







# Economic Policy Council and Office of Economic Policy

Department of the Treasury State of New Jersey April, 1973 .



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STATE OF NEW JERSEY Office of the Governor Trenton

WILLIAM T. CAHILL GOVERNOR

### TO THE LEGISLATURE

I am pleased to submit herewith the Sixth Annual Economic Report of the Economic Policy Council and the Office of Economic Policy.

In its consideration of topics of concern to the economic welfare of the State, the Council has devoted considerable attention to the financing of education, one of the larger and rapidly growing components of the State budget. Its primary attention was devoted to the prevention of inequities and to examining provisions required to assure full educational opportunities. Other topics analyzed include the significance of some fast-growing services industries in the State and changes in commuting patterns.

The Council reports that economic prospects for New Jersey in 1973 are encouraging, with the expectation that the momentum of last year's expansion will continue, providing more jobs and higher living standards. The problem of unemployment persists and is being explored jointly by the Department of Labor and Industry and the Economic Policy Council. Their initial conclusions, indicating the role of declines in manufacturing jobs, are included in this report.

Respectfully,

Ulilei ameral

Governor.

March 23, 1973.



State of New Jersey DEPARTMENT OF THE TREASURY OFFICE OF ECONOMIC POLICY STATE HOUSE TRENTON, NEW JERSEY 08625

March 30, 1973.

HONORABLE WILLIAM T. CAHILL Governor, State of New Jersey

DEAR GOVERNOR CAHILL:

The Economic Policy Council has honor to transmit its Sixth Annual Report in accordance with Chapter 129 of the New Jersey Laws of 1966.

This year's report concerns itself with some of the fundamental economic issues facing our state, in part reflecting overall developments in the economy of the nation. In particular, the report describes the results of studies of service and manufacturing activities in New Jersey, and their relation to employment in the state. There is also a discussion of the economics of public higher education in New Jersey—an area that is likely to continue to be a critical component of the State's budget.

As it has done in the past, the report also contains the Council's statement of the economic outlook for the year before us, a statement originally released through your office last December.

The Council has now resumed its full strength with the appointment of Lester V. Chandler to fill the position left vacant by Monroe Berkowitz. We are also very pleased to have been joined by Peter Bearse as the first full-time economist to serve with the Council. With his able assistance the Council will now be able to serve your administration and the Legislature on a more regular and continuing basis.

We also wish to take this opportunity to acknowledge the very generous assistance of several individuals and departments in our past year's endeavors and especially the preparation of this report. As in the past, the assistance of the Department of Labor and Industry has been invaluable, especially that of Dr. Arthur O'Neal, Director of Planning and Research. Henry Watson and the Office of Business Economics also contributed greatly

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# Ι

# REVIEW OF THE ACTIVITIES OF THE ECONOMIC POLICY COUNCIL\*

The year since the last annual report has been an eventful one for the Council. Before turning to the nature of its activities proper it is appropriate to report on some major personnel changes. The first of the two unfortunate changes was the resignation of Monroe Berkowitz after some five years of dedicated service on the Council. One of the initial members of our group, over the years he contributed greatly to its workings. Later in the year Harry Stark, who has served as director of our office and has in effect, though not in name, been a full member of the Council since its inception, left on a welldeserved leave of absence from his university and, concurrently, from the Council. He has served most effectively as our executive officer and we hope that after his return he can be induced to work with us again. Certainly we have missed both of them greatly.

It is, however, most gratifying to report two excellent additions to our group. Nearly a year ago, after a protracted search, we were able to persuade Peter Bearse to join our group as the full-time economist of the Economic Policy Council.

Second, as the replacement for Monroe Berkowitz the Governor has appointed Lester Chandler, whose outstanding reputation hardly needs to be expanded upon.

During the year the Council found itself involved in a broad range of activities. Early in this period, in a cooperative effort with the State's Environmental Protection Agency, it helped to complete the drafting of an effluent charges bill. This proposed act is now before the New Jersey Legislature. The act is intended to induce more efficient utilization of the State's waterways, and to induce those who discharge wastes into them to reduce their emissions in a manner that is efficient and as inexpensive as possible to society. The bill is designed as a supplement rather than as a substitute for current regulations and we believe it will strengthen significantly the State's environmental program.

The Council was also involved in the analysis and evaluation of the tax reform program designed by the Tax Policy Commission. The fate of these proposals makes further discussions of this activity rather pointless.

A substantial part of our time was spent on the financing of education, one of the larger and most rapidly growing components of the budget of the State. Among the issues to which a great deal of attention was devoted was the potential role of a loan program to students as a means to help them bear their share of the growing costs. The financial implications for the State of this method of financing have been explored at considerable length. But our primary attention was devoted to the prevention of inequities and the foreclosing of educational opportunities that can arise from a program that is designed

<sup>\*</sup> Prepared by Dr. William Baumol, Chairman, Economic Policy Council.

poorly. We have examined what provisions are required to assure full educational opportunities to the impecunious, to minimize any regressivity and to protect the interests of public educational institutions.

We have also spent time on a number of other topics important for the economic welfare of the state. The problem of unemployment in New Jersey, and in the central cities in particular, the strategy of timing of Bond financing, etc. On all of these we offered our suggestions to the Governor and the members of his cabinet most directly concerned with the issues. Finally, we prepared, as we do every year, our Economic Outlook Report for the State of New Jersey, which is included in this Annual Report.

With our somewhat expanded staff we feel we are now able to carry out our tasks more effectively than before and to broaden the range of matters to which we can devote our attention. As a result, we expect in the next year to increase the scope of our activities and to be able to deal more promptly and effectively with the issues as they arise.

# Π

# REVIEW OF THE NEW JERSEY ECONOMY AND FORECASTS FOR 1973\*

#### THE NEW JERSEY ECONOMY IN 1972

The New Jersey economy followed an expansionary course in 1972, as forecast a year ago by the Economic Policy Council. Unfortunately, the pace of advance lagged behind that nationally and unemployment failed to show the anticipated decline. A major factor in the persistence of high unemployment was the continued sluggishness of manufacturing activity.

#### Most Broad Indicators Pointing Up

Though rising somewhat less than nationally, New Jersey's personal income appears on its way to a total of \$38 billion for the full year of 1972, an increase of 8.2 percent over 1971. Retail sales have been running 7 percent ahead of last year's pace and there have been substantial gains in checkbook spending, construction contract awards, and the number of new business incorporations. Electric power sales to large industrial and commercial users have also been rising, though only moderately because of the lagging rate of recovery of industrial production. Aside from labor market conditions, one of the more disappointing developments in 1972 was an uptrend in the number of business failures, which had declined in 1971.

### **Employment Expands But Not Enough**

Nonfarm wage and salary employment increased in New Jersey during 1972, reaching a record 2,633,400 in October, after seasonal adjustment. Compared to the same time last year it was up roughly 40,000 thanks to expansion in trade, state and local government, and other service-producing activities.

The growth of employment over the year has not been large enough to remove unemployment from the agenda of priority problems. In fact, New Jersey's unemployment rate (seasonally adjusted) has been on a plateau for nearly a year and a half, after rising from 4.4 percent in 1969 to slightly over 7 percent in June 1971. Though it showed an encouraging dip to 6.7 percent in November 1972, based on preliminary estimates, it will average about 7 percent for the full year of 1972, approximately the same as in 1971. Nationally, unemployment has been declining moderately over the past year. The reason for New Jersey's failure to share in this improvement appears to be the lagging performance of the State's manufacturing sector.

### Manufacturing-Lagging but Hopeful

New Jersey's manufacturing sector has been in a serious slump over the past three years, with

<sup>\* &</sup>quot;The New Jersey Economy in 1972" was prepared by Dr. Arthur J. O'Neal, Director, Division of Planning and Research-Department of Labor and Industry, State of New Jersey. "The New Jersey Economy in 1973" was prepared by Dr. William C. Freund, Member of the New Jersey Economic Policy Council; Vice President and Chief Economist of the New York Stock Exchange, Inc.

an employment loss on the order of 100,000. The durable goods sector was hit hardest by the recession, with job cutbacks biggest in electrical machinery, nonelectrical machinery, fabricated metals, and primary metals. The garment industry was another big loser and there were numerically smaller, yet important, declines spread over almost the whole range of other industries. All parts of New Jersey have been affected by these cutbacks, but the impact has been most severe in such major industrial centers as the Newark, Jersey City, and Camden labor market areas.

The State has borne more than its proportionate share of the nation's loss of factory jobs since 1969. New Jersey followed the national trend rather closely during the first year or so of the slump. Since early 1971, however, the State's performance has lagged. Nationally, industrial employment leveled off during the first half of 1971 and then began to recover at a fairly strong rate, with improvement pretty much across the board. In contrast, New Jersey's employment decline continued much longer-into early 1972 -before leveling off. Also, unlike the nation, a generalized factory employment recovery in New Jersey is not yet clearly evident. Only a handful of individual industries have shown significant upturns thus far. These include fabricated metals, instruments, paper, and textiles.

Prospects at this time, however, do appear favorable for a wider manufacturing employment recovery in 1973. The average factory work-week has been fully recovered for a year and in recent months has been as long as at any time over the past two decades—about 41 and  $\frac{1}{2}$ hours per week. The State's manufacturing job vacancy rate has been edging up from a late-1971 low, and labor turnover rates have been behaving as they normally do when activity is picking up. All signs point to increased hiring in the months ahead.

### **Construction-Holding Its Own**

The performance of the construction industry in New Jersey was relatively strong during 1972. Construction worker jobs were about as plentiful as in 1971, though fewer in number than in 1970 when they were at a record high. The State shared in the nation's homebuilding boom and there was improvement in some types of nonresidential construction. On the other hand, industrial construction remained slow.

Indicators of planned private construction have shown considerable strength all year, except for industrial building, which can be expected to lag until factory activity rebounds much more than it has to date. Thus far in 1972, residential construction contract awards in the State have been running 60 percent ahead of their 1971 pace and nonresidential awards have risen 26 percent despite the slack in factory construction. Contract awards in New Jersey for heavy engineering construction (e.g., roads, bridges) have also been running somewhat ahead of 1971, slightly more than can be attributed to inflation alone. In all cases, awards have risen more in New Jersey than nationally. Though the volume of new housing starts may level off and public construction across the nation has been held in check by restraints on Federal government spending, there should be increased construction activity during 1973.

#### Service-Producing Activities-Expanding

The mainstay of New Jersey's employment growth over the past quarter of a century has been the service-producing sector, which includes trade, finance, transportation, utilities, a wide range of business and personal services, and government. Expansion of these activities provided roughly 50,000 additional jobs during 1972, with the biggest increases in wholesale and retail trade (20,000) and state and local government (nearly 18,000).

The rise in state and local government employment was larger than usual, reflecting the impact of the Federal Public Employment Program which provided funds to create public service jobs in areas of high unemployment. Partly offsetting this was a reduction in the number of Federal government employees in the State, particularly at post offices and defense installations. Some individual service industries, such as business services, have shown sluggishness possibly related to the continued effects of the recent recession and relatively slow recovery. Others, such as retail trade, showed exceptionally strong performance as job creators in 1972. Taken together, service-producing activities cannot be faulted for more than a minor share of the State's current high rate of unemployment.

### Agriculture

Weather extremes dominated the 1972 crop production season as both rainfall and temperatures significantly reduced the production of many crops. Planting of spring crops was slowed by rains and persistently below normal temperatures which delayed drying of soils. The State's peach crop, the smallest since 1934, suffered most from adverse conditions, including excessive rains, freezing temperatures and an unprecedented late drop of fruit in July. After rains from the tropical storm Agnes fell on soils already saturated, damage to many field crops, vegetables and berries began to mount. Crop losses were estimated to exceed 10 million dollars. The remainder of the growing season was more favorable for crops, and livestock production per unit was generally maintained at recent years' relatively high levels.

By the end of the wet spring and early summer season, crop production was one to two weeks later than usual. Growers had difficulty maintaining spray schedules and excessive leaching of fertilizers required additional applications for some crops. The State's hay crop was damaged severely because of poor harvest weather. Both production and quality were lowered. Field corn production for silage and grain was reduced because of the dry weather in August during the critical stage of ear formation. For carrots and several fall vegetables however, including cabbage, lettuce and spinach, production was greater than in 1971. Favorable demand resulted in potato harvest being completed earlier than usual with very little of the crop moving into storage. Much soybean and field corn harvesting has been delayed because of late fall rains and wet fields.

Estimated cash receipts from farm marketings in 1972 for the January through September period totaled \$177,300,000, 6 percent below 1971. Generally improved prices for livestock, livestock products and crops have been more than offset by sharply lower production and by higher production costs due to increased costs from adverse growing conditions and higher prices paid for farm inputs. Production losses resulted in farmers qualifying for government disaster assistance funds in several areas.

Cash receipts from farm marketings in 1971 totaled 240.1 million dollars and compared with 246.9 million dollars in 1970. Net farm income in 1971 totaled 40.9 million dollars and compared with 48.9 million dollars in 1970, down 16 percent. Total farmland continues to decline as economic pressures impel sales for other uses, and the average size of those units remaining continues to increase. The composite Index of New Jersey Prices Received by Farmers to United States Prices Paid at 64 was 7 percent below 1970 and the lowest of record as increased costs continued.

On balance, the lower production for most crops in 1971 and increased production costs were only partially offset by significantly higher average prices received by farmers.

### THE NEW JERSEY ECONOMY IN 1973

The business picture is very strong at present, both nationally and in the State of New Jersey. Prospects for 1973 are equally encouraging. The Economic Policy Council expects the momentum of expansion to continue throughout the coming year, providing more jobs and higher living standards. Although inflation has not been defeated, we anticipate no new upsurge in 1973.

The economy of New Jersey has shown considerable strength, particularly in retail trade, construction, finance, and communications. However, employment has lagged behind the national picture, with the result that the unemployment rate in our State has been excessively sticky. This experience raises a number of questions, which are being explored jointly by the New Jersey Department of Labor and Industry and the Economic Policy Council. The conclusions of their analysis<sup>1</sup> will be reported in the near future as they become available.

We begin our analysis with a brief summary of the national economic outlook, followed by our forecast for the State.

### The National Economic Outlook

A well-balanced and sustained economic expansion is under way which promises to roll along right through next year.

We expect gross national product to climb \$110 billion next year, on top of an estimated \$100 billion gain this year. These figures translate into a  $9\frac{1}{2}$  percent growth rate in 1973, of which approximately 6 percent will reflect real growth and  $3\frac{1}{2}$  percent inflation. All major sectors of the economy are expected to fuel the expansion.

Consumers have clearly loosened their purse strings and are now spending more freely. Business outlays are also heading higher, with plant and equipment spending expected to rise 10-12 percent in 1973, about the same percentage increase as this year. Inventory buying will also be rising as a rapid pace of final sales requires heavier inventory stocking. Government outlays at all levels are likely to increase.

The Economic Policy Council expects the U. S. balance of payments to improve and the dollar to strengthen internationally. Last year's dollar devaluation will have a delayed effect in stimulating U. S. exports and limiting the growth in imports. Moreover, U. S. inflation is now under better control than in most foreign countries.

Corporate profits should reflect the stepped up pace of activity. Higher volume, some price increases, and a reasonably good hold on unit labor costs are expected to produce a 13 percent hike in after-tax profits.

National unemployment, although continuing as an economic and social problem, is expected to drop to the 5 percent level in 1973, which would constitute a measurable improvement over recent years.

Inflation is expected to continue at a  $3\frac{1}{2}$  percent rate, just slightly above the percentage for 1972.

#### The Outlook for New Jersey

The national business upswing is being reflected in the economy of New Jersey. Except for a relatively sticky unemployment rate, which has hovered over 7 percent since mid 1971, broad measures of business are advancing. Retail sales are registering new highs each month and Christmas retail sales are up, and construction expenditures have surged. Only manufacturing employment has been lagging behind the nation, and as noted, this phenomenon is receiving careful study with a view toward some new policy initiatives.

Whatever the problem behind the State's lag in manufacturing employment, an upturn in factory jobholdings seems on the way. The factory work week, now averaging 41½ hours, cannot be extended much further. As factory activity picks up, more new workers will be required.

Construction jobs in 1973 will become more plentiful. Though the tremendous surge of homebuilding during 1972 will not be repeated, any slack will be picked up by the expansion of non-residential construction.

The improvement in our foreign trade balance should benefit the State of New Jersey. Moreover, spending in the services sector will reflect the rising proportion of services in the State's total gross product.

As we see prospects, the Gross State Product will rise about 9 percent, from \$46 billion in

<sup>1</sup> See Chapter VII for a detailed analysis of employment and unemployment in the manufacturing sector.

1972 to \$50 billion in 1973. Total personal income in the State is expected to reach \$41.4 billion next year, up from \$38.0 billion in 1972. On a per capita basis personal income should reach close to \$5600. Average income per household is projected at about \$18,000.

With the economic expansion rolling along and still gathering strength, there is little risk

of either the national or New Jersey economy running out of steam. On the contrary, national policy needs to be alert to signs of overheating as we come closer to the limits of our productive capacity. For the State of New Jersey, the risks of excessive expansion are less because of a relatively abundant supply of labor and plant capacity. An improved prosperous economy seems ahead for 1973.

# III

# THE ECONOMICS AND FINANCE OF PUBLIC HIGHER EDUCATION IN NEW JERSEY\*

How should higher education be financed? What should be the relative roles and responsibilities of governments at all levels, of the students themselves, and of the families of the students? In what ways, if at all, should present methods of financing higher education be changed? What should policies be with respect to tuition and student fees, to grants-in-aid, and to various possible types of student loan programs? Such questions are faced by both private and public institutions of higher learning and pose important and difficult issues in public policy.

A major reason for the widespread interest in such questions is the very large increase in expenditures for higher education during the past two decades and the prospect of still more increases in the future. Though expenditures by the federal government and by students and their families have also increased, we shall concentrate here on such expenditures by state and local governments.

#### **Past Experience:**

The increase of these expenditures has been a nationwide phenomenon, though the extent of the increase has varied from state to state, and it reflects both large increases in the number of students in institutions of higher learning and in expenditures per student. As indicated in Figure 3-1, the number enrolled in college nationwide increased by 1,356,000 or 61 percent, between 1950 and 1960, and then rose another 3,844,000, or 108 percent, between 1960 and 1970. Thus, the total increase from 1950 to 1970 was 5,200,000 or 235 percent. These increases reflected both a large rise of the number of people in the college-age group and an increase in the fraction of this group enrolled in college. For example, between 1960 and 1970, the number in the 18-24 age group rose by nearly 53 percent, and the percentage of this age group enrolled in higher education rose from 23 to 31 percent.

The number of students enrolled in higher education from N. J., rose from 85,787 in 1950 to 248,216 in 1968, an increase of 189.3 percent, compared to an increase of 153 percent for the nation. The percentage increase in the number of students enrolling in **publicly** supported institutions of higher learning in N. J. (265 percent from 1960-70) has been well above the overall national average, primarily because it was in this period that the state and some of the local governments began to accelerate their efforts to provide more facilities for higher education.

<sup>\*</sup>Prepared by Peter Bearse, Office of Economic Policy, with the assistance of Dr. Lester Chandler, Economic Policy Council. Richard DiFedele, Summer Intern-Office of Economic Policy, was of great help in preparing some of the basic data series.

		Projec	ctions
Year	Actual	E-l	E-2
1950	2,214		
1960	3,570		
1965	5,675		
1970	7.414		
1975		9,700	9,147
1980		11,449	10,284
1985		11.854	10.207
1990		12.465	10.397
1995		14.031	11.416
2000		15.682	12.619

# FIGURE 3-1 COLLEGE ENROLLMENTS IN THE UNITED STATES (In Thousands)

Source: Bureau of the Census, Current Population, Reports, Series P-25, Number 473, pp. 11-12.

State government expenditures for higher education in New Jersey have increased twice as fast as enrollments over the period 1965-1973. Enrollments<sup>1</sup> have doubled and state appropriations<sup>2</sup> for higher education have quadrupled since 1965. The rate of increase of total state and local government expenditures for higher education in New Jersey is certainly higher than indicated by the state figures alone. Two-year community colleges have had the most rapid rate of expansion, and a significant portion of their revenues are from local sources (27 percent in 1970-1971).

For the nation as a whole, state and local government expenditures on higher education rose from less than \$1.1 billion in 1952 to nearly \$2.8 billion in 1960, to \$10.9 billion in 1970, and to nearly \$12 billion in 1971. Figure 3-2 shows that while enrollments rose 235 percent between 1952 and 1970, state and local expenditures for higher education rose 922 percent.

For the faster rise of such state and local expenditures there have been several interrelated reasons, of which the following appear to be the most important. (1) The greatly increased role of state and local governments in providing higher education. Only a small part of the total increase of students in post-secondary institutions was absorbed by new private colleges and by increases of enrollments in existing private

FIGURE 3-4	FI	GI	UR	E	3-2
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# PERCENTAGE CHANGES IN ENROLLMENTS IN HIGHER EDUCATION AND IN STATE AND LOCAL GOVERNMENT EXPENDITURES FOR HIGHER EDUCATION<sup>+</sup>

Period	Change in Enrollments	Change in Total State and Local Expenditures
1950-1960* 1960-1970 1950-1970*	+ 61 + 108 + 235	+ 160 + 292 + 922

\* For State and Local expenditures, changes are from 1952.

† U.S. as a whole, 1950-70.

institutions. Most of the increase was absorbed by expanding enrollments in existing public institutions and by the creation of new public junior colleges, 4-year colleges and university campuses. As total enrollments continue to increase, this trend toward greater reliance on publicly-supported institutions will almost certainly continue, for few private institutions are in a position to expand proportionally. (2) General price inflation. The increase in the general price level from 1952 to 1970 was 47 percent as measured by the consumer price index and more than 50 percent as measured by the GNP price deflator. Both indexes show increases of 32 percent from 1960 to 1970. (3) An increase in the real cost of higher educational services as these costs, in terms of money, rose faster than the general price level. For this, two principal forces were responsible. (a) After about the mid-1950's, wages and salaries of those employed in institutions of higher learning rose not only faster than the general price level but also faster than wages and salaries in general. Prior to that time, academic wages and salaries had lagged behind the increase in the cost of living. However, during the period of acute shortage of academic personnel, these wages and salaries rose rapidly. Now that the shortage is less acute, wages and salaries of academic personnel are unlikely to rise much faster than wages and salaries in general. (b) As in other service industries, productivity per worker in higher education rose less rapidly than in the economy as a whole. In the absence of some unexpected breakthrough in teaching technology, this trend is likely to continue into the future.

# The Future:

Enrollments in institutions of higher learning are almost certain to continue to rise through most of the rest of this century, though the rate of the increase cannot be predicted with certainty. Only one foreseeable event could bring an absolute decline of enrollments-a sharp increase in real tuition and other costs to be borne by students and their families. However, even if this occurs, its aggregate (though not distributional) retarding effect will almost certainly be offset by other forces, such as the continuing increase in the population of college age<sup>3</sup>, the continuing increase in real income per capita and per family, and some increase in the percentage of the college-age population desiring postsecondary education. The latter part of Figure 3-1 presents two conservative projections of college enrollments in the nation as a whole. Both use the Census Bureau "E" projection of births,

		Undergraduate		Percent In	crease
Year	Total FTE	FTE		(Undergraduate)	(Total)
1970	255,450	227,050			
1975	339,435	305,635	197 <b>0</b> -1980	66.1	63.6
1980	417,950	377,050			
1985	492,000	393,418	1980-1990	1.3	
1990		382,000			
1995		423,000	1990-2000	29.8	
2000		496,000			

FIGURE 3-3 NEW JERSEY ENROLLMENT PROJECTIONS

Sources: (1) Minimum Projection, Department of Higher Education, State of New Jersey, "Demand for Undergraduate Education in New Jersey" (A working paper for the forthcoming Master Plan). These projections are in the process of being revised. The minimum series appears to conform most closely to the most recent enrollment patterns and New Jersey population projections. (2) The above undergraduate FTE series was extended using the New Jersey official population projections (from the Office of Business Economics, Department of Labor & Industry) and the following assumptions: (a) The percent of the projected 18-21 population in college rises from 47-50 percent over the period 1968-1975 and 50-53 percent over the period 1975-1995; (b) The percent attending full time stabilizes from 70-71 percent. (It has been declining with the increase in percent of part-time students.)

which assumes that on the average each woman will give birth to only 2.1 children. This is the birth rate which, if maintained for several decades, would eventually lead to a zero-rate growth of population. Projection E-1 assumes that the percentage of college-age people attending college will rise annually at the rate actually experienced during the period of 1950-1970. Under this projection, the increase from 1970 to 1980 would be 4,035,000 or somewhat larger than the 3,844,000 rise from 1960 to 1970. The increase from 1980 to 1990 would be only 1,016,000, but it would rise to 3,216,000 for the period 1990-2000. Projection E-2 assumes that the percentage of those of college age who are enrolled will rise only about half as fast as in the earlier period. The projected increases under this assumption are, of course, smaller; nevertheless, they amount to 2,870,000 during the period 1970-1980, to 113,000 during the period 1980-1990, and to 2,220,000 between 1990 and 2000. Because of the possibility of large net migration of people from one state to another, it is even more difficult to predict future changes in the number of students from a single state that will be enrolled in post-secondary educational institutions. It seems likely, however, that such increases in New Jersey, stated in percentage terms, will be at least as high as the national average.

# The Costs of Higher Education: U. S. Public and Private Institutions

Costs per student will continue to rise, though perhaps not as fast as during the past 10-15 years. The U.S. data on current expenditures by institutions of higher education<sup>4</sup> indicate that total current expenditures per student increased at an annual average rate<sup>5</sup> of 8.9 percent for private and 5.3 percent for public institutions over the period 1959-1960 to 1970-1971. For "instructional" expenditures only the annual average rates of increase were 8.1 percent and 5.4 percent, respectively. In terms of tuitions, the much more rapid rate of increase of expenditures by private colleges, and their need to adjust tuitions in some fashion to keep pace with the increase has meant a widening tuition gap between the public and private sectors. Over the same period, the ratio of student charges to undergraduates in private to those in public institutions has increased from 1.86 to 2.13. There is some indication that the differential itself may now be a factor in the faster rise of costs in private institutions as they try to maintain educational quality in the face of stiff competition for enrollments from the lower priced public sector.

So far, our discussion has been entirely in terms of current dollar costs. It is very difficult to net out the effects of "inflation" or derive an index of real costs for any services-type activity, particularly education. O'Neill (1971) has made a brave attempt to develop such a series for higher education for the period 1930-1967, including a crude adjustment for changes in "quality."<sup>6</sup> Her conclusion is that the real costs of higher education have remained approximately constant over the period. When expenditure series mentioned above are deflated with the "services less rent" index,<sup>7</sup> the annual average rates of increase in expenditures per student become: (1959-1960–1970-1971)

	Total	Instructional
Public		
Institutions	1.0 Percent	1.2 Percent
Private		
Institutions	4.3 Percent	2.3 Percent

This index does not take into account changes in the quality aspect of higher education. This may account for much of the public-private differential. Similarly, the differential has little to do with instructional costs per se. This makes sense, because quality is usually associated with the amount of research and similar 'overhead' type expenses. These figures suggest a question: Are public institutions increasing in quality or only in enrollments **relative** to private institutions?

In order to derive useful estimates of future cost levels, it is necessary to see how and why the composition of overall costs is changing. The largest single component of cost in higher education is faculty salaries. U.S. figures indicate that, for institutions *in toto*, the percentage of "instruction and departmental research"<sup>8</sup> in total current expenditures has consistently declined since 1929, except for a slight rise in recent years. This tendency is observable for both public and private institutions and for New Jersey as well as the U.S. The proportion is significantly higher for public than for private institutions—in New Jersey, 41.4 percent vs. 26.2 percent as of 1967-1968. Though we are mainly concerned with future cost levels in New Jersey public institutions, it is apparent that we cannot forecast these by simply extrapolating a trend for instructional costs alone.

First, what are the costs of instruction? It is important to try to answer this question completely apart from the forecasting problem. We need to try to assess which costs provide more or less direct benefits to the student, which benefits to a larger community, and which to future generations. Unfortunately, there is no indisputable answer. There are many joint products and joint inputs in education and any allocation of costs which attempts to answer the question inevitably contains elements of judgment or arbitrariness. This category can vary from  $\frac{1}{3}$ to <sup>2</sup>/<sub>3</sub> of current costs depending on one's definition.9 Second, the rate of increase of instructional costs primarily depends on the supply and demand for college faculty. There are lags in the mutual adjustment of supply and demand for this sort of highly trained labor. This makes

	FIGURE 3-4						
COSTS	IN	NEW	JERSEY	PUBLIC	INSTITUTIONS		
1964/1965 - 1972/1973							
		(Ir	i thousand	ds of dolla	rs)		

Fiscal Year Ending	Operating Costs <sup>1</sup>	Year-to-Year Increase (Percent)	Total Costs <sup>2</sup>	Year-to-Year Increase (Percent)
1965	\$47,895		\$91,985,739	
		20.8		16.0
1966	57,859	15.0	106,705,065	9.0
1967	67.064	15.9	115,220,473	8.0
1007	07,001	20.7	110,440,170	20.4
1968	80,967	10.0	138,674,023	
1060	96 490	19.2	164 946 989	18.4
1909	50,450	22.4	101,210,202	22.0
1970	118,061		200,355,829	
1051	180.000	18.3	941 400 700	20.5
1971	139,606	41 8	241,406,706	19.5
1972	197,242	11.0	271,680,5193	12.5
		- 2.3		21.0
1973	192,828 <sup>3</sup>		328,738,7484	

1, 2 Operating Costs-include total salaries, total materials and supplies, total services other than personnel, total maintenance of property and expenditures for part-time, summer and graduate programs. Auxiliary Services and "additions and improvements" are not included. Total Costs-equal operating costs plus auxiliary services expenditures plus appropriations for the Agricultural Experiment Station plus net hospital costs plus appropriations for Department of Higher Education management, general support of higher education and the State School of Conservation at Lake Wapalanne.

<sup>3</sup> Adjusted Appropriation.

4 Recommended Appropriation.

Source: State of N. J.: BUDGET and APPROPRIATIONS HANDBOOK.

forecasting rather tricky. All that one can confidently say is that the high rates of increase of faculty salaries characteristic of the recent past are not likely to continue. One researcher estimates that, over the next two decades, "the number of doctorates will be sufficient to fill 147 percent of the positions available," in four-year institutions.10

# The Costs of Higher Education: N. J. Public Institutions

Aggregate total costs for New Jersey public institutions have increased over 3 and  $\frac{1}{2}$  times and "operating costs"<sup>11</sup> over 4 times since 1965. These increases have been 1 and  $\frac{1}{2}$  and 2 times,

respectively, on a per student (FTE) basis. There has been a tendency for these rates of increase to slow down over the past few years. (Figure 3-4.)<sup>12</sup>

The trends for individual New Jersey colleges are similar to the national pattern: a slight increase in costs per student (FTE) in "real" or deflated dollar terms. Current dollar operating costs per FTE, on the other hand, grow exponentially. The rates for individual institutions are shown below in Figure 3-5. In most cases the rate of increase in enrollments has also been a small, though statistically significant, negative influence on year-to-year changes in operating costs per student.

FIGURE 3-5 COST ANALYSES-NEW JERSEY PUBLIC COLLEGES

Statistical Growth Functions*: 1965	tatistical Growth Functions*: 1965-1972					
Institution	R <sup>2</sup> (Percent)	Constant (k)	Annual Rate (r)	Enrollment Coefficient (b)		
Rutgers	96.0	7.179	0.0774	+		
Montclair (M)	86.3	6.6913	0.0566			
Glassboro (G)	98.4	6.6261	0.0788			
Newark (N)	95.1	6.6970	0.0577			
Jersey City (JC)	93.1	6.5447	0.0858			
Trenton (T)	97.8	6.5945	0.0796			
William Patterson (WP)	83.4	6.5800	0.0588	+		
			Average := .071,			

or 7.1% per year

# TOTAL CURRENT EXPENDITURES PER FTE AVERAGE ANNUAL GROWTH RATES

	G	Т	N	JC	WP	М
1954-60	0.8	-4.0	3.0	-3.4	-1.7	-1.9
1960-67	4.1	2.6	3.7	4.9	5.9	4.5
1967-72	6.2	8.0	8.6	10.2	7.0	4.4

\* C=Aexp (r-b E)t or log C = K + rt-b Et

Where C=operating costs per FTE; r=annual rate of change; E= Percent change in enrollment (FTE); A,K,b=constants.

Source: BUDGET, State of N. J. and Office of Economic Policy.

There is no discernible scale effect on costs per student among the public colleges. In other words, the variation in costs per FTE in the public colleges has no apparent relation to the enrollment size of the colleges. They differ markedly, however, from Rutgers and Newark College of Engineering, the designated "university" portion of the State system. As of 1972, operating costs per FTE for Rutgers were less than two times while FTE enrollments were almost four times the corresponding averages for the public colleges. Does this mean that there are significant scale effects when we look from "large" (5,000-15,000) students to "super" institutions (25,000 and over)? Hodgkinson's (1971) Carnegie Commission study<sup>13</sup> found that, indeed, there are significant differences between these classes of institutions. The "super" institutions tend to get the best prepared students, graduate larger percentages who will go on to more advanced studies, and differ with regard to several indicators which relate to institutional administration and control. Other studies14 indicate that the probability of a person of relatively low socioeconomic background entering a large "university" type institution is much less than his probability of entering a 2- or 4-year public college. The tentative implication from the available literature, therefore, is that from the viewpoint of both equity and efficiency, it might be better if the public colleges were operated and developed as if they were components of a larger, university type system, as is Rutgers. This may be necessary over the next phase of the Master Plan during which the goal of "quality and diversification"15 could easily conflict with that of "equality of opportunity." What is missing is a more thoroughgoing analysis of the economic correlates of institution size which would come to grips with the important policy questions.

