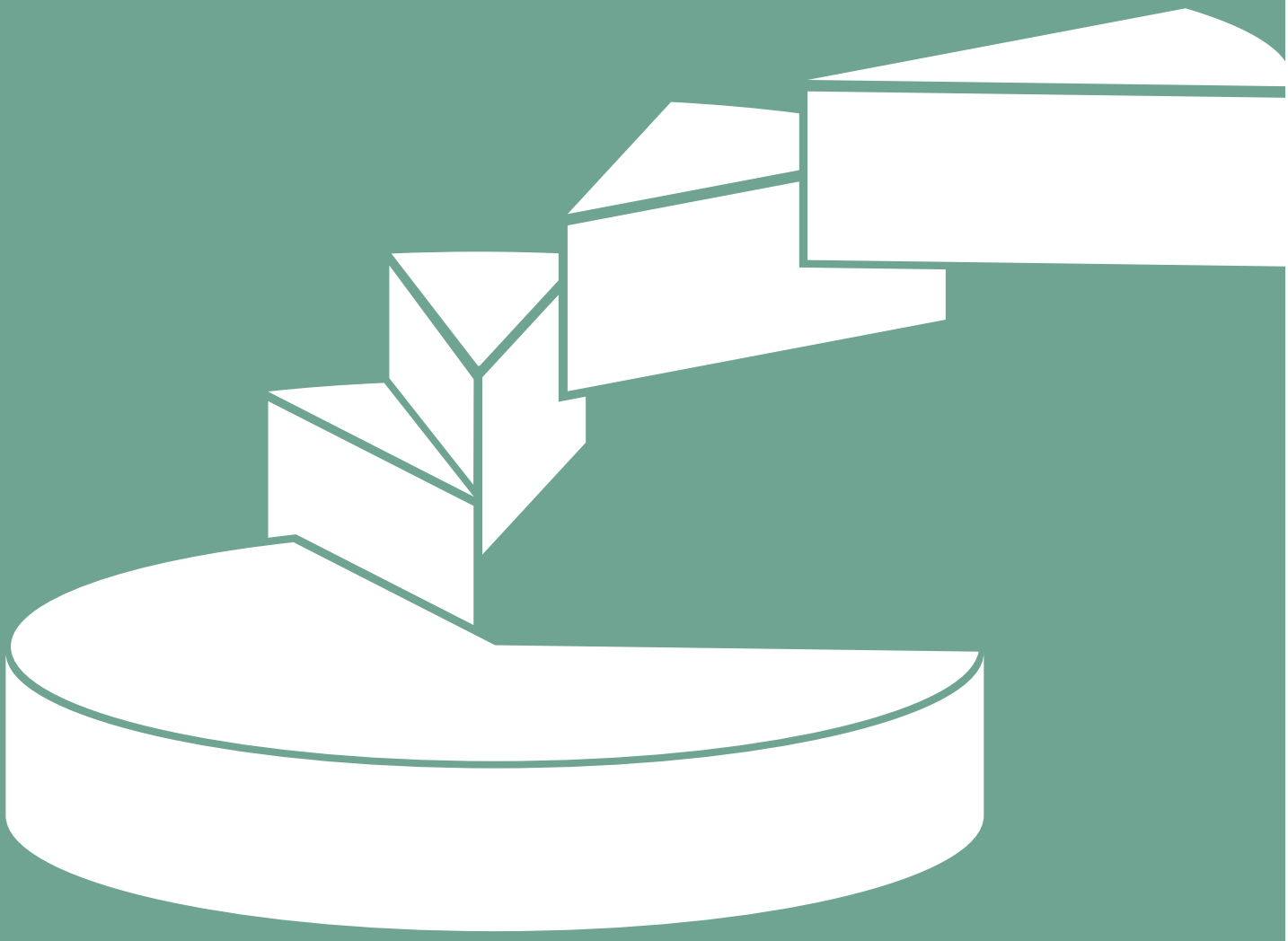
ALLEGHENYPLACES
THE ALLEGHENY COUNTY COMPREHENSIVE PLAN

Allegheny County Economic Trends



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EXECUTIVE SUMMARY

This report summarizes the economic trends that have affected Allegheny County over the previous three decades and projects a baseline economic forecast using the Pittsburgh REMI Model for Allegheny Places, the County's first Comprehensive Plan. The economic history of Allegheny County and the greater Pittsburgh region has been a case study of massive industrial restructuring that reached its peak in the mid 1980's. Like many rust-belt regions in the United States, the Pittsburgh region had long had the luxury of a sizable core of well paying manufacturing jobs. The concentration of heavy industries in the region was such that it displaced the development of other industries. That lack of diversification would not serve the region well as the industries long relied upon for economic stability would decline rapidly during the 1980's. The concentrated job destruction that the region experienced forced significant changes to all aspects of the regional economy. The trends documented here highlight how the local economy has adapted to the changes and how it is continuing to adapt to them into the future.

Allegheny County forms the core of the regional economy in Southwestern Pennsylvania. The concentration of economic activity and employment in Allegheny County makes it the driver of economic growth throughout the Southwestern Pennsylvania region. The County's economy has transformed over the previous two decades as local industries shifted away from heavy manufacturing with recent growth in multiple industries. Manufacturing remains an important sector of the regional and county economy, but it is no longer the only significant generator of regional income. This economic transition may become a perpetual state as local industries continue to adapt to changing market conditions. This transformation has resulted in a much more diversified economic base for the County and region than it has had in the past and will have as a result a pattern of economic growth that will more closely match national trends going into the future.

In 2005, economic activity in Allegheny County is estimated to produce over $77 billion in value added product. This value added production, called Gross Regional Product, accounts for over 72% of what is estimated to be a $107 billion Gross Regional Product generated in the Pittsburgh Metropolitan Statistical Area. The county's Gross Regional Product, is projected to grow by over 86% to an inflation adjusted value of over $126 billion by 2030.

The dynamics of the local workforce reflect the industrial transformation that the region has undergone in recent decades. Total employment in the county has returned to levels comparable to where they were before the decline of manufacturing employment in the 1980's. In 2003, employment within Allegheny County peaked at 880,962 which is likely the highest employment level the County has ever had. Continuing demographic shifts in the region will dampen overall employment growth in the coming decade. This results from a declining elderly population, and low or negative natural population changes which impact labor demand in local service and retail industries. Employment growth in Allegheny County is projected to be relatively flat over the coming decade and shift to moderate growth after 2015. Overall employment in Allegheny County is projected to increase by 15% between 2005 to 2030, or 0.6% per year, and will reach over 1 million in employment by 2030.

As the region's employment center, Allegheny County attracts significant numbers of workers from three states—Ohio, West Virginia, and Pennsylvania—to fill jobs within its borders. These commuting workers totaled over 143,000 in 2000, which is more than double the 60,000 commuters that traveled into the county for work in 1970. Many of the commuters into

Allegheny County reside along the county's border with Beaver, Butler, Washington, and Westmoreland Counties. In most of these bordering municipalities, the majority of their resident workers commute to jobs in Allegheny County. There are increasing numbers of commuters from counties and municipalities outside of the metropolitan region as well. In the last revision of Metropolitan Statistical Areas (MSA's), the addition of Armstrong County to the definition of the Pittsburgh MSA was the direct result of increased commuting of Armstrong County residents to jobs in Allegheny County. Further expansion of the Pittsburgh MSA can be expected in the future as the levels of commuting continue to increase.

These commuters are attracted to the county by career opportunities within the various job sectors such as health care, manufacturing, primary metals, and educational services. Health care and social assistance is the largest sector in Allegheny County by employment measures. In 2003, over 120,000 workers in Allegheny County were employed in the health care and social assistance sector, comprising 14 percent of the county's employment. Expected to remain at the top as a primary job sector, health care is estimated to reach nearly 195,000 workers by 2025 and 215,000 workers by 2030.

The role of manufacturing in the County has not gone away. Despite absolute losses in employment and decline relative to other parts of the economy, manufacturing industries remain a significant part of the local economy. An estimated $15 billion of manufacturing industry products are sold outside the Pittsburgh region, making it the biggest generator of regional export earnings for the county. In 2005, the county's manufacturing industries will have an estimated product valued at over $23 billion, while the primary metals industry is estimated to generate $2.1 billion in export sales.

The report includes a detailed location quotient (LQ) analysis of the county's industrial structure. A LQ is a measure of what industries are relatively over or under-specialized in a local or regional economy compared to a reference economy. That analysis shows that the County maintains a significant concentration of employment in educational services with a LQ estimated at 2.4 in 2002. A LQ of 1.0 would indicate a degree of specialization on par with that in the national as a whole and a LQ of 2.4 quantifies the importance of and degree of specialization the area has in education. Other industries in the County with LQ's greater than 1.0 include management of companies and enterprises, professional and technical services, health care and social assistance, and finance and insurance.

Occupational trends in the County match many of the trends that have been typical for the nation. In terms of specific occupations, computer specialists are the fastest growing occupation in the county, growing by nearly 17,000 jobs between 1971 and 2000. Its relative increase, 726 percent between the same years was second only to personal and home care aides, which increased by 911 percent over that period. Other fast growing occupations in the county include health care support, health diagnostics, lawyers, and other health professionals and technicians.

One of the most significant transformations in the regional and county workforce has been the increase in female labor force participation over the last 30 years. More women entering the workforce is the primary reason that employment and labor force levels in the County have been increasing over recent decades despite continuing population declines. For multiple reasons, Allegheny County and the Pittsburgh region have historically had abnormally low rates of female labor force participation. As the region shifted away from heavy manufacturing industries, one result was greater job opportunities for women. It has only been in recent years that the female labor force participation among the working age population has matched national levels. Though the number of men in the County's labor force has declined, that decline has been

offset by the increased number of women in the labor force. Between 1971 and 2000, the number of men in the Allegheny County labor force decreased by 17.8 percent while the number of women in the labor force increased by 13.9 percent. By 2000, women had become nearly half (48 percent) of Allegheny County's total labor force.

Increased female labor force participation has not eliminated persistent wage disparities between genders. Women in Allegheny County were concentrated in lower income earnings levels in 2000. There are significantly more women than men for all levels of earnings below $25,000 per year. At the same time all earning levels of $25,000 or more have more men. Men greatly outnumbered women at the highest earnings levels.

For over 30 years, Allegheny County has lost ground in personal income growth in comparison to the Pittsburgh region, Pennsylvania and the nation. Population losses in Allegheny County have exacerbated wage trends leading to Allegheny County lagging the region, state and nation in terms of personal income growth in almost every decade since 1970. Only in the 1980's did Allegheny County's personal income growth exceed that of the Pittsburgh MSA, reflecting the depth of the recession in the suburban counties of the region. When adjusted for population levels, Allegheny County's per capita income levels fare much better. Allegheny County maintains a concentration of relatively well paying jobs and a relatively low poverty rate which contribute to it having higher per capita income levels than the region, state or nation

A disparity in the county's labor force that has not ameliorated over time has been the labor force participation of African American men. African American men in Allegheny County have significantly lower labor force participation rates than the rates for the white alone population or any other major race and ethnic group represented in the county. African American men age 16 and over had an overall labor force participation rate of 58.9 percent in 2000 compared to 69.5 percent for the white males. Low labor force participation rates for African American men is one component leading to the low household income levels for African Americans. Median household income for African Americans was $22,130, or just 54 percent of the comparable median household income for the white alone population, which was $40,858. Because 84 percent of the Pittsburgh region's African American population lives in Allegheny County, the issues of racial disparity are concentrated within its borders.

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INTRODUCTION

This report covers the broad economic trends that are expected to impact Allegheny County in coming decades for Allegheny Places, the County Comprehensive Plan. The report examines the local economy, which is composed of many inter-related parts, including firms, industries, workers, and population. Typical of all large metropolitan regions, it is nearly impossible to separate the economic conditions of individual counties or smaller geographic areas from the economic conditions of the region in which they lie. Therefore, regional economies, such as the Pittsburgh regional economy, consist of integrated flows of goods and services flowing freely across county or municipal borders. Also, workers themselves often live in one county and work in another. This report will focus primarily on the specific nature of Allegheny County within the Pittsburgh region and its unique role as the region's urban core. (A full description of the definitions of Pittsburgh region is contained in the companion piece, *Allegheny County Housing and Socio-Demographic Trends*.)

The Pittsburgh region underwent a massive restructuring of its local manufacturing industry that has affected nearly all parts of the region's economy and its people. Steel defined the region and its economy for the better part of a century from the early to mid 1800s. The fact that the Pittsburgh economy has specializations in anything other than steel industries is itself a mark of resilience and recovery. The path of that restructuring is important because the legacies of the Pittsburgh transition are reflected in the region's economy in terms of how it has evolved, where it is now, and what foundations will be carried forward. These themes are recurrent in this analysis of Allegheny County's economic structure and projections for the future. Due to its influence and relevance to the subject matter discussed in this report, this restructuring will be referenced frequently as the Pittsburgh transition throughout this document.

Data Sources and Methodology

The information detailed in this report draws from the following data and sources to describe and analyze the economic trends prevalent in Allegheny County:

1. U.S. Census data (various years);
2. Pittsburgh Regional Economic Model Inc. (REMI). The REMI model was used both as a data source for various quantitative breakdowns of the regional economy and also as a tool to develop a *baseline economic forecast* for the county. It is described more fully in the appendix;
3. Regional Economic Information System (REIS), compiled by the U.S. Department of Commerce's Bureau of Economic Analysis;
4. Occupational Employment Statistics (OES), U.S. Bureau of Labor Statistics; and
5. Employment data compiled by the Pennsylvania Center for Workforce Information and Analysis (CWIA).

For comparison and context, data for Allegheny County is often compared to data for the Pittsburgh region. Unless noted otherwise, the Pittsburgh region for this document will reference the 2003 definition of the Pittsburgh Metropolitan Statistical Area, (MSA) which includes seven counties: Allegheny, Armstrong, Beaver, Butler, Fayette, Washington and Westmoreland. When possible, all historical data is adjusted to match this current MSA definition, but note that for certain data sources, this is not possible. Where noted, other definitions of the Pittsburgh region are used. In particular a previous version of the Pittsburgh

MSA in use between 1993 and 2003 was a six county region, which did not include Armstrong County. There are other commonly used definitions of the Pittsburgh region but for consistency they are not used in this document. These definitions include the ten county region that covers the membership of the Southwestern Pennsylvania Commission, this includes the counties of the Pittsburgh MSA as well as Indiana, Greene and Lawrence Counties. The Department of Commerce's Bureau of Economic Analysis defines the Pittsburgh Economic Area as a 28 county region that includes counties in both West Virginia and Ohio and also subsumes three separate MSA's including Pittsburgh, Weirton and Wheeling.

Please Note: A major change in industry classification in the U.S. occurred in 1997, which makes the comparison of certain industry data challenging. Prior to 1997, the Standard Industrial Classification System (SIC) was used, but it was replaced by a new classification system called the North American Industrial Classification System (NAICS). The shift between the SIC and NAICS system makes certain long-term time series comparison difficult. For many industries, there is not a one-to-one correlation between the two systems. Both classification systems are used in this report. *Historical trends use the SIC while recent trends and future projections use the NAICS*.

CONTEXT

Allegheny County's economy shows strength and resilience in the aftermath of the region's economic restructuring. Economic activity in Allegheny County is estimated to produce over $77 billion in value added product in 2005. This value added production, called Gross Regional Product, accounts for over 72 percent of what is estimated to be a $107 billion dollar Pittsburgh regional economy.[1]

Allegheny County continues as the region's major employment center. In 2003, 865,195 people worked in Allegheny County. Though employment dropped slightly from a peak of 880,962 in 2001 (1.8 percent decline), recent employment levels are currently the highest in the county's history. An average of 696,661 residents of Allegheny County were employed in 2003. Though population has continued to disperse from the county for decades, Allegheny County continues to be a center for employment in the Pittsburgh region.

As an employment center, the county draws more workers from outside its border and from farther distances than in the past. In 2000, it was estimated that over 45,707 workers resided in Allegheny County but commuted to jobs located outside the county. A far larger number of workers with jobs in Allegheny County, however, reside elsewhere in the Pittsburgh region and beyond. In 2000, over 143,000 workers commuted into Allegheny County for work, more than double the 60,000 commuters into the county in 1970.

Nonetheless, the county still exhibits the long-term effects of the massive shocks to the region's economy that occurred during the steel plant closures in the 1980s. Large-scale job destruction resulted in local unemployment rates that were high both in absolute levels and compared to other regions of the country. Indeed, the U.S. emerged from the recession of the early 1980s with relatively high job growth over most of the decade, while job losses mounted in older industrial regions such as Pittsburgh. The result was a large-scale out-migration of workers and their families from the region in the early 1980s. In the latter half of the 1980s, however, the Pittsburgh economy began to recover and the county and region began to exhibit job growth, approaching the national employment growth rate at that time.

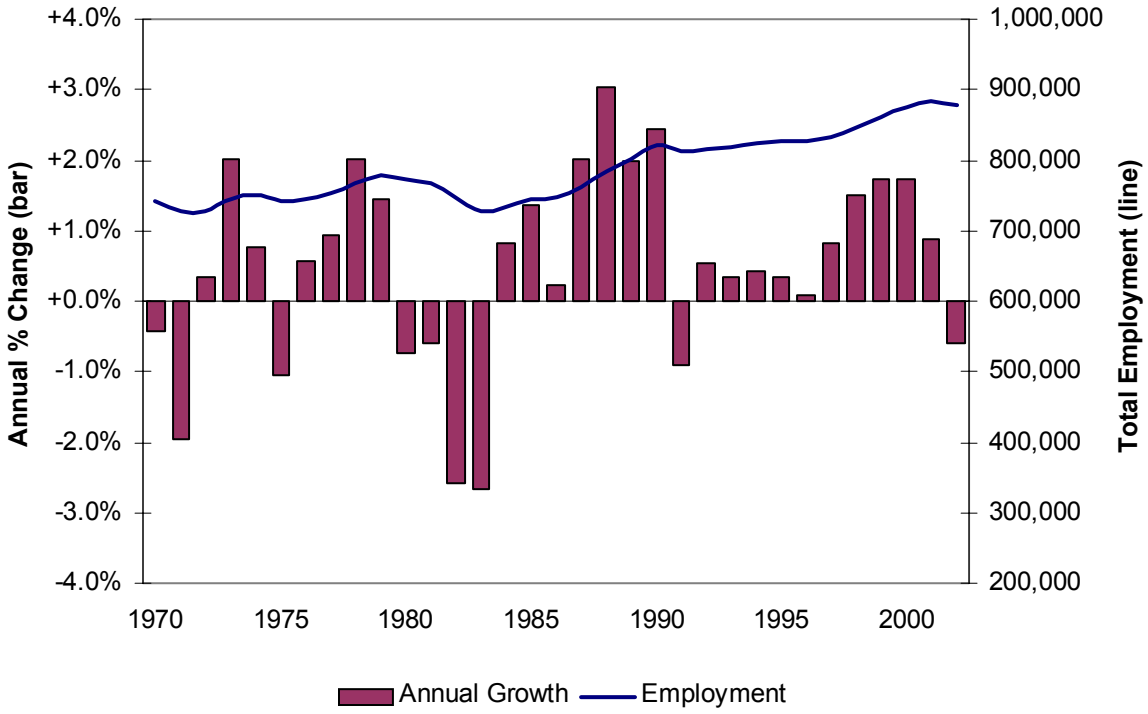
Discussed in more detail in the companion piece to this report, *Allegheny County Housing and Socio-Demographic Trends,* the migration of people from the Pittsburgh region, specifically the large scale migration of younger workers, left a lasting mark on demographic structure. Not only was a generation of workers lost during that time, but also future generations of workers. As devastating as it may have been, the out-migration of workers, however, was an essential part of the recovery that would follow. Because so many of the jobs lost in the region were structural losses not to be recovered, it would have been impossible in the short term to create enough jobs for the unemployed workers. The result was that the total number of unemployed dropped almost as fast as it had risen by 1990. By then, many of the unemployed had either left the region or the workforce, becoming known as discouraged workers no longer in the labor force.

The following figures show these changes graphically. Employment totals fell in the 1980s, with the massive restructuring of steel and manufacturing in Allegheny County and across the Pittsburgh region. In the early 1980s, employment levels decreased annually, and the number of unemployed reached nearly 100,000 by the mid 1980s (see Figures 1 and 2). The unemployment rate spiked higher than the U.S. rate during the recession of the early 1980s,

[1] Gross Regional Product estimates produced by the Pittsburgh REMI Model.

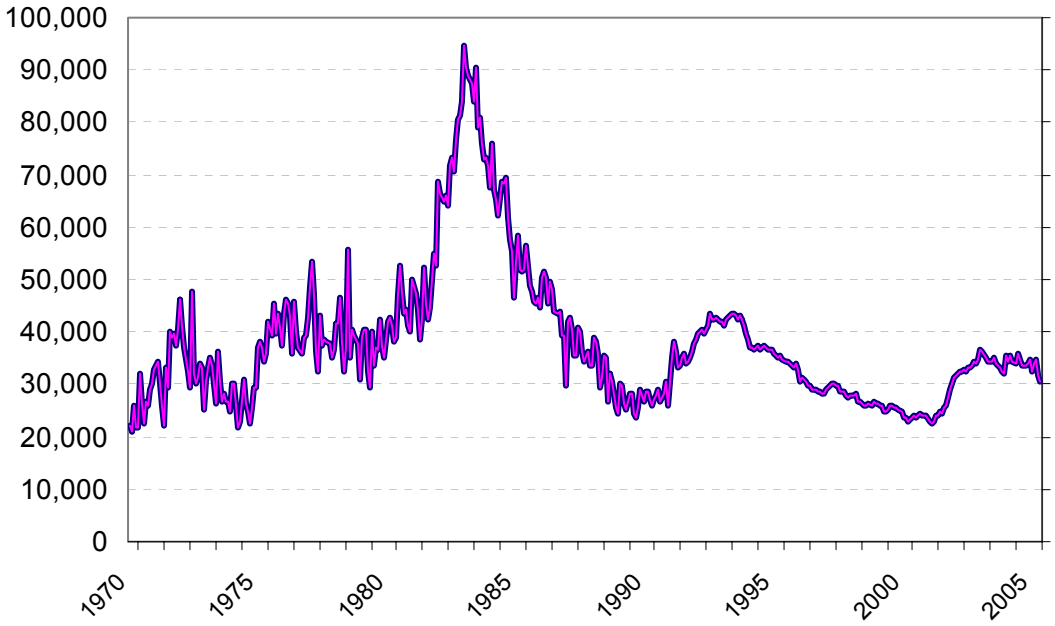
and Pittsburgh's unemployment recovered much more slowly, owing to the devastation of the steel industry (see Figure 3). By the 1990s, however, the combination of out-migration of the unemployed and rise in the number of discouraged workers meant that the unemployment rate in Allegheny County fell below the U.S. rate.

Figure 1. Employment and Employment Change in Allegheny County, 1970-2000



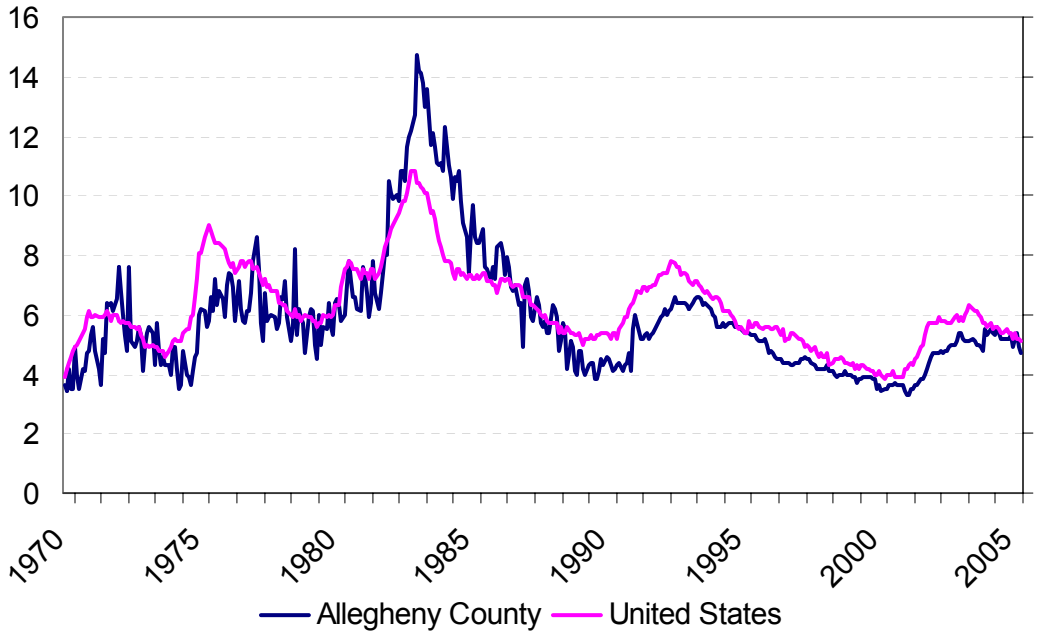
Source: U.S. Department of Commerce, Regional Economic Information System.

Figure 2. Total Resident Unemployment, Allegheny County, 1970-2005



Data from 1990 forward is seasonally adjusted.
Source: U.S. Department of Commerce, Regional Economic Information Systems.

Figure 3. Unemployment Rate, Allegheny County, 1970-2005



Data from 1990 forward is seasonally adjusted.
Source: Pennsylvania Center for Workforce Information and Analysis (CWIA).

