wholesale Trade*. These reports are available up to 1989 in the case of *County Business Patterns*, and 1987 for the *Economic Censuses*. In some cases, more current employment figures were obtained from the State Department of Labor.

In most cases, we have used statistics for Manhattan, as this is the center of diamond and jewelry activity. This data is focused solely on the jewelry industry, without distinguishing the diamond industry. In fact, the diamond industry, for these purposes, is considered a subset of the jewelry industry. Jewelry manufacturing, wholesaling and retailing are classified separately by the federal government's Standard Industrial Classifications (SIC codes). Diamond manufacturing would fall under the category of jewelry manufacturing and diamond trading would be categorized under wholesale jewelry. These categories were used to conduct most of our analysis (see Figure 2).

Figure 2

Primary Activity	SIC Code	Description
Manufacture	391	Jewelry, Silverware & Plated Wire
	or	
	3911 and 3915	Jewelry, Precious Metal Jewelers' Findings and Materials and Lapidary Work
Wholesale	5094	Jewelry and Precious Stones
Retail	5944	Jewelry Stores

These codes capture both diamond and non-diamond related activity. For instance, a diamond might be found in both 3911 and 3915, yet non-diamond jewelry is also included. In wholesale and retail classifications, costume jewelry is included within these categories. Data obtained from the City Department of Finance and the State Department of Taxation and Finance are based primarily on similar industry classifications.

II. ECONOMIC IMPACT OF THE DIAMOND AND JEWELRY INDUSTRIES

The diamond and jewelry industries contribute substantially to the City's economy through tax contributions, direct employment and payroll contributions, and indirect employment impacts (i.e., the people who work in jobs that depend on the diamond industry).

New York City as a Center of Diamond and Jewelry Trade and Export

New York City, and Manhattan in particular, is a center for the jewelry and diamond industries. Manhattan accounts for only two percent of national employment, but almost twenty-five percent of employment in what the federal government classifies as jewelry wholesaling, which includes diamond merchants' activities (see Figure 3).

CONCENTRATION OF EMPLOYMENT IN MANHATTAN			
	Number of Employees		Manhattan Employment as a Percentage of National Employment
	United States	Manhattan	
All Industries	91,631,203	2,047,932	2.23 %
Jewelry Manufacturing	48,554	9,218	18.99 %
Jewelry Wholesale	46,734	11,338	24.26 %
Jewelry Retail	159,444	4,326	2.71 %

Source: US Department of Commerce, COUNTY BUSINESS PATTERNS, 1989.

Figure 3

Manhattan's diamond and jewelry industries have extremely high "location quotients," a measurement of the degree to which an industry exceeds regional demand and therefore

"exports" outside the region². New York's dominance in this respect can be seen clearly by comparing its location quotients to those of such major competitors as Los Angeles and Miami (see Figure 4).

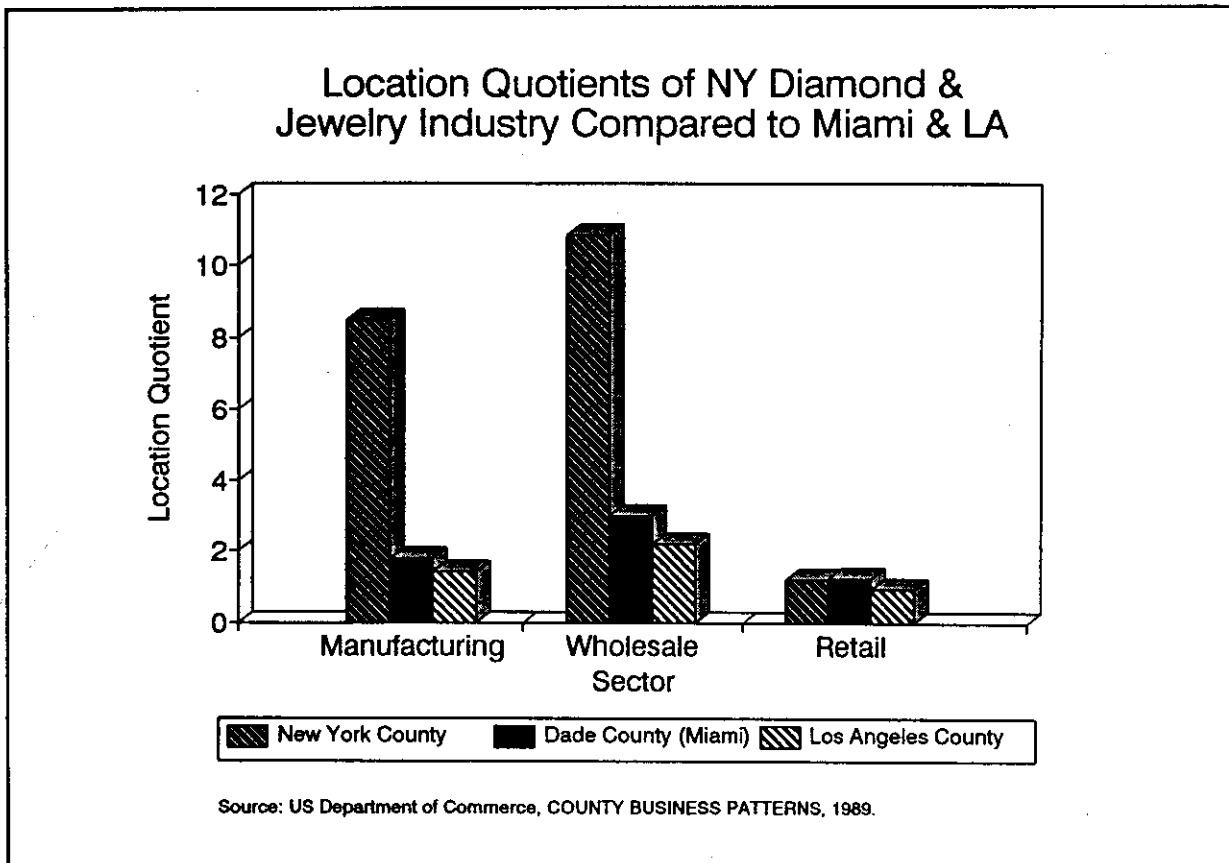


Figure 4

The industries draw income into New York from these exports. As can be seen from Figure 4, manufacturing and wholesale are the outstanding features of the New York diamond and jewelry industries.

² Location quotients measure the relative concentration of employment in a location. A location quotient of 1, for example, would mean that Manhattan employed a share of people in jewelry close to a national average. In other words, if in the U.S., .5% of the workforce were employed in jewelry manufacture, we would expect .5% of Manhattan's workforce to be employed in jewelry manufacture, representing a location quotient of 1. If, instead, 1% of Manhattan's workforce were employed in jewelry manufacture, the location quotient would be 2. The theory behind location quotients is that a location quotient greater than one indicates that more is being produced than is regionally consumed, and that the region is exporting the remainder for income into the region.

Direct Employment

The diamond and jewelry industries employed 23,124 people in 1991 in the wholesale, retail and manufacturing sectors (see Figure 5). In comparison, in 1990, only 11,717 persons worked directly in the more high-profile commodities industry in New York³.

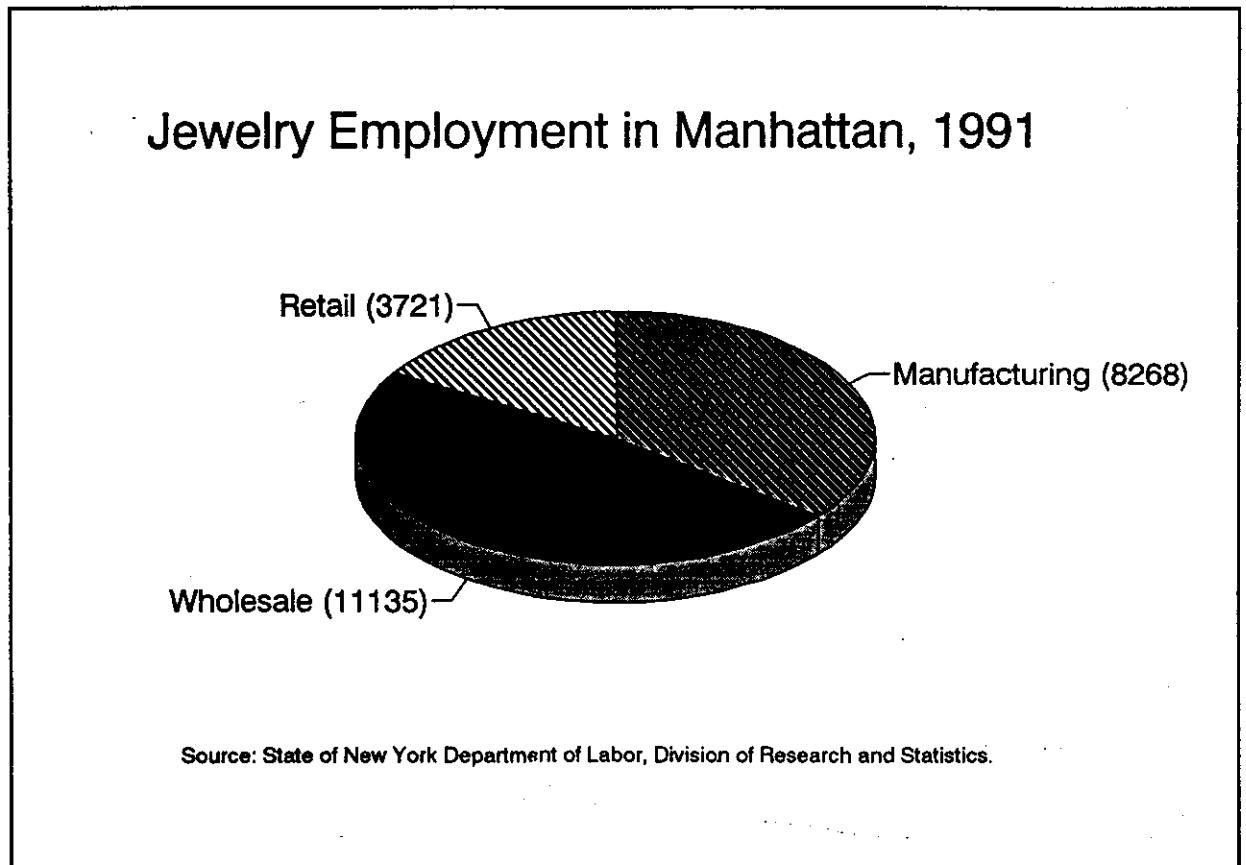


Figure 5

³ Urbanomics, *Economic and Fiscal Impact Assessment of the New York Commodities Industry*, 1990.

Jewelry manufacture (including diamond manufacture) ranks as the third most important manufacturing industry in Manhattan in terms of employment (see Figure 6). In wholesale employment jewelry and diamonds also ranks third (see Figure 7).

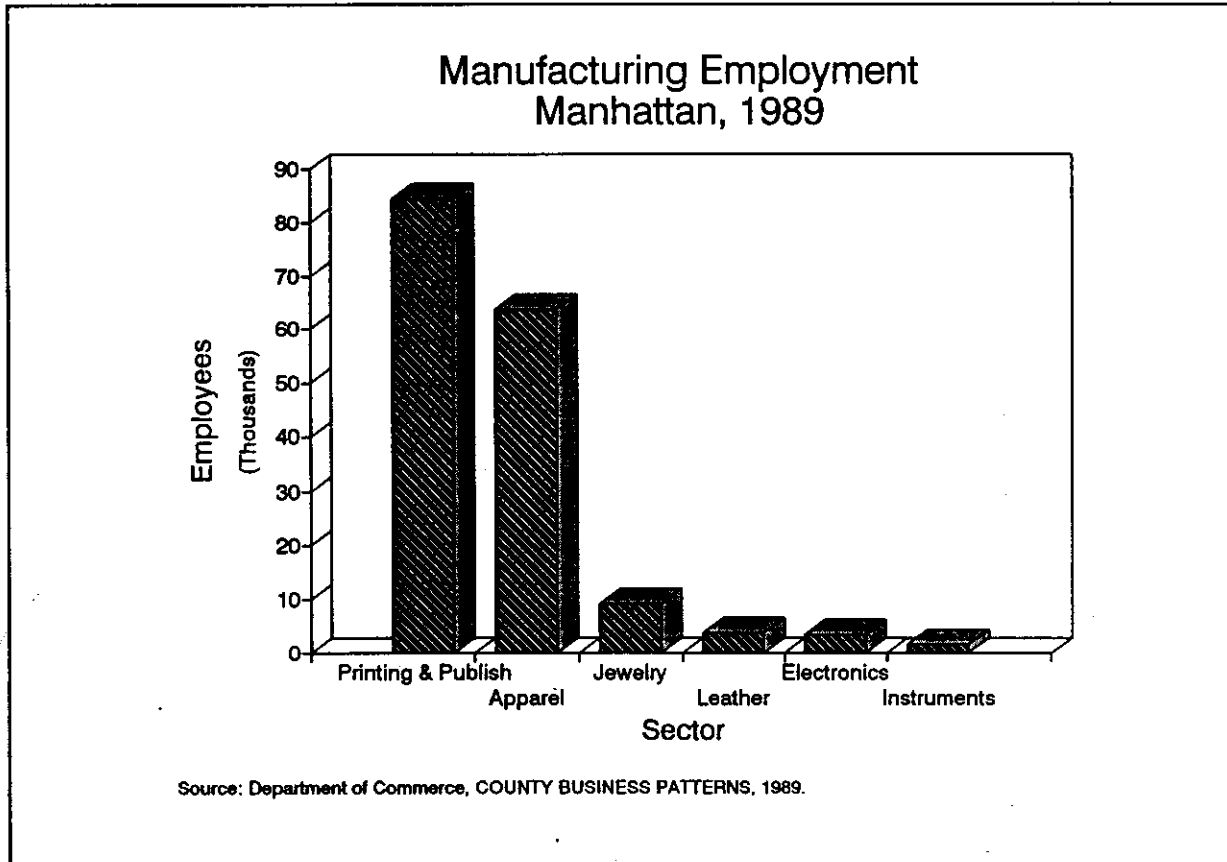
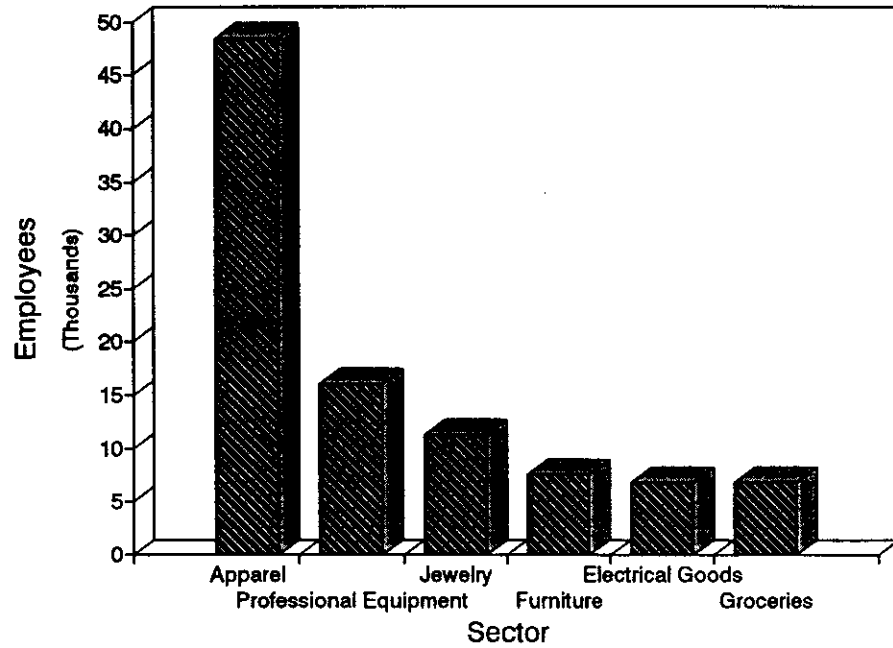


Figure 6

Wholesale Employment, Manhattan, 1989



Source: Department of Commerce, COUNTY BUSINESS PATTERNS, 1989.

Figure 7

Labor Force Composition

Contrary to popular belief, the survey results show that the jewelry and diamond industries employ a sizeable number of minorities and women.

Fifty-seven percent of employees are non-white or latino (see Figure 8), whereas the City's labor force is only 50.3% minority.⁴

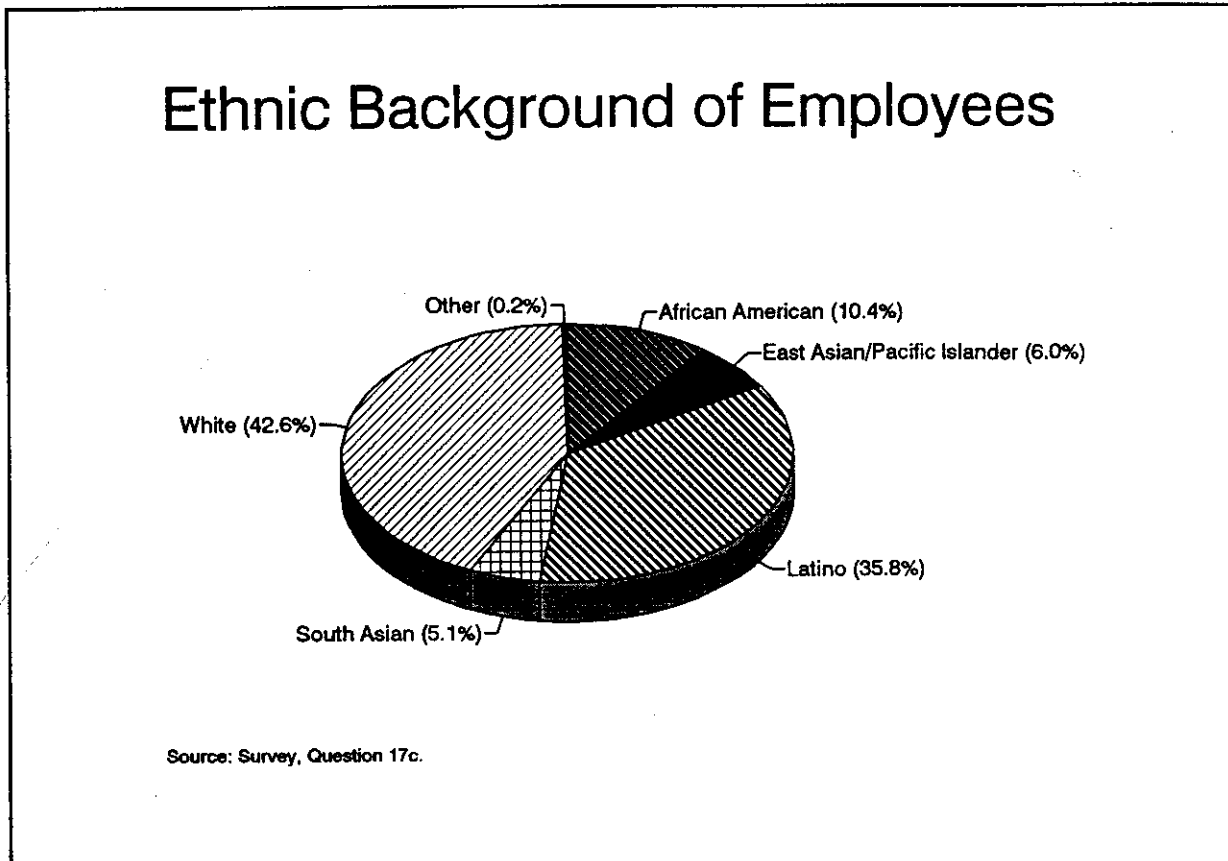


Figure 8

Women comprise 43 percent of the diamond and jewelry industries workforce.

⁴ Bureau of Labor Statistics, *News*, June 26, 1990.

The majority of the industries' employees live in New York City, increasing the effect on the City economy as the wages are spent here (see Figure 9).

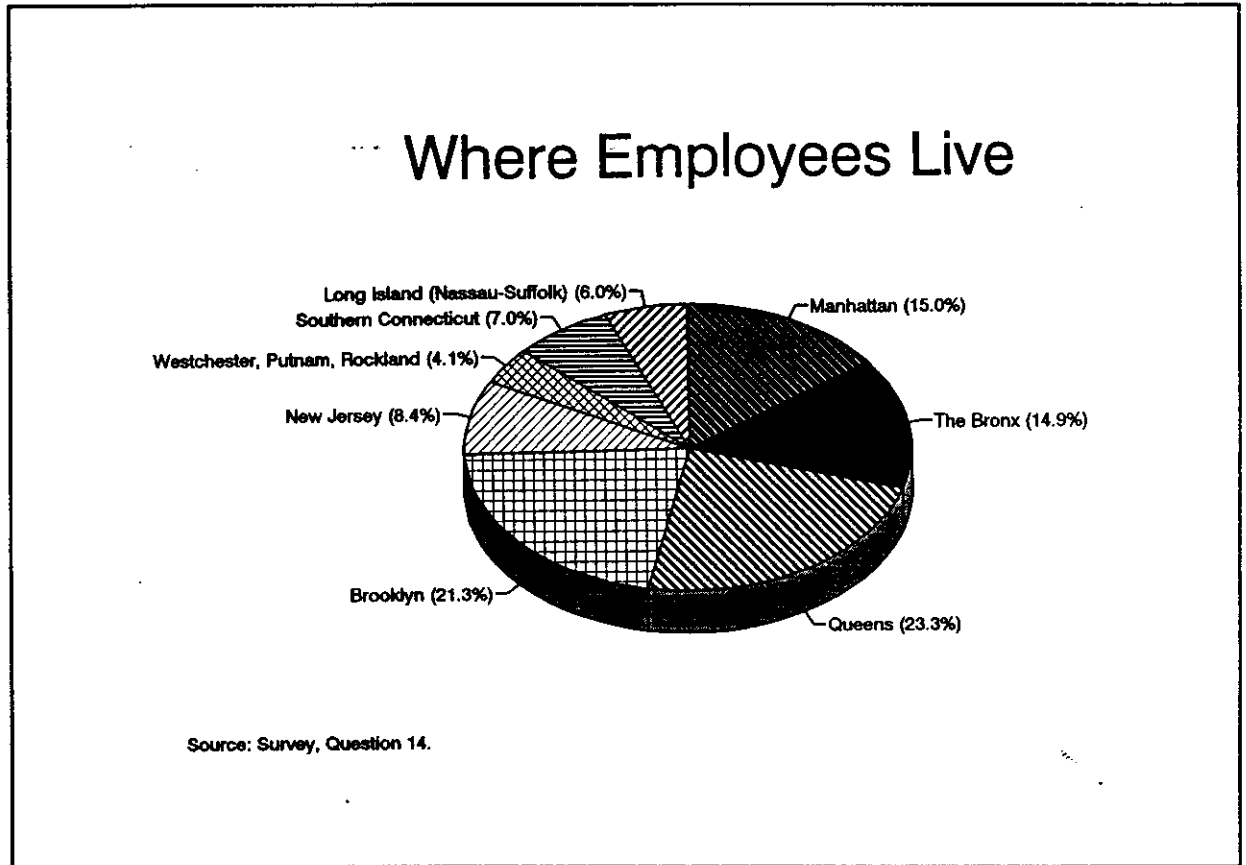


Figure 9

Indirect Employment Impacts

The diamond and jewelry industries also create jobs in real estate agencies, law firms, restaurants and in other industries related or impacted by the jewelry and diamond industries. Jewelry and diamond businesses also purchase goods from other industries. These impacts can be measured by using an input-output model of the regional economy. In 1991, the New York City diamond and jewelry industries produced 11,220 additional jobs in the 17-county region, according to the Port Authority of New York and New Jersey's input-output model of the economy (see Appendix D for more details).

Tax Base Contribution

The jewelry and diamond industries pay substantial sums to the City in the form of personal income taxes, property taxes, commercial rent taxes, unincorporated and incorporated business taxes, utility taxes and sales taxes. At a minimum, the industry contributes an estimated \$57 million to the City annually in personal income tax, property tax and sales tax contributions.

Personal Income Tax

Personal income taxes are estimated to generate \$13.75 million for the City. This calculation is based on estimated wages and an effective tax rate for residents and non-resident employees. Using 1991 payroll and employment figures from the New York Department of Labor for New York County (Manhattan), we have estimated the following average annual wage:

Manufacturing:	\$28,561
Wholesale:	\$37,201
Retail:	\$34,106

Effective tax rates were calculated using the rate schedule in effect and information on uses of standard and itemized deductions for taxpayers in these income ranges. This procedure was followed for non-residents, who make up 26% of the jewelry industry workforce.⁵

Property Taxes

Using New York City Department of Finance assessed values for the properties in the Diamond and Jewelry District (see Map A) and the official nominal rate for fiscal year 1992, we estimate a contribution of \$20 million. This is an underestimate, as not all of the diamond and jewelry companies are in the District.

