

AN INVESTIGATION OF THE MISMATCH HYPOTHESIS
FOR THE BOSTON METROPOLITAN AREA

by

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The hypothesis that there is an increasingly apparent mismatch between low skilled workers forced to live in the central city and the industries creating a demand for low skilled workers locating in or moving to outer, suburban areas has had significant impact on urban economic policy. This work questions the lack of evidence to support this hypothesis. It attempts, as well, to define the dimensions of employment and occupational trends in the Boston Metropolitan Area.

Basically, it is found that the central cities are growing overall(although at a rate slower than the suburbs) and that it is the high skilled jobs which are growing the fastest. It was found, however, that this last is more heavily due to changes in industrial structure than to locational trends.

In concluding, the Boston economy is found to be growing with some disadvantages for the low skilled resident as to the types of jobs available. Attention, it is felt, should be paid to manpower training policies and alternative forms of transportation configurations as well as the effects of discrimination in the job market.

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I. Introduction

-A City Councillor from East Cambridge complains that the sons of his working class constituents cannot find factory jobs as increasingly they see manufacturing plants near their neighborhood closing or moving to the suburbs. He fears that his neighborhood (and his constituency) will slowly move to the suburbs in search of better job opportunities.

-Daniel Moynihan, speaking from a quite different part of Cambridge, comments that: "It is not necessary to grow apocalyptic about the disappearance of low skilled jobs in the American economy in order to admit that such jobs are relatively harder to find than they have been in the past and moreover seem increasingly to be located in areas beyond the suburban fringe, far from the homes of the city poor."¹

Two comments, from very different points of view, speaking to the same basic problem in our central city economies. Increasingly, a 'mismatch' is seen between the higher skilled professional jobs which are locating and growing in the central cities and the low skilled labor force residing in the central cities and unable to move or travel to the outer suburban areas where low skilled jobs are still growing. Through

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Moynihan, Daniel Patrick, "Poverty in Cities". in The Metropolitan Enigma, James Q. Wilson, Ed., Harvard University Press, 1968, p.378

casual observations and limited data analyses, this "mismatch hypothesis" has come to play an important role in forming urban policy. Basically, the hypothesis provides a locational dimension to the problems of urban poverty which its proponents feel is not to be dealt with by concentrating only on the educational and skill training aspects of unemployment. Rather, acceptance of the hypothesis has led to questioning of policies aimed at reviving the central city (i.e. renewal and rehabilitation) as not being cognizant of forces bringing about major declines in central city lower skilled job opportunities. The basic premise leads one very quickly to the policy notion of the dispersal of low income workers into suburban areas (e.g. scatter site housing). Accepting, as well, that for blacks, housing segregation is a major obstacle to any such dispersal, the theory has occasioned consideration of transportation 'solutions' involving the development of means of commuting out to growing suburban jobs from the central city. In short, these policies emphasize geographically oriented solutions to the problems of unemployment rather than those aimed primarily at the skill problems of the individual worker.

And yet, until very recently, there was no strong evidence with which to look closely at the mismatch, or even to prove its existence at all. Analyses have often been limited by lacking data on important growth sectors of the economy and have only recently begun to look specifically at the effects

of employment location patterns on occupational employment patterns. Further, there has been no investigation as to the extent to which any such trends are in fact locational phenomena or whether they might be more strongly due to factors such as changes in occupational structures within industries in metropolitan areas.

In the Boston area, this lack of evidence has been especially large. It is intended here, making use of more complete and up-to-date data than has previously been available, to assess, for the Boston metropolitan area, the nature and dimensions of the hypothesized mismatch. In addition to looking at data on trends of industrial employment location as others have done, data will be developed here on the implications of these trends for occupational distributions in the area. While a complete policy analysis is not intended here, the implications and questions raised by this analysis for policy formulation will be identified and discussed.

In the following section a further discussion of the contexts and theories of the mismatch is taken up. From that base, an examination of the data and methodology used for the analysis is made so as to make explicit all major assumptions. In that data is one of the major constraints on any analysis such as this, the findings of this section are crucial to the validity of the analysis as a whole. As to the mismatch itself, a look will first be taken at industrial employment location trends. Using industrial-Occupational matrices

developed from the 1960 and 1970 Censuses of Population, the implications of these trends for occupational distributions will then be assessed. This is to include an investigation of the importance of industrial structure changes to these trends. To further examine the mismatch, a relative measure of job availability is developed and then compared with labor force trends in several key low skilled worker groups. Finally, trends in journey to work patterns are investigated for their importance to these availabilities. A concluding section summarizing the findings and discussing the policy implications of them will follow.

II. The Hypothesis, Its Context and Theory

Although there are several variations on the statement of the mismatch hypothesis, it can generally be defined as the increasing mismatch of low skilled workers (particularly minorities) residing in the central cities and industries creating a demand for such workers locating in or moving to outer, suburban areas. The mismatch is aggravated by job growth in the central cities taking place only in the higher skilled jobs. Most prominently, the work of John Kain has attempted to assess the mismatch across a number of American cities. Kain's work however, has been considerably limited, as is much work in the area, by a lack of complete, valid data on industrial employment location. In "The Distribution and Movement of Jobs and Industry."¹ Kain relies upon data for only four industrial categories (Manufacturing, Wholesaling, Retailing and Services). As Kain himself admits, the data, primarily from the Census of Business and Manufactures, covers only 60 per cent of employment in the metropolitan areas. His assumption, however, that the data provides a good indicator of overall trends must be questioned. First, a look at what is not covered shows two areas, finance, insurance and real estate and government employment which are both major portions of the employment market and potentially more important to the

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Kain, John F., in The Metropolitan Enigma, James Q. Wilson, ed., Harvard, 1968; also, in the Quarterly Journal of Economics of May 1968 and May 1969 there is a Kain article, "Housing Segregation, Negro Employment and Metropolitan Decentralization" and an alternative view by Joseph D. Mooney respectively

central city than Kain's categories. Second, again as a result of missing data, Kain does not assess trends in occupational employment and in the occupational distributions among the population. Rather, it is assumed that the industrial categories used represent a significant proportion of both low and high skilled jobs, resulting in generalizable trends largely relying on manufacturing to represent low skilled employment.

Given the limitations of this work, Kain does find strong evidence within these categories of both absolute and relative declines in central city employment. With what Kain admits to be the "incompleteness of the data" and the "speculative nature of these predictions," it is surprising to realize the extent to which the mismatch has been assumed in policy statements and decisions of public figures. Statements such as "the real problem is jobs, not people....there are thousands of jobs going begging in the suburbs but the Negroes can't get there" or "....there is less and less work to be had since many industries are either automating or moving to the suburbs. The rapid transit system doesn't run near the new centers of industry and most Negroes.....are increasingly cut off from work,"² have not been uncommon. Based on interpretation of partial data such as Kain's, it is clear that the hypothesis can take on major policy significance not justified by the data. The more major of these are briefly described in the

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Used as examples in support of the mismatch in Kain, John F. "Housing Segregation, Negro Employment and Metropolitan Decentralization," Quarterly Journal of Economics, May 1968

introduction above. The importance of such an analytic base for policy analysis cannot be underestimated. It is exactly the pictures taken from these limited data which create the general view of the dying central city (left largely to the poor) surrounded by prospering suburban areas (not accessible to the poor). In part, the creation of this view can (and may have already) become part of a self-fulfilling prophecy, creating an atmosphere (especially among the business community) of pessimism regarding the future of the central city and the prospects for investment there. To be sure, there are other observations upon which this view may be properly based in some cases. To realize, in general, however, the very small amount of information upon which these views have been based, is to begin to point up the injustice potentially being done to the central city and its residents by the promulgation of these views.