Total operating costs for the New Jersey system, according to our previous definition, have been a fairly constant proportion of total costs over the past 6 years (58-59 percent). If "extraordinary" costs are excluded, the composition of expenditures among the public colleges is remarkably similar. There have been no large shifts in this composition since 1967. The earlier tendency (1954-1967) was one of gradual convergence. The "extraordinary" category has been the largest and fastest growing component. It includes many of the outlays needed for the rapid expansion and improvement of the colleges after 1966. Similarly, we find the proportion taken up by faculty and administrative salaries is quite stable, ranging from 84-88 percent among the colleges since 1965. Student/ Faculty (S/F) ratios in the public colleges have tended to converge and stabilize within a range of 16-17 students per teacher.<sup>16</sup> This is somewhat surprising in view of the sharp increases in enrollments over the past two recades. (See Figure 3-10.) Significant increases in the S/F ratio for the purpose of cost saving are not very likely. The resistance of professors and the Master Plan's emphasis on increasing educational quality may make increases difficult. In any case, the economic history of other sectors indicates that significant productivity increases arise from a substitution of capital or overhead type costs for variable costs. One interesting innovation of this type is a "learning center" where students use a tape library to learn at their own pace with little direct teacher supervision. This has been successfully implemented at a few engineering schools.17

# Cost Projections-N. J. Public Institutions

The figures presented above provide some basis for making cost projections. In addition to the usual risky features of this type of exercise, the reader should bear in mind the following. We want to make projections for the whole public system, but the observations showing relatively stable cost/growth patterns pertained primarily to the public **colleges**. Though the compound growth rate of costs/FTE for Rutgers falls within the range for the public colleges, the universities should probably be projected separately. Also, projections, as an exercise in prediction, are sometimes incompatible with planning or design. Projections are necessarily based on uniformities observed from the past. To the extent that our planning goals require significant changes in the public colleges then projections may be of little use.

Projections are never exact. The materials at hand permit us to estimate the probable range of costs in 1980/1981, utilizing three alternative sets of assumptions.

- The real cost per FTE will not change over the period. The proportion of total current expenditures comprising the sum of "instruction and departmental research," "general administration," and "organized research" will remain approximately constant (62-63 percent). The current dollar costs of the latter category will rise at about 5 percent per year and the remainder (37-38 percent)—about 3 percent.
- (2) Extrapolation—based on an exponential growth function. The slower rate of increase of operating costs<sup>18</sup> per FTE since 1969/1970 is assumed to continue. (See Figures 3-4, 3-5.) Operating costs are assumed to stay a constant 58-59 percent of total current costs.
- (3) Extrapolation-based on a linear trend used in the U.S. publication: PROJECTIONS OF EDUCATIONAL STATISTICS TO 1980-1981.

tions. Also, the annual rate of increase of faculty salaries averaged 4.8 percent from 1948-1966. Other costs are assumed to keep pace with the Consumer Price Index for New Jersey, whose year-to-year changes have averaged about 2.8 percent from 1947-1972.<sup>21</sup> Projection (2) is consonant with both expectations and recommended policies<sup>22</sup> for a slowdown of cost rates of increase. The interested reader can judge for himself the reasonableness of (3) by referring to the methodology of the U.S. "PROJECTIONS . . .". Our faith in projections usually rises if independent estimates tend to be fairly close, as are the above. Moreover, the rate of increase suggested in the latest MASTER PLAN<sup>23</sup>, 1.5 percent net of inflation, yields an estimate close to (1) if we assume a 3 percent rate of inflation; namely about \$5,000 total per FTE.

What do these projections imply for the state budget? Let us make two assumptions in order to come up with a ball park estimate. (1) By 1980-1981, slightly over 37 percent of total projected FTE enrollments of New Jersey students will be enrolled in New Jersey public institutions. This percent is consonant with existing policies; namely that "the proportion of New Jersey residents who attend in-state colleges will increase from about 55 percent in 1972 to almost 70 percent in 1985,"<sup>24</sup> and the competitive po-

	Operating Costs	Total Current Costs
Base Year <sup>19</sup>	\$2,054	\$3,523
Projection (1)	\$2,900	\$4,900
Projection (2)	\$3,200	\$5,500
Projection (3) <sup>20</sup>	\$3,340	\$4,963

### FIGURE 3-6

PROJECTED COSTS PER FTE – NEW JERSEY PUBLIC INSTITUTIONS 1980-1981

Each underlying set of assumptions has a plausible basis. It is reasonable to assume that the proportions used in (1) will remain nearly constant because the shifts in the main components have been in opposite, offsetting direcsition of private colleges should not continue to deteriorate relative to the public colleges in terms of enrollment growth. (2) The state's net appropriation<sup>25</sup> for higher education will stabilize at about 62 percent and gross appropriation at about 75 percent of total costs. (The estimated 1972-73 figures are 61.5 percent and 74 percent respectively). Then (1) and (2) imply the following:

educational institutions. The mix of institutional types should be viewed, within limits, as a pattern which, in theory, can be varied to bring about certain desired ends. Equal oppor-

# FIGURE 3-7

PROJECTED BUDGETARY IMPACT OF COST INCREASES IN N. J. PUBLIC INSTITUTIONS (In Millions)

Fiscal Year	Gross Appropriation	Net Appropriation	Percent Increase
1972 - 1973	244.3	202.3	('73 -'81)
1980 - 1981	536.5	443.5	119.6

Thus state appropriations for higher education are likely to more than double over the next eight years but this rate is much less than the quadruple increase over the past eight years. Furthermore, a comparison with independent projections of personal income for New Jersey<sup>26</sup> indicate that costs per student are unlikely to increase faster than personal incomes per capita to 1981. This would be a marked contrast to the relative increases of the recent past. From 1965-1972, operating costs per student (FTE basis; New Jersey public) increased 1.85 times vs. 1.54 times for New Jersey per capita personal income. Somewhat relaxed rates of change may still imply a budgetary problem for the state since the New Jersey tax system is relatively "inelastic" in relation to the growth of personal incomes. (Tax Policy Commission, 1972.)

# Higher Education Goals and Economic Choices: The Major Issues

What is the state's investment in higher education meant to accomplish? What are its goals? The primary aim is supposed to be "equal opportunity." Others may be: to train specialized skills, to teach values or abilities of a more general nature; to reinforce acceptable patterns of behavior, to generate new knowledge via research, to enhance efficiency, to assist private tunity itself can be interpreted in different ways; but when we talk of higher education it can be given a reasonably well-defined meaning. That is, that any person above a certain level of "ability" has the same chance as any other of obtaining higher education of given quality. This may imply that enrollment rates should be equalized among children from different socioeconomic groups.<sup>27</sup> With regard to "ability," we are confronted with a range of abilities or personal qualities which are favored by the community, not a discrete cutoff point, such as an I.Q. of 120 or larger.

A major reason for the current widespread interest in the financing of higher education is undoubtedly the heavy impact of past and prospective increases in expenditures for this purpose on the overall budgets of state and local governments. However, the size of the impacts on state and local budgets is by no means the only relevant issue. Even with expenditures of a given size, there remain important issues relating to the form of financial assistance and to the allocation of benefits and costs among the members of the community.

Government net expenditures in support of higher education are of three principal types.

(1) Setting tuition and other student fees at publicly supported institutions at levels significantly below the cost of providing the educational services. In New Jersey and most other states, this is by far the largest component of government aid to higher education, and its direct benefits accrue only to those who elect to attend a publiclysupported institution.

- (2) Various types of grants-in-aid to students. These can be confined to students in publicly-supported institutions in the state or can be extended to eligible students who elect to attend other institutions.
- (3) Student-loan programs. These can take many forms. For example, they can be designed to be completely self-supporting, or to be subsidized in varying degrees. They can be short-term or very long-term; and so on.

Even if there were unlimited funds, the various goals of higher education could not all be made compatible. Quality is not fully compatible with quantity, nor socialization with innovation, nor specialization with generality. Limited state and private funds enforce even more stringent choices. The economic choices in higher education are not unlike those in other areas; namely:

- (1) Consumption, or present use, vs. Investment, or future use;
- (2) Short-run vs. Long(er)-run investment;
- (3) A market, non-market, or mixed economic environment;
- (4) If one of the latter, then what form should subsidies take? Real or monetary? To individuals or institutions? To all or only some? How allocated between public and private institutions?

The basic questions would seem to be: Why the need for subsidies?, and do the goals of higher education, by their very nature, dictate the type of subsidies to be used? In a nutshell, subsidies are required if, without them, too little of a good or service would be purchased. This occurs whenever a significant portion of the benefits of a good or service do not accrue to the individuals who make the purchase, so those individuals will be unwilling to commit enough of their personal resources for the purpose. Neither society nor individuals "consume" educational services. They are an investment with a time horizon longer than any consumer durables.

The effects extend beyond a single lifetime or generation. The difficulty of the higher education investment decision is compounded by uncertainty. Although the expected lifetime income of someone who completes college is significantly greater than that for someone who only completes high school,28 there is considerable variation around these "expected" figures. Also, it is not clear to what extent this expected lifetime earnings differential is actually a return to college training or the result of any individual's socioeconomic background, or starting position, in the economic race. The public sector is confronted with uncertainty also. Though the existence of distinctly social benefits to investment in higher education are generally recognized, they have neither been enumerated nor measured to anybody's satisfaction. Thus we lack a clear-cut guideline for what proportion of the total cost of higher education should be financed by the public sector and what portion by families and individuals.

Any discussion of the subsidies must never lose sight of the kinds of ends that they are supposed to serve. These ends, as illustrated above, are multiple and sometimes incompatible. Also, much depends on how the ends themselves are set forth-as abstractions or, meaningfully, in terms of actual and desired patterns of economic behavior. There is a generally accepted theorem in economic policy set forth by Tinbergen.29 It is: that one needs at least an equal number of instruments to achieve a given number of economic goals. Provided we have succeeded in articulating a complete set of goals, each distinct from the other (in the sense of not being joint products), we can then infer the number of instruments we need but, unfortunately, little else. In short, the goals do not dictate the type of

instruments to be used. We can infer somewhat more by observing the behavioral correlates of any given goal. Too often, however, one finds that people want a set of magic numbers to aid their decision-making. They say, give us a set of numbers—x,y,z,a,b,—such that the state should supply x percent, families y percent, and students z percent of the total cost of higher education, and of the state's x percent, 'a' percent should go to individuals and 'b' percent to institutions, etc. This is nonsense. We can only derive useful policy guidelines by observing whether various subsidy or institutional arrangement actually promote ends and response patterns that are generally thought to be desirable.

What would be some consequences of altering the pattern of costs, prices, subsidies and other aspects of higher education finance in New Jersey? Unfortunately, we can only address many of the issues of higher education finance in New Jersey by phrasing the problem this way, i.e., by positing hypothetical changes and results. We lack needed information on actual enrollment patterns and higher education financial arrangements for New Jersey individuals and institutions. In some instances, however, we can draw reasonable conclusions from statistics for the nation or other states.

Let us put aside, for the purposes of discussion, the problem of political feasibility, and look at the spectrum of choices imaginable for the state of New Jersey:

- (i) Full cost tuition in the public colleges, state subsidy only via individual grants;
- (ii) Continuance of a partial subsidy to public institutions while levying tuition based on some definition of "instructional" cost;
- (iii) Substitution of part of all of the state subsidy to public colleges with an offer of expanded, liberalized student loans;
- (iv) Substitution of the state subsidy to institutions with a combination of loans and grants to individuals;

- (v) Free education and open admissions to public institutions;
- (vi) Institutional subsidies with no discrimination between public and private institutions;
- (vii) No subsidies to institutions, only to individuals;
- (viii) Grants or scholarships based on need only;
  - (ix) Maintain the status quo.

There are also several alternative types of student loan programs; these will be discussed further on.

# **Increasing Public College Tuitions**

A significant rise in public college tuitions without an offsetting increase of grants or substantially liberalized loans would have the following effects: (a) A decline in the rate of enrollment of students from lower income households, and (b) a shift of some potential enrollees to private and out-of-state colleges. A sudden rise to "full cost" levels which are nearly equivalent to tuitions at many private colleges could have a profound adverse effect on those public institutions which have not already been able to establish reputations as high quality institutions. Neither the best students nor the poorer students would be likely to attend. Any attempt to improve their competitive position would require higher outlays and higher tuitions but this would worsen their competitive and financial position over the short run. Assuming that the potential student population is growing and there is no excess capacity of places in institutions, the real losers, however, would be the less affluent students. The resulting scenario would look something like this: the less able middle and upper family income students would attend the public colleges and the more talented students from the same backgrounds would go to more prestigious private and out-of-state colleges. Even an excess supply of Ph.D.'s would not alter this picture much, unless they were willing to teach in the public colleges for substantially less salary under less desirable conditions (more and larger classes).

There are no reliable estimates of the actual impact of tuition increases on the attendance of lower income students. But given the fact that they are much more likely to attend a subsidized public college, the burden of proof lies with the proponents of tuition increases to show that lower income students will not be disadvantaged. Rivlin's analysis "indicates that college enrollment is highly responsive to changes in cost to the student."30 Radner and Miller's (1970)<sup>31</sup> study of high school graduates' choice among various alternatives indicates that an increase in public college cost of only \$100 implies that the probability of a (California) youngster going to college decreases by 10 percent. These conclusions are supported by a very recent analysis of college choice reported from M.I.T.<sup>32</sup> which shows that this choice is sensitive not only to relative cost but also to distance, or proximity of colleges to potential students homes. This implies that since public colleges are, on the average, the closest colleges to students homes, an increase in their costs, forcing students to look farther afield, may effectively discourage a significant number from attending college at all. In general, there is a wealth of evidence that (1) the probabilities of attending some college, and (2) the probabilities of attending higher status or quality colleges-are strongly dependent on a youngster's socioeconomic background. One must conclude that it is not a viable alternative to charge "full cost" tuition in public colleges, or levy a significant increase in tuition without also making compensatory adjustments in grants or loan programs.

### Subsidies-To Institutions

Though budgeted on a per-student basis, the state support of public colleges and universities is actually a subsidy to institutions. There is no sound economic or policy reason why these types of subsidies should be continued indefinitely. Though it is commonplace that subsidies are provided to institutions or firms, these are usually in the nature of performance contracts. Government hopes to provide just the added incentive via a subsidy to induce some socially desirable behavior, good or service which might otherwise not be forthcoming at all or to a sufficient extent. A good example is the recently enacted state program of aid to independent colleges.<sup>33</sup> It has been and continues to be Department of Education policy to create more college places for New Jersey youngsters within New Jersey and decrease the proportion that find it necessary to attend out-of-state colleges. New Jersey now provides subsidies to independent colleges which are entirely contingent on the number of additional New Jersey resident students they admit in any given year.

One possible justification for discriminatory state subsidies to public institutions is analogous to the well-known "infant-industry" argument in development economics. That is, state subsidies are necessary to expand and improve existing public institutions or establish new ones. This is not a rationale for unending subsidies. The state subsidy formulas recognize the need for significantly higher state support during an institution's build-up phase. Eventually, however, all public institutions arrive at the same formula basis.

Indefinite subsidization of public colleges by the state could prove to be a mixed blessing. Due to the inelasticity of the state tax system and competition for available funds from other departments, there are very real constraints on the ability of public colleges to spend for new programs, better faculty, and so on, once they are past their build-up phase. Among other things, this budgetary situation leads to pressures from the state to insure greater "productivity." The available evidence indicates, however, that there has been little if any increase in the productivity of higher education; that is, no decrease in the real costs of a credit hour of instruction since 1930.34 On the other hand, there have been increases in the "quality" of higher education, though these are hardly measurable in the same sense as productivity. Unless the state is prepared to pour a great deal more money into institutional subsidies, its direct support of the public colleges could prove to be more of a constraint than a stimulus to their development over the long run.

Since there appears to be no way to insure proper allocation of "direct state support"35 subsidies without inefficient bureaucratic intervention, the state should reorient its subsidy program to individuals and well-defined program objectives. Program subsidies should be targeted to enhance the quality and reputation of New Jersey's public institutions, not to provide a price-subsidy. Subsidies to individuals have the merit of not biasing college choices toward public colleges just because they are cheaper. In general, a shift of the state subsidy from institutions to individuals could be expected, over the long run, to broaden and deepen the set of higher education choices available to New Jersey residents.

### Subsidies-To Individuals

There are many alternative ways of providing subsidies to individuals. The main choices are:

- (a) Grants or Scholarships—flat grants or keyed to some definition of need;
- (b) Subsidized Student Loans;
- (c) Various combinations of a, b; including-
  - (i) A maximum grant level, the rest to be provided by loans, student earnings, and family contributions;
  - (ii) A maximum loan level such that grants are to cover what is left of college cost after the maximum loan and other sources have been accounted for;
  - (iii) A requirement that every student must borrow whatever he cannot supply from his own or other resources, along with a grant program based on need. The students could use the offsetting grant to pre-pay the loan, or for other purposes.

The practice of most private colleges is to use CSS<sup>36</sup> formulas to estimate what a student and his family can reasonably contribute from their own resources, then offer scholarship aid up to a point such that the sum of scholarships plus own resources covers a certain large portion (say 75 percent) of the total cost of a given year's attendance.37 The student must find some way of raising the remainder, by borrowing or otherwise. This corresponds to alternative (i), above. If one of the standard formulas is used, then in practice there is not much difference between (i) and (ii). Either grants or loans is a residual in that the distribution of one nearly determines the distribution of the other. This implies that, on the average, lower income students must assume more debt, unless the maximum grant were very high and/or the maximum loan quite low. What is important is that there be made available an overall financial package which includes both grants and loans. An aid package with several interchangeable elements can also offset the inevitable degree of arbitrariness in grant or contribution formulas. David Storrs of Yale's Tuition Postponement Office emphasized that aid instruments appear to be complementary.38 For instance, the introduction of their "tuition postponement" option did not supplant other student loan or aid programs among aid recipients.

# Shifting the State Subsidy: Effects on Public Institutions

The effects of a shift in the form and distribution of the state's subsidy must be carefully examined. Unfortunately, the data are not sufficient for the task and our conclusions, if any, can only be tentative. Without some continued form of institutional support, the shift might place the public colleges at a disadvantage within an environment of competition among institutions. The "quality" of a college is highly correlated with the existence, scale, and quality of research along with related graduate or professional functions. In many fields, the research function is also a valuable complement to instruction. (Black, 1972.) These facts suggest it

would be a good policy for New Jersey to provide strong support for research functions at the public colleges.<sup>39</sup> Due to the fact that these colleges are too small to support large advanced study programs, this would require a carefully thought-out pattern of specialization and sharing of research resources among the public colleges. The state could use specific subsidies to encourage greater orientation of research efforts toward issues of public policy and thus increase the probability of generating significant returns on its subsidy investment. Schultz (1968) remarks that "the value of the research function has received a lot of puffing but little analysis." From the point of view of the public colleges, however, ample support for research may well be necessary if they are to attract and hold a good faculty.

# Altering State Subsidy Arrangements: Numerical Examples

First, as a basis of comparison, let us use our earlier projections to examine the result of things continuing pretty much as they are. The state subsidy to public institutions now represents 57.2 percent of total operating costs and 70 percent of non-operating costs.<sup>40</sup> If we assume these proportions continue to 1981, then projection (1) implies that tuition and charges (per FTE) must be raised \$457; projection (2)— \$637. The alternative would be to significantly increase the overall share of state support of total costs—by 9-11 percentage points. Of course, whatever the tuition increase, the demand for student loans would increase.

Now let us imagine that, in an outburst of fiscal pique or penury, the state decides to reduce its share and says—no more than 50 percent of current higher education costs shall be appropriated (Net). This rule implies an increase in student charges (as of 1981) of \$1050 to \$1300 per FTE. The net savings to the budget would range from \$98-110 million compared to the previous arrangement.

The upshot of these simplified examples is that even projections of modest rates of cost increases imply difficult political and financial decisions in the years ahead and offer little hope of reducing the state's share of higher education costs.

What if most of the state subsidy were to be distributed as grants to individuals rather than institutions? In the process, is there any possibility for a net budgetary saving? To try to answer these questions, it was necessary to posit a simplified grant distribution formula: Grant = T(1-Y/M). T is tuition; M is a maximum level of adjusted family income (Y), the level at or above which no grant is given. A series of transformations on this basic equation yields (x) as a function of M, where (x) is the state's share of total current higher education costs. The key to the relationship is the form of the distribution of students according to family income. Only crude approximations to this distribution are possible. The only trustworthy data are for financial aid recipients, obviously a biased sample. The College Scholarship Service also compiles these data and their distributions may be somewhat oppositely biased. Thus we relied on a composite distribution put together by Thomas Truitt.41 It turns out that this composite gives an excellent fit to a lognormal distribution. The computed trade-off between (x) and M is shown in Figure 3-8. The numbers clearly imply that, even if New Jersey were to redistribute the entire subsidy to individuals, it could not reduce its overall share of the cost much below the current level without cutting off middle income families from a share of the grant funds. What this also suggests is that the subsidy "shift" should be viewed as a way to rationalize subsidy arrangements, not as a viable way to reduce the burden of appropriations for higher education.

### Subsidies and Equality of Opportunity

It is by no means certain what effect the shift would have on "equality of opportunity," i.e., the enrollment rates of lower income students relative to higher. The proponents of "free" or lowtuition public higher education claim that any



attempt to price higher education closer to its actual costs will lead to severe enrollment reductions among youngsters from lower-income backgrounds. They find support for their position in the simple and incontestable observation that enrollment rates are very sensitive to level of family income, however defined. Relatively fewer low-income students attend college at all; those that do tend to attend public or lowerquality private institutions in relatively greater numbers. What we are concerned about, however, is a more subtle problem-not simply removing the whole state subsidy and charging "full cost," but charging "instructional" or "operating" costs and shifting most or even all of the direct state subsidy from institutions to individuals according to need.

The proponents of zero or low tuitions usually fail to pay sufficient attention to two basic points:

- Low tuition is a highly inefficient way to progress toward the goal of equal opportunity. Public higher education is a long way from that goal and the level of tax resources that might suffice to achieve it are so large as to make this avenue totally infeasible;
- (2) Non-price barriers to equal opportunity are at least of equal importance. The ways in which socioeconomic background conditions a person's expectations may be more important than a certain variation in the price of higher education. Admissions standards and opportunity costs, particularly foregone earnings, would still influence enrollments if there were "free tuition." (Corazzini, 1972.)<sup>42</sup> Whether a person crosses the threshold from high school to college also depends on the quality of his earlier schooling. Last, but most important, "equal opportunity" for most people is dependent on their opportunities to learn and advance on-the-job in the workaday world.

These considerations do not deny the significance of tuition; they put it in perspective. The state's overall commitment to equality of opportunity in higher education is most important. The key dimensions of this commitment include scholarships policy, admissions policy, recruitment and information programs, the nature of primary/secondary education, and the location, capacity and quality of public institutions.

Hartman (1972)<sup>43</sup> attempts to deduce whether low-income students will be dissuaded from attending college if tuition rises are accommodated by liberal student loans. His conclusion is that some negative impact on enrollments can be expected unless students are permitted to borrow, at subsidized terms, more than their actual costs of education. This conclusion, however, hinges on the assumption that price (tuition) is the only significant factor, as well as a somewhat narrow view of how potential students make enrollment decisions. If the state allots scholarships equitably, the increased price faced by a low-income student in the event of a tuition increase is likely to be small. (\$0-\$250) Existing work does not provide a convincing basis for evaluating an effective increase of this magnitude. Two elements are lacking:

- (1) A sufficiently broad and concise view of the actual decision problems faced by low-in-come students;
- (2) An analysis of various non-price measures whether they can offset any potential negative enrollment effects or contribute as much or more to equal opportunity as low tuition.

### Grants and Scholarships vis-a-vis Student Loans

If we are to place greater emphasis on financial aid to individuals, what should be the balance between grants and loans and what type of loans should be employed? It is assumed that, for most individuals, the amount to be made up from grant and loan sources is determined by the amount of family contribution. But there is no avoiding a degree of value judgement in guiding allocations between grants and loans. Two guidelines should be considered:

 The distribution of students' debt should not be significantly skewed toward the lower income students; i.e., students should not be required to incur large debts simply because their families are poor.

(This implies a maximum loan-say 30 percent of college costs.)<sup>44</sup>

(2) Each individual should be required to bear a certain part of the cost of his higher education, either by borrowing or working. If a person does not want to work during the school year, this implies a certain minimum loan, say \$600 per year. (This may also be necessary to guarantee the success of certain types of income-contingent loan programs.)

The grants/loans issue is not an either/or question. A borrowing alternative is desirable irrespective of what grants are available. The reasons for this have been extensively argued by economists.45 The essential point is that education is not (primarily) consumption, it is a form of investment with a long-term payoff. If there is no "capital market" to accommodate the growing demand for this investment, some of it will not occur. It is both infeasible and inefficient for individuals or society to finance the costs of this type of investment out of current incomes or past savings, whether in the form of taxes or family contributions. The rapid growth of student loans in recent years indicates that loans are a necessary component of financial aid arrangements in an environment of rising costs.

### Student Loans: The Alternatives

Existing types of student loan arrangements have many shortcomings (see Hartman, 1971).<sup>46</sup> Their payback periods are too short; their terms lack flexibility and fail to account for the essential elements of risk characteristic of indivduals' investment in higher education. Various types of so-called variable-term or income-contingent loan plans have been proposed to deal with these shortcomings. Two such plans are actually in effect—at Yale and Duke Universities. There is an almost combinational variety to the choices among student loan plans. As briefly as possible, we shall try to narrow down the set of alternatives for policy consideration. $4^7$ 

(i) The Federal Guaranteed Student Loan Program (GSL):

This is the largest student loan program. GSL's have grown rapidly over the last few years -from 330,000 borrowers (1966) to about one million (1971), or about 200 percent for the U.S. as a whole. The dollar volume of loans has grown even faster. Likewise, this form of lending has grown very rapidly in New Jersey though the rate of increase has tapered off over the last few years. A large number of New Jersey students are now borrowing at near the loan limit.<sup>48</sup> Unfortunately, the GSL program is far from being an ideal vehicle for loan finance of higher education. It requires students to repay principal and 7 percent interest within 10 years after graduation. This places the repayment burden on the years of early labor-force participation and family formation. There is not enough flexibility in the terms to permit borrowers to adjust repayments to economic circumstances. The cutoff (\$15,000 family income) for providing an interest subsidy while a student is in attendance is too sharp and arbitrary. The distribution of both loans and interest subsidies is such that the GSL makes little, if any, contribution to the goal of equal opportunity in higher education, and a significant portion of the subsidies are received where they are not needed.49 This implies that public revenues are being wasted for too little social benefit. The distribution of number of loans is biased toward middle and upper income students; the distribution of dollar volume even more so. The same is true of the New Jersey program.<sup>50</sup> Hartman (1971, p. 147) shows that the average dollar value of loan subsidies declines slightly as we move up the family income scale. The overall distribution of subsidies is not progressive, however, because of the facts just mentioned.

It is possible for a state or institution to modify the GSL loan, overcome a few of its shortcomings, and still qualify for federal guarantees. The Harvard-Radcliffe student loan program is a case in point. Graduates make graduated (increasing) payments which can be adjusted to economic circumstances. The 10year repayment period still holds, though the institution may allow additional time and even a "forgiveness" of part of the loan in certain cases. The federal program, however, severely constrains any effort to design a more suitable loan instrument, so states or institutions may, like Yale, have to be prepared to 'go it alone.'

The basic problem with existing programs is that they look upon student loans as analogous to those made for purchase of commercial goods or services with a long life. The only significant difference recognized by the GSL is that regarding "collateral." Since there is no reclaimable physical counterpart for a student loan, risks of default must be subsidized by government guarantees. The correct analogy, however, is with certain types of insurance.

(ii) Income-Contingent Student Loans:

The essential difference between the higher education investment and other forms of investment is in the nature of the associated risks. These risks are directly related to the 'externality' of many of the benefits of education. There is a large class of risks to the individual that he can insure against by contributing to a pool, e.g. by buying insurance. The risks of investment in higher education belong to another class; the risks of gain or loss for one individual or group are not independent of those for others. Also, these risks are distributed unevenly among classes of population. This implies that a student loan program must incorporate some of the features of a mutual insurance arrangement whereby some of the risk is transferred from some groups or individuals to others. Nerlove makes the important point that these aspects of risk imply that the question of the nature of a loans program is important quite apart from any question of subsidies. No subsidy program is adequate or appropriate to resolve the unique problem of risk in "human capital" investments. It is for this reason that several variants of "income-contingent" student loan schemes have been proposed over the last few years.

A pure income-contingent loan program would have the following features:

- (a) The length of the repayment period would be quite long, from 20-40 years, covering most of a person's prime working life;
- (b) The terms of the loan would be stated in terms of a percentage of income earned as a result of the educational investment. The exact level of the terms would depend on the amount borrowed and perhaps other factors as well (such as whether the loan program need be self-sustaining);
- (c) A person can terminate his loan obligation before the end of the designated repayment period only by "buying out" at a premium. For instance, the buy-out rate for the Yale plan is 150 percent of principal plus accumulated interest. This feature insures the redistribution of risk as noted above.

Only a few proposals to revamp student loan programs share the above features (Shell, et al., 1968, Carnegie Commission, 1968, Yale, 1971) and fewer yet have been implemented. Even acceptance of a thoroughgoing income-contingent plan still leaves quite a range of choices with variations among (a), (b), (c). The choices are multiplied by more modest proposals which relax the latter or simply adapt existing programs in ways which bring them a little closer to the income-contingent ideal.

Both Dresch and Goldberg (1972) and Hartman (1972)<sup>51</sup> have evaluated some of the variants of income-contingent loans. These analyses indicate the desirability of long repayment periods (up to 30 years) and low "tax" rates in order to diminish possible regressive effects on enrollment of lower-income students. The parameter most in dispute is the "buy-out" interest rate. This governs the degree of redistribution, or subsidy, internal to the program; that is, the degree to which **future** high income earners repay part of the loan of future low-income earners. Since considerable uncertainty surrounds any teenager's estimate of his future earnings (it may not only be uncertain but unformed or uninformed), it is likely that too much has been made of the "adverse selection" problem. This is the possibility that those who expect high future earnings will not participate in the program, thus undermining its mutual insurance features. The children of rich families are not likely to participate in any loan program in significant numbers. The participation of lowand middle-income students will depend much more on the nature of scholarship programs than on fine details of the loan program. A more important consideration, it would seem, is the "ex-post" question of the future overall tax burden of repayment. The repayment terms must be set so that this burden is not too large.<sup>52</sup> The Ford Foundation mentions another salient point: that "the responsibility of assisting low earners should (not) fall only on those high earners who were sufficiently needy 20 years ago to have had to borrow."53 These remarks suggest that the state should consider a partial subsidy for the repayment terms of any new loan program. "Hybrid" student loan programs have been discussed and recommended by the Ford Foundation. These involve adaptation of existing programs by extending the maximum repayment periods, subsidizing repayment terms, and offering more flexible repayment schedules which permit some adjustment of repayments to income contingencies. As mentioned earlier, it is possible for existing programs to be made more equitable and flexible, even within federal constraints. This is the Minimum to be accomplished within the area of student loans. The state should wait a bit, however, to see what becomes of proposals for revamping higher education finance at the federal level. These may even result in legislation which would impel the states to reestablish their loan program according to some income-contingent model.

### **Policy Implications:**

Much of the recent literature on the "financial crisis" of higher education deals with manifestations of the enrollment explosion of the past decade. Now enrollments are leveling off. What this chapter has tried to convey, however, is that the problem of higher education finance is not primarily attributable to passing phases of demography or state finance. Rather, the problem is that the financing system lacks adaptability and rationality, and it bears no systematic relation to the goals of higher education or other instruments for achieving them.

The various arguments imply that the forthcoming state commission<sup>54</sup> should seriously consider shifting a large part of the state subsidy from institutions to individuals, reorienting the institutional aid portion to specific program objectives,55 and revamping the student loan program. At the same time, this requires a comprehensive rethinking and consolidation of student grant programs to ensure they are explicitly oriented to equal opportunity goals and the probabilities of college admission and completion for different classes of youngsters. Recently, a New York State "Task Force" recommended student finance arrangements, including grants based on need, that would virtually guarantee that academically qualified students did not fail to complete their higher education for financial reasons.<sup>56</sup> It is also desirable that any financial aid instrument be available for any form of post-secondary education, or training, not just "college."

Some of the non-financial aspects of opportunity were also mentioned. One of these is the assignment of roles to the public institutions. Can there be "equal opportunity" if the higher education system is highly stratified?

Finally, it is obvious that the data to evaluate certain policy questions in this area is poor or unavailable. The Bureau of the Budget has been trying to develop "evaluation data" for the public higher education system in conjunction with their program-budgeting effort. Some of the data they wish to gather are very much needed, but it will take years to build series which are useful for analysis.<sup>57</sup> Meanwhile, a sample survey of students' socioeconomic backgrounds may be necessary. Also, a more specialized, on-going effort to study and monitor the overall (public and private) higher education system in New Jersey is needed. A Carnegie Commission recommendation-that states or groups of institutions establish an institutional research center-would meet this need.