Total Assessed Value:	\$188,823,712
Nominal Rate:	10.631%

Tax Contribution:	\$20,073,848
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Sales Tax

Using taxable sales and purchases reported to the New York State Department of Taxation for 1990, we estimate the diamond and jewelry industries contribute approximately \$24 million to the City in taxes.

⁵ This information is based on survey results.

III. INDUSTRY STRUCTURE

Historically, New York City has sustained a cluster of jewelry and diamond manufacturers, wholesalers, and retailers. The result is a network of producers and suppliers located within close proximity. Such a cluster facilitates transactions. Transactions are often further advanced by family networks that link people involved in different areas of the diamond and jewelry industries. For example, one setter we interviewed received much of his work from uncles who were involved in the industry as diamond dealers.

Because producers are in close geographic proximity to suppliers and customers, market trends are communicated rapidly. This gives the diamond and jewelry industries in New York a competitive advantage, as market information is quickly relayed and inventories can be replenished rapidly.

That this network is still strongly operational can be witnessed in the response to our survey. When asked where customers and suppliers were located, the majority of firms answered the Diamond and Jewelry District or Manhattan (see Figures 10 and 11).

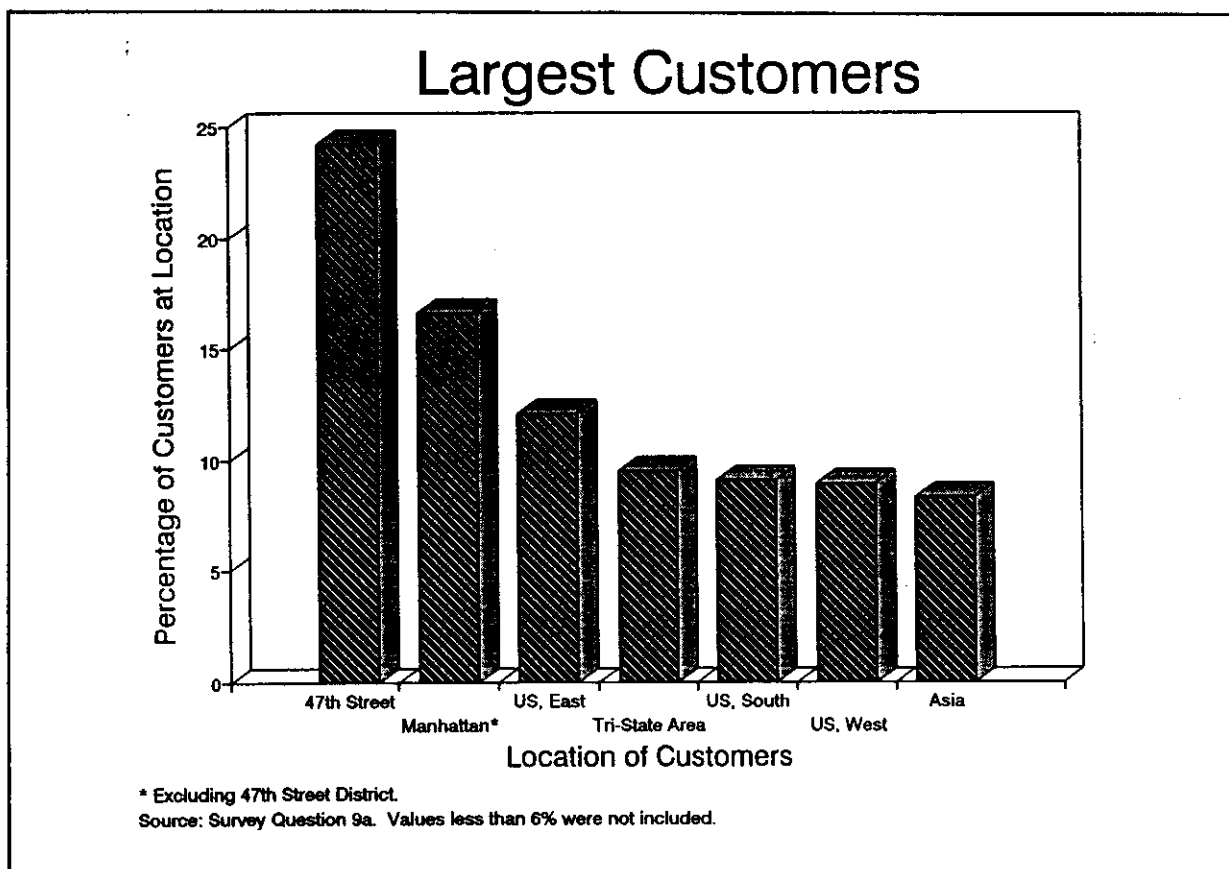
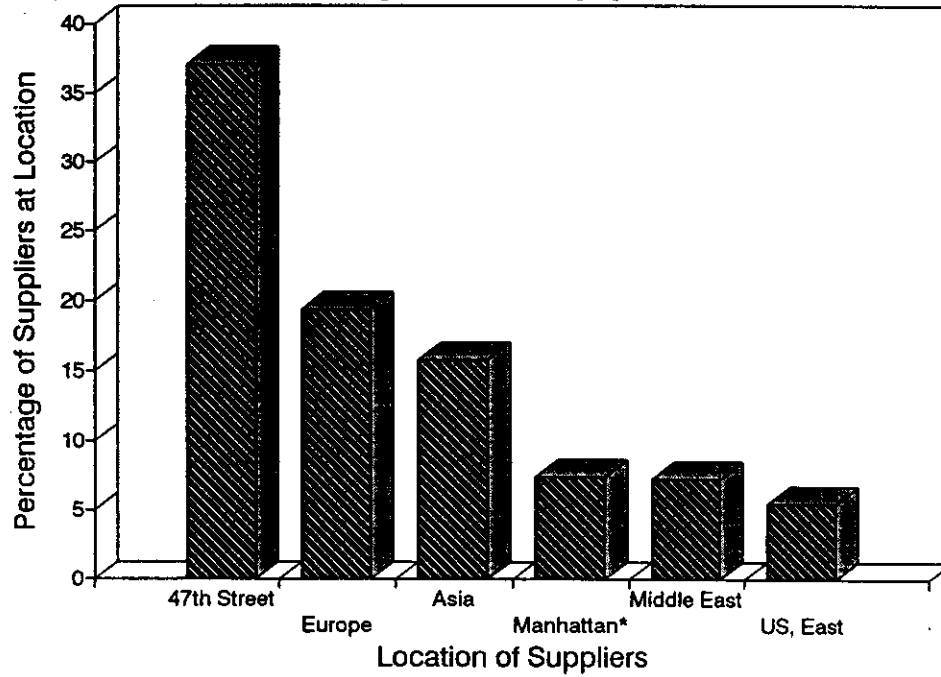


Figure 10

Largest Suppliers



* Excluding 47th Street District.

Source: Survey, Question 9b. Excluding locations with less than 5% of suppliers.

Figure 11

Firm Size

In 1989, ninety-nine percent of jewelry firms in Manhattan employed fewer than 100 employees. The survey sample showed that 70 percent of the firms had ten or fewer employees, and only 5 percent had fifty or more employees.

Overall Trends

In 1991, the number of business establishments in Manhattan involved in jewelry, diamonds and precious metals totaled 3,475, with a total of 23,124 employees (see Figure 12).

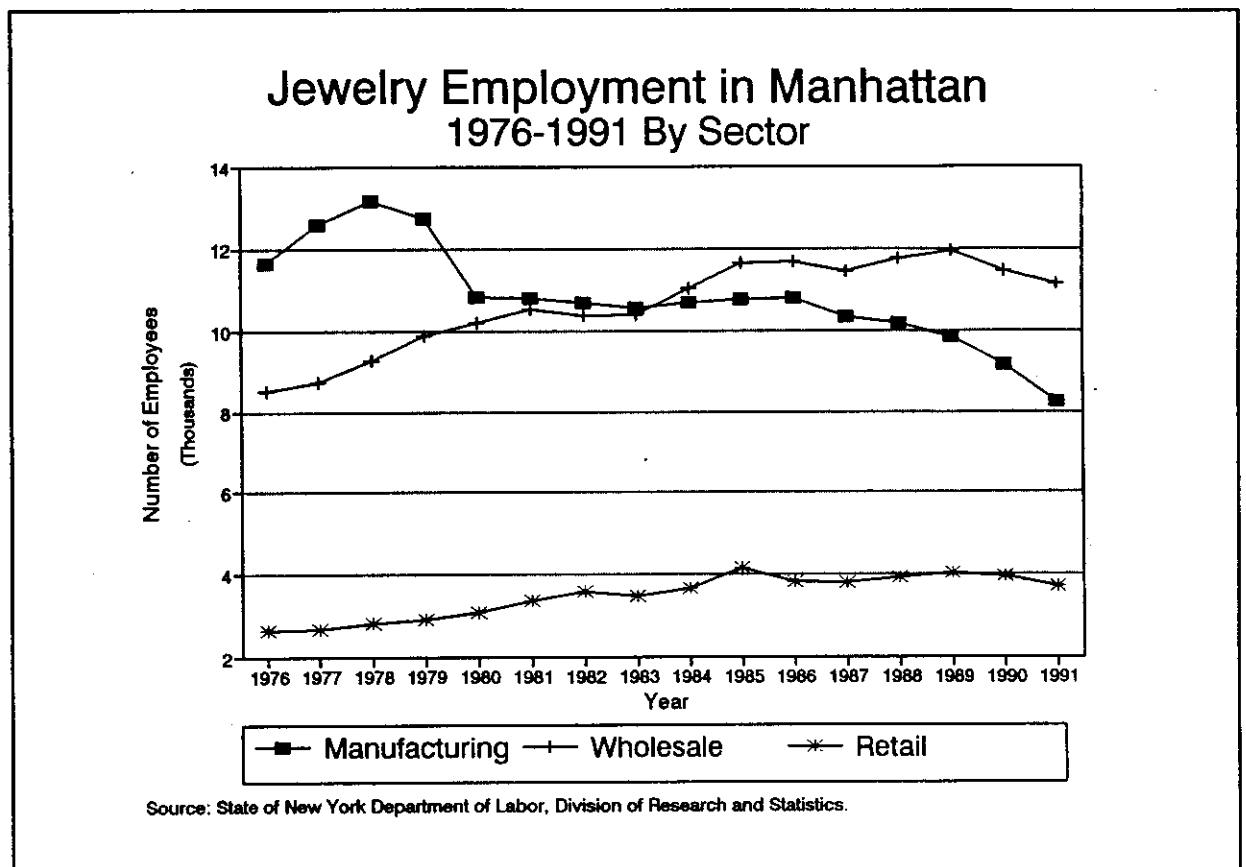


Figure 12

However, since 1989, the Manhattan jewelry and diamond industries have lost a total of 2,709 jobs.⁶ Much of this loss can be attributed to manufacturing decline (see Figure 13)⁷.

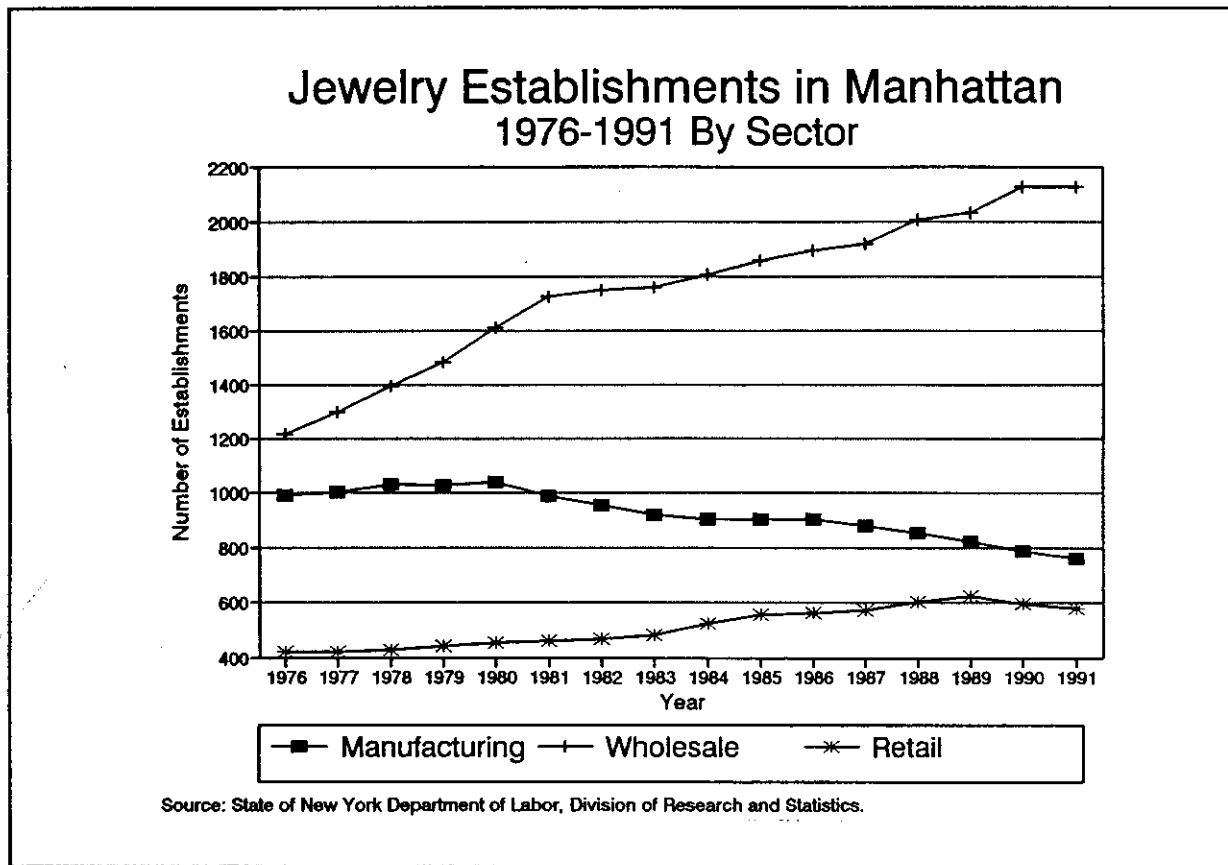


Figure 13

⁶ Department of Labor, New York State.

⁷ According to The Diamond Registry Bulletin, there are between 250 and 500 cutters, down from the thousands that were here ten years ago.

Manufacturing

Jewelry and diamond manufacturing to a great degree holds the cluster of diamond and jewelry firms together. In fact, most jewelry manufacturing firms are located within one zip code in the city, close to 65 percent of jewelry manufacturing is in zip code 10036, the Diamond and Jewelry District (see Map A).

Distribution

Many manufacturers sell directly to retail establishments. They also sell to wholesalers, who have marketing resources unavailable to small manufacturers. To a lesser extent, they also sell directly to other manufacturers, as in the cases of a findings manufacturer selling to a finished jewelry piece manufacturer (see Figure 14).

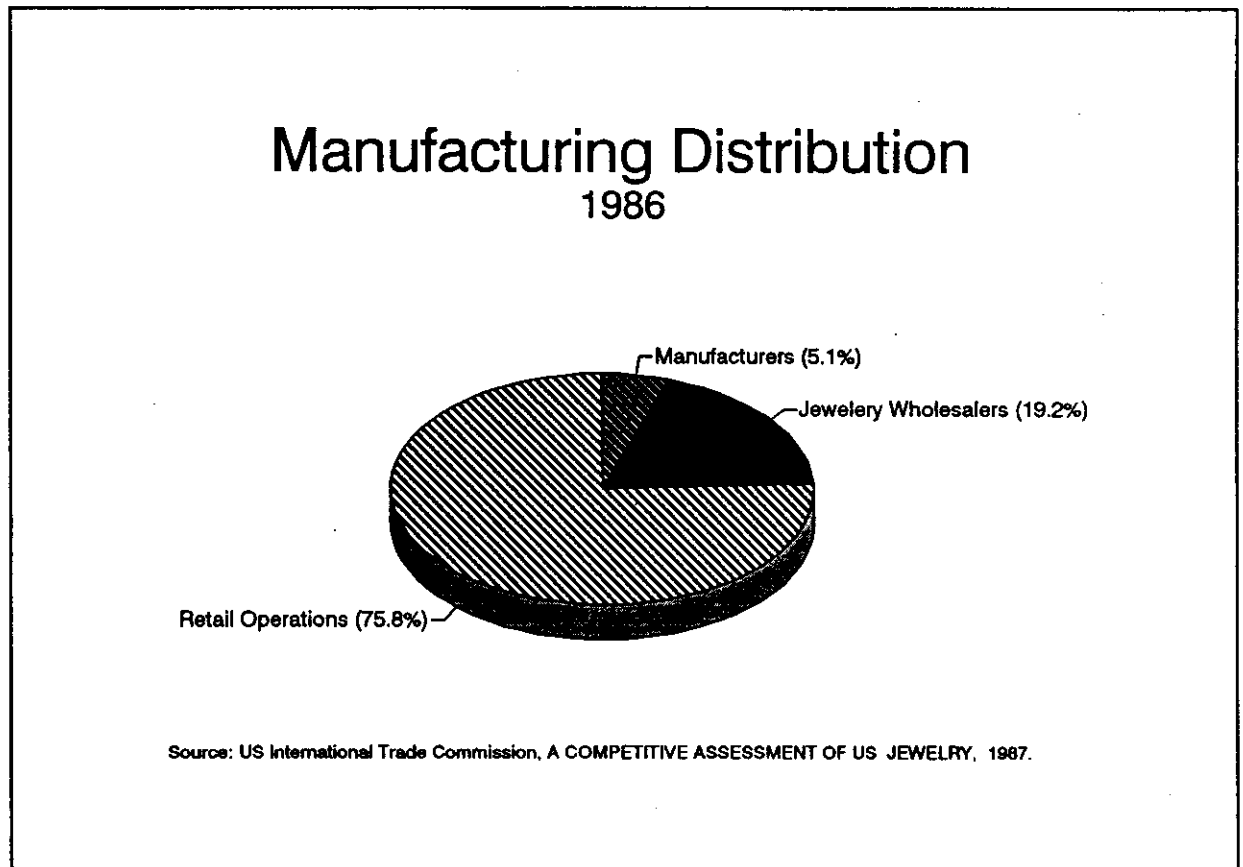
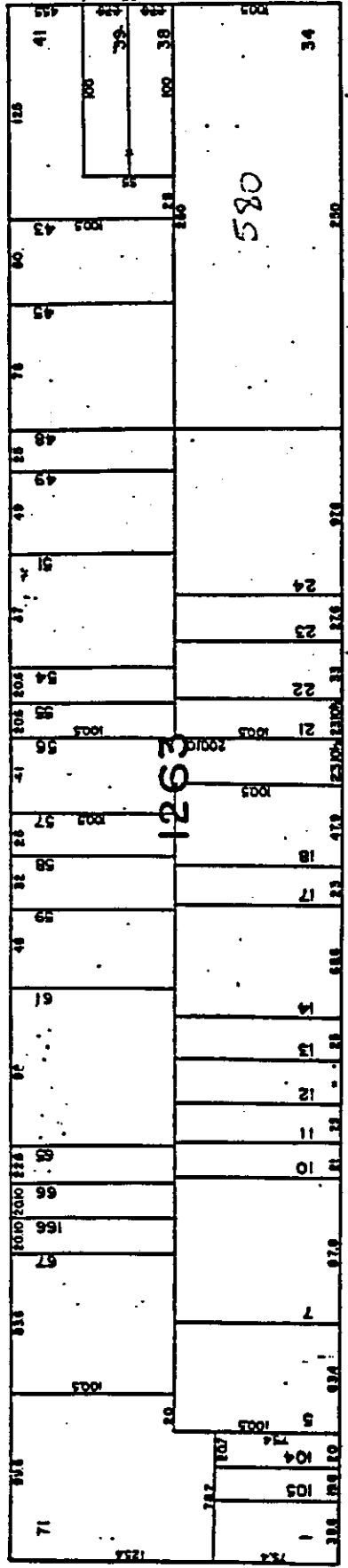


Figure 14

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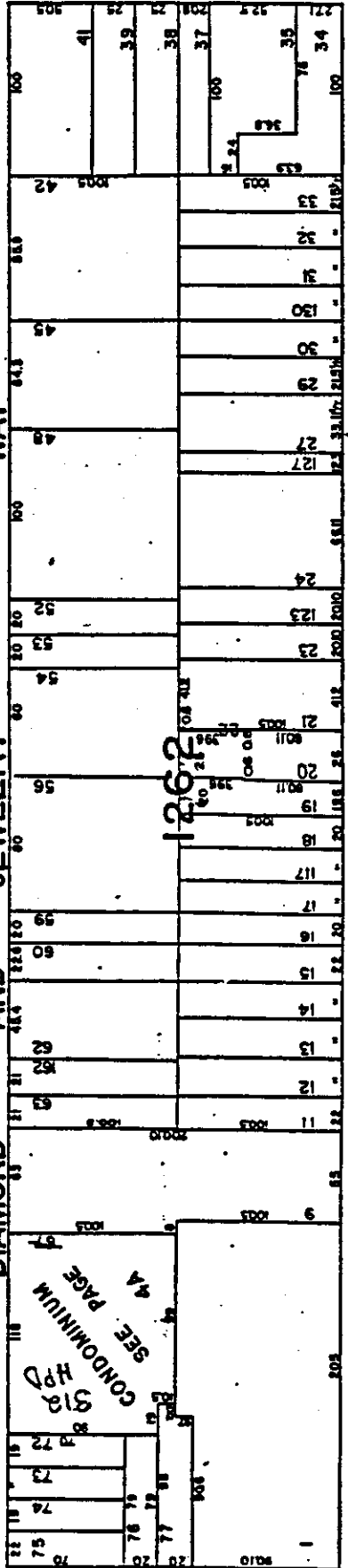
W. 48TH ST.



SEE PAGE 16
AVF

THE AMERICAS

W. DIAMOND AND JEWELRY WAY 47TH ST.



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4

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Many manufacturers rely on trade shows to market their products. Shows like the annual Jewelers of America show held in New York are vital to jewelry sales.

The Manufacturing Process

Design

The first step in the production of jewelry is design. Some of the best jewelry designers in the world are located in New York City. The majority of the designers in New York are trained at the Fashion Institute of Technology. The designer sketches the design for a piece of jewelry, and determines which types of materials (i.e., gold or silver) will be used, and which, if any, precious stones.

Fabrication

After a design has been completed, a jeweler can make a model of the piece of jewelry. When more than one piece of the same design is desired, this piece of jewelry is used to make a wax model, or a model is made independently. From this model, a cast is made to pour molten metal into. Often one mold will hold a tree of a number of duplicate pieces of jewelry. For example, a ring shape is prepared with wax and duplicated. These wax rings are affixed to a wax base. Then plaster of paris is poured over the wax, and fired to remove the wax. Gold may then be poured into the mold to prepare the rings.

Another method of making jewelry is to cut pieces from flat stock by stamping the metal, or using photo-chemical etching. These methods are often used in making jewelry findings (the component parts of jewelry). Chains are often made by machine.

Finally, pieces must be assembled by machine or hand using rivets, screws, springs, or by soldering or welding.

Setting

Setting involves mounting a gem into a piece of jewelry. A setter may set stones for wholesalers, retail establishments, or retail customers directly instead of being employed in a manufacturing establishment. One setter in the Diamond and Jewelry District told us that 90 to 95 percent of his business is devoted to setting for wholesalers, and 5 to 10 percent to setting for retail customers.

Many setters have left New York City because of increased competition from cheap labor in India, Singapore, Hong Kong, China, and Taiwan. Manufacturers in New York City report that the cheap labor offered by these countries attracts a large percentage of the manufacturing business. One setter told us that he has had to take on more work at lower

costs in order to stay in business.

Finishing

Before a piece of jewelry is completed, it will be polished, and metal may be texturized. For most fine jewelry, polishing is done by using a buffing wheel or working by hand. Some machine polishing may also be done.

Trends

Due to international and national competition, the number of people employed in manufacturing jewelry and diamonds has fallen (see Figure 15). Manufacturers must compete on the basis of a number of factors including price, product quality, design, product availability, delivery time, and supplier relationships. The New York City industry must do more to build on these competitive factors.



Figure 15

Wholesale

Jewelry wholesalers may distribute jewelry imported from abroad or manufactured in the United States to retail stores. Like diamantaires, they may also distribute jewelry components to manufacturers. A wholesaler acts as a middleman to both retailers and manufacturers, often financing inventory.