Not surprisingly, considering the lack of empirical evidence upon which such policy positions are based, several have begun to question these policy positions and, more importantly, the validity of the mismatch itself. Charlotte Fremont³, for example, cites a study of reverse commuting in St. Louis which showed little effect on central city resident employment patterns. Both Fremont and Wilfred Lewis, Jr.⁴

³ Fremont, Charlotte, The Occupational Patterns in Urban Employment Change, 1965-1967, The Urban Institute, August, 1970, p. 21

⁴ Lewis, Wilfred, Jr., Urban Growth and Suburbanization of Employment-Some New Data, (Unpublished Draft), The Brookings Institution, May, 1969

take issue with the added assumption of many who accept the hypothesis that it is the lowest skilled jobs (those best suited to the central city residents) which are suburbanizing fastest. Fremon's strongest contribution lies simply in the fact that until their research, there were "no time series data for employment, by occupation, in central cities and suburbs."⁵ Further, Lewis and Fremon have developed a more complete set of data than was previously available. Using this data set, they have come to several important findings : (a) although central city employment is becoming a relatively smaller portion of SMSA employment, absolute measurement shows central city job growth, overall (although at a slower rate than in the suburbs);⁶ (b) While there is a relative suburbanization of jobs, workers appear to be leaving at a rate faster than jobs as Lewis notes through application of a job/worker ratio;⁷ and (c) Fremon's analysis of occupational trends in the metropolitan areas found that all general skill levels in the central city appeared to have increased absolutely although suburban increases were greater and some higher skilled jobs were growing faster in the central city than lower skilled jobs.⁸ If one is to accept these data, as it is difficult not to do at least in part, they raise some strong questions about the existence and dimensions of the mismatch in metropolitan areas and its role, if any, in the central cities' greater

⁵Fremon, op. cit., p. 22

⁶Lewis, op. cit., p. 29

⁷ibid. p. 27

⁸Fremon, op. cit., p. 23

problems of unemployment relative to the suburbs.

Assessing the nature of the mismatch in the Boston metropolitan area then, takes on new dimensions in light of the techniques and findings of the work of Fremon and Lewis.. Boston, at first glance, might appear to have high potential for industrial suburbanization with early development of a suburban circumferential roadway(Rt.128) and a reliance in its economy upon many more highly skilled lighter industries which do not consider transportation costs as heavily in location decisions. Lewis' work deals with Boston's industrial employment over a six year period(1959-1965) and finds a net growth in central city jobs(with some industries showing declines). Other than this data, little has been done to investigate the dimensions of the mismatch in the Boston area.⁹ It is intended here, making use of locational industrial data from the Massachusetts Division of Employment Security¹⁰ to investigate for the time period 1960 to 1970, the trends first brought out by Lewis. Further, applying industrial - occupational matrices developed from the 1960 and 1970 Censuses, investigation of the occupational questions looked at by Fremon as well as the importance of industrial structure changes to the occupational questions will be undertaken. Making use of the ratio techniques proposed by Lewis, a measure

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Alexander Ganz and his staff at the Boston Redevelopment Authority have undertaken work in this area but have not, as yet, published their methodologies.

¹⁰The data sources are discussed in the following section.

of relative job availability trends, by occupation, will be constructed. Finally, trends in the characteristics of the supply of labor in the central city will be examined, with special attention to occupational journey to work patterns. It is intended that consideration of these questions in this manner will provide a strong analytical base for consideration of the dimensions of the mismatch and its implications for policy.

III. Data and Methodology

A. The Data The lack of complete employment data, by place of work, and the even further lack of any firm occupational data has been, and continues to be, the major limitation on analyses of this type. As such, any analysis is only as valid as its data base, a factor which makes the careful delineation of data sources and methodologies crucial.

For the purposes of this study, data has been gathered from several sources, each with their own peculiarities and needs for adjustment. The basic sources are:

- Massachusetts Division of Employment Security(DES) data on employment by industry, by town in the Standard Metropolitan Statistical Area(SMSA). This data is^s gathered yearly only for firms covered under state unemployment insurance and as such is missing several major employment categories, most notably, self employed workers, non-profit agency employees and government employees. The adjustments for these are discussed below.
- 1960 and 1970 Census of Population data for the Boston area at the SMSA, city and census tract level. This data had three primary uses: (a) the development of industrial-occupational matrices from the detailed characteristics, (b) the investigation of worker characteristics and trends and (c) the investigation of trends in journey to work patterns. Here, as with the employment data,

major assumptions are involved as discussed below.

-Throughout the work, minor references and usages of
of data are made as cited.

B. The Assumptions Perhaps the largest problem with the data base concerns the development of estimates of (a) the amount of non-covered employment and (b) the split between the central city and suburbs for these figures. As a first step, it has been assumed that self-employed workers, although a significant fraction, are both difficult to estimate and, more importantly, not crucial to the analyses intended here (as very few of the lower skilled workers are self employed). Of more importance are the figures for non-profit and government employment. For the former, the DES is, as of January 1973, collecting data which covers these groups significantly better. As a result, some estimation of the number of jobs not covered (all in the service categories) and a development of a percent-not-covered is possible. Adding this percentage to employment figures in the appropriate categories, a breakdown between central city and suburbs according to the already known split for profit-making services in the same categories is made. The use of trends originally supplied in DES data, while perhaps not the strongest of techniques, is at least reasonable.

As to the government data, the problem is slightly more difficult. An estimate of employment for the SMSA is derived from DES estimates and Census class of worker data. To split

this for 1960, the Census data on Public Administration employment by place of work is used (central city: 51.5%). As the identical data is not available in 1970, a split used by Wilfred Lewis in 1965 and derived from the Census of Governments (48.6%) is applied as a surrogate. For both government and non-profit data, care is taken in the analysis to keep figures including these estimates separate from the former DES data and use it primarily for comparison purposes.

A second set of assumptions involves the use of a census based industrial-occupational matrix. First, there are some problems recognized with the process of self-identification of occupation and one's tendency to overestimate one's position. Thus one who operates a machine (operative category) may become a machinist (craftsmen category). This problem implies, however, that low skilled jobs will be underestimated on the whole, a problem which should not significantly affect the relative distribution of low skilled jobs in the central city and suburbs. A second problem with the matrices involves the Census and Standard Industrial Classification definition of a government worker. The SIC, unlike the Census, will classify all government employees (including craftsmen, janitors, clerical, etc.) in the government category. Thus some adjustment of the matrices is necessary. Using Census figures on industry and occupation by class of worker, the percentage of each industry in government employment was stratified by the occupational distributions of government employment, sub-

tracted from the private industrial employment in each occupational category and added to public administration figures so as to adjust the percentages in that portion of the matrix (the adjusted matrices can be found in Appendix I).

A final assumption, and an important one, involves the use of one metropolitan industrial-occupational matrix for both central city and suburbs. The danger is that a firm in one industry might have its plants in one part of the SMSA and its offices elsewhere so that application of a single matrix might smooth out occupational distributions. Further, there is the potential problem, with the DES data, that all employment would be reported at the office address and none attributed to other areas. While the latter is more serious, it is also more likely to occur in only a small number of the cases. The implications of both of these problems are important, nevertheless, for in both cases it is likely the use of one matrix will affect the measured suburbanization of low skilled jobs. It is very difficult, however, to say to what extent this assumption plays a role. While older, non-changing industries of this type might have a factory in Boston and new offices in the suburbs, the newer, more technologically advanced industries might have the reverse as true. Although the total effect of these two cases might amount to a balance, the assumptions inherent are nevertheless important.

C. The Occupations In that an important part of this analysis involves the investigation of occupational employment trends, the assumptions involved in the occupational stratification used are important. For the purposes of this study, the categories to be used are the eight major ones delineated in the Census (and described in Appendix II). Scoville¹ for one, has criticized these categories as not reflective of the nature of the work for each job. Blau and Duncan², on the other hand, developed measures of socioeconomic status correlated to Census occupational categories basing their measure on education and income compared to interview-gathered appraisals of status. It is this latter stratification, with some reference to the skill level necessary and the economic benefits of each occupation, which seems of most use here. Some problems, however, still do arise concerning the aggregation of a variety of jobs into so few categories. A closer look at the categories, however, shows that, with the exception of the service category, the range of jobs within categories is sufficiently homogeneous to allow the intended analysis. For the service category, there is the possibility that a further split between lower and higher paying jobs, the latter including health and public safety workers, would be useful. Two factors, however, make this difficult and unnecessary.