# FIGURE 3-9 CURRENT EXPENDITURES INSTITUTIONS OF HIGHER EDUCATION - U.S. 1960-1970

	PUBLIC				PRIVATE			
	In Dollars		In Deflated Dollars		In Dollars		In Deflated Dollars	
Year	I1	TCE <sup>2</sup>	I	TCE	I	TCE	I	TCE
59-60	963	1521			934	1724		
60-61	992	1560	1202	1891	1002	1840	1239	2230
61-62	988	1589	1169	1880	1044	2023	1236	2394
62-63	1010	1632	1170	1891	1125	2188	1304	2535
63-64	1053	1721	1194	1951	1215	2369	1378	2686
64-65	1069	1761	1184	1950	1299	2542	1439	2816
65-66	1131	1849	1211	1980	1420	2734	1520	2927
66-67	1269	2006	1300	2054	1509	2867	1546	2938
67-68	1426	2163	1387	2104	1664	3035	1619	3089
69-70	1596	2487	1345	2095	<b>2</b> 145	4134	1807	3483
70-71	1709	2652	1343	2083	2207	4313	1734	3388

<sup>1</sup> (I) is instructional expenditures per student.

<sup>2</sup> (TCE) equals total current expenditures per student.

Source: U.S. Department of Health, Education and Welfare, FINANCIAL STATISTICS OF INSTITUTIONS OF HIGHER EDUCATION: CURRENT FUNDS REVENUES AND EXPENDITURES 1966-1967, U.S. Government Printing Office, Washington, D.C. (1972).

### FIGURE 3-10

# ENROLLMENT INCREASES AND FACULTY/STUDENT RATIOS NEW JERSEY PUBLIC INSTITUTIONS

Institution (N.J. Public)	Increase Fall En (Perce	e in Total rollments nt p.a.)	Faculty/Student Ratio			
_	1953-60	1960-72	1953	1960	1967	1972
Glassboro	18.8	6.8	11.6	18.1	16.4	17.5
Jersey City	22.9	7.6	11.9	18.9	19.2	16.0
Newark	- 2.9	11.6	16.6	16.4	16.0	16.3
Paterson	18.0	5.3	16.9	16.7	16.3	16.6
Trenton	23.2	4.5	11.0	16.3	16.0	16.0
Montclair	11.6	6.7	13.8	17.0	16.0	16.1
Rutgers	5.9	1.2	11.9	12.5	12.6	13.0
Newark College of Engineering	2.9	- 2.8	10.41	10.42	10.1	11.0

<sup>1</sup> Total Student/Teacher Ratio; weighted figures are not available for this year.

<sup>2</sup> Based on 36 credit-hours per student.

Source: U.S. Department of Education, "Opening Fall Enrollments in Institutions of Higher Education," 1953, 1960; N.J. Department of Higher Education, 1970, 1972; State of N.J., BUDGET.

#### FOOTNOTES

<sup>1</sup> Full-time equivalent (FTE) basis, state colleges and universities.

- <sup>2</sup> Appropriations-distinguish "net" from "gross". Rate of increase of former slightly less than 4 times; of the latter-slightly greater than 4 times. See note 25 below.
- 3 U.S. Census projections indicate the N.J. 18-24 year old population will continue to increase till 1980 then decrease somewhat from 1980-90 and then resume its increase, 1990-2000.
- 4 U.S. Department of Health, Education and Welfare, FINANCIAL STATISTICS of INSTITUTIONS of HIGHER EDU-CATION: Current Funds Revenues and Expenditures.
- <sup>5</sup> Compound rate. Total current expenditures equal to the sum of: general administration, instruction and departmental research, extension and public services, libraries, plant operation and maintenance, organized research, related activities, sales and services expenditures, auxiliary enterprises (room and board services), student-aid and "other".
- 6 O'Neill, June, RESOURCE USE IN HIGHER EDUCATION, Carnegie Commission on Higher Education, 1971, Chapter 2 and Appendix B.
- 7 We use this index because the O'Neill index ends at 1967 and the changes in the "services less rent" index are somewhat similar to O'Neill's over the overlapping part of the period (1969/1960 to 1966/1967).
- 8 As defined by U.S. Department of Health, Education, and Welfare op. cit. (Footnote 4).
- <sup>9</sup> The lower bound (1/3) is approximately the ratio using the definition "instruction and departmental research." Our own definition of operating costs, which is designed to include all costs which might reasonably be allocated to students, is 58-59 percent of total current costs for N.J. public institutions. The "instructional" costs defined by the N.J. Bureau of the Budget in its program budget is less than our "operating costs".
- 10 Southwick, Lawrence, Jr., "The Higher Education Industry: Forecasts to 1990"

School of Management, State University of New York at Buffalo, Working Paper No. 157, December, 1972.

- 11 Operating Costs include total salaries, total materials and supplies, total services other than personnel, total maintenance of property, and expenditures for part-time, summer and graduate programs. Auxiliary Services and "additions and improvements" are not included. Total Costs equal operating costs plus auxiliary services expenditures plus appropriations for the Agricultural Experiment Station plus net hospital costs plus appropriations for Department of Higher Education management, general support of higher education and the State School of Conservation at Lake Wapalanne.
- 12 Plots of operating costs per FTE for the individual public colleges also show a slowdown, with a marked break in the trend line at 1969/1970.
- <sup>13</sup> Hodgkinson, Harold L. (1971), INSTITUTIONS IN TRANSITION The Carnegie Commission on Higher Education. \* See Chapter on "Variation in Institutional Characteristics by Institution Size".
- <sup>14</sup> Radner, Roy; Miller, L. S., "Demand and Supply in United States Higher Education: A Progress Report" 60 THE AMERICAN ECONOMIC REVIEW, p. 326.

Bowles, Samuel (1971), "Contradictions in U.S. Higher Education"

- CENTER FOR ÉDUCATIONAL POLICY ŘESEARCH, Harvard Graduate School of Education. (Reprint Series No. 29).
- <sup>15</sup> State of N.J. Department of Higher Education, MASTER PLAN (Draft Copy), Chapter 1, January, 1973. Also: "Colleges: A Stress on Quality," THE NEW YORK TIMES, N.J. Section, November 26, 1972.

- 16 "Students" were calculated on a full-time equivalent basis, assuming "full-time"=32 credit-hours. "Faculty" are budgeted. full-time faculty not including adjunct instructors. See Figure 3-9.
- <sup>17</sup> See Wilson, S. W., "Interactive Lectures," 74 TECHNOLOGY REVIEW 50 (January, 1972).
- 18 Operating costs as defined in Footnote 11 above.
- 19 Base year figures are derived from 1972/1973 adjusted appropriations, N.J. BUDGET, Department of Higher Education. Projected figures are in current dollars.
- 20 Also assumes 3 percent inflation per annum.
- 21 Derived from Table 14, 5th ANNUAL REPORT, Economic Policy Council, State of New Jersey.
- <sup>22</sup> See: Carnegie Commission on Higher Education, THE MORE EFFECTIVE USE OF RESOURCES, June 1972.
- 23 Chapter Nine, "The Cost of Higher Education 1970-1985," p. 6.
- 24 MASTER PLAN (Draft Copy), Chapter Three, p. 3.
- 25 Net appropriation to the General services income (mainly tuitions) credited to the General Fund of the State Treasury.

26 Courtesy of the Office of Business Economics, Department of Labor and Industry, State of New Jersey.

- 27 This goal implies, for N.J. in 1968, that enrollments would have been 55 percent higher if enrollment rates for all high school graduates were equal to that for graduates from families with an income of \$15,000 or more.
- 28 The estimated difference in lifetime incomes is about \$236,000 according to 1968 data. The difference has been increase ing since 1949. See U.S. STATISTICAL ABSTRACT, Table No. 173, (1972).
- 29 Tinbergen, J., CENTRALIZATION AND DECENTRALIZATION IN ECONOMIC POLICY, North-Holland Amsterdam, 1954.
- 30 Rivlin, Alice M.-Assistant Secretary, Department of Health, Education and Welfare, "Testimony for the Department of Health, Education and Welfare" in: HEARINGS FOR THE HIGHER EDUCATION AMENDMENTS OF 1970, Subcommittee on Education of the Committee on Labor and Public Welfare-U.S. Senate, 91st Congress. 2d Session. U.S. Government Printing Office, Washington, D.C.
- 31 Radner and Miller, op. cit.

<sup>32</sup> Kohn, M.; Manski, C.; Mundel, D. (1972), "A Study of College Choice". Department of Economics, M. I. T.-ECONOMETRIC SOCIETY MEETINGS, Toronto, Canada. (December).

33 This (1972/1973) is the first year of disbursements under the program. For the amounts paid out to various private colleges see:

"Colleges Receive State Dollars," TRENTONIAN, January 24, 1973.

The program is explained in detail in: N.J. Department of Higher Education, "Assistance to N.J. Independent Colleges and Universities: Manual of Administrative Procedure," 1972.

- <sup>35</sup> "Direct State Support," according to the Bureau of the Budget's program budget format, is defined as "Instruction" plus "Academic Support" plus "Student Services" plus "Institutional Support" minus "Tuition and other Student Fees." "Auxiliary Services" and "Extension and Public Service" are omitted. (State of N.J., APPROPRIATION HANDBOOK, 1972-1973, pp. 227 ff.).
- <sup>36</sup> College Scholarship Service, MANUAL FOR FINANCIAL AID OFFICERS, College Entrance Examination Board, 1965/1967/1970.
- 37 e.g., this is the practice at Yale.
- 38 Conversation, November 28, 1972.
- <sup>39</sup> This is not now the case, Department of Higher Education policy has been and will continue to be to maintain Rutgers as the center of graduate study and research in the public system. But there is no necessary *institutional* connection between graduate study and research or research and teaching. Specialized research programs could as well be established in any of the public colleges.
- <sup>40</sup> Derived from 1972-1973 appropriations data by the Office of Economic Policy. This assumes that all general services (tuition, etc.) income is allocated to "operating costs" as defined above (Footnote 11). "Non-operating costs"="Total (current) costs" minus "Operating costs".
- <sup>41</sup> Truitt, Thomas, Assistant Chancellor, N.J. Department of Higher Education, Memorandum, February 28, 1972.
- 42 Corrazzini, Arthur J.; Dugan, Dennis J.; Grabowski, Henry G. (1972), "Determinants and Distributional Aspects of Enrollment in U.S. Higher Education.'
  - 7 THE JOURNAL OF HUMAN RESOURCES 1.
- 43 Hartman, Robert W. (1972), "Equity Implications of State Tuition Policy and Student Loans."
- Reprint No. 238, The Brookings Institution, Washington, D. C. (1972).
- 44 At Yale, the maximum is 25 percent.
- 45 See especially-Nerlove, M., "On Tuition and the Costs of Higher Education. . . .", 80 JOURNAL OF POLITICAL ECONOMY S 178 (May/June 1972).
- 46 Hartman, Robert W. (1971), CREDIT FOR COLLEGE Carnegie Commission on Higher Education
  - McGraw-Hill Book Co., Hightstown, N.J.
- 47 The Office of Economic Policy has prepared a chart which compares the many variations in income-contingent student loan plans. Available upon request.
- 48 According to William Nester, Director-Higher Education Assistance Authority, N.J. Department of Higher Education.
- 49 Demonstrated by Hartman (1971), op. cit.
- <sup>50</sup> N.J. Department of Higher Education, "Student Financial Aid, 1971-1972, Annual Report," Table 3, p. 9 and unpublished tables.

51 Dresch, Stephen P.; Goldberg, Robert D. (1972), "Variable Term Loans for Higher Education-Analytics and Empirics". 1 ANNALS OF ECONOMIC AND SOCIAL MEASUREMENT, pp. 59-92. (January.) Hartman (1972), op. cit.

- <sup>52</sup> Under some alternatives, the permissible tax rate (4-12 percent) could seriously effect overall tax policy.
- 53 Ford Foundation, "Pay-As-You-Earn: Summary Report and Recommendations".

Ford Foundation, Office of Reports, New York, N.Y. (September 1972).

- 54 "A special broadly representative commission" on higher education finance proposed by the Governor in his THIRD ANNUAL MESSAGE, January 9, 1973.
- 55 Note, for example, that the Board of Higher Education is "authorized to contract with eligible institutions for the provision of specialized graduate and professional programs where to do so would employ special resources of the independent institutions and would reduce or eliminate the need for the State to create or expand such programs at public institutions to meet an existing demand." ("Assistance to New Jersey Independent Colleges and Universities".) This provision, however, may conflict with the goal of improving the quality of the public colleges and should be reconsidered.

<sup>56</sup> See article "Tuition Plan at the City University Under Attack," NEW YORK TIMES, March 9, 1973, p. 39

- 57 See "Proposed Evaluation Measures," Department of Higher Education, BUDGET, State of New Jersey, Fiscal Year 1973-1974, January 29, 1973, p. 168.
- POSTSCRIPT: Some references to other peoples work, e.g. (Black, 1972), were not given bibliographic citations in the above footnotes. Those interested in following up this topic can find these and other references in the "Comprehensive Bibliography on The Economics and Finance of Higher Education" available upon request from The N.J. Office of Economic Policy.

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<sup>34</sup> According to O'Neill, op. cit.
## IV

## THE ECONOMIC CHARACTERISTICS OF THE NEW JERSEY POPULATION: INSIGHTS FROM THE 1970 CENSUS\*

### Urbanization:

In 1970, the population of New Jersey surpassed the seven million mark, ranking eighth nationally. The growth due to natural increase in population (8.1 percent) has been outweighed by the contribution due to net in-migration, which has brought close to 500 thousand persons, or 10.1 percent, more people to New Jersey since 1960. With a total population increase of 18 percent over the past decade and 48 percent since 1950 there have been changing migration patterns within the state, resulting in varying economic and social characteristics for places of different size.

Figure 4-1 indicates how the population distribution of New Jersey has shifted among various size places, decade by decade. The shift in the curves from 1950 to 1960 reflects the sharp growth during that period (+ 25.5 percent). The percentage of persons residing in small places (those less than 25 thousand persons) decreased. Places from 25 thousand to 100 thousand in size increased in relative terms by an additional 10 percent of the total population. The distribution of growth from 1950 to 1960 produced a decrease in size of rural places and growth in medium to large places, with only a slight gain in population for places 250 thousand or larger. Between 1960 and 1970 there is a reversal of earlier tendencies. The population increased significantly in places under 25 thousand, with a 125 percent increase occurring in places under 25 thousand persons. This migration to suburban and rural places has led to a net decrease in the proportion of persons living in urban centers both in relative and absolute terms.

Several cursory observations can be made concerning the net effect of shifting population patterns. Movement of families and individuals to less urban areas have increased the incidence of commuting and the distance traveled, placing an ever-increasing burden upon existing transportation networks. Urban centers with decreasing populations (and jobs) have lost revenues. Many have a declining real property tax base. A burden has also been placed on the small growing community as its new residents demand improved services. The effect of mass suburban migration in New Jersey has led to sharply increasing non-urban property values and one of the highest property tax burdens in the U.S.

#### Stratification of New Jersey Counties

Classification of New Jersey counties into urban, suburban, and rural groups can often assist the evaluation of changing social and economic

<sup>\*</sup> Prepared by George Nagle, Office of Economic Policy, with the assistance of Peter Bearse.



DISTRIBUTION OF PERSONS BY SIZE OF PLACE NEW JERSEY, 1920-1970

Y-Number of urban places with population greater than X

## X=Size of Place

Source: "1970 Census of Population: Number of Inhabitants" U.S. Department of Commerce, Washington, D.C. 1971.



Y=Growth rate 1960-1970

X\_Density, 1960 (persons/mi.<sup>2</sup>) \*

	(1370)	
URBAN	SUBURBAN	RURAL
2-Bergen	3-Burlington	l-Atlantic
4–Camden	8–Gloucester	5–Cape May
7–Essex	13–Monmouth	6–Cumberland
9–Hudson	14–Morris	10–Hunterdon
11–Mercer	15–Ocean	17—Salem
12–Middlesex	18–Somerset	19–Sussex
16–Passaic		21–Warren
20–Union		
	1950 & 1960 (No Change	e)
URBAN	SUBURBAN	RURAL
Bergen	Passaic	Salem
Essex	Morris	Atlantic
Hudson	Somerset	Cape May
Middlesex	Mercer	Hunterdon
Union	Monmouth	Sussex
	Ocean	Warren
	Burlington	Cumberland
	Camden	
	Gloucester	

(1970)

conditions though shifting population patterns have somewhat blurred these once-simple categories.

These three groups were defined by stratifying New Jersey counties on the basis of their growth rate and density, transformed into logarithms.<sup>1</sup> The groupings by county, 1970, defined on the basis of their growth, are plotted in Figure 2. Urban counties show a wide range in density; however, all are grouped within a narrow range of growth. Suburban counties exhibit the faster growth rates, while those of rural, low density, counties vary somewhat. Figure 4-2 also lists the grouping of New Jersey counties, stratified on a similar basis, for the 1950 and 1960 census periods. Subsequent discussions of economic or social characteristics by counties will utilize these groupings.

### Income

Median income in New Jersey has grown steadily from \$2,389 in 1950 (Families and unrelated individuals) to \$11,020 in 1970 resulting in a per capita value of over \$4,500, ranking fifth in the nation. When these dollar values are deflated by the Consumer Price Index to remove the influence of inflation, the increase ranges from \$2,850 in 1950 to \$8,224 in 1970, a gain of 189 percent, equivalent to an average annual rate of change of 9.4 percent per year.

Although rising aggregate income is a plausible measure of growth, more socially oriented objectives usually involve the manner in which this growth is distributed among the population. The cumulative distributions of incomes for families and unrelated individuals are shown in Figure 4-3. Over time the distribution of income in New Jersey has shifted as personal incomes continued to rise. The percent with incomes less than \$10,000 decreased while the percent earning \$10,000 or larger increased. Families and individuals earning above \$5,000 increased sharply relative to 1950, reflecting the emergence of a middle-class dominated state both in terms of numbers and incomes. From 1960-70, the proportion of families and unre-

#### FIGURE 4-3

## COMPARATIVE CUMULATIVE INCOME DISTRIBUTIONS FAMILIES AND UNRELATED INDIVIDUALS U.S./N.J. – 1950-1970 (Percent with Incomes Less Than (Y))

(Y)	1949		19	1959		69
- Income (\$1,000's)	U.S.	N.J.	U.S.	N.J.	U.S.	N.J.
1	22.3	15.0	12.8	8.6	7.7	5.3
2	38.4	26.1	23.3	15.3	16.1	10.9
3	56.6	43.5	32.5	21.8	22.6	15.6
4	73.5	63.0	42.0	29.6	28.6	20.3
5	83.6	75.6	52.2	39.0	34.1	24.8
6	89.9	84.7	62.9	50.5	39.9	29.6
7	93.4	89.8	71.8	60.8	45.8	34.7
8	NA	NA	NA	NA	51.8	40.2
9	NA	NA	NA	NA	57.9	46.2
10	97.4	96.1	88.0	81.9	63.4	51.9
12	NA	NA	NA	NA	73.7	NA
15	NA	NA	NA	NA	84.3	76.6
25	NA	NA	NA	NA	96.4	94.4

Source: U.S. Census of Population, 1950, 1960, 1970.

lated individuals earning \$3,000 or less decreased over six percentage points—from 21.8 percent to 15.6 percent. In real terms (1959 dollars) the decrease was much less—only about two percentage points—to slightly under 20 percent. The statistics clearly indicate, however, that N.J. is a state with proportionately many more higher incomes and many less lower incomes than the nation as a whole.

There is a noticeable "bulge" in the 1960 distribution which makes the shape of the N.J. distribution of that year appear quite different from that of the U.S. distribution. (See Figure 4-15.)<sup>2</sup> This was probably due to the considerable in-migration of middle-class families into N.J. during the 1950-1960 decade. By 1970, the shape of the state's distribution has become closer to that of the U.S. and perhaps will become even more so as net migration slows.

New Jersey compares favorably with other states in terms of income concentration<sup>3</sup> ranking fourteenth nationally (few urban states rank in the top one-third). Compared to other states of the Mid-Atlantic region, New Jersey's index of income-equality was below that of Pennsylvania (ranked 9) but above that of New York (ranked 33). Between '60 and '70, there was a shift toward a more unequal income distribution in New Jersey and New York, while Pennsylvania moved with the United States in the opposite direction.

An attempt was made to identify the social and economic conditions that explain the stateto-state variation in income concentrations as of 1970. By using stepwise regression nine variables were found to have a significant relationship with the Gini Coefficient, explaining 91 percent of the observed variation. Among the factors positively related to income concentration were percent of the population below the poverty level, property income as a percent of total personal income, percent white collar occupations in the labor force, and percent nonwhite population. Those variables with a negative relationship were median income, level of education, incidence of long-term unemployment and percent manufacturing and mining employment. The fact that New Jersey has witnessed an increase in white collar occupations, non-white population and a decline in total manufacturing probably has offset increases in median income and the level of education, to account for the slightly higher concentration of income now than in 1960.

Urban centers in New Jersey have repeatedly felt the pinch of declining revenue and rising operational expenses over the past few years. The results of the 1950 and 1960 census report urban counties with the highest absolute median income (families and unrelated individuals), but suburban counties made the largest percent gain. By 1970 the urban exodus had taken its toll and residents of suburban counties earned the highest median incomes (Figure 4-4).

The significance of the shift of high incomes to suburban areas was tested by comparing the county to county differences in median incomes using analysis of variance. In all three comparisons, a two-way design was used so that variation due to an undesired variable could be "blocked out."

In the first test incomes were blocked by year to remove variation over time. The treatment effect testing differences in income between types of counties was significant as expected. The high degree of interaction between the block and treatment effects reflects the fact that there was a spread of urbanization over the 1950-70 period. This is also clear from the reversal of the rank order of average median incomes in 1970 between urban and suburban counties. Since the distribution of wealth is even more highly skewed than income, this implies a substantial exodus of income and wealth from urban centers to suburban areas and even some dispersal into rural areas. The consequences of this trend may result in a reversal of the traditional role of urban centers.

In the second test the time element was removed to compare income differences by race. The highly significant F-value simply emphasizes the lower average median incomes for non-

	1950		1	1960		1970	
Туре	Total \$	Non-White \$	Total \$	Non-White \$	Total \$	Non-White \$	
Urban (U) Suburban (S) Rural (R)	4,670 4,156 3,503	N.A. N.A. N.A.	6,903 6,442 5,463	4,832 4,478 3,546	8,297 8,686 7,465	6,078 6,230 5,667	
Average	4,061		6,226	4,094	8,131	5,984	
		ANALYSIS	OF VARIA	NCE			
1. Block Treatment	: F Yea : F U-S	ur (1950-1970) 5- <b>R</b>	= 143.91** = 12.06**	Interact =	= 2,82**		
2. Block Treatment	: FYea : FRac	ur (1960-1970) ce (1960-1970)	= 85.97** = 109.26**	Interact =	.0041		
3. Block Treatment	: FU-S : FRad	<b>FR</b> (1970) ce (1970)	= 2.579 = 44.74**	Interact =	3282		

#### AVERAGE MEDIAN INCOME\* OF FAMILIES AND UNRELATED INDIVIDUALS BY TYPE OF COUNTY AND RACE, NEW JERSEY, 1950 to 1970

\* Income adjusted to constant prices by the Consumer Price Index.

\*\* Significant at 5 percent level.

whites. The observed interaction (negligible) between race and time gives credence to the argument that income gaps between whites and non-whites have not been closing at a statistically significant rate, on an aggregate statewide basis.

The last comparison, Number 3, matches 1970 median incomes between counties with the variation due to race removed. While the block effect was significant, incomes between counties did not exceed the critical F-value. A possible explanation for the lack of variance in incomes between counties is increasing suburban sprawl and migration between counties.

#### Poverty

Irregardless of New Jersey's ranking on the income scale the existence of poverty is a very real occurrence in the Garden State. But what exactly is Poverty? And is there a way to identify the gray area between a "decent" and "indecent" standard of living. In 1964 the Social Security Administration defined a wartime standard poverty level<sup>4</sup> for the United States. This does not represent a true measure of need. Applying this standard income cutoff, now about \$3,800, to the 1970 census income data, we find 8.1 percent of all persons in New Jersey were below the poverty level, compared to 12 percent nationally. See Figure 4-5 for the distribution of poverty within New Jersey by county.

The most careful and reputable indices of living standards are issued by the Bureau of Labor Statistics, an item by item enumeration of consumption needs. The B.L.S. defines a "lower" budget standard of living for a family of four in an urban area.<sup>5</sup> Thus the regional effect in price differentials are considered. Included in the computation are Federal, state, and local taxes, apartment rentals, food, transportation, medical, and insurance costs. The lower budget describes the living standard of the following type of family: One middle-aged male wage earner, two children, living in inexpensive rental housing, driving a 6-10 year old



car, saving little or nothing. The B.L.S. lower family income of \$7,061 (U.S. annual average for metropolitan areas, 1970) has been accepted to a large extent by Congress in establishing income guidelines for Child Development Programs and exclusion from wage and price controls.

A comparison of the adjusted distribution of family income in New Jersey to this benchmark provides quite a different picture of economic welfare in the state. Twenty-two percent of all families earn incomes below the B.L.S. standard. with the rate rising to 37.4 percent of all families in central cities. Almost half (46.9 percent) of New Jersey non-white families are below this norm.<sup>6</sup>

The composition of the poverty sector reveals some striking changes in the demographic structure of the New Jersey population. Twenty-two percent of all persons are over 65 years of age yet only 1.8 percent are listed with poverty incomes. This tends to obscure the fact that senior citizens with relatively fixed incomes lose purchasing power in times of sharply rising prices, as evident in New Jersey over the past few years. At the other end of the age scale are related children below 18 years, constituting 34 percent of the poverty population. These statistics suggest that job creation efforts may be more productive than welfare subsidy payments, especially if coupled with provision for day care facilities. One of the underlying objectives of social security insurance is to provide for an individual's welfare after his income producing years are over. Those collecting social security in New Jersey constitute 9.6 percent of the population. Of these, 120 thousand, or 18 percent,



FIGURE 4-6

\* Non-Agricultural Workers

Source: "1970 Census of Population: General Social and Economic Characteristics-New Jersey," U.S. Department of Commerce, Washington, D.C.

reside below the poverty level, even though New Jersey ranks third nationally in average monthly payments to retired workers.

#### **Class of Worker:**

The occupational structure is perhaps the main foundation of socioeconomic stratification and mobility in contemporary industrial society.<sup>7</sup> In a democratic state where equality of opportunity is an important ideal, the existence of class differences increasingly comes to rest on occupational positions and the economic advantages and power associated with them.

The census traditionally distinguishes employed persons by "class of worker," namely public and private, salaried and self-employed workers. The greatest number of employed persons in New Jersey are private wage and salary workers (Figure 4-6), constituting approximately 80 percent of the civilian, non-farm, labor force. Irrespective of its magnitude, this proportion has varied only 0.6 percent during the past 30 years even though the labor force has grown over 70 percent since 1940.

Those identified as self-employed include persons working for a profit or fee in their own unincorporated business, profession or trade. In 1940 self-employed persons totaled 12 percent of the employed labor force, however, a steady decline since 1950 has left this class of worker with 5<sup>1</sup>/<sub>2</sub> percent of the 1970 New Jersey labor force. Rising prices have prolonged the decline in selfemployment in New Jersey by placing an everincreasing capital burden on individual proprietors. Rapid expansion of franchises, resulting in economies of scale, have also eliminated some independent small businesses. Also, improved transportation networks have reduced reliance on neighborhood establishments for goods and services. Changes in the role of individual enterprise have implications for the potential of "black capitalism" in central cities. Irregardless of current government encouragement of this concept, or the initiative of a new breed of black entrepreneurs, there is little evidence to indicate that self-employment in small business will be a significant vehicle for the economic progress of minority groups. Expansion of an occupation, through increased demand, depends on economic conditions that attract workers from other origins. The above factors have resulted in a relatively lower income for self-employed persons. In 1950, self-employed persons earned almost \$4,100 per annum compared to \$2,800 for wage of salary workers, but in 1970 salaried employees averaged \$10,880 (a 280 percent increase) compared with \$9,202 for self-employed persons (a rise of 126 percent).

On the other hand, over the past 30 years, government employees have gained in their relative share of the labor force—from  $7\frac{1}{2}$  percent in 1940 to almost 14 percent as of the latest census. The sharp rise in public employees, especially since 1960, is a result of the increasing demand for more public services and the labor intensiveness and relatively small rise in productivity in providing these services. Political factors may have also pressured government to employ as an offset to high unemployment.

The remaining category, unpaid family workers, are comprised of farm or business labor working for a relative, usually spouse or children of the owner. Their share of the labor force has varied  $\frac{1}{2}$  percent over the 1940-70 time frame and now constitutes 0.4 percent of the civilian labor force.

Although the percentage distribution of workers reveals something of the structure of the New Jersey labor force, a measure is needed to remove the effect of changing occupation patterns in the economy at large. By computing the proportion of New Jersey workers in one class to the proportion of U.S. workers in the same class (Location Quotient),8 a change in New Jersey's labor force may be reduced or magnified by the change in occupational structure which we might "expect" from observing national patterns. Since a location quotient greater than unity represents a New Jersey "advantage" (relative to the U.S.), this state has held an edge in private wage and salary workers since 1940 (Figure 4-7).



Percent Class of Worker in U.S.

Source: "1970 Census of Population: General Social and Economic Characteristics-New Jersey," U.S. Department of Commerce, Washington, D.C.

However, this margin has decreased over time to a new low, just above unity (1.0426), in 1970. Even though the statewide proportion of these workers has remained constant since 1940, the increasing national trend has led to a relative decline of private wage and salary workers in New Jersey.

In 1940 New Jersey trailed far behind the U.S. proportion of individual enterprise (.5465), but a sharper decline nationally has brought the state almost to par with the U.S. (.9271) in 1970. One factor may be New Jersey's close proximity to New York City and Philadelphia and the inmigration of proprietors from those cities. Government employees, irregardless of their sharp rise in numbers since 1940, have failed to increase as fast as the U.S. rates. The relative decline is indicated by the change in the L.Q. from 0.96 in 1940 to 0.83 in 1970, with a slight rise from 1960 to 1970. It is possible though not conclusive, that the lag in public employment has contributed to the chronic positive differential in unemployment rates between New Jersey and the U.S.

Unpaid family workers, although holding a constant percentage in New Jersey between 1940 and 1970, have risen appreciably relative to the U.S. norm.



Source: "1970 Census of Population: General Social and Economic Characteristics-New Jersey," U.S. Department of Commerce, Washington, D.C.

#### **Occupations:**

The detailed occupational structure lends greater insight to the changing demographic and economic characteristics of New Jersey.

Traditionally, the greatest proportion of the employed New Jersey population were operatives, 24 percent in 1940; however, a steady decline since 1950 has resulted in operatives representing 17 percent of the labor force by 1970 (Figure 4-8).

Likewise, the proportion of craftsmen rose to 16 percent of the labor force in 1950 only to fall to 13 percent by 1970. The relative decline of manufacturing jobs in New Jersey is undoubtedly the main factor in these declines. (See Chapter VII for analysis of this decline.)

Other occupations showing a relative decline are laborers and private household workers. These declines reflect changes in the technical and social structure of our economy. The continual demise of agricultural occupations reflects the present state of farming in New Jersey, such as the squeeze between farming costs and farming incomes. Two occupations maintained their relative share of the labor market over the 30year time period: managers and officials and sales workers. The largest gain was posted by professional occupations, rising from 9.4 percent in 1940, to 15 percent in 1970. This growth was paralleled by a 5 percent gain in clerical occupations. Part of this gain may have resulted from job creation in the expanding areas of business and professional services. A recent study released by the Library of Congress<sup>9</sup> reported that the rapid increase in professional occupations has contributed to income inequality. This was partially offset by a decline in lower paid jobs, but the net result has been a slightly more skewed earnings distribution. The proportion in "service worker" occupations varied little





Source: "1970 Census of Population: General Social and Economic Characteristics-New Jersey," U.S. Department of Commerce, Washington, D.C.

between 1940 and 1960, maintaining approximately 7 percent of the labor force; however, growth during the past ten years, bolstered by an increasingly service-oriented economy has resulted in an increase to 9 percent of the New Jersey labor force. White collar and service occupations have grown consistently since 1940, while blue collar occupations have dropped steadily since 1950.<sup>10</sup> (See Figure 4-9)

These changes are due to shifts in the distribution of jobs both among and within industries in response to technological advances, increased educational attainments, and changing patterns of demand. Unfortunately, the census category "service workers" is quite narrow. It excludes many occupations which we intuitively associate with the provision of services; for instance, clerical, technical, professional and kindred (TPK), and sales services. Let us therefore lump all of the latter occupational categories together with "service workers" to get an overall picture of 1960-1970 changes. Call this aggregate "service occupations." Neither of these should be confused with the sector of "services industries." Unfortunately, 1970 New Jersey data on occupations by industries are not readily available, so we must rely on U.S. data. (But also see Footnote 11)

Though as expected, the Services industry sector has the largest proportion of employees in services occupations (81.2 percent), Finance, Insurance and Real Estate (74.7 percent) and Government (75 percent) are not far behind. These proportions are also significant and rising for Trade (54.2 percent), Transport, Communications & Utilities (36.2 percent), and Manufacturing (26.1 percent).<sup>11</sup> The increase of the proportion in the Manufacturing, Government, and Transportation, Communications and Utilities sectors has been primarily due to increases in the Technical, Professional and Kindred occupations category. The proportion of employment in clerical occupations has been rising in all sectors except for government, where the proportion is by far the highest (41.45)percent) and only declined slightly from 1960-1970.

The necessity for making careful distinctions among service industries and occupations is illustrated by the following. The proportion of service workers has declined in all sectors except for Trade, with the largest decline occurring in the Services-sector (-5.2 percent). At the same time, the largest increases in the proportions of both Technical, Professional and Kindred and Clerical occupations occurred in the Servicessector, increases of 3.1 and 3.4 respectively. Thus the rapid growth of employment in this sector is accompanied by a rapid shift in its mix of occupations-from jobs requiring relatively low to relatively high skills or education. As soon as possible, we should examine these data for New Jersey and assess their implications for state manpower programs. It is apparent from the 1970 U.S. data that the Services-sector has surpassed Manufacturing as the largest sectoral employer. Over the past decade, the percent growth in Services was about 43 percent; in Manufacturing-15 percent. Since the growth in the labor force was about 19 percent, manufacturing is no longer a net generator of jobs. In fact, we can expect manufacturing employment to resume its absolute, not just relative, trend of decline which apparently began about 1953-1955.12 In New Jersey, the gap between the growth of manufacturing jobs and the growth of the labor force is much wider than for the U.S. It is likely that efforts to revive the state's manufacturing sector will yield diminishing We should examine whether the returns. growth of services is proceeding fast enough to take up the slack and what can be done to accelerate our transition to a "service economy."