Through marketing, a wholesaler must establish a reputation for honesty and reliable access to inventories of a specific type or quality of goods at competitive prices. To develop new relationships, wholesalers market their specialty goods at trade shows in which they establish contacts with retailers. Generally, wholesalers bring their products to trade shows and provide brochures that feature their product. When a retailer needs a specific type of supply, he or she will know whom to contact. Wholesalers may also advertise in jewelry magazines.

Some wholesalers export to Asia, South America, and Canada. However, the majority of the wholesalers interviewed supplied diamonds and jewelry primarily within the U.S.

Firms often engage in several sectors simultaneously. For example, a firm may combine both wholesale and manufacturing activities. Our study found that 33 percent of the firms surveyed combined both wholesale and manufacturing activities. The wholesaler often has some in-house manufacturing capability to service his or her inventory.

The wages paid to employees in the wholesaling business are the highest of any sector in the jewelry industry. The average annual salary for wholesale workers in the jewelry industry is \$37,201, and is perhaps higher for diamond wholesalers.⁸

⁸ Average annual wages are from 1991, Department of Labor, New York State.

Trends

Wholesaling has fared better than manufacturing. The most significant increase in the industry is in wholesale activities for jewelry, diamonds and precious stones. The number of employees in wholesale increased from 8,530 to 11,135 in 15 years (see Figure 16).

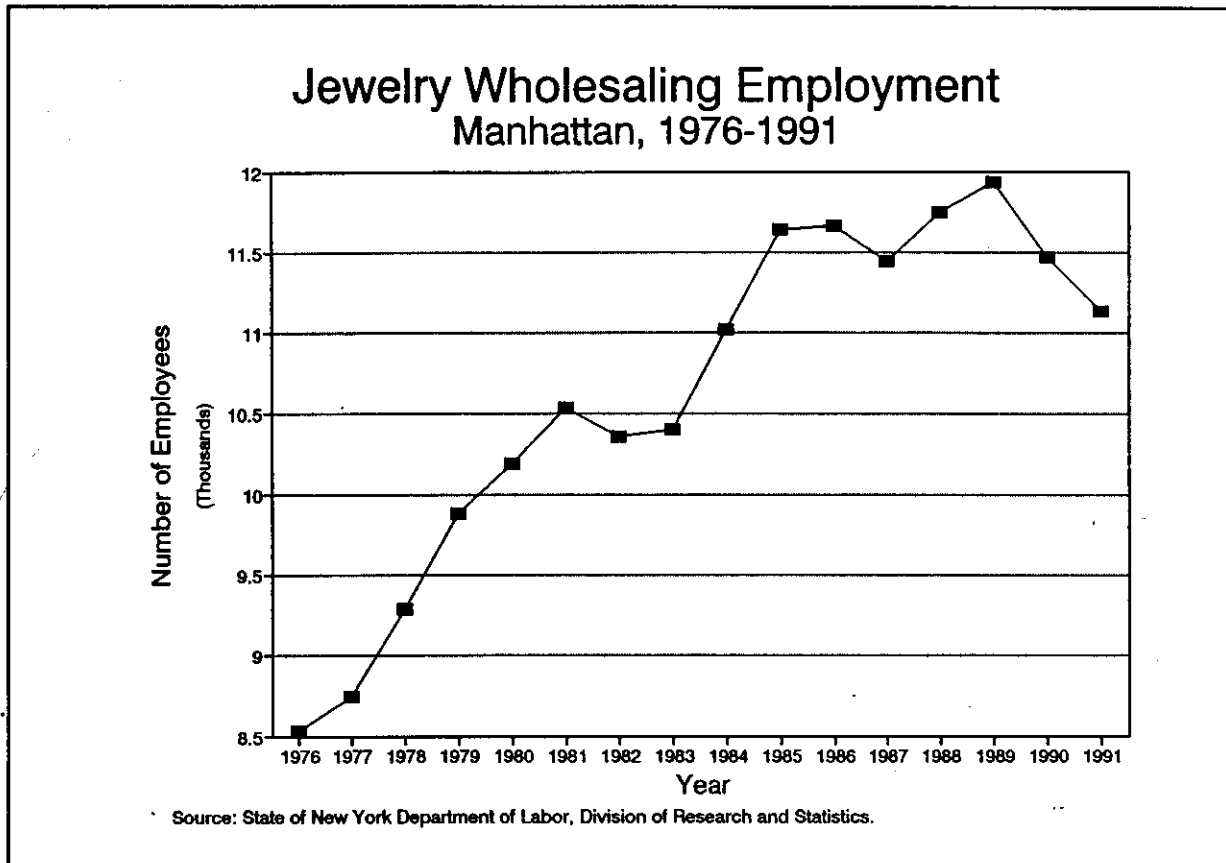


Figure 16

Retail

Retailing has a high street-level visibility. However, retailing does not require the same clustering that wholesale and manufacturing do, because it responds to a customer demand that is dispersed. New York is an exceptional retail center, providing high-end quality and design, and it attracts more than local customers. In recent years, the number of tourists visiting New York has fallen; as a result, fewer customers visit the Diamond and Jewelry District. Retailers complain that the District no longer has a critical mass of buyers that can sustain liquidity.

In the Diamond and Jewelry District, booths or small shops sell diamond rings to consumers at prices lower than in most retail stores. Diamond anniversary bands constitute the largest share of diamond jewelry sales, and bridal diamond jewelry in 1990 constituted over 30 percent of diamond jewelry sales. Customers may also purchase a ring without a stone, and then have the diamond of their choice set into the ring.

As in the other sectors, some retail operations may be involved in wholesale sales. The average annual wage for employees involved in jewelry retail is \$34,106.

Retailers may establish relationships with particular manufacturers of jewelry. Stores such as Tiffany's base their reputations on high-quality manufacturers. Fifty percent of retail store business is in diamonds.⁹

Trends

The recent recession has altered the structure of this sector. Bankruptcies among retail operations have forced many manufacturers and wholesalers to reexamine the way they do business. Bankruptcies have meant enormous losses to many, and in the survey, the problem of "credit" was frequently cited. In addition, the industry has both experienced consolidation and the increasing popularity of the "mom and pop" or small specialty retailing establishment.

⁹"Middlemen are disappearing - The Independents are Coming Back - Interview with Michael Roman, President, Jewelers of America," *Mazal U'Bracha*, August, 1991.

The number of employees in jewelry retail has increased since 1976 (see Figure 17).



Figure 17

IV. THE DIAMOND PATHWAY

The dynamism of the diamond industry here depends on a few key factors. First, the U.S. is the world's largest market for diamonds and New York City serves as the gateway to this market. Second, the diamond cutters and polishers in New York City are world-renowned for their skill. The largest and most valuable diamonds are often sent to New York to be cut and polished. Third, New York City is home to two diamond exchanges or bourses, the Diamond Dealers Club (DDC) and the Diamond Trade and Precious Stone Association (DT&PSA).

The New York diamond industry is currently concentrated in the area of 47th Street between Fifth and Sixth Avenues in Manhattan, commonly referred to as the Diamond and Jewelry District or Diamond and Jewelry Way. The Diamond and Jewelry District is the center of all diamond-related activity in the U.S. Manufacturing and wholesale activities relating to the diamond trade are concentrated in the Diamond and Jewelry District, where some retail activity also occurs. Diamond retailing, however, is spread throughout Manhattan. For example, Canal Street has significant retail activity.

Commodity Characteristics

Diamonds' unique characteristics include:

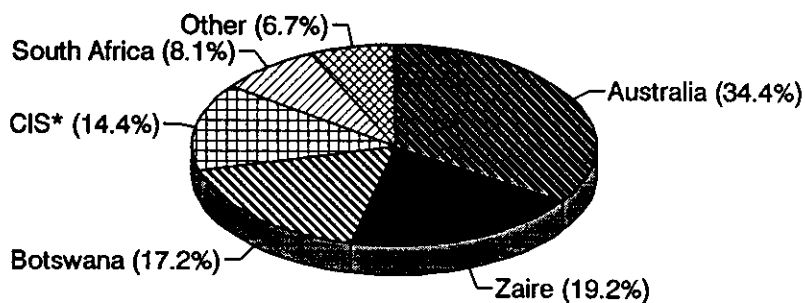
1. Transportability. Unlike many other commodities, diamonds can be carried without costly shipping and handling. Transportation costs have negligible impact on industry location.
2. Taste. Diamonds are more like real estate or art works than they are a commodity like corn. Each diamond must find a unique buyer, and a customer may prefer one diamond to another, even if they are of the same weight and quality.
3. Value. Because diamonds are extremely valuable relative to most other commodities, diamond manufacturers, wholesalers, and retailers must have a high degree of trust in their suppliers and producers. A diamond dealer or retailer makes a living based on their reputation for honesty.

Control of Supply from Mines to Markets

The supply of diamonds is tightly regulated by an international cartel known as De Beers. This international control exerts a strong effect on the diamond industry in New York by determining which kinds of stones flow to New York, how these stones will be utilized, and when they will be made available. As a result of this controlled supply, prices do not fluctuate dramatically. The De Beers cartel provides the market with stability, channeling demand, and eliciting desire through advertising efforts.

Diamonds are mined all over the world by small-scale individual diggers and by large companies. In 1991, thirty-four percent of the world's diamonds (by total weight) were dug from mines in Australia, while 19 percent came from Zaire, 17 percent from Botswana, 14 percent from the former USSR, and 8 percent from South Africa (see Figure 18).

World Diamond Production in Carats



*Commonwealth of Independent States, the former USSR

Source: Department of Interior, Bureau of Mines, 1992, from ADIA.

Figure 18

Most of the diamonds produced by these countries are sold under contract to De Beers or purchased by De Beers on the open market. Some of De Beers' collections of diamonds are then shipped to London and sorted into boxes for sale at Central Selling Organization (CSO) "sights."

De Beers of Switzerland and South Africa is the main company in a cartel that controls most of the distribution of diamonds worldwide. Currently the diamond cartel, run through De Beers Consolidated Mines, Ltd., markets 85 percent of the world's supply of rough diamonds.¹⁰ The Central Selling Organization (CSO), De Beers' marketing arm in London, controls 90 percent of the diamond supply worldwide. The CSO holds selling

¹⁰ Pranay Gupte, "The Big Money in Cheap Rock," *Forbes*, August 10, 1987, p. 64.

events, or sights, ten times a year where diamond manufacturers and traders buy rough, uncut diamonds.¹¹ De Beers also sells to rough diamond dealers. De Beers sets prices in part by remaining the sole middleman between diamond producing nations and dealers and manufacturers.

De Beers combines both a monopsony¹² and monopoly power on rough diamonds with an unsurpassable distribution network to sustain its cartel.¹³ Producers have little incentive to undercut the cartel because De Beers pays high prices for diamonds in weak markets. Diamonds are sorted and sold based on certain characteristics. If a producer attempts to break from the cartel, De Beers has the ability to increase the market supply of that particular type of diamond and undercut the renegade firm.¹⁴

De Beers combines its price support of diamonds in a sluggish market with a quota system. The cartel requires the most significant producers to abide by a contract requiring them to supply a certain proportion of annual De Beers' diamond sales. This quota system passes the burden of a weak market back to producers because as diamond sales fall, quotas are implemented.¹⁵ If independent buyers begin selling too many diamonds into a weak market, the De Beers' buying office clears the market by buying up the diamonds.

Every five weeks, approximately two hundred of the world's most established diamond manufacturers and dealers purchase rough diamonds. The diamonds are purchased in London at "sights," and buyers who attend are known as "sightholders." Generally, the sightholders are manufacturers, although some wholesale firms that deal in rough diamonds also attend. The sightholder makes his or her preferences known to De Beers through a broker in London before the sight, and De Beers makes some attempt to fulfill the sightholder's needs. At the sight the sightholder is offered a box of diamonds and must "take or leave" the whole box. Negotiation is permissible, but large changes in price or mix of diamonds are usually not permitted. This box system keeps the "right" mix of diamonds

¹¹ Ibid.

¹² A monopsony (or buyer's monopoly) occurs when there are numerous sellers but only one buyer.

¹³ Gupte, p. 64.

¹⁴ Diamonds mined in one country differ from those mined elsewhere, a fact which facilitates De Beers' control. For example in 1981, Zaire attempted to break from the cartel, yet it was unable to maintain its independence. De Beers flooded the market with Zaire's diamonds thereby lowering the price of that country's diamonds. The low price of Zaire's type of diamonds and a weakening economy forced the African nation back into the De Beers' cartel. The Economist, January 10, 1987.

¹⁵ The Economist, January 10, 1987.

flowing into the market.

No one outside of the Central Selling Organization (CSO) knows precisely how sightholders are chosen. A firm applies to the CSO, usually stating the type of diamond it wishes to buy and the purpose of the sale. For example, a firm might specify that it wants to buy large diamonds of a particular quality to manufacture and resell. A firm must demonstrate that it is established and of sufficient stature to absorb the goods. Letters from a bank may be helpful. One former sightholder speculated that applicants are accepted if the type of diamond requested by the applicant resembles the type of diamond CSO wants to pour into the market.

The majority of the owners that attend the sights are manufacturers. For the most part, the manufacturer will cut and polish the stones in-house. However, on occasion, the sightholder may sell a rough stone. Once the stones are cut and polished, the sightholder will sell the stones to diamond merchants.

It is very prestigious to be a sightholder, since these firms are one entry way for diamonds into the world market. In order for New York to remain a diamond capital it needs to continue to have large numbers of sightholders. Since sightholders are almost always manufacturers, it is essential to keep some diamond manufacturing firms in New York.

Through the sights and other rough sales, De Beers controls the flow and proportions of the various types of diamonds in the market. De Beers spends \$110 million a year on advertising in the United States to stimulate demand for particular types of stones.

Almost all of the cutters and polishers in the world are located in one of four centers: Belgium, Israel, India, or New York. While New York is the fourth largest diamond manufacturing center in the world, a small percentage of the world's diamonds are cut and polished in New York City.

The diamond capitals of the world are part of an interlocking web of manufacturing and wholesale trade. Because each center has its own niche, one country cannot change its pattern of production without affecting change in other areas.

Diamonds are usually cut, traded, and set in jewelry before they reach the consumer market. Wholesalers, or diamond merchants, supply both manufacturers and retailers, and in New York, this sector is among the most important in understanding the dynamics of the diamond industry.

Wholesale

Wholesaling is the foundation for New York's stature as a diamond center.¹⁶ Because the diamond industry is dispersed throughout the globe, the information functions performed by wholesalers in the diamond capitals are essential to market function. Wholesalers direct diamond supplies to retailers, manufacturers, and other wholesalers through their purchases and contracts.

A large portion of the diamond business in New York City is devoted to wholesale trade. There are several reasons for the preponderance of wholesale traders: the size of the U.S. market is very large and the retailers across the country have a high demand for diamonds (see Figure 19). Retailers prefer to purchase their diamonds in New York City because the large number of wholesalers increases competition and retailers feel they are getting the best deal. New York City is also perceived as a source for diamonds, as stones are manufactured here. One wholesaler mentioned that the large number of suppliers in New York City drove down the prices of diamonds. New York is a wholesale center because a large enough base exists here that a retailer can be assured of having the largest selection in the country. Virtually any type of diamond quality, cut, and color can be found through a New York wholesaler.

¹⁶By wholesaling we refer to all diamond merchants, wholesalers and diamond dealers.

Final Demand for Diamonds By Value, Retail Diamond Jewelry Sales

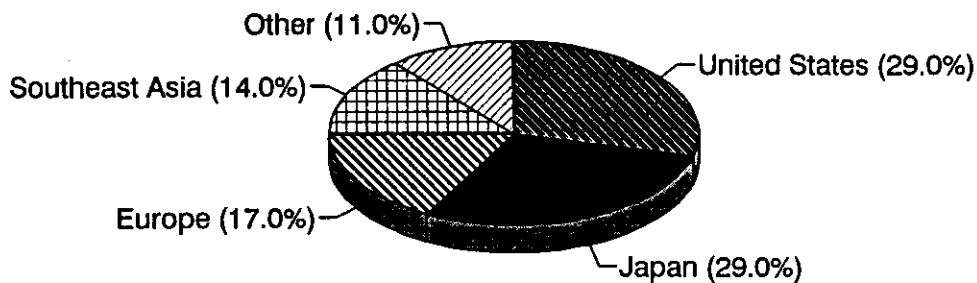


Figure 19

Many wholesalers make their transactions with one another at a bourse, or exchange. The Diamond Dealers Club (DDC) is the major trading association and bourse in the United States. With a total membership of 2,000, the DDC ranks among the world's largest bourses, along with those of Belgium and Israel. The DDC provides needed security and office space, promulgates rules that govern trade among members, and arbitrates disputes among members. Perhaps most importantly, the DDC provides a secure locale for diamond trading.

The Diamond Trade and Precious Stone Association (DT&PSA) is the second largest bourse in New York, with approximately 700 members. Precious colored stones are also traded at the DT&PSA. Both the DDC and the DT&PSA are members of the World Federation of Diamond Bourses, so that a member of one of these bourses can trade stones at any other exchanges that are part of the Federation.

The presence of two bourses attests to New York's prominence as a diamond capital, and helps explain New York's national significance in the area of jewelry and diamond wholesaling.

As is true with jewelry firms, diamond firms often engage in several sectors simultaneously. The wholesaler often provides some in-house manufacturing, including cutting and polishing. Some wholesalers have affiliates in other parts of the world, primarily in Antwerp and Tel Aviv or factories in India, Malaysia, and Hong Kong. Diamonds can be a family business; thus a New York wholesaler may have relatives in other diamond capitals with whom he or she trades. For example, a New York wholesaler may have a relative in Israel who owns a factory that supplies the New York wholesale operations.

The wholesaler may provide the following services: sorting, weighing, grading, sizing, and selling. Wholesalers may deal in either rough or polished stones, or a combination of both.

There are various specialties within diamond wholesale. The wholesaler may buy an assortment of diamonds known as a "melange," and sort the melange according to quality. Later a wholesaler might sort the stones into a "series," according to size, and then again into a smaller series, according to size and quality. From the mine to the customer, diamonds may be sorted a number of times.

There are three different levels of diamond wholesalers in New York. The twenty largest wholesalers do in excess of \$100 million worth of business each year. The next tier does approximately \$3 to \$20 million. The smallest wholesalers gross under \$3 million a year.¹⁷ According to our interviews, each wholesaler has his or her own *modus operandi*.

Each wholesaler has a certain niche, and provides a very specific type of stone. For example, some wholesalers are known for stocking inventory of special cuts, colors, and shapes. Other wholesalers may specialize in low-quality diamonds. Because each wholesaler may provide a narrow range of goods, it is useful to have the firms cluster in a specific geographic area. As a result, the diamond wholesale firms often complement rather than compete with one another, forming part of a large network of suppliers. This network is capable of providing thousands of varieties of diamonds quickly. Because of the diversity of products available, New York is, and for the foreseeable future will remain, the diamond capital of the U.S. and a key trading center for international markets.

Wholesalers sell to other wholesalers, jewelry manufacturers, and retailers.

Wholesale to Wholesale

Diamond dealers sell loose diamonds to other traders in a manner unlike any other business transaction. Diamond dealers in New York City sell diamonds to traders from all over the world at the various bourses or in private offices. Much trading in New York City

¹⁷ These numbers were provided in a confidential interview with a wholesaler. The numbers are probably an estimate.

occurs at the Diamond Dealers' Club and the Diamond Trade and Precious Stone Association. Trading at bourses is beneficial because of the security, the presence of traders from all over the world, the existence of very exact scales to measure the weight of the stones, and excellent lighting in which to view them.

A typical transaction between two traders in New York might proceed in the following manner: a prospective buyer examines the wares of a prospective seller at a table in the DDC. After bargaining, the two agree on a price per carat and terms of sale if necessary. At that point, the diamond may be weighed by the official Club scale. The two shake hands and recite the words "mazal und bracha," which means "luck and blessings" in Yiddish. Money does not necessarily exchange hands, and verbal agreements may be all that is required.

Another example illustrates the importance of the depth and breadth of New York City's market and the role of the exchanges. A buyer goes to the DDC and does not see what he wants. He may tell two or three people that he is looking for a particular type of diamond and then wait in a lounge area or at a table. Within a few hours, he will be approached by sellers with diamonds meeting his specifications.

Trading may also occur through a broker, or an intermediary who may keep the names of the buyers and sellers anonymous. In addition, several services in Manhattan match buyers and sellers through computers. A prospective buyer sends in a request by fax. The seller may show the customer a number of stones provided on memorandum, of which the buyer may choose.¹⁸ This trade is often international in nature; the survey revealed that trade to Europe and Asia is not uncommon.

Wholesale to Manufacturers

It is common for a wholesaler and manufacturer to establish a close relationship in which the manufacturer cuts and polishes the diamonds that a wholesaler purchases for trade. In turn, a wholesaler may supply a manufacturer with rough stone for his or her operation.

Wholesale to Retail

Wholesale companies sell loose diamonds and diamond jewelry to retailers both in the

¹⁸ The use of memorandum is common in the diamond business. The memorandum is a form under which a potential seller of diamonds states his or her intention to sell the diamonds. The memorandum lists the number and weight of the diamonds and the price per carat. The prospective buyer initials the memorandum. If the goods are accepted, he or she is invoiced. If not, the goods are returned, and the potential buyer receives the signed memorandum.

U.S. and abroad. The wholesaler's retail customers include chains as well as "Mom and Pop" stores.

Because diamonds can be very expensive, and transactions between wholesalers and retailers may involve a lot of credit, a high degree of trust must be developed over years of trading. A retailer also must know which wholesaler has access to the particular type of stone he or she wants.

Once the wholesaler receives an order, the stone is sent to the retailer (via express mail if it is an out of town order). Some wholesalers opt to place valuable jewelry on consignment in exclusive stores in Manhattan. Many of the wholesalers who sell to retailers expressed concern with the trend in retail toward consolidation and the large number of recent bankruptcies. Not only are there fewer outlets for their products, but each outlet requires a greater range of products. As the number of retailers decreases, it is possible that wholesale firms may consolidate as well to meet the wide range of demand. Other wholesalers mentioned that current trends favor "Mom and Pop" stores, as customers regard them as more reliable.

Manufacturing

Manufacturing diamonds transforms a rough stone into a gem ready to be set in jewelry. Diamond manufacture involves the process of cutting and polishing a diamond. Diamond capitals of the world specialize in different kinds of diamond manufacture, and are distinct in the type of stones they process. New York's advantage lies in cutting large diamonds of high quality. It is profitable to cut large stones in New York City because of the presence of diamond cutters with superior skills, unmatched by other cutters. Because these cutters are very good, they draw high wages, thereby making it unprofitable to cut small or low-quality stones in New York, where labor costs would make up a higher portion of the value of the final product.

Manufacturing diamonds is one component holding the diamond and jewelry industry together in close proximity. As sightholders or as suppliers, manufacturers are the source of diamonds. It is also important for wholesalers to be close to the source in order to establish rapport with others in the diamond industry and to assess current trends in price and quality.

Diamond manufacturing involves several distinct phases. In order to understand the manufacturing industry and emerging technologies, one must first understand the manufacturing process. There are generally four phases: studying the stone, sawing or cleaving, bruting, and faceting. Each process is discussed below.

1. Studying the Rough Diamond

There are over 5,000 categories of rough diamonds, so it is crucial that a rough stone be carefully analyzed. An expert examines the stone to determine its flaws and the cutting

techniques that can be used in order to yield the most valuable gem or series of gems. The stone is then marked with India ink to determine where cuts will be made.

2. Cutting

Like wood, diamonds have veins and knots, so that a cutter must cut with careful attention to detail. Diamonds can be cut using three different techniques: cleaving, sawing, and laser cutting (See Figure 20).

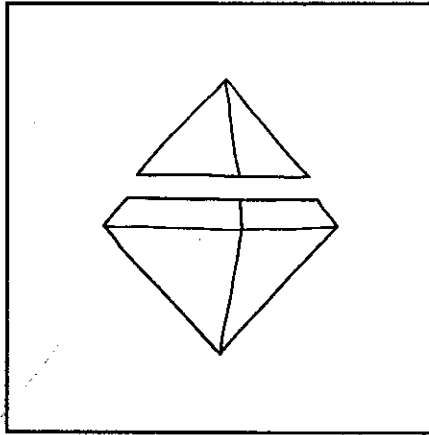


Figure 20

a) Sawing is the most common technique for splitting a diamond. The diamond is sawed using a thin bronze disk, or saw. The saw runs vertically, while the stone is held horizontally. Diamond dust is applied to the saw, because diamonds are so hard that only a diamond can cut a diamond. Sawing is a time-consuming process: it may take several days or weeks to saw a large stone.

b) Cleaving describes a process in which the rough stone is split into two halves. The first step involves kerfing, or creating a tiny groove in which the chisel is placed to split the diamond. If this is not done carefully, the diamond can shatter into many pieces or cracks may develop.