¹Scoville, James C., Manpower and Occupational Analysis: Concepts and Measurements, Lexington Books, 1972

²Blau, Peter M. and Otis Dudley Duncan, The American Occupational Structure, Wiley, New York, 1967

First, the breakdown in the Census matrices makes distinction between these groups difficult. Secondly, a very high proportion of the jobs in the better category (69%) are government jobs, an industrial category which is only estimated in this analysis and therefore can be treated separately. In addition, a significant proportion of the health service employees not employed by the government are employed by non-profit groups (e.g. hospitals), another estimated group. Thus the eight categories, while not allowing extremely detailed analysis, offers a sense of job stratification useful in this analysis and can, in its weakest spot (services), be further analyzed.

D. The Central City vs. The Core In all of the discussion up to this point (and in most of the work in the literature) the mismatch has been viewed in the context of a central city-suburban split. Boston, unlike some other cities, has several areas which, although not legally part of the city, geographically and demographically seem to deserve some special consideration. Surrounding the Central Business District and the inner city industrial and residential areas are a number of working class residential areas, for the most part connected to the central city by public transport. South and West of the CBD, these areas lie, for the most part, in the city of Boston. To the North and East, however, these areas lie primarily in the cities of Cambridge, Somerville, Chelsea and Revere, cities which have in the past been classified as part of the suburbs. Given the nature of these political

boundaries and the intention of this analysis to investigate the availability of jobs as compared to the distribution of workers who are closest to them, the majority of this analysis has been done in two parts. First, trends have been identified for Boston alone as the central city. Then, similar investigations of trends for the core cities of Boston, Cambridge, Somerville, Chelsea and Revere was done and compared to the central city figures, especially as concerns job availabilities.

IV. The Mismatch

A. Employment Trends Wilfred Lewis¹, using data primarily from the County Business Patterns, examined industrial employment trends for Boston over the period 1959-1965. His findings(see Table I). contrary to one of the basic premises of the mismatch hypothesis, were of an overall slight increase (1.7%) in the number of jobs in Boston. While there were significant declines in the manufacturing, transportation and wholesale industries, almost all others rose with services and finances, insurance and real estate being the fastest growing categories. At the same time, of course, the central city share of total SMSA employment was declining, indicating a faster rate of growth in the suburbs.

The data available for this analysis allowed for the development of trends over the period 1960-1970. These data, while not complete, interestingly show very similar trends to those of Lewis. Without including data on non-profit and government employment, the trends show an increase in central city jobs of .7% with the categories of increase and decrease being essentially the same(see Table II). At the same time again, the central city percentage of metropolitan jobs declined in all categories, reinforcing the view of only relatively more rapid growth in the suburbs.

¹

Lewis, op. cit.

TABLE I

Central City Employment Distribution, 1959-1965, Boston SMSA

<u>Industry</u>	<u>1959</u>			<u>1965</u>			<u>Boston as % change</u>
	<u>Boston</u>	<u>SMSA</u>	<u>Boston as % SMSA</u>	<u>Boston</u>	<u>SMSA</u>	<u>Boston as % SMSA</u>	
Construction	13833	36235	38.2	16922	46019	36.8	22.3
Manufacturing	93643	304798	30.8	86599	283044	30.6	-7.5
Transportation Communication & Utilities	52818	69500	76.0	44357	71081	62.4	-16.0
Wholesale	43894	67706	65.0	38954	70046	55.6	-11.2
Retail	69495	169694	40.9	68751	185654	37.0	-1.0
Finances, In- surance and Real Estate	53469	71600	74.6	58059	78900	73.9	8.5
Services	81149	162774	50.0	99841	215412	46.4	23.0
Government	69825	135326	51.5	72797	149709	48.6	4.2
Total	478131	1017633	47.0	486280	1099865	44.2	1.7

Source: Wilfred Lewis, Jr., Urban Growth and Suburbanization of Employment, Some New Data,
(Draft), The Brookings Institution, May, 1969, Appendices A2, A3

TABLE II

Central City-Suburban Employment Distributions, 1960-1970, Boston SMSA

<u>Industry</u>	<u>1960</u>			<u>1970</u>			<u>Boston % Change</u>
	<u>Boston</u>	<u>Suburbs</u>	<u>Boston as % SMSA</u>	<u>Boston</u>	<u>Suburbs</u>	<u>Boston as % SMSA</u>	
Agriculture & Mining	1376	2442	36.0	651	3023	17.7	-52.6
Construction	16851	29965	36.0	19301	37428	34.0	14.5
Durable Manufacturing	26587	129732	17.0	20527	138147	12.9	-22.4
Non-Durable Manufacturing	60721	84157	41.9	42439	72305	37.0	-30.1
Transportation, Comm. & Util.	39023	23668	62.3	40849	31620	56.4	4.7
Wholesale	45433	24629	64.9	39571	40895	49.2	-12.9
Retail	76720	94241	44.9	76266	143679	34.7	- 0.6
Finances, Ins. & Real Estate	53525	17209	75.7	68312	23575	74.3	27.6
Misc. Services	27925	23622	54.2	29760	33547	47.0	6.6
Bus. & Prof. Services	25978	22818	53.2	38928	53469	42.1	49.8
Total	374311			376776			0.7

Source: Massachusetts Division of Employment Security

TABLE IIA

Adjustments to Table II for Non-Profit and Government Employment
1960 1970

<u>Industry</u>	<u>Boston</u>	<u>Suburbs</u>	<u>Boston as % SMSA</u>	<u>Boston</u>	<u>Suburbs</u>	<u>Boston as % SMSA</u>	<u>Boston % Change</u>
Miscellaneous Services	29043	24566	54.2	30986	34929	47.0	3.8
Bus. & Prof. Services	55420	48515	53.2	82922	113975	42.1	53.2
Government	72410	68190	51.5	86220	91180	48.6	16.0
Total	477281			508216			6.5

Source: Massachusetts Division of Employment Security
 Wilfred Lewis, Urban Growth and Suburbanization of Employment, Some New Data, (Draft),
 The Brookings Institution, May, 1969

As discussed earlier, the nature of the available data allows for the development of employment trends for the core cities as well as the central city alone. In Table III, consideration of the core cities, not surprisingly, shows improvement in all areas of employment. Overall job growth stands at 1.9% with the categorical declines for the central city being less pronounced for the core and increases being greater. Interestingly, in some of the categories which declined most for the central city alone, consideration of the core cities shows an actual reduction in the rate of decline, implying a slight growth in those categories in the core cities excluding Boston. These last include, durable manufacturing, wholesale and retail trade.

