THE PITTSBURGH REMI MODEL:
LONG-TERM REMI MODEL FORECAST FOR ALLEGHENY COUNTY AND THE PITTSBURGH REGION AND POLICY SIMULATION METHODS

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EXECUTIVE SUMMARY

This report provides the current economic and population projections of the University of Pittsburgh's Center for Social and Urban Research (UCSUR) working in conjunction with the Southwest Regional Planning Commission. It also provides a demonstration of some of the strengths and capabilities of the Pittsburgh Regional Economic Modeling, Inc. (REMI) Model from which these projections were made.

REMI LONG-TERM FORECAST AND BEA PROJECTIONS

This report includes UCSUR's 1998 economic and population projections for the Pittsburgh Region. The purpose of UCSUR's long-term regional forecasts is to establish a general framework, which allows area policymakers to examine and test potential regional policy initiatives.

The Model defines the Pittsburgh Region as the six Southwestern Pennsylvania counties: Allegheny, Armstrong, Beaver, Butler, Washington, and Westmoreland. The Model provides details on two major subdivisions of the Region: Allegheny County and the remaining five suburban counties. The regional forecast is compared to forecasts for the Commonwealth of Pennsylvania and the United States as a whole. The US Bureau of Economic Analysis (BEA) provides forecast data for these two areas.

Between 1998-2008, population in Allegheny County will experience only minimal growth of 0.38 percent, with the Pittsburgh Region doing only slightly better at 1.6 percent. Both of these are lower than the expected growth rates for the Commonwealth (4.9 percent) and the total U.S. population (9.2 percent).

Between 1998-2008, total employment in Allegheny County and the Region will grow by 4.7 and 3.9 percent, respectively, lagging behind the Commonwealth (8.7 percent) and well below the nation's (12.9 percent) growth rates. During this period, total private non-farm employment in Allegheny County and the Region will grow by 5.1 and 4.2 percent, respectively, while total private non-farm employment for Pennsylvania and the U.S. will grow by 8.8 and 13.2 percent, respectively.

Between 1998-2008, manufacturing employment in Allegheny County and the Pittsburgh Region will decline by 19.7 and 18.2 percent, respectively. During this period, Pennsylvania and the U.S. will see manufacturing employment decline by 6.3 and 0.05 percent, respectively. Falling employment levels in durable goods will cause most of this decline.

Between 1998-2008, non-manufacturing employment will increase by 11.1 percent in Allegheny County, 12.1 percent in the Region, 31.5 percent in Pennsylvania, and 38.2 percent in the U.S.

Between 1998-2008, Gross Regional Product (value added) will grow by 15.7 percent in Allegheny County and 16.9 percent in the Region. This compares to the growth expected for the Commonwealth (15.6 percent) but lags behind the growth expected for the U.S. (20.6 percent).

Between 1998-2008, real personal income per capita will grow by 8.4 percent in Allegheny County and 7.5 percent in the Region. Both of these lag behind the expected growth for state (11.1 percent) and national (13.4 percent) levels.

REMI SIMULATIONS

Several REMI Model simulations are run to determine the impact on the Region's economy, resulting from recent or anticipated changes at local manufacturing plants. One simulation looks at the closing of the Mon Valley LTV plant. This plant was closed in early 1998 and represented the last basic steel plant still in operation within the City of Pittsburgh. The second simulation looks at the recently closed Nabisco bakery in East Liberty. The third simulation looks at the anticipated expansion of the Sony Electronics plant in Westmoreland County. Three separate scenarios are considered to highlight REMI's ability to differentiate the economic impact of specific industries in the regional economy. Both of the plant closings will cause the loss of jobs beyond the plants own layoffs. Secondary effects will result from the loss of jobs in associated industries and also in retail and service sectors because of the loss of earnings spent in the community by individual workers. The opposite effect is true for the anticipated Sony plant expansion. The pattern of the resulting job losses in the regional economy will be different because of the differences between the primary metal, food manufacturing, and electrical equipment industries represented by these three plants.

In Scenario 1, the closing of the LTV plant has resulted in the direct loss of 800 jobs from the Region, all in Allegheny County. The first simulation assumes that LTV does not attempt to rebuild the existing plant at any point in the future and that no other similar manufacturing plant rebuilds on the existing site.

In Scenario 2, the closing of the LTV plant is assumed to result in a loss of only 800 jobs in 1998 but a net loss of only 400 jobs in subsequent years. The smaller loss of jobs could result from one of several possibilities. LTV or a competitor could choose to rebuild on the existing site. An alternative industrial use could be found.