## Area and Regional Comparisons of Occupational Structure:

To evaluate occupational changes within the state additional comparisons with national and regional figures are needed. Again, these comparisons are aided by calculation of "location quotients." Figure 4-10 compares the occupational composition of New Jersey and the Mid-Atlantic region with that of the U.S.

	1940	1950	1960	1970
NEW IERSEY:				
White CollarBlue CollarServiceAgricultural	1.3929 1.0993 1.0670 .1241	$\begin{array}{c} 1.3653 \\ .9724 \\ 1.5333 \\ .1477 \end{array}$	1.2905 .8559 1.4852 .0778	1.0888 .9901 .8235 .0305
MID-ATLANTIC REGION:				
White Collar Blue Collar Service Agricultural	$1.3701 \\ 1.0349 \\ 1.8734 \\ .1951$	1.3650 .9368 1.7283 .2031	$1.3500 \\ .8158 \\ 1.7098 \\ .2096$	1.0570 .9664 .9400 .3185

## LOCATION QUOTIENTS FOR OCCUPATIONS VS. THE U.S. 1940-1970

The proportion of white collar occupations in New Jersey once held a commanding lead over the national rate; however, more rapid growth in other regions has resulted in only a slight "advantage" for our state as of 1970. Although blue collar occupations declined sharply within the state, New Jersey has maintained a proportion on par with national totals since 1940. Service and agricultural occupations also declined relative to the U.S. distribution.

Misleading conclusions are possible if one does not consider the highly urban population within the state and its correspondingly slower occupational mobility rates as compared to many rapidly growing states in other regions. A comparison of the occupational structure of New Jersey with that of the Mid-Atlantic Region shows much the same relative changes in white and blue collar occupations; however, the location quotient for service occupations dropped.

A better perspective may be formed by viewing the concentration of occupations in geographical areas over time. Since social scientists agree there has been a net increase in geographic mobility; that is, persons changing residence and job location, occupations were compared by their relative share of the labor force within central cities and within Standard Metropolitan Statistical Areas. (Figure 4-11)

The geographical concentration of service workers exhibits the greatest relative change over time, shifting decidedly toward central cities. There are many plausible reasons for the increase in urban services employment by establishment, but those that might explain the relative shift in residence of service workers are not so evident. Technological advances have eliminated routine lower paid work in many of goods-producing industries; the however, similar types of jobs have increased in service industries, especially in central cities. The need of many services to concentrate in urban locations, coupled with the availability of low-skill labor in those locations probably accounts for the urban concentration of this occupation. Despite the decrease of manufacturing and blue collar related jobs in urban areas, people with blue collar occupations increased their relative concentration in urban areas. (Note the shift from quadrant III to I, Figure 4-11) This situation may be partly due to the fact that some manufacturing industries are slow to relocate, either because of their large investment in physical plant or dependence on low-wage labor. More likely, the lower income of blue



\* The direction of the arrow indicates the 1960-1970 relative change in geographical location for a particular observation.

Source: "1970 Census of Population: General Social and Economic Characteristics-New Jersey," U.S. Department of Commerce, Washington, D.C.

collar workers and the cohesion of some working class neighborhoods restrain them from moving to more suburban areas. As expected, the degree of urban residential concentration of white collar occupations has declined. The interesting thing shown by the 1960-1970 data is not the continuing migration of white collar people from central cities but a tendency for them to move away from metropolitan areas.

#### Status Occupations and the Population:

The shift of white collar occupations to suburban areas in analogous to other migration phenomena-the net effect of "push" vs. "pull" forces. The simplest explanation is suggested by the old maxim: "like attracts like" (and vice versa). If this is assumed to hold true, then the change in the residential distribution of white collar occupations among areas can be predicted, or at least explained by, the composition of the population within areas. A key to success in most fields, especially white collar occupations, is educational attainment. We hypothesize, therefore, that educational attainment is positively related and the percent non-white population, negatively related to the residential concentration of people with white collar jobs. Thus the percent of white collar occupations for places in New Jersey with populations greater than 50,000, SMA's, and counties were regressed on educational attainment and the percent of non-white population for 1960 and 1970.

The resulting coefficients of determination reveal striking differences between years and areas. For 1970 the model does well in explaining white collar variation in urban areas with an  $R^2$  of 91 percent in SMSA regions and 88 percent in urban places. At the county level, the coefficient decreases for counties but educational attainment becomes a relatively more important variable. In 1960 there was less dependence upon educational attainment and the coefficient of determination drops considerably, to a low of 65 percent for New Jersey counties.

Initially we assumed that the percent of non-white population was negatively related to percent of white collar residents; however, the relationship turns out to be positive for SMSA's and counties in 1960. This undoubtedly reflects the fact that, as of 1960, New Jersey counties and SMSA's were still admixtures of all classes of people even though the central cities were not. The change in sign and statistical reliability of our equation from 1960-1970 is testimony to the increasing strength of centrifugal forces affecting population movements within the state. In sum, in the more urban areas of our state the variation in the proportion of white collar residents is largely explained by the educational level and racial composition of the population.

Up to this point, discussion has largely centered about the general groupings of occupations, Figure 4-12 plots the mobility of more narrowly defined occupations.

Although similar to the grouped occupational structure, there are individual jobs that tend to either dampen or exaggerate the direction of movement of that group. Most white collar occupations (professional, managerial, sales) show a much sharper retreat from central cities. But clerical employees, although classified as white collar, exhibit a relative shift toward cities which parallels that of other lower status occupations. Blue collar jobs are similarly affected. Operatives and laborers are now more heavily concentrated in central cities, while the more highly paid craftsmen have migrated to suburban areas. Service and private household jobs show a dramatic shift to central cities. Overall, it appears that the increased population differentiation fostered by increases in education and income over the past decade have been strong centrifugal forces tending to increase the relative residential segregation of groups with different socioeconomic status.

## Labor Force Composition by Industry:

Agricultural jobs appear to be heavily concentrated in urban areas, but this can be explained by the presence of food processing plants in these areas. The number of agricultural jobs



Laborers MOP - Managerial, Officials, Proprietors

"1970 Census of Population: General Social and Economic Characteristics-New Jersey", U. S. Department of Commerce, Washington, D.C. Source:

Services

in less urban areas is often underestimated due to the low incidence of Social Security Insurance coverage among agricultural laborers. Industries that have lost their share of the labor market include transportation and communication, construction, and agricultural related jobs. Reductions in these industries characterize New Jersey as representative of an urban state with relatively mature growth patterns. On the positive side, the wholesale/retail trade industry, though its proportion has fluctuated greatly since 1940, has grown to occupy 19.3 percent of the 1970 labor force. The proportion of employment in the services sector has grown steadily from 19.4 percent in 1960 to 23.6 percent of the 1970 labor force. This growth has absorbed a great deal of the reduction in manufacturing employment. Public administration employment has grown in relative terms since 1940 and now engages 5.2 percent of the labor force. See Figure 4-13 for trends in the actual numbers of employed persons by industry.

When we compare the composition of the state's labor force by industry of employment to that of the nation's, we find that New Jersey still has a relatively large share of its labor force employed in the manufacturing, transportation, and financial sectors, even though the location quotients for these categories have been steadily declining since 1940. The largest declines have occurred in the construction, manufacturing, and financial sectors. What this means is that the shares of the state's labor force which are employed in these sectors have consistently declined relative to U.S. shares. In these same terms, the New Jersey shares in agriculture and services have declined slightly and in public administration, increased greatly, since 1960. Though New Jersey employment in the Trade sector has increased greatly in recent years, this has not led to an increase in the share of the labor force employed in that sector relative to the U.S. Given the state's unique location and relatively high level of average income and urbanization, the location quotient for Services seems abnormally low. On the other hand, the share of the labor force in public administration

jobs is rapidly approaching par with the nation. Clearly, the state and local governments will have to pay closer attention to the effect of their own employment policies on employment, income and unemployment in the state as a whole. But these shifts in the composition of the labor force can bear more detailed scrutiny if we are to derive any useful conclusions for state policy.

#### Jobs: City vs. Suburb:

The industrial structure has also been shifting within areas of the state. Figure 4-14 summarizes changes in the locational orientation of industries (by establishment) between urban and suburban<sup>13</sup> New Jersey counties between 1960 and 1970. Both manufacturing and trade sector jobs appear to be decentralizing to the metropolitan periphery; that is, becoming simultaneously less concentrated in urban and suburban counties. Services, on the other hand, is the only sector whose orientation is becoming unequivocally more urban. This is true in a relative sense even though service jobs are moving to the suburbs.

Construction jobs are leaving urban centers. Obviously, urban areas offer few construction opportunities compared to high growth suburban areas. Wholesale/retail employment is also shifting toward the more lucrative suburban markets, partially due to the decline of urban shopping centers. Urban based financial establishments are begining to show a tendency to locate away from urban counties.

#### **Conclusion:**

The state has undergone a great transformation since 1940. In many respects, the changes of the recent decade represent a deepening of changes already evident in the earlier two decades. Certainly this is true with regard to the exodus of people, income, and wealth from central cities to suburbs, the shift of both labor force and employment structure away from manufacturing, the dramatic increases in average incomes and the reduction of the proportion



Source: "1970 Census of Population: General Social and Economic Characteristics-New Jersey," U.S. Department of Commerce, Washington, D.C.



Source: "County Business Patterns-New Jersey, 1959, 1963, 1970," U.S. Department of Commerce, Washington, D.C.

of people in poverty. But some features of New Jersey revealed by the 1970 Census are not simply extensions of past trends. One is that the state's central cities may now be more of a trap for lower-income, lower status groups than earlier. Another is that the process of dispersion from urban centers has now obviously gone beyond the suburbs to what were once strictly rural areas. A third is that certain differentials do not appear to be decreasing<sup>14</sup>—such as the black/white income gap; and residential segregation of racial, income, or occupational groups. Obviously, some of these features are subtle,

open to interpretation, and could bear a much closer look.

Many changes of the last few decades have been attributable to the rapid growth of New Jersey's population and economy. In particular, there has been tremendous in-migration. With the onset of changed fertility patterns, increased densities, environmental priorities and a services economy, it is possible that the state may be entering a new phase. In this type of situation, the differences of 1960-1970 from 1940-1960 may be worth more attention than the more obvious similarities.



DISTRIBUTION OF ANNUAL INCOME FOR FAMILIES AND UNRELATED INDIVIDUALS-NEW JERSEY, 1950 to 1970

X – Annual Income (log scale).

Y - Percent with incomes not exceeding X (Probability scale). (See Footnote 2 for explanation.)
 Source: "1970 Census of Population: General Social and Economic Characteristics-New Jersey," U.S. Department of Commerce, Washington, D.C.

#### FOOTNOTES

- <sup>1</sup> Newling, Bruce E., "Population Projections for New Jersey to 2000 by Minor Civil Divisions," A study supported by the Office of Water Resources Research, U.S. Department of the Interior and New Jersey Department of Conservation and Economic Development, 1968.
- <sup>2</sup> As shown by a graphical plot on log-probability paper. If the plot on this type of graph is a straight line, this is a strong (although not conclusive) indication that the distribution in question is log-normal, i.e. the logarithms of incomes are normally distributed. Clearly, neither the U.S. and N.J. distributions follow this simple form which has interesting and straightforward interpretations. Also, it is impossible, on the basis of decennial census data to tell whether the U.S. or N.J.-distributions follow the famous "Pareto" distribution since the incomes in the high income "tail" of the distribution are not reported.
- <sup>3</sup> Income concentration, or Gini Coefficient, is derived from the Lorenz Curve which is obtained by plotting the cumulative percent of units (families and unrelated individuals) on the X-axis against the cumulative percent of aggregate income accounted for by these units on the Y-axis. If all units had the same income, the Lorenz Curve would be represented by a diagonal drawn from the origin. Curves drawn to actual data invariably fall below this line and the greater the inequality in the distribution of income, the greater the area between the diagonal line and the Lorenz Curve. Appropriately, the area ranges between 0.0 and 1.0.
- <sup>4</sup> The Social Security Administration's definition of the poverty level is based on an absolute minimum amount needed to feed a family. The range of income cutoffs are adjusted by such factors as family size, sex of the head of the household, number of children under 18 years of age, and distinction between farm and non-farm residence. See Harrison, Bennett, et al., "Crisis of the *Underemployed*—In Much of the Inner City 60 Percent Don't Earn Enough for a Decent Standard of Living," THE NEW YORK TIMES MAGAZINE, November 5, 1972.
- <sup>5</sup> U.S. Department of Labor, Bureau of Labor Statistics. "Three Budgets for an Urban Family of Four Persons, 1969-70," Supplement to Bulletin 1570-5; 1972.
- <sup>6</sup> These percentages may be slightly overestimated because we are using an average budget for a family of four and not taking into account the actual distribution of family sizes, different ages of family members and similar factors which affect the family cost of living. On the other hand, the cost of living in New Jersey urban areas is somewhat higher than the U.S. metropolitan average, our estimates do not include unrelated individuals who tend to have lower incomes than family members, and the average family size is somewhat larger than four.
- 7 See Blau and Duncan, THE AMERICAN OCCUPATIONAL STRUCTURE, for a comprehensive treatment of this point.
- 8 A location quotient provides an index of comparison between two percentage distributions for a particular characteristic (C). i.e.,
  - $L.Q. = \frac{Percent (C) N.J.}{Percent (C) U.S.}$

A L.Q. greater than 1.00 indicates a relative N.J. advantage over the U.S. for characteristic (C).

9 Henle, Peter; "Exploring the Distribution of Earned Income," MONTHLY LABOR REVIEW, December 1972, pp. 16-27. 10 White Collar: includes-professional, managerial and officials, proprietors, clerical, and sales workers

- Blue Collar: craftsmen, operatives, laborers (non-farm)
- Service: private household, food service (restaurant, etc.) workers, protective service workers (policemen, firemen, etc.), janitors, etc.

Agricultural: farm manager, farm labor

11 U.S. Department of Labor, Bureau of Labor Statistics, "Occupational Employment Statistics, 1960-1970," Bulletin 1738; 1972. The corresponding figures for N.J. were released in time for inclusion in this footnote. They compare with the U.S. as follows:

#### PERCENT OF SERVICE OCCUPATIONS IN SERVICE INDUSTRIES

Industry	U.S.	N. J.
Service	81.2	75.0
Finance, Insurance, Real Estate	74.7	77.2
Government	75.0	79.1
Trade	54.2	61.6
Transportation-Communication Utilities	36.2	44.1
Manufacturing	26.1	18.6

The differences are marked, with N.J. percentages significantly less in the Service and Manufacturing sectors and greater in the others. An examination of these differences in light of N.J. commuting patterns and industry structure may provide some explanation for N.J. services employment lagging relative to the U.S. in recent years.

12 Henderson, John P., "Inflation and the Structure of Unemployment," SOUTHERN ECONOMIC JOURNAL, 1962.

13 Refer to previous heading, "Stratification of New Jersey Counties."

14 This tentative conclusion is based on our analysis of census data aggregated by counties and cities. It is possible that other data or more detailed census data may show some decrease in these income gaps but it would be surprising if these decreases turned out to be significant. More and more, New Jersey commuters like their national counterparts are skipping the 7:50 bus or train and taking to the highways in private automobiles. Rising incomes, the growth and dispersion of jobs and homes throughout the State coupled with a large increase in the number of automobiles and also an excellent expanding highway system, are largely responsible for the increasing mobile labor force. All can be summed up in . . .

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# JOURNEY TO WORK\* THE CASE OF THE NEW JERSEY FOOTLOOSE COMMUTER

#### The Background

Turning back the calendar, just prior to the mass exodus from the cities to the promised land of suburbia, New Jersey in 1950 was home for 4.8 million people. Over half of these residents were concentrated in four northeastern counties, all in close proximity to New York City. Most of the State's employment opportunities were also centered in that same location. Likewise, all but three of the State's 28 cities with a population of 25,000 or more were part of what was then considered the New York Metropolitan Area.

In the intervening years that followed, city dwellers by the thousands, all over the nation, eagerly answered New Jersey real estate advertisements-ads that told them of sunshine and fresh air, trees and grass, open space for children and the pride of owning a home all possible in a suburban community. Likewise, rising abilities, job status and income, as well as the availability of long-term mortgages, enabled suburbia to fit into many more family budgets. The widespread ownership of cars and expansion of the State's highway network has made long distance commuting possible. Today, residential areas are no longer circumscribed by a stagnant public transportation system with fixed bus routes or railroad tracks.

Jamming an additional 2.5 million people into a highly urbanized State like New Jersey, with only an area of 7,489 square miles, could do nothing but intensify its population concentration. The 1970 Census confirmed what was already known—New Jersey, with 957.2 persons per square mile, was the most densely populated of all the states. New Jersey's population and density change represents an average growth of 18.2% or an additional 147 persons on each square mile over the past decade alone.

In the wake of population expansion and migration, all types of services were needed to satisfy the growing and vibrant demand. Shopping centers of all sizes and descriptions, complete with branches of well-known department stores, supermarkets, variety stores, and specialty shops, mushroomed overnight. It was also obvious that trade and service establishments were not the only job opportunities becoming widespread. Industry, too, began to hearken the call of the suburbs. Land was cheaper and more readily available. Firms were able to combine utility and beauty in architecturally attractive one-story plants and a new phenomenon developed, the "Industrial Park." The labor force was becoming more dispersed and increasingly mobile, moving to jobs with greater physical and financial benefits.

<sup>\*</sup> Prepared by Shirly A. Goetz and Henry A. Watson, Office of Business Economics, Department of Labor and Industry. Basic research and analysis for this report was conducted by Edward Butterer.

#### Suddenly It's 1970

The State has come a long way in a little over 20 years. A modern Rip Van Winkle would see great changes. Population had risen to 7.2 million, nearly one-half again its 1950 level. The labor force also had increased and stood at 3 million strong. All of the growth that manifested itself in suburbia was not, however, because of the exodus from the older core cities. Immigration played a dominant role. New residents moving into the State during the sixties represented 55.7% of the population mix. The other 44.3% was due to the natural increase of births over deaths. Obviously, New Jersey has been a true mecca for greater financial gain and a better way of life to thousands of new home and job seekers.

Significant change during the decade has also taken place in the quality as well as quantity of the work force. Although the typical profile of the New Jersey worker in 1970 as in 1960 was white, male, and about 40 years old, important social and economic characteristics did change for the better. Ten years ago the average male worker had only ten years of schooling. In 1970, however, he was a high school graduate. A decade ago, he was employed as an operative, earning between \$5,000 and \$6,000 a year. In 1970, he was predominately in the more skilled category of craftsman-foreman. His income, likewise, had been raised substantially to a level of \$9,000. This upgrading has enabled the average worker in the labor force throughout the State to increasingly "enjoy the good life," to move to the suburbs, to own a car, and become a mobile "footloose commuter."

Some minority segments of the population, however, have not been as fortunate or fared as well. Male Negro and Puerto Rican workers according to the 1970 Census typically are less educated, work as laborers or operatives in manufacturing and earn less money. In 1970, the average Negro worker was about 36 years old, had a tenth grade education and earned between \$6,000 to \$7,000 a year. Puerto Rican men averaged 31 years of age, mostly with an eighth grade education, with an income between \$5,000 and \$6,000. Lacking economic means, most minority segments have been tied to the central cities, both for residence and jobs, and forced to rely on an antiquated inflexible public transportation system for their "journey to work."

With increased economic means available to more and more, New Jersey residents found themselves and their job opportunities increasingly spreading throughout all categories and across the State. There are now more than 60 communities with a population in excess of 25,000 located in 16 of New Jersey's 21 counties. Most areas of the State have shown substantial growth. South Jersey, a sparsely populated area, however, has shown fantastic growth. Ocean

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SUMMARY	OF	INTE	RSTA	ΥTE	СОМ	мит	ATIC	DN
		1960	and	1970	)			
	(Th	ousands	s of C	Comn	nuters)	•		

	1960	1970
Commuting from New York SMSA to Northeastern N.J.	51	90
Commuting from Northeastern N.J. to New York SMSA	163	182
Commuting from Pennsylvania Part of Philadelphia SMSA to New Jersey Part	18	37
Commuting from New Jersey Part of Philadelphia SMSA to Penn- sylvania Part	56	74

#### TABLE 5-2

## COMMUTING BETWEEN NEW YORK AND NEW JERSEY PORTION OF NEW YORK SCA, 1970-NEW JERSEY TO NEW YORK

County of Residence	Manhattan	Rest of NYC	Westchester & Rockland Cos.	Nassau & Suffolk Cos.	Total
Bergen	43,957	24,370	6,091	984	75,402
Essex	10,783	7,497	470	190	18,940
Hudson	22,015	15,665	465	193	38,338
Middlesex	7,794	5,329	169	163	13,455
Morris	6,032	3,521	239		9,792
Passaic	4,184	3,317	681	166	8,348
Somerset	2,216	1,481	63	94	3,854
Union	7,999	5,868	249	162	14,278
Total	104,980	67.048	8,427	1,952	182,407

#### WORK LOCATIONS

## COMMUTING BETWEEN NEW YORK AND NEW JERSEY<sup>1</sup> PORTIONS OF NEW YORK SCA, 1970–NEW YORK TO NEW JERSEY

## WORK LOCATIONS

Area of Residence	Newark <sup>2</sup> SMSA	Bergen	Passaic	Hudson	Middlesex	Total
New York City	25,546	9,600	7,096	24,272	4,216	70,730
Nassau County	3,851	1,974	1,556	978		8,359
Rockland County	970	4,284	546	232		6,032
Suffolk County	1,666	719	514	280	246	3,425
Westchester County	1,387			525		1,912
Total	33,420	16,577	9,712	26,287	4,462	90,458

<sup>1</sup> Somerset County is not included because it did not appear as a major work location for any of the N.Y. Counties.

<sup>2</sup> Essex, Morris and Union Counties.

County, traditionally just a seashore resort area, led the way with a 93 percent gain in population over the past decade. Not only has the population increased in numerical terms but also the quality of the work force has expanded through increased educational and vocational training.

## A Break With Tradition

Greater labor force mobility has been synonymous with dynamic growth and the dispersal of people and job opportunities throughout the State. The dynamic interlocking processes of new plant location and new housing development has continually and constantly altered points of origin and destination. New Jersey workers in 1970, no longer tied to the traditionally established patterns, traveled longer distances to reach their jobs. Census data indicate that 35% of the labor force in 1970 as opposed to 31% in 1960 crossed county lines to reach their place of employment. In actual numbers this represents an increased mobility of 246,503 workers.

Following this trend closely has been the relative decline in central cities as places of employment. The old core cities such as Newark, Jersey City, Trenton, Camden, Atlantic City and Hoboken are no longer the meccas of job seekers that they once were. All have suffered large declines in population. In 1960, for example, over a quarter of all workers living in the threecounty Newark Metropolitan area held jobs in the City of Newark. By 1970, however, less than 19% were employed in the city. The percentage of the Hudson County labor force finding employment in Jersey City dropped from 28% to 23% over the same time period. Atlantic City, which provided jobs for almost half of its county's residents in 1960, had only about a third in 1970.

With the State's residents and industries spreading out from the cities, umbilical cords

between New Jersey and its dominating neighbors of New York and Pennsylvania became more reciprocal. New Jersey in 1970, as the seventh largest producer of industrial output in the nation, had a substantial varied, diversified manufacturing and economic base. Thus, New Jersey not only continues to send a portion of its residents out of State for jobs but also provides a continuing number of opportunities for those who live in neighboring states. While the traffic continues to flow more heavily out of state during the morning rush hour, commutation into New Jersey has risen much more substantially than outcommutation. (See Table 5-1.) In 1960, for every three New Jersey residents who commuted to work in the New York City or Greater Philadelphia areas there was only one of the latter residents who commuted to New Jersey. This 3 to 1 ratio declined to 2 to 1. (See Tables 5-2 and 5-3 for detailed breakdown.)

#### TABLE 5-3

## COMMUTING BETWEEN PENNSYLVANIA AND NEW JERSEY PORTIONS OF PHILADELPHIA SMSA, 1970–NEW JERSEY TO PENNSYLVANIA WORK LOCATION

County of	Phila.	Rest of	Delaware	Montgomery	Bucks	Chester	Total
Residence	CBD	Phila.	Co.	Co.	Co.	Co.	
Burlington	2,580	12,425	384	1,152	2,358	119	19,018
Camden	8,289	29,827	1,690	1,690	627	271	42,394
Gloucester	2,003	8,851	707	379	152	137	12,229
Total	12,872	51,103	2,781	3,221	3,137	527	73,641

## COMMUTING BETWEEN PENNSYLVANIA AND NEW JERSEY PORTIONS OF PHILADELPHIA SMSA, 1970–PENNSYLVANIA TO NEW JERSEY

WORK LOCATION

County of Residence	Burlington	Camden	Gloucester	Total
Philadelphia	4,126	12,266	2,236	18,628
Delaware	1,215	3,641	951	5,807
Montgomery	1,493	2,850	806	5,149
Bucks	2,179	2,101	538	4,818
Chester	633	1,472	609	2,714
Total	9,646	22,330	5,140	37,116

Every change brings about its own complications, placing in most cases additional burdens on an inflexible, outmoded public transportation system. The situation is compounded and intensified when other means of transportation are sought, specifically when the automobile is brought into play. Longer and more diffused work trips have thus resulted in a greater reliance on the automobile. Back in the year 1960, there were probably plenty of people who, while sitting in a rush hour traffic jam wondered "How many more cars could possibly jam the roads?" Increased auto traffic, however, has brought with it an improvement to the State's highway system. According to the 1970 Census, the numerical increase for the past decade was 674,561 in the number of people driving to work or riding as passengers in a private automobile. That number is presumably still on the rise. Since the Census, if the number of new passenger cars registered in the State can be used as a guide, the increase has risen by 320,000. Today, we estimate that three out of every four workers in the State get to their jobs either as drivers or passengers in private automobiles.

The Census data also show that most of the increase in driving resulted from an expanding labor force although some riders of public transportation have been lured away. Bus travel suffered substantially during the sixties, with the number of riders dropping by about 50,000, averaging in total to less than 300,000. Working at home also became less popular, with a decrease of almost 38,000. The other categories, claiming a relatively smaller percentage of the total transportation picture showed slight increases. The railroad/subway category inched up to over 102,000 in 1970. Environmentalists and health buffs will be pleased to note that walking to work is on the increase throughout the State. Residents using only shoe leather to reach their jobs, numbered over 223,000, slightly higher than the number of walkers in 1960. (See Table 5-4 for a breakdown by mode of travel.)

#### From Mountains High to Ocean Wide

New Jersey's counties almost universally followed the statewide pattern of increased reliance on automobiles and outcommutation. (See Map.) However, as would be expected, public transportation was able to hold its own in the most densely populated areas of the State. Here workers could find a concentration of employment opportunities and a greater availability of public transit facilities. In Hudson County, for instance, less than half the labor force used pri-

	Number o	of Workers	Percent of Labor Force <sup>1</sup>		
	1970	1960	1970	1960	
Private Automobile, Driver or Passenger	2,105,255	1,430,694	74.1	64.4	
Bus or Streetcar	299,316	348,278	10.5	15.7	
Railroad or Subway	102,329	93,162	3.6	4.2	
Walked Only	223,015	212,839	7.9	9.6	
Worked at Home	56,494	93,517	2.0	4.2	
Other	53,136	41,229	1.9	1.9	
Not Reported	0	120,184			
Total	2,839,545	2,339,903	100.0	100.0	

TABLE 5-4MODE OF TRAVEL TO WORK OF NEW JERSEY LABOR FORCE1970 and 1960

<sup>1</sup> Of those workers reporting mode of travel.



vate autos to get to work. Cumberland County is the other extreme where more than six out of every seven persons drove to work or were passengers in private cars.

Bergen County was the lone exception to the general trend in increased outcommutation and registered a fairly substantial decline. Bergen historically has been comprised of a number of affluent so-called "bedroom" communities with workers traveling daily to Manhattan, Newark and other employment centers in the Metropolitan area. During the sixties, labor force growth was outstripped by a rapid expansion in the number of local jobs and as a consequence a greater percentage of workers found employment within the county. In addition to industrial expansion, Bergen also had a sharp rise in nonfactory jobs, including the relocation of large office and corporate headquarters that moved in from New York and other areas.

Somerset became the county with the greatest percentage of outcommuters in 1970. Almost half the resident workers traveled to jobs beyond the county borders, most to nearby Middlesex and Union. Both Camden and Gloucester, linked economically to Philadelphia, also fall into the group with a high level of outcommuting, as did Sussex and Hunterdon. Mainly because of the lack of a large industrial base, workers crossed over to neighboring areas—from Sussex to Morris, and from Hunterdon to Somerset and Mercer.

Passaic, Hudson, Union and Morris generally followed the statewide averages for commuting patterns. In these counties the attraction of jobs in neighboring industrialized areas was balanced by a sizable number of job opportunities within their own county lines; Burlington, Ocean, Monmouth and Warren also fell in this middle group. Outcommuting increased sharply during the 1960's in Ocean County. Ocean and Monmouth were two of the fastest growing counties in New Jersey during the decade. In these counties, the new arrivals were oriented toward the job market in North Jersey and New York. A substantial amount of the commutation in Warren County moved across the Delaware to jobs in Pennsylvania.

Essex County had a higher than average share of people working locally despite its proximity to New York City and the fact that it is completely surrounded by highly industrialized areas. This could be attributed to the large number of jobs in Newark and other county industrial employment centers and the fact that Essex has large pockets of low-income population who traditionally travel short distances to places of employment. The Mercer County labor force also worked mostly at local jobs. Fairly distant from both New York and Philadelphia, Mercer has a substantial industrial base of its own and is the center of State government employment.

The rest of the counties showing little outcommuting—Cumberland, Atlantic, Cape May and Salem all lie together in the southernmost part of the State. Although each of the counties paralleled the Statewide trend of increasing mobility, the relative remoteness of the area from large developed heavy industrial centers still has made outcommuting unattractive in most cases. Cumberland County continued to remain in 1970 the most self-contained labor market in the State, with almost nine out of ten of its workers staying "home" to work.

#### What of the Future?

The dispersion of people and jobs witnessed over the past few decades is likely to continue throughout the seventies although perhaps at a slower rate, as population growth is less spectacular. The social and economic factors at work in the past that have helped to bring about this dispersion are still present today. Continuing development albeit in concert with a growing respect for the environment can also be expected throughout the State.

Whether or not the increasing reliance on private cars for commuting and the distances traveled between home and job will continue to rise is not as clear. Certainly, job dispersion and economic growth has helped to foster this, but has had favorable effects as well-not everyone commutes in the same direction. The overwhelming dependence on central business districts has moderated. Suburban housing developments, likewise, can and do provide a trained labor supply for many nearby shopping centers and industrial parks.

Dispersion, it appears from the New Jersey case, does not necessarily lower the number of cars on the road. It has caused them to increase. Certainly, there is a limit both to the number of cars that can physically move on the highways and in the frustration level of the average commuter. In some cases, both this physical and mental limit may have been reached. It is at this point that the footloose commuter may be willing to be lured from his own car to join car pools, combination park and ride systems, more flexible and convenient public transportation, and once and for all leave the driving to others.

Who knows what the future holds for the commuter with new bridges going up over the Delaware, mass transportation expansion in the offing and the lure of sophisticated vehicles like the Stol airplane, helicopters and hydrofoil ferries? One thing is certain—New Jersey's work force is extremely mobile and on the move.

#### **Technical Note**

"Journey to Work" data have become much sought after statistics over the last decade. In 1960, the U.S. Department of Commerce, Bureau of Census, added a series of questions to the sample schedule for every fourth household in the nation directed to persons aged 14 years old and over. The precoded questionnaire identified the place of residence.

With the additional information gathered from Questions P28 a, b, c, and P29, information was obtained as to the work location of the respondent and the principal means of transportation used. The data obtained thus provided a base for estimating the "Journey to Work" patterns of the entire working population for 1960.

The 1970 Census schedule retained the "Journey to Work" question and has provided comparable data for broad base analysis. The 1970 data were obtained from a 15% sample as compared to the 25% in 1960. A change on the Census schedule also found the question listed as 29 a, b, c and d.

Data used in this report were obtained from the Fourth Count Summary Tapes issued by the U.S. Department of Commerce, Bureau of Census. Through special programming, the Office of Business Economics extracted the data records that corresponded to Question 29. The record used is listed in Part II of the "1970 Census Users Guide," as Fourth Count (Pop.) Items 35 and 36. The record generated data for the first 20 places of work defined for each county and for all of New Jersey's 567 municipalities. A Master State Summary Table also was prepared. Data for Delaware, Pennsylvania and New York were obtained on an exchange basis from the appropriate State agency in each of the states and used for analysis of "Incommutation." A full New Jersey report including data locations for each of the State's 567 municipalities is planned for release in late Spring of 1973.