Generally, cleaving is used to cut difficult stones.

c) Laser Cutting: Lasers can be used to divide diamonds by burning them. The advantage of lasers over saws is that lasers can cut through knots that saws cannot. However, as a result of the laser cutting process, the diamond may lose weight and thus decrease in value. As a result, laser cutting is not generally recommended for cutting large stones. Moreover, using lasers to cut stones is very expensive.

d) Kerfing: Before a diamond can be cleaved the diamond manufacturer must make a small groove in the stone. Kerfing is also used in creating some gems of special shapes, such as a heart.

3. *Bruting*: Also known as "girdling," bruting involves shaping the diamond. Diamonds can take many shapes, including round, pear, marquise, and other shapes limited only by the imagination and techniques applied (see Figure 21). The diamond rotates at a very high speed on a horizontal holder. Another diamond is used to shape the amorphous stone. If bruting is done recklessly, both stones can be shattered.

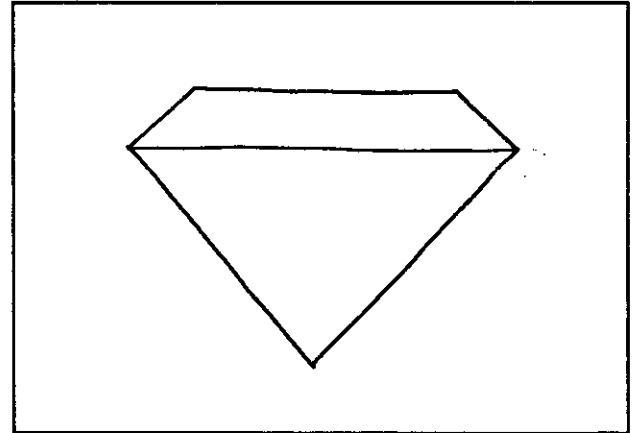


Figure 21

4. *Faceting*: Also known as "brillianteering" or polishing, faceting involves grinding sides into the stones (see Figure 22). A finished diamond generally has 58 facets. A diamond is faceted by grinding the stone on a wheel known as a "scaife." The faceting of a stone is often done by different people, each with different expertise.

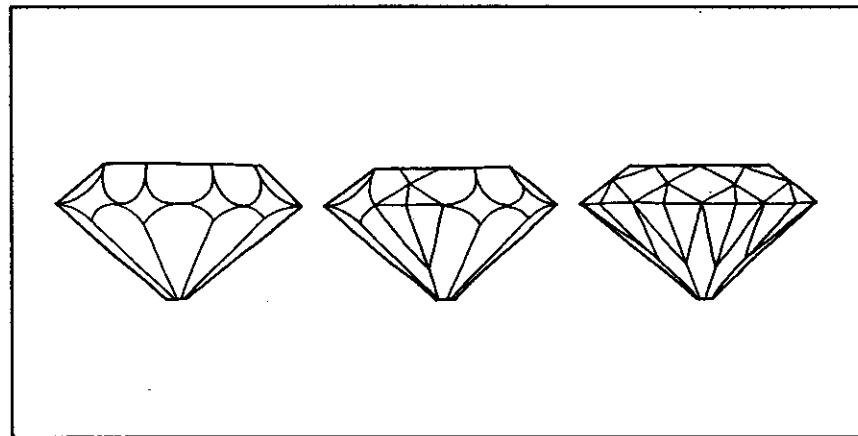


Figure 22

Depending on the type of diamond, a different sequence of processes is used. For example, a diamond that will be sawed follows a different pattern than those that will be cleaved or cut with lasers.

This complicated manufacturing process may require the diamond to change hands many times, reinforcing the advantages of the "cluster" nature of the industry. Each phase of diamond manufacturing requires tremendous expertise, and the costs that could result from an accident are so high that manufacturers specialize in particular phases of diamond production. It is therefore quite common for manufacturers to sell to other manufacturers.

Diamond cutters (sawyers and polishers) typically either rent space from a manufacturer or rent their own workshop. The cutter may rent a bench within a manufacturer's office for approximately \$300 to \$400 per month. Although they work in one person's shop, the gems that they cut may be owned by others.

Like the wholesaler, the manufacturer gets work based on his or her reputation. However in the case of the manufacturer, the reputation is based on skill as well as honesty. There are many specialized manufacturers in New York City, including: cutters that recut and repair jewelry, sawyers that use laser technology, and polishers for fancy shaped stones, to mention a few.

Many of the manufacturers interviewed once had large in-house manufacturing capabilities of up to 25 people. Today they employ only a small number of manufacturers. One expert guessed that the industry had shrunk from approximately 2,500 cutters in 1980 to 250 cutters today, based on the number of cutting wheels being serviced in the city. The erosion of the manufacturing sector is due to intense competition from overseas, as wages are lower in many developing countries.

These processes will culminate in a cut and polished stone ready to be placed in jewelry. Manufacturing at this point becomes involved in jewelry making. To reach the customer, it must go through a jewelry retail outlet.

V. COMPETITION: THREATS AND LESSONS

International

As we have described, the diamond industry is international in nature. Different world centers have different strengths and specialties. Even centers where trade is the strongest component of the industry have a manufacturing component. All the centers attempt to gain a larger market share of the manufacture and trade of diamonds. While there are niches that centers excel at, there is overlapping competition. New York's major competitors are Belgium and Israel. New York cannot compete with India, a world center reliant on low labor costs. India and Israel have the major shares of the world's diamond manufacturing.

Each major center manufactures what it can most profitably cut. The type of stones cut in each diamond capital is a function of the strengths and weaknesses of each market. India cuts the most diamonds by number of stone, because low labor costs in India make small, low-quality stone cutting quite profitable. Israel cuts a wide range of diamonds, having developed technology to best utilize labor. Both Antwerp and New York cut large, quality diamonds, utilizing highly skilled cutters and little new technology. These two centers cut stones for which labor costs do not make up a large portion of the value of the cut and polished stones. The quality and size of the diamonds cut in each locale have a major impact on the nature of the diamond trade conducted in each center.

Where trade is conducted depends on both the consumer demand of the location, and where the manufacture of diamonds occurs. Diamond manufacturing competition has become intense over the past ten years, and now presents serious problems for New York. For example, it costs \$90/carats to cut in New York City, as compared to \$40/carats in Tel Aviv. As a result, interviewees in various aspects of manufacturing, report that some of their colleagues have been forced to leave New York City and the remaining companies may be reducing their prices and working longer hours. Manufacturers remaining in New York City also report dramatic drops in employment; one cutter has gone from employing 25 to now employing three cutters in the factory.

Diamond manufacturers hurt by cheap labor from foreign firms may move within the U.S. to places such as Florida and California where living costs are lower and the lower wages they are forced to accept in order to compete internationally are easier to live on. Government incentives, such as tax abatements, and the greater ability to own one's own building also serve as important attractions in drawing diamond dealers out of New York City.

The high costs of labor have also affected the types of diamonds that are being manufactured in New York City. One manufacturer reported that his factory no longer cuts diamonds smaller than four and five carats because the cutting industry is very labor intensive and high labor costs make it unprofitable to cut smaller diamonds. Many in the

industry who were interviewed believe that the smaller diamond production (under 3/4 of a carat), which is more labor cost sensitive, has already left New York. What remains can compete in New York City, but with a smaller share of the market than it once had.

Diamond wholesaling is not as influenced by labor costs. While it is dependent to some extent on manufacturing locations, it is also strongly impacted by historical business relationships and consumer markets for diamonds (see Figure 23). The major diamond bourses in New York, Antwerp, and Tel Aviv, serve international markets. Exchanges in Amsterdam, Hong Kong, Idar-Oberstein, Johannesburg, London, Los Angeles, Milan, Paris, Singapore, and Vienna serve more regional markets, or local consumers. While India does not have bourses, the fact that so many diamonds are cut there brings in substantial clients and traders.

TRADING CENTERS		
	Type of Center	Advantages
Antwerp	4 Bourses	Historical Background Financing Minimal Regulation/ Freedom of Trade
New York	2 Bourses	Large U.S. Market Financial Markets Grading Facilities
Tel Aviv	3 Bourses	Security High Technology Utilization
Bombay/Surat	0 Bourses	Quantity of Goods Low Labor Costs

Figure 23

New York City faces the greatest threat from competitors of the same stature as itself -- other international centers. These centers provide diamonds not only for local consumers, but for wholesalers who provide diamonds in other nations.

Belgium

Antwerp is the world's largest diamond trading center, with four active diamond

bourses. Over 25,000 people are employed in the industry there, and diamond sales account for \$7.1 billion, or 6 percent, of Belgium's export earnings.

Diamonds have been cut and traded for five centuries in Belgium. Antwerp was strengthened as a trading center by the decline of the Amsterdam diamond business, approximately 40 miles away. Amsterdam lost its once thriving diamond industry when factors such as heavy unionization and difficult work rules made cutting less profitable. Since then, diamantaires cite the exodus from Amsterdam as a lesson on the mobility of the diamond business.

Antwerp is well-known for its superior cutters, who cut large diamonds from stones that are often difficult to process. Antwerp is also well-known for cutting fancy diamonds, stones with original shapes, such as triangles, hearts, or squares. Diamond cutting occurs in Antwerp, and in Kempen, a rural area near Antwerp. The manufacturing base in the Belgian diamond industry has eroded, making trade far more important than cutting.

The Belgian government imposes few regulations on the diamond industry in Antwerp, and tax laws are weakly enforced. Diamonds are reputed to be smuggled into Belgium from African mines in Sierra Leone, Liberia, Zaire, Angola, and the Central African Republic.¹⁹ Under Belgian law, diamantaires may conduct as much as 25% of their business on "blind invoices," in which neither the buyer nor the seller is named.

The presence of banks devoted solely to financing diamonds greatly facilitates trading. There are three diamond banks in Antwerp whose bankers are specialists in the field. The banks provide substantial loans to diamantaires, often many millions of dollars per diamantaire.²⁰ The importance of such loans cannot be underestimated, as diamantaires must have access to large amounts of capital in order to buy rough and polished stones. It takes time before the rough stones can be cut, polished and sold. New York's financial markets are likewise important to the diamond trade.

The Belgian government is so hospitable to the industry that the government uses a percentage of the revenue raised from the taxes accrued to assist the industry. The Diamond High Council or Hoge Raad Voor Diamant was established to promote the Belgian diamond industry by conducting scientific research, operating diamond grading laboratories, and conducting the promotion of Belgian diamonds through trade missions, seminars, and by hosting foreign visitors. The Council publishes a guide to Belgian diamantaires in several languages, available through Belgian consulates. The consulates also provide glossy

¹⁹"Smuggling and fraud grow in Zaire and Angola diamond fields," *The Diamond Registry*, April, 1992.

²⁰ Timothy Green, *The World of Diamonds*, New York: William Morrow and Company, Inc. 1981, p. 64.

promotional materials that illustrate the rise of Antwerp as a diamond center.

Israel

Israel is a major center for both diamond cutting and trading. The Israeli industry is different from that of Antwerp and New York; its diamonds are produced using automation and modern technology to a great extent. Automated polishers are particularly suited for smaller stones. Technology, coupled with moderate labor costs, has made the Israeli diamond industry powerful. It now produces over 50 percent by value of the world's polished diamonds, and Israeli workers cut 50 percent of the world's fancy cut diamonds.

The Israeli diamond industry is primarily located in a complex of skyscrapers known as the Diamond Exchange in Ramat Gan, near Tel Aviv. The Exchange includes three bourses, a customs house, banks, post office and restaurants, so that diamantaires rarely need to leave the complex. Diamond manufacturing takes place in factories in and around the Diamond Exchange. Physical proximity facilitates interaction between dealers and manufacturers, and security is also enhanced. The Diamond Exchange invests heavily in security, which accounts for approximately 65 percent of its budget.²¹ As a result, the Diamond Exchange is one of the most secure exchanges in the world, a fact that helps attract buyers to Israel.

Israel is on the forefront of technological advancement, using lasers and computer technology to cut. The Israeli government provides training to immigrants that includes the use of these new technologies.

Technological development is enhanced by labor specialization. In this process, every new worker specializes in only one of the phases in the cutting and polishing process, instead of devoting years to learn all aspects of diamond manufacturing. As a result of specialization, the training period is shortened and worker efficiency improved.

The Israeli government provides assistance to the industry through various channels, including training, subsidized credit, and promotion. The Israel Diamond Institute is a quasi-governmental organization, dedicated to promoting Israeli diamonds.

India

India has become an important center for diamond cutting. India processes an estimated eight or nine out of every ten diamonds. India cuts small stones, some as small as one-hundredth of a carat. The majority of the stones cut in India are made of very low-quality rough stones, stones so poor that in the past they might have been destined for industrial rather than jewelry purposes.

²¹ David E. Koskoff, *The Diamond World*, New York: Harper and Row, 1981, p. 231.

India is able to manufacture stones at a low cost because of its large supply of cheap labor. Monthly wages for a diamond cutter are approximately \$50 per month, in comparison to \$2,000 a month in New York. An estimated half a million people out of India's labor force of 250 million are involved in diamond cutting and polishing²².

Diamond manufacturing in India is different from cutting and polishing elsewhere. Some diamond cutters operate out of their own homes, much as in cottage industries. Unlike most diamond centers, where cutting is centralized, diamond cutting in India is relatively dispersed in pockets in Surat and Bombay. Unlike cutters in Antwerp and New York, Indian cutters are generally very young, because the cutting of tiny stones requires exceptionally good eyesight.

Although diamond manufacturing is a significant industry, trading in diamonds is somewhat different in India than in other centers, because there is no bourse. India is planning to establish a diamond bourse in Bharat by the end of 1995 with 2,000 dealers.

In an effort to further improve the Indian industry, the Gem and Jewelry Export Promotion Council (GJEPC), a semi-autonomous government funded organization that represents 4000 exporters, was founded in 1966. The GJEPC is managed by government appointees and elected officials. Through advertising they promote the consumption of small diamonds and less expensive jewelry.

The Indian diamond industry is currently facing hard times. Approximately 40 percent of the industry is idle. The difficulties are due to currency devaluations that make raw materials more expensive, and to the fall in demand for small diamonds²³. The Indian diamond industry is also threatened by competition from other Asian countries with cheap labor, such as China, Thailand, and Malaysia. However, the Indian diamond industry has very close links to Antwerp that would be difficult for other countries to duplicate.

Regional

New York is the premier diamond trading center in the U.S. However, other cities are regional centers for retailing, and are beginning to grow in importance as trading centers. These centers have emerged for several reasons: the rise in demand in various regions, both nationally and internationally; the perceived decline in the quality of life in New York City; and the relocation of diamantaires from New York City and other centers. Because New

²² Richard Teitelbaum "Hard Times for Diamonds" Fortune, April 22, 1991.

²³ New York Diamonds, "India Industry faces hard times; hundreds of units stay closed", Spring 1992, p 66.

York City firm owners are aging, many are retiring to areas with better climates. The median age for a diamond and jewelry firm owner in the survey was 50.

Another reason for the attractiveness of other regional centers is that they are new and uncharted territory, without established players. New entrepreneurs in New York must compete with more established firms, whereas the emerging centers attract entrepreneurs who hope to become founders of a diamond club. Los Angeles and Miami are increasingly playing a key role in the industry. Other major cities, including Chicago, Dallas, Boston, and Philadelphia, are important retail centers.

Los Angeles

Los Angeles is emerging as an important diamond center serving regional markets in the Midwest and Pacific Coast. Given its proximity to Asia, Los Angeles is trying to market its diamonds to Asian retailers. In recent years, diamantaires from Israel, South Africa, and Antwerp have relocated to Los Angeles. Because diamonds are a family business, the presence of many nationalities within Los Angeles facilitates the growth of the industry.

The diamond industry in Los Angeles is concentrated in the downtown area. Approximately 50,000 people are employed in the jewelry industry in Los Angeles; primarily in the retail sector. There are more people employed in jewelry retailing in Los Angeles than in New York and their rate of growth is greater than New York's. There are far fewer manufacturers in Los Angeles than in New York. However, manufacturing seems to be growing while it is shrinking in New York. The demand for setters and other manufacturers is also growing.

The Diamond Club West Coast has 138 members, which is considered small by most standards. Unlike the large exchanges, only a limited amount of trading is done on the floor of the Club. Prior to the establishment of the current Club, there were two failed attempts to establish a Club in Los Angeles. Data for jewelry wholesaling show that Los Angeles has a locational quotient above 2.2. This means that there is more than twice as much activity in wholesaling as the national average and that it is an export industry.

Los Angeles poses both advantages and disadvantages as a diamond center. Some experts say that prices in Los Angeles are generally cheaper than in other major U.S. cities because overhead costs are low. It is easier to make a deal in Los Angeles, because there are fewer firms and there is less competition. The presence of the Gemological Institute of America, which provides extensive training, is also a benefit to the Los Angeles diamond industry. The time difference between New York and Los Angeles provides advantages, since diamond dealers in Los Angeles can still do business with other parts of the world, with Asia in particular, at times when New York cannot. Los Angeles is unable, however, to offer the advantages of cities with large diamond exchanges. If Los Angeles is able to capture larger segments of the Asian market, its stature will grow considerably.

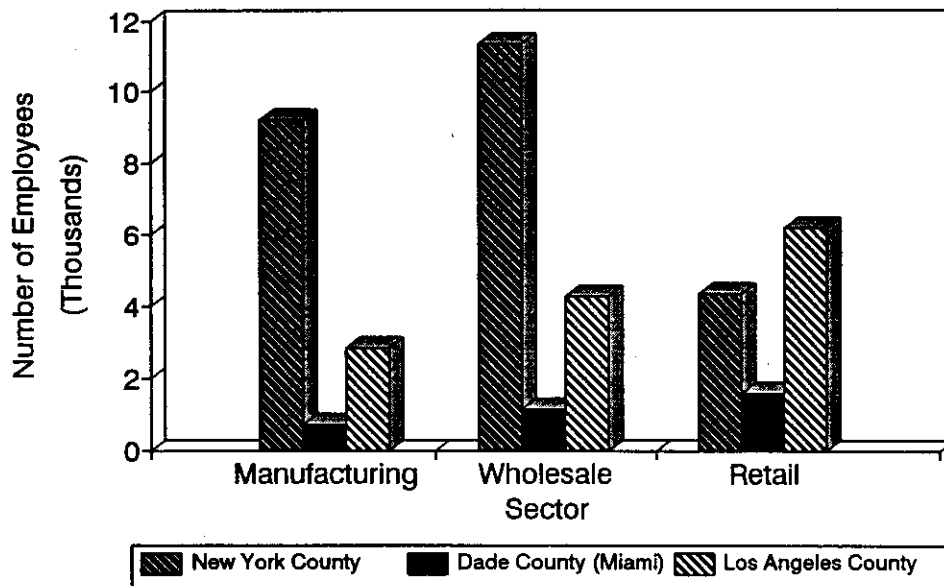
Miami

Like New York and Los Angeles, Miami is a very international city, a prerequisite for becoming a diamond center. Given its proximity to Latin America and the Caribbean, Miami has the potential to become an important link between these areas and the U.S.

The Diamond Dealer's Club of Florida was incorporated in 1991. The Club is located in Miami and has 140 members, many of whom moved to Miami from New York. One of the signs that Miami is becoming increasingly significant is the frequency with which New York diamantaires travel to Miami. A key player in the New York industry told us that it is common for a New York diamantaire to travel one to three times per year to Miami on business. These factors have not yet translated into changes in employment there.

While Los Angeles and Miami do not yet present a threat to the New York City industry, their strength appears to be growing. Los Angeles and Miami are already major retailing centers and are attempting to establish themselves as trading centers that would be in competition with New York (see Figure 24).

Number of Employees in US Centers By Sector and County, 1989



Source: US Department of Commerce, COUNTY BUSINESS PATTERNS, 1989.

Figure 24

Lessons for New York

New York City provides diamond cutters with many advantages as a place for doing business: access to the large U.S. market; proximity to a major financial market; the presence of superb cutters; good transportation through international airports; and the flow of tourists. Several of these factors are less significant today than they once were. For example, the industry's proximity to a large financial market is less relevant than it once was, given the increasing ease with which the banks and investment houses can conduct business from afar. The number of cutters in New York has fallen, and the flow of tourists is also shrinking.

Because there are more diamond centers today, competition among centers has increased. Although diamonds cut in New York City have been described as "uniquely elite," with unusual fire and brilliance, it may no longer be sufficient to have the most beautiful diamonds. Promotion and marketing are more important than ever.

One of the interesting constants among the Belgian, Israeli, and Indian diamond industries is the extent to which marketing efforts are subsidized by their governments. Each of these countries provides government assistance in export promotion. Other governments provide assistance in training and technology development.

Another interesting contrast between New York and the other international centers is the location of manufacturing in relation to trading. Manufacturing in most other centers occurs both in the center and in more rural areas. For example in Belgium, manufacturing takes place in the Kempen, a rural area, as well as Antwerp. Although there are manufacturers in the urban area of 47th Street, many New York firms are multinational, with manufacturing occurring overseas under U.S. control.

VI. RELOCATION

The evidence is mixed as to whether relocation is a serious threat to New York's viability as a diamond and jewelry center. Most respondents to the survey and participants in the interviews said that their current location is critical and that they want to remain in New York. It is not clear to what extent emerging regional centers are competing with New York City for New York firms. They may simply be meeting growing regional demand.

The participants in the focus group summarized relocation trends in the following way: although the periphery of the industry has left, the core of the industry remains in Manhattan. In the interviews, several owners expanded on why New York City is an important location for firms. One diamond broker suggested that "New York has synergy."

The majority of the respondents strongly agreed or agreed that business location is crucial to the firm's success (see Figure 25), their strong desire to remain in New York is probably due in large measure to the location of their customers and suppliers.

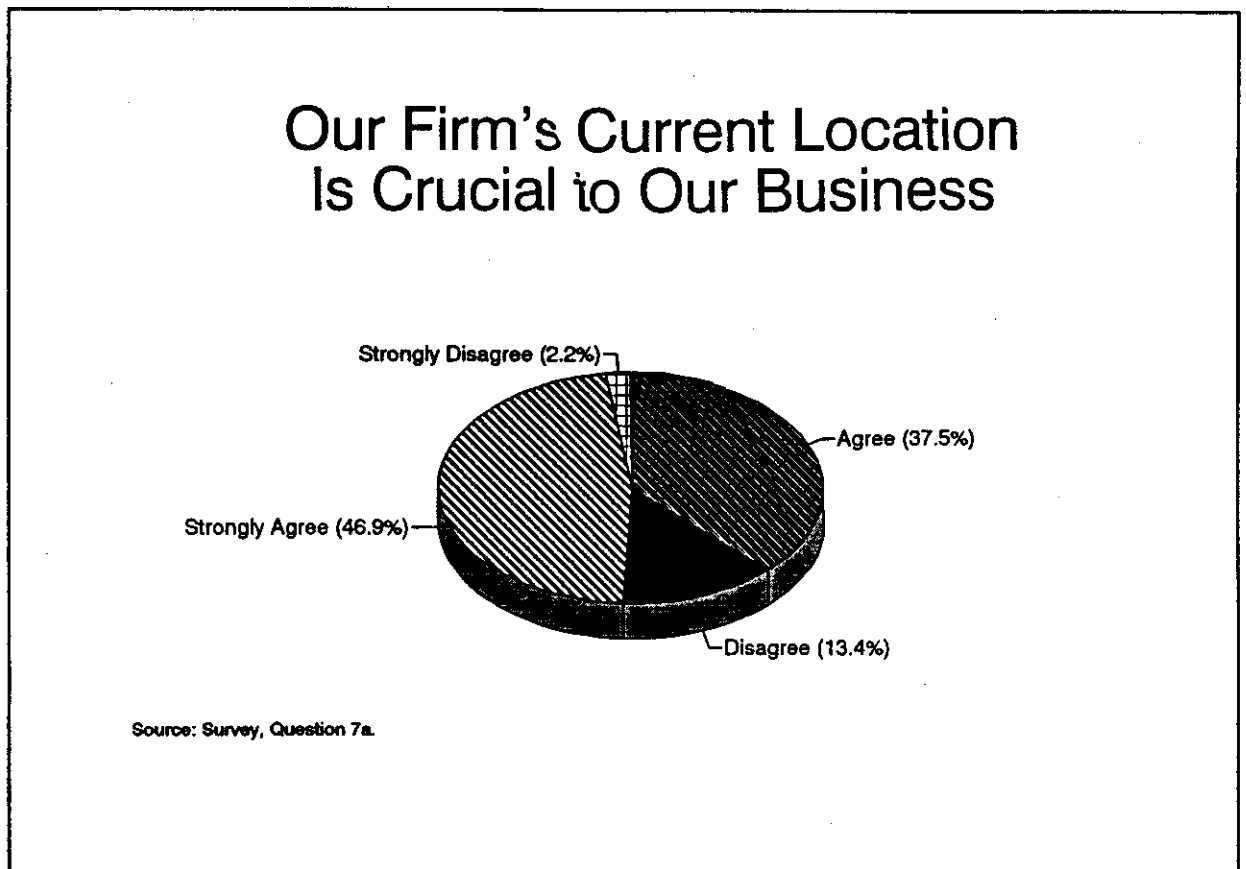


Figure 25

Wholesalers, manufacturers, and retailers interviewed are strongly tied to the existing synergistic market in New York. When asked about the decision to relocate or to stay in New York, people in the diamond business spoke of the industry as a single unit; they said they would leave if the industry as a whole left, but it is difficult to relocate alone. "As the suppliers move, I will move, along with everyone else," one wholesaler told us. Another business owner who combines both wholesale and manufacturing told us that the industry cannot leave without the manufacturers and designers because they keep the industry together and in New York.