Thus it appears that these data, with an industrial stratification, do not support, overall, the generally believed trends of a declining city among prosperous suburbs. To be sure, the category of greatest decline (non-durable manufacturing) may be one of the heaviest users of low skilled workers but interestingly the decline in Boston is only part of a larger decline for the entire metropolitan area in the category. While central city employment in the category declined by 18,000 jobs, the employment in the rest of the SMSA was declining by nearly 12,000 jobs, an indicator of the generally decreasing importance of manufacturing to the metropolitan economy. On the other hand, these findings of relatively slower growth overall in the central city are

TABLE III

Core Cities-Suburban Employment Distributions, 1960-1970, Boston SMSA

<u>Industry</u>	<u>1960</u>		<u>1970</u>		Core as <u>% SMSA</u>	Core as <u>% SMSA</u>	Core <u>% Change</u>
	<u>Core Cities</u>	<u>Suburbs</u>	<u>Core Cities</u>	<u>Suburbs</u>			
Agriculture and Mining	1548	2270	40.6	856	2818	23.3	-44.7
Construction	22379	24437	47.8	24382	32347	43.0	8.9
Durable Manufacturing	41942	114377	26.8	36028	122646	22.7	-14.1
Non-Durable Manufacturing	80812	64066	55.8	57563	57180	50.2	-28.8
Transportation, Comm. & Util.	47673	15018	76.0	51681	20788	71.3	8.4
Wholesale	55423	14639	79.1	50086	30379	62.3	-9.6
Retail	95908	75053	56.1	97901	122044	44.5	2.1
Finances, Ins. & Real Estate	55831	14903	78.9	71408	20480	77.7	27.9
Miscellaneous Services	33835	17712	65.6	37607	25701	59.4	11.1
Bus. & Prof. Services	30255	18542	62.0	46727	45669	50.6	54.4
Total	465606			474239			1.9

Source: Massachusetts Division of Employment Security

strengthened if one considers employment in non-profit and government agencies. Using the estimate of this employment developed as previously described, Table IIA shows modifications of the figures for miscellaneous, business and professional services and the estimate of government employment. Overall, with these large additions (of industries more heavily based in the central city), the central city shows an overall increase of 30,900 jobs or 6.5%, a considerable rate of growth.

An interesting alternative for assessing the importance of these data for the economic health of the central area is suggested by Ganz². He argues that a two dimensional measure is more appropriate, considering productivity of the industrial mix as well as numbers of jobs. Thus different industries contribute a different share to the economy of the region. Interestingly, using Ganz' data on productivity per capita for different industries in Boston (Ganz, Chart III-4), ^{looking} ~~we see~~ that those industries which have been growing the fastest and taking up an increasing share of the Boston job market (finances, insurance and real estate, services, and government (see Table IV)), we see that those industries which have been growing fastest are also among the top four contributors to the per capita productivity of the city economy. Finances, insurance and

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Ganz, Alexander, Our Large Cities, New Light on their Recent Transformations....., MIT Laboratory for Environmental Studies, Cambridge, May, 1971

TABLE IV

Employment Percentage Distributions for Central City and Core Cities, 1960-1970

<u>Industry</u>	<u>Central City</u> (with est. data)*		<u>Central City</u> (without)**		<u>Core Cities</u> (without)**	
	<u>1960</u>	<u>1970</u>	<u>1960</u>	<u>1970</u>	<u>1960</u>	<u>1970</u>
Agriculture & Mining	0.3	0.1	0.4	0.2	0.3	0.2
Construction	3.5	3.8	4.5	5.1	4.8	5.1
Durable Manufacturing	5.6	4.0	7.1	5.4	9.0	7.6
Non-Durable Manufacturing	12.7	8.4	16.2	11.3	17.4	12.1
Transportation Comm. & Util.	8.2	8.0	10.4	10.8	10.2	10.9
Wholesale	9.5	7.8	12.1	10.5	11.9	10.6
Retail	16.1	15.0	20.5	20.2	20.6	20.6
Finances, Ins. & Real Estate	11.2	13.4	14.3	18.1	12.0	15.1
Miscellaneous Services	6.1	6.1	7.5	7.9	7.3	7.9
Bus. & Prof. Services	11.6	16.3	6.9	10.3	6.5	9.9
Government	15.2	17.0				

Source: *Tables II and IIA, including Government and Non-Profit Estimates
 **Tables II and III, excluding Government and Non-Profit Estimates

real estate alone provide one third of the economy's gross product per capita with only 13% of the economy's employees. As is evident, this very brief analysis denotes a very important positive aspect of the job growth which has taken place in the city of Boston and an aspect which must be considered in any fuller analysis of Boston's economic trends than is intended here.

These findings seem to show strong overall growth in Boston's economy offsetting declines in a few industries. This seems to be especially true if one considers the core cities together. Of course the key question, and the one to this point addressed only by Fremon, involves the effects of these trends upon occupational employment distributions, the issue taken up in the following section.

B. Occupational Trends The methodology used here to translate industrial to occupational employment is conceptually very simple. From the 1960 and 1970 censuses, the occupational composition of each industry is calculated. These are then applied to the already calculated industrial distributions of employment. Ganz has performed a similar analysis for Boston but making use of an adjusted national matrix.³ Although full comparison of these approaches is not attempted here, general outcomes appear to be similar.

³ Ganz, op. cit. p. IV-28 (The methodology for developing this matrix is not yet available)

The availability of 1960 and 1970 industrial-occupational matrices allows for a two dimensional analysis of these occupational trends. The application of the 1960 and 1970 matrices to 1960 and 1970 employment data respectively provides data for analysis of the overall trends of jobs by occupation. In order to assess these, however, it is necessary to distinguish between changes due to shifts in industrial structure (i.e. changes in the matrices) and changes due to locational trends, an evaluation rarely attempted in the literature (and yet crucial to the implications of the trends). For this purpose, a second analysis, applying both the 1960 and 1970 matrices to 1960 data is undertaken to estimate the proportion of occupational employment change due to changes in industrial structure. On another dimension, the occupational structure of those industries not originally covered are taken up in a separate analysis to indicate the effect of these high growth industries on occupational trends.

The overall trends in occupations, as shown in Tables V and VI for the central city and core cities respectively, lend support to the hypothesis that higher skilled job areas are those showing the most growth in the central city. In fact, the strongest increases took place in the professional and clerical categories. Among the lower skilled jobs, only service jobs increased, a rise which was strongly offset by losses in the operatives category. These trends appear when both the central city alone and the core cities are con-

TABLE V

Central City-Suburban Occupational Distributions, 1960-1970, Boston SMSA

<u>Occupation</u>	<u>Boston</u>	<u>Suburbs</u>	<u>Boston as % SMSA</u>	<u>Boston</u>	<u>Suburbs</u>	<u>Boston as % SMSA</u>	<u>Boston % Change</u>
Professional	32194	44661	41.9	44522	72934	37.9	38.3
Managers	43221	44009	49.6	40675	58417	41.1	-5.9
Clerical	83538	76429	52.2	98726	115114	46.2	18.2
Sales	51100	48922	51.1	44878	60124	42.7	-12.2
Craftsmen	48527	80547	37.6	44842	89021	33.5	- 7.6
Operatives	67068	106658	38.6	50635	105167	32.5	-24.5
Service	36581	35338	50.9	41152	59579	40.9	12.5
Laborers	12833	16553	43.7	11201	17487	39.0	-12.7

Source: Massachusetts Division of Employment Security
U.S. Census of Population, 1960, 1970

TABLE VI

Core Cities-Suburban Occupational Distributions, 1960-1970, Boston SMSA

<u>Occupation</u>	<u>1960</u>			<u>1970</u>			<u>Core % Change</u>
	<u>Core</u>	<u>Suburbs</u>	<u>Core as % SMSA</u>	<u>Core</u>	<u>Suburbs</u>	<u>Core as % SMSA</u>	
Professional	39884	36971	51.9	55963	61493	47.6	40.3
Managers	52747	34483	60.5	50578	48515	51.0	-4.1
Clerical	99475	60492	62.2	118894	94946	55.6	19.5
Sales	62200	37821	62.2	55036	49965	52.4	-11.5
Craftsmen	63531	65544	49.2	59285	74578	44.3	-6.7
Operatives	88345	85381	50.9	68739	87064	44.1	-22.2
Service	44360	27559	61.7	51469	49262	51.1	16.0
Laborers	16186	13200	55.1	14326	14361	49.9	-11.5

Sources: Massachusetts Division of Employment Security
U.S. Census of Population, 1960, 1970

sidered, with the latter case showing the declining trends as being somewhat less pronounced.

If one were to aggregate these trends in a manner similar to that used by Fremon(a potentially misleading procedure), the picture is slightly changed. In that way, the high skilled(professional and managers) and the low skilled(service and laborers) occupations show significant increases while the larger semi-skilled category shows a major decline. Of course only slight changes in the arrangement of categories changes these results. If, for example, operatives are considered low skilled, it is that category which sees a significant decline and the remaining semi-skilled occupations which experience a gain.