Scenario 3 is the loss of 350 jobs resulting from the closing of the Nabisco plant. All of these jobs are in the food manufacturing sector. Note that this scenario is run completely separate from the first two.

Scenario 4 is the expansion of 1000 jobs, which are anticipated at the Sony Corporation's manufacturing plant in Westmoreland County. All of these jobs are in the electrical equipment manufacturing sector. This scenario is also run separate from the first three.

INTRODUCTION

An important research initiative of the Urban and Regional Analysis Program and the Regional Competitiveness Program at the University Center for Social and Urban Research (UCSUR) has been the use and maintenance of the Pittsburgh Regional Economic Model (REMI).

The Pittsburgh REMI Model is a large econometric model of the Pittsburgh Region. The Model uses detailed information on the linkages between local industries, employment, and output. The REMI Model can quantify the response of the regional economy to specific shocks and also detail how these impacts are distributed over time. For an increased level of detail, the Pittsburgh REMI Model divides the Pittsburgh Region into two smaller regions. The first is the Core Region, which comprises Allegheny County. The second is the Peripheral Region, which comprises the surrounding five counties (Armstrong, Beaver, Butler, Washington, and Westmoreland).[1]

The REMI Model has a two-year history lag. The current REMI Model's last year of history is 1995. In order to take into account the recent changes in the Pittsburgh Region, the REMI Model has been updated, using ES-202 (unemployment compensation) data. Growth rates for each industrial category from the ES-202 data were applied to the REMI Model to guarantee the most accurate and up-to-date results. Adjustments were made to the demographic module of the Pittsburgh REMI Model to further increase accuracy and precision. It is important to note that the REMI Model's measurement of employment includes all payroll and self-employed workers. This will make total employment numbers larger than statistics that include only payroll workers. Additional information from recently-released Census Bureau population estimates are also incorporated into the Model.

Part (a) of this report is the current UCSUR/REMI Model forecasts of demographic changes in the Pittsburgh Region through 2013. This includes detailed explanations of how different factors, including domestic and international migration and the local age structure, affect anticipated population growth. Following this are individual sections explaining the economic forecasts for the Pittsburgh Region, including overall and industry specific employment, Gross Regional Product, and Personal Income statistics. For each of these variables, local data is compared to U.S. Bureau of Economic Analysis data for the nation and Commonwealth of Pennsylvania. The final part gives some comparisons of the Pittsburgh Region to nearby metropolitan areas and overall conclusion for the future of the local economy.

For this forecast, no exogenous shocks to the regional economy were assumed to occur during the forecast period. Instead, the Pittsburgh Region will continue to grow along its projected baseline. While UCSUR researchers are aware that unexpected shocks to the Pittsburgh Region and movements in the business cycle will have an impact on the Pittsburgh Region's economy, there is no objective way to predict such unexpected events. Therefore, no attempt is made to second-guess the national economy, long-term movements in the national business cycle, or unexpected economic shocks to the Pittsburgh Region. However, UCSUR will continue its practice of annually updating and revising its long-term regional economic projections as more data become available. Detailed tables of these projections are included in Appendix I of this report.

[1] Note this differs from the official definition of the Pittsburgh MSA, which comprises Allegheny, Beaver, Butler, Fayette, Washington, and Westmoreland counties.

The first appendix contains a set of simulations of the economic impact of several recent or expected changes in employment at area manufacturing plants. In each scenario, the REMI Model will be used to simulate the potential impact of these changes on Allegheny County and the Region as a whole. The results of the simulations will be described in terms of deviation from the baseline forecast.

The second appendix is a detailed set of demographic and economic forecasts for Allegheny County and the Pittsburgh Region. This includes employment forecasts by industry and the demographic components of change in the local population.

The third appendix will summarize the results of various other public and private forecasts for the Pittsburgh Region. This will allow for comparison to the UCSUR/REMI Model and its current forecast.

The reader is warned that forecasting future demographic and economic trends is a difficult task. It is relatively easy to predict the future given that there are no unexpected changes in the local or national economies. Unexpected changes are unfortunately the rule rather than the exception. Even small changes that affect the forecast each year will compound over time to produce potentially large errors when predicting the long-term future. For this reason, we have limited the discussion in the current UCSUR/REMI forecast to the next 10 years. Graphs and charts show the forecast results for an additional five-year period ending in 2013. The REMI Model has the capability to forecast much farther into the future, to 2035. In certain circumstances, the Model may use this forecasting capability, but the potential for errors over such a long span of time must be acknowledged.