#### TABLE 5-6

#### COUNTY COMMUTER PATTERNS FOR NEW JERSEY WORK LOCATION DISTRIBUTION OF LABOR FORCE\* BY WORKPLACE LOCATION

County of Residence	Atlantic	Bergen	Burlington	Camden	Cape May	Cumberland	Essex	Gloucester	Hudson	Hunterdon	Mercer	Middlesex	Monmouth	Morris	Ocean	Passaic	Salem	Somerset	Sussex	Union	Warren	N.Y. State	Pennsylvania	Delaware	State Total
Atlantic	50,023		554	1,705	1,005	2,049		506			128				170		137						1,918	57	58,252
Bergen		204,054					17,032		21,539			1,439		2,454		28,861				4,716		75,402			355,497
Burlington	768		74,316	13,358		407		1,029			6,945	510	192		346		124						19,018	111	117,124
Camden	1,579		7, <del>94</del> 8	93,595		616		5,110			2,780						665						42,394	308	154,995
Cape May	1,265		47	181	14,411	461		7					•••••		67		38						664	29	17,170
Cumberland.	970		210	856	207	37,038		713			76						1,035						897	214	42,216
Essex		8,789					233,779		15,532			4,619		8,304		9,662		817		28,490		19,254			329,246
Gloucester	660		693	9,489	68	1,917		<b>30,490</b>			282			·			1,522						12,229	377	57,727
Hudson		14,597		••••			17,024		140,444			1,393		749		2,643				5,536		38,338			220,724
Hunterdon	••••	••••	281				462		74	15,068	1,725	785	••••	600		••••		3,261		763	774	721	822		25,083
Mercer		87	2,600	8572			••••		73	416	92,766	3,880	642			44	· • • •	874	••••	<i>.</i>		2,086	4,067		108,392
Middlesex		4,1643	2451				15,009		5,068		2,900	139,523	3,153	1,414				7,189		27,017		13,455	198	••••	219,335
Monmouth		877	354	902			6,035		2,499		1,909	8,875	104,777	319	3,703	473				4,123		13,439	254	• • • •	147,727
Morris		4,793					17,014		2,300	128		1,045		88,132		8,564		1,414	663	7,775	531	9,792			142,151
Ocean	366	5223	1,496	225			1,914	13	869		1,080	1,656	8,043		38,108					1,6235		2,083	560		58,558
Passaic		29,151					12,723		2,868			718		3,762	••••	108,907			145	1,996		8,543			168,813
Salem	132		82	347		1,893		1,007			10					••••	16,026		• • • •			••••	647	1,546	21,690
Somerset	••••	623	351				2,972		671	767	1,899	12,319		2,268		432		39,654		9,999		3,854	96		75,589
Sussex		713	••••				854		250					6,172		1,198		62	15,260	147	420	1,460	46		26,582
Union		2,051	• • • •				33,945		6,542		310	11,288		3,514		1,422		3,562		134,821		14,278			211,788
Warren			6411				24 <del>9</del>		138	1,122	74			1,8694					512		17,733	198	3,975		26,511
STATE	55,763	270.421	89,249	120,703	15,691	44,381	359,012	38,875	198,867	17,501	112,884	188,050	116,807	119,557	42,394	162,206	19,547	56,833	16,580	227,006	19,458	202,903	87,785	2,642	2,585,115

<sup>1</sup> Reported as working in either Burlington, Camden or Gloucester Counties and allocated entirely to Burlington County. <sup>2</sup> Reported as working in either Camden or Gloucester Counties and allocated entirely to Camden County.

4 Reported as working in either Morris or Union Counties and allocated entirely to Morris.

5 Reported as working in either Morris or Union Counties and allocated entirely to Union.

<sup>3</sup> Reported as working in either Bergen or Passaic Counties and allocated entirely to Bergen.

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\* NOTE: Totals do not equal total labor force for New Jersey because only major work locations are shown for each county.

Compiled by Office of Business Economics, March 7, 1973.

# VI INDUSTRY STUDY:

## BUSINESS SERVICES IN NEW JERSEY\*

## Introduction:

New Jersey ECONOMIC INDICATORS frequently calls our attention to the fact that services activity in the state is on the rise, taking up a considerable portion of the slack created by downtrends in manufacturing jobs. Unfortunately, these cues have not brought forth any response from economists concerned with the regional economy. The nature and significance of New Jersey's inexorable transformation into a "service economy" has been ignored. Meanwhile, planners and industrial development promoters continue to focus their efforts on the industrial "economic base." This chapter is a first effort to fill the gap in analysis and policy concerning this aspect of our state and regional economy.

Business services are the focus of attention for several reasons. First, the overall growth of these activities has been the fastest among the servicesfor-profit industries and, in terms of income generation, at least as rapid as that of Health and Government Services.

Second, the few earlier treatments of this industry<sup>1</sup> indicated that it was very much an

## FIGURE 6-1 SERVICES INDUSTRY GROWTH UNITED STATES (Percent)

		(2)	
	National Incom (1950-70)	Employment (1960-70)	
Personal Services	150.0	63.0	- 31.7
Miscellaneous Business Services	723.5	174.5	112.8
Medical and Health	588.6	183.2	439.7
Government	. 436.0	139.1	310.7

Source: (1) U.S. STATISTICAL ABSTRACT, 1972, Table No. 518, p. 318.

Source: (2) U.S. EMPLOYMENT AND EARNINGS, 1939-71, U.S. Department of Labor Bulletin No. 1312-8, 1971.

\* Net value added-measured by factor costs in the industry.

\* Prepared by Peter Bearse, Office of Economic Policy. John McManus, Office of Economic Policy helped in the preparation of the data and many of the figures. "urban" industry (though without clarifying the nature of its urban orientation). Lastly, business services are intermediate services. As such, they may have a special influence on the growth of a region's economy. Eighty-three percent of the industry's output is sold to other businesses and only one-tenth as much to Households.

### The National Context:

Employment in "Miscellaneous Business Services" (Hereafter 'MBS') grew nationally at an annual average compound rate of 7.7 percent per annum (p.a.) from 1958-1970.<sup>2</sup> "National income originating" in MBS grew about 11 percent p.a. from 1955-1970.<sup>3</sup> The conventionally defined "Services" sector expanded its share of "national income originating" from 9 to 13 percent, 1950-1970 and MBS from 0.70 to 1.76 percent.<sup>4</sup> Though growing rapidly, these shares are still small and by themselves do not adequately measure the strategic significance of these industries in a regional economy.

Business services constitute a highly articulated "complex" of activities which are interrelated via market and other dynamic linkages. The boundaries of this complex are not quite as well-defined as those for other industrial complexes, such as metalworking or petrochemicals. Greenfield (1966)<sup>5</sup>, for instance, defines a "producer services" complex which is much more inclusive than the activities we are discussing here. "Producer services" encompass parts of transportation and communication, financial, government, and non-profit services, and now generates about 26 percent of national income. The various parts of this complex not only provide intermediate inputs to nearly all other industries but to each other as well. This means that, in terms of conventional multiplier effects alone, growth of producer services can be a powerful stimulus to a regional economy. Many economists are convinced that this service-base, not the industrial base, is the key to the long-run growth and development of an urban economy.

The Urban Institute has defined a "Business Services" complex based on statistical analysis of county and urban-area employment structures and trends.<sup>6</sup> It is defined as those services which tend to agglomerate in similar locations. Thus defined, the complex includes: commercial printing, communication, banking, security and commodity brokers, insurance carriers, miscellaneous business services, legal services, non-profit membership organizations, and miscellaneous services. Of course, the most straightforward glimpse at the interdependence of various economic activities is provided by an input/output table. Data derived from the 1963 table<sup>7</sup> are shown below.

The significance of business services as an intermediate industry is immediately clear, especially in contrast to personal services. For the combined "Business Services" category which includes Professional Services, intermediate output was 78.4 percent of total output, compared to 18 percent for Personal Services. For MBS alone this figure is even higher—83 percent. Industries which purchase at least one billion dol-

## FIGURE 6-2 INTERMEDIATE PURCHASES AND SALES BY SERVICE INDUSTRIES, 1963 (As a percent of an Industry's total output)

	Personal Services	Business Services	Miscellaneous Professional Services	Advertising
INPUT	36.0%	35.8%	28.8%	90.7%
OUTPUT	18.0%	78.4%	72.2%	98.7%

lars of MBS output are: Printing and publishing, radio and television, real-estate, and MBS itself. MBS industries also purchase large amounts of output of these same industries as inputs to their own activities, including one billion dollars or more of output from the trade and financial sectors and MBS itself. What input-output tables show very clearly is the large degree of interdependence among the set of MBS industries and between these and other industries within the larger "producer services" sector. Also, when one looks at final rather than intermediate demand, what is most striking is the large and rising percent of MBS final demand sales which are purchased by all levels of government (46 percent as of 1963). If, appropriately, we view government as an intermediate activity rather than simply a source of final demand, then the intermediate share of MBS output comes to about 91 percent. MBS activities appear to be one of the important links between the public and private sectors.

#### The Regional Context:

The state of New Jersey is not an economic region. It has often been described as a corridor between two metropoli. Similarly, as a working hypothesis, we treat the state as a dipole—its northern half oriented to New York City and its southern half to Philadelphia. The validity of this hypothesis will be examined. Thus two regions are defined: one comprising all New York State, Fairfield County, Connecticut and the 10 urban counties of North Jersey (including Mercer); the other comprising the Philadelphia metropolitan area, the South Jersey Counties, and the Wilmington metropolitan area. Both regions are relatively self-contained in the sense that they include the commuting sheds of both New York and Philadelphia.

The annual average rates of change of employment in "business services"8 are shown below for the U.S., N.J., the two regions and their N.J. portions (See Figure 6-3). This highly aggregate view suggests a diffusion pattern for these industries quite similar to that observed for manufacturing and other industries; namely, a more rapid rate of growth outside of the northeast and in areas within the northeast which are away from the areas of initial industry concentration. The growth rate of employment in business services in New Jersey has been greater than that for New York State but similar to that for the United States over the period 1951-1971. Rates of growth have been higher for Philadelphia City than for New York City and those for New Jersey counties peripheral to the former correspondingly higher than those peripheral to

1951 - 1971								
	N.J.	N.N.J. <sup>2</sup>	S.N.J. <sup>3</sup>	N.Y. State + N.N.J.	Phila. <sup>4</sup> S.M.S.A. + S.N.J.	N.Y. CITY	Phila. CITY	U.S.
1951-1971	7.4	8.4	6.6	5.4	6.7	3.8	4.7	7.1
1953-19695	6.9	6.6	10.1	5.8	7.2	4.3	7.8,	6.0
1956-1970	7.4	7.0	10.2	5.9	8.1	4.6	5.4	5.2

FIGURE 6-3

BUSINESS SERVICES EMPLOYM	IENT <sup>1</sup>	
ANNUAL AVERAGE (Compound) RATES OF	INCREASE	(Percent)
1951 - 1971		. ,

<sup>1</sup> Source: COUNTY BUSINESS PATTERNS, 1951, 1956, 1971; Business Services includes SIC 73 + 89.

<sup>2</sup> Includes: Bergen, Essex, Hudson, Mercer, Middlesex, Monmouth, Morris, Passaic, Somerset, and Union Counties-N.J.

3 Includes: Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Ocean, and Salem Counties-N.J.

4 Includes: Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties-Pa.

<sup>5</sup> Both years containing the peak of a business cycle, according to The National Bureau of Economic Research.

the latter. The rates for South Jersey counties (SNJ) are significantly different from those for North Jersey counties (NNJ). The former are more closely related to the Philadelphia than the New York rates of change. Thus the dipole analogy appears to be reasonable.

The pattern of growth rates suggests some questions about the locational pattern of growth in business services. Is it a hierarchical process of diffusion? In other words, does growth spread from the "center" (New York City) in a stepwise fashion—to other large cities, to suburbs, to smaller centers and then to rural areas? Or does it follow a less determinate process, influenced mainly by initial degrees of industry concentration and broader locational categories? The first we will call our "central-place" hypothesis; the second our "rank-size" hypothesis. We want to examine these. First, let us take stock of some economic models which might help us explain our observations.

## Some Alternative Frameworks for Industry Analysis

When one is trying to examine the simultaneous growth and spatial arrangement of a set of economic activities, only a few applicable models come to mind. In the case of services the number is fewer still. In fact, there is only one which purports to explain the spatial organization of services activities; that is, the Christaller/Losch (C/L) "central-place" model. It cannot be used as is, however, because it applies to consumer and not business services. In simplest terms, the model describes a regular, hierarchical spatial pattern of industries and urban areas. Such a pattern would arise if, simultaneously, all businesses and households were assigned "optimum" locations-those which perfectly satisfy a measurable goal, such as: minimize transportation costs or: minimize the number of urban centers needed for efficient provision of goods and services. Not only are the underlying assumptions unreal but the supposed optimality of the pattern becomes highly doubtful if intermediate goods or services are included. Thus the C/L model per se turns out to have little or no content from a policy perspective. Its main concept, however, is intuitively appealing and should be explored further. That is, that the characteristics of both urban areas and services industries are such that these industries' locations form some sort of hierarchical arrangement.

Those familiar with the use of scaling techniques may recognize that the Christaller pattern is theoretically equivalent to a one-dimensional Gutman scale.9 This scale arranges a set of activities into a simple hierarchy, or ranking, based on their frequency of occurrence among the various locations throughout a region. The lowest ranking activity is the most common one which appears in all or nearly all places. The highest ranking activity appears in one or very few places. Business services industries do form simple scales. Three alternative scales were developed and found to be statistically significant. At their apex is either communication, financial or administrative services centered in Manhattan. (See Figure 6-4.) Research, other administrative, or subsidiary "communications" type activities (such as advertising, mailing, TV) come next in the hierarchy, and these are slightly decentralized. Most of the scale rankings make intuitive sense; some are curious. 'Building services' rank higher than 'Engineering and Architectural Services,' 'Equipment rental' higher than 'Protective Services' or 'Temporary Help' and the latter higher in turn than 'Business Consulting.' These observations suggest, though by no means prove, that services which involve more physical (property) capital are more centralized than those which rely on "human capital" (highly trained people) and, in turn, those which require relatively more embodied human capital, such as consulting services, are more decentralized than those which require less.

There is a well-developed body of theory concerning certain frequency distributions which can be used to analyze the distribution of industry within a region. These distributions are highly skew; that is, they are not symmetric about the peak and they have long "tails" because a few observations possess very high
Rank	Scale (1)	Scale (2)	Scale (3)
1	Movie Production	Administrative Units (FIRE)	Transportation Services
2	Miscellaneous Services, n.e.c.	Administrative Units (C)	Motion Pictures
3	Non-Profit Research	Commercial Testing Labs	Repair Services
4	Advertising	Administrative Units (TCU)	Public Utilities
5	Employment Agencies	Administrative Units (S)	Miscellaneous Business Services
6	Medical Labs	Research and Development Labs	Educational Services
7	Business Associations	Equipment Rental	Miscellaneous Svs Services
8	Building Services	Administrative Units (WT)	Communication
9	Engineering and Architectural Services	Protective– Detective Services	Entertainment, n.e.c.
10	Labor Organizations	Temporary Help	Auto Repair
11	Miscellaneous Business Services, n.e.c.	Business Consulting	Legal Services
12	Health Services, n.e.c.	Administrative Units (RT)	Personal Services

#### FIGURE 6-4

## THREE GUTMAN SCALES FOR BUSINESS AND RELATED SERVICES

Statistics:

Coefficient of Reproducibility (1) 0.95; (2) 0.93; (3) = 0.94 Coefficient of Scalability (1) 0.85; (2) 0.74; (3) = 0.74 Coefficient of Reproducibility higher than 0.9 is considered to indicate a valid scale. Abbreviations: n.e.c. = not elsewhere classified FIRE = Finance, Insurance, Real Estate C = Construction TCU = Transport, Communications, Utilities Services

- - Construct
     Transpo
     Services

  - S ⇒ Wholesale Trade
     ⇒ Retail Trade WT
  - RT

Source: Derived from 1970 County Business Patterns data (73 observations) by Peter Bearse.

values. (For examples, see Figure 6-10). The degree of "skewness" is a good indicator of the extent to which industry is concentrated in a few cities or areas. These distributions are interesting and useful for the following reasons: (1) The frequency distributions of business services employment among counties or cities are of this type; (2) They are compatible with some of the "central-place" patterns discussed above;10 and (3) The processes which generate them are simpler, requiring weaker assumptions, than those which underlie "central-place" or conventional industry-location models. Figure 6-5 shows double-logarithmic plots for the cumulative frequency distributions of business services employment among counties of the New York/North Jersey region. Though one's first impression from the data is one of great changes in the distribution of these activities, the plots show surprising stability over the period. They also subdivide the region into sets of counties which have certain similarities or spatial relationships.

In statistical terminology, these distributions have significantly higher measures of skewness, kurtosis (peakedness) and variance than normal or other symmetric distributions. A good indicator of the spread of business service activities is the downward trend of these measures for the county distribution of various characteristics of the services industry over the region. In addition to employment and receipts, these characteristics include: employees per establishment, average payrolls per employee, receipts per employee and establishments with payroll. The distribution of percent changes in most of these characteristics is also highly skew. Thus the overall picture provided by the distributional perspective is one of significant change (spread) but also relative stability within an unmistakably hierarchical spatial arrangement.

The county and city distributions of some other industries provide a useful contrast. The distribution of manufacturing and personal services employment is much less concentrated than that for business services. The distribution of larger manufacturing units is less concentrated than that for smaller units; whereas the contrary is true for the distribution of larger MBS units vis-a-vis smaller. There is only a small degree of variation among counties in their shares of employment in manufacturing, whereas the share of business services employment in total services is significantly larger for the larger, more urban counties. The county variation of manufacturing productivity,<sup>11</sup> however, is much greater than that of manufacturing employment and the variance has risen since 1951.

Economic base theory is often used to forecast the growth of services activity in a region. This theory divides the industries of a region into two groups: "basic" and "non-basic." The basic industries are those that export their product to markets outside the region. The non-basic sector, viewed as a set of "residentiary" or local "population-serving" activities, is usually defined to include services. This framework is equivalent to a two-sector input-output model and is just about as appropriate for discussing the economic development of an area. It is based on the assumption that the external-market-oriented, goods-producing industries are the ones which generate income, wealth, and development for a region. Many urban economists dispute this view (e.g., Thompson, 1961; Artle, 1970; Meier, 1962 et seq.12). They say that if one is concerned with the long-run development of an urban economy rather than predicting its short-run response to external impulses, it is the local, services-oriented sector which is more important. The diversification and efficiency of this sector is critical to the processes of adaptation, learning, communication, coordination, innovation, labor force specialization, and changes in business organization which underline development. These processes are precisely those embraced by the business services industry.

Thus one would not expect economic base theory to explain observations on business services employment. Our initial observations indicate that the growth and diversification of business services is less in areas where "basic" large-scale manufacturing predominates. For example, there are marked contrasts in this re-

## FIGURE 6-5



COUNTY DISTRIBUTION OF BUSINESS SERVICES\* EMPLOYMENT NEW YORK/NORTH NEW JERSEY REGION, 1951-1971 (73 Counties)

\* SIC 73 + SIC 89

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gard between the Buffalo and Syracuse, New York metropolitan areas and the Jersey City and Newark, New Jersey areas. Areas with high percentages of overall employment in manufacturing tend to attract lower shares of growth in services. We could also assume that larger business units of all kinds are more likely to be "basic." But we find that the correlation between percent changes in MBS employment and total business units declines with increasing sizeclass of the units in an area.

The business services industry cannot be assigned to either part of the economic-base dichotomy. A comparison of business and personal services is illustrative. The usual definition of a "residentiary" activity is that it is tied to a local market; that is, practically all variation in the level of the activity can be explained solely by reference to local population and income. Personal services is a residentiary industry. The variation of its employment density is largely explained by the variation of its population density. The rate of increase of personal services employment is largely (69%) dependent on the population growth rate whereas this factor explains very little (8.4%) of the variation in the percent growth of employment in business services. Furthermore, the relationship to changes in total employment or business establishments is positive in the case of business services employment but negative for personal services. Lastly, the distribution and growth of business services is dependent on aspects of the urban structure of a region which are not captured by simple measures of population size and density which suffice for personal services. These aspects are discussed further on.

The above contrast relies on an oversimplified dichotomy of its own. There are in fact several so-called "personal services" which, like business services, are neither residentiary or non-residentiary; for example, commercial laundries, photography studios, and linen supply (See Figure 6-9). The most striking feature of the services sector has been rapid diversification of activities over time and space. The basic failing of an economic base approach is its inability to handle this feature. Walter (1970)<sup>13</sup> has shown that an area's economy does not have to move much beyond the stage of "single enterprise" dominance before economic base concepts become inappropriate. A services-based model of the urban economy is sorely needed. Such a model is likely to be a selective synthesis of elements from the theories we have mentioned plus some others.

## Focus: Business Services Employment in New Jersey

The growth of business miscellaneous services in New Jersey has tended to keep pace with the trend for the U.S., though the pattern of annual rates of change has been quite different. Over the period 1951-71, New Jersey MBS (SIC 73) growth rates have been greater during the earlier and recent years and lesser during the in-between years. The New Jersey growth rate of employment in SIC 89 has been significantly higher than the U.S. and the state's share has been rising. This increase has been due to increases in all components of SIC 89-accounting, auditing, bookkeeping; non-profit research, and architectural-engineering firms. It may seem surprising that business services in SIC 73 have not fared better relative to the U.S. Figure 6-6 shows, via location quotients,14 New Jersey's relative position for the various business service industries. New Jersey has tended to improve its position relative to the Middle-Atlantic census region but the advantage of the region relative to the U.S. has declined, though it is still significant (All quotients above one except for "creditreporting and collection.") Again, SIC 89 is the exception. Location quotients have declined for advertising and "duplicating, mailing, stenographic services," and "miscellaneous" and have increased for "private employment agencies" and "services to buildings."

New Jersey is at a considerable disadvantage with regard to advertising, private employment agencies, and credit reporting and collection. This is understandable in view of the nearness of New York City. What is somewhat disturbing, however, is the tendency of the New Jersey quotients to decline since 1961, both relative to the region and the U.S. Also, 1970-1971 was the first year in almost 20 years to show absolute declines in the U.S. and the two regions which include New Jersey. Part of this may be due to the recession. A plot of U.S. business services employment, however, shows a consistent tendency for the industry's growth rate to decline. This is to be expected as an industry matures. This tendency has not yet been manifest in New Jersey, except perhaps for the MBS component. Business Services employment in New Jersey did not decline over 1970-1971, but the increase was less than 1 percent. These observations, in toto, suggest that it would be unrealistic to expect continued high rates of growth of business services employment without policy measures which favor such growth.

The middle-range of business service units (20-100 employees) have increased the fastest in New Jersey. A significant part of this growth is due to net in-migration of firms<sup>20</sup> from other areas, notably New York City. As of 1971, North Jersey counties had 19-21 percent of the NY/NNJ region's business service firms in all except the largest categories (250 and up). It might be worthwhile to identify the largest em-

#### FIGURE 6-6

LOCATION QUOTIENTS – BUSINESS SERVICES New Jersey vis-a-vis the U.S.

SIC No.		1951	1959	1962	1970/71
(73)	Miscellaneous Business		1 5550	1 5005	1.4461
	Services <sup>1</sup>		1.5573	1.5287	1.4461
	Miscellaneous Business	1 1154	1.0550	1 41/21	1 1107
	Services <sup>2</sup>	1.11/4	1.2550	1.41/1	1.1197
(89)	Miscellaneous Services	0.7000	0.7273	0.7976	0.9245
$(\dot{7}31)$	Advertising		0.5833	0.5000	0.5500
(732)	Credit Reporting and				
(102)	Collection		0.6667	0.6364	0.6667
(733)	Duplicating, Mailing,				
	Stenographic Services		1.7000	1.5455	1.2727
(734)	Building Services		1.0000	1.2759	1.1538
(736)	Private Employment				
(100)	Agencies		0.4000	0.8333	0.6667
(739)	Miscellaneous		1.6410	1.7830	1.2179

#### Middle-Atlantic<sup>3</sup> vis-a-vis the U.S.

SIC No.		1951	1959	1962	1970/71
(73)	"	0.7254	0.7318	1.0308	0.8785
(89)	"		0.6437	0.7053	0.8376
(731)	"		0.3256	0.2927	0.2973
(732)	"		0.8000	0.7778	0.8001
(733)	"		1.0000	0.8947	0.8235
(734)	"		0.7586	0.9487	0.9375
(736)	"		0.4000	0.7143	0.6001
(739)	**		1.1636	1.3404	0.9821

<sup>1</sup> Derived from EMPLOYMENT AND EARNINGS data; for which the most recent figures are 1970.

<sup>2</sup> This and all others from COUNTY BUSINESS PATTERNS data, for which the most recent are 1971.

<sup>3</sup> Region - States of N.Y., N.J. and Pennsylvania.

ploying units and see whether they can be induced to move to New Jersey.

The changing distribution of New Jersey's labor force provides additional perspective. Using Greenfield's definition of "producer services," we have estimated the state's labor force in these activities for 1950-1970. (See Figure 6-11) The expansion of the labor force in each of the categories has been rapid, and for several of them, more rapid over the recent decade than the earlier. These increases have also been more rapid than the expansion of the labor force as a whole. So producer services' share of the labor force has risen from 13 to 15 percent. The most significant expansion has clearly been in the categories we have previously labelled "business services," miscellaneous professional services, and government. New Jersey's evident ability to hold, attract and expand its resident "producer services" labor force suggests some optimism regarding its ability to attract new investment in corresponding types of activities.

The rates of growth of business services employment vary widely among New Jersey counties and cities. Over the period 1951-1971 the rates of growth in the most urban counties have been slower, on the average, while those in suburban counties have been higher. (See Figure 6-7). The rates in rural counties vary greatly from low to high. Year-to-year rates for urban counties are significantly more stable than those

## FIGURE 6-7

BUSINESS SERVICES EMPLOYMENT<sup>1</sup> ANNUAL AVERAGE RATES OF INCREASE, MEAN RATE OF INCREASE AND COEFFICIENT OF VARIATION<sup>2</sup>

County	Annual Average (Compound) Rates of Increase (Percent) 1951-1970	Mean Rates of Increase (Percent) 1951-1970	Coefficient of Variation
Atlantic	9.6	11.7	122.273
Bergen	14.6	13.8	96.821
Burlington	18.1	<b>24.4</b>	147.359
Camden	11.2	12.0	107.428
Cape May	6.9	9.0	170.700
Cumberland	14.5	19.9	140.936
Essex	5.9	5.6	101.567
Gloucester	7.4	14.4	<b>2</b> 17.749
Hudson	5.6	6.1	165.998
Hunterdon	13.3	18.1	144.680
Mercer	10.1	10.7	103.235
Middlesex	12.7	13.3	78.082
Monmouth	11.3	15.2	231.946
Morris	7.4	9.6	213.922
Ocean	11.7	14.3	147.950
Passaic	8.9	8.4	84.631
Salem	7.8	8.5	347.075
Somerset	12.1	13.0	278.504
Sussex	21.1	21.0	110.061
Union	1.6	5.4	322.476
Warren	7.7	9.5	252.919

<sup>1</sup> Source: COUNTY BUSINESS PATTERNS, 1951-1971; Business Services Employment includes SIC 73 + 89.

<sup>2</sup> Coefficient of Variation = (Standard Deviation/Mean) x 100.

for other counties while those for rural counties are extremely variable. Referring to our larger sample, it is also evident that growth rates for this industry tend to be larger if a county contains a large university or government complex. Counties with an urban center which is both old and small tend to suffer from both low growth rates and high rate variability. Perhaps the only example in New Jersey is Union County, though there are several examples in upstate New York.

MBS employment has been growing in most New Jersey cities but at a rate significantly slower than for the state as a whole. Thus, from 1948-1967 the share of this employment in the state's older central cities was cut in half—from 70 percent to about 36 percent. Meanwhile, towns and cities in the faster growing suburban counties, such as Bloomfield, Clifton, and Hackensack, have been increasing their share. There are few exceptions to these trends. MBS employment shares in Elizabeth and Trenton rebounded (1963-1967); Jersey City's share has not declined much. Nevertheless, even in New Jersey MBS remains a predominantly urban industry, with 45 percent of its employment located in the state's larger cities and towns as of 1967.

Newark is a case in itself. Its share of MBS employment has declined from almost 40 percent in 1948 to about 19 percent as of 1967. Unpublished "covered employment" data<sup>15</sup> now indicate that this employment has begun to decline absolutely as well as relatively after increasing steadily from 1948 to 1970. Since 1948 Newark's MBS specialization and main source of employment growth has been the less sophisticated services, principally services to buildings and detective-protective services. Many of the more sophisticated services, such as business consulting, are included in the catch-all "not elsewhere included" or "other" categories where employment levels have declined. In this regard, Newark may suffer from two disadvantages: (1) contiguity to Manhattan; and (2) the exodus of its professional, technical and best educated labor force. Nevertheless, the expansion of MBS employment in Newark has been a contributor to the overall expansion of services employment in Newark and Essex County. A decline of this industry, in conjunction with the out-migration of related activities in finance and

		RECEIPTS <sup>1</sup>					EMPLOYMENT <sup>2</sup>				
	Shar U	Share of U.S.		Share of Region		Share of U.S.		Share of Region			
	1948	1967	1948	1967	1951	1971	1951	1971			
New York City	30.0	25.0	84.8	79.6	21.8	11.6	76.4	57.4			
NY/NNJ Region	35.3	31.4	100.0	100.0	28.6	20.2	100.0	100.0			
Philadelphia	2.5	2.3	91.3	65.6	2.8	1.8	85.7	58.1			
Philadelphia- SNJ Region	2.9	2.6	100.0	100.0	3.3	3.0	100.0	100.0			

FIGURE 6-8 GEOGRAPHIC CONCENTRATION OF BUSINESS SERVICES

<sup>1</sup> Receipts for SIC 73.

Source: See Footnote 22.

<sup>&</sup>lt;sup>2</sup> Employment for SIC 73 and 89.

insurance, may seriously effect the long-run economic prospects of the city.

## Observations and Conclusions from a Larger Sample of Counties:

Some statistical observations were made on the 73-county sample which covers the NY/NNJ region as defined above. Most of the data used were for the beginning and end points of a 20-year interval; 1948-1967 or 1951-1971.<sup>16</sup> At the beginning of this period, business services employment was extremely concentrated in New York City, especially in Manhattan, and receipts even more so, as shown in Figure 6-8. The changing location of business services can be viewed as a process of spread, or diffusion, of these activities from New York City to other parts of the region.

Let us look at five key features of this process:

(i) Initial Advantage-To what extent is the diffusion of business services over the region conditioned by initial industry location patterns (as of 1951)? The significance of several different indicators of a county's "initial advantage" for the growth of business services was tested via simple correlations of these measures with the rate of growth of employment in business services. These indicators included: employment density in business services; number of FORTUNE-500 corporate units; manufacturing productivity; share of county employment in manufacturing, transport-communicationsutilities; finance-insurance-real estate and services; age of largest city; logarithm of size of largest city; number of employing units of size 500 or larger; and number of manufacturing units with 100 employees or more. Among all these only manufacturing productivity and age of central city proved to be significant at the 5 percent level, with a positive association in both cases. The "age" factor will be discussed further on, along with other dimensions of "urbanization." The lack of association with the initial distribution of corporate units is somewhat surprising and requires further analysis. Others have suggested that the locational concentration of corporate units is somewhat dependent on the existence of a variety of business services. The results do not contradict this but simply raise the question whether there is an inverse line of influence from corporate units to business service units. The following is offered as a tentative explanation. Large corporate offices may be somewhat self-contained; that is—perform most of their business services activities "in-house." Highly productive clusters of manufacturing plants, on the other hand, are likely to be quite specialized, in need of certain business services, and able to afford them.

The rate of growth and share of growth of business services employment is significantly and positively correlated with the base-year share of such employment. Thus the diffusion process is highly constrained by the initial location pattern.

(ii) Industry Composition-How do differences in industry structure among counties affect the share of total economic activity devoted to services and business services? It has often been observed that overspecialization of a local or regional economy in one type of industry inhibits its adoption of new, faster-growing activities when the older industry matures. Thus we find that the 1970 county employment shares in total services have a strong and significant negative correlation with both 1951 and 1970 shares in manufacturing, indicating that specialization in the latter does inhibit growth in the "newer" service-economy. The negative association is stronger now than it was 20 years ago. The share of county employment in business services also correlates negatively with share in manufacturing, though the relationship is less strong than for services as a whole. Finally, it is more true now than 20 years ago that counties which have relatively large amounts of one type of services employment also have relatively large amounts of other types. This may be an indication of greater interdependence among services industries.

(iii) Urbanization—What are the features of urban structure which most strongly influence the pattern of growth and spatial organization

#### FIGURE 6-9

		Percent Change		
BUSINESS SERVICES	1948	1954*	1963	1948-1963
Miscellaneous Business Services	67 62	 55	54 51	18.9 17.2
Duplicating, Mailing, Stenographic Services to Buildings	71 62	$\begin{array}{c} 65\\ 54\end{array}$	$54\\46$	24.1 26.1
PERSONAL SERVICES	1948	1954	1963	1948-1963
Personal Services	39		28	27.9
Barber Shops	27	23	16	40.8
Funeral Service and Crematories	25	21	16	34.9
Power Laundries, Family and Commercial	43	40	38	13.1
Industrial Laundries	62	61	46	25.3
Linen Supply	63	<b>58</b>	55	12.6
Diaper Service	57	54	53	7.4
Photographic Studios	47	44	41	12.5

## INDICES OF URBANIZATION—UNITED STATES BUSINESS AND PERSONAL SERVICES

\* From Duncan, O.D., op. cit. (footnote 1).

of business services? Among counties of the region, we find that the variation of employment levels in business services shows a significant positive correlation with population density and the size and age of the central city. A "market potential" index of urbanization<sup>17</sup> is also significant, indicating the importance of a county's nearness to metropolitan areas within the region. These initial observations suggest that business services activity depend on urban structure in a way which is quite different and more subtle than that for other activities. Since New Jersey's urban location and structure are somewhat unique, the nature of this relationship must be pursued further.