Overall then, the occupational trends in the central area seem to corroborate the generalization that primary job growth is taking place in the higher skilled categories. Even consideration of the occupational structure of non-profit and government employment alters these trends only slightly as Table VII indicates. These figures tend to reduce the rates of decline. They point up, as well, that 50.2% of the growth in service jobs has taken place in these categories alone. In view of the high proportion of better service jobs in these categories(health workers, firemen, etc.) the chances are better that a good deal of that service growth which has taken place has been in the 'better' service jobs.

TABLE VII

Central City Occupational Distribution including Non-Profit and Government Employment

<u>Occupation</u>	<u>1960</u>	<u>1970</u>	<u>% Change</u>
Professional	61619	89238	44.8
Managers	50569	49788	-1.5
Clerical	116166	138726	18.2
Sales	51379	45256	-12.2
Craftsmen	53887	49508	-7.6
Operatives	69738	53177	-24.5
Service	59198	68370	12.5
Laborers	16016	14094	-12.7

Source: Massachusetts Division of Employment Security (Tables II and IIA above)
U.S. Census of Population, 1960, 1970

Concerning the second dimension of this analysis, the question remains as to the extent to which these trends are due to changes in occupational compositions of industries or to changing locational tendencies. The application of the 1960 and 1970 matrices to a common employment data set (1960) allows for the calculation of a percent of change in central city employment, by occupation, due to change in industrial structure. As a reasonable inference, the actual percent change, less this structural change, can be used as a measure of the changes due to locational trends. Thus Tables VIII and IX (central city and core respectively) show some very interesting findings. In all cases the proportion of the overall changes due to structural change is considerable. In the case of managers and sales workers, the structural change indicates that locationally there have actually been very slight increases in the number of jobs in the central city and core cities. In addition, among the low skilled and semi-skilled job categories, interestingly, those jobs which showed declines have a higher proportion of those declines explained by structural changes than are the increases in the other categories. That is to say that where there are declines, they are more strongly due to structural changes than to locational factors, a concept of great importance to consideration of metropolitan employment problems.

In summary then, there are significant central area job declines in a number of categories, especially those in

TABLE VIII

Distributions of 1960 Central City Employment by 1960 and 1970 Industry-Occupation Matrices

<u>Occupation</u>	<u>1960 Matrix</u>			<u>1970 Matrix</u>			<u>Boston % Change</u>
	<u>Boston</u>	<u>Suburbs</u>	<u>Boston as % SMSA</u>	<u>Boston</u>	<u>Suburbs</u>	<u>Boston as % SMSA</u>	
Professional	32194	44661	41.9	40376	53470	43.0	25.4
Managers	43221	44009	49.6	40421	44559	47.6	-6.5
Clerical	83538	76429	52.2	92840	87319	51.5	11.1
Sales	51100	48922	51.1	44692	42189	51.4	-12.5
Craftsmen	48527	80547	37.6	46869	75894	38.2	-3.4
Operatives	67068	106658	38.6	59419	96416	38.2	-11.4
Service	36581	35338	50.9	37794	39060	49.2	3.3
Laborers	12833	16553	43.7	11767	13953	45.8	-8.3

Source: Massachusetts Division of Employment Security
 U.S. Census of Population, 1960, 1970

TABLE IX

Distributions of 1960 Core Cities Employment by 1960 and 1970 Industry-Occupation Matrices

<u>Occupation</u>	<u>1960 Matrix</u>			<u>1970 Matrix</u>			<u>Core % Change</u>
	<u>Core</u>	<u>Suburbs</u>	<u>Core as % SMSA</u>	<u>Core</u>	<u>Suburbs</u>	<u>Core as % SMSA</u>	
Professional	39884	36971	51.9	50300	43545	53.6	26.1
Managers	52747	34483	60.5	49715	35266	58.5	-6.5
Clerical	99475	60492	62.2	111135	69023	61.7	11.7
Sales	62200	37821	62.2	54118	32763	62.3	-13.0
Craftsmen	63531	65544	49.2	61258	61506	49.9	-3.6
Operatives	88345	85381	50.9	78275	77290	50.3	-11.4
Service	44360	27559	61.7	46118	30736	60.0	4.0
Laborers	16186	13200	55.1	14748	10972	57.3	-8.9

Source: Massachusetts Division Of Employment Security
U.S. Census of Population, 1960, 1970

the lower skilled job areas. However, it appears from this further analysis that locational trends in the various industries play a less important role in the low and semi-skilled declines than do structural changes in the occupational compositions of industries. In two cases, in fact, the locational trends appear to denote increases in jobs when only locational trends are considered. Thus this two dimensional analysis would seem to have serious implications for the interpretation of the mismatch hypothesis. A discussion of the importance of these findings, for transportation and manpower policies particularly is included in the later section on policy implications.

C. Job Availabilities Up to this point in the analysis, of course, only the labor requirements side of the mismatch hypothesis has been considered. Lewis notes⁴ that nationally the rate of people moving out of the central city is faster than that of jobs. To estimate this, he made use of a measure of relative job availability by industry of the central city within the metropolitan area. Again, however, he was able only to look at industry and thus infer about occupational trends. The data on Boston occupational trends developed here offers an opportunity for investigation of the relative availability of different occupations over the time period studied. Basically

⁴Lewis, op. cit., p. 27

the measures used are the same as those of Lewis using occupational data instead of industrial . For population trends, occupational data by place of residence was gathered from the Census. In developing these, the occupational data used does not include the major uncovered categories(non-profit and government). In that the relative measure of availability is consistent within itself for the SMSA and the occupational figures for these categories did not strongly alter the overall distributions of occupations, it is unlikely that the ratio would be significantly changed. The measure is used here, then, as an indicator of the availability of various occupations in the central area relative to their availability in the metropolitan area.

As Table X indicates, Lewis' findings that people appear to be leaving the central cities faster than jobs is supported by the Boston case. For the central city, all categories except professional had their relative availabilities increase or remain the same over the period 1960 to 1970. Further, for all categories, central city or core, the relative availabilities are all greater than one, indicating the continued relative strength of the central job market. Interestingly, the decline in professional availability, in light of the earlier finding of strong growth in professional jobs in the central city, points up an apparently substantial increase in professionals living in Boston, a trend of interest as regards population trends of the central city.

TABLE X

Relative Job Availabilities, 1960-1970*

<u>Occupation</u>	<u>Central City</u>		<u>Core Cities</u>	
	<u>1960</u>	<u>1970</u>	<u>1960</u>	<u>1970</u>
Professional	2.00	1.92	1.69	1.58
Managers	2.74	2.78	2.47	2.48
Clerical	1.69	1.68	1.45	1.45
Sales	2.28	2.49	2.02	2.15
Craftsmen	1.57	1.62	1.44	1.47
Operatives	1.25	1.28	1.13	1.05
Service	1.30	2.54	1.32	2.11
Laborer	1.31	1.35	1.22	1.26

*Relative Availability = $\frac{\text{Jobs in Central City}}{\text{Pop. in Central City}} \div \frac{\text{Jobs in SMSA}}{\text{Pop. in SMSA}}$ developed

for each occupational category

Source: Massachusetts Division of Employment Security
U.S. Census of Population, 1960, 1970

When one turns to the core availabilities, the same trends again emerge although with several basic differences. First, all availabilities are at lower levels, a not surprising fact given the working class residential nature of many of the core cities. Second, where increases in availability have occurred they have been of a smaller magnitude than the same changes for the central city alone. Finally, one category, operatives, did show a decline in availability when the core cities are considered. The importance of this as regards relative availability of different skill levels is discussed below. Overall, these core findings, along with the nature of the Boston area as regards demography and public transportation, suggests that the core cities are strongly analogous to working class neighborhoods of the city of Boston. As such, it is the core occupational availabilities which would seem of most importance in consideration of trends.