REMI LONG-TERM FORECAST AND THE BEA PROJECTIONS

Between 1998-2008, the Commonwealth of Pennsylvania and the nation will see faster employment and output growth rates than either Allegheny County or the Pittsburgh Region. In turn, the Region as a whole will grow faster than its economic core, Allegheny County. The driving factor behind this trend will be the difference between local, Commonwealth, and national population growth rates. During this period, the population of the U.S. will grow at a faster rate than the population of Pennsylvania, which in turn will be faster than that of the Region. This will be due to declining population in the Region's economic core (Allegheny County), which will slow economic growth in both Allegheny County and the Region as a whole, causing it to lag behind the rest of the country.

Section A highlights the historical and forecasted trends in the regional population and, in particular, the impacts of migration out of the Region.

Sections B to D are included to illustrate the growth of Allegheny County and the Region relative to Pennsylvania and the U.S. for several key economic indicators: employment by industry sector, gross regional product, and per capita personal income. These graphs show the percentage change for the statistic of interest in each forecast area for five-year periods (1978 through 2013).

Section E gives some perspective on local economic performance by comparing the Pittsburgh economy to other regional metropolitan areas, including Cleveland, Cincinnati, Baltimore, and Philadelphia.

A. Population and Migration

Between 1998-2008, the population of Allegheny County is expected to grow only a modest 0.38 percent (an average annual rate of virtually zero: 0.04 percent), while the Pittsburgh Region's population will grow only slightly more at 1.6 percent (an average annual rate of 0.16 percent) as seen in Figure 1. During this period, both Pennsylvania and the U.S. will see greater population increases. Pennsylvania's population will increase by 4.9 percent, while the nation's population will increase by 9.2 percent.

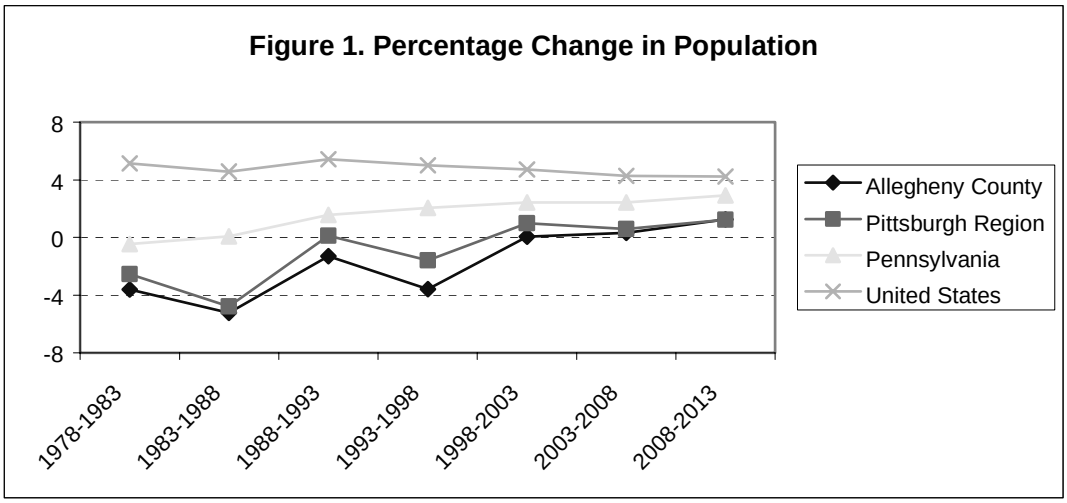
As seen in Figure 1, between 1998-2013, the populations of Allegheny County and the Pittsburgh Region will stabilize and begin to increase. After 2008, the population of Allegheny County will begin to increase for the first time in several years, though only at a modest annual rate of 0.25 percent between 2008-2013. The Pittsburgh Region will continue a slow increase in the rate of population growth with a comparable annual percentage growth of 0.25 percent over the same period. At the same time, Pennsylvania and the U.S. will be expected to grow at annual rates of 0.48 percent and 0.84 percent, respectively.