The legacy of Pittsburgh's industrial past continues to impact Allegheny County's economy today. As long ago as 1960, regional economist Ben Chinitz suggested that the massively

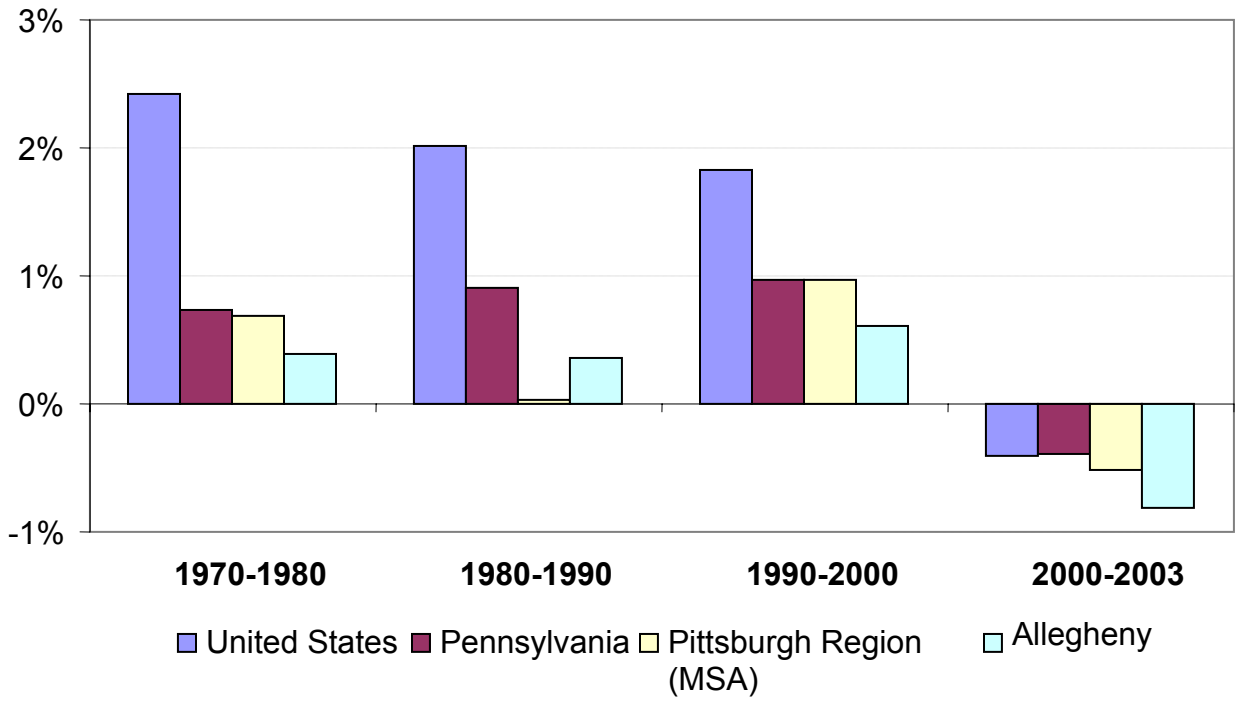
specialized nature of the Pittsburgh economy, not only in terms of the small numbers of industries represented in the region, but also the large size and narrow ownership structure of local firms, set Pittsburgh apart from other places. This lack of diversity hampered the development of entrepreneurial activity in the region. Without a wide range of industries that would form the initial markets for potentially new products, the ability for an entrepreneur to succeed would be that much more difficult. Today the issue of making the region competitive in terms of its ability to foster entrepreneurial activity is at the forefront of economic development.

Figure 4 compares employment growth in Allegheny County with the U.S., Pennsylvania, and the Pittsburgh region (Pittsburgh Metropolitan Statistical Area, MSA, see introduction) over each decade between 1970 and 2000, with a final comparison of employment growth between 2000 and 2003.

In each decade, employment in Allegheny County grew slower than both the U.S. and Pennsylvania. Since Pennsylvania's employment growth was slower than the U.S. over each decade, Allegheny County thus is a slow growing county in a relatively slow growing state. Over each decade, the county's growth was less than half the U.S. average. Finally, in the recession between 2000 and 2003, employment in the county declined by a larger margin than the country, state, and region.

Figure 4. Comparative Employment Growth, 1970-2003

Average Annual Change, Allegheny, Pittsburgh Region (MSA), Pennsylvania and U.S

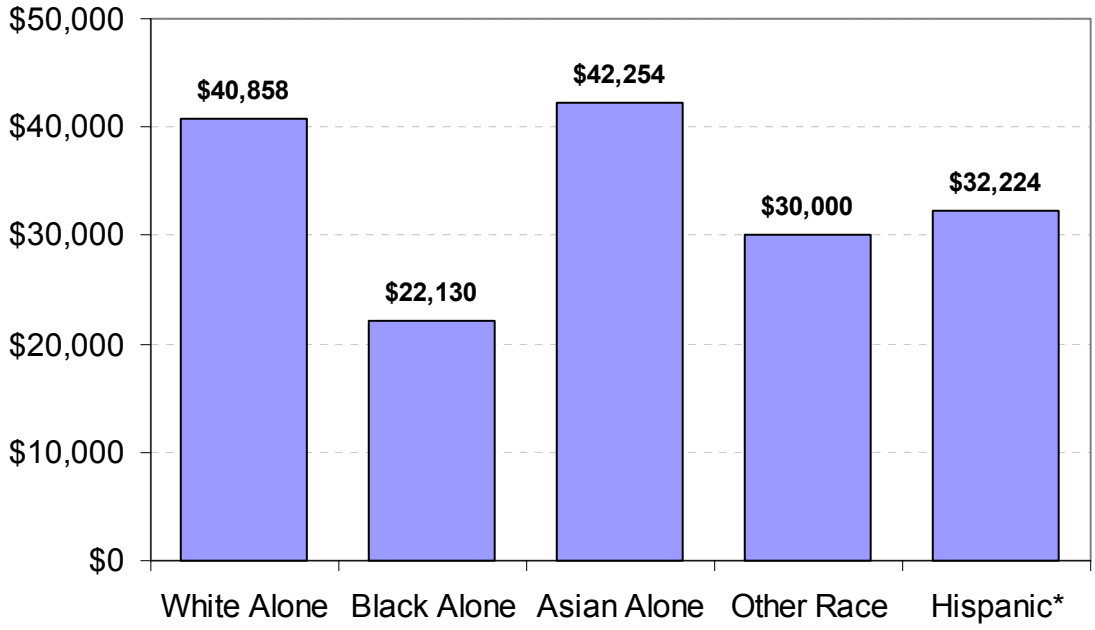


Source: U.S. Department of Commerce, Regional Economic Information System.

The core city of Allegheny County, Pittsburgh, showed stability in its employment base, despite continued population losses. Between 1958 and 1960, 304,000 people worked in the City of Pittsburgh.[2] In 2001, Pittsburgh contained 319,946 jobs.[3] Commuting flows between the City of Pittsburgh and Allegheny County and other parts of the region continued to expand.

Low overall economic growth in recent decades has made it difficult for the region to overcome a persistent disparity in the economic condition of African Americans in both Allegheny County and the Pittsburgh region. Low employment and earnings levels for African Americans remains a feature of both Allegheny County and the region. Median household income for African Americans was $22,130, or just 54 percent of the comparable median household income for the white alone population, which was $40,858 (see Figure 5). Because 84 percent of the Pittsburgh region's African American population lives in Allegheny County, the issue of racial disparity is concentrated in the county.

Figure 5. Median Household Income by Race, Allegheny County, 2000



* Hispanic can be of any race.

Another legacy of the county's industrial heritage is the small mill towns that today remain economically devastated after 20 years. During the 1980s, no less than six large steel mills were shuttered or downsized in the Pittsburgh region. Two others had ceased most or all of their steel production and were running only limited metals processing or coke production operations. The mill towns that were home to these plants were economically devastated as their main source of employment and income was lost. Even today, most of these mill towns

[2] For more on the 1960 pattern of employment in the region see Ira S. Lowry. Portrait of a Region. Volume 1 of the Economic Study of the Pittsburgh Region. University of Pittsburgh Press, 1963. For City of Pittsburgh employment patterns see pages 153-159.

[3] City employment by place of work provided by the State of the Cities Data System. Department of Housing and Urban Development and were computed from a special extract of the County Business Patterns database.

have yet to recover, and are significantly smaller and poorer with limited capacity to improve their situation.

Allegheny County's economy has shown signs of improvement, and by many measures, the local economy mirrors national economic structure more closely today than in the past. Unemployment in Allegheny County fell below 3.5 percent in January 2000, the lowest rate recorded in three decades. It remained below four percent for the next three years. Though the national economic expansion had produced even lower unemployment rates in some regions of the country, clearly the region was no longer suffering from the job destruction that it had experienced.

Even employment in regional manufacturing industries stabilized in the mid 1990s. Within the manufacturing industries in the region, a significant diversification and growth has occurred in sectors not associated with the traditional heavy industries located in the region. Pittsburgh has been able to retain significant manufacturing jobs from several multinational firms and has been able to attract significant new investment in recent years.

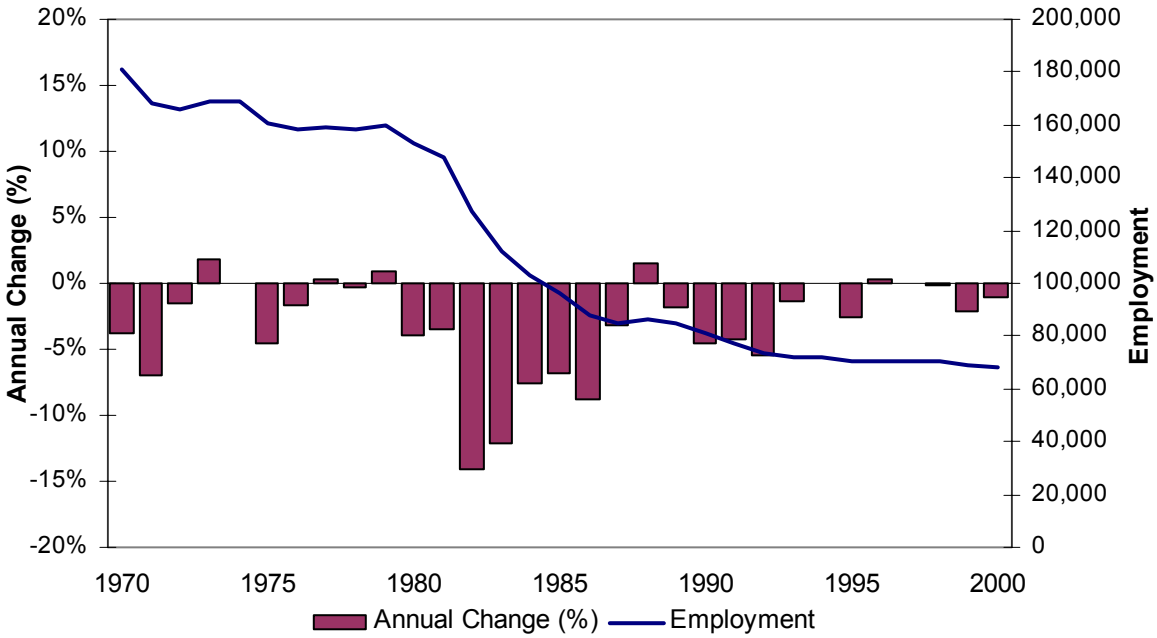
Taken together, this evidence suggests that Allegheny County has reached an important stage of recovery, which is reflected in one more measure of its resilience. It is not unreasonable to attribute this change in county's performance over the course of the business cycle to economic restructuring that improved the competitiveness of firms in the region. Old plants were closed during the 1980s, and those that remain have been re-tooled to improve productivity. The productivity gains realized by firms in the region mean that more output can be produced from a smaller employment base, and the firms are more efficient and better able to cope with cyclical downturns.

The next section details industrial restructuring of the Pittsburgh transition that has happened over the past three decades (1970 – 2000). The rest of the report examines employment trends and changes, industry change, occupational structure and changes, wages and earnings, workforce trends, and commuting patterns. A baseline forecast of the Pittsburgh region's economy through 2020 is presented at the end of this report.

INDUSTRY CHANGE IN ALLEGHENY COUNTY

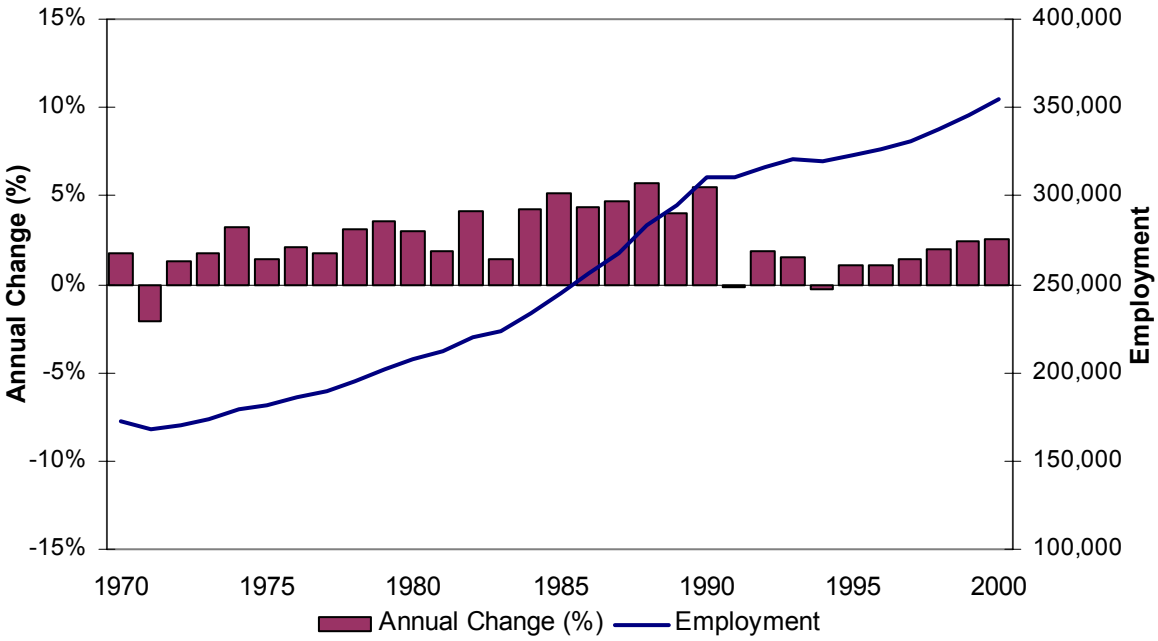
The major changes in Allegheny County's economy were the decline in the number of workers in manufacturing from 1970 to 2000 and the growth in the number of workers in service-related industries (see Figures 6 and 7). In 2000, there were over 350,000 service industry workers in Allegheny County, while the number of manufacturing workers had fallen to just over 60,000.

Figure 6. Manufacturing Employment Change, Allegheny County, 1970-2000



Source: Regional Economic Information System. Department of Commerce

Figure 7. Service Sector Employment, Allegheny County, 1970-2000



Source: Regional Economic Information System. Department of Commerce

Today, health care is the county's largest industry (see Table 1). In 2003, over 120,000 workers in Allegheny County were employed in the health care and social assistance sector, or 14 percent of the county's employment. Retail trade and professional and scientific industries followed. The county is now specialized in services, such as education and health care. Though parts of the manufacturing sector remain important in the county, major segments of that industry have been lost. Changes in employment by industry show that the decrease in employment from 2001 to 2003 occurred largely in the construction and manufacturing industries, those hardest hit by the recent recession.

Table 1. Employment by Industry, Allegheny County, 2001-2003

	2001	% of total	2002	% of total	2003	% of total
Total employment	880,962		873,169		865,195	
Farm employment	511	0.1%	517	0.1%	498	0.1%
Nonfarm employment	880,451	99.9%	872,652	99.9%	864,697	99.9%
Private employment	799,421	90.7%	791,008	90.6%	783,177	90.5%
Forestry, fishing, related activities	209	0.0%	212	0.0%	305	0.0%
Mining	2,706	0.3%	2,456	0.3%	2,251	0.3%
Utilities	5,262	0.6%	4,961	0.6%	3,384	0.4%
Construction	47,933	5.4%	46,264	5.3%	44,170	5.1%
Manufacturing	57,572	6.5%	52,890	6.1%	50,587	5.8%
Wholesale trade	32,472	3.7%	31,231	3.6%	31,173	3.6%
Retail trade	94,583	10.7%	92,581	10.6%	93,885	10.9%
Transportation and warehousing	34,005	3.9%	31,586	3.6%	29,400	3.4%
Information	22,536	2.6%	21,548	2.5%	20,555	2.4%
Finance and insurance	55,428	6.3%	55,938	6.4%	56,604	6.5%
Real estate and rental and leasing	24,922	2.8%	25,475	2.9%	26,419	3.1%
Professional and technical services	74,953	8.5%	71,355	8.2%	70,709	8.2%
Management of companies and enterprises	13,171	1.5%	13,589	1.6%	13,474	1.6%
Administrative and waste services	50,676	5.8%	50,377	5.8%	48,955	5.7%
Educational services	44,917	5.1%	46,304	5.3%	46,345	5.4%
Health care and social assistance	117,918	13.4%	120,860	13.8%	120,737	14.0%
Arts, entertainment, and recreation	17,953	2.0%	18,566	2.1%	18,710	2.2%
Accommodation and food services	54,255	6.2%	56,129	6.4%	56,490	6.5%
Other services	47,950	5.4%	48,686	5.6%	49,024	5.7%
Government and government enterprises	81,030	9.2%	81,644	9.4%	81,520	9.4%
Federal, civilian	15,117	1.7%	15,023	1.7%	15,150	1.8%
Military	4,869	0.6%	4,812	0.6%	4,851	0.6%
State and local	61,044	6.9%	61,809	7.1%	61,519	7.1%
State government	6,751	0.8%	6,734	0.8%	6,592	0.8%
Local government	54,293	6.2%	55,075	6.3%	54,927	6.3%

Source: Pennsylvania Center for Workforce Information and Analysis (CWIA). For NAICS industry details, see U.S. Bureau of the Census, 2002 NAICS Codes and Titles, http://www.census.gov/epcd/naics02/naicod02.htm.

Steel and its Aftermath

The decline of Pittsburgh's employment and output base in manufacturing can be traced in large measure to losses in the steel industry. Over 142,000 manufacturing jobs were lost in the region from 1978 to 1998, and all but 11,000 were in durable goods industries, mainly primary metals. Compared to other regions of the U.S., Pittsburgh's losses in steel and manufacturing were among the largest, in absolute and relative terms. Simply put, the geographic center of steel-making in the United States had been shifting away from Pittsburgh over the 20th century, but that shift accelerated rapidly during the 1980s.

By the 1970s, not only did the Pittsburgh region decline further, but it was also joined in population decline by a number of other large metropolitan regions. Many, but not all, of these regions began to grow again in the 1980s, but Pittsburgh did not reverse its trend. Much of this decline was concentrated in the core of the region in Allegheny County.

The geographic shift in the American steel industry was caused by changes in the core technology used to manufacture steel. The growth of scrap based mini-mill production at the expense of larger integrated producers diminished the competitive advantage employed by the Pittsburgh region. Being fueled mostly by electric arc furnaces, these new plants significantly reduced the demand for large coal and coke supplies. Pittsburgh has little competitive advantage in the production or pricing of electricity. The local electric production capacity infrastructure was built out, at significant cost, to accommodate a large heavy manufacturing industry. When this industrial base dissipated the benefits of scale in energy production could not be realized, and prices became inflated. As a direct result, electric costs in the region remain uncompetitive with the rest of the U.S. to this day.

The regional economy can be described as transitional during the era when Pittsburgh was defined by its manufacture of steel and related industries. The structural change that the Pittsburgh region endured was significant in terms of its breadth and depth in the local economy and the speed at which it happened. Over a short period of time in the early 1980s, the long-term slow decline in the region's manufacturing industries became a massive freefall. While the region had been losing its competitive advantage in manufacturing, the process was a slow one and often lost amid the large variations repeated in national business cycles. Because the decline was gradual and nearly unnoticeable, the regional manufacturing industries didn't recognize the long-term, downward trend.

Perhaps it is fairer to say that the transition of the Pittsburgh economy continues to be ongoing. One single industry may not ever come to dominate the local economy in the same way that the metals industries did for over a century.

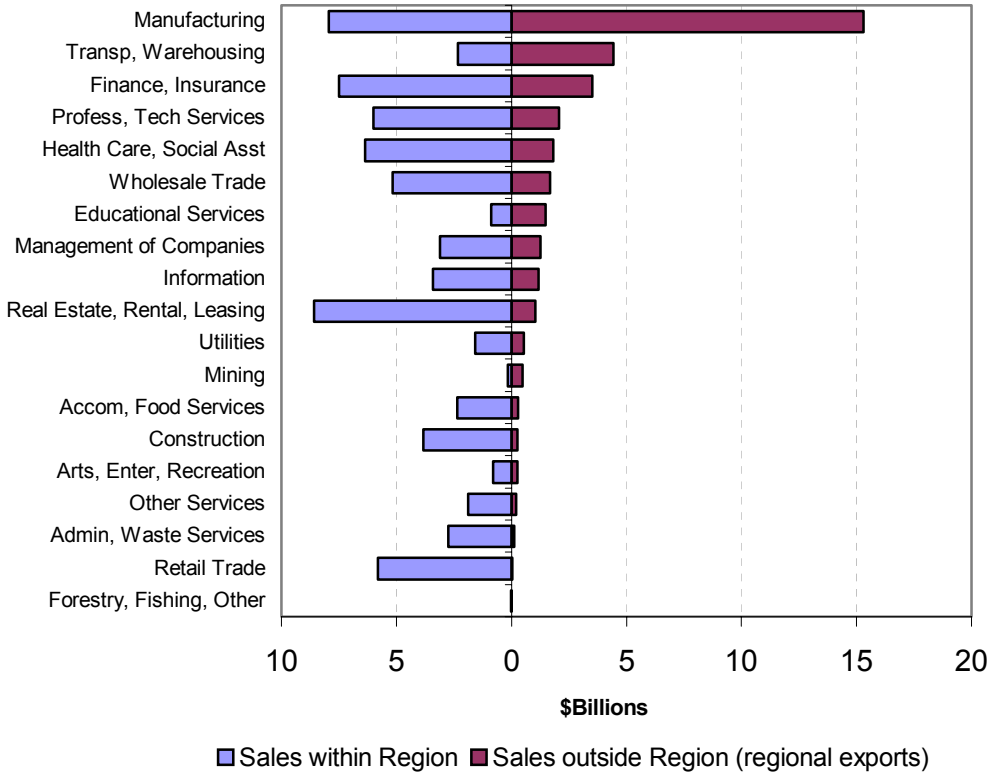
Regional Competitiveness

Economic competitiveness in a regional sense is broadly defined by an ability to attract new investment and other resources into a particular region. That new investment produces economic activity, which can then produce growth in jobs and wages. The competitiveness of the regional economy is reflected in many ways by its ability to export goods and services. Exports do not refer to foreign sales, but to sales to customers outside of the Pittsburgh region and would include other regions within the U.S. Export industries and the promotion of firms that produce for the regional export market are often the focus of economic development strategies, as net exports from the region increase regional income and employment. The traded sector (or export sector) includes most manufacturing and some service sector activities, such as education and research. The non-traded sector includes locally serving industries, such as construction, retail trade, real estate and food services.

For the Pittsburgh region, the traded sector accounts for roughly 30 percent of the regional economy. The non-traded, or local, part makes up roughly 70 percent of gross regional product, an economic measure of value added in the production process. This part of local output is called “self-supply” in regional economics. Roughly two thirds of all employment is tied directly to the production of goods and services consumed locally. The Pittsburgh REMI model breaks down sales in local industries into these two parts of the regional economy: self supply, which are goods and services sold within the region, and traded sector, which are goods and services exported to the rest of the nation or internationally.

Despite absolute losses in manufacturing employment and its decline relative to other parts of the regional economy, manufacturing industries remain a significant part of the regional economy. Allegheny County’s manufacturing industries will have an estimated product valued at over $23 billion in 2005. Over $15 billion of manufacturing industry product is exported from the Pittsburgh region making it the biggest generator of export earnings for the county. Transportation and finance were the next largest generators of regional export earnings. Some sectors produce largely for the local market and have only a small portion of regional exports (see Figure 8). Included are retail trade, local administration, and real estate activities. Other sectors generate more regional export dollars than local self-supply, including manufacturing, transportation and warehousing, and educational services.

Figure 8. Allegheny County Exports and Self-Supply by Industry, 2005

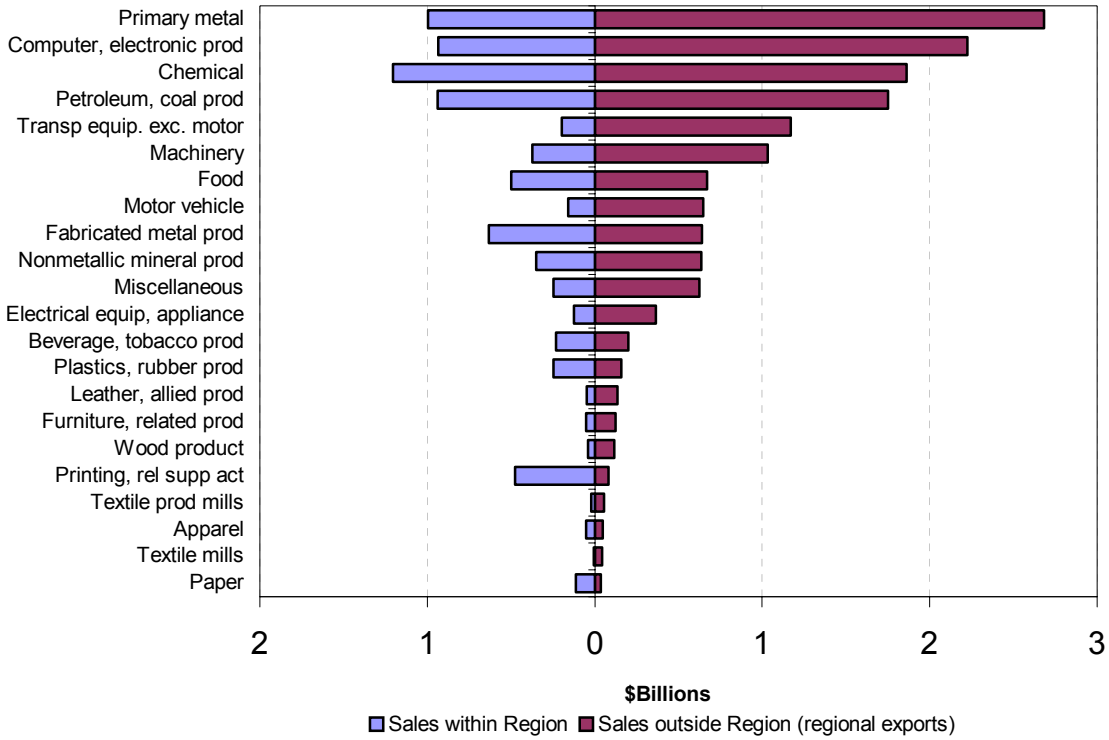


Source: University Center for Social and Urban Research, University of Pittsburgh, Pittsburgh REMI Model.