Although generally these availabilities portray positive trends, one cannot overlook the importance of the decline shown in the availability of operative jobs in the core area. It is possible that this merely reflects inertia in the work force to switch from a declining occupation to a faster growing one such as service jobs. In terms of status comparability, Duncan⁵, in developing a socioeconomic index of occupations based on education and income found service and operative jobs to have very similar ratings (operative:18 and service:17 out

⁵See Chapter 6 in Albert Reiss, Jr., et al, Occupations and Social Status, Free Press, 1961

of 100). Some doubt, however, must linger when one considers the nature of operative as opposed to service jobs. Generally, as Blau and Duncan⁶ suggest, an operative job within an industry may offer greater opportunities for upward mobility (i.e. an operative within a manufacturing industry has a better chance of moving up to a craftsmen job than does the service worker outside the plant). These 'channels of mobility' then, can add different dimensions to occupational categories which have similar 'status' levels. Of course one could argue that any job for a low skilled worker is better than none at all or that there will continue to be a demand for low opportunity, low skilled jobs and that upward mobility should not be a prime consideration in developing manpower and other policies. However, the long term effects of encouraging workers into industries with small channels of mobility would seem potentially harmful for the worker and the central city. The importance of this question is such that discussion of it will be specifically taken up in the later section on policy implications. For the present, as a means of further informing discussion, investigation of work force trends of three groups important to the lower skilled, more marginal occupations: women, blacks and youth, will be undertaken.

D. Labor Supply Trends Human capital theory⁷ argues

⁶Blau, Peter M. and Otis Dudley Duncan, op.cit.

⁷For a discussion of several aspects of this, see, Bakke, E. Wright, Phillip M. Hauser, et al., Essays on Labor Mobility and Economic Opportunity, MIT Press, 1954

basically that the amount of specific vs. general training of a worker affects the transferability of workers among business firms. Thus, while a high skilled craftsman (with a great amount of specific training) would find it difficult to switch employers without taking a loss in pay, low skilled workers (service and operatives) with only the most general training can move quite freely among employers without affecting their marginal productivity or pay. There is some room to question these ideas, especially as regards low skilled jobs. While a service worker (e.g. waitress) may have the skill aptitude to transfer into an operative job, the need to adapt to a changed work environment, and obstacles such as required union membership suggest a certain rigidity in the flow of labor. These questions, only briefly stated here, take on added importance in light of the shifts taking place in the occupational demands of the Boston economy. As Table XI indicates, the percentage of workers in the operatives category has been declining and, when considering non-profit and government employment, service jobs have taken a larger share of the central city labor market than even operatives and laborers combined. Figures for the core area, while not here including non-profit and government data, exhibit very similar trends. The ability, then, of those in the labor force to switch between the declining operative and the increasing service jobs become crucial to the questions of unemployment and the mismatch. While an in-depth analysis of these questions is impossible here, an

TABLE XI

Percent Occupational Distributions for Central City and Core Cities, 1960-1970

<u>Occupation</u>	<u>Central City</u> (with non-prof. and govt.)*		<u>Central City</u> (without)*		<u>Core Cities</u> (without)*	
	<u>1960</u>	<u>1970</u>	<u>1960</u>	<u>1970</u>	<u>1960</u>	<u>1970</u>
Professional	12.9	17.6	8.6	11.8	8.5	11.8
Managers	10.6	9.8	11.5	10.8	11.3	10.7
Clerical	24.3	27.3	22.3	26.2	21.3	25.1
Sales	10.7	8.9	13.6	11.9	13.3	11.6
Craftsmen	11.3	9.7	12.9	11.9	13.6	12.5
Operatives	14.6	10.5	17.9	13.4	18.9	14.5
Service	12.4	13.5	9.7	10.9	9.5	10.9
Laborers	3.3	2.8	3.4	3.0	3.5	3.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: *Table VII including distributions of Non-Profit and Government Estimates
 **Tables V and VI excluding distributions of Non-Profit and Government Estimates



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attempt is made to look at trends in occupational distributions among three groups important to the low-skilled labor market: women, blacks and youth.

The occupational distributions of women are important for two reasons. First, as mentioned above, to evaluate trends, especially in the important low skilled job categories, as to the shifts in the distributions. A second interest concerns a more recent trend of more women taking on higher skilled jobs and entering the job market in general. As Table XII shows, occupational trends for women in both the core area and the entire SMSA are very similar. As such, and in light of the better data available on SMSA trends, it is that with which we will deal. As can be seen, trends within the women's work force show significantly higher percentages of women working in professional, clerical and service jobs, exactly those three occupations in which overall increases in the central areas have taken place. There is a major decline only in the operatives category, that being the one with decreasing opportunities. Perhaps most importantly, looking at the trends in the percentage of each occupation held by women in the whole market points up that in all occupations women are playing a larger role. The importance of this lies in the potential for increased participation by women to place pressure on jobs already in short supply. As regards shifts in occupations, the category least available in the core (operatives) is also that in which women are playing a much

TABLE XII

Women's Occupational Distributions, Metropolitan Area and Core Cities

<u>Occupation</u>	<u>Core Cities</u>		<u>SMSA</u>		<u>SMSA</u>	
	Percent		Percent		Percent of	
	Distribution		Distribution		Total Labor	
	<u>1960</u>	<u>1970</u>	<u>1960</u>	<u>1970</u>	<u>1960</u>	<u>1970</u>
Professional	13.0	18.4	14.2	19.0	35.3	39.1
Managers	2.4	2.9	3.0	3.3	12.7	15.0
Clerical	35.0	42.6	35.5	41.6	69.0	74.4
Sales	6.2	5.7	7.3	7.5	33.0	40.1
Craftsmen	1.3	.	1.2	1.3	3.4	4.6
Operatives	17.6	11.9	16.3	11.0	55.7	35.5
Service	14.0	19.9	14.3	15.5	50.0	50.4
Laborers	0.4	2.1	0.3	0.7	3.7	8.2

Source: U.S. Census of Population, 1960, 1970

smaller role while the increase of women in the other major low skilled category(service) has been slight. As this parallels closely the changing labor requirements in the central Boston area, there is reason to suggest that the decline reflects the marginal nature of women in operatives jobs(i.e. the first to be laid off) and the increaseⁱⁿ the competition which a relatively increased proportion of women in the service category appear to be facing.

The black labor force has been the major area of concern to those investigating the mismatch. High unemployment and discrimination have raised questions not only of what shifts have taken place in the general black occupational distributions but also as to the degree to which shifts have indicated true increases in the higher status jobs within each category.

In order to look at these questions, use has been made here of the occupational status measures developed by Duncan,⁸ as an indicator of black status level change within categories. Given the difficulty of matching different data stratifications from the work of Duncan and the 1960 and 1970 Censuses, only a limited analysis of this type is possible. Some strong implications can be drawn, nevertheless, from the information in Table XIII.

The black occupational distribution can be seen to have undergone a general shift upward. Thus a higher percentage

8

Duncan, op.cit.

TABLE XIII

Black Occupational Distributions for the Metropolitan Area, 1960-1970

<u>Occupation</u>	<u>Socioeconomic Status (Max.=100)*</u>	<u>Percent of Total</u>	
		<u>1960</u>	<u>1970</u>
Professional	75	10.1	11.8
Teachers	72	0.7	1.9
Managers	57	2.5	3.6
Sales	49	2.0	3.3
Clerical	45	12.1	22.1
Craftsmen	31	8.5	9.8
Construction Craft.	19	1.6	2.3
Foremen	-	0.6	0.8
Operatives	18	31.1	20.9
Manufacturing	17	20.8	10.4
Service	17	20.1	20.1
Protective	18,40	0.4	0.9
waiters, Cooks, Bartenders	16	5.4	3.4
Laborers	7	6.0	4.8
Private Household	-	7.4	3.6
Totals		100.0 28668	100.0 42456

Source: *The development of these measures is fully discussed in Chapter 6 of Occupations and Social Status, Albert Reiss, Jr., Free Press, 1961
U.S. Census of Population, 1960, 1970

of blacks are in jobs at the craftsmen level and above and lower percentages in the operatives and laborers categories. The proportion of service workers has remained about the same. Interestingly, the largest increase in black employment is in the clerical category, one of the fastest growing occupations in the core city area. Approximately 49 percent of the blacks, nevertheless, remain in the low skilled categories of operatives, service and laborers. As with women, though, blacks have seen a large relative drop in operative jobs, especially those in manufacturing, while their participation in service jobs has remained about the same. Thus they too have shown some tendency to shift away from jobs declining in numbers(while their participation in non-manufacturing operative jobs has remained the same).