One of the most important dimensions of urbanization is the distribution of cities by population size. Using 1954 data, Duncan<sup>18</sup> analyzed the similarity of this distribution and the distribution of services industry receipts; i.e. how various services industries were arrayed along the urban size hierarchy. For comparison, earliest and latest years for which comparable data are available. The analysis employs an "index of urbanization"19 which simply measures the extent to which industry receipts are more concentrated in larger urban places than is population. As expected, business services are much more an urban industry than personal services. Both are becoming less concentrated in the larger cities. (See Figure 6-9) As mentioned above the two classifications overlap somewhat. Some so-called "personal" services-Power Laundries, Other Laundries, Linen Supply and Diaper Services-all possess indices at least as high as many business services. Comparisons over the years indicate that the ranking of these industries according to degree of urban concentration tends to be maintained. The only significant shift was the rank of "Diaper Services," which remained a highly urbanized industry. (And then came Pampers!) Industries which are relatively unsophisticated but highly

we repeated his analysis for 1948 and 1963, the

urbanized at the earlier date (Duplicating, Mailing, Steno, Building Services and "other" Laundry Services) have spread more rapidly to lower ranking cities than those which, presumably, are more sophisticated (Advertising, Credit Reporting and Collection, Power Laundries). Given our small sample, these observations are tentative and should be explored further.

Duncan concluded that three factors account for the concentration and specialization of business and some personal services in cities: (1) the effect of the urban environment on needs and preferences; (2) external economies; and (3) the size of the local market. For the most part, these factors do not conform with either "central place" or "economic base" viewpoints. Unfortunately, a definitive test of these conclusions, especially for recent years, is extremely difficult because appropriate data have not been reported.

(iv) Firms of Different Size-Do their locational characteristics and trends differ significantly? The percentage of business service firm "units" concentrated in New York City was examined by employment size-classes in the years 1951, 1971.20 It was found that the degree of concentration increases slightly with size of unit up to the largest, where the concentration jumps to about 75 percent. The spread of establishments out of New York City is greatest for the middle size-range.<sup>21</sup> It is practically nil for the size-class "500 and over." The City's share of these establishments has only decreased from 76.9 percent to 75.6 percent in 20 years. concentration The greatest reduction in occurred in the class "100-249" employees. These results indicate that New York City may remain the home of the very small and very large business service units. The former depend on the "external economies" created by the presence of countless other small firms, while the latter may be oriented to the large communications and corporate organizations centered in Manhattan. The question for New Jersey is: has the state reached a point of development where the dynamic impulse for

further expansion and diversification of business services can now come from within or will it still depend on the "spin-off" of firms from New York City?

## **Policy Implications:**

Concrete policy recommendations depend on a more thorough-going analysis of the topic than this chapter has been able to provide. Yet the outlines of some policy implications are already visible and the direction of further work to firm up these implications can be specified. For instance—

- (1) The strong urban orientation of business services implies that the urban structure of a region or the spatial arrangement of its industries can be a very important influence on the development of business services in that region. The spatial organization of the 19th century American city provided an inefficient home for 20th century manufacturing, and the implications were manifold. We must now answer the question: Is the spatial pattern of the urban economy which has evolved in response to the unadaptability of our central cities (suburbs, shopping centers, industrial parks) providing a suitable matrix for the development of a sophisticated services-economy? Even if it is thought that New Jersey's central cities are beyond redemption, it is possible that New Jersey may have to "reinvent" suitable urban centers if it is to maximize its economic potential over the next generation.
- (2) Education and Training—The development of a more and more sophisticated producer-service economy demands constant upgrading of the labor force. This requires a continuously aggressive program to improve the quality, access, and adaptability of educational resources. In addition, due to the manufacturing orientation of its present labor force, the state needs to make equally strenuous efforts to

retrain workers and ease their transition to new occupations in tandem with changes in the state's industrial structure.

(3) The influence of the public sector on business services has been pointed out. It should be fairly straightforward to identify more precisely the nature of this interdependence using a larger sample of counties or cities. What should be apparent in any case is that state and local authorities have potentially more influence over growth of business services industries than perhaps any others. This influence can be exercised via location of public facilities, government contracting, or taxation. A decision by the state to perform certain services in-house or out can have a significant impact. Also, taxation of business services could slow their growth in New Jersey if there is not similar taxation by neighboring states.

- (4) Professional Labor Force-A significant proportion of professionals in the labor force is required and can only be maintained if the state continues to offer an attractive living environment.
- (5) The appropriate state agencies should focus much more attention on producer service industries in their manpower, vocational, industrial promotion, data acquisition and statistical reporting programs.

## FIGURE 6-10

Illustrative Frequency Distributions Labor Force by Industry of Employment Among Cities





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Source: Nelson: "A Service Classification of American Cities," ECONOMIC GEOGRAPHY, 1955.

				% Change in Producer Services Employment for the State of New Jersey			
INDUSTRY	1950	1960	1970	1950 to 1960	1960 to 1970	1950 to 1970	
Transportation (3/4)	74,435	77,150	88,384	3.6	14.6	18.7	
Communications (1/4)	9,007	9,376	11,937	4.1	27.3	32.5	
Wholesale Trade	65,560	78,662	117,740	20.0	49.7	79.6	
Finance, Insurance and Real Estate (1/2)	49,298	60,543	86,680	22.8	43.2	75.8	
Advertising	4,890	5,841	7,113	19.4	21.8	45.5	
Miscellaneous Business Services	12,186	35,713	26,389	193.1	-26.1	116.6	
Industrial Medical	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	
Legal (1/2)	6,024	6,573	9,388	9.1	42.8	55.8	
Engineering and Architectural (9/10)	4,068	9,288	13,964	128.3	49.8	243.3	
Accounting, Auditing and Bookkeep- ing (9/10)	4,302	5,913	12,129	37.4	105.1	181.9	
Miscellaneous Professional Services (3/4)	2,510	2,942	5,786	17.2	96.7	130.5	
Government (1/3)	26,951	34,566	48,869				
TOTAL PRODUCER SERVICES	259,231	326,567	428,379	26.0	31.2	65.2	
TOTAL ALL INDUSTRIES	1,961,778	2,345,496	2,858,967	19.6	21.9	45.7	
Producer Services as a Percent of Total	13.2%	13.9%	15.0%				

## FIGURE 6-11 LABOR FORCE ENGAGED IN "PRODUCER SERVICES" FOR THE STATE OF NEW JERSEY

Source: Office of Economic Policy following Greenfield, H., op. cit.

\* The ratios in parentheses are Greenfield's estimates of the proportion of industry employment which is engaged in "producer service" activities. Where the ratio is not given, 100% of the industry's employment is so engaged.

#### FOOTNOTES

<sup>1</sup> Bergsman, Joel. et al., "The Agglomeration Process in Urban Growth," 9 URBAN STUDIES 263 (October 1972). Cuzzort, Raymond (1955), "Suburbanization of Service Industries Within Metropolitan Areas," Scripps Foundation for Research in Population Problems and Population Research and Training Center, University of Chicago. Duncan, O. D., "Service Industries and the Urban Hierarchy," REGIONAL SCIENCE ASSOCIATION; Papers, Volume 5 (1959), p. 105.

Fuchs, V. R., THE SERVICE ECONOMY, National Bureau of Economic Research-Columbia University (1968).

Greenfield, Harry, MANPOWER AND THE GROWTH OF PRODUCER SERVICES, Columbia University Press (1966). Kuznets, S., "Quantitative Aspects of the Economic Growth of Nations, III, Industrial Distribution of Income and Labor Force by States, USA, 1919–1955," ECONOMIC DEVELOPMENT AND CULTURAL CHANGE, Volume 6 (1958, July). Nelson, H. J., "A Service Classification of American Cities," ECONOMIC GEOGRAPHY, Volume 31 (1955).

Ohlsson, Bertil, "Service and Spatial Change," in Wilson, A. G., ed., URBAN AND REGIONAL PLANNING, Pion Ltd., London, 1971.

- <sup>2</sup> Computed from U. S. Department of Labor-EMPLOYMENT AND EARNINGS. This and U.S. Department of Commerce/ Social Security Administration, COUNTY BUSINESS PATTERNS and the U.S. CENSUS of BUSINESS: SELECTED SERVICES are the main sources used in this chapter. Miscellaneous Business Services refers to industries usually classified under Standard Industrial Classification No. 73. SEE: U.S. Bureau of the Budget, STANDARD INDUSTRIAL CLASSI-FICATION MANUAL, 1972. The figures reported from the various sources will usually not correspond with one another because of several factors, including: different classifications of some activities, different treatment of administrative and auxiliary units, different reporting bases, and different procedures for estimating missing data. The overall MBS trends revealed by these sources, however, do not differ significantly.
- <sup>3</sup> Net value added to production by industry, measured at factor costs. U.S. STATISTICAL ABSTRACT, 1972, Table No. 518, p. 318.

4 Ibid.

- <sup>5</sup> Greenfield, op. cit., note 1 above.
- <sup>6</sup> Reported in Bergsman, et al., op. cit.
- 7 SURVEY OF CURRENT BUSINESS, November 1969, p. 16.
- <sup>8</sup> Defined as employment in SIC's (73) + (89) in this instance as reported by COUNTY BUSINESS PATTERNS. Data for SIC (73) alone will be referred to by 'Miscellaneous Business Services' or 'MBS.'
- <sup>9</sup> Each county, industry pair is assigned a (0, 1) number: = 1 if the industry is located in the county; = 0 if it is not. In the case of COUNTY BUSINESS PATTERNS, an industry is counted (= 1) if it has either 10 establishments or more or 100 employees or more. This procedure gives us a matrix of 0's and 1's. Forming a Gutman Scale is equivalent to triangulating this matrix and the statistics (Figure 6-4) measures the "fit" with triangularity.
- <sup>10</sup> Shown by Parr, J. (1970), "Models of City Size in an Urban System," Regional Science Association, PAPERS, Volume 25, p. 221.
- 11 Productivity defined as: Total Value-added minus Total Payrolls, per employee.
- <sup>12</sup> Artle, Roland (1970), "Urbanization and Economic Growth in Venezuela," Institute for Urban and Regional Development, University of California, Berkeley, Working Paper No. 135, October.

Meier, Richard L. (1962), A COMMUNICATIONS THEORY OF URBAN GROWTH, M.I.T. Press.

- Thompson, Wilbur (1961), PREFACE TO URBAN ECONOMICS, Resources for the Future, 1961.
- 13 Walter, G. R. (1970), "The Economic Structure of Single Enterprise Communities in Canada," mimeo., University of Victoria, British Columbia, Canada.
- <sup>14</sup> These compare, by way of a simple ratio, a state's share of employment in a given industry to the state's share of total employment (relative to some larger region). For example, N.J. has 3.55 percent of U.S. employment in Services and 4.49 percent of U.S. total employment; therefore its (1970) Services location quotient (L.Q.) is 3.55/4.99, or 0.79. An L.Q. greater than 1 is often interpreted to mean that a state has a relative "advantage" in that form of employment.
- <sup>15</sup> Courtesy of Reports Section, N.J. Department of Labor and Industry. Data is that reported under the state's unemployment insurance program.
- 16 1948, 1967 data are from the U.S. Census of Business. 1951, 1971 data are from COUNTY BUSINESS PATTERNS. Because of missing data from some counties, some of the reported results are based on a sample smaller than 73 counties. Actual sample sizes range from 47 to 73.
- <sup>17</sup> For any given county, this is a sum of the metropolitan area populations within the region, with each population weighted by an inverse power of the highway distance from the county to the area. The distance exponent used was 2.5.

19 The index is a "Gini Coefficient." See Footnote 3, Chapter IV for brief description.

<sup>18</sup> Duncan, O. D., op. cit. (Footnote 1).

- 20 The units reported by COUNTY BUSINESS PATTERNS are "firms" (legal entities) rather than (physically separate) "establishments." The employee size classes of these firms are: 1-3, 4-7, 8-19, 20-49, 50-99, 100-249, 250-499 and 500 or more employees. "Medium size" firms are considered to be from 20-249 employees.
- <sup>21</sup> Assuming that the growth of MBS firms internal to N.J. proceeds at the same rates as the nation, we find that net migration of firms accounts for 25 percent or more of the overall growth in number of mid-size MBS firms in N.J. from 1964-71.
- 22 U.S. Bureau of the Census (1948), VOLUME VII, SELECTED SERVICES-AREA STATISTICS, U.S. Government Printing Office, Washington, D.C. (1951).

U.S. Bureau of the Census (1967), VOLUME V, SELECTED SERVICES-AREA STATISTICS, U.S. Government Printing Office, Washington, D.C.

U.S. Bureau of the Census, County Business Patterns (1951), U.S. SUMMARY-CBP-51-1, U.S. Government Printing Office, Washington, D.C.

U.S. Bureau of the Census, County Business Patterns (1971), U.S. SUMMARY-CBP-71 1, U.S. Government Printing Office, Washington, D.C.

## VII

# UNEMPLOYMENT IN NEW JERSEY: THE ROLE OF THE MANUFACTURING SECTOR\*

The national economy has been recovering from the 1969-1970 recession for about two years, with employment, income, and production reaching new heights. This has caused unemployment to move down, particularly over the past year. New Jersey's economy has also been recovering, but not vigorously enough to reduce unemployment significantly. The state's jobless rate clung stubbornly to a rate of just over 7 percent through most of 1972. This chapter, an updated version of a working paper prepared for the Economic Policy Council in December 1972, attempts to measure some of the dimensions of this problem with particular emphasis on the role of lagging manufacturing employment recovery.

#### The Nation Slumps and Rebounds

Following nearly a decade of expansion, fueled after 1964 by a strong surge of spending related to the Vietnam War, unemployment in the United States declined in 1968 and 1969 to its lowest level since the Korean War. Unfortunately, the economy became overheated and a prolonged period of relative price stability was succeeded by mounting inflationary pressures.

After initial efforts to deal with accelerating prices through a tight money policy precipitated a slump in homebuilding, they were reversed by the Federal Reserve Board and attention turned to the federal budget deficit. Starting in 1969, federal government spending was cut sharply, particularly for defense. The national economy slipped into a recession and unemployment began to rise. Fewer inductions into the armed forces and increased discharges of servicemen aggravated the unemployment problem, as did continued inflationary pressures which contributed to a deterioration of the nation's competitiveness in international trade. The nation's unemployment rate rose from 3.5 percent in 1969 to about 6 percent by the end of 1970.

The recession hit its trough in November 1970. Since that time the national economy has made a very substantial recovery sparked initially by stimulatory fiscal and monetary policies and later sustained by strengthened consumer and business confidence. For quite some time unemployment edged down only grudgingly. Despite the upswing in business activity, the nation's jobless rate was still 5.9 percent in May 1972, seventeen months after it had hit a recession high of 6.1 percent in December 1970. Significant improvement in the unemployment situation then occurred during the second half of 1972, when the national jobless rate dipped to the neighborhood of 5 percent.

<sup>\*</sup> Prepared by Dr. Arthur O'Neal, Director, Division of Planning and Research, N.J. Department of Labor and Industry.





## New Jersey's Unemployment Recovery Lags

Thus far New Jersey has not come out of the latest recession as well as the U.S. Though conditions deteriorated in the state at about the same rate as nationally during the period of national economic decline, the slump continued longer in New Jersey and once recovery began the pace of advance lagged behind.

This is illustrated in Figure 7-1, which compares trends of state and national seasonally adjusted unemployment rates during the years 1968 through 1972.

When the economy was booming in 1968 and 1969 at the height of the Vietnam War spending period, New Jersey's jobless rate fluctuated around an average of 4.4 to 4.5 percent, about 0.9 percentage points higher than the (conceptually somewhat different) national rate for the same period. Despite a sharp increase in joblessness between late 1969 and the fall of 1970, the state-national differential did not change significantly. In fact, New Jersey's average unemployment rate of 6.35 percent for September and October 1970 was still 0.9 percentage points above the national average.

Discounting statistical aberrations during the winter months of 1970-71,<sup>1</sup> the state's unemployment rate then continued on an uptrend until it reached a plateau of slightly over 7 percent in the late spring of 1971. In contrast, the nation's unemployment rate had stopped rising at about 6 percent six months earlier. Then, while the national rate began to edge downward, New Jersey's rate stayed on its plateau except for a brief and, for this study, insignificant dip in the winter of 1971-72. As of October 1972, the state's rate was still 7.2 percent while the national the national rate began to edge down while the national provide the state's rate was still 7.2 percent while the national the state is the state is the national the state is the state is the state is the state is state i

tional rate had dipped to 5.5 percent. Thus the differential had risen to 1.7 percentage points, where it remained through December.

#### Unemployment Insurance Data Confirm Lag

Though unemployment estimates for states and local areas are developed through different statistical methods from those for the nation as a whole,<sup>2</sup> it is doubtful that these disparate trends are the result of conceptual or measurement differences in the two series. That the widening gap between state and national unemployment rates is a valid reflection of differential labor market performance is clearly suggested by the behavior of the more narrowly defined insured unemployment rate, which is computed exactly the same way in all states and for the nation as a whole. This rate is essentially a head count of unemployment insurance claimants under regular state unemployment insurance programs divided by the number of workers covered by such programs. The count excludes claimants under federal programs and in New Jersey and some other states, those under special programs which provide extended benefits to persons exhausting regular benefits.

Figure 7-2 shows that the relative performance of state and national insured unemployment rates has been much the same as that described for the total unemployment rate. New Jersey's rate rose by about the same amount as the nation's during late 1969 and most of 1970, continued to rise to a mid-1971 peak while the national rate leveled off, and then moved down much less than nationally.<sup>3</sup> The differential rose from 0.9 percentage points in October 1970



to 1.8 percentage points in October 1972, approximately the same increase in gap demonstrated in Figure 7-1 for the total unemployment rate over the same period.

#### This Recovery Was Different

As illustrated in Figure 7-3, the recent recession and partial recovery has been abnormal in comparison with the preceding three recessions, especially during the recovery stage. The chart compares trends of New Jersey's seasonally adjusted **insured** unemployment rate during each of these cycles. The vertical line on the chart (month zero) marks the trough of each recession as designated for the nation as a whole by the National Bureau of Economic Research (August 1954, April 1958, February 1961, and November 1970).

While the 1954, 1958, and 1961 recessions varied in intensity, all showed a similar pattern. In each, unemployment climbed during economic contraction, peaked at or within one to three months following the general business turning point, and then declined about as rapidly as it had risen and leveled off a year or so after the nation's recession trough.

## FIGURE 7-3 INSURED UNEMPLOYMENT RATES IN NEW JERSEY (seasonally adjusted)





The 1969-1970 recession started in this classic fashion, with the state's insured unemployment rate climbing rapidly from just over 3 percent in mid-1969 to 5.5 percent in November 1970. Then, instead of turning down and signifying that this had been merely a mini-recession in comparison with the others, it continued to rise to 6.1 percent in June 1971—seven months later —before starting to move lower. Thus, by the time the labor market deterioration was checked, the rate had climbed almost as high as in 1954 (6.5 percent) and 1961 (6.6 percent), though not nearly as much as in 1958 when it reached 8.6 percent.

## The Lag Accounts for 11 Percent of Unemployed

While New Jersey's lag behind the national recovery has contributed significantly to the stickiness of the state's unemployment rate, this lag accounts for only a small fraction of the state's current unemployment. This is illustrated by Figure 7-4, which provides a rough breakdown of last October's unemployment into several conceptually distinct components.

Unemployment totaled an estimated 229,500 that month, after seasonal adjustment. Of this, about 139,700, or 61 percent, represents the amount of unemployment that would have been expected even if the economy were operating at "full employment," defined for the purpose of this analysis as the level of joblessness during the pre-recession boom. These would be people temporarily out of work because of seasonal layoffs, persons in the process of changing jobs, young people newly entering the job market and exploring employment prospects, persons with serious employment handicaps and needing training and/or rehabilitation, and others out of work for reasons unrelated to the general level of demand for labor.

In the illustration, this noncyclical category is divided into "expected" and "excess" components. The "expected" component assumes an unemployment rate equal to the 3.5 percent national rate attained during the Vietnam War. The "excess" component relates to the 0.9 percentage points by which the state exceeded the national jobless rate before the recession. This excess represents a long-term differential that could reflect unique structural characteristics of the state's economy, greater than normal seasonality, demographic differences between New Jersey and the nation, or other factors. Part of the difference could also be due to conceptual differences in measurement of unemployment. A study is currently under way in the Department of Labor and Industry's Division of Planning and Research to shed further light on these historical differentials. For the purpose of this illustration, however, it seems reasonable to assume that for New Jersey a 4.4 percent unemployment rate computed by present methods approximately represents a noncyclical floor.

Another 28 percent of October's unemployed (about 63,500 persons)—the "expected" cyclical unemployed—represent those that would have been unemployed if the state had exactly followed national patterns during the recent recession and its aftermath. It is what would have happened had the state's jobless rate risen by the same number of percentage points as nationally between 1969 and October 1972. Obviously there is little, if anything, that the state can do to control the behavior of the national economy. Thus this portion of the cyclical unemployment might be chalked up as New Jersey's "fair share" of the national slump.

What remains are roughly 26,300, or 11 percent of the unemployed, whose joblessness is attributable to the widening gap in unemployment rates shown in Figure 7-1. This is the unemployment component that needs explaining. If the state could have generated another 25,000 to 30,000 jobs over the past year or two, this excess might not exist.

#### Is the Problem Demand or Supply?

Before getting into an analysis of employment trends, it must be noted that some part of the state's rising unemployment rate differential visa-vis the nation could reflect deviant trends on the labor supply side.

For example, it is possible that the existence of extended unemployment compensation benefits over the past two years could have retarded the exit of some workers from the labor force. In the absence of these special programs, which provide an additional 26 weeks of compensation for some of the long-term unemployed, some workers discouraged by the unavailability of jobs might have withdrawn from the labor force through retirement or returned to their primary role of housewife or student. Since such extended benefits were available to New Jersey's unemployed to a greater degree than in the nation generally because of the state's high unemployment rate,<sup>4</sup> the incentive to quit the labor force may have been relatively weaker in New Jersey during 1971 and 1972.

While the influence of extended compensation benefits and other potential contributing factors on the supply side have not been studied, quantitatively, they do warrant further exploration. It seems unlikely, however, that the major part of the answer is to be found here. For example, the existence of extended benefits cannot be used to explain the widening differential between state and national **insured** unemployment insurance programs. The evidence suggests that the principal cause of New Jersey's lag in unemployment recovery has been on the demand side.<sup>5</sup>

## Manufacturing Lag Correlates Well

One does not have to look far to find a major contributor to lagging labor demand in the recent period. This is the manufacturing sector, where there has been a rapid shrinkage of jobs since 1969. New Jersey's performance over this period compared unfavorably with the nation and was quite different from that during past business cycles.

## FIGURE 7-5 TOTAL MANUFACTURING EMPLOYMENT IN NEW JERSEY (seasonally adjusted)



Number of Months from Trough

#### FIGURE 7-6





Figure 7-5 compares manufacturing employment behavior in New Jersey during the 1969-1972 period with that during the three preceding cycles. The vertical line (month zero) marks the cyclical troughs for the national economy as a whole as designated by the National Bureau of Economic Research. The format is identical to Figure 7-3, which makes the same comparison of insured unemployment rates.

It will be noted that factory employment in the three earlier recessions stopped declining at or near the recession troughs. There was a lag before an upturn developed, except for 1961: however, the longest lag was six months (in 1958), following which there was a strong upward movement. In contrast, the 1969-70 recession brought with it a downtrend of factory employment that continued until early 1972, more than a year after the official recession trough. By the time the decline ended, about 90,000 (or 10 percent) of the state's factory jobs had vanished.<sup>6</sup> It was not until late 1972 that faint recovery signs became evident.

In the 1954, 1958, and 1961 recessions, the state was not disproportionately affected relative to the nation. In fact, the 1954 and 1961 manufacturing slumps were somewhat milder in New Jersey than nationally and the 1958 pattern was very similar in both areas. The state lagged the nation on the upturns by four months in 1954 and three months in 1958. The upturns coincided in 1961.

The most recent cycle was quite different as shown in Figure 7-6. Nationally, factory employ-

ment departed from its historic pattern by continuing to decline to a low nine months after the officially designated recession trough. Up to that point (August 1971), the state and national slumps were very similar. Since that time, however, the nation's industrial sector has been in a relatively strong recovery not shared by the state, with the result that a big gap has opened between state and national trends.

The similarity between the employment trends shown in Figure 7-6 and the unemployment trends depicted in Figure 7-1 is striking. In both cases the deviation of New Jersey from national trends occurred during the recovery stage of the business cycle, beginning in the spring or summer of 1972. Moreover, the numerical dimensions of the deviations are similar. For example, if New Jersey's factory employment had turned up with the nation's after August 1971 and had then risen at the same 4.5 percent rate as nationally, the state would have had about 33,000 more jobs in October 1972 than it actually did have, enough to have kept the state's unemployment rate in line with national trends. Most of New Jersey's shortfall in manufacturing jobs occurred over that period. Measured over the full course of the industrial employment contraction and recovery to date (from August 1969 to December 1972), the state lost about 38,000 more jobs than it would have had it followed national trends.

#### Long Run Trends Must Be Considered

The correlation between unemployment and lags in factory employment is so close that it would be convenient to draw the obvious conclusion that the latter caused the former and look no further. Unfortunately, it is not that simple.

For many years New Jersey defied trends of most states in the northeast by matching the national rate of overall employment growth despite the relatively laggard behavior of its manufacturing sector. While the state saw its preeminence as one of the nation's major industrial centers challenged by tremendous growth in southern and western states, with its share of factory jobs gradually chipped away, it compensated for this by raising its share of jobs in the service sectors. Its unemployment rate did not rise relative to national trends until the recent period. What has changed?

#### Manufacturing Shortfall Has Increased

Figure 7-7 compares trends of manufacturing employment in New Jersey and the United States over the past quarter of a century. The top part of the chart shows indexes for the two areas on an annual average basis, with employment levels in 1967 equal to 100. The lower part shows the trend of New Jersey's percentage share of the nation's manufacturing jobs over the same period.

It is clear that New Jersey's lag relative to the nation has increased since about 1962. Over the full 15-year period from 1947 to 1962, the state's share of the nation's manufacturing employment edged down only fractionally from 5.03 percent to 4.82 percent. In the ten-year period since 1962 it has slipped by a full half of a percentage point to 4.30 percent in 1972.<sup>7</sup> New Jersey did not do as well relative to the nation during the boom of the 1960s as might have been expected based on earlier trends. Then after holding its own with the nation during the slump between 1969 and 1971, the state lagged badly in 1972, as already discussed.

Since the acceleration of the state's shortfall in manufacturing began in the early 1960s, how does one explain the fact that the state-national unemployment rate gap has widened only over the past two years? The answer is that there is a big difference between falling short in employment growth during a boom period and bearing a disproportionate impact of recession cutbacks.

Before 1969 overall employment growth in New Jersey (including jobs in the nonmanufacturing sectors) was enough to enable unemployment to decline as much as nationally. If the demand for factory labor had risen more in line with national trends over that period, con-





straints would have been encountered on the supply side. Either the labor supply would have increased more rapidly, through induced population in-migration and the attraction of housewives and others marginally attached to the labor force, or some factory or nonfactory jobs would have gone begging. Since all sectors were growing, labor market frictions were minimized and the response to structural shifts in occupational demand occurred primarily at the point of labor market entry. Except in relatively isolated cases of plant closings and slowdowns in particular industries, most of those who were already working were able to retain their jobs or leave voluntarily for available alternative jobs with minimum transitional problems.

The 1969-72 period was different. Though job opportunities in nonmanufacturing activities grew over this period, the disproportionate number of workers involuntarily displaced from manufacturing during the recession could not be expected to shift occupations as readily as young people entering the labor market could choose occupations. Before 1969, labor market frictions could be minimized by routing new labor market entrants into occupations where demand was growing. Part of the problem since 1969 has been the difficulty of shifting experienced manufacturing workers (including professionals and managers) to jobs in such expanding industries as trade, services, and government where education and skill requirements are different and wages for the shifted worker are likely to be lower, at least at the beginning. While the same reasoning applies to both the state and nation, the need for occupational change has been relatively greater in New Jersey because of its relatively greater concentration of manufacturing industry and its very substantial lag behind the nation in factory employment recovery.

#### **Trends Vary Among Industries**

Figure 7-8 shows how New Jersey's manufacturing job losses since 1969 in the 20 major industry groups compare with national trends over

the same period. The comparison is between annual average employment in 1969 and seasonally adjusted employment in December 1972. Annual averages were used for 1969 to maintain consistency with the long-term trend analysis that will follow. If the specific pre-recession peak of August 1969 had been used as the base, the overall decline in New Jersey would have been about 6,600 larger than the table shows. Since the national decline would have also been bigger on that basis, the use of annual averages for that year does not significantly affect statenational comparisons. However, annual averages could not be used for 1972 without disguising much of the differential behavior of the state vis-a-vis the nation during that year. Use of seasonally adjusted December 1972 data captures the full effect of the deviation between state and national trends.

It will be noted in column 3 of Figure 7-8 that New Jersey lost about 69,700 factory jobs between 1969 and December 1972, despite some recovery toward the end of 1972. The electrical machinery industry accounted for 22,000, or about one-third of these. Other industries with significant numerical declines were nonelectrical machinery (-7,900), primary metals (-6,900), miscellaneous manufacturing (-6,600), apparel (-5,800), food (-5,400), transportation equipment (-5,400), fabricated metal products (-4,100). The only industries with gains, in all cases small, were printing and publishing, paper, chemicals, textiles, and furniture and fixtures.

The last column places these trends in a different and more meaningful perspective. It shows how each industry deviated from national trends over this period. Specifically, it indicates the difference between each industry's actual employment level in December 1972 and what it would have been had it changed by the same percentage since 1969 as occurred nationally in that same industry. Such deviations are far more relevant for this analysis than absolute job losses since they roughly neutralize the cyclical aspect and focus attention on industries with apparent competitive problems vis-a-vis other states and

## FIGURE 7-8

## TRENDS OF MANUFACTURING EMPLOYMENT IN NEW JERSEY AND THE UNITED STATES, 1969-1972

	Employment in New Jersey					
	1969 Dec. 1972		Percent Change		New Jersey's	
	Annual	Seasonally	Change	1969	-1972	<b>Relative Gain</b>
Industry	Average	Adjusted	1969-72	N.J.	U.S.	or Loss
	(000)	(000)	(000)	(%)	(%)	(000)
TOTAL MANUFACTURING <sup>1</sup>	894.0	824.3	69.7	- 7.8	3.7	
DURABLE GOODS <sup>1</sup>	463.9	407.2	56.7		<u> </u>	32.8
Lumber and wood products	5.2	4.4	0.8	15.4	+ 2.5	0.9
Furniture and fixtures	11.0	11.2	+ 0.2	+ 1.8	+ 5.0	0.3
Stone, clay and glass	40.9	40.4	-0.5	<u> </u>	<b>- 2</b> .5	<u> </u>
Primary metals	39.4	32.5	<u> </u>	-17.5	5.6	4.7
Fabricated metal products						
(including ordnance)	69.2	64.0	5.2	— 7.5	8.7	+ 0.8
Nonelectrical machinery	76.4	68.5	7.9	-10.3	3.7	<u> </u>
Electrical machinery	125.4	103.4		17.5	5.3	-15.4
Transportation equipment	31.4	26.0	5.4	17.2	-11.9	1.7
Instruments	34 7	33.1	- 1.6	4.6	- 1.0	- 1.3
Miscellaneous manufacturing	30.2	23.6	<u> </u>	-21.9	_ 1.8	- 6.1
NONDURABLE GOODS <sup>1</sup>	430.1	417.1	13.0	3.0	1.6	6.2
	63.2	57.8	_ 5.4	- 8.5	2.7	3.7
Tobacco	0.3	0.3	0	0		0
Textiles	30.8	31.0	+ 0.2	+ 0.6	+ 1.6	<u> </u>
Apparel	77.2	71.4	5.8	7.5	4.4	2.4
Paper	35.0	36.7	+ 1.7	+ 4.9	0.6	+ 1.9
Printing and publishing	43.3	45.3	+ 2.0	+ 4.6	0.3	+ 2.1
Chemicals	118.2	118.5	+ 0.3	+ 0.3	<u> </u>	+ 5.3
Petroleum and coal products	10.0	9.9	0.1	1.0	+ 4.2	0.5
Rubber and plastic products	41.4	37.3	<u> </u>	- 9.9	+10.4	8.4
Leather	10.6	8.8	1.8	17.0	12.9	0.4
Net Effect of Relative Gains or Losses	2					-42.6
Industry Mix Effect <sup>3</sup>						+ 6.0

 Relative loss of total factory jobs in last column computed directly (horizontally). Durable and nondurable goods totals also computed directly. They do not equal the sum of the changes for individual industries because of industry mix effects.
 Summation of figures for 20 individual industries.

<sup>3</sup> Difference between summation of figures for 20 individual industries and the relative loss of total manufacturing jobs computed directly from aggregate figures for the manufacturing sector as a whole.

NOTE: New Jersey employment estimates have been revised to new (1972) benchmarks. They were not yet published and still subject to possible small further adjustments at the time this table was prepared.

those that are performing relatively well in New Jersey.

Ranked by numerical deviations from national trends, the principal contributors to New Jersey's relatively poor performance since 1969 are seen to be electrical machinery (-15,400jobs), rubber and plastic products (-8,400), miscellaneous manufacturing (-6,100), nonelectrical machinery (-5,100), primary metals (-4,700), and food (-3,700). Chemicals turns out to have been a strong performer in New Jersey with a relative gain of 5,300 jobs. While employment in this industry did not increase significantly since 1969, it was spared the decline that occurred nationally. Other industries that did better in New Jersey than nationally were printing and publishing, paper, and fabricated metals.