What is leading manufacturing "exports" from the county? Export sales broken into manufacturing sub-sectors was examined (Figure 9). Traditional Pittsburgh industries continue as the largest sources of regional export earnings. The primary metals industry remains the county's largest generator of export sales among manufacturing sub-sectors at $2.1 billion in 2005. Computer and electronic products also generated over $2 billion in export sales in 2005. Several other manufacturing sub-sectors are important parts of the county's export-related industries, including chemicals, petroleum and coal products, transportation equipment, and machinery. Only a few manufacturing industries are primarily locally serving industries. These include, most notably, the printing industry. In general, manufacturing sub-sectors are net generators of export earnings for the County.

Figure 9. Allegheny County Exports and Self-Supply. Manufacturing Sub-Sectors, 2005

Ranked by Total Export Sales



Source: University Center for Social and Urban Research, University of Pittsburgh, Pittsburgh REMI Model.

Location Quotient Analysis

Another way to examine regional competitiveness is through location quotient analysis. A location quotient (LQ) is a measure of what industries are relatively over or under-specialized in a local or regional economy compared to a reference economy. Typically a location quotient shows the relative employment share of an industry locally compared to a reference state or national employment. In this case, the industries in Allegheny County were compared to the United States to determine where some of the county's economic specialization lies.

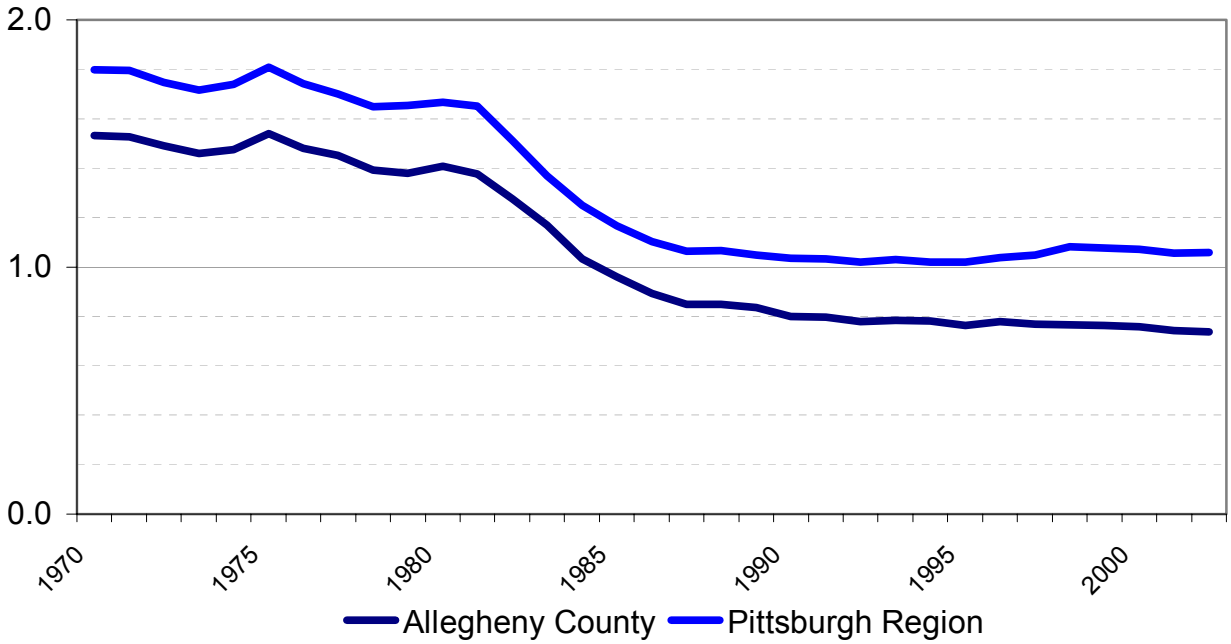
When an industry in the regional economy is as specialized as the nation, the LQ is 1.0. When a region has a higher concentration of economic activity in a particular industry, the LQ for that industry is greater than 1.0. Conversely, for industries that are under-represented in the local economy compared to the nation, the LQ computed would be less than 1.0.

A location quotient is a simple, but valuable tool for identifying regional export industries. Industries that show a LQ greater than 1.0 are typically deriving income from outside of the region. The distinction of being an export industry is that its output produces net income generation for the region. Non-export industries—also called local industries—typically cannot expand in a metropolitan area without causing an offsetting decrease among other existing firms within the same industry.

The trends in certain LQ's define the ongoing economic transition in the Pittsburgh region. In the durable goods industries, which were many of the traditional Pittsburgh industries, the LQ for the region is barely above 1.0 today and is well below 1.0 for Allegheny County (see Figure 10). Further illustrating that point, Allegheny County is no longer considered specialized in durable goods.

Figure 10. Durable Goods Industries Location Quotient

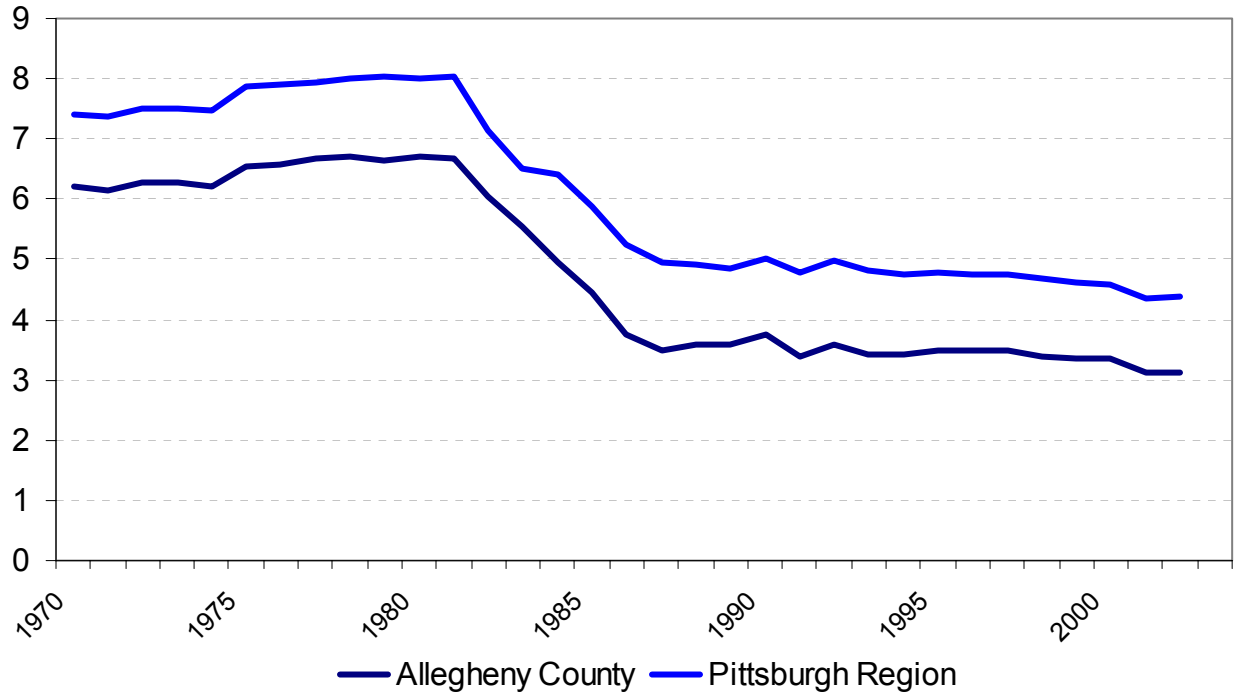
Allegheny County and Pittsburgh Region (MSA), 1970-2002



Source: University Center for Social and Urban Research, University of Pittsburgh, Pittsburgh REMI Model.

Pittsburgh's specialization in primary metals was reflected in very high LQ's for that industry in the Pittsburgh region as well as for Allegheny County (see Figure 11). Up until the 1980s, the Pittsburgh region's LQ for the primary metals industry was consistently above 7.0. While there remains a significant concentration of primary metals industry in the region, the drop from an LQ near 8.0 at the beginning of the 1980s to just over 4.0 by the mid 1980s may show what might have been one of the most rapid declines for a major industry in any region in the peacetime history of the United States. Nonetheless, Allegheny County remains specialized in primary metals employment, with an LQ above 3.0.

Figure 11. Primary Metals Industry Location Quotient:
Allegheny County and Pittsburgh Region (MSA), 1970-2002



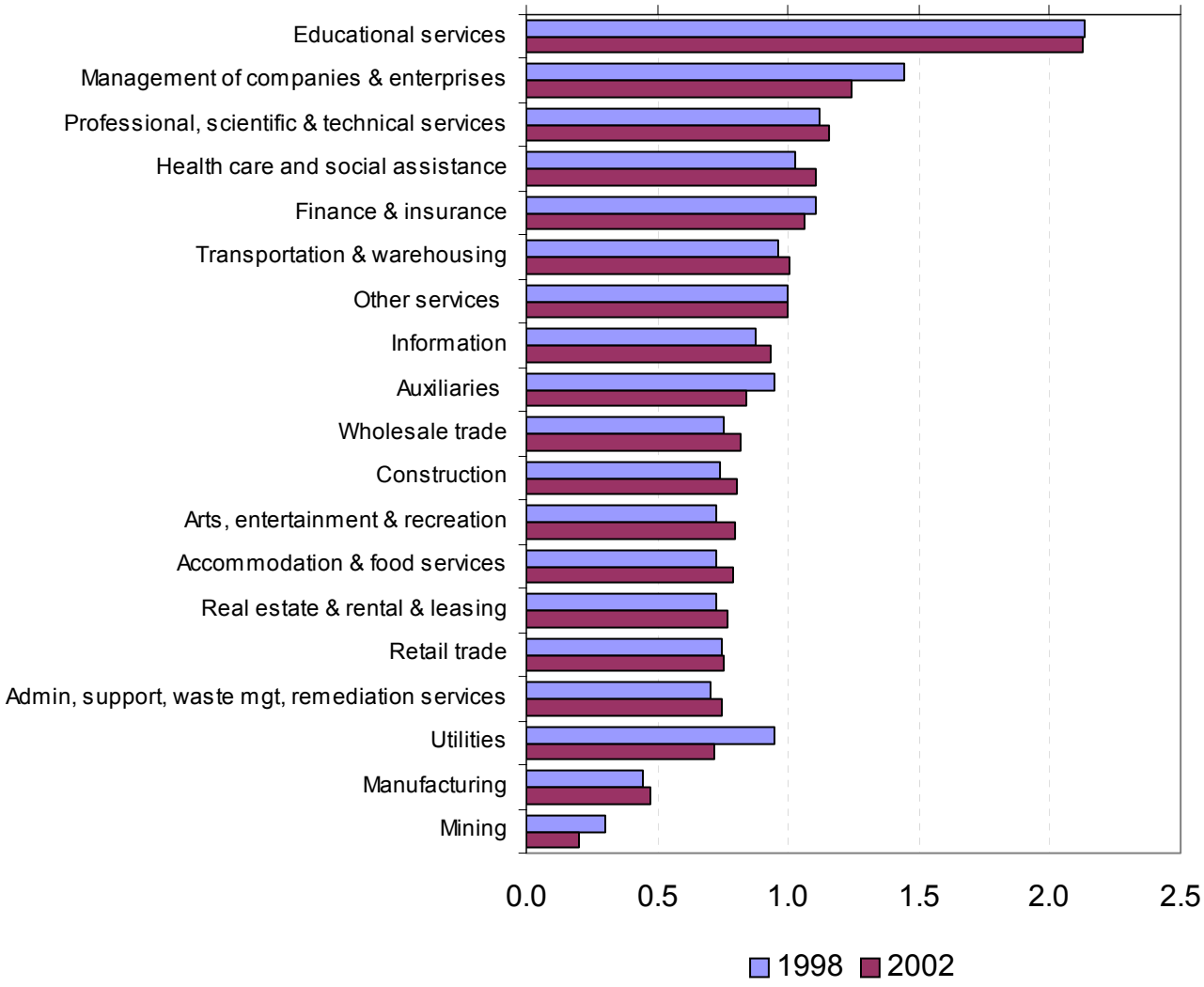
Source: University Center for Social and Urban Research, University of Pittsburgh, Pittsburgh REMI Model.

For manufacturing industries, the LQ for the Pittsburgh region declined from nearly 2.0 in the 1970s to just above 1.0 at the end of the 1980s. This means that the region was no longer specialized in manufacturing, compared to the national average. For Allegheny County, the LQ for manufacturing employment has fallen to between 0.6 and 0.7, meaning that the concentration of manufacturing employment in the county is far less than what is typical for the country as a whole.

Allegheny County is specialized in several other industries, and the specialization did not change from 1998 to 2000 (see Figure 12 and Table 2). Educational services are one of the county's main specializations, with an LQ of 2.4 in 2002, about as specialized in 1998. This reflects the concentration of educational institutions within the county and makes the local education industry one of the county's main export industries. Other industries with an LQ significantly greater than 1.0 included management of companies and enterprises, professional and technical services, health care and social assistance, and finance and insurance. Management of companies and enterprises has a high LQ, which increased between 1998 and 2002, reflecting the concentration of corporate headquarters in the county.

Figure 12. Allegheny County Employment Location Quotients by Industry,1998 and 2002

Ranked by Location Quotient in 2002



Source: University Center for Social and Urban Research, University of Pittsburgh, Pittsburgh REMI Model.

Table 2. Allegheny County Location Quotients by Industry, 1998 and 2002

	Employment						Allegheny County Location Quotient		
	Allegheny County			United States					
	1998	2002	Change	1998	2002	Change	1998	2002	Change
Mining	1,122	648	-42.2%	497,843	465,775	-6.4%	0.362	0.228	-0.135
Utilities	4,795	3,201	-33.2%	682,217	648,254	-5.0%	1.130	0.808	-0.323
Construction	31,812	35,130	10.4%	5,798,261	6,307,370	8.8%	0.882	0.911	0.029
Manufacturing	55,654	47,377	-14.9%	16,945,834	14,393,609	-15.1%	0.528	0.538	0.010
Wholesale trade	32,946	33,165	0.7%	5,884,946	5,860,256	-0.4%	0.900	0.926	0.025
Retail trade	78,790	77,211	-2.0%	14,240,726	14,819,904	4.1%	0.890	0.852	-0.038
Transportation & warehousing	24,725	24,933	0.8%	3,462,472	3,581,013	3.4%	1.148	1.139	-0.010
Information	20,336	22,846	12.3%	3,141,957	3,536,120	12.5%	1.041	1.057	0.016
Finance & insurance	47,456	47,038	-0.9%	5,770,209	6,414,583	11.2%	1.322	1.199	-0.123
Real estate & rental & leasing	9,795	10,744	9.7%	1,812,621	2,017,347	11.3%	0.869	0.871	0.002
Professional, scientific & technical services	50,145	56,251	12.2%	6,051,636	7,046,205	16.4%	1.332	1.306	-0.027
Management of companies & enterprises	28,969	24,945	-13.9%	2,703,798	2,913,798	7.8%	1.723	1.400	-0.323
Admin, support, waste mgt, remediation services	40,731	42,652	4.7%	7,774,610	8,299,217	6.7%	0.842	0.840	-0.002
Educational services	36,784	39,633	7.7%	2,323,744	2,701,675	16.3%	2.545	2.399	-0.146
Health care and social assistance	104,998	113,529	8.1%	13,757,996	14,900,148	8.3%	1.227	1.246	0.019
Arts, entertainment & recreation	8,484	9,924	17.0%	1,583,783	1,800,991	13.7%	0.861	0.901	0.040
Accommodation & food services	50,748	54,654	7.7%	9,466,088	10,048,875	6.2%	0.862	0.889	0.027
Other services	37,349	37,403	0.1%	5,037,866	5,420,087	7.6%	1.192	1.129	-0.063
Auxiliaries	6,460	5,854	-9.4%	916,349	1,011,496	10.4%	1.134	0.946	-0.187
Total	672,404	687,285	2.2%	108,117,731	112,400,654	4.0%			

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

LQs in Allegheny County were also compared with the rest of the Pittsburgh MSA (see Table 3 and Figure 13). Unlike Allegheny County, the rest of the Pittsburgh region is specialized in the construction, transportation, and manufacturing industries. Several other industries have higher LQs in the rest of the MSA compared to Allegheny County, though they are not specialized in these industries. These include wholesale trade, arts and recreation, and retail trade. The only industries that show a higher LQ for Allegheny County as compared to the rest of the MSA are educational services; management of companies and industries; professional, scientific and technical services; health care and social assistance; and finance and insurance.

Table 3. Location Quotients by Industry: Allegheny County Compared to Remainder of MSA, 2002

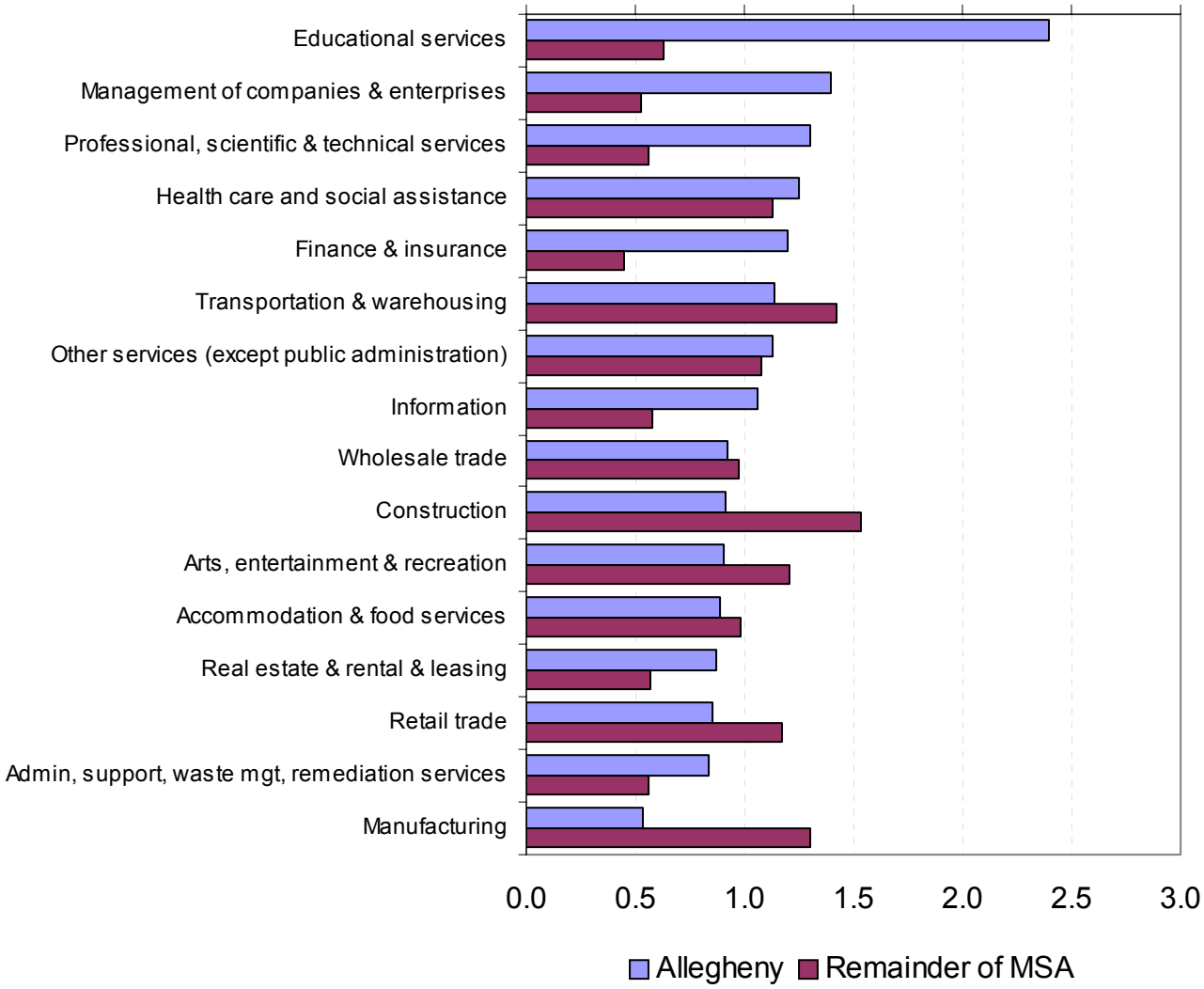
Ranked by Location Quotient

	Allegheny County	Remainder of MSA
Educational services	2.40	0.63
Management of companies & enterprises	1.40	0.53
Professional, scientific & technical services	1.31	0.56
Health care and social assistance	1.25	1.13
Finance & insurance	1.20	0.45
Transportation & warehousing	1.14	1.42
Other services (except public administration)	1.13	1.08
Information	1.06	0.58
Wholesale trade	0.93	0.97
Construction	0.91	1.53
Arts, entertainment & recreation	0.90	1.21
Accommodation & food services	0.89	0.98
Real estate & rental & leasing	0.87	0.57
Retail trade	0.85	1.18
Admin, support, waste mgt, remediation services	0.84	0.56
Manufacturing	0.54	1.30

Source: Pittsburgh REMI Model, University Center for Social and Urban Research, University of Pittsburgh

Figure 13. Employment Location Quotients by Industry, Allegheny County and Remainder of MSA, 2002

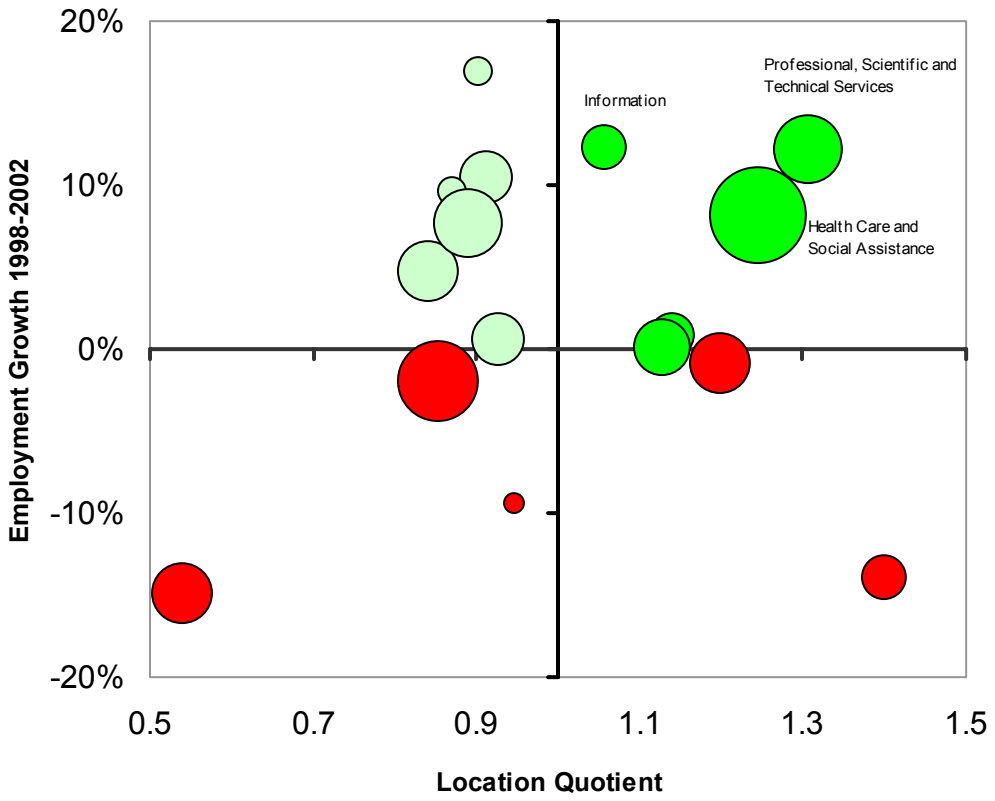
Ranked by Allegheny County Location Quotient



Finally, drawing on the information in Table 3, the constellation of growth and specialized industries are shown in Figure 14. The upper right hand quandrant shows the three industries that exhibit both recent employment growth and are specialized in Allegheny County: information, health care, and professional and scientific services.

In conclusion, Allegheny County is specialized in a small subset of industries related to education, health, finance, and professional and technical services. This represents another layer to examine the continued restructuring of the Allegheny County - and Pittsburgh regional - economy. The county's economy shifted rapidly out of manufacturing, to the extent that the county is now under-specialized in manufacturing compared to the nation, with an LQ of 0.5. Its export industries now include service sectors.

Figure 14. Specialization versus Growth, by Industry, Allegheny County, 1998-2002



Shift Share Analysis

Shift share analysis is more sophisticated than the measurement of Location Quotients. Typical Shift Share analysis decomposes the growth in specific industries into mutually exclusive factors: that which can be attributed to national macroeconomic trends and that which can be attributed to the change in the competitiveness of a particular region. Shift share analysis adds to the understanding of major differences between the industry pattern of employment growth locally and nationwide trends.

Shift-share breaks down the change in regional employment into three elements: (1) a national growth effect, that part of employment change in a region that can be attributed to the rate of growth of employment in the nation as a whole, (2) an industry mix effect, the amount of employment change in a region that occurred because the local mix of industries differs from that nationally, and (3) a regional shift also considered the competitive effect which is the difference between the actual change in employment and the employment change to be expected if each industrial sector grew at the national rate.

Like other analytical economic tools, the shift-share technique is only a descriptive tool that should be used in combination with other analysis to provide a summary of a region's key employment potential industries. Once completed, the analysis provides a representation of changes in employment growth or decline, and it is useful for targeting industries that might offer significant future employment opportunities. The data provided by shift-share can be interpreted to provide information on the advantages your local area may enjoy, as well as identify growth, or potential growth industries that are worthy of further investigation.