Many of the people interviewed also can't imagine leaving because New York is their home, their families are here, and they are bound by longstanding business ties to their suppliers and customers. Tradition is a factor in deciding to stay. One diamond broker described it differently, saying that it was "inertia" that kept firms in New York.

However, a very large number of survey respondents said that they knew of jewelers who had left New York City (see Figure 26). Seventy-five percent of the firms interviewed agreed or strongly agreed that many jewelers have left Manhattan. One diamond importer told us that of the firms that had left, the majority represented owners who were going back to their original place of residence.

As one industry leader pointed out during the focus group meeting, not all moves are similar. The impact of a firm's relocation differs in magnitude depending on the size and significance of the firm. Recently, a large firm that employed 300 people left the City, causing a large impact on the diamond and jewelry business, as well as on other related industries. One expert referred to a possible "snowballing effect" that could occur if large firms continue to leave, causing other firms to relocate as well.

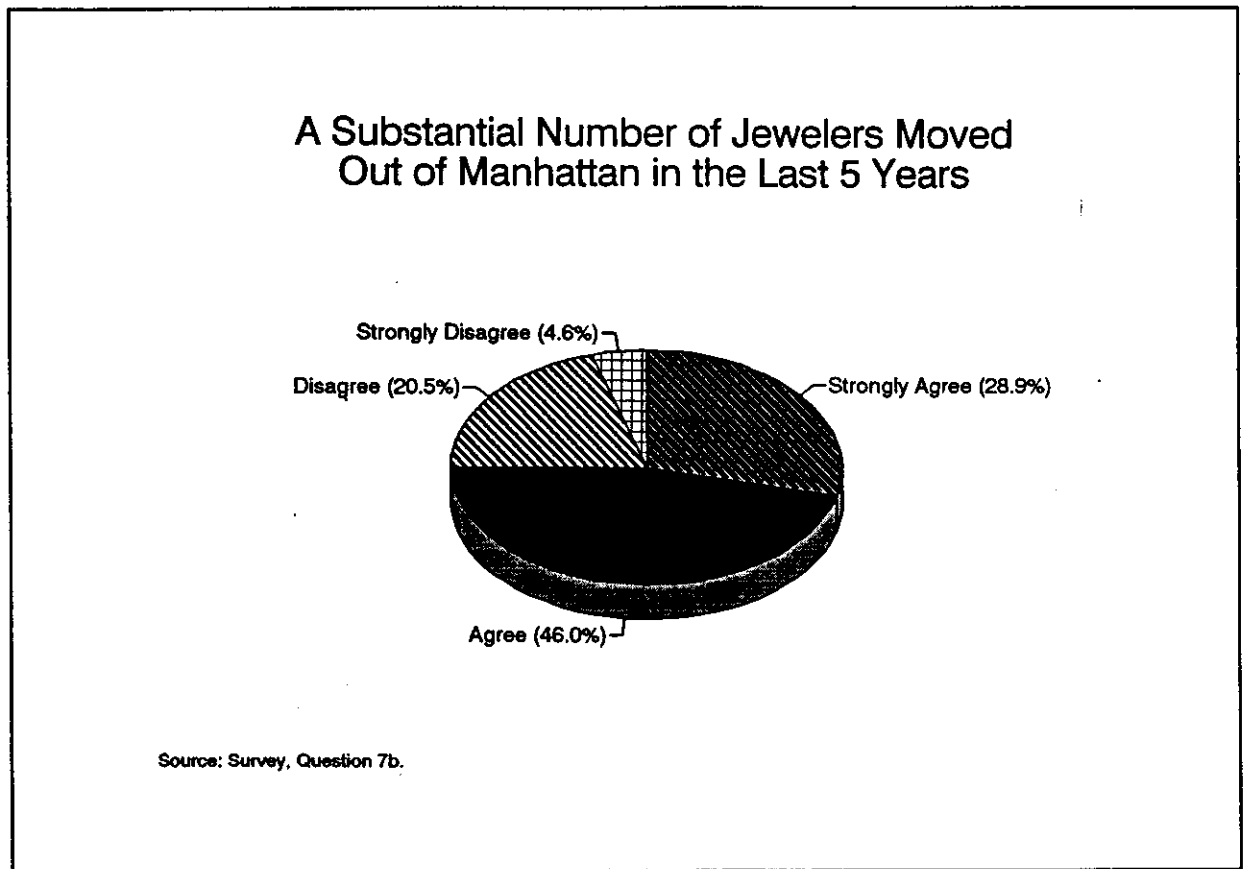


Figure 26

The Port Authority's database on business births and deaths for jewelry manufacturing, however, shows three times as many business deaths as relocations (see Figures 27 and 28). It may be that in answering the written survey question, respondents combined business relocations and business deaths.

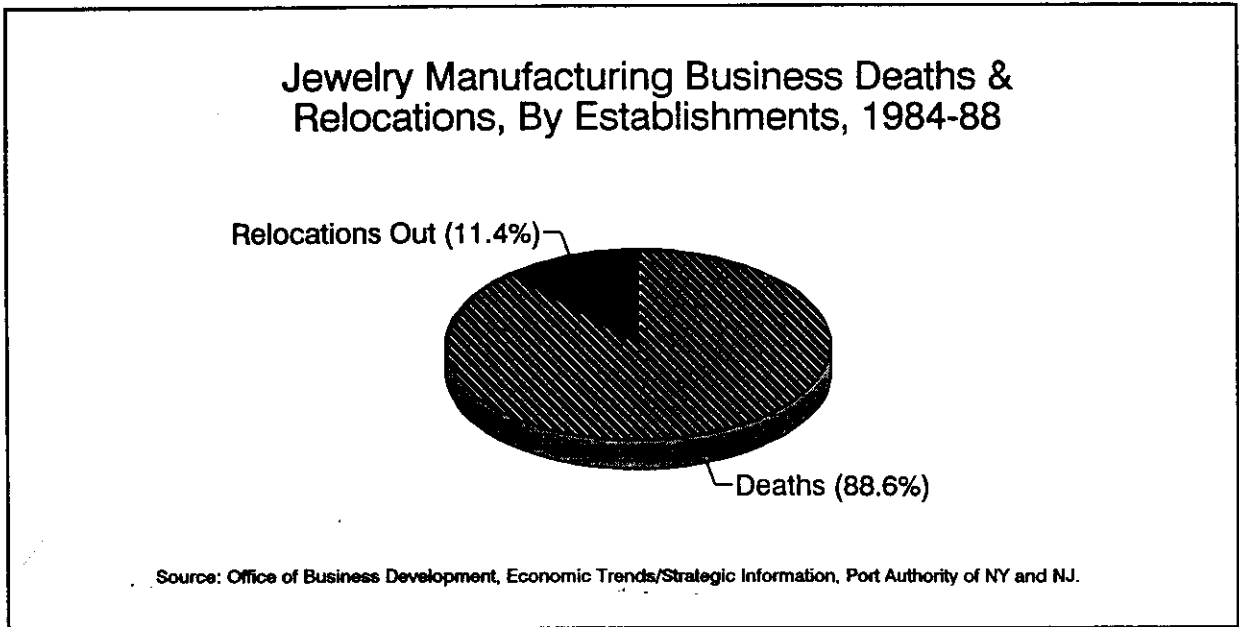


Figure 27

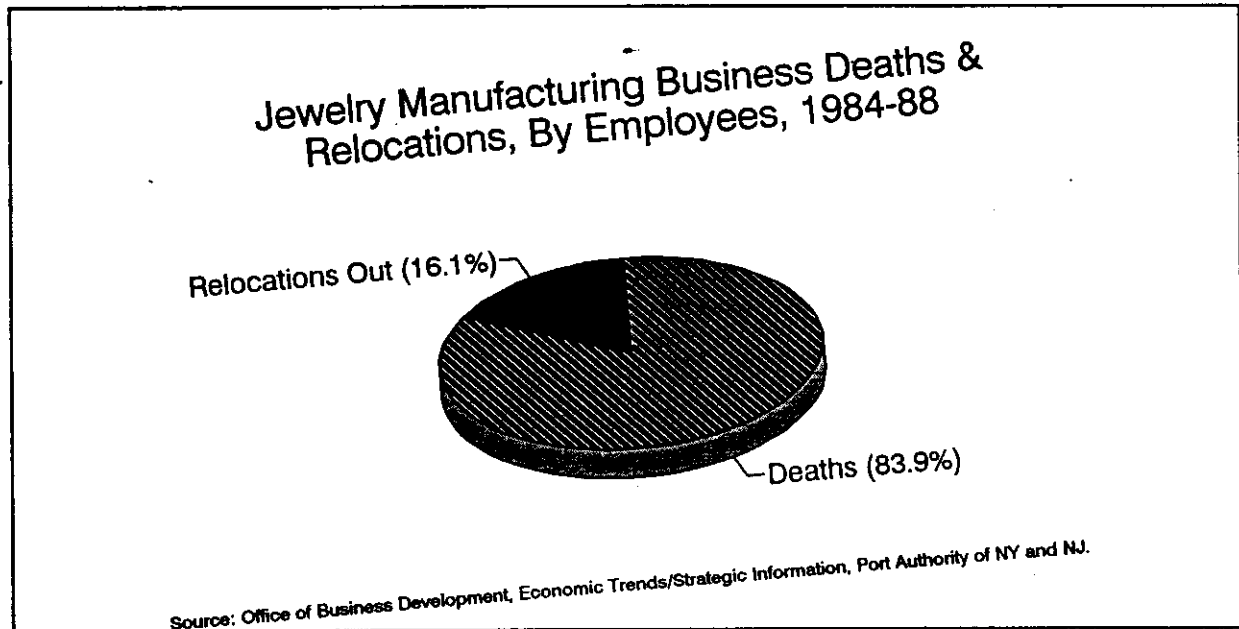


Figure 28

Results were mixed as to whether or not firms were likely to relocate within the next two years. Seventy-two percent of the respondents were NOT likely to move (see Figure 29). Interviews with manufacturers and wholesalers not only told us why firms would want to stay in New York, but factors that would cause them to want to leave.

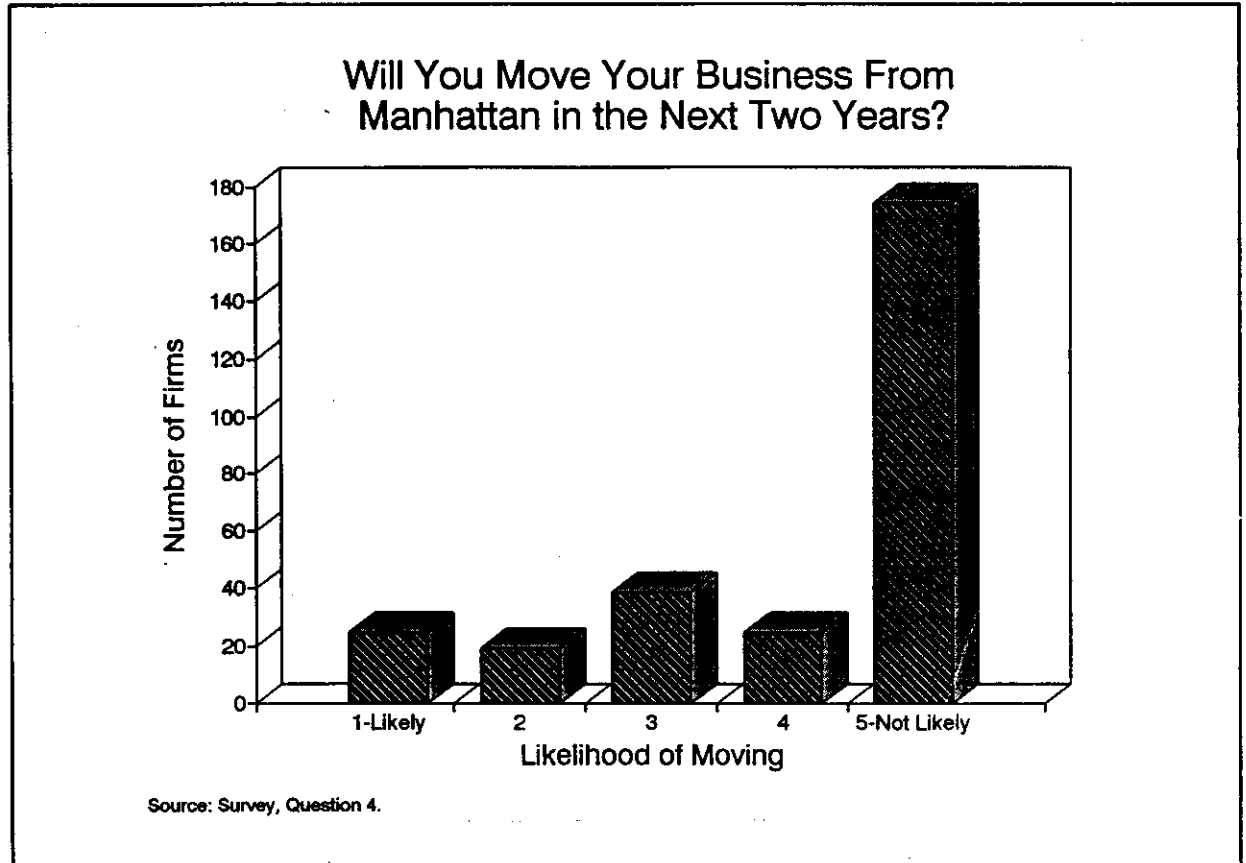


Figure 29

A number of wholesalers and diamond dealers, however, told us that they might leave New York City as soon as their business improves. Relocation is expensive because it would result in a long pause in business and a loss of customers. One wholesaler of fine jewelry told us that it would cost him \$2 million to relocate. He has tried to relocate to Long Island but his plans fell through. In Long Island, rent is only \$3.00 per square foot. In the mean time, his current landlord lowered the rent from \$12.00 to \$8.00 per square foot. Once the recession is over and business improves, he said he will move.

The majority of the reasons given for why business would move were space and related overhead costs (see Figure 30).

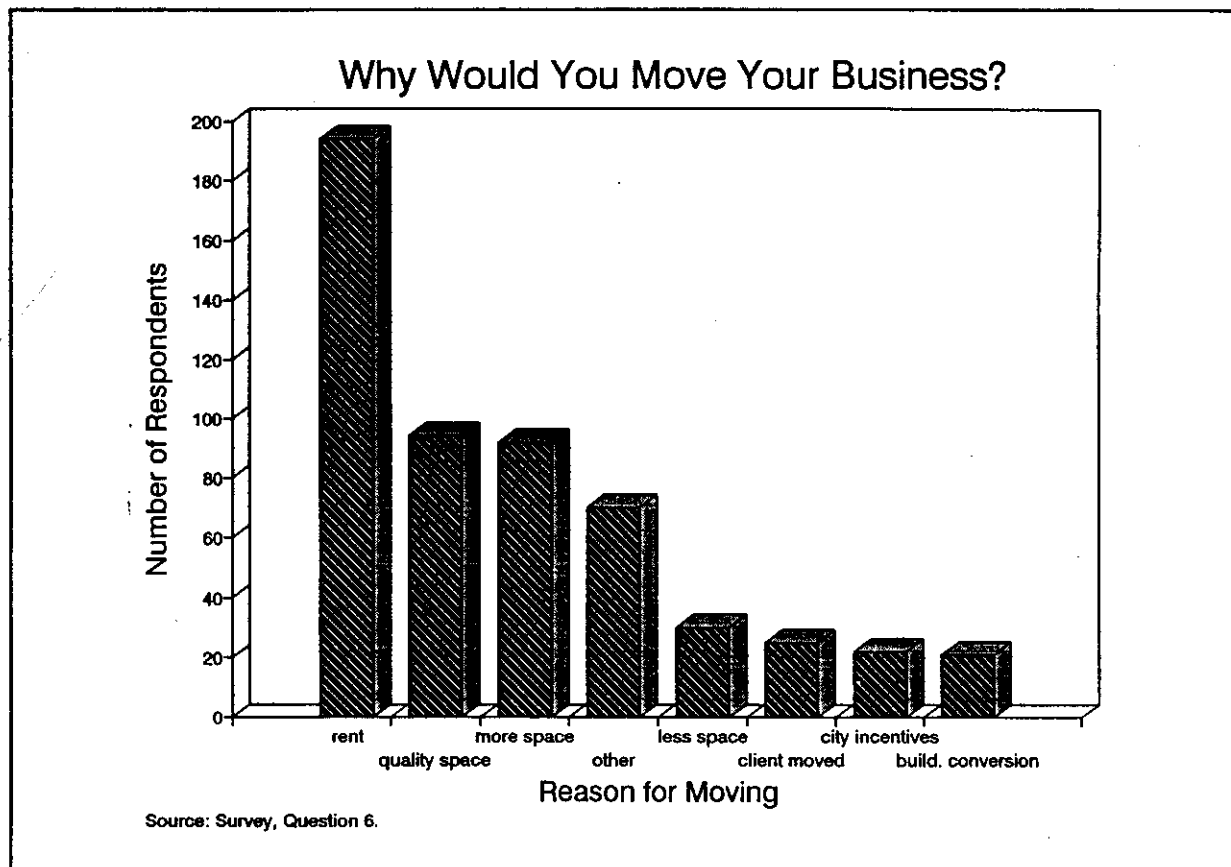


Figure 30

Other reasons for moving include the quality of life, security, and cost of operations. One jewelry manufacturer told us that his colleagues decided to leave due to incentives provided by other cities, including tax abatements and the chance to own their own buildings. "New York is forcing the business out," he told us.

The survey asked the following question: If you had to leave your current space, where would you move to? Forty percent of the respondents would seek to remain in the Jewelry and Diamond District, 18 percent would move elsewhere in Manhattan, 9 percent would move within the New York metropolitan area, 7 percent said they would move to another borough, 18 percent would move to a different state, and only 5 percent would move to another country (see Figure 31).

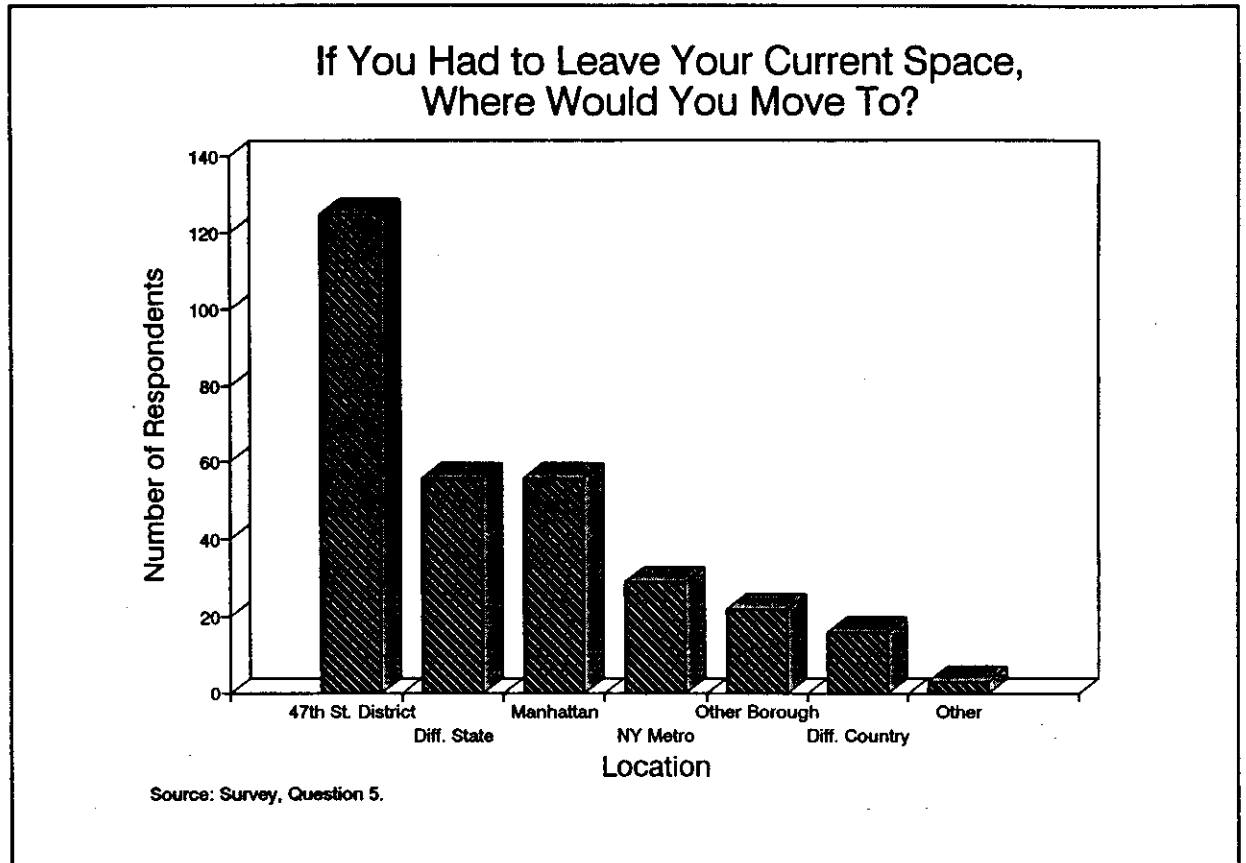


Figure 31

VII. THE NEEDS OF THE INDUSTRY

While New York remains the undisputed center of the diamond and jewelry industries in the United States and a New York location offers many advantages, the City should not be complacent. The following section summarizes the needs of the industry as articulated by its own representatives. These needs, both those that are "real" and those that are a mixture of "reality" and perception, influence the locational decisions that firms make and their ability to compete for market share.

The long-term viability of the industry depends on its ability to take advantage of New York's strengths, while minimizing its disadvantages. New York's share of the industry can be retained, and even grow, if the city plans strategically.

New York's advantages are numerous. It is an international city and therefore an extremely suitable home for an industry that is exceptionally international in nature. The City's international airports, its telecommunications infrastructure also linking it to the world market, and its financial institutions are all important parts of the infrastructure serving the diamond and jewelry industries. Another critical advantage is the City's workforce that includes both highly skilled workers and designers. Finally, the synergy and market that continues to exist in New York City is a tremendous strength.

The survey gauged some of the industry's needs by asking questions that measure individual firms' problems. Some questions addressed particular needs, such as succession, or availability of skilled labor. More open-ended questions asked what the firms considered to be their largest problems, and what factors most affected their competitiveness.

When asked what most affected their competitiveness, firms ranked crime and the overhead costs of taxes and rent as major problems (see Figure 32).