Table 1: Estimated Population Change by County 1990-1997

County	*1990 Population*	*1997 Estimated Population*	*Change in Population*	*% Change*
Allegheny	1,335,855	1,280,624	-55,231	-4.1%
Beaver	186,264	185,682	-582	-0.3%
Butler	152,624	169,197	16,573	10.9%
Fayette	145,331	145,036	-295	-0.2%
Westmoreland	370,396	374,673	4,277	1.2%
Washington	204,617	205,807	1,190	0.6%
Total	2,395,087	2,361,019	-34,068	-1.4%

Source: U.S. Bureau of the Census, PE-62 Population Estimates

It should be noted that the REMI Model does not provide detailed forecasts for individual counties or municipalities other than the breakdown between Allegheny County and the suburban counties in the Region. Specific areas in the Region have experienced differential growth rates in the past and can be expected to do so in the future. Table 1 highlights Census data of the different population trends across counties in the Region since 1990.



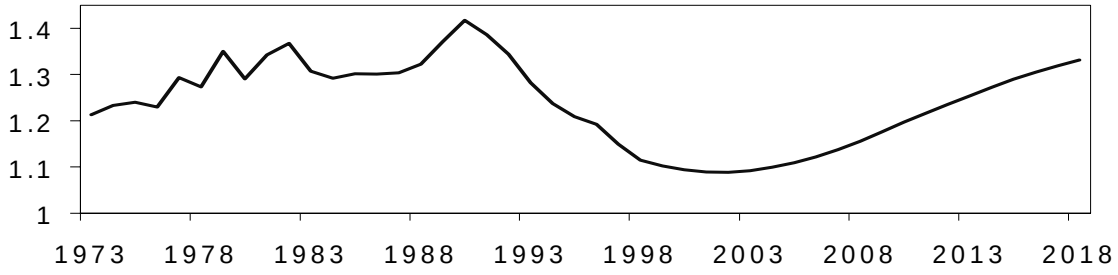
Source: The Pittsburgh REMI Model, U.S. Bureau of Economic Analysis

Impact of Age Demographics on Population Forecasts

Recent population decline and the expected slow growth for the future both have several causes. A key factor causing the regional population to decline is the large percentage of the population made up of senior citizens. Decades of out-migration among younger workers has resulted in 18 percent of the Allegheny County population being aged 65 or older. This is over 50 percent higher than the national average of 12 percent and one of the highest percentages of elderly outside of traditional retirement communities in Florida. An important fact is that the age distribution in the Pittsburgh Region is unlike that of the nation. For the nation as a whole, the large pre-elderly or baby boom population will cause the size of the elderly population to increase dramatically over the next several decades. In Pittsburgh, the baby boom population is significantly smaller than the elderly population.

As the population ages, the size of the regional elderly population will actually decrease over the next 15 years. Over that time frame, the relative numbers of deaths will be high, and the relative numbers of births will be low. The result shown in Figure 2 is that *over the next decade, the Region will have the lowest ratio of births to deaths than at any time in its history*. Only after 2013 will this ratio rise to levels comparable to the present. The retail and service sectors of the local economy are tied to the size of the local population. As this large elderly cohort decreases in size, the impact will be felt in both employment and income throughout the Region.

Figure 2. Birth to Death Ratio: Historical and Projected - Allegheny County



International Immigrants

A second factor inhibiting population growth is that the Region has historically had an extremely small rate of international immigrants choosing to settle here. This lowers the magnitude of net-migration into the Region. Low international migration has a secondary effect on population, because immigrant groups are generally younger and have relatively higher fertility rates than non-immigrants. The result is a lower birth rate than would be expected for the Region, which decreases the rate of population growth. Table 2 shows the rates of international migration for large counties in the U.S. Allegheny County ranks in the lowest 10 of these counties, with only 6,211 international migrants settling here between 1990-1997. This figure is only 0.46 percent of the total population. The comparable figures for border communities in California and Texas reach numbers almost 20 times higher. Even compared to regional neighbors, this number is low, with Cuyahoga County (Cleveland) at 0.78 percent, Philadelphia four times higher at 1.9 percent, and Baltimore at 1.23 percent. Only Cincinnati among regional areas has a comparably low level of international migration at 0.44 percent.