What are the factors that contribute to a region's competitive advantage over other regions? A wide range of factors of potential sources of competitive advantage includes: local raw materials or other local inputs, transportation methods, scale and diversity in the local labor force and local wage rates. These factors each have individual trends both locally and nationally and as they constantly change, the competitive position of individual industries in a region will change as well. Shift share analysis in itself does not explain which of these factors are most important. It also cannot explain why a particular industry, or the county's economy as a whole, is performing as it is. Shift share analysis is best used as a tool to alert local planners and policymakers to emerging trends and to diagnose reasons for observed economic trends.

This analysis (see Table 4) looks at competitive trends in recent Allegheny County employment patterns between 1998 and 2002. Over this period, employment of Allegheny County residents increased by 15,039 workers or 2.2 percent. Shift share analysis breaks down this employment growth by industry and also into the employment growth that is attributable to national trends and competitive shifts within local industries. Five of 19 broad industry categories defined showed positive competitive shift: construction, manufacturing, wholesale trade, arts/entertainment and accommodations/food service. In each of these industries, employment of Allegheny County residents declined less or increased more than would be expected if local industry trends matched national industry trends. For 14 industries the local employment trend reflected a declining competitive position with regard other regions in the country. Because this analysis is done at the county level, the competing regions could be interpreted as other regions of the country or the suburban counties within the Pittsburgh region. The shift-share breakdown estimates that employment would have increased in the county by 26,624 if employment by industry had more closely matched national patterns.

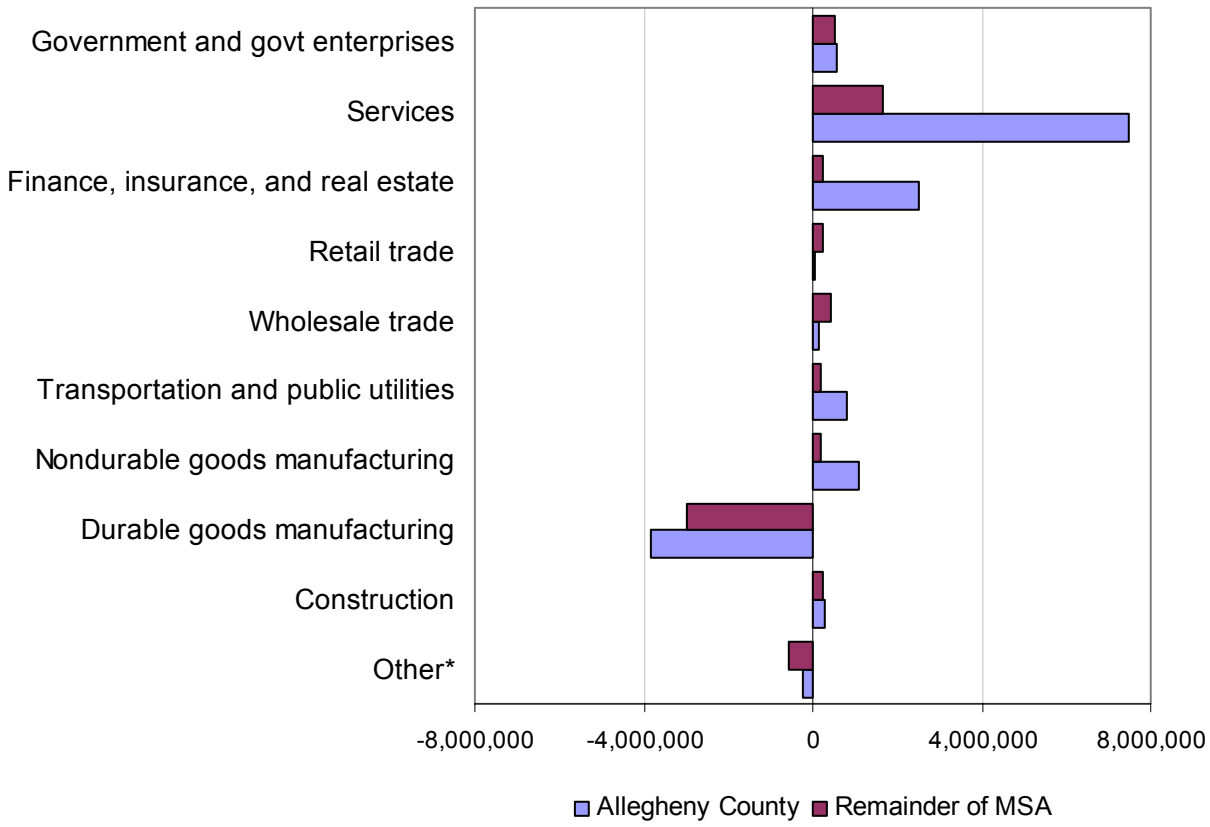
Table 4. Shift Share Analysis of Employment Trends by Major Industry, Allegheny County, 1998-2002

		Employment						Shift Share Breakout of Employment Change				
		United States			Allegheny County							
NAICS	Industry	1998	2002	Growth	1998	2002	Growth	County Growth	National Trend Effect	Industry Mix Effect	Competitive Shift	Competitive Shift as % of Employment
21-	Mining	497,843	465,775	-6.4%	1,122	648	-42.2%	-474=	44	-117	-402	-35.8%
22-	Utilities	682,217	648,254	-5.0%	4,795	3,201	-33.2%	-1,594=	190	-429	-1,355	-28.3%
23-	Construction	5,798,261	6,307,370	8.8%	31,812	35,130	10.4%	3,318=	1,260	1,533	525	1.6%
31-	Manufacturing	16,945,834	14,393,609	-15.1%	55,654	47,377	-14.9%	-8,277=	2,205	-10,587	105	0.2%
42-	Wholesale trade	5,884,946	5,860,256	-0.4%	32,946	33,165	0.7%	219=	1,305	-1,443	357	1.1%
44-	Retail trade	14,240,726	14,819,904	4.1%	78,790	77,211	-2.0%	-1,579=	3,121	83	-4,783	-6.1%
48-	Transportation & warehousing	3,462,472	3,581,013	3.4%	24,725	24,933	0.8%	208=	979	-133	-638	-2.6%
51-	Information	3,141,957	3,536,120	12.5%	20,336	22,846	12.3%	2,510=	806	1,746	-41	-0.2%
52-	Finance & insurance	5,770,209	6,414,583	11.2%	47,456	47,038	-0.9%	-418=	1,880	3,420	-5,718	-12.0%
53-	Real estate, rental & leasing	1,812,621	2,017,347	11.3%	9,795	10,744	9.7%	949=	388	718	-157	-1.6%
54-	Professional, scientific & technical services	6,051,636	7,046,205	16.4%	50,145	56,251	12.2%	6,106=	1,986	6,255	-2,135	-4.3%
55-	Management of companies & enterprises	2,703,798	2,913,798	7.8%	28,969	24,945	-13.9%	-4,024=	1,148	1,102	-6,274	-21.7%
56-	Admin, support, waste mgt, remediation services	7,774,610	8,299,217	6.7%	40,731	42,652	4.7%	1,921=	1,613	1,135	-827	-2.0%
61-	Educational services	2,323,744	2,701,675	16.3%	36,784	39,633	7.7%	2,849=	1,457	4,525	-3,134	-8.5%
62-	Health care and social assistance	13,757,996	14,900,148	8.3%	104,998	113,529	8.1%	8,531=	4,159	4,557	-186	-0.2%
71-	Arts, entertainment & recreation	1,583,783	1,800,991	13.7%	8,484	9,924	17.0%	1,440=	336	827	276	3.3%
72-	Accommodation & food services	9,466,088	10,048,875	6.2%	50,748	54,654	7.7%	3,906=	2,010	1,114	782	1.5%
81-	Other services	5,037,866	5,420,087	7.6%	37,349	37,403	0.1%	54=	1,480	1,354	-2,780	-7.4%
95-	Auxiliaries	916,349	1,011,496	10.4%	6,460	5,854	-9.4%	-606=	256	415	-1,277	-19.8%
	Total	108,117,731	112,400,654	4.0%	672,404	687,285	2.2%	15,039=	26,624	16,077	-27,662	-4.1%

Earnings by Industry Sector

Annual earnings can also be analyzed to determine changes in industry sector. Between 1980 and 2000, income by sector showed the same structural shift as employment, from durable manufacturing to service-related income (see Figure 15). Earnings in the durable goods sector in Allegheny County lost nearly $4 billion between 1980 and 2000. Increases in earnings in manufacturing occurred in the nondurable goods sector between the same years. The largest growth in earnings was found in the services sector in Allegheny County, which grew in earnings by $8 billion.

Figure 15. Change in Annual Earnings by Industry Sector, 1980-2000 ($1,000s)



Source: U.S. Department of Commerce, Regional Economic Information System. SIC Industry Classification.

Restructuring in the Allegheny County economy is also shown by examining industry shares of earnings and changes over time. In 1980, over 25 percent or all regional earnings were generated from durable goods manufacturing industries, specifically steel and related sectors (see Figures 16 and 17). By 2000, durable goods manufacturing had declined to less than nine percent of county earnings. Over the same time frame, the services sector share of county earnings increased from 21 percent to 35 percent. The contribution of other major sectors stayed relatively the same.

Figure 16. Distribution of Earnings by Industry, Allegheny County, 1980

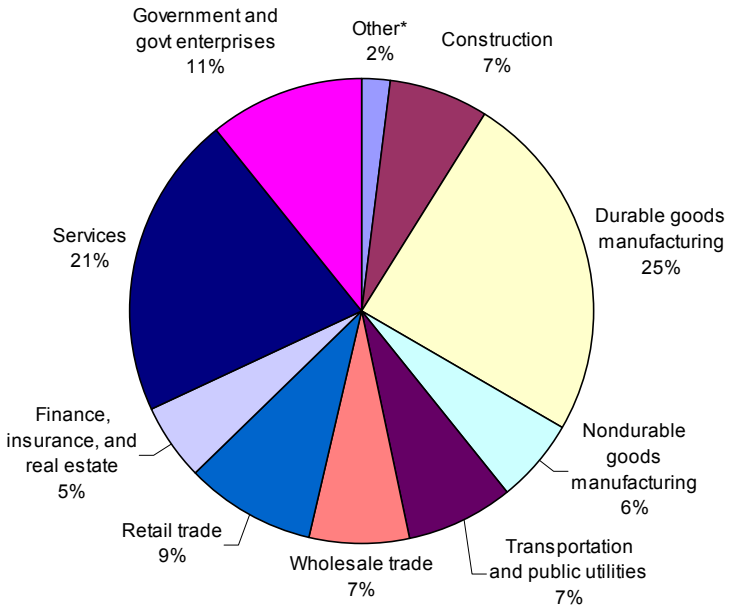
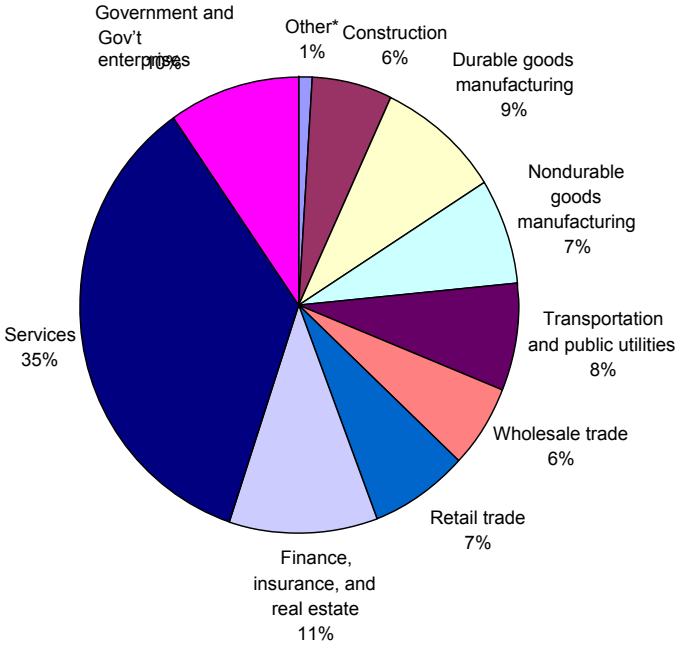


Figure 17. Distribution of Earnings by Industry, Allegheny County, 2000



Source: U.S. Department of Commerce, Regional Economic Information System. SIC Industry Classification

OCCUPATIONAL CHANGE

Another way to examine the labor force and economy is through the occupational structure. Over the past three decades, computer specialists are the fastest growing occupation by absolute change, growing by nearly 17,000 jobs between 1971 and 2000 (see Table 5). Its relative increase, 726 percent between the same years was second only to personal and home care aides, which increased by 911 percent over the period. Related to industry change is the growth of health-related occupations. Other fast growing occupations in Allegheny County include health care support, health diagnostics, lawyers, and other health professionals and technicians.

Table 5. Change in Allegheny County Employment by Occupation, 1971-2000

Occupational Group	1971	1980	1990	2000	Change 1971-2000	
Management Business Financial Occupations						
Management occupations	42,534	46,800	50,807	56,475	13,941	32.8%
Business operations specialists	13,720	14,768	16,233	18,231	4,511	32.9%
Financial specialists	10,134	11,792	14,404	17,083	6,949	68.6%
Computer and Mathematical Occupations						
Computer specialists	2,326	5,530	11,774	19,223	16,897	726.4%
Mathematical science occupations	607	638	739	759	152	25.0%
Architecture and Engineering Occupations						
Architects, surveyors, and cartographers	1,030	1,217	1,768	1,784	754	73.2%
Engineers	10,991	11,068	9,658	9,492	-1,499	-13.6%
Drafters, engineering, and mapping	6,379	6,645	6,464	6,659	280	4.4%
Life scientists	717	868	1,137	1,269	552	77.0%
Physical scientists	1,352	1,542	1,741	1,872	520	38.5%
Social scientists and related occupations	1,368	1,599	2,033	2,357	989	72.3%
Life, physical and social science technicians	1,881	2,076	2,209	2,354	473	25.1%
Education, Training, Social Service and Related Occupations						
Counselors	1,462	1,668	2,222	2,825	1,363	93.2%
Religious workers	1,401	1,296	1,653	2,119	718	51.2%
Social workers	1,607	1,894	2,477	3,129	1,522	94.7%
All other and misc. counselors and social workers	1,972	2,360	3,165	4,334	2,362	119.8%
Primary, secondary, and special education	12,752	14,271	17,911	21,306	8,554	67.1%
Postsecondary teachers	3,065	3,800	5,129	6,379	3,314	108.1%
Other teachers and instructors	2,336	2,611	3,396	4,275	1,939	83.0%
Librarians, curators, and archivists	5,153	5,890	7,436	9,144	3,991	77.5%
Other education, training, and library occupations	642	722	886	1,052	410	63.9%

Occupational Group	1971	1980	1990	2000	Change 1971-2000	
Legal Occupations						
Lawyers	2,417	3,051	4,741	5,427	3,010	124.5%
Judges, Magistrate Judges, and Magistrates	327	312	273	265	-62	-19.0%
All other and misc. legal and related	1,942	2,323	3,309	3,689	1,747	90.0%
Arts Design Entertainment Sports Media						
Art and design workers	1,762	2,087	2,578	2,816	1,054	59.8%
Entertainers and performers, sports competitors, and other related workers	1,610	1,925	2,264	3,002	1,392	86.5%
Media and communication workers	2,160	2,485	2,920	3,551	1,391	64.4%
Media and communication equipment workers	1,140	1,199	1,258	1,432	292	25.6%
Healthcare Practitioners and Technical Occupations						
Health diagnosing and treating practitioners	11,730	16,356	24,750	27,325	15,595	132.9%
Other health professionals and technicians	8,186	11,199	16,503	18,278	10,092	123.3%
Healthcare support occupations	9,321	12,712	19,934	23,518	14,197	152.3%
Protective Service Occupations						
First-Line Supervisors/Managers of Protective Service workers	1,536	1,618	1,622	1,710	174	11.3%
Fire fighters and inspectors	1,901	1,867	1,655	1,661	-240	-12.6%
Law enforcement workers	4,655	5,552	6,021	7,109	2,454	52.7%
Other protective service workers	5,498	6,622	8,700	9,485	3,987	72.5%
Food Preparation and Serving Related Occupations						
Supervisors, food preparation and workers	2,908	3,874	4,467	4,330	1,422	48.9%
Cooks and food preparation workers	10,387	13,563	15,864	15,600	5,213	50.2%
Food and beverage serving workers	16,498	23,094	28,613	29,962	13,464	81.6%
Other food preparation and serving	7,133	8,968	9,469	8,134	1,001	14.0%
Building and Grounds Cleaning and Maintenance Occupations						
First-line supervisors/managers, building and groundskeeping workers	1,390	1,618	1,959	1,964	574	41.3%
Building cleaning workers	21,739	20,798	23,888	23,644	1,905	8.8%
Grounds maintenance workers	2,966	3,338	4,005	4,823	1,857	62.6%
Pest control workers	720	877	1,163	1,268	548	76.1%

Occupational Group	1971	1980	1990	2000	Change 1971-2000	
Personal Care and Service Occupations						
Animal care and service workers	276	294	353	449	173	62.7%
Child care workers	5,614	3,804	3,797	4,332	-1,282	-22.8%
Entertainment attendants and related workers	1,663	1,925	2,104	2,559	896	53.9%
Funeral service workers	314	323	422	445	131	41.7%
Gaming occupations	536	685	788	997	461	86.0%
Personal appearance workers	3,752	3,794	4,799	4,978	1,226	32.7%
Personal and home care aides	307	765	1,800	3,106	2,799	911.7%
Recreation and fitness workers	1,647	1,888	2,315	2,995	1,348	81.8%
Residential advisors	164	174	226	291	127	77.4%
Transportations, tourism, and lodging	1,208	1,309	2,557	2,795	1,587	131.4%
All other personal care and service	661	716	874	1,025	364	55.1%
Sales and Related Occupations						
Real estate brokers and sales agent	1,589	1,739	1,978	1,917	328	20.6%
Retail salespersons	22,036	22,855	24,005	24,933	2,897	13.1%
Supervisors, sales workers	9,106	9,454	9,739	10,049	943	10.4%
All other sales and related workers	43,077	46,413	49,131	52,338	9,261	21.5%
Office and Administrative Support Occupations						
First-line supervisors/managers of office and administrative support workers	7,742	8,498	9,555	10,005	2,263	29.2%
Communications equipment operators	3,137	2,979	2,714	2,330	-807	-25.7%
Financial clerks	22,447	23,647	25,235	25,473	3,026	13.5%
Information and record clerks	23,639	27,157	33,540	38,202	14,563	61.6%
All other financial, information	972	1,091	1,263	1,460	488	50.2%
Material recording, scheduling	26,844	26,912	25,531	25,169	-1,675	-6.2%
Secretaries, administrative assistants	54,228	57,123	63,853	64,605	10,377	19.1%
Farming, Fishing, Forestry Occupations						
First-line supervisors/ managers	122	143	162	193	71	58.2%
Agricultural workers	1,645	1,918	2,149	2,469	824	50.1%
Fishers and fishing vessel operator	28	34	38	43	15	53.6%
Forest, conservation, and logging workers	108	120	129	128	20	18.5%
All other farming, fishing, and forestry occupations	311	357	402	468	157	50.5%
Production Occupations						
First-line supervisors/managers	2,962	3,157	3,125	3,580	618	20.9%
Construction trades and related workers	31,531	33,767	33,626	38,964	7,433	23.6%
Extraction workers	1,194	1,319	1,200	1,089	-105	-8.8%

Occupational Group	1971	1980	1990	2000	Change 1971-2000	
Installation, Maintenance, and Repair Occupations						
First-line Supervisors/Managers of mechanics, installers, and repairers	2,788	2,878	2,684	2,842	54	1.9%
Electrical and electronic equipment repairers	4,861	4,664	4,076	4,151	-710	-14.6%
Vehicle and mobile equipment mechanics	9,189	9,757	11,455	12,347	3,158	34.4%
Other installation, maintenance	22,433	21,742	17,762	17,681	-4,752	-21.2%
Production Occupations						
First-line supervisors/managers of production and operating workers	8,009	7,237	4,236	3,625	-4,384	-54.7%
Assemblers and fabricators	20,752	19,046	10,922	9,641	11,111	-53.5%
Food processing occupations	4,854	4,137	3,606	3,245	-1,609	-33.1%
Metal workers and plastic workers	38,459	34,939	16,505	14,124	24,335	-63.3%
Plant and system operators	3,552	3,490	2,437	2,250	-1,302	-36.7%
Printing occupations	2,329	2,563	2,477	2,297	-32	-1.4%
Textile, apparel, and furnishings, all other	5,436	5,152	5,633	5,473	37	0.7%
Woodworkers	809	936	964	938	129	15.9%
Other production occupations	23,378	22,435	16,560	15,156	-8,222	-35.2%
Transportation and Material Moving Occupations						
Supervisors, transportation and material moving occupations	1,928	1,960	2,065	2,325	397	20.6%
Air transportation occupation	632	744	1,899	2,048	1,416	224.1%
Motor vehicle operators	20,918	20,827	21,246	25,083	4,165	19.9%
Rail transportation occupations	3,245	2,618	1,082	849	-2,396	-73.8%
Water transportation occupations	277	300	372	330	53	19.1%
Related transportation occupations	2,082	2,095	2,258	2,287	205	9.8%
Material moving occupations	30,771	30,255	27,918	28,157	-2,614	-8.5%

Source: Pittsburgh REMI Model, University Center for Social and Urban Research, University of Pittsburgh.

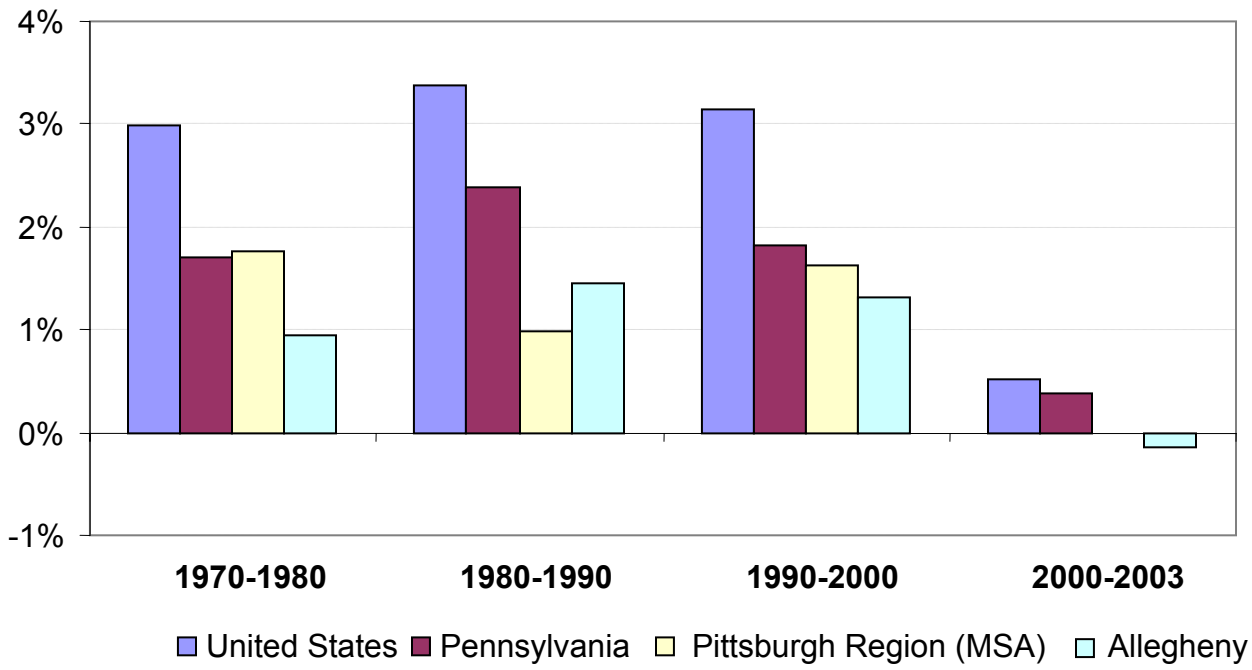
WAGES AND INCOME

Local wage levels are determined by multiple factors and trends. Individual workers are part of a regional labor force that has certain characteristics of growth or decline. Regional growth can have a direct impact on the level of local labor demand. Slow growth or decline can have the opposite effect. In the following section, wages and income are examined by a number of different measures, including personal income, earnings by industry, and wages by occupation.

One measure to analyze is personal income. Personal income is the total of current income received from all sources less personal contributions to social insurance (see Glossary in Appendix). The continued restructuring (Pittsburgh transition) of the Allegheny County economy is again reflected in reviewing personal income and comparing growth to the nation and state. Personal income in Allegheny County grew more slowly than income in the U.S. and Pennsylvania over each decade from 1970 to 2000 (see Figure 18). In the 1990s, it also grew more slowly than the Pittsburgh region. During the recession of 2000-2003, personal income in Allegheny County continued to decline, while the U.S. and Pennsylvania increased slightly. The Pittsburgh region did not change over these years. Allegheny County has lost ground in the growth of personal income compared to Pennsylvania and the nation for over 30 years.