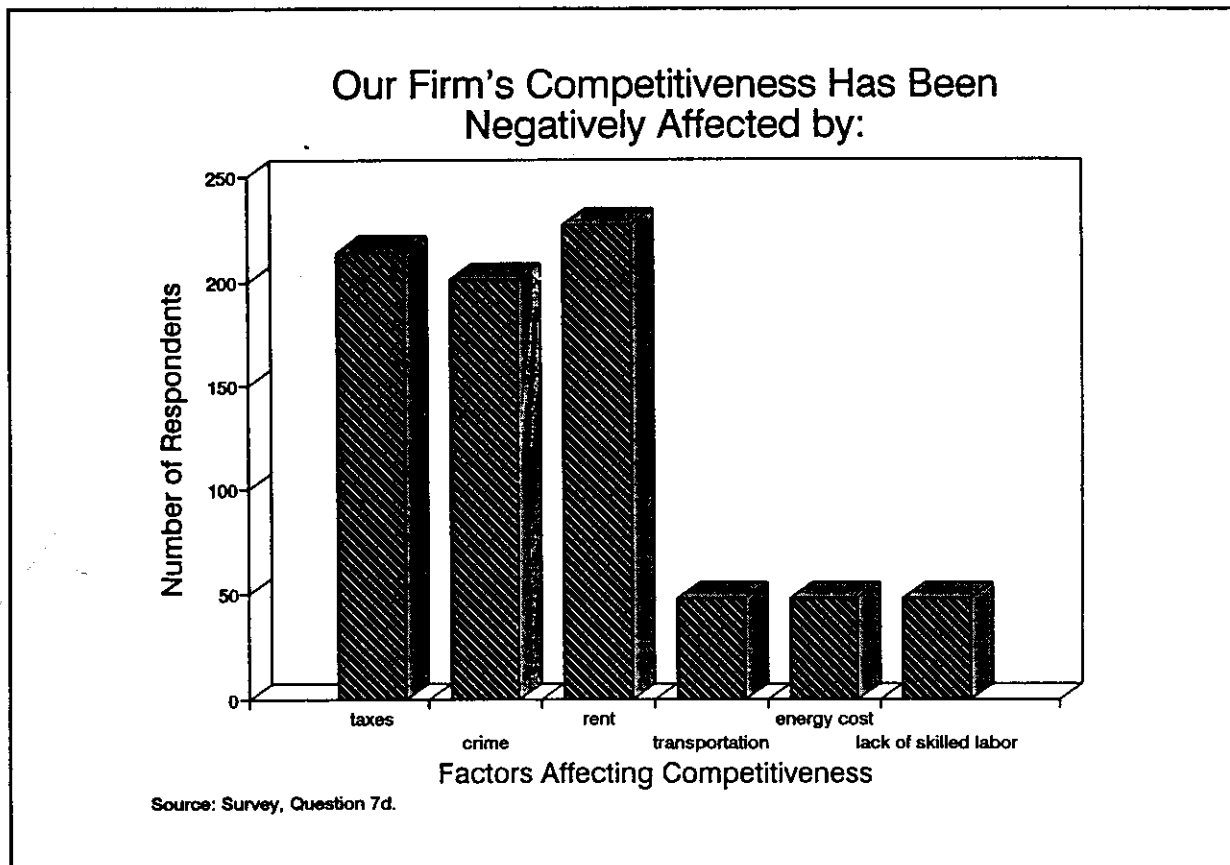


Figure 32

The most open-ended question, asking firms what their largest problems were, produced quite similar results (see Figure 33).

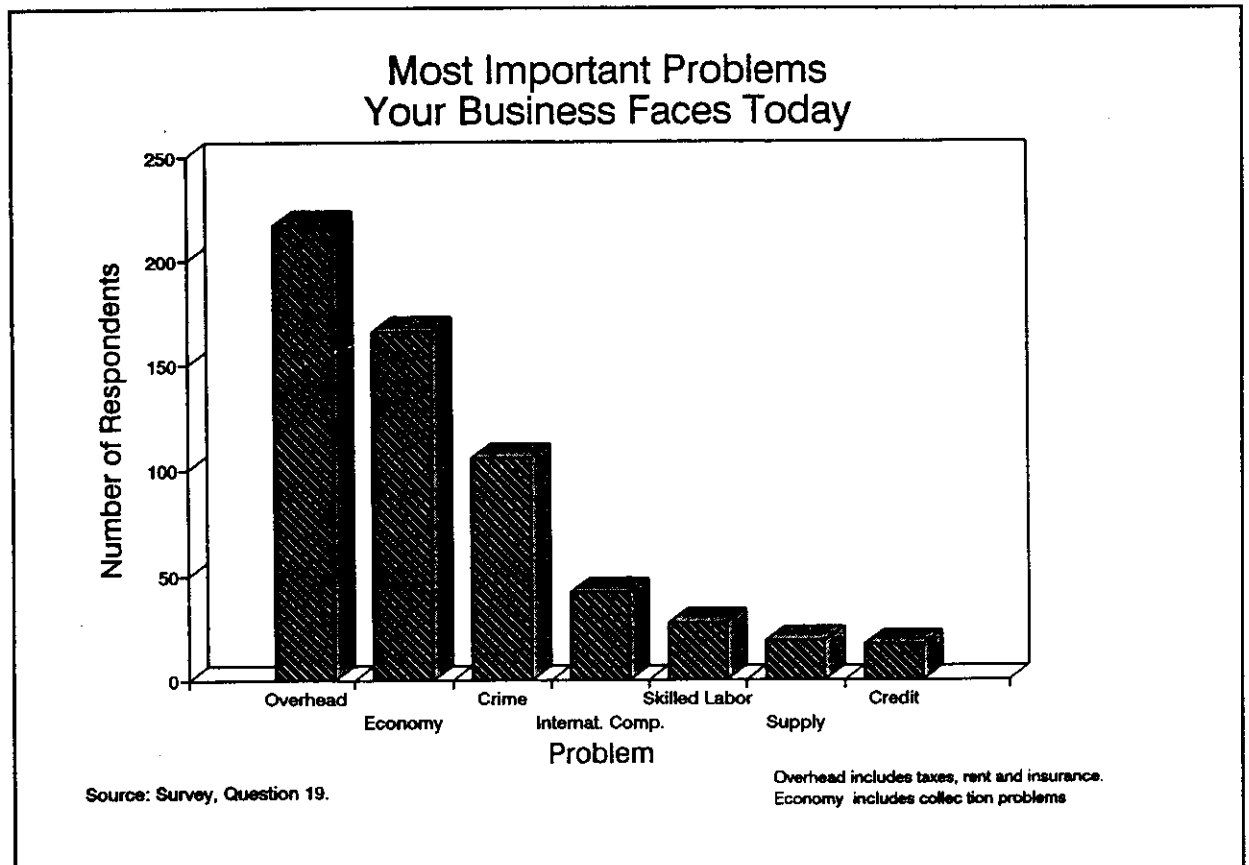


Figure 33

Firms found the overhead costs of rents and taxes to be their most important problems. This was followed by the state of the economy, particularly problems with bankruptcies and collections. The category of crime, security and safety was ranked as the third most important problem.

A significant number of respondents also mentioned international competition and finding skilled labor as serious problems. In the interviews, questions of the image of the industry came up as a serious problem.

Some of these problems are beyond the capacity of local government to solve. No city plan will pull the country out of recession. Overhead costs are also unlikely to be significantly altered by the city. Taxes, while considered important by most firms, are unlikely to change significantly, simply because on the local level, fiscal and equity concerns

make it extremely unlikely that industry will be given special exceptions. The federal luxury tax, while important, is unlikely to be addressed at the city level. However, the list of needs attempts to highlight those that are crucial to retaining the New York diamond and jewelry industry. They warrant careful consideration and planning.

Rent and Space Needs

The need for more or less space, the quality of that space, and the cost of space are important considerations for diamond and jewelry firms. Rent costs are very high in the Diamond District, and constitute one of the largest expenses for firms. Accordingly, rent costs (in the category of "overhead") were considered a primary factor affecting competitiveness in our survey. Relocation, however, is difficult for individual firms, because clustering is essential to the industry.

Many diamantaires feel restricted to the spaces they currently occupy in the Diamond District because they are in buildings that offer features that few other locations could provide. These features exist, in part, because of the sheer number of firms with similar needs. For example, security in some of these buildings is very good, and is cited as an advantage. Proximity to suppliers, customers, and the trading floor also are strong magnets for firms.

In order to stay competitive, many diamantaires believe that they must remain on 47th Street for both business and security reasons. As one wholesaler told us, there is a trade-off between higher rents and higher profits and lower rents and lower profits. Moving one block away from the District can decrease sales.

Rent is one of the primary costs of doing business in New York City, and affects the decision to relocate. Relative to New Jersey and Long Island, rents in the Diamond District are very high. Rents are also high relative to other diamond capitals around the world. However, rent in the Diamond District has recently fallen from approximately \$50 per square foot in the latter part of the 1980's to \$25 in 1992²⁴.

Insurance

In many cases, a firm's insurance bill is equal to its rent payments. One of the wholesalers interviewed paid \$10,000 per year for insurance, an amount equal to his annual rent payment. One wholesaler told us that the high cost of insurance is especially problematic for small firms. This problem is in need of further investigation to see what kind of mechanisms might work to lower insurance costs.

The types of protection policies available to the industry vary greatly, because it is

²⁴Brooks, p. 13.

possible to be insured against many different types of crimes in different locations. Several factors determine the cost of an insurance policy, including: the frequency with which a diamantaire must travel with the gems; the size of the inventory; and the number of employees. An insurer may even dictate some of the firms' business practices as a prerequisite for coverage.

Diamonds are an expensive commodity and easy to transport. As a result, diamantaires assume a high risk. Moreover, the existence of synthetic diamonds makes it relatively simple to switch a real diamond with a false stone. Because the diamond business is inherently risky, few insurance companies are willing to offer insurance to diamantaires. It is difficult for an insurance company to enter the market, since it takes many years to fully understand the diamond business. The president of a New York affiliate of Lloyd's of London stated that the insurance company, like the diamantaire, must develop a "feel for the industry." An insurance company can face very steep losses if it does not fully comprehend the market. One insurance company representative estimated that there are currently only six insurance companies that provide coverage to diamantaires. The number of insurance companies serving diamantaires has fallen in the past years, causing the cost of insurance to rise even higher.

Crime and Security

Crime and fear of crime seriously affects the diamond and jewelry industry. Fear of crime affects customers, workers and owners. The costs in losses, in insurance coverage, and in security systems and personnel are enormous. Crime, more than in other industries, is a critical problem because the value of diamonds is so high. Efforts to reduce crime further, and to advertise the successes of any such programs, are essential to the industry.

Major losses are very infrequent, but if they occur they can be extraordinarily expensive. The threat of robbery has forced businesses to employ large numbers of private security guards and to install elaborate and costly security systems in their offices, making the district one of the most protected areas in the City of New York.²⁵ This does not deter all crime, and smaller crimes in the Diamond District are not uncommon. These include: pick-pocketing; customers presenting themselves with false documents or falsified certified checks; switching diamonds; and slashing automobile tires in order to rob diamantaires traveling by car. Armed robbery and burglaries of safes are relatively rare, according to one insurance company official.

While the fear of crime may be exaggerated, its impact is no less real. Everyone can cite instances of crime -- muggings, thefts, robberies, etc. This is to be expected in an industry that is intensely personal and where daily communications about markets and clients

²⁵Albert Lubin, The Diamond Dealers Club: A Fifty Year History, New York, Diamond Dealers Club, Inc., 1982, p. 26.

is vital. That there may be a heightened awareness of crime makes its impact no less real. In addition to crime's direct costs, the fear of crime deters customers from shopping in New York. Perhaps even more significantly, fear is providing an incentive for New York dealers to travel to other cities to complete sales.

In addition to theft, fraud is also a serious problem. Many complex schemes have been used to "buy" diamonds with checks from fictitious banks or bank accounts. Alternatively, forged checks are used to purchase diamonds.

There are both direct and indirect costs associated with all of these crimes. The direct costs include outlays for alarm systems, guards, vaults, and insurance. The indirect costs are difficult to estimate, as they involve the perception of crime. Many of the diamantaires and jewelers that were interviewed suggested that the perception of crime is very high. As a result, the retail sector of the District loses customers who fear for their safety in the District. Some wholesale business may also be affected. One wholesaler told us that other cities, like Los Angeles, Chicago, and Florida do not have this image problem. As a result, some foreign wholesalers avoid New York City in favor of cities perceived to be safer.

Crime in the Diamond District has decreased over the last eighteen months. While Manhattan Midtown North, the precinct that covers the Diamond District, has one of the higher robbery rates in the City, it demonstrated the third greatest decline during 1991 (18.2%). Diamond dealers have noted that a community policing plan of visibility and a larger uniformed presence have aided in this decline. This kind of success needs to be expanded and advertised. Additionally, the NYPD recently erected two police booths on 47th Street in an effort to lower crime.²⁶ However, diamantaires complained that the police booths are usually empty.

Development of International Markets

International competition ranked fourth as a problem for New York firms. One way other countries compete is to export into New York, or otherwise try to capture the New York market share. The governments of many diamond capitals provide extensive export promotion assistance. As other diamond centers expand, capturing global market share is increasingly essential to the New York diamond and jewelry industry. While New York firms are already exporting a large portion of their products, neither the federal nor New York City governments match the services provided by other governments in export promotion. Assistance and organization are essential for New York firms to continue to export and to move into new markets.

The jewelry industry is already extensively export-oriented. Approximately five out

²⁶Blumenthal, Ralph, "Less Crime to Count," New York Times, March 27, 1992, p. B3.

of every six employees in the jewelry sector work producing jewelry destined for foreign markets. With two exceptions, no other New York City industry has as high a proportion of its manufactured goods destined for consumption outside of New York City.²⁷

The U.S. is the fourth largest diamond exporter in the world. In 1991, the value of diamond imports totaled \$3.46 billion, whereas U.S. exports totaled \$1.35 billion²⁸. The key markets for U.S. diamond exports are Belgium, Hong Kong, Japan, Israel, and Switzerland. The Japanese market is second only to the U.S. market for diamond jewelry.

Both exports and imports have grown substantially in recent years. As a result, the demand for New York diamonds has grown. Despite the recession, the past two years have been very good for exports. 1990 was the best export year ever, and 1991 was the second best year for New York City diamond exports. According to the American Diamond Industry Association Inc., diamond exports from New York City have considerable growth potential.

Diamonds can be exported through two different mechanisms: goods can be sent abroad or customers can be brought to New York. Foreign wholesale buyers come to the Diamond District to buy stones. However, fewer foreign buyers are coming to New York City than in the past. One survey respondent told us that European customers are less likely to come to New York because of New York's poor image, which includes homelessness, pollution, and crime. As a result, foreign buyers are going to other U.S. cities, including Los Angeles, Miami and other centers. Israel and Belgium provide special services for the foreign buyers, including limousines, meals, and entertainment. New York has not catered to foreign buyers in the same way.

Some firms do have foreign clients to whom they export. However, of the firms surveyed and interviewed, the bulk of the business is done with U.S. customers. The survey respondents reported that their largest customers are located in the U.S.; foreign customers are located in Japan, Europe, and the Middle East (see Figure 10). One medium-sized wholesaler stated that 90 percent of his clients are in the U.S. One wholesaler with affiliates in Antwerp and Tel Aviv exports to Canada.

Maintaining distant business acquaintances is very expensive. As a result of the large expenses involved, many of the owners interviewed reported that they did not export. Those that did often relied on family members, which while secure, provides a limited network.

²⁷ New York City 1991: The World's Capital in Transition, Pierre Vilain The Economic Policy and Marketing Group, Office of Sally Hernandez-Pinero, Deputy Mayor for Finance and Economic Development, The City of New York, 1991, p. 93.

²⁸ The figures represent diamonds that are cut but not set. American Diamond Industry Association (ADIA) Newsletter, Spring, 1992.

For example, few owners have family connections in the Asian market. By not responding to the large market in Asia, the New York industry may miss out on important opportunities.

Technology

The use of new technologies in diamond manufacturing directly affects competitiveness. By lowering the labor costs per diamond by increasing capital investment, it is possible to increase market share of diamond manufacturing. Israel is a pioneer in developing new technology to cut stones, and accordingly it has steadily increased its share of the diamond cutting industry. This has important implications for New York. Israel may soon compete directly for New York's cutting niche in large stones as it continues to develop its strengths. It is unclear whether New York can gain more of a share in cutting diamonds, or even keep the share that it does have, but investigating these possibilities is essential. Since diamond manufacturing is a prerequisite to retaining a share of the supply of diamonds, to not plan thoroughly in this area could be extremely harmful.

Throughout the diamond industry, investment in research and development has increased. Factories are increasingly investing in the purchase of modern equipment. According to a paper presented to the International Diamond Technical Symposium in 1991, "the diamond industry is going through a revolution and is awakening from many years of conservatism."²⁹

The new developments include the use of lasers and computers to assist in diamond manufacture. The result of these changes is that, in a modern diamond factory today, about \$30,000 per employee is invested, as opposed to about \$5,000 per employee in a traditional factory.³⁰

Technology has altered diamond manufacturing in the following ways:

Studying the Stone: Computers can determine the best way in which to cut a stone in order to yield the stone of greatest value.

Cleaving The introduction of lasers caused a revolution in cleaving. Lasers can be used for kerfing. As a result of the laser, several diamonds can be kerfed simultaneously, thereby reducing costs and increasing precision, all in a shorter period of time. The lasers can be

²⁹"Buying a New Machine is Only the Beginning," New York Diamonds, Winter 1991-92, pp. 46-48.

³⁰Ibid.

guided by computer. Computer-guided lasers can make a firm ten times more productive.³¹

One laser system today can replace ten cleavers. In modern cutting centers, where many lasers are used, the number of traditional cleavers has dramatically decreased. As a result of the high investments and expertise required, laboratories have been established that operate a number of lasers, subcontracting the cleaving service. Sometimes a main manufacturer will have his own laser, and when a production capability surplus occurs, he will subcontract to other manufacturers to justify the high investment.

Laser Sawing The laser has also caused a revolution in sawing, as problematic stones have become relatively easy to saw by lasers. Subcontracting service centers have been established (usually combining cleaving and sawing), requiring higher investment and specialized knowledge. Among the advantages of laser sawing are the quick speed and the greater yield that can be attained through sawing in nonconventional directions. Laser sawing has two drawbacks: the high cost of using laser and the large weight loss of the diamond.

Sawing In the light of the large number of ordinary sawing machines that can be operated by one sawing employee, it is justifiable to invest in a large number of these machines. As a result, the sawing factories have become subcontractors.

Bruting or shaping the diamond has been done automatically for some time. The modern bruting machine will stop automatically after the diamond reaches a certain diameter, so that the stone cannot become over processed. New technologies are being tested in which robots will transfer the stones from machine to machine, according to previously specified patterns.

Polishing Automatic polishing machines have greatly improved over time, increasing the number of facets polished. The new generation of polishing machines can seek the grain. Diamonds, like wood have a grain, and must be polished with attention to the direction of the grain. New technologies are able to find the direction of the grain.

Increased investments in modern equipment have motivated a desire for better financial use of investments. This may result in different types of organization of future diamond cutting centers. Organization may range between two extreme possibilities:

- ◆ The fully integrated factory, containing all manufacturing processes, including continual updating of state-of-the-art production methods, investments and the required expertise.

³¹ Steven Benson, Reducing the risk of innovation: Is the total requirement satisfied? Diamond World Review, No. 65, September-October 1991, p. 28.

- ◆ A firm that makes no investment in manufacturing equipment and does not own an operative unit, but utilizes subcontractors for all processes.

Between these two extreme possibilities are the whole range of manufacturers who operate factories that include some of the manufacturing processes, while the various subcontractors carry out many processes.

In the cutting centers of the future, there may be subcontractors for all production processes: sorting, marking, cleaving, sawing, bruting, and polishing, among others. These subcontractors will invest in modern state-of-the-art equipment and will have a great deal of knowledge and experience in their specific fields. In every center, however, part of the production will always be manual, carried out by experts specializing in the treatment of large or special stones.

Belgium and Israel are the most technologically advanced of the world's diamond capitals. The Israel Diamond Institute of the Weizmann Institute has conducted extensive research in technology for diamond manufacturing. Some of the technological developments were highlighted at the first International Diamond Technical Symposium, held in Israel in 1991 under the sponsorship of the Central Selling Organization and the Israel Diamond Institute. Through technology, relatively high-wage countries can to some extent compete against the low cost of labor in developing countries.

Training

Finding skilled labor was ranked as the fifth most important problem, and is directly connected to the area's training capacity (see Figure 34).

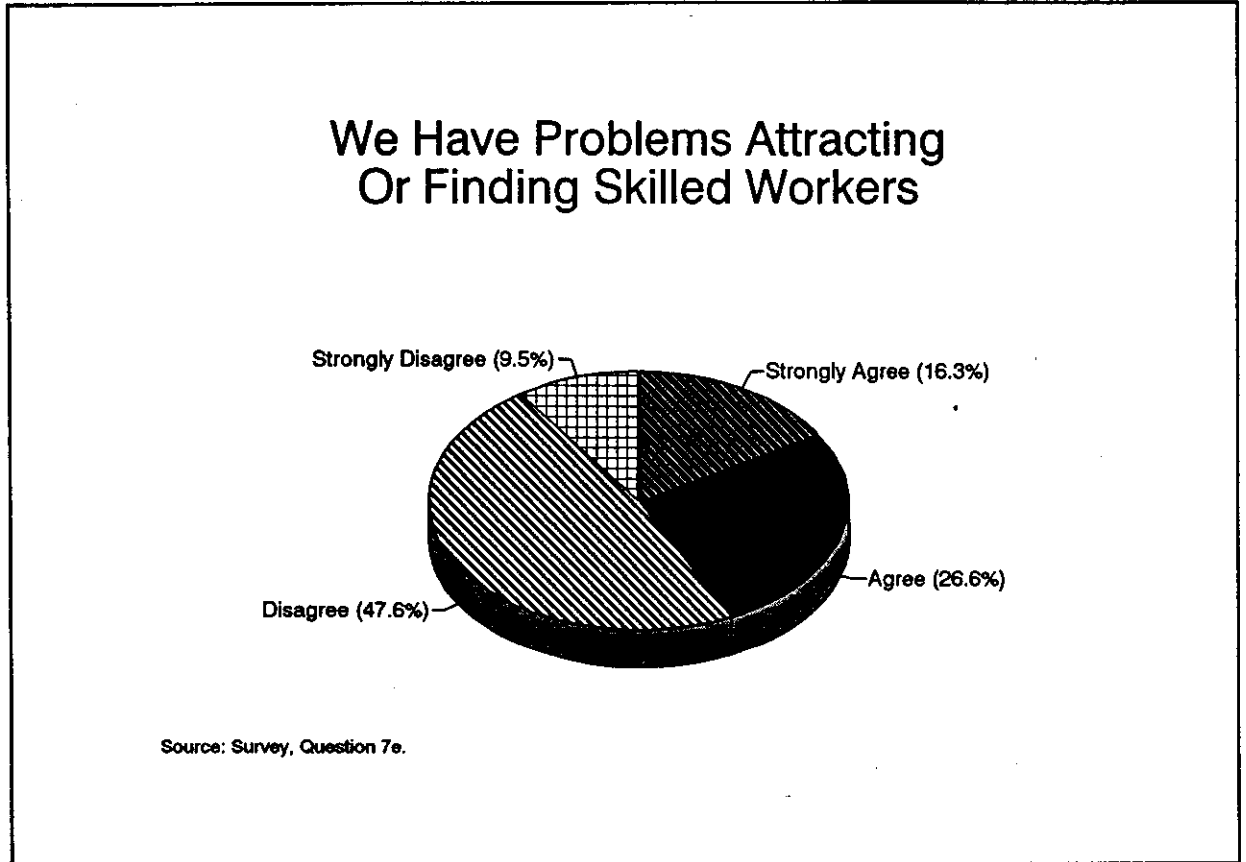


Figure 34

Training in the diamond industry is especially important since workers are continually handling and cutting high-priced rough diamonds. Any irresponsible handling or cutting could result in irreversible damage to the diamond. Such damage means the loss of a large sum of money to a diamond company. Labor needs are varied and complex. Little has been done to accurately assess training needs in the industry, or to coordinate programs. If technology changes will affect New York's share of diamond cutting, training for these technologies will be essential.

The two types of professional training available for diamond industry manufacturing workers are external courses and on-the-job training. Professional external training courses are helpful for diamond industry manufacturing employees to upgrade their skills in working with new technology. However, the diamond industry has a reputation for utilizing on-the-

job training to provide skills to its employees. Moreover, during interviews with manufacturing firms it became clear that workers need to prove their character as well as their skills, so that a technical degree is less valuable than it is in other fields.

Jewelry training courses have been offered in additional locations in New York City, but some of these programs have been eliminated. Both the New York Association for New Americans and the Federation Employment Guidance Service (FEGS) had jewelry training services, but the programs were cut, at least in part because of a decrease in City funds. The Marco Polo Center of Manhattan, which once provided training, is no longer in operation. There are still a number of jewelry manufacturing and design schools in New York. The Fashion Institute of Technology (FIT) provides credit to its students in jewelry design who serve as apprentices in New York City firms. The Jewelry Arts Institute in Manhattan provides training for jewelry manufacture, as does Nazareth College in Rochester, Studio Jewelers in Manhattan, the Westinghouse Vocational & Technical High School in Brooklyn, and the YWCA in Manhattan. These courses do not necessarily include work with diamonds.