If the relative gains and losses for each of the 20 individual industries are combined, the relative change between 1969 and December 1972 nets out to a loss of 42,600. This is 6,000 more than the 36,600 relative loss derived by directly computing total manufacturing. The difference reflects the fact that the state had an industry mix advantage at the start of the period. The state had a smaller share of its factory jobs in industries that were to be hit hardest throughout the nation during the recession. Because of this, if all of New Jersey's individual manufacturing industries had performed exactly like their national counterparts between 1969 and 1972, total manufacturing employment would have declined by a somewhat smaller percentage in New Jersey than nationally. The true measure of the state's competitive performance is the 42,600-job lag that excludes the effect of this structural advantage.8

## Comparisons with Earlier Periods Add Perspective

It was shown earlier that New Jersey was lagging behind national manufacturing employment trends before 1969 without this causing significant unemployment problems relative to the nation. It is worth asking whether there have been significant departures from historical trends in individual industries and what, if any, distortions were caused by the Vietnam Warrelated manufacturing boom that immediately preceded the 1969-70 slump. Figure 7-9 is an attempt to do this by comparing trends in the 20 major manufacturing industries over three periods of time.

The first period is the eight years from 1956 to 1964, just before the upsurge of Vietnam War spending. Both the base and terminal years of this span were roughly comparable in terms of level of economic activity. The nation's overall unemployment rate was higher in 1964, but this reflected in part a long-term uptrend due to changes in the demographic composition of the labor force (e.g., more women and young people whose unemployment rates tend to be above average). The national jobless rate for married men, which is a better indicator of the degree of labor market tightness for long-term comparisons, averaged 2.6% in 1956 and 2.8% in 1964. This period, during which manufacturing employment showed relative stability nationally, was chosen to represent prewar trends. The 1964-69 period was chosen to identify differential employment trends during the Vietnam War boom, when factory employment expanded sharply, and the 1969-72 period represents the slump and subsequent partial recovery with which this analysis is primarily concerned.

Figures in the first three columns of Fig. 7-9 are comparable to those in the last column of Fig. 7-8. They show how much New Jersey's employment in each manufacturing industry exceeded or fell short of what it would have been had it grown or declined at the same percentage rate as the nation. Since the three periods involved different numbers of years, the figures are expressed as annual averages to facilitate comparisons.

The bottom line on the table (labeled "combined effect") confirms the deterioration of New Jersey's overall manufacturing performance relative to the nation already illustrated in Fig. 7-7. It shows that **relative to national trends** the state lost manufacturing jobs at annual rates of 10,500

## FIGURE 7-9

## ANALYSIS OF NEW JERSEY'S MANUFACTURING EMPLOYMENT SHORTFALLS AND RELATIVE GAINS DURING SELECTED PERIODS

	New Jers Gain or	Difference Between 1956-64 Period and 1969-72 Period		
	1956-64	1964-69	1969-72*	
Industry	(000)	(000)	(000)	(000)
DURABLE GOODS <sup>1</sup>	4.6	8.6	- 9.4	4.8
Lumber and wood products Furniture and fixtures Stone, clay and glass Primary metals	$\begin{array}{c} 0 \\ - & 0.1 \\ + & 0.1 \\ - & 0.6 \end{array}$		$\begin{array}{c} & 0.3 \\ & 0.1 \\ & 0.4 \\ & 1.3 \end{array}$	$ \begin{array}{c} & 0.3 \\ 0 \\ & 0.5 \\ & 0.7 \end{array} $
Fabricated metal products(including ordnance)Nonelectrical machineryElectrical machineryTransportation equipmentInstrumentsMiscellaneous manufacturing	$\begin{array}{rrrr} & 0.7 \\ & 0.8 \\ & 3.7 \\ & 1.8 \\ + & 0.1 \\ + & 0.4 \end{array}$	$\begin{array}{cccc} & 0.1 \\ & 0.2 \\ & 5.0 \\ & 2.9 \\ & 1.0 \\ & 0.8 \end{array}$	+ 0.2 - 1.5 - 4.4 - 0.5 - 0.4 - 1.7	$\begin{array}{c} + & 0.9 \\ - & 0.7 \\ - & 0.7 \\ + & 1.3 \\ - & 0.5 \\ - & 2.1 \end{array}$
NONDURABLE GOODS <sup>1</sup>	+ 0.8	0	1.7	<u> </u>
Food Tobacco Textiles Apparel Paper Printing and publishing Chemicals Petroleum and coal products Rubber and plastic products Leather	$\begin{array}{r} + 0.6 \\ - 0.1 \\ - 1.0 \\ - 1.3 \\ + 0.2 \\ + 0.6 \\ + 0.8 \\ - 0.2 \\ + 0.1 \\ + 0.1 \end{array}$	$\begin{array}{cccc} - & 0.7 \\ - & 0.2 \\ - & 0.1 \\ - & 0.7 \\ - & 0.2 \\ + & 0.4 \\ + & 0.4 \\ + & 0.1 \\ - & 1.1 \\ - & 0.1 \end{array}$	$\begin{array}{c} - & 1.1 \\ & 0 \\ - & 0.1 \\ - & 0.7 \\ + & 0.5 \\ + & 0.6 \\ + & 1.5 \\ - & 0.1 \\ - & 2.4 \\ - & 0.1 \end{array}$	$\begin{array}{r}1.7 \\ + 0.1 \\ + 0.9 \\ + 0.6 \\ + 0.3 \\ 0 \\ + 0.7 \\ + 0.1 \\2.5 \\0.2 \end{array}$
Net Effect of Relative Gains or Losses <sup>2</sup>	7.3	12.1	12.3	5.0
Industry Mix Effect <sup>3</sup>	+ 3.5	+ 2.8	+ 1.8	1.7
Combined Effect <sup>1</sup>	3.8	9.3		6.7

\* Obtained from last column of Figure 7-8 divided by 3.5. For the purpose of deriving annual rates of deviation, seasonally adjusted data for December 1972 are assumed to approximate annual averages lagging one-half year behind calendar year 1972 averages. Thus the span between annual average 1969 and December 1972 is regarded as 3.5 years. 1 Relative loss of total factory jobs computed directly (horizontally). Durable and nondurable goods totals also computed directly. They do not equal the sum of the changes for individual industries because of industry mix effects.

<sup>2</sup> Summation of figures for 20 individual industries.

<sup>3</sup> Difference between summation of figures for 20 individual industries and the relative loss of total manufacturing jobs computed directly from aggregate figures for the manufacturing sector as a whole.

between 1969 and December 1972 and 9,300 between 1964 and 1969, up from a comparatively small relative lag of 3,800 jobs per year during the 1956-64 period. After allowing for the relatively favorable industry mix within the state's factory sector, New Jersey's performance was somewhat more adverse than this. Summations of relative gains or losses in each industry yield aggregate relative losses per year of 12,300 in the 1969-72 period, 12,100 during the Vietnam War boom, and 7,300 during the prewar period.

A relatively small portion of the state's manufacturing lag since 1956 has been in nondurable goods. This sector held its own vis-a-vis the nation between 1956 and 1969, largely because of strong relative gains in the printing and publishing industry and chemicals. Its comparative performance deteriorated somewhat after 1969, however, as significant relative losses in the food, apparel, and rubber and plastics products industries more than offset gains in printing and publishing, chemicals, and paper.

When relative changes in the 1969-72 period are compared with those in prewar 1956-64 to identify altered trend relationships as between the state and the nation (last column of Fig. 7-9), the entire negative shift in nondurable goods is found to have occurred in the rubber and plastic products and the food industries, both of which have lagged in recent years after matching or bettering national trends before 1964. These emerge as the real problem industries in this sector if one is looking for departures from past patterns.

Shifts in most other nondurable goods industries were positive, even in apparel where New Jersey's rate of lag has diminished since 1964. The biggest favorable departures have been registered by chemicals, which has bettered national trends at an increased rate since 1969, and textiles, which has matched national trends since 1964 after deteriorating badly in the state before that time.

The bulk of the state's manufacturing employment shortfall since 1956 has been in durable goods industries. Increased spending on defense, aerospace, and capital goods during the boom of the mid-1960s caused employment of durable goods producers to rise in New Jersey, but this rise represented a relatively meager share of the nation's additional jobs in these industries. In the 1964-69 period, the state's relative lags behind the nation were numerically largest in industries heavily involved in defense and aerospace production, including electrical equipment and machinery, transportation equipment (primarily shipbuilding and aircraft), and instruments. When boom turned to bust after 1969, the state's increased rate of shortfall continued, with relative losses biggest in electrical equipment, nonelectrical machinery, primary metals, and the group called miscellaneous manufacturing.

While it has been the biggest numerical contributor to the state's durable goods employment shortfall since 1964, electrical machinery has not been a major influence in accelerating the state's rate of deterioration relative to the nation. This industry lagged about as badly before 1964. Its recent shortfalls represent a continuation of long-term trends rather than some new development. The biggest negative shift numerically in recent years has been experienced by miscellaneous manufacturing, which includes production of such things as toys, fountain pens, and novelty goods. Smaller negative departures have been spread over most industries. Transportation equipment, where shipbuilding leveled off following big losses in the 1950s and 1960s, was one of the few exceptions. Another was fabricated metal products, which lagged before 1964 but has held its own since then.

## Defense Spending Cutbacks Not the Main Problem

The array of principal "problem" industries identified above—food, rubber and plastic products, and miscellaneous manufacturing—would seem to indicate that New Jersey's recent departure from national experience is **not** primarily the result of a disproportionate impact of defense and aerospace spending cutbacks on the state since 1969. Despite its ranking as a major industrial state, New Jersey was less defense-dependent than the nation during the period prior to or during the Vietnam War buildup.

In June 1968, for example, the U.S. Department of Defense found New Jersey's "defense dependency ratio" (civilian defense dependent jobs as a percentage of civilian work force) to be 3.1%, compared with a 3.6% nationally. As noted earlier, industries heavily dependent on defense contracts did not grow nearly as rapidly in the state as nationally during the 1964 to 1969 period. Though these industries suffered from defense cutbacks after 1969, New Jersey's share of the impact does not appear to have been significantly out of line with what would have been expected based on prewar differential trends.

#### Graphs Add Some Light

The statistical analysis attempted above has helped to identify and quantify the impact of lags in some problem industries. However, it leaves many questions unanswered. Because it only involved comparisons of cross-sectional data for specific years which seemed appropriate from an aggregative analytical point of view, it could have hidden significant shifting patterns in individual industries over time. Employment changes during the 1956-64 period, for example, may not have been representative of long-range prewar trends for some industries.

A measure of the state's performance vis-a-vis the nation presented graphically would add new dimension to the analysis. One such measure is the trend of the state's share of the nation's employment in individual manufacturing industry groups. Trends of these shares since 1947 for the 20 major manufacturing industries are shown in Figure 7-10.

The graphs confirm the earlier finding that there have been significant adverse shifts in state-national relationships in the rubber and plastic products, food, and miscellaneous manufacturing industries since the 1956-64 period. However, they add an important perspective. While the rubber and plastic products and miscellaneous manufacturing industries did better in New Jersey than nationally during the 1956-64 period, both had been lagging badly in the state before that time. The recent negative shifts for these two industries could well reflect resumption of longer-term deterioration patterns rather than some new or unique developments. The graphs do not alter the earlier conclusions that a reversal of long-term trends has occurred in the food industry.

#### A Geographical Dispersion Problem?

It has already been shown that the biggest numerical employment lags relative to the nation throughout the 1956-72 period were in electrical machinery. The continuous nature of this sizable relative loss shows up clearly in Figure 7-10. It is worth noting, however, that New Jersey had a very disproportionate share of between 10 percent and 11 percent of the nation's jobs in this industry in the late 1940s. Even after declining to 5.5 percent in 1972, the state still had a substantial share considering that New Jersey has only about 3.5 percent of the nation's population and labor force. Other industries that started the period with shares of 7 percent or more, only to see those shares deteriorate to the 5 to 6 percent range by 1972, include rubber and plastic products, petroleum and coal products, apparel, and miscellaneous manufacturing.

This suggests the possibility that part of New Jersey's long-term problem could be that it started the post-World War II period with an unsustainable share of factory jobs in some industries. It may have been inevitable that these industries would spread out geographically to be nearer their growing markets in other parts of the country. The recent recession could simply have been the occasion for an acceleration of these movements in some industries.

But then how does one explain chemicals? This industry started out in 1947 with 12.3 percent of its jobs in New Jersey. While that pro-

## FIGURE 7-10

## NEW JERSEY'S SHARE OF THE NATION'S JOBS IN SELECTED MANUFACTURING INDUSTRIES\_

Durable Goods

Nondurable Goods



portion dropped to just over 10 percent in the late 1950s, it has been rising ever since. By 1972 it has returned to roughly 12 percent. Also, the instruments and related products industry began with about 7 percent of its jobs in New Jersey in 1947. The state's share in this industry then rose to 8.5 percent in 1963. Though it has been trending back down since then, it was still 7 percent in 1972, the same as a quarter of a century earlier. Clearly there have been other forces at work besides a simple tendency toward geographical equalization.

Some industries, with less imposing shares of the nation's jobs 25 years ago, have experienced significantly declining shares since that time. These include textiles, which declined between 1949 and 1962 but have maintained a stable pattern since then; transportation equipment, down mainly since 1960 due to shipbuilding shutdowns and the failure of the state's aircraft industry to garner a proportionate share of expanded aerospace and defense contracts during the pre-1969 boom; and primary metals, where all of the relative decline has occurred since 1961. The state's share of nonelectrical machinery jobs has also slipped moderately since 1961, after holding steady during the 1950s, and upward trends for food and leather have been reversed since the mid-1960s.

## Factors Affecting Geographical Movements Need Study

Geographical dispersion away from traditional industrial centers undoubtedly is one contributing factor to New Jersey's gradually declining share of manufacturing jobs over the past quarter of a century. Most of the northeastern region of the United States has been affected by this. Yet the trends in Figure 7-10 reveal considerable variations among industries in this regard.

Reasons for these differential patterns need further study. Why has New Jersey been attracting and retaining some industries like printing and publishing, paper products, and chemicals, and repelling others? Why are shifts occurring more rapidly in some industries than in others? It is not enough to generalize about high labor costs, congestion, taxes, the ecology movement, or the existence of industrial inducements in other states. This begs the important question: Why do some industries go and others come under the existing set of circumstances?

It is frequently observed that economic development efforts must be "selective." Usually what is meant by this is that the state should focus its attention on attracting industries that would be desirable from the point of view of environmental impact, wage levels, quantity and quality of jobs, seasonal stability of employment, etc. The orientation is toward the desirability of the industry to New Jersey.

There is another aspect of selectivity, however, that is also important. This is the desirability of New Jersey to the industry. In some industries, outward movement from New Jersey may be irreversible because of such basic economic forces as migration of markets and labor supply, changing sources of raw materials, or linkages with other industries. Rather than trying to resist the inevitable, the state's industrial development efforts might be more successful if directed at attracting (and retaining) firms in those industries that experience has demonstrated will thrive in New Jersey. A prerequisite to this aspect of selective industrial promotion is a much more solid understanding than presently exists of factors affecting industrial location decisions as they pertain to New Jersey.

#### **Regional Performance Has Been Similar**

How has New Jersey compared with neighboring states during the past three years? Is the state unique in its lagging behavior relative to the nation or is it merely sharing in a larger regional phenomenon? The evidence suggests that the latter is the case.

New York, Pennsylvania, Connecticut, and Massachusetts all were hard hit by factory job losses during the recent recession and, at least through mid-1972, all had experienced disproportionate increases in unemployment relative to the nation. On an annual average basis, manufacturing employment declined over the 1969-71 period by 15.1 percent in Connecticut, 14.7 percent in Massachusetts, 12.4 percent in New York, and 9.7 percent in Pennsylvania. The decline in New Jersey over that period was 8.0 percent. Though some of these states have rebounded somewhat more than New Jersey since 1971, New Jersey's losses over the full period since 1969 have been less serious than those in any of these states except Pennsylvania.

Connecticut and Massachusetts were much more severely impacted by defense spending cutbacks than New Jersey. According to U.S. Defense Department estimates, their defense dependency ratios were 8.8 percent and 4.6 percent, respectively, as of June 1968, shortly before the slump began. New Jersey's was 3.1 percent. While New York was less defense dependent than New Jersey, with a dependency ratio of 2.1 percent, that state's cyclical problems over the past three years were superimposed on a longterm declining trend of factory jobs. Adverse long-term trends also compounded Massachusetts' problems. Pennsylvania, about as vulnerable to defense cutbacks as New Jersey with a 3.2 percent dependency ratio in 1968, experienced a factory slump between 1969 and 1972 about as severe as New Jersey's.

Comparative performance of neighboring states suggests that New Jersey's factory job losses have not been its neighboring industrial states' gains. Individual firms have, of course, moved from New Jersey to neighboring states. However, others have moved in the reverse direction. Intraregional analysis of individual industries over time probably would reveal some significant patterns of interstate migration within the northeastern region. However, the net effect of these could well turn out to be favorable to New Jersey. Migration out of New York City, for example, has definitely benefited this state's printing and publishing industry. To the extent that there has been significant geographical dispersion of industrial activity away from industrial centers like New Jersey, the principal beneficiaries have been in the southern and western parts of the United States, not in other parts of the northeast region.

## A Look Ahead

The focus of this paper has been on negative aspects of the New Jersey economy. Stubbornness of unemployment and the lag in manufacturing recovery over the past two years have been of serious concern to everyone. Therefore, these are the economic developments that warranted the most attention. Neither the past picture nor future outlook, however, are those of gloom and doom. Substantial employment expansion occurred in nonmanufacturing activities during 1972. This will continue and will be supplemented by new factory jobs generated by a recovery of industrial activity which was well under way as the year closed. Thus the prospects for 1973 are quite good. Overall job growth will almost certainly be sufficient to reduce unemployment.

Longer-range prospects also are hopeful. Assuming an appropriate balance between industrial development efforts and competing public priorities such as protection of the environment, the direction of the economy will be upward. Even if New Jersey continues to lag behind the nation in manufacturing, the level of factory employment should gradually rise and total jobs in all sectors should expand sufficiently to absorb the state's rising labor force. The economy has prospered for many years despite the problems associated with outmigration of particular industries. There is no reason to expect the future to be different.

#### FOOTNOTES

- <sup>1</sup> Both the total and insured unemployment rates for New Jersey showed dips during the winters of 1970-71 and 1971-72 that appear to reflect either abnormal seasonal patterns or deficiencies in seasonal adjustment procedures. The same thing may be happening this winter. Similar patterns have been observed in data published by other states and in the national insured unemployment rate. It would appear that, since unemployment became swollen late in 1970, standard adjustment techniques have been attributing too much of the wintertime unemployment to seasonality and hence understating unemployment associated with underlying economic trends during these months. A technical note on this entitled "A Seasonal Adjustment Dilemma" appeared in the May 1972 issue (No. 106) of *N.J. Economic Indicators* published by the Division of Planning and Research, N.J. Department of Labor and Industry.
- <sup>2</sup> Differences are discussed in "How Unemployment is Measured in New Jersey," N.J. Economic Indicators, September 1972 (No. 110). Reprints are available from the Division of Planning and Research, N.J. Department of Labor and Industry.
- <sup>3</sup> The decline in the *insured* unemployment rate since mid-1971 is not inconsistent with the stickiness of the *total* unemployment rate over the same period. When persons exhaust their entitlement to regular unemployment insurance benefits they are dropped from the insured unemployment count but may still be unemployed. Also, total unemployment includes persons entering the labor market who have not earned sufficient wages in covered employment to be eligible for unemployment insurance. Unemployment has been rising among this group. The decline in insured unemployment is primarily a reflection of the fact that recession-related layoffs have been reduced. The failure of total unemployment to decline reflects the sluggish expansion of new job opportunities.
- <sup>4</sup> The extended benefits program, permitting up to 13 weeks of unemployment insurance beyond the normal maximum duration of benefits, became effective in the beginning of 1971. The program triggers on and off based on a complex formula tied to trends of insured unemployment rates in the nation and the individual states. The program was in effect voluntarily in most states during parts of 1971 and in all states in early 1972 when the program became mandatory. When the national trigger went off in April 1972, only those states with serious unemployment problems remained on, based on their own state triggers. A special federally funded "temporary compensation" program providing 13 more weeks of extended benefits went into effect in New Jersey and a relatively small number of other states in January 1972. One or the other (or both) of these programs was in effect through virtually all of 1972 in New Jersey because of its continued high unemployment.
- <sup>5</sup> The distinction between supply and demand influences is rather artificial, particularly when applied to analysis of state and local labor market trends. Labor supply is a nebulous concept. Many people fall into a gray area where they may be in or out of the labor force depending upon the availability of jobs. Labor supply is even more elastic at the state and local levels since population migration and commutation patterns change in response to changing labor demand. For these reasons, it is probably safe to say that, in the final analysis, adverse state and local unemployment trends that deviate seriously from national patterns usually can be traced to demand problems.
- <sup>6</sup> The employment estimates used for this calculation and for the state trends shown in Figures 7-5 and 7-6 reflect approximate (upward) adjustments to first quarter 1972 benchmarks, which were not quite completed and of course not yet published at the time this paper was prepared. The original published estimates showed the decline between mid-1969 and early 1972 to have been about 100,000 jobs.
- <sup>7</sup> Since employment was rising during 1972 in the nation but not in the state until the very end of the year, the state's share of jobs declined even more in 1972 than the annual average data would indicate. Based on seasonally adjusted data, the state's share of the nation's factory jobs had slipped to 4.25% by December 1972.
- <sup>8</sup> The industry mix advantages identified through this analysis are only first approximations since they were derived by comparing the state and national employment structures at a relatively high level of aggregation, i.e., by 2-digit industrial classifications. More detailed structural breakdowns at the 3-digit industry level would yield more accurate results.

## VIII RESEARCH PROGRAMS AND CRITICAL ISSUES FOR FUTURE WORK

#### **Unemployment and Employment:**

As evidenced by the previous chapter, the Economic Policy Council and the Department of Labor and Industry have been delving into certain aspects of the state's employment problems. Much more work needs to be done in this area. There is insufficient understanding of how New Jersey is similar to or different from other states, especially Northeast industrial states with ostensibly similar problems created by a decline of their manufacturing sectors. The same detailed attention given to the manufacturing sector needs to be devoted to an analysis of job creation in the services sector. There is a need for analysis of labor force participation and its changes among different groups in the population. The components of unemployment have to be carefully distinguished: what part is frictional, what part due to deficient demand, what part structural? Lastly, how effective are various training programs in assisting labor upgrading, mobility, and transitions to new occupations?

## **Business Taxation:**

The matter of business taxation is a latent issue of great importance to the state as indicated by the intense unresolved controversy over the "excess gains" aspect of the Governor's Tax Reform Proposal, the complaints of business representatives, and the many issues left hanging by the Tax Policy Commission itself. The area of business taxation is so diverse and complex that it is necessary to start to unpuzzling the area now in anticipation of future requirements. Two important topics are the taxation of financial and unincorporated businesses. The Council hopes to consult with the Division of Taxation to see what efforts can be devoted to these and related topics.

#### School Finance & Reform of the Property Tax:

Alternative means of financing local education must be developed in response to the ruling of the N.J. Supreme Court. This is inseparable from the issue of property tax reform, though there are other reasons for reforming property taxation.

## Economic Forecasting and Evaluation of State Programs:

The Council's ECONOMIC OUTLOOK statement would be far more useful to state officials if it could be related to the progress of major state programs, such as housing, welfare, or finance. This requires some thought.

## Public Employment and Redevelopment of Central Cities:

In the light of experience gathered from the now foundering federal public employment program, some more attention should be given to public employment and public facilities location as an offset to New Jersey central city unemployment and economic decline.
## State Economic Development and Land-Use Patterns:

The economic aspects of land-use control in the state are being given too little attention, though there are increasing pressures and constraints on land-uses in New Jersey. What are the state's land-use goals? Do we want to become another Los Angeles? What economic instruments will further which goals, and what is their relation to non-economic factors?

## IX APPENDIX

### STATISTICAL TABLES

#### TABLE 1

#### POPULATION AND EMPLOYMENT, NEW JERSEY, 1956-1972

		Resident	Work		Unemp	loyment	Insured Unemploy- ment	
Year		Population	Force † In Thousands	Employment	Number (000)	Rate (Percent)	Rate (Percent)	
1956		5,516,100	2,406.6	2,263.2	138.6	5.8	4.6	
1957		5,631,700	2,448.1	2,290.0	156.8	6.4	5.3	
1958		5,739,800	2,472.6	2,248.1	222.5	9.0	7.6	
1959		5,960,000	2,483.1	2,303.2	175.5	7.1	5.5	
1960		6,070,780	2,507.4	2,337.2	168.5	6.7	5.7	
1961		6,222,160	2,543.5	2,355.9	185.5	7.3	6.0	
1962		6,370,650	2,575.1	2,415.0	159.0	6.2	5.2	
1963		6,503,190	2,618.4	2,447.9	168.8	6.4	5.4	
1964		6,614,560	2,655.5	2,489.6	162.1	6.1	4.8	
1965		6,720,300	2,724.5	2,582.2	140.0	5.1	3.9	
1966		6,821,050	2,790.3	2,665.3	122.6	4.4	3.2	
1967		6,917,450	2,854.5	2,721.7	128.3	4.5	3.4	
1968		7,012,750	2,920.9	2,783.3	132.1	4.5	3.3	
1969		7,103,310	3,019.5	2,882.8	133.5	4.4	3.3	
1970		7,171,043	3,087.6	2,910.5	170.9	5.5	4.4	
1971		7,303,000	3,138.7	2,916.0	217.2	6.9	5.4	
1972		7,382,985	3,195.5	2,971.6	220.0	6.9	5.1	

+ Persons involved in labor-management disputes are included in total work force estimates and are excluded from unemployment and employment estimates.

NOTES:

The rate of insured unemployment is based on weekly averages of insured unemployment (State UI Program) expressed as a percent of the average total number of jobs covered by the State Unemployment Compensation Program.

Work force, employment, and unemployment estimates are adjusted to first quarter 1972 benchmarks.

Annual average work force and employment data from 1963 on are based on monthly data. Annual averages for 1962 and prior years are based on bi-monthly data.

The 1970 resident population estimate has been revised to reflect the 1970 census changes. All population data as of July 1. Years other than those for Census are estimates prepared by the Office of Business Economics.

Source: N.J. Department of Labor and Industry, Division of Planning and Research.

#### WORK FORCE, UNEMPLOYMENT, AND EMPLOYMENT ATLANTIC CITY LABOR AREA, 1956-1972 (In thousands)

			Unem	bloyment	Employment			
					Nonagric	Agricultural		
Year		Work Forcea	Number	Rate (Percent)	Wage and Salary Employment	All Otherb		
1956		62.8	5.6	8.9	44.2	10.4	2.6	
1957		64.1	6.4	10.0	44.9	10.2	2.6	
1958		66.6	7.9	11.9	45.3	10.7	2.7	
1959		68.8	6.8	9.9	48.2	11.1	2.7	
1960		67.9	5.7	8.4	49.3	10.1	2.8	
1961		70.0	6.2	8.9	50.3	10.6	2.9	
1962		71.4	5.7	8.0	52.0	10.5	3.2	
1963		71.3	5.6	7.9	52.5	10.2	3.0	
1964		72.9	5.5	7.5	54.0	10.3	3.1	
1965		74.2	4.8	6.5	56.2	10.2	3.0	
1966		76.9	4.4	5.7	59.5	10.1	2.9	
1967		77.5	4.4	5.7	60.5	9.7	2.8	
1968		78.9	4.4	5.6	62.3	9.5	2.6	
1969		79.8	4.7	5.9	63.3	9.5	2.4	
1970		80.8	5.6	6.9	63.4	9.3	2.4	
1971		80.3	6.1	7.6	62.5	9.3	2.4	
1972		83.0	6.3	7.6	65.1	9.3	2.3	

a Persons involved in labor-management disputes are included in total work force estimates and are excluded from unemployment and employment estimates.

b "All other" nonagricultural employment includes self-employed, unpaid family, and domestic workers in private households.

Atlantic City, Camden, Jersey City, Long Branch, Newark, Paterson, Perth Amboy and Trenton Labor Areas, for which data are presented in Tables 2 to 9, contained 91.4% of the New Jersey work force in 1972. The other labor areas are Bridgeton, Flemington, Lakewood, Newton, Phillipsburg, Salem, and Wildwood.

All estimates are adjusted to first quarter 1972 benchmarks.

Annual average work force and employment data from 1963 on are based on monthly data. Annual averages for 1962 and prior years are based on bi-monthly data.

Source: New Jersey Department of Labor and Industry, Division of Planning and Research

		(11	i thousan	us)				
		Unem	ployment	Employment				
				Nonagric	Agricultural			
Year	Work Forcea	Number	Rate (Percent)	Wage and Salary Employment	All Otherb			
1956	220.1	15.1	6.9	168.7	26.4	9.9		
1957	221.4	16.6	7.5	169.6	25.5	9.6		
1958	229.6	20.2	8.8	171.9	27.0	9.7		
1959	<b>234.8</b>	16.4	7.0	180.9	27.9	9.0		
1960	241.5	16.5	6.8	187.7	28.3	8.6		
1961	249.1	19.2	7.7	191.9	29.7	8.3		
1962	257.3	19.2	7.5	199.5	29.7	8.9		
1963	<b>258.9</b>	21.3	8.2	200.1	28.6	8.7		
1964	259.8	20.6	7.9	202.4	28.4	8.3		
1965	264.9	16.1	6.1	212.2	28.4	8.0		
1966	272.7	13.1	4.8	224.3	27.8	7.3		
1967	282.8	14.3	5.1	233.9	27.3	6.9		
1968	<b>287.8</b>	14.2	4.9	239.8	26.4	6.8		
1969	299.0	14.7	4.9	250.0	27.3	6.5		
1970	309.5	19.0	6.1	254.8	27.6	6.6		
1971	324.2	24.4	7.5	264.2	28.6	6.7		
1972	338.2	27.5	8.1	274.8	29.1	6.5		

#### TABLE 3 WORK FORCE, UNEMPLOYMENT, AND EMPLOYMENT CAMDEN LABOR AREA, 1956-1972 (In thousands)

See footnotes at the end of Table 2.

#### TABLE 4

#### WORK FORCE, UNEMPLOYMENT. AND EMPLOYMENT JERSEY CITY LABOR AREA, 1956-1972 (In thousands)

Unemployment Employment Nonagricultural Agricultural Wage and All Work Number Rate Salary (Percent) Otherb Employment Year Forcea 1956 . . . . . . 327.6 18.7 282.1 26.7.1 5.720.3 278.825.51957 324.86.3 .1 28.51958 . . . . . . 315.5 9.0 261.725.1.1 1959 . . . . . 22.6 7.4 257.823.9 304.7.1 1960 . . . . . . 299.9 21.6 7.2256.7 21.2 .1 23.3 7.8 21.5 1961 ..... 298.5253.5.1 1962 ..... 255.421.0 295.418.0 6.1 .1 1963 ..... 251.4 291.2 19.4 6.7 19.7 .1 1964 ..... 287.0 17.9 6.2 249.5 19.3 .1 1965 ..... 289.7 15.2 5.2 255.318.7 .1 292.4 12.9 4.4 261.3 17.8 0 1966 . . . . . . 4.91967 . . . . . . 293.914.5 262.416.9 0 296.215.7 5.3263.8 16.0 0 1968 . . . . . . 15.9 0 1969 . . . . . . 297.3 16.1 5.4264.9 294.9 1970 . . . . . . 19.5 6.6 259.1 16.0 0 25.6 289.2 8.9 247.6 15.1 0 1971 . . . . . . 0 24.5 245.5 14.4 1972 . . . . . . 284.6 8.6

See footnotes at the end of Table 2.

#### WORK FORCE, UNEMPLOYMENT, AND EMPLOYMENT TRENTON LABOR AREA, 1956-1972 (In thousands)

			Unem	ployment		Employment				
					Nonagric	ultural	Agricultural			
Year		Work Forcea	Number	Rate (Percent)	Wage and Salary Employment	All Otherb				
1956		125.8	7.0	5.6	102.8	12.8	2.3			
1957		128.0	7.7	6.0	104.9	13.0	2.4			
1958 .		127.8	11.2	8.8	100.7	13.4	2.1			
1959		129.0	8.7	6.7	103.8	13.7	2.1			
1960		129.0	8.0	6.2	106.3	12.8	1.9			
1961		129.4	9.1	7.1	105.3	13.0	2.0			
1962		129.2	6.9	5.4	107.4	12.8	1.9			
1963		131.8	6.6	5.0	110.5	12.6	2.0			
1964		134.9	5.8	4.3	114.1	12.8	1.7			
1965		139.1	5.6	4.1	119.1	12.7	1.7			
1966		142.0	5.3	3.7	122.9	12.1	1.7			
1967		143.2	5.5	3.8	124.3	11.6	1.5			
1968		145.5	5.4	3.7	127.3	11.4	1.4			
1969		150.2	4.8	3.2	132.6	11.5	1.2			
1970		154.6	6.1	3.9	135.4	11.4	.9			
1971		158.7	7.9	5.0	137.6	11.9	.9			
1972		163.6	7.5	4.6	143.2	12.1	.9			

See footnotes at the end of Table 2.