Figure 18. Comparative Personal Income Growth, 1970-2003

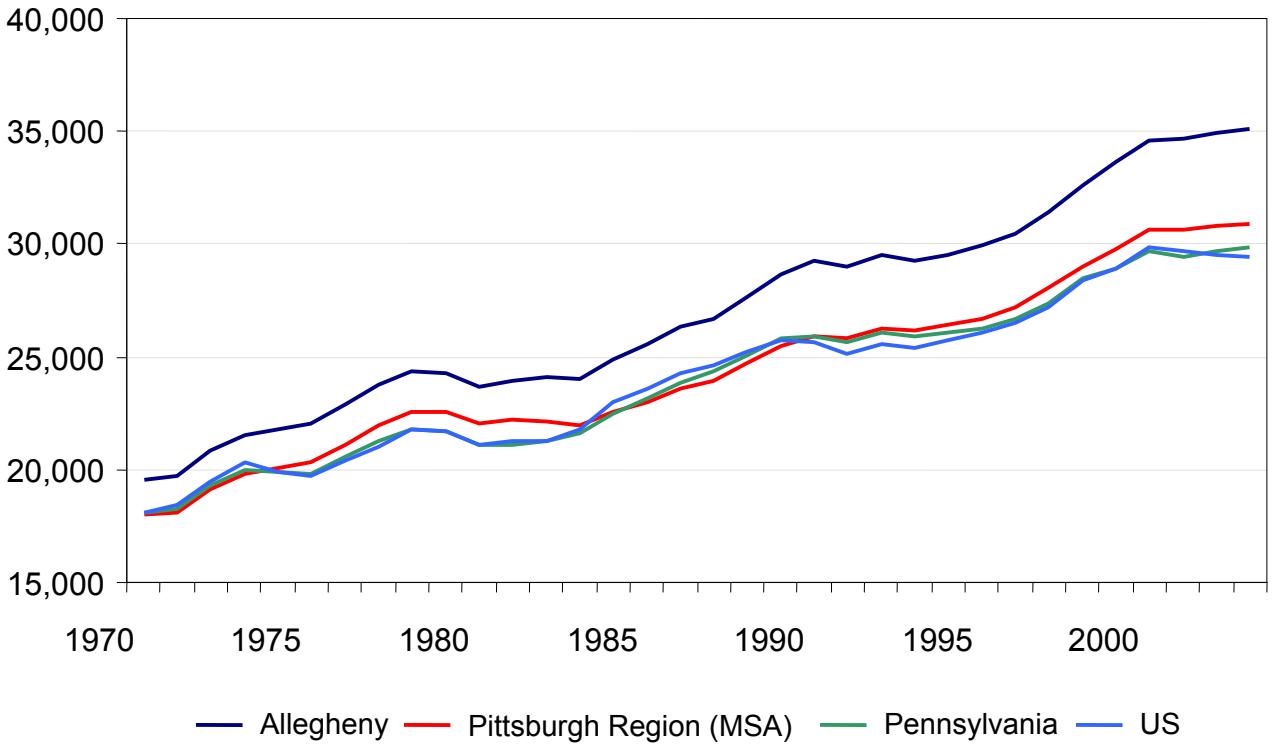
Average Annual Change: Allegheny, Pittsburgh Region (MSA), Pennsylvania and U.S



Source: U.S. Department of Commerce, Regional Economic Information System.

Per capita income represents another way to examine standards of living in a place. In Figure 19, personal income is divided by population to attain per capita personal income. Per capita income in Allegheny County exceeded the nation, Pennsylvania and region in all years shown between 1970 and 2002. There are a number of reasons for this, including relatively high wages over certain periods of time, relatively low poverty rates, relatively low numbers of immigrants, and the age composition of the population.

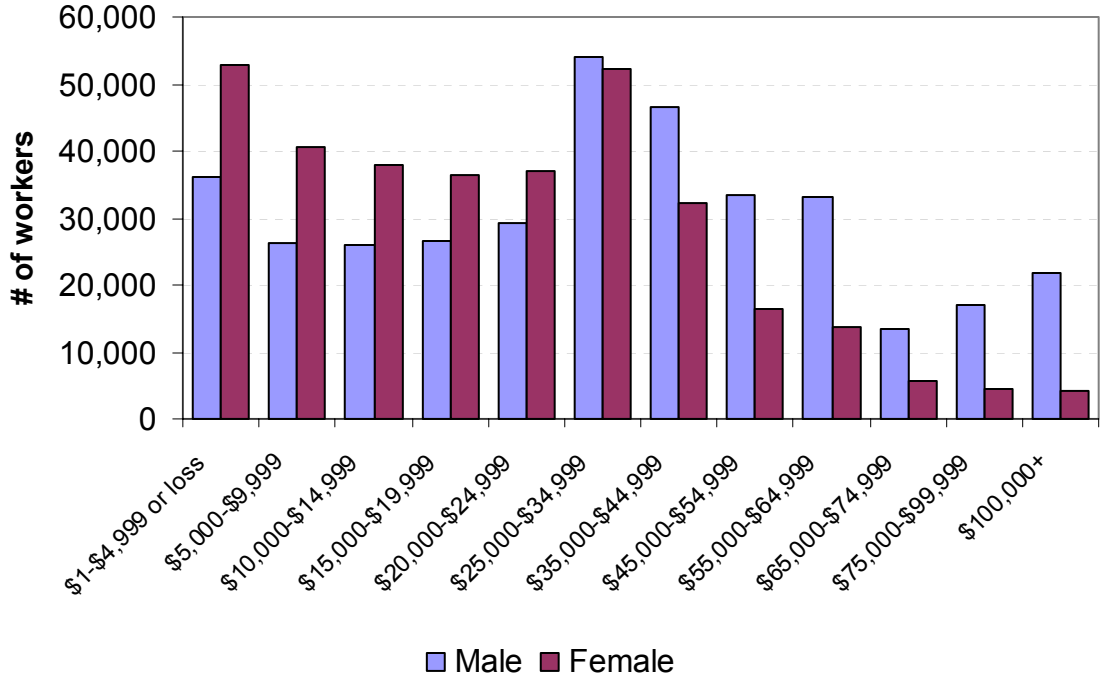
Figure 19. Per Capita Personal Income – Allegheny County/Pittsburgh Region (MSA)/Pennsylvania and United States, 1970-2002



Source: U.S. Department of Commerce, Regional Economic Information System.

Finally, the disparity between earnings of male and female workers shows important differences (see Figure 20). Women in Allegheny County were concentrated in lower income earnings levels in 2000. At the $25,000-$34,999 level, there were nearly the same number of female and male workers. However, at all higher income levels, men outnumbered women workers.

Figure 20. Distribution of Workers by Annual Earnings and Gender, Allegheny County, 2000



Wages by Industry

Wages are typically higher in industries where the output per worker, or labor productivity, is higher. Labor productivity is typically higher in export-oriented industries, such as most manufacturing sectors. Productivity can also be high in non-manufacturing industries, such as finance and management.

In 2004, the highest average earnings for workers in Allegheny County was $5,917 per month for those employed at local corporate headquarters and similar establishments (see Table 6). These are establishments identified by the industrial classification *Management of Companies and Enterprises*. Both mining industries ($5,828 per month) and local utility industries ($5,121 per month) registered high average earnings in Allegheny County. The lowest average earnings for workers was $1,167 per month in Accommodation and Food Services industries. Agriculture and related industries, along with Arts, Entertainment, and Recreation industries, likewise had average earnings of under $2,000 per month.

Table 6. Average Monthly Earnings Per Worker By Industry, Allegheny County, 2001-2004[2]

Industry	2001[1]	2002[1]	2003[1]	2004[2]
Agriculture, Forestry, Fishing and Hunting	$1,106	$988	$1,341	$1,249
Mining	$5,287	$5,523	$5,930	$5,828
Utilities	$4,896	$5,030	$4,935	$5,121
Construction	$3,431	$3,449	$3,442	$3,398
Manufacturing	$3,819	$4,051	$4,280	$4,233
Wholesale Trade	$4,163	$4,133	$4,321	$4,464
Retail Trade	$1,902	$1,943	$1,978	$1,923
Transportation and Warehousing	$3,469	$3,425	$3,388	$3,333
Information	$4,046	$4,149	$4,206	$4,365
Finance and Insurance	$4,233	$4,309	$4,522	$4,727
Real Estate and Rental and Leasing	$2,894	$2,915	$3,093	$2,975
Professional, Scientific, and Technical Services	$4,698	$4,717	$4,829	$4,940
Management of Companies and Enterprises	$5,044	$5,093	$5,432	$5,917
Administrative and Support and Waste Management and Remediation Services	$2,120	$2,176	$2,225	$2,347
Educational Services	$3,347	$3,471	$3,532	$3,665
Health Care and Social Assistance	$2,877	$2,986	$2,985	$3,124
Arts, Entertainment, and Recreation	$1,967	$1,924	$1,901	$1,780
Accommodation and Food Services	$1,106	$1,147	$1,175	$1,167
Other Services (except Public Administration)	$1,990	$2,039	$2,079	$2,060
Public Administration	$2,984	$3,116	$3,270	$3,303

1. Annual data reflects average of 4 quarterly earnings. All $ amounts nominal.
2 2004 data reflects data through first 2 quarters only.
Source: Compiled From U.S. Census Bureau, Quarterly Workforce Indicators(QMI)

Wages by Occupation

A final way to analyze wage and salary trends is to evaluate wages earned by occupational categories. Tables 7 and 8 compare national occupation data on employment and average annual earnings with the same information for the older definition of the Pittsburgh MSA, which is comprised of the six counties of Allegheny, Beaver, Butler, Fayette, Washington, and Westmoreland.

The Occupational Employment Statistics (OES) survey is an annual mail survey measuring occupational employment and wage rates for wage and salary workers in non-farm establishments, by industry. The OES survey samples and contacts approximately 400,000 establishments each year and, over 3 years, contacts approximately 1.2 million establishments. The reference period for each year's survey is the fourth quarter of that year. The detailed tables include information for all occupations with employment in the Pittsburgh region. Due to the sampling methodology, the actual employment total is not included for each of these occupations. In cases where the sampling error was too large, specific occupation employment data are not available.

The ratio computed for all earnings data is the ratio of average annual earnings in the Pittsburgh region compared to the same for the nation. Values below 100 percent represent occupations where the Pittsburgh average earnings fall below national averages and percentages above 100 percent are for those occupations where local average earnings exceed national averages. Several occupations exceed the U.S. average annual wage, with education leading among that group. However, on average, for all occupations, workers in the Pittsburgh region earned 94.7 percent of the average U.S. wage in 2004.

Examining more detailed occupations shows that the Pittsburgh region exceeds the U.S. average by significant margins in a number of categories (see Table 7).

Table 7. Wage Levels by Major Occupation. Pittsburgh MSA vs. U.S. May 2004

Ranked by Wage Premium: US vs. Pittsburgh Region Average Annual Wage

Major Occupation Group	Average Annual Wage		Ratio: Pittsburgh/ US
	Pittsburgh Region	US	
Education, training, and library occupations	$47,050	$42,080	111.8%
Farming, fishing, and forestry occupations	$21,390	$20,310	105.3%
Construction and extraction occupations	$39,390	$37,520	105.0%
Production occupations	$30,040	$29,280	102.6%
Transportation and material moving occupations	$28,380	$27,880	101.8%
Life, physical, and social science occupations	$56,060	$55,920	100.3%
Healthcare support occupations	$22,870	$23,220	98.5%
Building and grounds cleaning and maintenance occupations	$21,150	$21,490	98.4%
Personal care and service occupations	$20,920	$21,800	96.0%
Installation, maintenance, and repair occupations	$35,410	$37,220	95.1%
Arts, design, entertainment, sports, and media occupations	$41,520	$43,710	95.0%
All Occupations	***$35,050***	***$37,020***	***94.7%***
Food preparation and serving related occupations	$16,460	$17,530	93.9%
Management occupations	$79,750	$85,530	93.2%
Architecture and engineering occupations	$57,520	$61,750	93.1%
Business and financial operations occupations	$51,920	$56,380	92.1%
Office and administrative support occupations	$26,570	$29,020	91.6%
Sales and related occupations	$29,230	$32,210	90.7%
Protective service occupations	$31,510	$34,840	90.4%
Healthcare practitioners and technical occupations	$50,120	$57,310	87.5%
Legal occupations	$69,510	$79,910	87.0%
Computer and mathematical occupations	$56,280	$65,510	85.9%
Community and social services occupations	$31,020	$36,440	85.1%

Source: U.S. Bureau of Labor Statistics, compiled from Occupational Employment and Wage Estimates. Pittsburgh MSA used for this table is the 1993 6 county defintion.

Occupation groups can be broken down into greater detail. Wages in many of the more detailed occupations in the Pittsburgh region pay 2/3 or less than the U.S. average (see Table 8). This group includes dentists and dental hygienists, music directors, tax preparers, and other occupations that are typically engaged in locally provided services. Interestingly, in Allegheny County, the largest wage premiums compared to the U.S. were in the forestry and fishing and athletes occupations, though there are few people engaged in these occupations in the county.

Table 8. Detail Occupations with High and Low Relative Wages,

Pittsburgh Region (MSA) vs. U.S., May 2004

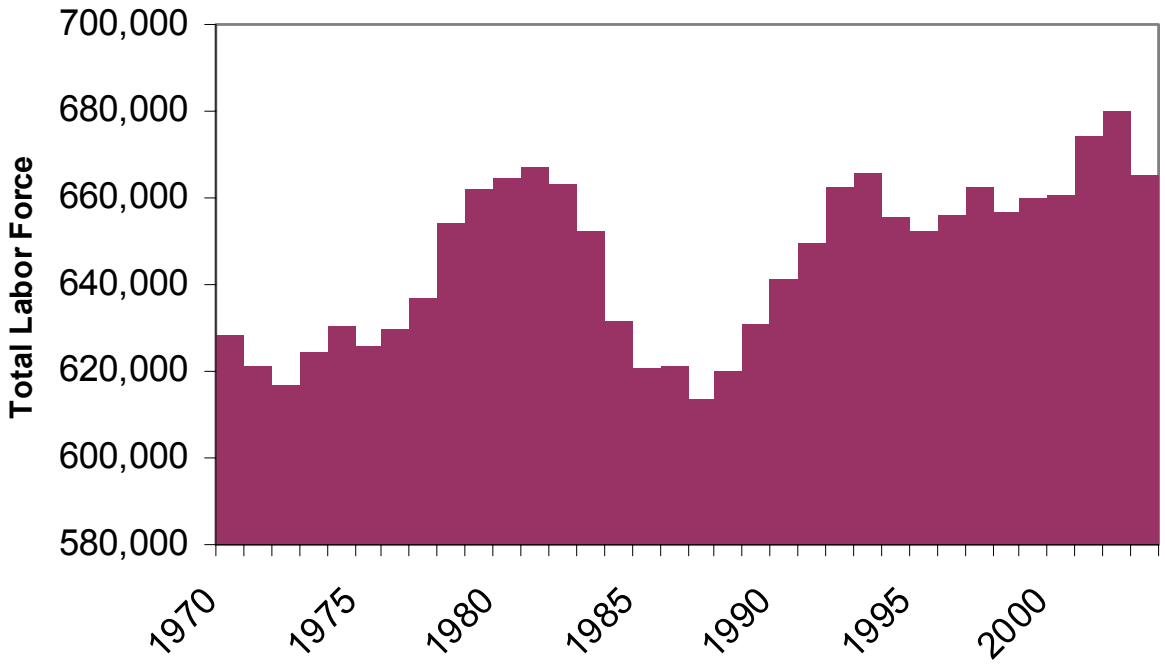
Detail Occupations with Highest Wages	Pittsburgh Region	U.S.	Ratio: Pgh/US
1) Forest and conservation technicians	$69,950	$30,770	227.3%
2) Fish and game wardens	$98,300	$49,090	200.2%
3) Athletes and sports competitors	$162,070	$86,690	187.0%
4) Pipelayers	$58,680	$32,040	183.1%
5) Door-to-door sales workers, news and street vendors, and related workers	$50,250	$27,790	180.8%
6) Forest and conservation workers	$37,990	$23,590	161.0%
7) Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers	$39,490	$28,520	138.5%
8) Timing device assemblers, adjusters, and calibrators	$41,780	$30,310	137.8%
9) Conveyor operators and tenders	$35,640	$26,720	133.4%
10) Floor layers, except carpet, wood, and hard tiles	$46,890	$35,640	131.6%
11) Vocational education teachers, middle school	$60,680	$46,250	131.2%
12) Paperhangers	$45,740	$35,090	130.4%
13) Cement masons and concrete finishers	$43,820	$34,030	128.8%
14) Reinforcing iron and rebar workers	$51,730	$40,190	128.7%
15) Helpers--pipelayers, plumbers, pipefitters, and steamfitters	$30,580	$23,930	127.8%
Detail Occupations with Lowest Wages	**Pittsburgh Region**	**US**	**Ratio: Pgh/US**
1) Music directors and composers	$23,070	$43,810	52.7%
2) Dental hygienists	$34,020	$59,440	57.2%
3) Agents and business managers of artists, performers, and athletes	$40,460	$69,520	58.2%
4) Tax preparers	$20,210	$34,330	58.9%
5) Skin care specialists	$16,420	$27,450	59.8%
6) Massage therapists	$22,280	$36,670	60.8%
7) Film and video editors	$31,110	$50,690	61.4%
8) Adult literacy, remedial education, and GED teachers and instructors	$26,760	$43,520	61.5%
9) Dentists, general	$82,110	$132,850	61.8%
10) Camera operators, television, video, and motion picture	$26,030	$41,690	62.4%
11) Health diagnosing and treating practitioners, all other	$58,290	$92,300	63.2%
12) Fitness trainers and aerobics instructors	$20,090	$31,170	64.5%
13) Postsecondary teachers, all other	$41,480	$63,920	64.9%
14) Producers and directors	$47,520	$72,470	65.6%
15) Parking enforcement workers	$20,260	$29,890	67.8%

Source: U.S. Bureau of Labor Statistics, compiled from Occupational Employment and Wage Estimates.

WORKFORCE TRENDS

The industrial changes in the Pittsburgh region have caused significant changes in the composition of the local labor force. The labor force includes workers who are working and those actively seeking employment. The labor force in Allegheny County peaked at an average 667,100 in 1981 (see Figure 21). Like total employment, the labor force dropped during the 1980s, but increased steadily thereafter. The total number of workers in the county peaked again at an average 679,900 in 2002, a level higher than the county's peak labor force during the steel era.

Figure 21. Total Labor Force, Allegheny County, 1970-2000



Source: Pennsylvania Center for Workforce Information and Analysis
Labor Force = persons employed + persons unemployed who are actively seeking employment and available to begin work.

A skilled workforce is a key factor in regional competitiveness and is essential to attracting new businesses to the region. Likewise, higher education levels are needed in today's workforce. Looking toward future growth has become more reliant on training qualified workers now.

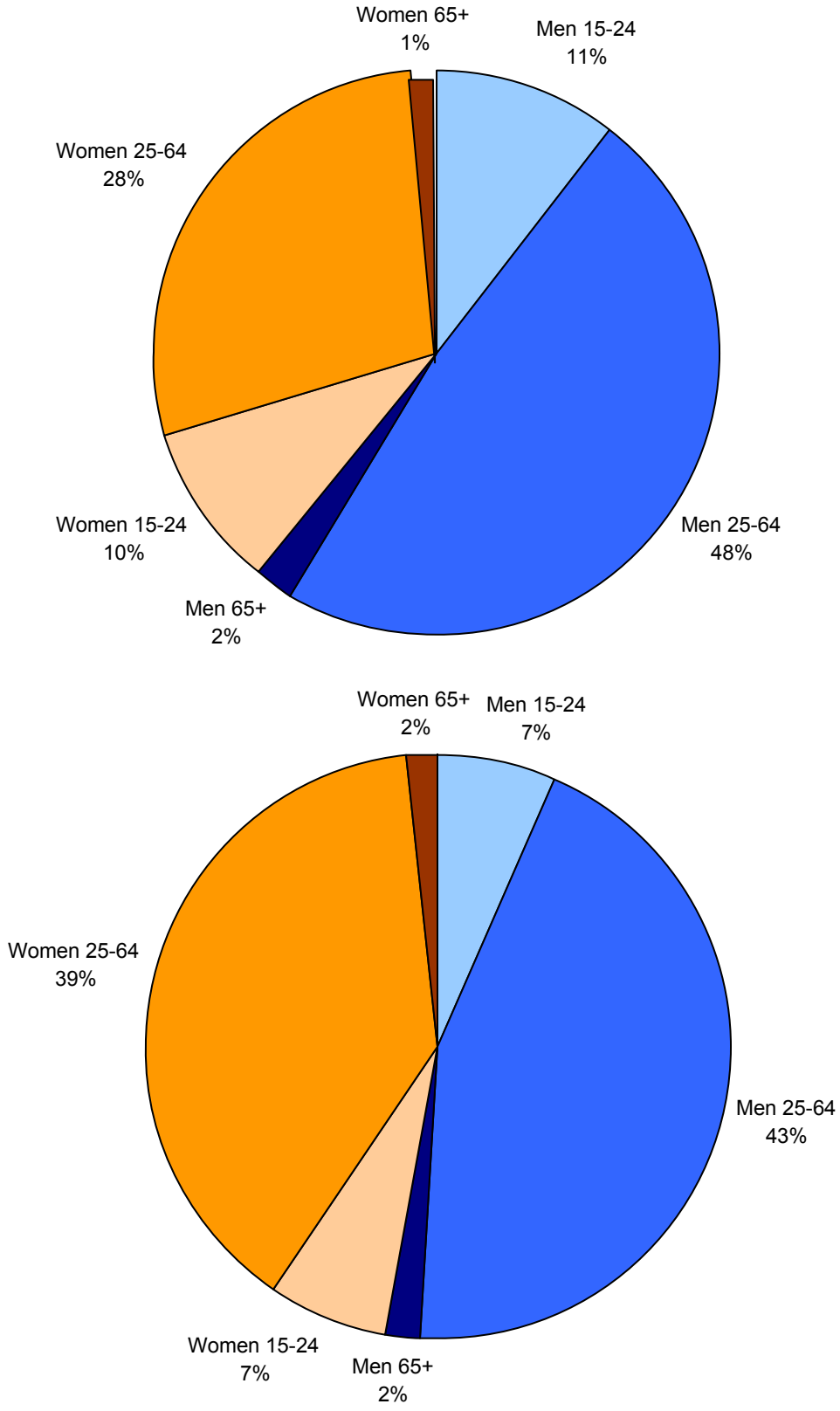
One of the more significant changes in the Allegheny County workforce has been the increase in the number of female workers in the county and the decline in the number of men in the labor force (see Table 9). Between 1971 and 2000, the number of men in the Allegheny County labor force decreased by 17.8 percent while the number of women in the labor force increased by 13.9 percent (see Figure 22). By 2000, women had become nearly half (48 percent) of the Allegheny County labor force. The major source for this increase was in prime-age females, those between 25 and 64, which increased by nearly 30 percent between 1971 and 2000. The reasons behind the increase in the number of women workers are discussed below in labor force participation.

Table 9. Allegheny County Labor Force by Gender and Age Group, 1971-2000

	1971	1980	1990	2000	Change 71-00	
Men 15-24	69,016	75,245	50,086	41,846	-27,170	-39.4%
Men 25-64	314,555	293,268	284,323	273,941	-40,614	-12.9%
Men 65+	15,255	12,072	12,430	11,936	-3,319	-21.8%
	398,826	380,585	346,839	327,723	-71,103	-17.8%
Women 15-24	62,782	71,687	48,963	41,910	-20,872	-33.2%
Women 25-64	185,818	210,627	237,678	241,149	55,331	29.8%
Women 65+	8,481	8,403	10,516	9,770	1,289	15.2%
	257,081	290,717	297,157	292,829	35,748	13.9%

Source: Pittsburgh REMI Model

Figure 22. Allegheny County Labor Force by Gender and Age Group, 1971 and 2000



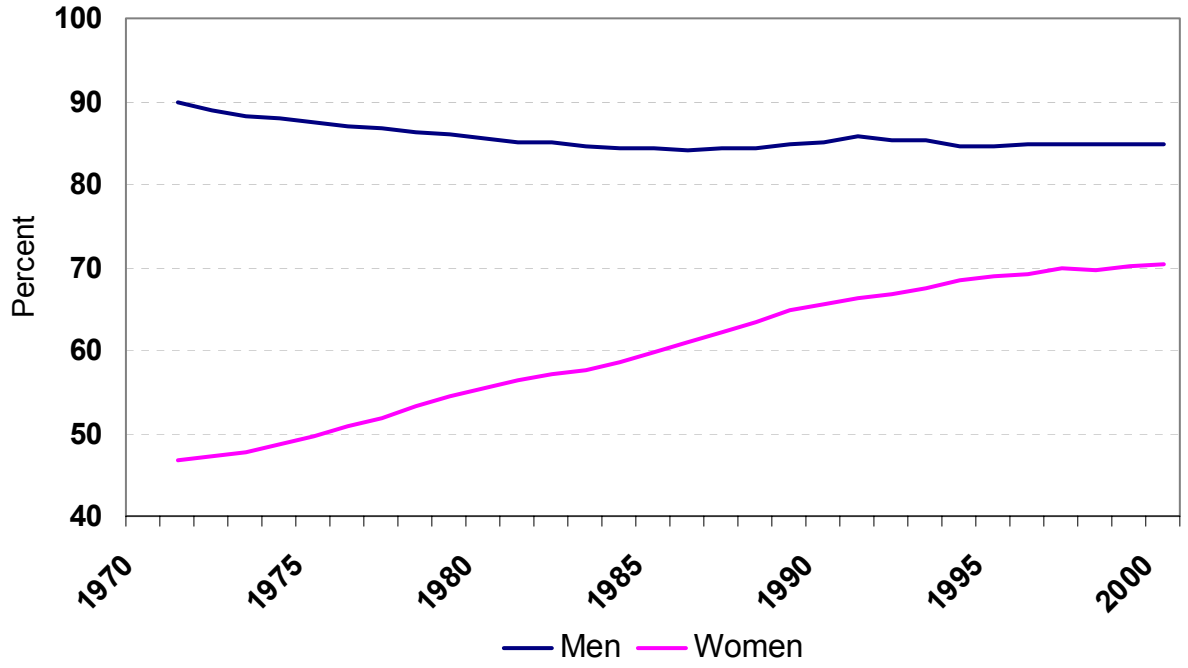
Source: Pittsburgh REMI Model

Labor Force Participation

Labor force participation is a crucial part of employment and economic forecasting both locally and nationally. The local labor force participation pattern differs historically from national labor force participation patterns, especially in terms of gender. Female labor force participation rates in the Pittsburgh region have historically have been lower than national female labor force participation rates. As late as 1960, the rate of white female labor force participation for married women with husbands present was 19.5 percent compared to 29.7 percent nationally. For non-white married women the gap was even greater. However, female labor force participation rates in Allegheny County have risen steadily since 1970, while male rates have declined ever so slightly (see Figure 23).