The Gemological Institute of America (GIA) provides programs that allow jewelers to complete the course by listening to an audio tape. The courses offered cover sales techniques, latest trends in technology, diamond grading, and security procedures. These course are appropriate to wholesalers and retailers.

Adelphi University once housed a Diamond Institute to provide information about the diamond trade. The Institute held seminars for gemologists and investors in order to expand their knowledge about the diamond industry. Courses focused on mining, cutting, grading, and the pricing of diamonds.

The ORT Federation has been very successful in developing training programs to train diamond and jewelry workers. ORT is an international Jewish educational organization that raises funds to help immigrants find employment through vocational training and job placement. ORT schools teach many different types of classes, including: diamond cutting and processing, window display and computer-aided design, among others. Through government-sponsored programs, ORT pays a jewelry manufacturer to take an apprentice into his firm. In many instances, the apprentice is offered a position full-time after the apprenticeship.

Although ORT has considered establishing a jewelry training program in New York, it believes that there is insufficient demand for the type of training it provides and instead, it promotes training in other fields. ORT offers jewelry training programs in Israel, Europe, and in South America.

Labor Costs and Supply

The problem of finding skilled labor is also related to the attributes of the New York

labor market. The diamond and jewelry industries' employment needs vary across the different kinds of firms within the industries. The problems vary as well. The cost of labor is felt most acutely in the manufacturing sectors, but even here labor shortages and excesses vary depending on the specific skill required. Normal problems in finding personnel are exacerbated because the high value of jewelry and diamonds means that not only must the employee have the requisite skills for the job, but he or she must also be trusted by the firm.



Figure 35

This trust factor explains the predominance of colleague recommendations as a method of finding employees (see Figure 35). Many of the diamantaires interviewed reported that they only hire employees that they know well. As a result, recruitment is through word of mouth. The turnover rate is minimal.

All firms require skilled labor. The manufacturing firms require specialized blue-collar labor, whereas the service sector (wholesale and retail) requires white-collar labor. Both wholesalers and retailers require managers, accountants, salesmen, secretaries, inventory control experts, and designers.

The costs of labor were mentioned by many, although this problem was rated as less important than crime, rent and the general economy. For example, according to the wholesaler interviewed, a secretary suited to the jewelry business has an annual salary of approximately \$38,000 in New York as opposed to \$18,000 elsewhere. Clerical help costs \$20,000 to \$25,000 as opposed to \$10,400 in other cities. Wages in the wholesaling and retailing industries, however, have not stemmed employment growth overall in these sectors.

While some firms can weather higher labor costs, portions of the manufacturing sector cannot compete with low wages in countries like India. Diamond manufacturing in particular has suffered. Manufacturing processes that are labor and skill-intensive have migrated where the product is not unique or of extremely high-value. For example, while large, exceptional stones can still be profitably cut in New York, it is not profitable to cut diamonds here that are mass-produced for small rings or earrings. What remains here is the fine-tuning required to get a product to market, whether it be last-minute repairs, or dividing a larger stone into smaller pieces. As a result of this decline, The Diamond Registry Bulletin, one of the newsletters circulated in the diamond community, has recently started a help wanted section in order to help unemployed diamond manufacturers find work.

Other kinds of manufacturing in the industry have remained here successfully. High-priced jewelry that uses diamonds can compete using a higher paid workforce if the design and product quality are good. For these items, which are often of a limited run, it pays to offer such high degrees of service as responding quickly to an order for a special piece of jewelry, or repairing it on short notice.

These trends help explain the divided responses to our survey. When asked if firms have problems finding skilled labor, respondents provided mixed answers.

Image

Diamonds and jewelry are luxury goods. Their mystique is psychological and sensitive to image. Diamond dealers in New York complain that the District has lost its glamour. The negative image of the Diamond and Jewelry District is due in part to the perception of a rise in unethical business practices. Maintaining and improving this image is a priority for the retail sector, and also very important for wholesalers because attracting customers to New York City depends on a good image.

Buying a diamond or an expensive piece of jewelry can be a difficult, stressful experience. For the majority of customers, diamonds are a once-in-a-lifetime purchase. As a result, the consumer is usually not familiar with diamonds and the terminology used by retailers. The difference in knowledge between retailer and consumer, combined with the expense and potential for loss, the sheer size of the market and the incredible array of confusing choices, can provoke tremendous anxiety in consumers. In addition, the retailer may not be concerned with developing a long-term relationship with the customer. This is compounded by the fact that many of the consumers in the Diamond District are tourists.

There are several ways a retailer can mislead the customer. For instance, a retailer can collude with an appraiser. In a biased appraisal, the colluding appraiser grossly overestimates the value of the stone. Other deceptions include underkarating, where a jeweler sells a diamond that weighs less than the advertised weight, or deceptive pricing, where a special sale price is advertised that is in fact the regular price.

Although only a small minority of the businesses in New York have ever been found guilty of any violations, some of the jewelers interviewed and surveyed felt that the reputation of the entire District was jeopardized by the illegal actions of several businesses on the street. Some diamond dealers felt that the District had become a "flea market" or "bazaar."

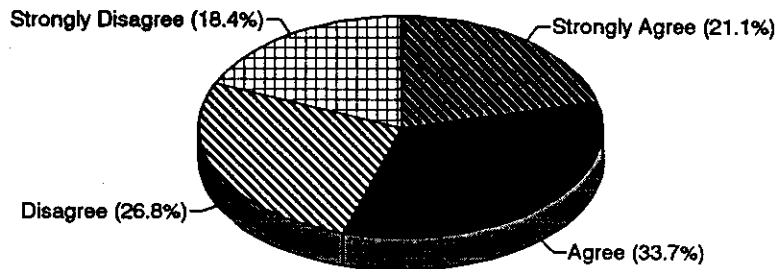
Succession

The firms in the Diamond and Jewelry District are typically family-owned businesses. Their marketing is based on personal skills and relationships. It is difficult to sell such businesses. One industry leader compared a jewelry business to a private medical practice, in which it is difficult to find a successor, given the importance of reputation.

The question of succession may have greater implications than relocation does for the future of these industries in New York. Between 1984 and 1988, for example, there were nearly eight times as many firm "deaths" -- usually ascribable to retirement -- than there were relocations out of Manhattan.

Approximately 45 percent of the respondents to our survey said they did not have a successor planned for their businesses (see Figure 36).

If Present Management Retires or Leaves There Would be People to Take Over



Source: Survey, Question 7f.

Figure 36

One manufacturer and wholesaler interviewed said that the only way to attack the succession problem is to make sure that there is enough talent and skill for workers to start their own businesses and earn their own reputations. Even this approach has its limitations, as the industry requires the investment of large amounts of capital to start a business. Working on expanding business births through credit help and training workers in entrepreneurship may be fruitful.

VIII. RECOMMENDATIONS

New York City's diamond industry is challenged by changes occurring around the world. The principal threat is not the typical one of a major employer relocating to a nearby state where costs are lower, but of an industry composed of many small businesses suffering attrition. There is also growing competition from other regional centers in the United States, and from international centers that receive far greater levels of government support in the areas of training, technology assistance, space and marketing.

An astounding majority of those surveyed feel New York City has not made significant efforts to keep the jewelry industry within the city. This measures the degree of alienation that exists between the industry and the city, and a perception that needs to be addressed by the city. A partnership is one way to bring the parties to the table. Working together, disaffection can be transformed into collaboration. The city must hear what the problems are, and begin to work with the industry to meet its needs.

While most of the specific recommendations that follow are designed to address some of the concrete concerns that are pressing most heavily on today's diamond industry, we recognize that these concerns will change over time. New needs will develop, priorities will change and programs will have to change to respond to those needs. The first recommendation therefore -- the establishment of an industry-government "partnership" -- concerns the creation of a process by which change can be monitored and responded to.³²

This partnership can provide a vehicle for refining and implementing the programmatic initiatives described below. These recommendations are not the end but the beginning of the process. They will require further research, exploration and discussion. The partnership would help to develop a consensus regarding the priority of each area of recommended service and who should provide that service.

Many organizations already exist within the diamond and jewelry industries. They provide a range services including security, public relations and training. The intent of the

³² There are several business improvement districts (BIDs) in operation near the Diamond District including the Grand Central Partnership and the 34th Street Partnership. Despite its name, the Partnership proposed herein is not a BID.

While we considered formation of a BID, we did not propose a BID because of certain disadvantages which a BID might present. For example, the composition of the District Management Association, a BID's governing body, is dictated by State law and a majority of the members must be property owners. The Partnership proposed herein should be broadly representative of the industry and the composition of its governing body should be more flexible. In addition, the Partnership is intended to serve the industry and its services should not be limited to a specific geographic area.

partnership is not to duplicate or replace these organizations but to support and coordinate their efforts and to connect these industry initiatives with city government as a supporter and assistant. In addition, the partnership offers a vehicle to improve services provided by others. For example, one citywide organization that offered a jewelry training program that was discontinued probably would have benefitted from a stronger industry network that could have been provided by the Partnership.

Recommendation #1: Establish a Partnership Between New York City and the Diamond and Jewelry Industries

New York City and the diamond and jewelry industries should create a Diamond and Jewelry Partnership to develop a strategic plan for the industries that includes a vision of healthy industries, and a plan to research and monitor the needs of the industries and develop programs responsive to those needs. The Partnership would be composed of representatives from key organizations in the industries such as the Diamond Dealers Club, Jeweler's Vigilance Committee, Jewelers of America, Manufacturing Jewelers and Silversmiths of America, New York State Jewelers Association, and the Gemological Institute, government, and a cross-section of businesses. The Partnership would be funded through industry contributions, a contract for services with the City, and grants obtained for specific projects.

The diamond and jewelry industries are composed of many small businesses. Few have the capacity to undertake programmatic solutions to such problems as organizing a trade mission or a training program. Their small size also makes it difficult for government, which has limited resources, to deliver services. Such solutions are only possible through cooperative action.

Similar "partnership" initiatives have been established to deliver services in such typically small-business sectors as the garment industry through the Garment Industry Development Corporation and in the metal-working industry through the Industrial Technology Assistance Corporation.

By contracting with industry-supported intermediaries to provide economic development services, both the industry and the government would benefit in a variety of ways: 1) The industries would become involved in the decision-making process and help to determine what services are needed: 2) Government would be able to leverage industry resources that may include both financial support as well as knowledge and commitment to the programs: and 3) Government and industries would develop a better understanding of each other's role and limitations.

Several of the programmatic recommendations described below would be facilitated by a partnership mechanism. In particular, the programs to increase competitiveness through training and technology assistance and to market the industry and promote exporting would benefit from a cooperative, industry-wide effort. Much of the new technology exceeds both the financial capacity and the demand usage of the typical small New York firm. Such

technology could only be employed efficiently if shared between several firms. Promoting exports, either through trade missions or by encouraging prospective customers to come to New York can be most efficiently pursued through a cooperative approach.

Recommendation # 2: Improve the Appearance of the Area and Develop a Neighborhood Identity

Many of the individual owners who were interviewed as well as industry association representatives said that the industries suffered from a poor "image," both in terms of the physical appearance of the area and the industries' reputation. As a result, both wholesale and retail clients are deterred from shopping in the area. In addition, other diamond centers fund vigorous promotional campaigns which chip away at New York's position as the leading center for higher quality stones.

A number of steps should be pursued to make the area more attractive and to strengthen the industry's image with retail and wholesale consumers. Several suggested that Forty-Seventh Street be closed to auto traffic and that distinctive signage and sidewalks be installed to make the area more attractive to potential clients, particularly tourists. In addition, high-intensity lighting should be installed to brighten the appearance of the area during late afternoons and both to extend shopping hours and reduce crime.

While further research is needed to determine if Forty-Seventh Street should be closed to vehicular traffic, there are other, short-term measures that could be implemented to give the area a more cohesive identity and help attract consumers. Staffed or unstaffed information booths could be erected. These booths could be used to distribute information educating consumers about the process of buying jewelry. Signs on adjacent blocks and nearby hotels could direct tourists to the Diamond and Jewelry District. A professional marketing campaign also should be directed at overseas buyers through foreign consumer press, travel publications and information distributed at airports.

Recommendation #3: Increase Security

The Diamond and Jewelry District is one of the most privately guarded areas in the City. Many buildings and individual offices in the district hire private guards and use metal detectors and systems for checking visitors. Visitors to individual offices frequently have to pass through several secured doors before entering the actual office. In 1992, however, the larger area of the Midtown North district received 654 complaints of robbery, 2865 complaints of grand larceny, and 2059 complaints of petty larceny. Over the past year, these complaints have dropped by 5 percent.

However, the perception is that crime is a very serious problem. Everyone tells stories and cites specific incidents of crime as proof of the problem. Wholesalers, manufacturers and retailers believe that customers -- retail consumers, professionals, and tourists -- do not shop in the area as frequently as they used to due to fear of crime. While

it is always difficult to gauge the real severity of the crime problem, the perception of crime impacts on a firm owner's decision, and more importantly on a buyer's decision, to continue to trade in New York or another area. Foreign traders are said to be increasingly reluctant to come to New York and New York traders are opting to go abroad to make sales. In addition, crime has a real impact on insurance costs that, as discussed earlier, are comparable to rent costs.

We support the police department's efforts to increase the presence of uniformed officers. These efforts, and any resulting arrests, should be widely publicized. In February of 1992, 324 police patrolled the Midtown North district, moving towards a goal of 403 officers under the Safe Streets, Safe City program. While the City's resources are limited, increasing the number of police is an investment in keeping the businesses in New York. The awareness of the police presence can be enhanced by pairing police officers with private security guards. Such an arrangement has been used at Bryant Park.

Recommendation #4: Expand and Market Training Programs

Opinions about the availability of adequately skilled labor varied. Manufacturers had more difficulty finding skilled workers than retailers or wholesalers. Even within manufacturing, 51 percent felt that finding skilled workers was not difficult while 49 percent felt that it was a problem. Labor issues are complicated somewhat by the nature of the diamond and jewelry business; not only must workers have appropriate skills, they must be trustworthy. The demand for employees who can be trusted with such valuable inventory is in part responsible for the industry's insular reputation. Diamond and jewelry firms hire who they know, through family connections or colleague recommendations.

Further analysis is required to determine what skills are most in demand and for what segments of the industry. The split in opinion on workforce needs may also suggest that existing programs are not well-enough known. Programs should be better publicized. The Partnership could assist in this effort and act as a clearinghouse for information on training.

Most of the existing efforts appear to be classroom-based training programs. While this may provide the participants with sufficient technical skills, it does not address the need for prospective employees to demonstrate the trust and ethical standards demanded by employers. While careful recruitment practices and on-the-job apprenticeship programs may provide opportunities to build trust, these kinds of programs tend to place additional administrative burdens on the business that employs the apprentice. The partnership might act as an intermediary to assume some of this administrative burden.

Another way the partnership could facilitate the smooth coordination of training programs would be to work at partnering existing training programs with businesses. This way the business can have direct input into what kinds of training programs are offered, helping to develop curriculum appropriate to training needs. In addition, better utilizing existing programs cuts down on expenses.

Recommendation # 5: Promote Exporting

Many of the people interviewed indicated that there were substantial opportunities to increase overseas exports. Both the Israeli and Belgian governments have launched aggressive marketing campaigns to promote the export of diamonds, both through marketing abroad and through bringing prospective foreign clients to their countries.

Direct export promotion can be assisted through market research to determine the consumer preferences of particular markets, identification of major foreign importers, and arrangement of trade missions and representation at foreign trade fairs. The partnership can identify intermediaries to survey firms on export needs, administer programs, and tap into federal and state export grants.

Indirect export, increasing the number of foreign buyers coming to New York, is also an option that should be explored.

Recommendation # 6: Improve the Image of the Industry

Several jewelry and diamond firm owners felt consumers and tourists were discouraged from buying by the industry's poor image. Diamonds are generally not purchased frequently and consumers lack sufficient experience and information to comfortably make decisions about what to purchase. The tremendous magnitude of the market that is its strength is also a weakness when it comes to consumers making decisions about where and what to purchase. Consumers' fears are reinforced and magnified by press attention to individual instances of abuse.

We recommend a number of steps to improve the image of the industry with consumers. One industry-sponsored organization, the Jeweler's Vigilance Committee, already exists to guard against consumer fraud. Its efforts should be supported and publicized within the industry. The industry's efforts to regulate itself should be publicized in the consumer press and the industry should explore creation of a "seal of approval" that retailers might display to inform consumers that particular vendor observes certain standards of conduct. This would parallel the Gemological Institute of America's Fine Jewelry Quality Council that would set standards for fine jewelry.

Finally, the industry should develop an educational campaign to provide consumers with basic information about the production and retailing of jewelry. Much of this kind of information has been prepared by industry groups and the federal government. Informational literature that suggests important questions for consumers to ask retailers, defines most commonly used terms and alerts consumers to their rights, should be distributed in the district.

Recommendation # 7: Develop Ways to Facilitate Succession

The jewelry industry is composed of many small, often family-managed businesses. Because trust that is based on the reputation of an individual plays such an important role in business relationships, it is very difficult to sell a business, and sales are very rare. While there is a natural cycle of business births and deaths in any industry, diamonds and jewelry are "aging" industries. Therefore succession presents a particular problem.

Given the highly subjective nature of succession, it will be very difficult to develop traditional programmatic solutions. However, an individual with an extensive network within the industry and with knowledge of the reputation of each firm could help broker relationships between retiring owners and firms seeking to expand. Some trade associations in other industries already play this role on an informal basis, and this is an activity the Partnership could undertake.

Recommendation #8: Promote Research and Access to Emerging Technologies in Diamond and Jewelry Manufacturing

The diamond industry is undergoing a technological revolution. For example, to remain competitive with countries with very cheap labor, Israel is developing technology that utilizes lasers, computers, and robotics to analyze, design and cut stones. Modern diamond factories in Israel are investing on average \$30,000 per employee as compared to \$5,000 per employee at typical traditional factories. The Israeli government promotes technological development through the Technology Committee of the International Diamond Institute, which sponsored the International Diamond Technical Symposium in 1991, and through training programs.

The Diamond and Jewelry Partnership should help to promote the use of new technologies and develop mechanisms by which technology can be shared among the City's many small firms. Computers and lasers are currently being utilized to cut diamonds in only a small number of businesses in New York City. While their use is unlikely to be as widespread as in Israel, given the difference in the nature of the New York and Israeli markets and the different types of stones handled in each location, there are likely to be opportunities for New York firms to increase their competitiveness through better technology.

Some technology assistance already exists within the jewelry industry. Currently, the State of New York Industrial Effectiveness Program (administered through the City's Industrial Technology Assistance Corporation) and the Manufacturing Jewelers and Silversmiths of America have funded research into the use of computer aided design in the

jewelry industry at the New York City Technical Institute. These kinds of efforts should be expanded.

There are a number of ways technology can be promoted in New York City. First, the City, equipment manufacturers and the proposed Partnership can sponsor symposiums to demonstrate the use of new equipment. The City can assist in financing the purchase of equipment through one of its loan programs. Exposure to, and wherever appropriate, practice with the use of new technologies can be incorporated into training efforts. Finally, the Partnership can explore programs to purchase and lease equipment and to arrange for equipment to be shared.

7c. New York City has made significant efforts to keep the jewelry industry within the city.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

7d. Our firm's competitiveness has been negatively affected by which of the following: (check off all that apply)

- taxes crime rent
- transportation energy cost
- availability of skilled labor

7e. We have problems in attracting or finding skilled workers.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

7f. If the present management of this firm were to retire or leave in the next five years, there would be people available to take over and run this business.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

8. What percent of the work your business does is:

- design
- cutting and polishing
- setting
- retail sales
- wholesales
- other (specify) _____

9. We would now like you to help us identify the Geographical Location of the Customers and Suppliers with which you do most of your business. As we ask you Questions 9a. and 9b. Please refer to the following Geographic Codes:

GEOGRAPHIC CODES:

- | | |
|---|------------------|
| A. Manhattan
(47th Street District) | H. US Midwest |
| B. Manhattan
(outside 47th St. Area) | I. Europe |
| C. Tri-State area | J. Asia |
| D. US, East Coast | K. Middle East |
| E. US, West | L. Latin America |
| F. US, Northwest | M. NYC: Bronx |
| G. US, South | N. NYC: Queens |
| | O. NYC: Brooklyn |

9a. Where are your Three Largest Customers Located?

- 1. business %
- 2. business %
- 3. business %

9b. Where are your Three Most Used Suppliers Located?

- 1. business %
- 2. business %
- 3. business %

10. What is your present approximate monthly rate per square foot in rent?

\$ _____ per square foot each month.

11. How many people do you employ? _____

12. How do you find your employees? (Check as many as necessary.)

- from vocational training programs
- by advertising
- recommendations by colleagues
- all employees are relatives or family members
- Other (please specify) _____

13. How many of your employees in manufacturing are in each of the following pay ranges (not including overtime)?

Number: Base Hourly Rate:

- _____ less than \$5.00
- _____ \$5.01 to \$8.00
- _____ \$8.01 to \$11.00
- _____ \$11.01 to \$15.00
- _____ \$15.01 to \$20.00
- _____ \$20.01 to \$25.00
- _____ Over \$25.01

_____ Total Number of Employees in Manufacturing

13a. Do these employees receive bonuses?
___ Yes ___ No

14. Approximately, how many of your employees live in:

Number:

- _____ Manhattan
- _____ The Bronx
- _____ Queens
- _____ Brooklyn
- _____ New Jersey
- _____ Westchester, Putnam, Rockland
- _____ Southern Connecticut
- _____ Long Island (Nassau-Suffolk)

16. How many of your employees in retail are in each of the following pay ranges not including overtime?

Number: Base Hourly Rate:

- _____ less than \$5.00
- _____ \$5.01 to \$8.00
- _____ \$8.01 to \$11.00
- _____ \$11.01 to \$15.00
- _____ \$15.01 to \$20.00
- _____ \$20.01 to \$25.00
- _____ Over \$25.01

_____ Total Number of Employees in Retail

16a. Do these employees receive bonuses? ___ Yes ___ No

16b. Total Number of Employees _____

17. In numbers, how many of your employees are:

Number:

17a. Age:

- _____ Under 18
- _____ 18 to 25
- _____ 26 to 35
- _____ 36 to 50
- _____ 51 to 65
- _____ Over 65

17b. Gender:

- _____ Male
- _____ Female

17c. Ethnic Background:

- _____ African American
- _____ White
- _____ Latino
- _____ East Asian/Pacific Islander
- _____ South Asian
- _____ Other
- (specify) _____

17d. Religious Affiliation

- Jewish, Hasidic
- Jewish
- Catholic
- Protestant
- Buddhist/Hindu
- Muslim
- Other (specify) _____

18. What is YOUR age, ethnic background, gender and religious affiliation?

Age _____
Ethnic Background _____
Gender _____
Religious Affiliation _____

19. Please list the 3 most important problems your business faces today:

- 1) _____
- 2) _____
- 3) _____

Thank you for your time and effort. We hope the results of this survey will identify some of the problems of the Jewelry Industry in New York City and provide the City Government with some suggestions for the future.

*Ms. Ruth Messinger, Borough President
of Manhattan
Robert W. Bailey, -Assistant Professor,
Columbia University
Ms. Deborah Leipziger, Project Manager*

When did it start?

THE MARKET:

What is your business cycle like?

When do you do the most (least) business?

What is the trend in product preference?

When did it start?

Has business gotten better or worse over the last five years?

What factors have caused this trend?

What product competes with diamonds in NYC?

What is the current average retail price of a popular diamond?

Has this price gone up or down?

What percentage of your sales consist of diamonds (or diamond products)?

Approximately how much business do you do annually?

How many customers do you have per day (or per month, or per year)?

Has this number gone up or down?

*Do you export?

Do you see your business getting better or worse over the next five years?

What factors will cause this trend?

- *profit margin
- *economy
- *high wholesale prices
- *rent/lease cost
- *debt structure

EMPLOYMENT PRACTICES:

How many people do you employ?

How do you get them? (recruitment)

INTERVIEW OUTLINE

APPENDIX B Interview Survey

BACKGROUND:

* Have you always been in the diamond business in NY?

* (if not) Where else other than NY?

How long have you been the in US?

How did you get started? Why?

Where are you from originally?

Do you have any relatives in the industry?

Where are they living?

What sector of industry do they work in?