On the second question of their ability to shift to higher status low skilled jobs, the evidence points up a decline in the proportion of private household workers and food service personnel(cooks, waiters, etc.) with relative increases in protective service workers and both the construction craftsmen and foremen portion of the craftsmen category. Even, in fact, in the higher skilled professions there have been relative increases.

Thus the black labor force displays a tendency to follow the requirements of a changing low skilled labor market while displaying an overall trend toward increasingly better jobs within the low skilled categories.

As prime entrants into the job market each year, youth may be best used as an indicator of future trends in job market participation. A first glance at Table XIV points up one spectacular fact, youth participation in the labor market has increased tremendously over the past ten years (by some 100,000 workers) in the core Boston area. This may in part be due to the delayed impact of the postwar birth rate increase upon the labor market. For whatever reason, youth, like women, may through their large numbers be putting increasing pressure on the slowly growing job market in the central portion of the metropolitan area. As pertains to occupations, their strongest increases have been in the professional, and technical area, the service category and the laborers category. Their relative participation in operative jobs has been the greatest declining area. Youth, while greatly increasing their participation, also appear to move away from operative jobs to other more readily available jobs.

In sum then, the relative decline in operatives for all three groups suggests a certain flexibility in the low skilled labor force (although potentially forced by the loss of jobs in the operatives category) which is important to earlier findings and the implications of the mismatch. At the same time, though, both women and youth are exerting increasing pressure on the slowly rising (or in some categories, declining) job market in the central area while the blacks have just begun to move up into higher job categories. As a result, the blacks

TABLE XIV

Youth Occupational Distributions for the Metropolitan Area, 1960-1970
(Age: 14-24)

<u>Occupation</u>	<u>1960</u>	<u>1970</u>
Professional	13.2	15.7
Managers	1.9	2.6
Clerical	34.1	33.1
Sales	9.9	8.7
Craftsmen	7.5	6.9
Operatives	16.2	10.4
Service	10.8	16.2
Laborer	6.2	6.4
Totals	100.0 150,392	100.0 257,851

Source: U.S. Census of Population, 1960, 1970

may find themselves facing increased competition in all areas of the market due in part to the increased participation of two much larger groups.

E. Journey to Work Trends Of course, potentially the most misleading aspect of job availability measurement is that trends shown do not necessarily reflect the real job availability situation. In fact, while workers may be moving out of the central city faster than jobs, it is likely that a significant portion of those moving out maintain their central city jobs and simply become commuters. Thus a better evaluation of job availability requires an investigation of the trends in commuting to and from the city. Fremon found, not surprisingly, that the cities she investigated experienced net incommuting. It is of importance here to define the dimensions of this incommuting in the Boston area. Making use of U.S. Census place of work data, it is possible to analyze these trends by occupation.

Viewing the data (Table XV), we find that in every category except clerical workers the percentage of jobs in the central city held by central city residents has declined. While in no case has this decline been major, it is constantly between 3% and 6%. Further, there has been an absolute decline in the number of central city residents employed in the central city except in the cases of professional, clerical and service employment. On the other hand, those occupations with the highest percentages of central city residents as employees

TABLE XV

Distribution of City and Non-City Residents in City Located Employment, by Occupation
1960 1970

<u>Occupation</u>	<u>Resident</u>	<u>Non-Resident</u>	<u>% Resident</u>	<u>Resident</u>	<u>Non-Resident</u>	<u>% Resident</u>
Professional	23881	32081	42.6	28226	45732	38.1
Managers	12115	25446	32.2	10470	24540	29.9
Sales	15115	20453	42.4	9956	16010	38.3
Clerical	49783	50402	49.6	53576	54319	49.6
Craftsmen	22860	25140	47.6	16057	22146	42.0
Operatives	38428	21916	63.6	21423	37363	57.3
Service	29384	9072	76.4	29652	12642	70.1
Laborers	8863	3788	70.0	6205	3477	64.0

Source: U.S. Census of Population, 1960, 1970

are the lowest skilled. In light of the lower pay and less attractiveness for commuters, this is not surprising. However, while the availabilities discussed previously must be tempered by the degree of incommuting in each occupation, the high percentage of low skilled central city jobs held by residents reduces the sensitivity of the availabilities in these categories to changes in incommuting.

As in Fremon's cities, Boston is experiencing net incommuting. However, some interesting trends concerning outcommuting should be noted(see Table XVI). First, for all occupations, the percentage of the total central city labor force which is outcommuting has increased. These increases have been strongest in the clerical, operative and service categories. Of course the lack of place of work data for the core cities reduces one's ability to speculate on these trends. It is of interest that while outcommuting has generally increased, the categories of craftsmen, operatives and laborers have experienced an absolute decline in the number of outcommuting workers, reflecting, at least in part, the generally declining number of workers in the central city in those categories where central city job opportunities are declining.

The fact, however, that these groups, along with all others, have maintained an increased percentage outcommuting of the total group in the central city suggests that, either as a reaction to changing labor market demands, or as a result of the relatively good transportation system to industrial

TABLE XVI

Distribution of Central City Labor Force Working in Central City and Commuting Out

<u>Occupation</u>	<u>1960</u>			<u>1970</u>			<u>% Change Out Commuting</u>
	<u>working in City</u>	<u>working Out</u>	<u>Percent out</u>	<u>working in City</u>	<u>working Out</u>	<u>Percent Out</u>	
Professional	23881	8307	25.8	28226	11801	29.5	42.1
Managers	12115	2816	18.9	10470	3475	25.0	23.4
Sales	15115	2439	13.9	9956	3193	24.3	30.9
Clerical	49783	7374	12.9	53576	10127	15.9	37.3
Craftsmen	22860	8277	26.6	26057	7553	32.0	-8.7
Operatives	38428	11241	22.6	21423	9774	31.3	-13.1
Service	29384	3687	11.1	29652	7186	19.5	94.9
Laborers	8863	2345	20.9	6205	2312	27.1	-1.4

Source: U.S. Census of Population, 1960, 1970

places in the core cities, outcommuting has become increasingly important to the central city labor force. That this should be true even for a growing category such as service workers suggests strongly that in fact locational availabilities are not as crucial to employment problems in the central city as the mismatch hypothesis might suggest. In other words, the ability of central city low skilled workers to outcommute in increased proportions at all suggests that the possibility of outcommuting to better job opportunities in the core is already somewhat open to them as a means of combatting decreasing job opportunities in the central city alone.

V. Policy Implications

If one general observation can be drawn from the previous analysis, it is that the mismatch cannot be looked to as the primary factor in central city employment problems. This analysis has shown that first, the mismatch does not seem to be getting increasingly worse and second, there are other factors which appear to play a more important role in those trends identified. Of prime importance among these findings are the generally healthy signs in the central city's economy as regards both overall job growth and changes in the productivity mix of its industries. Job growth in the services, government and finances insurance and real estate with their heavy contributions to the area's productivity is particularly heartening. The one major negative factor in the picture, the declining manufacturing employment in the entire metropolitan area, has serious implications, however, for the types of new jobs being created. For the most part, job growth has taken place in the higher skilled occupations (and service jobs) with the categories of operatives and laborers showing major declines. This analysis shows, however, that the important factor in these declines appears to be other than the locational trends towards suburbanization of low skilled jobs. Rather, changes in the occupational structures of the industries in the metropolitan area appear to account most strongly for the declines. That is to say, the industries in Boston, in general, are hiring fewer low skilled operatives and laborers due more strongly to shifts

in their means and style of production(i.e.manpower needs) than to trends toward suburbanization. If these factors are important in other cities as well, they may help explain the failure of policies aimed most prominently at the presumed spatial nature of employment problems for central city poor (e.g.transportation experiments). Analyses in other cities similar to that performed here would be useful in this regard to better understand the true components of employment problems.