Figure 23. Labor Force Participation Rate by Gender, Allegheny County

Population Ages 25-64, 1970-2000



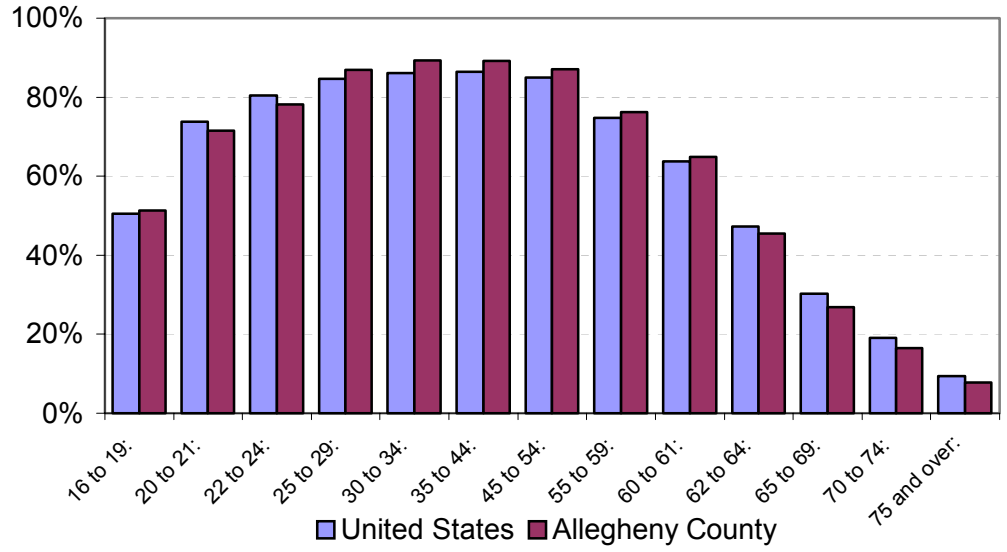
Source: Pittsburgh REMI Model

The local manufacturing industry employed primarily men, which accounts for much of the difference between local and national female labor force participation. The steel industry was a heavy industry, where few women worked. Union structure reinforced the gender gap for much of its history. Another explanation for this divergence is the reliance on shift work. Shift work required that individual workers rotated through three different shifts in a daily schedule. Other factors including the wage structure of the steel industry, which paid relatively higher wages than other sectors.

By comparing labor force participation rates in Allegheny County to the U.S. by gender, the participation rates for men in the county show minor differences, but generally reveal rates similar to the U.S. average (see Figure 24). For women, for many years, labor force participation rates were significantly lower than U.S. averages. Over the decades, as shown above, female labor force participation rates have been increasing. They now have closed the gaps with national female labor force participation rates (see Figure 25). In fact, female labor

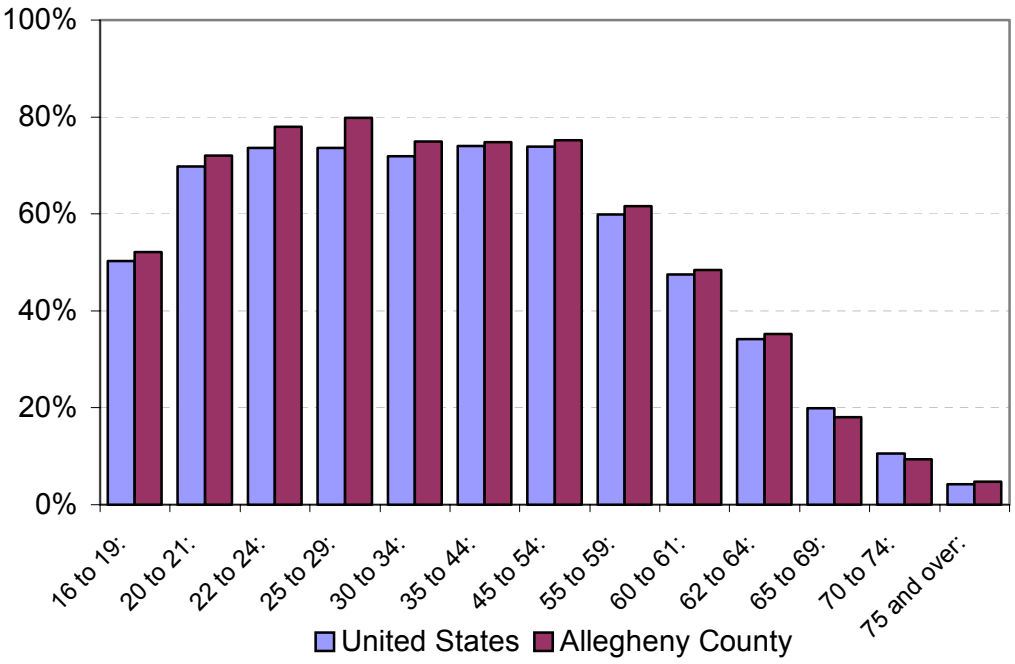
force participation rates in Allegheny County now exceed the national average in most age categories.

Figure 24. Male Labor Force Participation Rates by Age, U.S. Versus Allegheny County, 2000



Source: Census Bureau. Census 2000

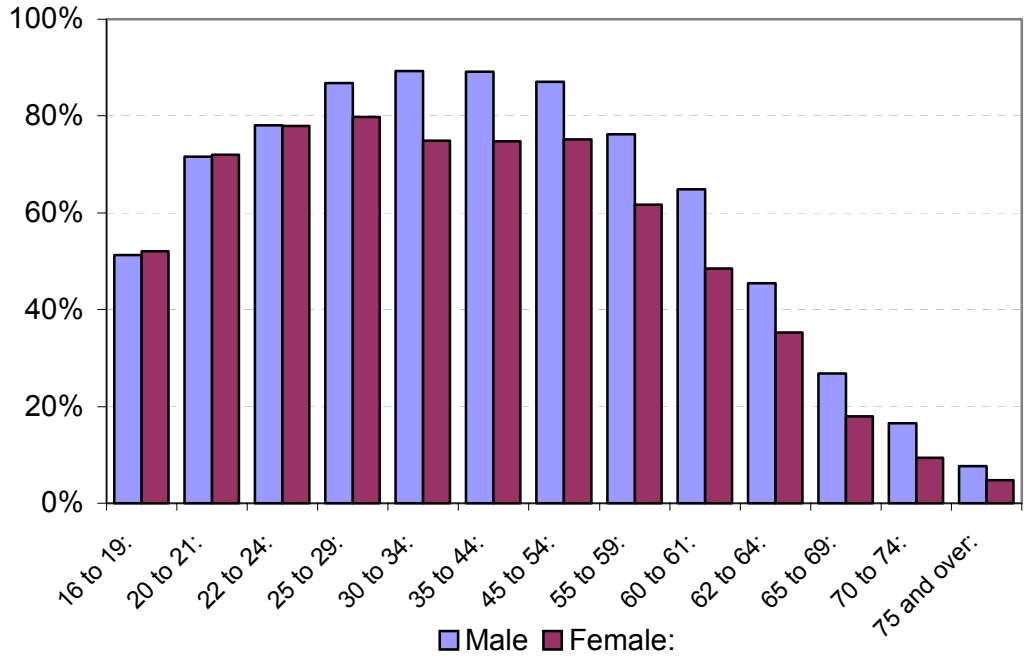
Figure 25. Female Labor Force Participation Rates by Age, U.S. Versus Allegheny County, 2000



Source: Census Bureau. Census 2000

Comparing labor force participation rates by age and gender in Allegheny County shows that female labor force participation between men and women are equal at younger ages (see Figure 26). However, even through working years 25-54, women's participation rates exceed 50 percent in all age categories.

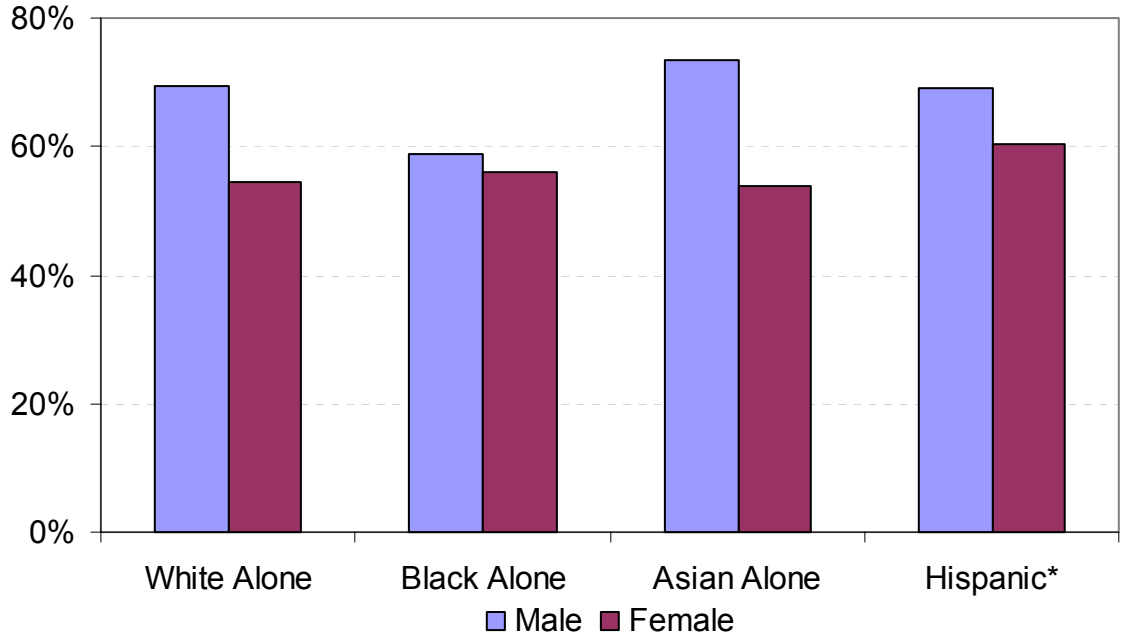
Figure 26. Labor Force Participation Rates by Age and Gender, Allegheny County, 2000



Source: Census Bureau. Census 2000

African American labor force participation for women is slightly lower but comparable to that for the White alone women in Allegheny County, 54.4 percent to 56.2 percent in 2000 (see Figure 27). However the labor force participation rate for men is significantly lower among African Americans than the comparable rate for the white alone population or any other major race and ethnic group represented in the county. African American men age 16 and over had an overall labor force participation rate of 58.9 percent in 2000 compared to 69.5 percent for the white alone men.

Figure 27. Labor Force Participation by Race. Population Age 16 and Over, Allegheny County, 2000



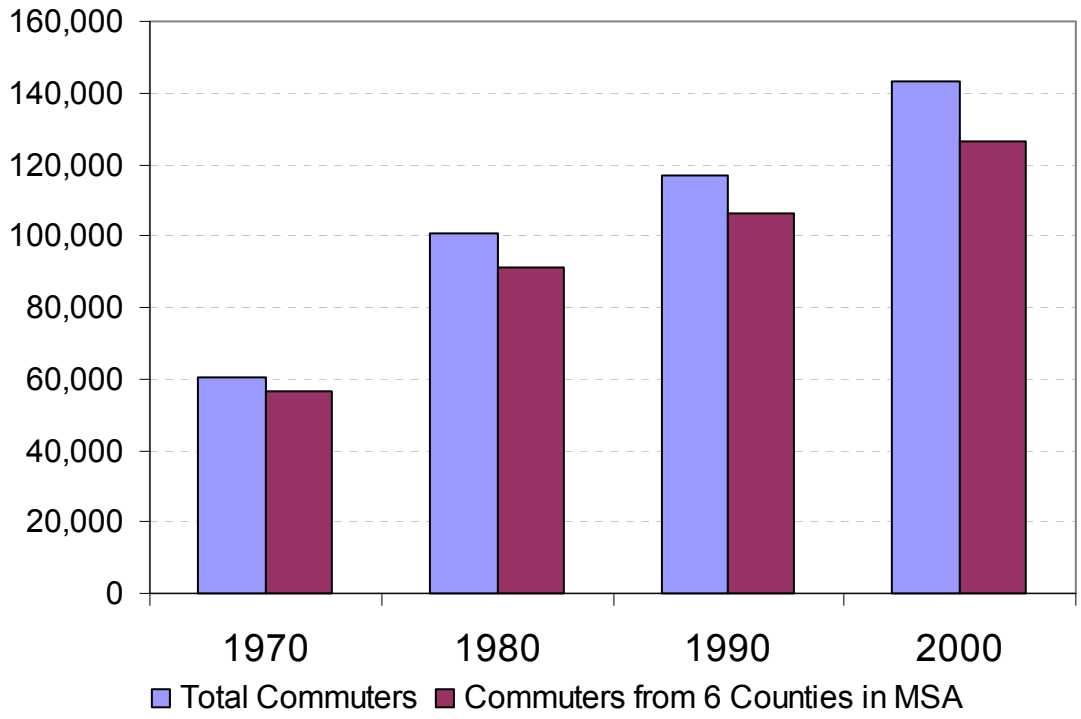
* Hispanic can be of any race.

COMMUTING PATTERNS

Ongoing suburbanization has fueled greater flows of commuters in all metropolitan regions of the country. The ability to work in one location within the region, yet live in another is one of the defining characteristics of a metropolitan region. All Metropolitan Statistical Areas (MSA) are defined around a central core area, typically an urban county which a concentration of employment and population that meet certain thresholds. Surrounding counties are added to the definition of an MSA if the resident workers in that county commute to jobs elsewhere in the MSA. As commuting patterns change so do the definitions of MSAs.

Commuting into Allegheny County has increased steadily in each decade between 1970 and 2000 (see Figure 28). The regional economy today has expanded to encompass much of Southwestern Pennsylvania and even beyond. By 2000, more than 143,000 commuters came into Allegheny County from outside the county for work.

Figure 28. Commuters into Allegheny County, 1970-2000



Source: Census Bureau. County to MCD Commuting Flows. Census 2000.

Most commuters into Allegheny County come from other parts of the Pittsburgh MSA. Taking a longer view, we can see that between 1960 and 2000, commuting into Allegheny County expanded mightily in all neighboring counties (see Table 10). Westmoreland County had the largest number of commuters to Allegheny County, with 43,536. Beaver and Butler counties had the largest relative increases, over 400 percent, between 1960 and 2000.

Table 10. Change in Commuting Flow into Allegheny County, 1960 - 2000

Commuters from:	1960	2000	Change
Westmoreland County	20,000	43,536	118%
Washington County	11,400	27,645	143%
Beaver County	4,000	23,946	499%
Butler County	3,900	21,403	449%
Armstrong County	1,200	4,582	282%

Source: Census Bureau. County to MCD Commuting Flows. Census 2000.

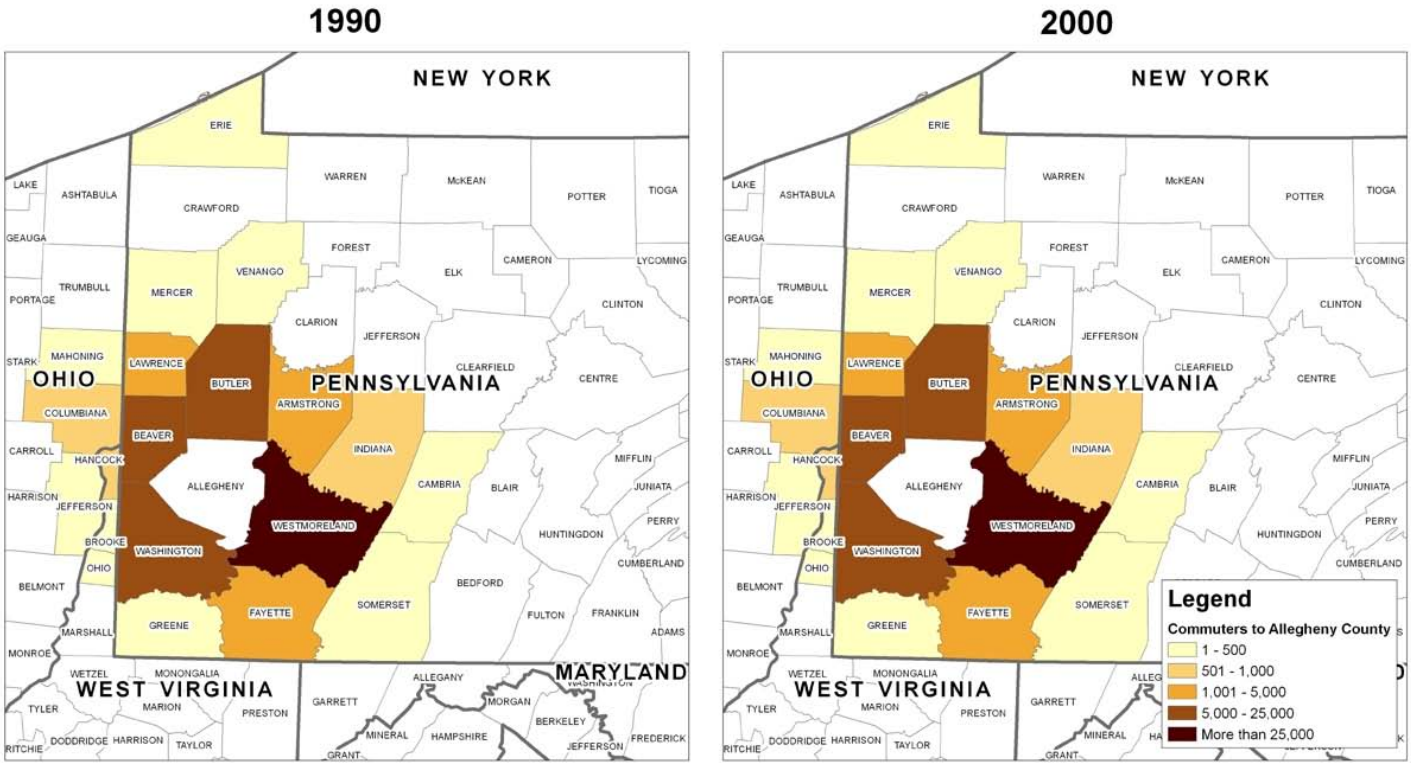
Commuting into Allegheny County continued during the 1990s (see Table 11). Commuting flows today extend well beyond the MSA, from other parts of western Pennsylvania and neighboring states to Allegheny County. This same information is shown graphically in Figure 29.

Table 11. Commuting by County into Allegheny County, 1990 - 2000

	1990	2000	Change	
Westmoreland Co. PA	40,681	43,536	2,855	7.0%
Washington Co. PA	22,096	27,645	5,549	25.1%
Beaver Co. PA	21,328	23,946	2,618	12.3%
Butler Co. PA	15,406	21,403	5,997	38.9%
Fayette Co. PA	3,174	5,151	1,977	62.3%
Armstrong Co. PA	3,598	4,582	984	27.3%
Lawrence Co. PA	1,013	2,043	1,030	101.7%
Hancock Co. WV	785	1,434	649	82.7%
Jefferson Co. OH	362	1,094	732	202.2%
Indiana Co. PA	944	960	16	1.7%
Brooke Co. WV	251	888	637	253.8%
Columbiana Co. OH	559	735	176	31.5%
Greene Co. PA	475	707	232	48.8%
Mercer Co. PA	395	616	221	55.9%
Mahoning Co. OH	360	508	148	41.1%
Somerset Co. PA	218	448	230	105.5%
Erie Co. PA	179	332	153	85.5%
Cambria Co. PA	290	313	23	7.9%
Ohio Co. WV	261	297	36	13.8%
Venango Co. PA	114	275	161	141.2%

Source: Census Bureau. County to MCD Commuting Flows. Census 2000.

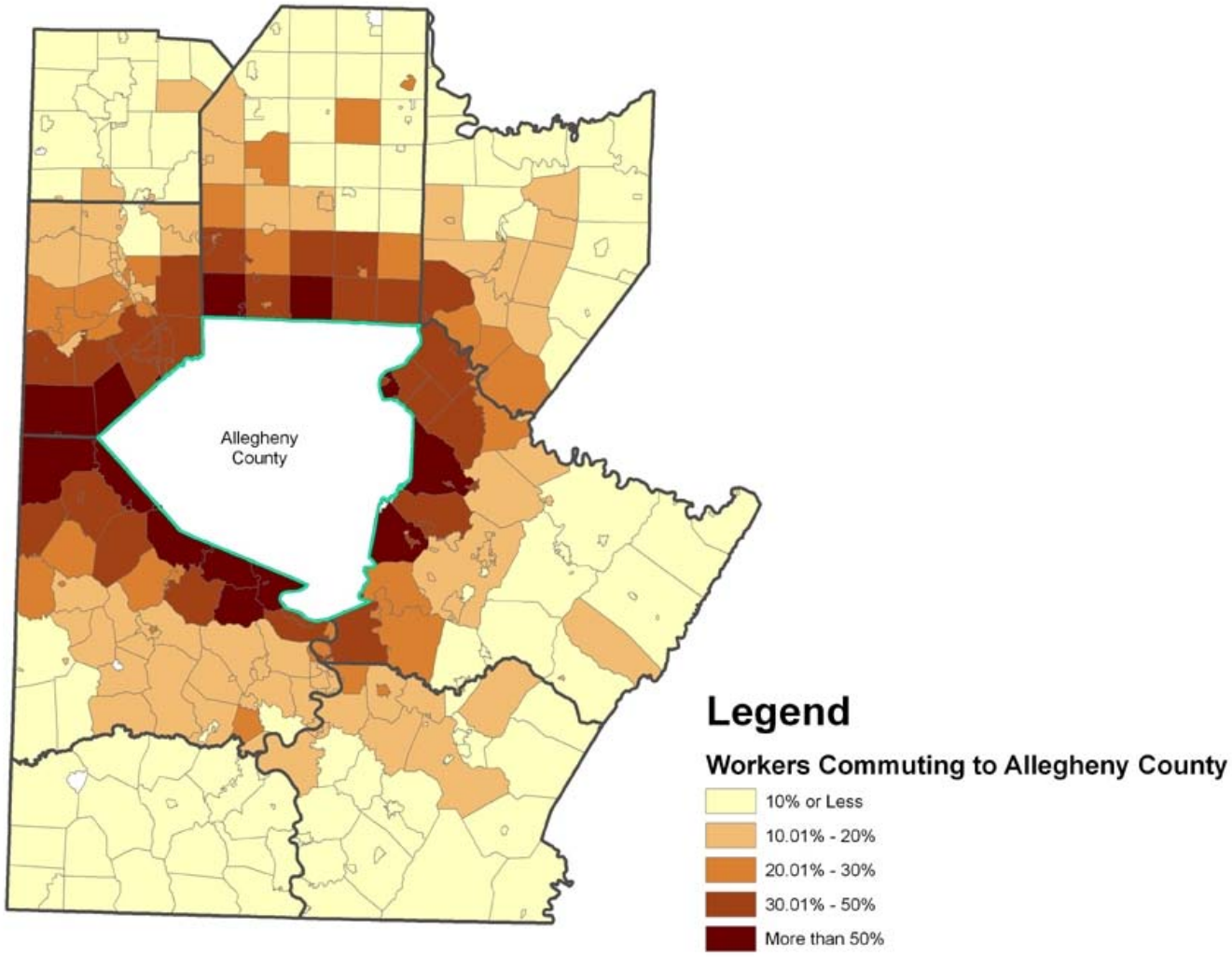
Figure 29. Commuting Into Allegheny County, 1990 and 2000



Source: Compiled from Census Bureau MCD to MCD Commuting Flow Data

Finally, examining the commuting data by municipality shows that many of the commuters into Allegheny County from the outlying counties reside in exurbs just along the county border. This holds true for Beaver, Butler, Washington and Westmoreland counties. Many of these bordering municipalities have 50 percent or more of their resident workers commuting into Allegheny County for employment (see Figure 30).

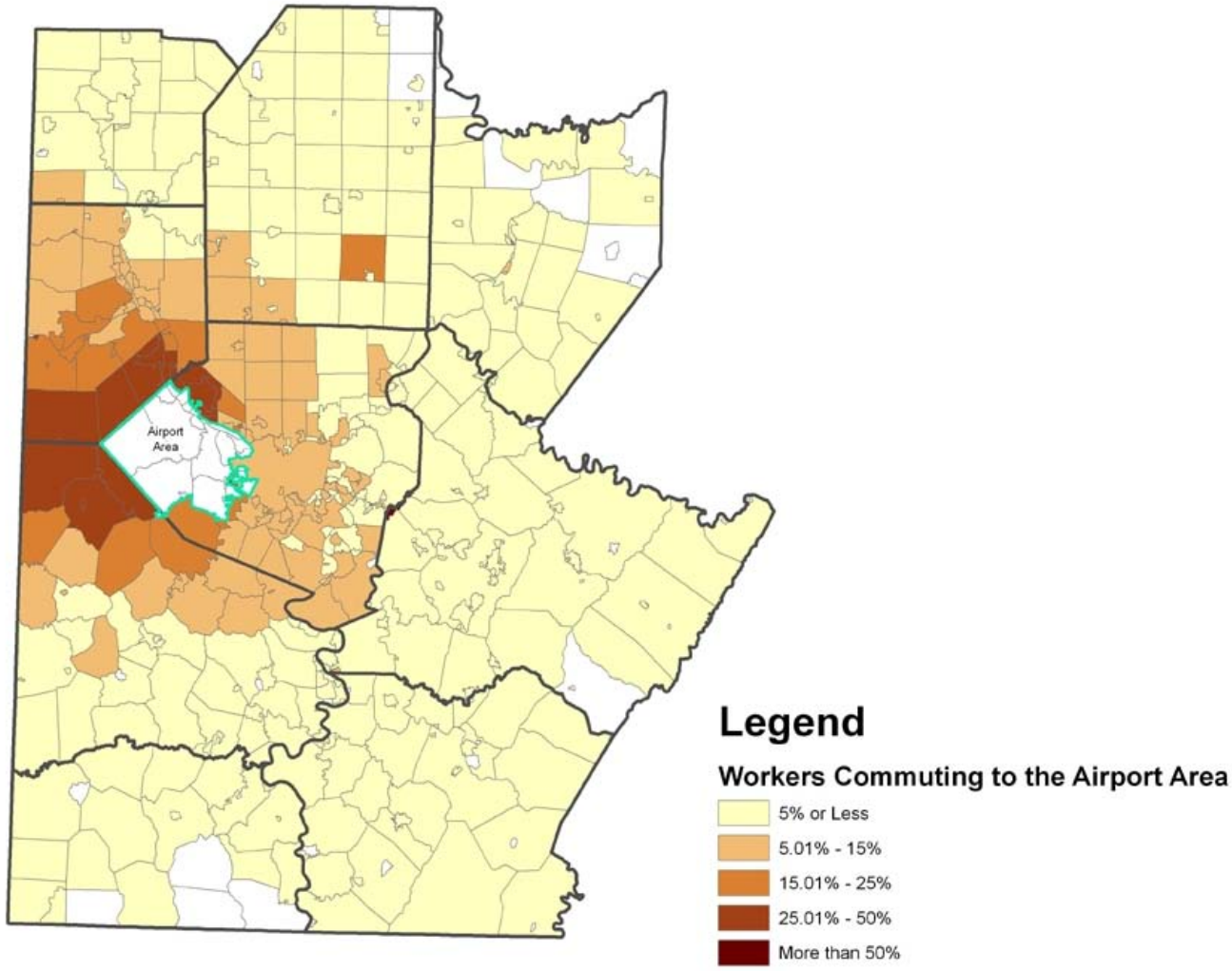
Figure 30. Commuting Into Allegheny County, 2000



Source: Compiled from Census Bureau MCD to MCD Commuting Flow Data

Commuting into Allegheny County can be broken down even further by examining significant employment centers. Many commuters to the county work in the Airport Corridor, one the county's major employment areas (see Figure 31). Though the Airport draws workers from all over the region, the major concentration of Airport Corridor workers come from the nearby municipalities located in Allegheny, Beaver, and Washington counties.