	TABLE 10									
WAGE	AND	SALARY	WORKERS	IN	NONAGRICULTURAL	ESTABLISHMENTS,	MAJOR	INDUSTRY	DIVISIONS,	
					NEW JERSEY,	1947-1972	-			

(In thousands)

Year	Total Non- Agricultural Employment	Manu- facturing	Mining	Contract Construction	Transportation and Public Utilities	Wholesale and Retail Trade	Finance, Insurance and Real Estate	Services and Miscellaneous	Government
1947	1,622.6	782.6	4.0	65.4	142.2	249.7	63.1	158.8	156.8
1948	1,657.1	786.3	4.1	74.6	141.0	260.5	67.0	163.7	159.9
1949	1,595.6	721.8	4.0	72.5	134.0	264.5	66.5	166.2	166.1
1950	1,657.1	756.4	4.3	81.2	135.4	273.7	68.3	166.8	171.0
1951	1,768.1	821.2	4.5	95.4	143.9	285.8	69.8	169.8	177.7
1952	1,804.0	832.9	4.6	91.9	146.7	295.6	70.7	174.0	187.6
1953	1,850.2	856.2	4.7	90.3	147.8	303.4	73.6	180.6	193.6
1954	1,820.8	802.1	4.3	<b>93.6</b>	146.1	312.4	76.1	186.0	200.2
1955	1,865.3	811.1	4.0	98.7	148.4	322.5	78.8	195.4	206.4
1956	1,933.5	834.8	4.3	100.7	153.8	336.6	81.8	208.4	213.1
1957	1,968.3	835.0	4.4	96.2	154.3	349.1	85.4	222.7	221.2
1958	1,911.3	775.4	3.7	88.6	148.2	351.2	86.7	230.5	227.0
1959	1,970.5	801.3	3.6	95.7	147.0	360.5	87.3	241.6	233.5
1960	2,017.1	808.6	3.5	98.1	149.5	374.6	88.6	252.0	242.2
1961	2,033.7	791.1	3.4	99.4	150.1	380.7	91.2	264.2	253.6
1962	2,096.1	812.8	3.4	100.7	150.8	393.3	93.4	278.9	262.8
1963	2,129.3	809.1	3.5	100.2	151.9	405.5	95.5	291.5	272.1
1964	2,168.5	806.2	3.6	105.7	153.4	420.2	97.8	301.6	280.0
1965	2,256.4	836.7	3.5	109.3	157.0	439.0	99.9	315.6	295.4
1966	2,358.4	878.2	3.0	109.8	162.2	460.0	102.4	330.8	31 <b>2.0</b>
1967	2,420.9	881.9	2.8	111.0	166.3	472.1	106.0	351.6	3 <b>29.2</b>
1968	2,485.4	886.2	3.1	114.3	166.3	489.7	109.7	372.6	344.4
1969	2,570.9	893.6	3.3	116.8	176.2	515.1	112.6	393. <b>2</b>	360.1
1970	2,608.5	863.0	3.2	119.2	182.2	538.2	117.7	410.0	375.1
1971	2,610.9	821.8	3.0	116.3	181.1	558.4	121.7	419.3	389.3
1972	2,666.3	814.8	3.2	120.5	181.6	578.1	124.9	435.0	408.2

Series have been adjusted to March 1972 benchmarks.

Source: N.J. Department of Labor and Industry, Division of Planning and Research.

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WAGE AND SALARY WORKERS IN MANUFACTURING, DURABLE GOODS, NEW JERSEY, 1947-1972 (In thousands)

Year	Total Durable Goods	Lumber and Wood Products	Furniture and Fixtures	Stone, Clay and Glass Products	Primary Metal Industries	Ordnance and Fabricated Metals	Machinery, Except Electrical	Electrical Machinery	Trans- portation Equipment	Instruments and Related Products	Miscellaneous Manu- facturing Industries
1947	403.0	6.9	7.7	31.0	45.8	45.7	56.0	108.9	47.4	18.2	35.5
1948	397.2	7.0	8.2	31.4	44.2	44.3	53.8	106.7	45.9	18.8	36.9
1949	346.1	6.5	7.6	29.0	37.6	40.7	48.8	87.3	37.5	17.9	33 <b>.2</b>
1950	372.3	6.8	8.9	31.7	40.5	44.2	49.9	97.2	40.1	17.8	35.3
1951	427.9	7.1	9.1	35.3	46.5	48.3	60.0	115.1	47.5	22.4	36.6
1952	446.6	6.4	8.5	33.4	45.3	50.5	61.7	121.7	60.2	24.7	34.3
1953	470.4	6.3	8.6	33.8	46.2	57.2	64.0	132.5	62.7	26.5	32.6
1954	431.3	6.4	8.2	32.5	42.6	54.6	60.6	116.7	56.5	24.9	<b>28</b> .3
1955	435.5	6.4	8.5	34.1	43.9	55.7	59.1	117.5	57.1	25.3	27.8
1956	455.9	6.4	9.1	34.3	47.3	55.5	65.8	124.3	57.4	27.9	27.9
1957	457.3	6.3	9.2	33.9	46.9	56.7	65.5	125.6	55.9	29.4	27.9
1958	411.9	5.6	8.7	31.9	40.9	50.9	57.0	115.0	48.7	27.4	25.8
1959	430.5	5.9	9.2	33.1	41.7	53.7	57.8	121.4	50.5	30.2	27.0
1960	436.5	5.7	9.8	33.7	42.6	54.2	61.0	122.3	48.5	31.7	26.8
1961	421.3	5.6	9.0	34.4	40.7	53.6	57.3	119.5	41.7	31.9	27.6
1962	436.1	5.8	9.7	<b>34.6</b>	40.1	55.6	60.3	125.2	<b>42.5</b>	32.4	29.9
1963	425.7	5.7	8.9	34.9	38.6	55.2	60.1	121.7	39.0	32.9	28.7
1964	418.6	5.6	9.0	35.6	37.9	56.7	61.4	115.1	35.6	31.0	30.7
1965	438.1	5.6	9.4	36.9	39.8	60.2	65.4	118.4	36.8	32.7	32.9
1966	462.5	5.2	10.5	39.3	40.4	63.8	70.8	129.9	36.4	34.3	31.9
1967	463.9	5.0	11.0	39.1	38.6	65.4	75.0	131.2	32.0	36.5	30.0
1968	460.8	5.3	10.2	38.8	38.5	67.0	75.8	128.1	31.7	35.8	29.7
1969	463.8	5.2	11.0	40.9	39.4	69.2	76.2	125.6	31.4	34.7	30.2
1970	435.4	4.9	10.5	39.6	37.2	66.4	72.8	116.9	26.3	33.2	27.5
1971	406.4	4.5	10.6	39.0	33.4	62.4	66.5	106.3	25.3	32.6	25.8
1972	401.9	4.4	11.2	39.6	32.1	62.7	65.4	102.0	26.2	33.2	25.0

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Series have been adjusted to March 1972 benchmarks.

Source: N.J. Department of Labor and Industry, Division of Planning and Research.

TABLE 12	
WAGE AND SALARY WORKERS IN MANUFACTURING, NONDURABLE GOODS, NEW JERSEY, 194	7-1972
(In thousands)	

Year	Total Nondurable Goods	Food and Kindred Products	Tobacco Manufactures	Textile Mill Products	Apparel and Related Products	Paper and Allied Products	Printing, Publishing and Allied Industries	Chemicals and Allied Products	Petroleum Refining and Related Industries	Rubber and Miscellaneous Plastic Products	Leather and Leather Products
1947	379.6	56.9	5.5	61.1	78.9	21.7	18.6	80.1	15.6	29.5	11.7
1948	389.1	57.1	5.1	64.7	85.6	22.2	19.9	77.6	16.2	28.4	12.3
1949	375.7	55.9	4.9	57.8	88.9	21.8	21.4	71.9	16.3	24.7	12.1
1950	384.1	56.5	4.6	58.2	89.0	23.5	22.8	73.7	16.5	26.4	12.9
1951	393.3	<b>59.8</b>	4.4	53.7	89.8	24.8	23.4	79.1	17.3	<b>28.4</b>	12.6
1952	386.3	61.3	4.4	50.1	88.7	24.2	23.5	78.5	16.3	27.3	12.1
1953	385.8	60.9	4.3	48.3	85.0	26.5	24.8	79.2	16.4	28.4	12.0
1954	370.8	62.2	4.0	41.9	79.7	26.0	25.9	78.0	15.2	26.7	11.2
1955	375.6	61.7	3.4	42.7	79.6	26.3	27.1	80.8	14.5	27.5	11.9
1956	378.9	63.5	2.6	41.6	79.7	27.2	28.1	81.8	14.3	28.3	11.8
1957	377.7	62.9	2.0	38.6	79.2	28.3	30.5	83.3	13.8	27.7	11.4
1958	363.5	62.9	1.9	33.0	76.7	28.0	30.3	80.8	12.3	26.6	11.1
1959	370.8	62.3	1.8	<b>33.2</b>	79.2	28.3	31.5	82.4	11.7	29.3	11.1
1960	372.1	62.9	1.7	31.4	77.7	28.0	<b>32</b> .3	86.4	11.5	29.2	11.0
1961	369.8	63.9	1.6	29.1	76.4	28.1	32.6	87.0	11.1	29.2	10.8
1962	376.7	64.2	1.5	28.6	75.8	29.7	33.0	91.0	10.7	30.7	11.5
1963	383.4	64.9	1.4	27.9	74.5	31.4	34.6	94.8	10.5	31.7	11.7
1964	387.6	65.0	1.5	27.8	74.6	31.5	35.8	96.4	9.6	<b>34.2</b>	11.2
1965	398.6	66.4	1.4	28.5	77.3	31.3	37.5	98.9	9.8	36.0	11.5
1966	415.7	67.2	.8	29.6	80.3	33.0	39.6	105.5	10.3	37.2	12.2
1967	418.1	65.3	.6	29.1	78.5	33.7	41.5	110.9	9.5	37.7	11.3
1968	<b>424</b> .6	64.5	.3	30.5	78.7	34.3	42.2	113.3	9.6	39.9	11.5
1969	429.9	63.2	.3	30.8	77.2	35.0	43.3	118.2	9.8	41.4	10.6
1970	427.6	63.5	.3	29.6	72.3	35.3	44.8	122.3	10.6	40.0	9.6
1971	415.4	61.7	.3	29.4	68.9	35.9	43.7	119.0	10.1	37.1	9.4
1972	412.9	58.6	.3	30.2	69.1	35.7	45.2	118.2	10.2	36.7	8.9

Series have been adjusted to March 1972 benchmarks. Source: N.J. Department of Labor and Industry, Division of Planning and Research.

Year	Employment (thousands)	Average Weekly Hours	Average Weekly Earnings (dollars)	Average Hourly Earnings (dollars)
1947	n.a.	40.7	52.26	1.28
1948	n.a.	40.5	56.37	1.39
1949	n.a.	39.4	56.97	1.45
1950	n.a.	40.8	61.65	1.51
1951	n.a.	41.1	67.28	1.64
1952	n.a.	41.1	71.02	1.73
1953	n.a.	40.9	74.32	1.82
1954	n.a.	39.8	74.43	1.87
1955	n.a.	40.7	79.16	1.94
1956	n.a.	40.5	82.98	2.05
1957	n.a.	39.9	85.23	2.14
1958	563.7	39.4	86.80	2.20
1959	583.8	40.3	92.45	2.29
1960	580.8	39.6	93.93	2.37
1961	563.1	40.0	97.60	2.44
1962	576.0	40.5	101.66	2.51
1963	567.5	40.5	104.90	2.59
1964	564.4	40.6	108.40	2.67
1965	587.1	41.0	112.34	2.74
1966	616.5	41.3	117.29	2.84
1967	616.7	40.6	118.96	2.93
1968	616.9	40.7	125.76	3.09
1969	621.3	40.8	132.60	3.25
1970	592.6	40.3	139.44	3.46
1971	563.9	40.4	150.29	3.72
1972	561.1	40.9	163.19	3.99

### EMPLOYMENT, HOURS, AND EARNINGS OF PRODUCTION WORKERS ON MANUFACTURING PAYROLLS, NEW JERSEY, 1947-1972

\_

n.a.-not available.

Series have been adjusted to March 1972 benchmarks. Source: New Jersey Department of Labor and Industry; Division of Planning and Research.

#### CONSUMER PRICE INDEXES\* FOR URBAN WAGE EARNERS AND CLERICAL WORKERS

Year	United States	New York SCA#	Philadelphia SMSAb	Average of New York and Philadelphia Areas
1947	 66.9	67.0	66.4	66.7
1948	 72.1	71.5	71.7	71.6
1949	 71.4	70.7	70.9	70.8
1950	 72.1	71.2	71.3	71.2
1951	 77.8	76.5	77.9	77.2
1952	 79.5	77.7	79.5	78.6
1953	 80.1	78.2	79.8	79.0
1954	 80.5	78.7	80.7	79.7
1955	 80.2	78.2	80.6	79.4
1956	 81.4	79.4	81.6	80.5
1957	 84.3	82.0	84.2	83.1
1958	 86.6	84.5	85.8	85.2
1959	 87.3	85.6	86.8	86.2
1960	 88.7	87.3	88.4	87.8
1961	 89.6	88.1	89.4	88.8
1962	 90.6	89.4	90.1	89.8
1963	 91.7	91.3	91.8	91.6
1964	 92.9	92.8	<b>93.2</b>	93.0
1965	 94.5	94.3	94.7	94.5
1966	 97.2	97.5	97.3	97.4
1967	 100.0	100.0	100.0	100.0
1968	 104.2	104.3	104.8	104.6
1969	 109.8	110.8	110.4	110.6
1970	 116.3	119.0	117.8	118.4
1971	 121.3	125.9	123.5	124.7
1972	 125.3	131.4	127.0	129.2

1967 = 100.0

FOOTNOTES

<sup>n</sup> Standard Consolidated Area: New York-Northeastern New Jersey (17 counties).

<sup>b</sup> Standard Metropolitan Statistical Area, including Camden, Burlington, and Gloucester Counties.

\* Annual averages.

SOURCES: U.S. Department of Labor, Bureau of Labor Statistics. N.J. Department of Labor and Industry, Office of Business Economics.

	Total Personal Income			Per Capita Personal Income					
	New	United	New	Ûnited	New	United			
Veer	[ersey	States	Jersey	States nt dollars)	Jerseya	States			
1 eut	(munons of	urrent aottars)	(curre		(1907 a	onars)			
1948	8,063	208,878	1,689	1,430	2,359	1,983			
1949	8,131	205,791	1,663	1,384	2,349	1,938			
1950	8,934	226,214	1,834	1,496	2,576	2,075			
1951	10,151	253,232	2,028	1,652	2,627	2,123			
1952	10,934	269,769	2,134	1,733	2,715	2,180			
1953	11,750	285,456	2,247	1,804	2,844	2,252			
1954	11,957	287,607	2,231	1,785	2,799	2,217			
1955	12,688	308,266	2,306	1,876	2,904	2,339			
1956	13,719	330,481	2,443	1,975	3,035	2,410			
1957	14,550	348,460	2,536	2,045	3,052	2,426			
1958	14,823	358,474	2,517	2,068	2,954	2,388			
1959	15,849	380,964	2,635	2,161	3,057	2,475			
1960	16,526	398,726	2,708	2,216	3,084	2,498			
1961	17,333	414,411	2,767	2,265	3,116	2,528			
1962	18,430	440,189	2,890	2,370	3,218	2,616			
1963	19,372	463,054	2,966	2,458	3,238	2,680			
1964	20,515	494,912	3,086	2,590	3,318	2,788			
1965	22,105	535,948	3,267	2,770	$3,\!457$	2,931			
1966	23,862	583,828	3,483	2,987	3,576	3,073			
1967	25,638	625,576	3,701	3,170	3,701	3,170			
1968	27,987	684,745	3,995	3,436	3,819	3,298			
1969	30,423	746,449	4,288	3,708	3,877	3,377			
1970	32,930	801,493	4,577	3,933	3,866	3,382			
1971	35,145	857,100	4,813	4,156	3,860	3,426			
1972 (P).	38,300	935,800	5,158	4,494	3,992	3,587			

### PERSONAL INCOME, NEW JERSEY AND UNITED STATES, 1948-1972

FOOTNOTES

<sup>a</sup> The average Consumer Price Index given in Table 14 for the New York Standard Consolidated Area and the Philadelphia SMSA was used to express New Jersey per capita personal income in constant 1967 dollars.

<sup>b</sup> The Consumer Price Index for the United States was used to express United States per capita personal income in constant 1967 dollars.

(P) Preliminary estimates.

SOURCES: U.S. Department of Commerce; U.S. Department of Labor, Bureau of Statistics; Business Week and Office of Business Economics, N.J. Dept. of Labor and Industry.

	E	lectric Power Sale	es s					Registration of	of New Vehicles
Year	Total (kilow	Large Industrial and Commercial Users att hours in tho	Small Industrial and Commercial Users	Gasoline Consumption	Value of New Dwelling Units Authorized (\$000)	Construction Contracts Awarded	Retail Store Sales	Passenger Cars (number)	Commercial Vehicles (number)
1049	6 997 191	9 796 091	1 950 954	1 109 594	(\$000)	406 476	(\$000,000)	116.947	25 504
1940	0,007,101	3,730,931 2,579,906	1,339,634	1,100,524	n.a.	400,470	n.a.	165 170	23,304
1949	7,020,004	0,070,090 1161 151	1,485,190	1,199,979	n.a.	400,007	n.a.	103,179	23,344
1930	8,023,122	4,101,404	1,030,073	1,007,070	n.a.	141,111 676 150	n.a.	210,430	21,229
1951	8,944,201 0 579 799	4,040,000	1,800,808	1,390,712	n.a.	600 770	n.a.	170,002	29,002
1952	9,070,744	4,037,000	1,909,215	1,407,020	11.a.	708 880	n.a.	908 876	19,555
1955	10,433,072	5,191,550	2,100,090	1,007,990	11.a.	795,009 886 047	n.a.	200,370	25,040
1954	10,951,059	5 974 100	2,546,591	1,077,575	11.a. n a	1 010 450	n.a.	267,252	20,001
1955	12,104,077	5,074,199 6 292 544	2,384,701	1,800,242	n.a.	1,010,459	n.a.	230,075	22,202
1950	13,224,055	6 649 984	2,007,055	1,840,055	n.a.	1,100,452	n.a.	219,297	21,505
1058	14,190,407	6 890 115	3,097,755	1,850,252	n.a.	1,040,449	n.a.	188 770	17 616
1050	16 689 611	7 683 049	3,322,774	9 007 607	n.a.	1 808 786	n a.	210 205	20 874
1960	17 560 054	8 195 141	3,715,151	2,007,097	558 501	1,505,750	n.a.	215,505	20,571
1961	10 948 840	8 7 8 0 7 9 7	<i>4 4</i> 7 1 8 7 0	2,050,200	629 489	1,200,002	n 2	250,235	24,552
1962	20 630 556	9 506 486	4 848 094	2,030,731	618 663	1 392 618	n a	285 955	24,000
1963	29,030,000	10 108 217	5 309 982	2,010,000	681 597	1 584 448	8 999	318 197	26,804
1964	23 848 214	10,773,759	5 872 988	2,110,000	778 540	1 699 048	9 768	325 293	28,001
1965	25,964,004	11,712,402	6 4 3 3 9 6 1	2 322 560	804,151	1,555,689	10,396	378,768	30,980
1966	28.512.856	12.814.406	7.043.455	2.391.674	665,653	1,651,494	10,711	352.573	31.072
1967	30,146,448	13,147,596	7.620.829	2,447,834	652,963	1.906.577	10,947	302,680	27.471
1968	32.616.153	13.863.329	8.394.581	2.596.238	680.816	2.380.846	12.030	356.762	30.724
1969	35.637.643	15.042.515	9.214.088	2.676.055	661,820	2.205.705	12.591	356.583	34.616
1970	38.156.144	15.394.352	10.185.005	2.818.317	702.116	2.753.100	14.274	348.294	36.027
1971	39,919,508	15,564,483	11,056,580	2,918,695	876.144	2,432,486	15,359	403,164+	36,842
1972 (P)	42,331,408	16,208,683	12,178,074	3,113,545	961,039	3,011,611	16,800*	448,200	51,388

TABLE 16PRODUCTION AND TRADE, NEW JERSEY, 1948, 1972

FOOTNOTES

\* Figures for 1970 and 1971 are based on a new sample design and improved processing techniques developed as a result of the 1967 Census of Business by the U.S. Department of Commerce. Figures not comparable with earlier data. † Years 1948 to 1970 compiled by N.J. Auto List. Years 1971 and 1972 N.J. Division of Motor Vehicles.

(P) Provisional estimates based on data through November 1972. Prepared by Office of Business Economics, January 19, 1973.

n.a.-not available.

NOTES:

Beginning with January 1967, construction contracts awarded were adjusted to reflect more complete coverage of one-family house construction. Retail store sales not strictly comparable. New series began September 1967.

SOURCES: Electric Power Sales: Edison Electric Institute. Gasoline Consumption: American Petroleum Institute. New Dwelling Units Authorized: N.J. Department of Labor and Industry in Cooperation with U.S. Department of Commerce. Construction Contracts Awarded: F.W. Dodge Corporation. Retail Sales: U.S. Dept. of Commerce. Registration of New Vehicles: New Jersey Auto Lists, Inc.; N.J. Division of Motor Vehicles.

					x * 1.1/.	N	Apparent	New Jersey	Turnpike
Year	Postal Receipts¤ (dollars)	Advertising Linage <sup>b</sup> (000 lines)	Business Telephones Net Gains	Business Failures (number)	of Business Failures (\$000)	New Incorpora- tions (number)	of Distilled Spirits (000 gal.)	Toll Revenue (\$000)	Number of Vehicles (000)
1948	25,521,507	133,515	19,106	219	15,286	5,510	6,852	n.a.	n.a.
1949	28,207,664	145,319	10,014	366	16,246	5,411	6,688	n.a.	n.a.
1950	29,428,662	151,024	20,134	346	10,926	6,009	8,243	n.a.	n.a.
1951	30,685,151	151,459	29,806	307	11,961	5,581	8,216	n.a.	n.a.
1952	33,226,624	162,413	29,044	319	18,627	6,146	7,824	16,245	17,948
1953	n.a.	172,671	26,613	360	25,856	6,651	8,443	19,195	22,005
1954	47,005,842	160,322	24,664	385	20,086	7,276	8,536	20,758	24,555
1955	48,516,344	171,876	31,659	456	29,753	8,386	9,045	21,124	25,888
1956	50,091,539	176,973	37,452	582	33,919	8,839	10,253	24,515	31,588
1957	52,614,766	172,607	29,856	565	39,604	8,097	9,331	29,025	39,270
1958	55,859,548	168,637	21,892	<b>778</b>	43,475	8,757	9,961	30,162	41,615
1959	63,172,822	178,818	35,051	639	27,619	10,436	10,702	33,3 <b>21</b>	46,199
1960	68,088,340	182,716	38,543	714	49,071	10,172	11,391	35,588	49,083
1961	71,359,658	177,863	28,825	717	53,282	9,650	11,743	37,197	51,738
1962	75,437,939	189,614	39,383	591	58,468	9,984	12,378	39,246	54,901
1963	85,541,527	197,736	29,716	509	256,075	9,716	12,810	40,781	56,677
1964	89,087,584	201,340	36,771	442	49,261	10,023	13,483	44,153	60,708
1965	89,863,285	266,092	47,251	512	96,334	10,439	14,383	46,128	64,958
1966	96,191,521	282,833	54,650	442	61,191	9,656	14,687	48,616	69,850
1967	99,363,477	278,160	48,620	414	64,215	10,220	15,064	51,238	73,529
1968	118,053,541	290,960	53,293	423	42,692	12,038	15,971	55,348	78,205
1969	122,074,437	311,353	73,211	343	53,141	13,168	16,572	57,645	80,618
1970	n.a.	285,963	58,787	463	142,196	13,958	16,289	63,944	89,655
1971	n.a.	n.a.	45,401	428	102,738	15,563	16,440	70,136	98,553
1972	(Series Di	scontinued)	*66,989	453	173,428	16,462	*17,012	75,948	107,933

# TABLE 17BUSINESS ACTIVITY, NEW JERSEY, 1948-1972

#### FOOTNOTES

\*-Preliminary.

n.a.-not available.

SOURCES: Postal Receipts: O.B.E. Dept. of L. & I. Advertising Linage: Media Records, Inc. and the Office of Business Economics. Business Telephone Net Gains: N.J. Bell Telephone Company. Number and Liabilities of Business Failures and New Incorporations: Dun and Bradstreet, Inc. Apparent Consumption of Distilled Spirits: Distilled Spirits Institute. New Jersey Turnpike-Toll Revenue and Number of Vehicles: New Jersey Turnpike Authority.

		Bank Debits	5	Savings in	Sawings in	Ordinam	
Year	Eight Cities (n	Nine Cities nillions of doll	Five SMSA Areasa ars)	- All Insurea Savings and Loan Associations (1	Savings in All Mutual Savings Banks thousands of do	Life Insurance Sales ollars)	
1049	10 756			955 959	516 500	580 688	
1940	19,750			<i>499</i> 501	525 519	604 901	
1949	19,400			506 027	588 888	795 719	
1950	22,332 95 455			500,037	650 868	805 480	
1931	20,400	96 669	• • • • •	794 491	780,505	800,405	
1934	20,054	20,005	• • • • •	969 041	994 985	1 058 601	
1933	· · · · ·	29,575		1 002,041	024,000	1,056,051	
1934		30,014		1,003,290	924,550	1,107,507	
$1933 \dots$		34,134 94 767		1,290,993	995,700	1,570,505	
1950	• • • • •	34,707		1,400,342	1,103,704	9 901 044	
1957	• • • • •	30,204		1,031,719	1,102,000	2,201,044	
1958		37,993		1,889,143	1,230,831	2,109,707	
1959		41,319	· · · · ·	2,147,322	1,292,154	2,235,092	
1960		43,864		2,414,376	1,327,447	2,171,985	
1961		48,851	• • • • •	2,729,116	1,384,518	2,180,105	
1962		51,622		3,052,389	1,547,302	2,103,371	
1963	• • • • •	56,596	70.090	3,418,173	1,092,707	2,381,980	
1964		61,709	79,920	3,801,004	1,833,533	2,748,760	
1965			90,719	4,171,487	1,992,759	3,112,622	
1966			104,425	4,261,895	2,122,482	3,258,043	
1967	· · · · ·		110,503	4,634,388	2,317,453	3,521,854	
1968	· · · · ·		152,419	5,059,085	2,480,412	3,920,144	
1969	· · · · ·		150,669	5,361,151	2,585,228	4,304,833	
1970			158,813	5,936,761	2,967,846	4,831,491	
1971			176,747	7,648,154	3,545,904	5,378,147	
1972	n.a.	n.a.	208,610	*8,908,940	*4,150,500	†5,662,128	

#### FINANCE, NEW JERSEY, 1948-1972

FOOTNOTES

\* Provisional estimates based on data through November 1971.

a Standard Metropolitan Statistical Areas: Newark-Paterson-Clifton-Passaic; Atlantic City; Trenton and Jersey City.

n.a.-not available.

SOURCES: Bank Debits: Federal Reserve System. Savings in all Insured Savings and Loan Assocations: Office of Bus. Economics. Savings in all Mutual Savings Banks; Savings Banks' Association of New Jersey. Ordinary Life Insurance Sales: Life Insurance Agency Management Association.



<sup>†</sup> Provisional estimates based on data through October 1971.

# TABLE 19STATE TAX REVENUES, NEW JERSEY CALENDAR YEARS 1949-1972

(Thousands of dollars)

Year	Total State Tax Revenues	Cigarette Tax	Corporation Tax	Inheritance Tax	Motor Fuel Tax	Motor Vehicle Tax	Pari- Mutuel Tax	All Other Taxes	Sales Tax
1949	155,135	17,713	15,633	10,179	35,167	33,542	11,801	31,100	
1950	162,402	18,240	17,238	9,535	35,601	36,486	11,834	33,467	
1951	177,994	18,996	18,992	11,103	38,293	41,309	14,661	34,640	
1952	188,557	19,854	20,265	12,069	40,048	45,181	18,047	33,096	
1953	203,033	20,079	22,294	12,357	42,660	48,577	20,710	36,355	
1954	217,526	19,482	23,435	10,515	53,552	52,095	21,871	36,576	
1955	256,142	19,952	36,811	14,316	67,196	57,835	22,822	37,210	
1956	292,232	30,622	39,235	17,338	70,307	71,226	23,798	39,666	
1957	292,059	34,806	41,831	18,123	70,538	62,492	24,484	39,783	
1958	309,674	36,754	43,952	10,608	80,046	64,731	23,886	39,697	
1959	357,756	39,529	69,327	18,771	97,184	68,476	24,571	39,898	
1960	383,503	42,130	76,940	24,988	99,945	71,733	25,155	42,610	
1961	410,832	56,075	78,724	22,051	111,210	74,958	25,309	42,506	
1962	455,131	59,966	82,496	29,810	124,446	77,658	29,408	51,347	
1963	492,835	66,243	88,060	48,568	128,952	81,980	27,213	51,818	
1964	529,068	68,720	94,142	44,801	135,157	87,383	28,580	70,285	
1965	561,971	75,031	101,838	50,278	141,938	91,094	28,826	72,966	
1966	688,469	87,868	119,462	55,246	147,765	95,179	29,209	70,391	83,349
1967	859,639	97,241	134,406	54,097	150,166	97,288	31,215	73,119	222,107
1968	1,061,032	111,713	146,407	60,166	172,835	109,059	34,461	157,979	268,412
1969	1,219,074	117,603	223,814	64,266	193,534	127,631	34,829	179,644	277,753
1970	1,408,667	121,677	212,019	68,367	204,309	132,353	34,023	193,777	442,142*
1971	1,490,943	125,794	125,968	69,192	213,930	139,131	34,781	228,557†	553,590
1972	1,691,339	154,181	151,162	71,530	248,191	147,468	35,872	260,569	622,366

\* Reflects rate increase as of March 1, 1970.

+\$10 million of this increase is represented through an accelerated tax provision (Chapters 108 and 109, P. L. 1971) regarding public utility excise tax.

SOURCE: New Jersey Department of the Treasury; 1972 Preliminary Estimates by Office of Economic Policy.

		Number	Cash Receipts from Farm Marketings					
Year		of Workers on Farms (thousands)	(t Total	housands of dollars) From Livestock and Products	From Crops			
1950		66	292.430	188.694	103.736			
1951		65	348.831	229.976	118.855			
1952		61	342.447	215.156	127.291			
1953		58	346,187	223,750	122,437			
1954		59	314,259	194,605	119,654			
1955		58	307,674	200,178	107,496			
1956		53	330,372	202,117	128,255			
1957		51	314,627	193,991	120,636			
1958		51	304,569	191,946	112,623			
1959		45	286,467	169,690	116,777			
1960		44	295,411	167,222	128,189			
1961		42	286,167	156,180	129,987			
1962		41	278,001	146,024	131,977			
1963		39	271,135	138,904	132.231			
1964		37	252,632	123,334	129,298			
1965		33	269,520	117,995	151,525			
1966		27	265,390	119,938	145,452			
1967		23	249,416	102,164	147.252			
1968		<b>2</b> 3	250,061	98,510	151,551			
1969		<b>2</b> 3	246,997	102,491	144,506			
1970		20	242,626	96,464	146,162			
1971		20	240,114	88,666	151,448			
1972	(P)	20	234,527	92,160	142,367			

AGRICULTURE, NEW JERSEY, 1950-1972

FOOTNOTE

(P)-Preliminary Estimates.

SOURCES: U.S. Department of Commerce; N.J. Department of Agriculture.

### POPULATION CHANGE BY COUNTY NEW JERSEY, 1960-1972

County	Total Population 1960	Total Population 1970	Revised Census 1970	Percent Change 1960-70	Area in Square Miles	Density Per Square Mile 1970	Estimated Population July 1, 1971	Estimated Population July 1, 1972
Atlantic	160,880	175,043	175,043	8.8	566.97	308.73	180,350	181,940
Bergen	780,255	898,012	897,148	15.0	234.57	3,824.65	907,960	911,405
Burlington	<b>22</b> 4,499	323,132	323,132	43.9	817.64	395.20	335,895	335,190
Camden	392,035	456,291	456,291	16.4	222.01	2,055.27	467,280	474,055
Cape May	48,555	59,554	59,554	22.7	263.37	226.12	61,505	62,925
Cumberland	106,850	121,374	121,374	13.6	501.73	241.91	125,705	128,445
Essex	923,545	929,986	932,457	1.0	127.44	7,316.83	937,025	940,410
Gloucester	134,840	172,681	172,681	28.1	328.36	525.89	177,115	180,460
Hudson	610,734	609,266	607,839	-0.5	46.42	13,094.33	611,735	613,250
Hunterdon	54,107	69,718	69,718	28.9	429.60	162.29	71,855	73,100
Mercer	266,392	303,968	304,116	14.1	226.00	1,345.65	311,290	314,985
Middlesex	433,856	583,813	583,812	34.6	311.00	1,877.21	594,525	601,225
Monmouth	334,401	459,379	461,849	38.1	471.57	979.39	472,850	478,260
Morris	261,620	383,454	383,454	46.6	470.24	815.44	394,305	404,550
Ocean	108,241	208,470	208,470	92.6	637.09	327.22	219,455	236,555
Passaic	406,618	460,782	460,782	13.3	192.01	2,399.78	466,550	469,360
Salem	58,711	60,346	60,346	2.8	346.56	174.16	61,375	63,105
Somerset	143,913	198,372	198,372	37.8	305.55	649.23	202,350	204,225
Sussex	49,255	77,528	77,528	57.4	526.59	147.23	80,080	82,325
Union	504,255	543,116	543,116	7.7	102.93	5,276.56	548,480	551,285
Warren	63,220	73,879	73,960	17.0	361.55	204.56	75,315	75,930
State Total	6,066,782	7,168,164	7,171,043	18.2	7,489.20	957.52	7,303,000	7,382,985

SOURCE: U.S. Bureau of the Census; 1971 and 1972 estimates by Office of Business Economics.

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