A second factor involves the continued increases in the percentage of central city jobs held by commuters. While the analysis here of job availability ratios has shown the actual magnitude of jobs vs. workers not to be a problem, ⁱIt is apparent that a certain number of workers, while leaving the central city and not being counted as resident workers, retain their central area jobs and commute to work. In part, the low skilled worker's ability to do this depends on the availability of cheap, convenient modes of transportation. In as much as the present transportation system provides this incommuting bias, to assume that the problem lies in allowing the central city residents to stay in the central city and commute out to work, also assumes that the low skilled worker has a propensity to stay closer to the central city for other than economic reasons, an assumption not necessarily borne out by increasing in-commuting in the lower skilled jobs. Rather, what is implied here would be some movement towards a policy which enables those

workers who are moving out of the central area to take the low skilled jobs which are more healthy in the suburbs(e.g. through the development of circumferential public transportation) and thus, potentially, open more of the central city low skilled jobs to those residents who cannot afford to or are not able to(e.g.because of discrimination) move out. While it is impossible to perform a detailed analysis of all the implications of such a policy here, this is suggested largely as a possible new direction for thought.

A third important factor in this analysis involves the ability of low skilled workers within the central city to adapt to changing low skill labor market demands and the implications of these adaptations for the low skilled populations. Perhaps one of the most negative findings of the analysis involves the decline in numbers and availabilities of operative jobs in the core area. While there was a parallel finding that major groups of low skilled workers appear to be able to transfer from operative jobs to service jobs, the more limited opportunities for upward mobility for most service jobs and the general increases in the central city in the high skilled as opposed to the semi-skilled occupations has significant implications for the central city's labor force ability to move upward occupationally and socially. Further, the finding that those declines which have taken place have largely been caused by changes in industrial structures as opposed to mere locational factors poses strong questions for

any policy which does not speak directly to manpower training to meet these changing labor demands. Further, more direct attention is necessary, despite the generally optimistic trends among the black labor force, to the degree to which discrimination continues to play a strong role in the central city unemployment problems.

In concluding, perhaps the most important point to be noted here, overall, concerns the generally positive implications for the central city of several of the findings. To the extent that healthy growth in Boston's economy help create a more optimistic view of the central city (for residents and businessmen alike) it helps dispell many of the non-economic factors entering into central city investment and residence decisions. While one can hardly agree totally with the President's feeling that the "hour of crisis is past" in our nation's cities, the advancement of more data such as that presented here strongly questioning the premise and policies of the mismatch hypothesis (which has undoubtedly played a role in creating pessimism in the central cities) may be important to the re-creation of a public and private momentum to invest in our central cities. To the extent that it does, the residents and the city itself will benefit.

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Appendix I
Adjusted Industrial-Occupational Matrices*

1960

<u>Industry</u>	<u>Prof.</u>	<u>Mgrs.</u>	<u>Cler.</u>	<u>Sales</u>	<u>Craft.</u>	<u>Oper.</u>	<u>Serv.</u>	<u>Laborers</u>	<u>Total</u>
Ag. & Mining	.056	.208	.052	.012	.036	.077	.021	.538	1.000
Construction	.058	.091	.053	.004	.573	.068	.003	.151	1.000
Durable Manufactur.	.153	.059	.162	.021	.249	.327	.012	.016	1.000
Non-Durable Manufactur.	.046	.069	.140	.069	.158	.474	.011	.034	1.000
Trans., Comm. & Util.	.054	.072	.292	.014	.200	.261	.036	.072	1.000
Wholesale	.040	.198	.262	.262	.071	.138	.035	.005	1.000
Retail	.024	.160	.142	.320	.070	.089	.165	.030	1.000
Finances, Ins. & R.E.	.056	.149	.537	.162	.024	.005	.053	.012	1.000
Miscellaneous Services	.057	.068	.079	.013	.140	.152	.458	.033	1.000
Prof. & Bus. Services	.536	.065	.178	.009	.039	.021	.163	.006	1.000
Government	.187	.074	.377	.000	.056	.026	.233	.041	1.000

Source: U.S. Census of Population, 1960 Detailed Characteristics

*Adjustment for government done using census class of
worker data

Appendix I (cont.)
Adjusted Industrial-Occupational Matrices*

1970

<u>Industry</u>	<u>Prof.</u>	<u>Mgrs.</u>	<u>Cler.</u>	<u>Sales</u>	<u>Craft.</u>	<u>Oper.</u>	<u>Serv.</u>	<u>Laborers</u>	<u>Total</u>
Ag. & Mining	.105	.046	.067	.020	.055	.120	.041	.576	1.000
Construction	.058	.101	.076	.008	.570	.062	.010	.116	1.000
Durable Manufacture	.150	.084	.166	.022	.220	.321	.020	.017	1.000
Non-Durable Manufacture	.140	.076	.164	.055	.148	.377	.017	.023	1.000
Trans., Comm. & Util.	.072	.068	.302	.017	.198	.231	.047	.065	1.000
Wholesale	.055	.167	.273	.210	.081	.156	.010	.048	1.000
Retail	.029	.137	.198	.268	.075	.083	.199	.012	1.000
Finances, Ins. & R.E.	.080	.139	.537	.169	.017	.006	.043	.008	1.000
Misc. Services	.073	.083	.126	.021	.131	.129	.403	.034	1.000
Bus. & Prof. Services	.497	.050	.210	.008	.024	.015	.190	.006	1.000
Government	.264	.079	.355	.000	.040	.020	.213	.030	1.000

Source: U.S. Census of Population, 1970 Detailed Characteristics

*Adjustment for government done using census class of
worker data

Appendix II
Samples from Eight Major Census Occupations*

Professionals, Technical and Kindred Workers - Accountants, Architects, Engineers, Lawyers and Judges, Life and Physical Scientists, Physicians, Dentists, Nurses, Social Scientists, Teachers, Social Workers, Technicians, Writers

Managers and Administrators - Assessors, treasurers, Buyers, wholesale and retail trade, Funeral directors, Health Administrators, Building Managers and Superintendents, Office Managers, Retail Trade, Sales Managers and Department Head, School Administrators

Clerical and Kindred Workers - Bank tellers, Bookkeepers, Cashiers, Vehicle Dispatchers, File Clerks, Office machine operators, Real Estate appraisers, Receptionists, Secretaries, Telephone operators

Sales Workers - Advertising Salesmen, Auctioneers, Hucksters and Peddlers, Insurance agents, Newsboys, Real Estate agents, Stock salesmen, Sales clerk

Craftsmen and Kindred Workers - Bakers, Blacksmiths, Brickmasons, Carpenters, Carpet Installers, Dental technicians, Electricians, Foremen, Machinists, Mechanics and Repairmen, Sheetmetal workers, Tailors, Shoe Repairmen

Appendix II(cont.)

Operatives - Bottling and Canning Operatives, Dressmakers, Garage workers and Gas Station Attendants, Meat Cutters and Butchers, Punch and Stamping press operatives, Textile operatives, Bus Drivers, Railroad brakemen, Taxicab drivers
Truck drivers

Service Workers - Cleaning Service Workers: Chambermaids, Janitors; Food service workers: Bartenders, busboys, cooks, waiters; Health Service workers: Dental assistants, health aides, nursing aides, Practical Nurses; Personal service workers: stewardesses, Barbers, elevator operators, hairdressers, child care workers; Protective service workers: Crossing guards, watchmen, policemen, firemen

Laborers - Carpenter's helpers, Garbage Collectors, Longshoremen, Teamsters, Warehousemen