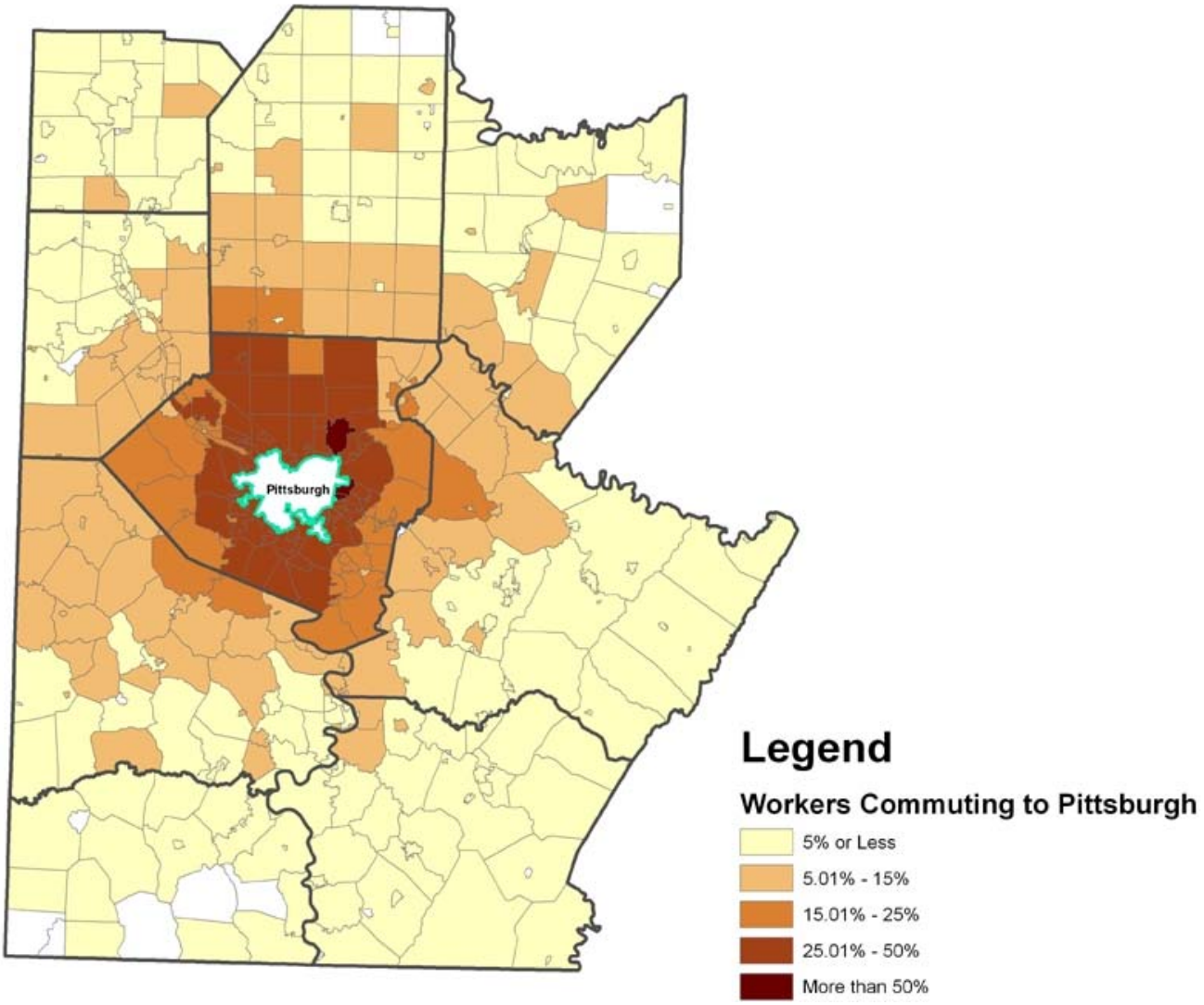
Figure 31. Commuting to Airport Corridor, 2000



Source: Compiled from Census Bureau MCD to MCD Commuting Flow Data

Likewise the City of Pittsburgh is a major employment center in Allegheny County. The following figure (Figure 32) shows commuting into the City of Pittsburgh in 2000. Similar to the airport, as a major employment center, the city draws workers from throughout the region, but a concentration comes from the municipalities bordering the city.

Figure 32. Commuting by Municipality into the City of Pittsburgh, 2000



Source: Compiled from Census Bureau MCD to MCD Commuting Flow Data

Related to commuting is public transit use. In 2000, 61,085 commuters, or 10.5 percent of Allegheny County resident workers used public transit (see Table 12). This was a decrease from 1990, when 72,242 resident workers used public transportation, or 12.1 percent of 1990 resident workers. Not unexpectedly, the most common form was bus or trolley bus, with nearly ten percent of workers using this form of transit.

Table 12. Means of Transportation to Work - Allegheny County and Remainder of Pittsburgh MSA Workers, 2000

	Allegheny County		6 County Area-Remainder of MSA	
Total Workers Age 16+	582,362		504,780	
Car, truck, or van:	478,341	82.1%	470,599	93.2%
Drove alone	419,829	72.1%	422,995	83.8%
Carpooled	58,512	10.0%	47,604	9.4%
Public transportation:	61,085	10.5%	4,378	0.9%
Bus or trolley bus	56,218	9.7%	3,546	0.7%
Streetcar or trolley car	3,059	0.5%	305	0.1%
Subway or elevated	1,179	0.2%	120	0.0%
Railroad	66	0.0%	23	0.0%
Ferryboat	84	0.0%	58	0.0%
Taxicab	479	0.1%	326	0.1%
Motorcycle	303	0.1%	187	0.0%
Bicycle	894	0.2%	288	0.1%
Walked	24,006	4.1%	14,861	2.9%
Other means	3,148	0.5%	2,402	0.5%
Worked at home	14,585	2.5%	12,065	2.4%

Source: Derived from the 2000 US Census

As shown in Table 13, many Allegheny County municipalities, one-quarter or more of workers used public transit in 2000. These communities tend to be lower income, where workers are dependent on public transit use. Wealthier communities, on the other hand, had very few workers using public transit. Nationally, 4.7 percent of workers used public transportation in 2000; for Pennsylvania, the figure was 4.2 percent. In the Pittsburgh MSA, 6.2 percent of workers used public transit. This ranked 8th among the 25 largest metropolitan areas in 2000.

Table 13. Public Transportation Usage by Municipality, 2000

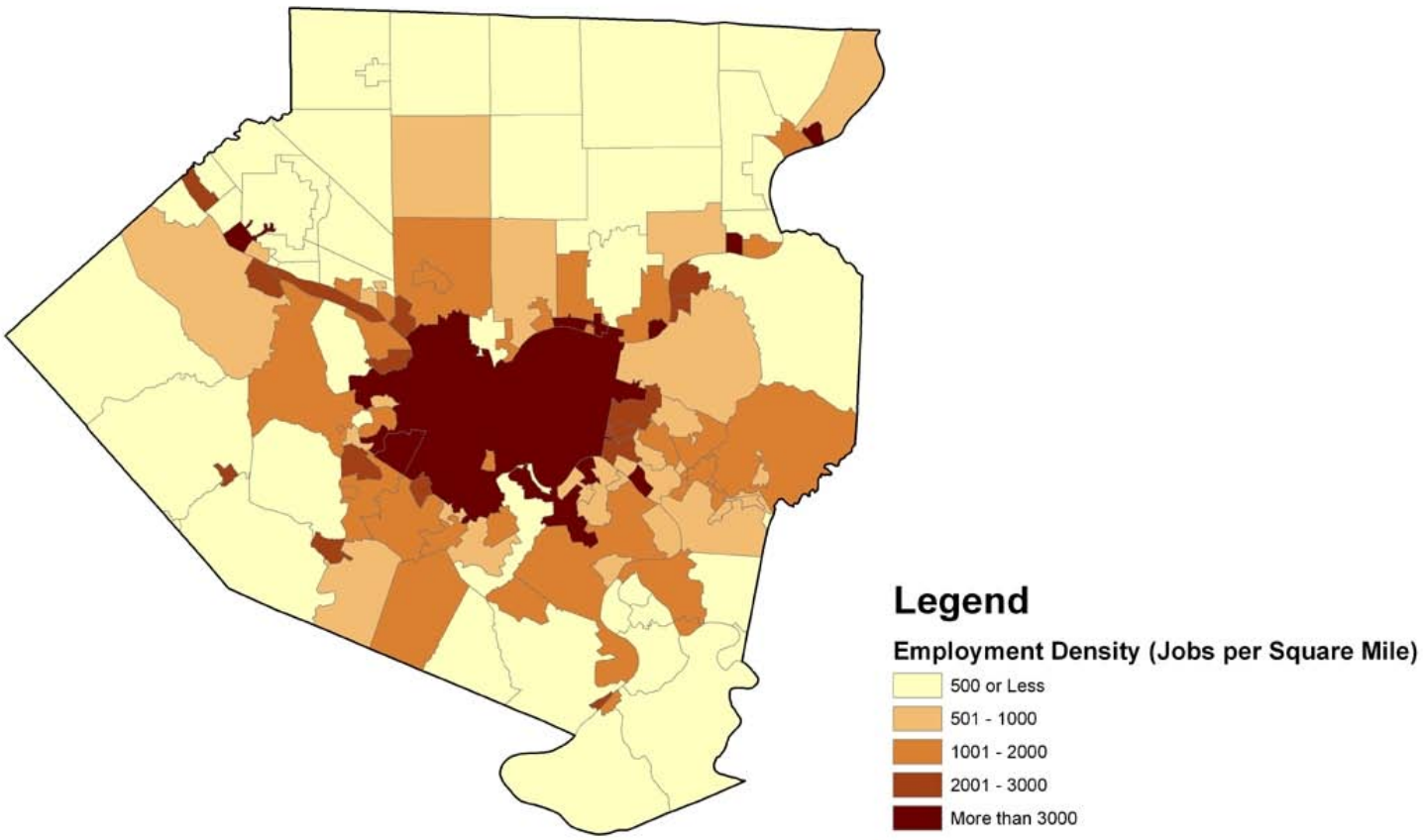
Highest Public Transportation Usage				Lowest Public Transportation Usage			
	Workers 16+	Public Transportation			Workers 16+	Public Transportation	
1) Rankin	669	214	32.0%	115) Fox Chapel	2,252	37	1.6%
2) Braddock	795	225	28.3%	116) Robinson	6,100	100	1.6%
3) Wilkinsburg	8,215	2,278	27.7%	117) South Versailles	127	2	1.6%
4) Mount Oliver	1,733	459	26.5%	118) Oakdale	830	13	1.6%
5) Dormont	4,922	1,081	22.0%	119) Fawn	1,115	17	1.5%
6) Pittsburgh	141,844	29,062	20.5%	120) Bradford Woods	617	8	1.3%
7) Homestead	1,229	242	19.7%	121) Frazer	644	8	1.2%
8) East Pittsburgh	871	167	19.2%	122) Findlay	2,647	31	1.2%
9) Duquesne	2,419	452	18.7%	123) Marshall	2,774	29	1.0%
10) North Braddock	2,478	457	18.4%	124) Richland	4,284	44	1.0%
11) Sharpsburg	1,544	262	17.0%	125) Ben Avon Heights	163	1	0.6%
12) Bellevue	4,544	693	15.3%	126) Forward	1,735	0	0.0%
13) Swissvale	4,768	727	15.2%	127) McDonald	162	0	0.0%
14) Whitehall	6,598	979	14.8%	128) Sewickley Heights	362	0	0.0%
15) Brentwood	5,418	780	14.4%	129) Sewickley Hills	333	0	0.0%

Source: Census Bureau, Census 2000

ECONOMIC ACTIVITY WITHIN ALLEGHENY COUNTY

The physical concentration of employment within Allegheny County in 2000 begins in the County's core, the City of Pittsburgh, and extends outward, largely by traditional patterns along the rivers. This employment density shows jobs per square mile (see Figure 33).

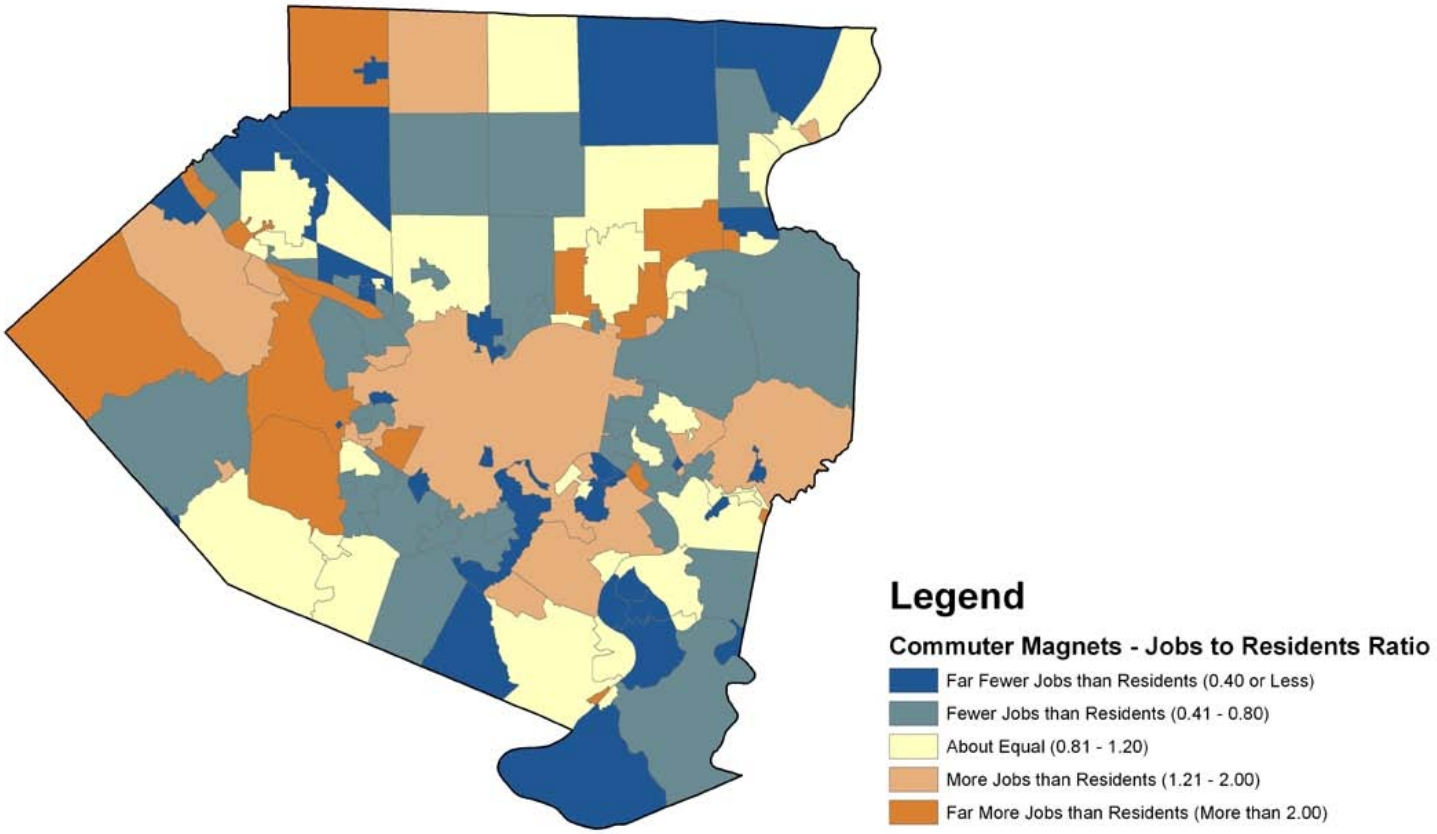
Figure 33. Employment Density by Municipality, 2000



Source: Derived from the 2000 US Census

However, when another measure—jobs to residents by municipality—was measured a different picture emerges (see Figure 34). In this case, many outlying municipalities show concentrated employment compared to the number of residents of the municipality. For the most part, these tend to be faster growing areas, farther away from the urban core. The municipalities with the largest employment-to-residents ratios were Neville Township, Greentree, Leetsdale, and Finlay, all of which had over four times the number of jobs than resident workers (see Table 14).

Figure 34. Commuter Magnets. Ratio of Jobs to Residents by Municipality, 2000



Source: Derived from the 2000 US Census

Table 14. Employment Concentrations in Allegheny County, 2000

		Workers		
		By Place of Work	By Residence	Ratio
1)	Neville Township	2,846	604	4.7
2)	Green Tree Borough	11,241	2,424	4.6
3)	Leetsdale Borough	2,287	520	4.4
4)	Findlay Township	11,602	2,647	4.4
5)	Braddock Borough	3,041	795	3.8
6)	Trafford Borough	53	16	3.3
7)	Harmar Township	4,803	1,488	3.2
8)	O'Hara Township	9,904	3,893	2.5
9)	Robinson Township	15,167	6,100	2.5
10)	Marshall Township	6,856	2,774	2.5
11)	Collier Township	5,554	2,275	2.4
12)	Sewickley Borough	3,919	1,827	2.2
13)	West Elizabeth Borough	576	277	2.1
14)	Cheswick Borough	1,659	818	2.0
15)	Pittsburgh City	280,035	141,844	2.0

Source: Derived from the 2000 US Census

Baseline Economic Forecast

The REMI model has been built especially for the Southwestern Pennsylvania region. The core model was purchased from Regional Economic Models Inc. of Amherst, Massachusetts, which has been in business since 1974. University Center for Social and Urban Research (UCSUR) has been a client of REMI since 1991. UCSUR has over the years participated in the calibration and updates of the REMI model. The REMI model is used extensively around the country by regional planning agencies and other commercial and private sector firms for both regional forecasting and economic impact analysis on various projects. UCSUR works cooperatively with the Southwestern Pennsylvania Commission (SPC), which uses the Pittsburgh REMI model as its core forecasting tool and a foundation of its Transportation Improvement Plan (TIP) produced every five years.

The REMI model-building system uses hundreds of equations developed over the last two decades to build customized models for each area using data from the Bureau of Economic Analysis, the Bureau of Labor Statistics, the Department of Energy, the Census Bureau and other public sources. This data is used to both calibrate the model from historical trends in the regional economy and to provide a comprehensive picture of the current state of the regional economy.

The REMI model is a structural model, meaning that it clearly includes cause and effect relationships among various factors within the regional economy. This differs significantly from any simple extrapolation of time series trends in economic or demographic variables that have been observed in the past. The model shares two key underlying assumptions with mainstream economic theory: households maximize utility and producers maximize profits. In the model, businesses produce goods to sell to other firms, consumers, investors, governments and purchasers outside of the region. The output is produced using labor, capital, fuel, and intermediate inputs. The demand for labor, capital, and fuel per unit of output depends on their relative costs, since an increase in the price of any one of these inputs leads to substitution away from that input to other inputs. The supply of labor in the model depends on the number of people in the population and the proportion of those people who participate in the labor force. Economic migration affects the population size. People will move into an area if the real after-tax wage rates or the likelihood of being employed increases in a region.

For an increased level of detail, the Pittsburgh REMI Model divides the Pittsburgh region into four smaller regions. The first is the core region, which comprises Allegheny County. The second is the peripheral region, which comprises the surrounding five counties (Beaver, Butler, Fayette, Washington, and Westmoreland counties). A third region includes three exurban counties in Southwestern Pennsylvania (Armstrong, Greene and Indiana counties). Sub-regions 1 and 2 together encompass the 1993 definition of the Pittsburgh Metropolitan Statistical Area (MSA). A fourth region defined by Lawrence County has recently been added to the model. All four sub-regions together encompass the geography used by the Southwestern Pennsylvania Commission (SPC) in their regional transportation models. The forecast presented is the baseline forecast for the Allegheny County sub-region of the Pittsburgh regional model.

The Allegheny County economy will expand in the coming decades. The Pittsburgh REMI model projects growth in Total Gross Regional (county) Product (GRP) to grow to $113 billion by 2025 and $127 billion by 2030. Between 2005 and 2030, GRP is expected to grow by 87

percent. Total Regional Output, the equivalent of total sales, will increase by 83 percent to over $200 billion by 2030 (see Table 15). (Additional forecast tables are found in the Appendix.)

Table 15. Summary of REMI Forecast for Allegheny County, 2005-2030

	2005	2010	2015	2020	2025	2030	Change 2005-2030	
Summary Variables								
Total Regional Product*	68,095	82,059	92,634	101,862	113,590	127,212	59,117	86.8%
Total Regional Output*	113,537	134,660	150,642	165,620	184,830	207,305	93,768	82.6%
* Millions of Fixed 2000$								

Source: Pittsburgh REMI Model

Job growth for Allegheny County is projected to increase by 15 percent between 2005 to 2030 (see Table 16). The model projects 0.6 percent increase per year from 2005 to 2030, reaching over 1 million in employment in 2030. The labor force is projected to increase at a slightly slower pace -- approximately 0.4 percent per year -- and grow to 743,043 by 2030. This represents a 10 percent increase 2005. With Allegheny County's projected relatively modest population growth over the next two decades, employment and labor force projections mirror that trend.

Table 16. Summary of REMI Forecast for Allegheny County, 2005-2030

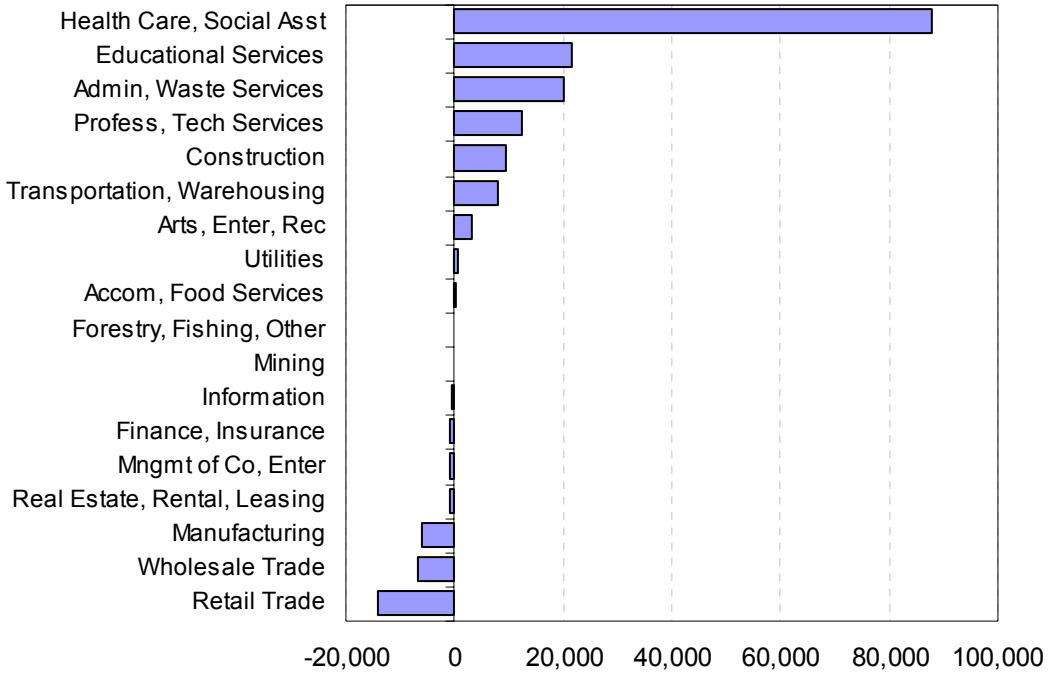
	2005	2010	2015	2020	2025	2030	Change 2005-2030	
Summary Variables								
Total Employment	890,071	918,026	945,075	969,087	993,538	1,023,766	133,695	15.0%
Population	1,260,645	1,258,928	1,272,239	1,308,391	1,355,074	1,402,769	142,124	11.3%
Labor Force	675,385	691,993	703,784	712,945	725,078	743,043	67,658	10.0%

Source: Pittsburgh REMI Model

The employment forecast shows that the gains in employment in Allegheny County over the next decades will be concentrated in service sectors (see Figure 35). The trends in the restructuring of the county's economy since the collapse of steel will continue. The largest employment gains to 2025 are projected to occur in the health care and social assistance sector. This continues the longer term trend of growth in that sector in Allegheny County. Similarly, most of the employment gains to 2025 will occur in other service sectors, including educational services, administrative and waste services, and professional and technical services. In nonservice sectors, both construction and transportation and warehousing are projected to add jobs through 2025.