Do any of them work with you?

BUSINESS MANAGEMENT:

* Please describe your business from start to finish of a piece of jewelry.

*Do you do retail and/or wholesale (in what proportions)?

Do you rent, lease or own the store property?

What are your major costs of doing business (COST STRUCTURE)?

Who competes with your store outside of the 47th St area?

CLIENTELE:

How would you describe your customers?

Are they generally from New York City? (If not where?)

What is the average age and gender?

What is the average income level?

What is the trend in the type of customers you have?

*If applicable, get names of programs they use.

What is the ethnic breakdown of your staff?

What kind of education and experience do they have coming in?

Do you train them?

What kind of training do you give them?

How long do most employees work for you (turnover rate)?

NEW YORK CITY:

What motivated you to establish your business on 47th Street?

What general problems do you face that are shared by other businesses in New York City? in 47th St.?

What obstacles to business do you face that are specific to the diamond business?

Have you thought about changing your business? To what?

Have you thought of leaving New York? Why or why not?

Where would you go? Why there?

Have any of your colleagues left? And why?

How were they able to relocate?

What would you suggest the city do to improve the climate for the diamond industry?

Appendix C

Mail Survey Results: Frequencies

1. How long have you lived in the U.S.?

"Since ____" (Fill in year)

196 Responded

Lived in the U.S. an average of 40.6 years

b. Born in the U.S. (check)

160 checked the box

2. How long have you been in the diamond business?

264 responded

Average: 31.2 years

Minimum: 4 years

Maximum: 82 years

Median: 28.5 years

3. How long as your business been at this location?

264 Responded

Average: 20.8 years

Minimum: 1 year

Maximum: 125 years

Median: 14 years

4. Will you move your business from Manhattan in the next two years?

1-Likely	25
2	19
3	39
4	25
5-Not Likely	174

5. If you had to leave your current space, where would you move to?

		%
47th St. District	125	40.72
Diff. State	56	18.24
Manhattan	56	18.24
NY Metro	29	9.45
Other Borough	22	7.17
Diff. Country	16	5.21
Other	3	0.98
Total	307	

6. Why would you move your business (list three reasons, with number 1 being the most important)

	1st	2nd	3rd	Total
rent	151	27	15	194
quality space	34	31	28	94
more space	51	25	15	92
other	51	12	7	70
less space	10	13	7	30
client moved	8	8	7	25
city incentives	9	4	6	22
build. conversion	6	4	11	21
Total				548

Note: Of those that responded, not all ranked their choices, simply checking off those that applied. This has inflated the first ranking, as the checks were all marked as a first choice. The total simply counts how many people marked that category as important, and is the count we have used.

7a. Our firm's current location is crucial to our business.

		%
Agree	104	37.55
Disagree	37	13.36
Strongly Agree	130	46.93
Strongly Disagree	6	2.17
Total	277	

7b. A substantial number of jewelers have moved out of Manhattan in the last five years.

		%
Strongly Agree	76	28.90
Agree	121	46.01
Disagree	54	20.53
Strongly Disagree	12	4.56
Total	263	

7c. New York City has made significant efforts to keep the jewelry industry within the city.

		%
Strongly Agree	4	1.50
Agree	19	7.12
Disagree	116	43.45
Strongly Disagree	128	47.94
Total	267	

7d. Our firm's competitiveness has been negatively affected by which of the following:

		%
taxes	214	27.23
crime	201	25.57
rent	227	28.88
transportation	48	6.11
energy cost	48	6.11
lack of skilled labor	48	6.11
Total	786	

7e. We have problems in attracting or finding skilled workers.

		%
Strongly Agree	41	16.27
Agree	67	26.59
Disagree	120	47.62
Strongly Disagree	24	9.52
Total	252	

7f. If the present management of this firm were to retire or leave in the next five years, there would be people available to take over and run this business.

		%
Strongly Agree	55	21.07
Agree	88	33.72
Disagree	70	26.82
Strongly Disagree	48	18.39
Total	261	

8. What percent of the work your business does is:

design	62	These numbers reflect how many people
cutting and polis	70	checked these responses.
setting	39	
retail sales	30	
wholesales	208	
other (specify)	45	

In the "other" category, the most significant response was manufacturing. We categorized a firm as a manufacturing firm if they reported themselves as "manufacturing", or they performed design, cutting and polishing or setting activities. If checked more than one activity without giving a percentage of business devoted to it, the firm's activities were shared equally between categories. For instance, if a firm checked wholesale and setting, they were regarded as 50% manufacturing and 50% wholesale. Finally, if a firm devoted 25% or more of its business to an activity, they were counted within that activity.

This produced the following results:

Wholesale	206
Retail	15
Manufacturing	115

- 56 Are both wholesale and manufacturing
- 4 are both wholesale and retail
- 3 are both retail and manufacturing

9a. Where are your three largest customers located?

	Reported Percentages Summed			Total	%
	1st	2nd	3rd		
47th Street	3185	426	156	3767	24.21
Manhattan*	1894	545	150	2589	16.64
US, East	992	500	386	1878	12.07
Tri-State Area	830	494.5	157	1481.5	9.52
US, South	575	333	502	1410	9.06
US, West	461	487	437	1385	8.90
Asia	704	300	294	1298	8.34
US, Midwest	439	357.5	90	886.5	5.70
Europe	115	175	122	412	2.65
US, Northwest	33	130	180	343	2.20
Middle East	50	10		60	0.39
Latin America			30	30	0.19
NYC: Queens		20		20	0.13
NYC: Bronx	2			2	0.01
NYC: Brooklyn				0	0.00
TOTAL				15562	100

9b. Where are your three largest suppliers located?

	Reported Percentages Summed				
	1st	2nd	3rd	Total	%
47th Street	4523	620	389	5532	37.08
Europe	2268	476	145	2889	19.36
Asia	1932	324	93	2349	15.74
Manhattan*	520	396	183	1099	7.37
Middle East	450	559	70	1079	7.23
US, East	447	199	167	813	5.45
Tri-State Area	305	170	181	656	4.40
Latin America	100	74		174	1.17
US, West		95	27	122	0.82
US, South	40	38	25	103	0.69
US, Midwest		30	20	50	0.34
NYC: Queens		30	10	40	0.27
NYC: Bronx	10			10	0.07
US, Northwest		5		5	0.03
NYC: Brooklyn					0.00
TOTAL				14921	100.00

10. What is your present approximate monthly rate per square foot in rent?

Number of respondents	231
Average	\$36.24
Minimum	\$1.00
Maximum	\$1,300.00
Median	\$28.00

11. How many people do you employ?

Respondents	239
Average	18
Maximum	700
Median	6
Minimum	1
Total	4531

12. How do you find your employees?

Respondents	240
colleague recomm.	173
advertising	72
are relatives	56
other	26
voc. training program	26

Under other:

Agencies	10
GIA	1
Friends	3
Contract Labor	1
FECS	1
Wife	1
City or State Employment	6
On-the-job Training	1

13. How many of your employees in manufacturing are in each of the following pay ranges (not including overtime?)

less than \$5.00	93
\$5.01 to \$8.00	553
\$8.01 to \$11.00	528.75
\$11.01 to \$15.00	492
\$15.01 to \$20.00	564.25
\$20.01 to \$25.00	252
over \$25.01	127
Total Number of Employees in Manufacturing	1912

(see cross tabs for mean, median, average, maximum and minimum)

13a. Do these employees receive bonuses?

Yes	97
No	61

14. Approximately, how many of your employees live in:

		%	% in NYC
Manhattan	618	14.95	74.45
The Bronx	615	14.88	
Queens	962	23.28	
Brooklyn	882	21.34	
New Jersey	349	8.44	
Westchester, Putnam, Rockl	171	4.14	
Southern Connecticut	290	7.02	
Long Island (Nassau-Suffol	246	5.95	
Total	4133		

16. How many of your employees in retail are in each of the following pay rates (not including overtime)?

less than \$5.00	0
\$5.01 to \$8.00	25
\$8.01 to \$11.00	34
\$11.01 to \$15.00	46
\$15.01 to \$20.00	22
\$20.01 to \$25.00	17
over \$25.01	32

Total Number of Employees in Retail 149

16a. Do these employees receive bonuses?

Yes	16
No	11

17. In numbers, how many of your employees are:

17a. Age:

		%
Under 18	9	0.26
18 to 25	492	14.11
26 to 35	1179	33.80
36 to 50	1289	36.96
51 to 65	418	11.98
Over 65	101	2.90

Total 3488

17b: Gender:

		%
Male	2000	56.96
Female	1511	43.04

Total 3511

17c: Ethnic Background:

		%
African American	322	10.38
East Asian/Pacific Islander	187	6.03
Latino	1112	35.84
South Asian	159	5.12
White	1323	42.64
Other	6	0.19

Total 3103

17d. Religious Affiliation

		%
Buddhist/Hindu	162	10.55
Catholic	538	35.05
Other	14	0.91
Jewish	547	35.64
Jewish, Hasidic	88	5.73
Muslim	37	2.41
Protestant	149	9.71
Total	1535	

18. What is YOUR age, ethnic background, gender and religious affiliation?

AGE

Average	51.2
Minimum	21
Median	50
Maximum	90

Ethnic Background

Gender		%
Male	202	94.39
Female	12	5.61

Religious Affiliation

		%
Atheist	1	0.44
Buddhist	1	0.44
Catholic	22	9.61
Christian	1	0.44
Hindu	9	3.93
Jain	3	1.31
Jew	170	74.24
Lutheran	1	0.44
None	14	6.11
Protestant	5	2.18
Unitarian	2	0.87
Total	229	

19. Please list the 3 most important problems your business faces today:

		%
Overhead	217	33.38
Economy	166	25.54
Crime	106	16.31
Internat. Comp.	42	6.46
Skilled Labor	27	4.15
Supply	19	2.92
Credit	17	2.62
Government Problems	14	2.15
Transportation	11	1.69
Business Ethics	9	1.38
City Image	6	0.92
Parking	5	0.77
Labor Costs	4	0.62
Space	3	0.46
Customers Moved	2	0.31
Slow Mail	2	0.31
Total	650	

Within the Economy:

54 Cited collections and bankruptcies as a problem

Within Overhead:

102 Cited taxes
80 Cited rent
12 Cited insurance costs
7 Cited health costs

**Appendix D
Mail Survey: Cross-Tabs by Firm Type**

1. How long have you lived in the U.S.?

	Manufacture	Wholesale
Respondents:	79	139
Average number of years:	42.35	37.60

b. Born in the U.S. (check)

	Manufacture	Wholesale
Number of respondents who checked (yes)	66	114

2. How long have you been in the diamond business?

	Manufacture	Wholesale
Number of respondents:	110	196
Average	30.85	29.93

3. How long has your business been at this location?

	Manufacture	Wholesale
Number of respondents:	113	202
Average number of years:	21.60	19.07

4. Will you move your business from Manhattan in the next two years?

	Manufacture	% Wholesale	%
1-Likely	16	13.6	6.2
2	9	7.6	5.3
3	21	17.8	12.0
4	12	10.2	9.1
5-Not Likely	60	50.8	67.5
Total	118		209

5. If you had to leave your current space, where would you move to?

	Manufacture	% Wholesale		%
Elsewhere in the Jewelry District	40	33.90	105	50.72
Elsewhere in Manhattan	21	17.80	29	14.01
A different Borough	14	11.86	10	4.83
One of the Counties in the New York metropolitan area	11	9.32	14	6.76
A different state	25	21.19	34	16.43
A different country	5	4.24	13	6.28
Other	2	1.69	2	0.97
Total	118		207	

6. Why would you move your business (list three reasons, with number 1 being the most important)

	Manufacture			Total	%
	1st	2nd	3rd		
need more space	5	11	5	36	15.86
need less space	2	6	0	8	3.52
conversion of building	5	1	7	13	5.73
steep rent increase	67	8	8	84	37.00
need better quality space	20	11	11	42	18.50
use City incentives to move to other b	6	1	3	11	4.85
client base moved	4	3	1	8	3.52
other				25	11.01
Total				227	

	Wholesale			Total	%
	1st	2nd	3rd		
need more space	44	19	9	73	17.94
need less space	8	11	7	26	6.39
conversion of building	3	3	8	16	3.93
steep rent increase	108	22	12	143	35.14
need better quality space	23	22	22	68	16.71
use City incentives to move to other b	6	3	3	15	3.69
client base moved	5	4	5	16	3.93
other	32	9	15	50	12.29
Total				407	

7a. Our firm's current location is crucial to our business.

	Manufacture		% Wholesale		%
Strongly Agree	47	40.87	102	49.51	
Agree	46	40.00	76	36.89	
Disagree	18	15.65	25	12.14	
Strongly Disagree	4	3.48	3	1.46	
Total	115		206		

7b. A substantial number of jewelers have moved out of Manhattan in the last five years

	Manufacture		% Wholesale		%
Strongly Agree	37	33.33	52	27.08	
Agree	54	48.65	85	44.27	
Disagree	16	14.41	45	23.44	
Strongly Disagree	4	3.60	10	5.21	
Total	111		192		

7c. New York City has made significant efforts to keep the jewelry industry within the city.

	Manufacture		% Wholesale		%
Strongly Agree	3	2.65	3	1.52	
Agree	6	5.31	16	8.08	
Disagree	49	43.36	87	43.94	
Strongly Disagree	55	48.67	92	46.46	
Total	113		198		

7d. Our firm's competitiveness has been negatively affected by:

	Manufacture		% Wholesale		%
taxes	96	26.59	153	26.61	
crime	84	23.27	150	26.09	
rent	97	26.87	171	29.74	
transportation	23	6.37	39	6.78	
energy cost	28	7.76	33	5.74	
availability of skille	33	9.14	29	5.04	
Total	361		575		

7c. We have problems in attracting or finding skilled workers.

	Manufacture	% Wholesale		%
Strongly Agree	30	26.55	18	16.36
Agree	25	22.12	40	36.36
Disagree	50	44.25	32	29.09
Strongly Disagree	8	7.08	20	18.18
Total	113		110	

7f. If the present management of this firm were to retire or leave in the next five years, there would be people available to take over and run this business.

	Manufacture	% Wholesale		%
Strongly Agree	22	11.89	43	22.40
Agree	50	27.03	66	34.38
Disagree	97	52.43	50	26.04
Strongly Disagree	16	8.65	33	17.19
Total	185		192	

9a. Where are your three largest customers located?

Location	% of Business Summed			Total	% of Business	
	Manufacture	1st	2nd			3rd
Manhattan, 47th Street District		1444	225	38	1707	24.91
Manhattan, Outside of 47th Street		1097	239	75	1411	20.59
Tri-State area		385	206	46	637	9.29
US, East Coast		485	173	82	740	10.80
US, West		176	248	214	638	9.31
US, Northwest			30	70	100	1.46
US, South		140	35	235	410	5.98
US, Midwest		175	200		375	5.47
Europe		115	50	55	220	3.21
Asia		274	42	228	544	7.94
Middle East		50			50	0.73
Latin America				20	20	0.29
NYC: Bronx		2			2	0.03
NYC: Queens					0	0.00
NYC: Brooklyn					0	0.00
		4343	1448	1063	6854	

Location	% of Business Summed				% of Business
	Wholesale				
	1st	2nd	3rd Total		
Manhattan, 47th Street District	2530	331	126	2987	26.21
Manhattan, Outside of 47th Street	960	351	110	1421	12.47
Tri-State area	445	338	136	919	8.06
US, East Coast	627	340	370	1337	11.73
US, West	361	412	300	1073	9.42
US, Northwest	33	105	180	318	2.79
US, South	525	293	260	1078	9.46
US, Midwest	364	250.5	90	704.5	6.18
Europe	85	125	117	327	2.87
Asia	695	262	232	1189	10.43
Middle East		10		10	0.09
Latin America			10	10	0.09
NYC: Bronx	2			2	0.02
NYC: Queens		20		20	0.18
NYC: Brooklyn					0.00
	6627	2837.5	1931	11395.5	

9b. Where are you three most used suppliers located?

Location	% of Business Summed				% of Business
	Manufacture				
	1st	2nd	3rd Total		
Manhattan, 47th Street District	2089	296	171	2556	39.50
Manhattan, Outside of 47th Street	300	268	136	704	10.88
Tri-State area	170	130	130	430	6.65
US, East Coast	90	77	67	234	3.62
US, West		40		40	0.62
US, Northwest				0	0.00
US, South			25	25	0.39
US, Midwest				0	0.00
Europe	1254	180	30	1464	22.62
Asia	490	120	18	628	9.70
Middle East	60	255		315	4.87
Latin America		35		35	0.54
NYC: Bronx				0	0.00
NYC: Queens			10	10	0.15
NYC: Brooklyn		30		30	0.46
Total	4453	1431	587	6471	

Location	% of Business Summed			3rd Total	% of Business
	Wholesale				
	1st	2nd			
Manhattan, 47th Street District	2997	527	286	3810	34.42
Manhattan, Outside of 47th Street	220	105	57	382	3.45
Tri-State area	235	70	61	366	3.31
US, East Coast	357	122	130	609	5.50
US, West		60	25	85	0.77
US, Northwest		5		5	0.05
US, South	40	33		73	0.66
US, Midwest		30	20	50	0.45
Europe	1763	406	115	2284	20.64
Asia	1912	229	75	2216	20.02
Middle East	390	559	70	1019	9.21
Latin America	100	59		159	1.44
NYC: Bronx	10			10	0.09
NYC: Queens				0	0.00
NYC: Brooklyn				0	0.00
Total	8024	2205	839	11068	

10. What is your present approximate monthly rate per square foot in rent?

	Manufacture	Wholesale
Number of Respondents:	99	170
Average:	\$24.6	\$41.6
Median:	\$23.0	\$30.0
Maximum:	\$35.0	\$1,300.0
Minimum:	\$1.0	\$1.0

11. How many people do you employ?

	Manufacture	Wholesale
Number of Respondents:	102	186
Average:	32.5	10.5
Median:	10	5
Maximum:	700	85
Minimum:	1	1

12. How do you find your employees?

	Manufacture	% Wholesale		%
from vocational training programs	18	11.0	16	6.2
by advertising	41	25.2	46	17.8
recommendations by colleagues	72	44.2	133	51.6
all employees are relatives or family m	19	11.7	45	17.4
other	13	8.0	18	7.0
Total	163		258	

14. Approximately, how many of your employees live in:

	Manufacture	%	% NYC Wholesale		%	% NYC
Manhattan	407	13.7	75.5	299	17.4	74.5
The Bronx	486	16.4		218	12.7	
Queens	685	23.1		386	22.5	
Brooklyn	663	22.3		377	22.0	
New Jersey	216	7.3		170	9.9	
Westchester, Putna	81	2.7		106	6.2	
Southern Connecti	265	8.9		31	1.8	
Long Island (Nassa	166	5.6		130	7.6	
Total	2969			1717		

17. In numbers, how many of your employees are:

17a. Age:

	Manufacture	% Wholesale		%
Under 18	9	0.3	2	0.2
18 to 25	390	14.8	177	14.2
26 to 35	909	34.6	375	30.0
36 to 50	994	37.8	444	35.6
51 to 65	281	10.7	188	15.1
Over 65	47	1.8	62	5.0
Total	2630		1248	

17b. Gender:

	Manufacture	% Wholesale		%
Male:	1572	57.8	700	54.6
Female:	1150	42.2	582	45.4

17c. Ethnic Background

	Manufacture	% Wholesale		%
African American	281	12.0	76	5.8
White	874	37.4	712	54.4
Latino	978	41.8	256	19.6
East Asian/Pacific Islander	98	4.2	104	7.9
South Asian	103	4.4	151	11.5
Other	6	0.3	10	0.8
Total	2340		1309	100

17d. Religious Affiliation

	Manufacture	% Wholesale		%
Jewish, Hasidic	64	7.5	65	6.2
Jewish	242	28.5	404	38.6
Catholic	371	43.7	281	26.9
Protestant	55	6.5	99	9.5
Buddhist/Hindu	79	9.3	147	14.1
Muslim	23	2.7	24	2.3
Other	15	1.8	26	2.5
Total	849		1046	

19. Please list the three most important problems your business faces today:

Manufacture		% Wholesale		%	
Overhead (Taxes, rent, insurance, hea	103	37.2	Overhead (Taxes, rent, insurance, hea	159	31.9
Economy (Collections)	63	22.7	Economy (Collections)	139	27.9
Crime, Safety, Security	32	11.6	Crime, Safety, Security	90	18.0
Lack of skilled labor	23	8.3	International Competition	26	5.2
International Competition	18	6.5	Supply	16	3.2
Supply	9	3.2	Lack of skilled labor	13	2.6
Credit	7	2.5	Transportation	11	2.2
Onerous regulations, lack of city servic	5	1.8	Business Ethics	10	2.0
Labor Costs	4	1.4	Credit	10	2.0
Transportation	4	1.4	Onerous regulations, lack of city servic	10	2.0
Business Ethics	3	1.1	Labor Costs	5	1.0
Parking	3	1.1	Parking	3	0.6
Space	2	0.7	City image, quality of life	3	0.6
City image, quality of life	1	0.4	Mail slow	2	0.4
Mail slow		0.0	Customer moved	1	0.2
Customer moved		0.0	Space	1	0.2

IN OVERHEAD:

43 CITED TAXES

37 CITED RENT

5 CITED INSURANCE

4 CITED HEALTH

IN ECONOMY:

17 CITED COLLECTIONS

IN OVERHEAD:

77 CITED TAXES

62 CITED RENT

11 CITED INSURANCE

4 CITED HEALTH

IN ECONOMY:

46 CITED COLLECTIONS

APPENDIX
Indirect Economic Impacts: Input-Output Analysis
Port Authority of New York and New Jersey

**Economic Impact of the Jewelry and Precious Stones Wholesale,
Retail and Manufacturing Industries**

The following analysis is an assessment of the effects of New York City's Jewelry and Precious Stones wholesaling, retailing and manufacturing on the 17-county regional economy. This analysis is based upon information on sales and employment in these industries for 1987 combined with 1991 employment data. All figures are in 1991 dollars.

The attached table summarizes the findings of this study. The Jewelry and Precious Stones wholesaling industry in New York City employed 12,120 persons in 1991.¹ This is listed as the industry's Direct employment Impact. As a result of the economic activity generated by this wholesaling in New York City, 3,510 additional jobs were created throughout the economy of the 17-county New York/New Jersey region around and including New York City. This is wholesaling's Indirect employment Impact. The sum of these two impacts, 15,630, is the Total employment Impact of the Jewelry and Precious Stones wholesaling industry throughout the region's economy.

Sales figures generated by the wholesale industry can be read in the same way. Jewelry and Precious Stones wholesaling's direct sales for 1991 came to \$2,857.5 million. These initial sales generated an additional \$307 million in indirect sales throughout the economy. These two effects sum to \$3,164.5 million, the Total sales Impact of the wholesale industry.

Again, wage entries can be interpreted in the same manner. The Jewelry and Precious Stones wholesale industry directly paid \$418.7 million in wages in 1991. The industry's direct activity generated another \$81.1 million in wages indirectly throughout the economy. Finally, the total wage impact of Jewelry and Precious stones wholesaling on the 17-county region comes to \$499.8 million in 1991.

Table entries for the retail and manufacturing sectors of Jewelry and Precious Stones have the same interpretation. Again, it must be emphasized that while the direct jobs, sales and wages figures reflect activity only in New York City, the indirect and total figures are for the 17-county region of the Port Authority's input-output model.

The Indirect Impact of an industry, as listed in this table, is defined as the economic activity resulting from the purchase of goods by that industry from other industries throughout the economy. In addition to this, this report subsumes the effect of increased

¹ Sources: New York State Department of Labor, ES202 Series;
New Jersey State Department of Labor, ES202 Series.

consumer spending (Induced Impact) into the Indirect Impact. The Induced Impact results from the expenditure of additional wages resulting from increased direct and indirect economic activity. These and other pertinent terms are defined in the glossary attached to this report.

Fine tuning these figures to be more specific to the Diamond industry is a straight-forward process. Since the Port Authority's input-output model is linear, the figures presented in the table can be shared down by the ratio of the Diamond industry's sales to the sales of the Jewelry and Precious Stones industry.

Glossary of Terms

Direct Impact:

The sales or employment provided by a particular industry.

Indirect Impact:

The regional effect resulting from the supply of inputs to the industry in question by other industries.

Induced Impact:

The effect of consumer spending resulting from increased worker income.

Total Impact:

The sum of direct, indirect and induced impacts.

Personal Income:

Gross salaries and wages earned by employees in payment for their services.

Jobs:

The number of person-years of labor. Person-years refers to the amount of work it takes to keep one person employed for one year.

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