On the other hand, several sectors are projected to lose jobs over the next two decades, including wholesale and retail trade and manufacturing. The largest employment losses are expected in the retail trade sector, which is expected to register productivity gains over the next two decades coupled with slow population growth in the county over the coming decades.

Figure 35. Projected Allegheny County Employment Change by Industry, 2005-2025



Health care is expected to reach 175,000 workers in Allegheny County in 2020, nearly 195,000 workers by 2025, and nearly 215,000 workers by 2030 (see Table 17). Education will grow to over 65,000 jobs in the county by 2025. Manufacturing employment in the county is projected to total just over 42,000 by 2020.

Table 17. Employment Forecast - Allegheny County, 2000-2030

	2005	2010	2015	2020	2025	2030	Change 2005-2030	Percent change 2005-2030	Average Annual Change		
									2005-2010	2010-2020	2020-2030
Forestry, Fishing, Other	214	170	142	122	105	91	-123	-57.5%	-4.1%	-2.8%	-2.5%
Mining	2,532	2,372	2,295	2,273	2,266	2,298	-234	-9.2%	-1.3%	-0.4%	0.1%
Utilities	4,987	5,023	5,174	5,332	5,466	5,606	619	12.4%	0.1%	0.6%	0.5%
Construction	50,494	49,530	51,966	55,270	58,019	60,015	9,521	18.9%	-0.4%	1.2%	0.9%
Manufacturing	49,944	46,255	43,191	42,907	43,153	44,093	-5,851	-11.7%	-1.5%	-0.7%	0.3%
Wholesale Trade	30,957	29,767	28,094	26,603	25,310	24,312	-6,645	-21.5%	-0.8%	-1.1%	-0.9%
Retail Trade	92,573	92,070	89,201	85,470	81,745	78,426	-14,147	-15.3%	-0.1%	-0.7%	-0.8%
Transportation Warehousing	31,865	34,014	35,581	36,867	38,169	39,792	7,927	24.9%	1.3%	0.8%	0.8%
Information	20,793	21,680	21,457	20,698	20,232	20,152	-641	-3.1%	0.9%	-0.5%	-0.3%
Finance, Insurance	56,543	56,909	57,019	56,536	55,966	55,793	-750	-1.3%	0.1%	-0.1%	-0.1%
Real Estate, Rental	29,640	29,953	30,019	29,688	29,220	28,717	-923	-3.1%	0.2%	-0.1%	-0.3%
Profess, Tech Services	72,401	74,387	76,461	78,612	81,261	84,943	12,542	17.3%	0.5%	0.6%	0.8%
Management of Companies, Enterprises	12,261	12,066	11,770	11,610	11,473	11,438	-823	-6.7%	-0.3%	-0.4%	-0.1%
Admin, Waste Services	51,897	56,761	60,893	64,354	67,890	71,939	20,042	38.6%	1.9%	1.3%	1.2%
Educational Services	48,205	53,249	58,345	62,376	65,863	69,780	21,575	44.8%	2.1%	1.7%	1.2%
Health Care, Social Asst	126,978	140,743	157,528	175,671	194,495	214,966	87,988	69.3%	2.2%	2.5%	2.2%
Arts, Enter, Recreation	18,916	20,054	20,942	21,437	21,819	22,289	3,373	17.8%	1.2%	0.7%	0.4%
Accomodation, Food Services	58,679	61,007	61,902	61,174	59,987	58,805	126	0.2%	0.8%	0.0%	-0.4%
Other Services (excl Gov)	48,471	49,171	49,239	48,303	47,053	45,840	-2,631	-5.4%	0.3%	-0.2%	-0.5%
Public Admin	81,218	82,372	83,414	83,381	83,679	84,137	2,919	3.6%	0.3%	0.1%	0.1%
Farm	502	474	442	403	366	334	-168	-33.5%	-1.1%	-1.5%	-1.7%

Source: Pittsburgh REMI Model

On the occupational side, the projected grow of health care in Allegheny County is again evident (see Table 18). Health care occupations are expected to grow to nearly 124,000 jobs by 2025. After health care, the fastest growing occupations are in education and communications and social services. Declines are expected in sales and production jobs.

Table 18. Employment by Occupation Forecast, Allegheny County, 2000-2030

	2005	2010	2015	2020	2025	2030	Change 2005-2030	
Management, business, finance	93,026	97,545	101,060	103,601	106,236	109,607	16,581	17.8%
Computers, math, arch, eng	39,388	41,318	42,574	43,562	44,849	46,687	7,299	18.5%
Life, phys, soc sciences	8,132	8,409	8,693	8,955	9,239	9,601	1,469	18.1%
Communications, soc services	15,304	16,747	17,920	18,699	19,465	20,336	5,032	32.9%
Legal	8,058	8,236	8,413	8,568	8,760	9,040	982	12.2%
Education, training, library	52,485	57,534	61,933	64,971	67,853	71,076	18,591	35.4%
Arts, des, entertainment, sports, media	14,118	14,677	15,159	15,526	15,902	16,412	2,294	16.2%
Healthcare	79,985	88,418	99,111	111,158	123,936	138,024	58,039	72.6%
Protective service	15,691	16,727	17,589	18,209	18,874	19,640	3,949	25.2%
Food prep, serving	62,633	64,967	66,203	66,090	65,560	65,078	2,445	3.9%
Building, grounds, personal care, service	59,123	62,376	65,134	66,978	68,678	70,682	11,559	19.6%
Sales, office, admin	256,202	254,723	252,549	250,020	247,472	246,278	-9,924	-3.9%
Farm, fish, forestry	1,507	1,513	1,517	1,517	1,521	1,534	27	1.8%
Construction, extraction	42,286	42,336	44,544	47,248	49,616	51,557	9,271	21.9%
Install, maintenance, repair	35,203	35,643	35,958	36,125	36,281	36,581	1,378	3.9%
Production	44,520	43,158	42,042	42,399	43,032	44,159	-361	-0.8%
Transportation, material moving	58,130	59,190	59,968	60,708	61,482	62,667	4,537	7.8%

Source: Pittsburgh REMI Model

In sum, these indicators point to an Allegheny County economy that continues its transition towards services. The economy is expected to expand to over $200 billion in Total Regional Output by 2030. Nonetheless, with its modest population growth, employment and the labor force growth is projected to be equally modest. Total employment is projected to reach nearly 1 million workers by 2025 and exceed 1 million by 2030. The number in the labor force will top 1.4 million by 2030. Most of that growth will occur in service-related industries and occupations. Health care will continue to be the largest major sector in the Allegheny County economy and is projected to employ over 200,000 by 2030.

APPENDIX I: THE PITTSBURGH REMI MODEL

The Pittsburgh REMI model coves the following places in the Pittsburgh region:

Pittsburgh REMI Model Sub-regions

Sub-region 1:

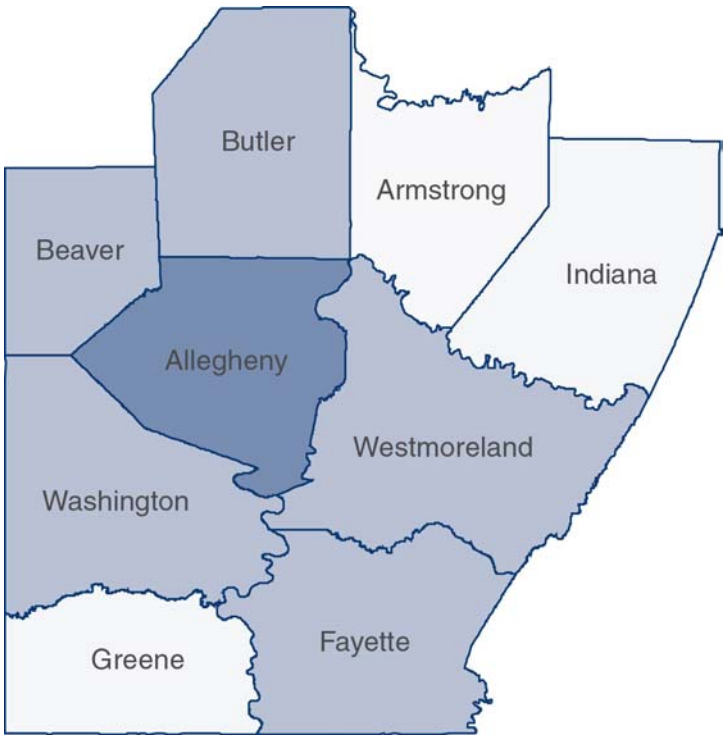
Allegheny County

Sub-region2:

Beaver County
Butler County
Fayette County
Washington County
Westmoreland County

Sub-region 3:

Armstrong County
Indiana County
Greene County



It is important to note that the REMI Model's measurement of employment includes all payroll and self-employed workers. This differs from most commonly cited measures of employment, which estimate only wage and salary employment and do not attempt to include self-employment. Thus, the employment numbers in REMI are larger, but do not reflect a different picture of current employment patterns.

How does the model project future change in the regional economy? Output in the model block sells to all of the sectors of final demand, as well as to other industries. Labor and capital requirements depend both on output and on their relative costs. Population and labor supply contribute to demand and to wage determination in the product and labor market. The feedback from this shows that economic migrants respond to labor market conditions. Demand and supply interact through wages, prices and profits. Once prices and profits are established, they determine market shares, which in turn, along with components of demand, determine output.

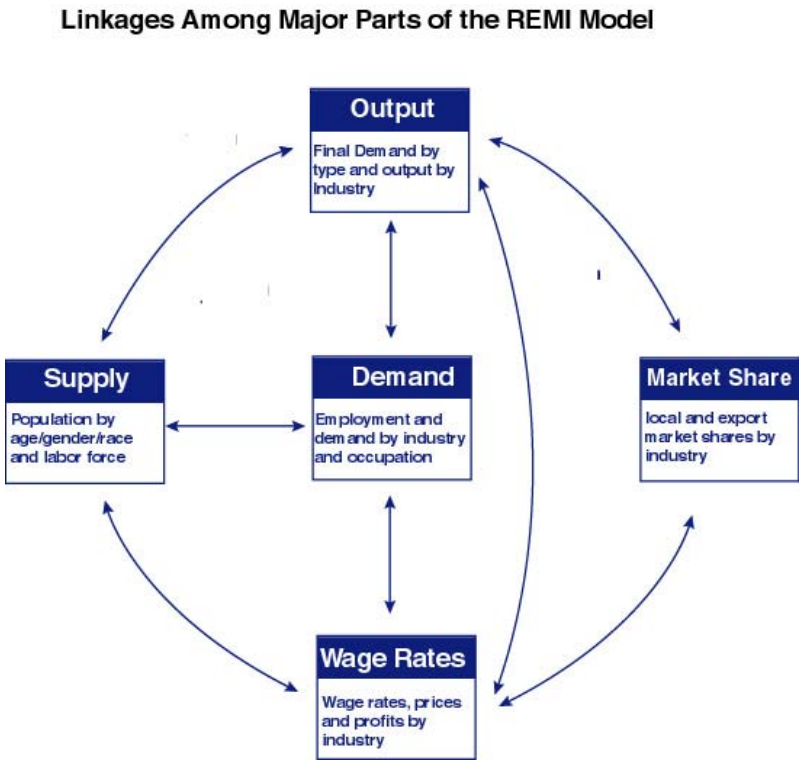
The REMI model brings these elements together to determine the value of each of the variables in the model for each year in the baseline forecasts. The model includes all the inter-industry relationships that are in an input-output model, but goes well beyond the input-output model by including more relationships.

In order to broaden the model in this way, it was necessary to estimate key relationships. This was accomplished by using extensive data sets covering all areas in the country. These large data sets and two decades of research effort have enabled REMI to simultaneously maintain a theoretically-sound model structure and to build a model based on all of the relevant data available.

The model has strong dynamic properties, which means that it forecasts not only what will happen, but also when it will happen. This results in long-term predictions that have general equilibrium properties. This means that the long-term properties of general equilibrium models are preserved without sacrificing the accuracy of event timing predictions and without simply taking elasticity estimates from secondary sources.

Figure 1 shows the linkages in the REMI model.

Figure 1



Demand Block

The labor and capital demand has only three types of key variables: employment, optimal capital stock, and labor/output ratio. Employment is determined by output in each industry and the labor/output ratio. This ratio depends on the relative labor, capital, and fuel costs. Optimal Capital Stock also depends on these same factors and the amount of employment. Simply put, if the cost of labor increases relative to the cost of capital, the labor per unit of output falls and the capital per unit of labor increases.

Supply Block

The model predicts population for 600 cohorts segmented by age, ethnicity, and gender. This block also calculates the following demographic processes: births, deaths, and aging. The model deals with different population sectors as explained below:

Retired migrants are based on past patterns for each age cohort 65 and over. International migrants follow past regional distributions by country of origin. Military and college populations are treated as special populations that do not follow normal demographic processes. Economic migrants are the migrants who are sensitive to changes in relative economic conditions in the relative regional economies. The economic variables that change economic migration are employment opportunity and real after-tax wage rates.

This block also determines the size of the labor force by predicting the labor force participation rates for age, ethnicity and gender cohorts; and applying these to their respective cohorts and then adding them up. The key variables that change participation rates within the model are the ratio of employment to the relevant population (labor market tightness) and the real after-tax wage rates.

Wage Rates Block

The wage rate is determined by employment opportunity and changes in employment demand by occupation for occupations that require lengthy training. The housing price increases when population density increases. The Consumer Expenditure Price Index is based on relative commodity prices, weighed by their share of US nominal personal consumption expenditures. The model uses the price index to calculate the real after-tax wage rate for potential migrants and also includes the housing price directly, while the price index used to deflate local income uses the local sales price of construction.

Wage rates affect production costs, as well as other costs, and they in turn determine profitability or sales prices, depending on whether the type of industry involved mainly serves local or external markets. For example, a cost increase for all local grocery stores results in an increase in their prices, while an increase in costs for a motor vehicle factory reduces its profitability of production at that facility, but may not increase their prices worldwide.

Market Share Block

Common sense dictates that an increase in prices leads to some substitution away from local suppliers toward external suppliers. Moreover, a reduction in profitability for local factories leads to less expansion of these factories relative to those located in areas where profits have not decreased. These responses occur because the US is an open economy where firms can move to the area that is most advantageous for their business.

APPENDIX II: DETAILED FORECAST TABLES FOR ALLEGHENY COUNTY

	2005	2010	2015	2020	2025	2030	Change 2005-2030	
Summary Variables								
Total Employment	890,071	918,026	945,075	969,087	993,538	1,023,766	133,695	15.0%
Total Regional Product*	68,095	82,059	92,634	101,862	113,590	127,212	59,117	86.8%
Total Regional Output*	113,537	134,660	150,642	165,620	184,830	207,305	93,768	82.6%
Exports to Multiregions *	7,403	8,688	9,685	10,605	11,763	13,086	5,683	76.8%
Exports to Rest of Nation*	31,397	37,761	42,217	46,050	51,010	57,058	25,661	81.7%
Exports to Rest of World*	6,392	9,016	11,722	14,625	18,323	22,744	16,352	255.8%
Population	1,260,645	1,258,928	1,272,239	1,308,391	1,355,074	1,402,769	142,124	11.3%
Labor Force	675,385	691,993	703,784	712,945	725,078	743,043	67,658	10.0%

* Millions of Fixed 2000$

Employment By Industry

	2005	2010	2015	2020	2025	2030	Change 2005-2030	
Forestry, Fishing, Other	214	170	142	122	105	91	-123	-57.5%
Mining	2,532	2,372	2,295	2,273	2,266	2,298	-234	-9.2%
Utilities	4,987	5,023	5,174	5,332	5,466	5,606	619	12.4%
Construction	50,494	49,530	51,966	55,270	58,019	60,015	9,521	18.9%
Manufacturing	49,944	46,255	43,191	42,907	43,153	44,093	-5,851	-11.7%
Wholesale Trade	30,957	29,767	28,094	26,603	25,310	24,312	-6,645	-21.5%
Retail Trade	92,573	92,070	89,201	85,470	81,745	78,426	-14,147	-15.3%
Transp, Warehousing	31,865	34,014	35,581	36,867	38,169	39,792	7,927	24.9%
Information	20,793	21,680	21,457	20,698	20,232	20,152	-641	-3.1%
Finance, Insurance	56,543	56,909	57,019	56,536	55,966	55,793	-750	-1.3%
Real Estate, Rental	29,640	29,953	30,019	29,688	29,220	28,717	-923	-3.1%
Profess, Tech Services	72,401	74,387	76,461	78,612	81,261	84,943	12,542	17.3%
Mngmt of Co, Enter	12,261	12,066	11,770	11,610	11,473	11,438	-823	-6.7%
Admin, Waste Services	51,897	56,761	60,893	64,354	67,890	71,939	20,042	38.6%
Educational Services	48,205	53,249	58,345	62,376	65,863	69,780	21,575	44.8%
Health Care, Social Asst	126,978	140,743	157,528	175,671	194,495	214,966	87,988	69.3%
Arts, Enter, Rec	18,916	20,054	20,942	21,437	21,819	22,289	3,373	17.8%
Accom, Food Services	58,679	61,007	61,902	61,174	59,987	58,805	126	0.2%
Other Services (excl Gov)	48,471	49,171	49,239	48,303	47,053	45,840	-2,631	-5.4%
Public Admin	81,218	82,372	83,414	83,381	83,679	84,137	2,919	3.6%
Farm	502	474	442	403	366	334	-168	-33.5%

Wage and Salary Disbursement by Industry ($mil)

	2005	2010	2015	2020	2025	2030	Change 2005-2030	
Forestry, Fishing, Other	2	2	2	2	2	2	0	0.0%
Mining	225	271	337	427	540	689	464	206.2%
	2005	**2010**	**2015**	**2020**	**2025**	**2030**	**Change 2005-2030**	
Utilities	300	383	483	595	728	891	591	197.0%
Construction	1,720	2,137	2,744	3,489	4,375	5,397	3,677	213.8%
Manufacturing	3,565	4,133	4,689	5,521	6,579	7,952	4,387	123.1%
Wholesale Trade	1,747	2,128	2,458	2,782	3,162	3,622	1,875	107.3%
Retail Trade	1,945	2,450	2,906	3,328	3,802	4,350	2,405	123.7%
Transp, Warehousing	1,513	2,021	2,537	3,072	3,725	4,549	3,036	200.7%
Information	986	1,302	1,578	1,820	2,125	2,526	1,540	156.2%
Finance, Insurance	2,644	3,364	4,123	4,889	5,782	6,875	4,231	160.0%
Real Estate, Rental	535	695	865	1,038	1,242	1,487	952	177.9%
Profess, Tech Services	3,606	4,692	5,903	7,255	8,959	11,168	7,562	209.7%
Mngmt of Co, Enter	990	1,234	1,474	1,738	2,052	2,439	1,449	146.4%
Admin, Waste Services	1,127	1,558	2,043	2,576	3,239	4,084	2,957	262.4%
Educational Services	1,605	2,246	3,012	3,850	4,856	6,135	4,530	282.2%
Health Care, Social Asst	4,525	6,329	8,693	11,664	15,517	20,555	16,030	354.3%
Arts, Enter, Rec	455	611	781	954	1,157	1,406	951	209.0%
Accom, Food Services	839	1,106	1,370	1,613	1,882	2,194	1,355	161.5%
Other Services (excl Gov)	945	1,227	1,509	1,771	2,062	2,397	1,452	153.7%

Source: Pittsburgh REMI model

Labor Force By Age Group
Total Labor Force

Age Group	2005	2010	2015	2020	2025	2030	Change 2005-2030	
16-19	38,733	38,805	35,800	36,131	37,509	40,283	1,550	4.0%
20-21	25,213	27,560	25,823	24,851	25,332	26,596	1,383	5.5%
22-24	36,997	41,393	42,367	39,708	40,104	41,178	4,181	11.3%
25-29	63,518	66,050	75,542	77,146	74,326	75,372	11,854	18.7%
30-34	62,537	63,690	67,497	78,265	80,783	78,084	15,547	24.9%
35-44	152,130	134,928	130,051	137,244	153,454	167,062	14,932	9.8%
45-54	173,221	170,655	154,315	140,476	138,398	146,742	-26,479	-15.3%
55-59	62,157	73,080	79,170	72,872	66,109	61,344	-813	-1.3%
60-61	15,769	22,127	26,195	27,463	24,847	23,472	7,703	48.8%
62-64	17,053	22,182	27,095	30,466	28,973	25,980	8,927	52.3%
65-69	13,110	15,843	22,042	26,379	28,864	26,969	13,859	105.7%
70-74	6,947	7,344	9,018	12,196	14,593	15,985	9,038	130.1%
75+	8,000	8,336	8,871	9,748	11,787	13,975	5,975	74.7%
Male Labor Force								
Age Group								
16-19	19,703	19,893	18,223	18,547	19,397	20,838	1,135	5.8%
20-21	12,691	13,714	12,715	12,275	12,524	13,147	456	3.6%
22-24	18,113	20,339	20,926	19,405	19,665	20,332	2,219	12.3%
25-29	31,604	32,369	36,831	37,828	36,164	36,706	5,102	16.1%
30-34	32,303	32,402	34,040	39,868	41,430	39,819	7,516	23.3%
35-44	77,574	68,763	65,981	69,705	78,374	85,879	8,305	10.7%
45-54	86,983	84,080	75,235	69,086	68,298	72,510	-14,473	-16.6%
55-59	31,539	36,757	39,046	35,766	32,819	30,766	-773	-2.5%
60-61	8,369	11,767	13,878	14,405	13,155	12,493	4,124	49.3%
62-64	8,526	11,156	13,444	15,148	14,216	12,965	4,439	52.1%
65-69	7,000	8,507	12,042	14,582	15,922	14,808	7,808	111.5%
70-74	3,948	4,170	5,175	7,203	8,748	9,644	5,696	144.3%
75+	3,756	3,760	3,904	4,379	5,560	6,808	3,052	81.3%
Female Labor Force								
Age Group								
16-19	19,031	18,912	17,577	17,584	18,113	19,445	414	2.2%
20-21	12,522	13,846	13,108	12,575	12,809	13,449	927	7.4%
22-24	18,885	21,054	21,441	20,303	20,439	20,845	1,960	10.4%
25-29	31,913	33,680	38,711	39,319	38,162	38,666	6,753	21.2%
30-34	30,233	31,288	33,457	38,397	39,353	38,265	8,032	26.6%
35-44	74,556	66,165	64,071	67,539	75,080	81,184	6,628	8.9%
45-54	86,238	86,575	79,080	71,390	70,099	74,232	-12,006	-13.9%
55-59	30,618	36,323	40,124	37,106	33,290	30,578	-40	-0.1%
60-61	7,400	10,360	12,317	13,058	11,692	10,979	3,579	48.4%
62-64	8,527	11,025	13,651	15,317	14,757	13,015	4,488	52.6%
65-69	6,110	7,337	9,999	11,797	12,941	12,161	6,051	99.0%
70-74	2,999	3,174	3,844	4,993	5,845	6,342	3,343	111.5%
75+	4,244	4,576	4,966	5,369	6,227	7,167	2,923	68.9%

Source: Pittsburgh REMI model

Appendix III: Glossary of Economic Terms

Demand. Demand is the amount of goods and services demanded, or consumed, by the local region. Some demand is satisfied locally, some by imports. Demand differs from output in that only the proportion of demand that is usually supplied locally is added to local output. Demand is apportioned to local production by using the regional purchase coefficient.

Direct Employment. Direct employment means the jobs that are an integral part of a project or other economic activity that is being considered by an economic impact analysis. In the REMI Model, changes to direct employment are caused by the policy variables that are entered when running a simulation. Direct changes are also called exogenous changes, meaning that the values are determined outside the economic impact model.

Employment. Employment is a Bureau of Economic Analysis (BEA) concept that measures full-time and part-time jobs on a place-of-work basis, that is, in the economic region where the employer is located. Individuals may hold more than one job and, therefore, may be counted twice.

Gross Regional Product. Gross Regional Product (GRP) is analogous to the national concept of Gross Domestic Product, or value-added. GRP equals the residual that is left over for compensation and profits after subtracting the value of all intermediate inputs from the gross sales value of an entities production, or output.

Indirect Employment. Indirect employment means jobs that are created by the supply requirements and linkages of the project or other economic activity analyzed. Indirect employment is sometimes called intermediate employment.

Induced Employment. Induced employment means jobs that are created by the re-spending of wages by employees of the project being analyzed and employees of any secondary economic activity simulated by the project.

Investment Spending. Investment Spending converts a single amount into changes in demand by industry using a detailed table of supply linkages. Changes in demand by industry are then apportioned to local industry production, or output, using the regional purchase coefficient.

Output. Output represents the amount of production in dollars recorded by economic entities within a region. Output includes purchases of intermediate goods, plus value-added, or compensation and profit. Output can also be thought of as gross sales.

Personal Income. Personal income is a Bureau of Economic Analysis (BEA) concept that measures income on a place-of-residence basis, that is, in the economic region where the recipient lives. The components of personal income are Labor and Proprietors' Income, Personal Contributions to Social Insurance, the Net Residence, Adjustment, Dividends, Interest and Rent, and Transfer Payments. In the REMI Model, changes to any of the components of personal income will impact real disposable income and, as a result, the induced effects of personal consumption in the economy.

Population. Mid-year estimates of population include survivors from the previous year, births, special populations (e.g., military personnel, college students, and prisoners), and economic, international, and retired migrants.

Regional Purchase Coefficient (RPC). The Regional Purchase Coefficient is a measure of the percentage of local demand supplied from within the local region. It is the proportion of the regional demand for a good or service that is fulfilled by regional production as opposed to imports from other regions.

Resident Employment. Also called Residence-Adjusted Employment. The number of employed persons residing within a region, regardless of whether they work within the region or commute to work outside the region. Also known as employment by place of residence.

Transfer Payments. Transfer payments are a component of total personal income representing income payments to persons for which they do not render current services. They include social security, welfare, veterans' benefits, and unemployment insurance payments, among other types of personal income.