Table 2: International Migrants

Counties over 500,000 in population with fewest international migrants per capita 1990-1997

	County	Intl Migrants 1990-1997	As a % of 1990 Population
1	Jefferson County, AL	1,942	0.30
2	Summit County, OH	1,700	0.33
3	Montgomery County, OH	2,147	0.37
4	Hamilton County, OH (Cincinnati)	3,798	0.44
5	Macomb County, MI	3,332	0.46
6	**Allegheny County, PA**	**6,211**	**0.46**
7	Jefferson County, KY	3,474	0.52
8	Shelby County, TN	4,694	0.57
9	Marion, IN (Indianapolis)	4,624	0.58

Counties over 500,000 in population with the most international migrants per capita 1990-1997

	County	Intl Migrants 1990-1997	As a % of 1990 Population
1	El Paso, TX	62,298	10.45
2	Kings County, NY (Brooklyn)	234,195	10.19
3	Queens, NY	196,928	10.09
4	Jersey City, NJ	52,094	9.42
5	San Francisco, CA	66,474	9.20
6	New York County, NY (Manhattan)	132,251	8.89
7	Bronx, NY	104,645	8.69
8	Dade County, FL	162,617	8.37
9	Los Angeles, CA	712,578	8.03
10	Orange County, CA	184,603	7.63

International migrants per capita for regional cities

	County	Intl Migrants 1990-1997	As a % of 1990 Population
1	Philadelphia, PA	29,976	1.90
2	Cuyahoga County, OH (Cleveland)	11,016	0.78
3	Baltimore, MD	8,563	1.23

Source: U.S. Bureau of the Census, PE-62 Population Estimates

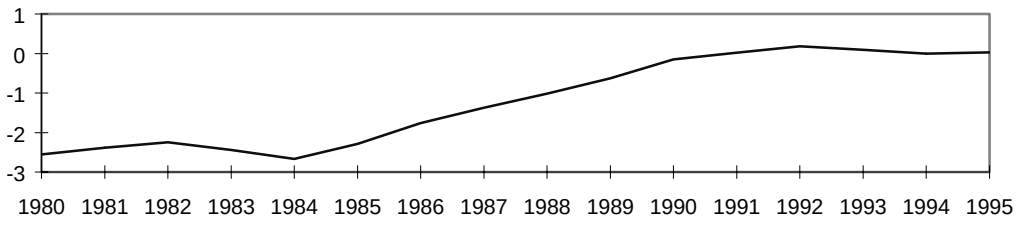
Economic Migration into the Region

A third and more publicized reason for the decline in population is a continuing out-migration of people due to economic reasons. There has been a continued migration of people from the economic core, Allegheny County, to the surrounding five counties and the rest of the nation, and migration

from the surrounding five counties to the rest of the nation.[2] Economic reasons generally include any movement of individuals due to changes in jobs, local costs, or amenity factors. Amenity factors are defined as any qualities of a region that make it a more or less attractive place to live. This could include factors as varied as the local weather to local cultural assets and amusements. This reason has received much more attention in the press because, unlike the other two factors affecting migration, it is believed that out-migration can be altered in some way by local public policy either by improving the local job market or the local quality of life.

The economic impact of continued out-migration and population decline is significant in many ways. Without a local labor force that is large and multifaceted, it is hard for the regional economy to support new or growing industries. Like the national economy, there exist labor shortages in many fields. If local employers cannot fill the jobs they have open, they will eventually be forced to leave the Region, taking jobs and income with them. The future of migration patterns in the Pittsburgh Region may be one of the primary factors affecting future economic growth. Figure 3 shows historical REMI estimates of the percentage of migration from Allegheny County over the last 20 years. The annual percentage migration has been negative for most of this time. Out-migration appears to have reached a steady state near zero in the early 1990's. The expectation for the future is unclear. Depending on whether migration returns to a lower level, remains near zero, or actually turns positive will have a significant impact over time. Even small annual migration levels will have large compound effects over a time-span of a decade or two. Regional planning is difficult, because most large-scale infrastructure projects are meant to last well past the next 20 years.

Figure 3: Annual Percentage Migration for Allegheny County: 1980-1995



Source: The Pittsburgh REMI Model

The REMI/UCSUR baseline forecast predicts that the net migration rate for the Region will be virtually zero well into the future. This may sound pessimistic but is actually far better than the Region has experienced in the past. This does not mean that there will not be a large number of people moving to the Region for jobs. For Allegheny County, the breakdown by age of migration is that a little more than 3,000 elderly will leave the Region each year. This has been a relatively consistent rate through good times and bad over the last several decades and probably represents relocation to new retirement homes outside of the Region. Countering this trend is a predicted net in-migration of those under 65 in excess of 2,000 per year. Those under 65 are assumed to be motivated by local job growth that is attracting them to relocate here. This number is far more optimistic than

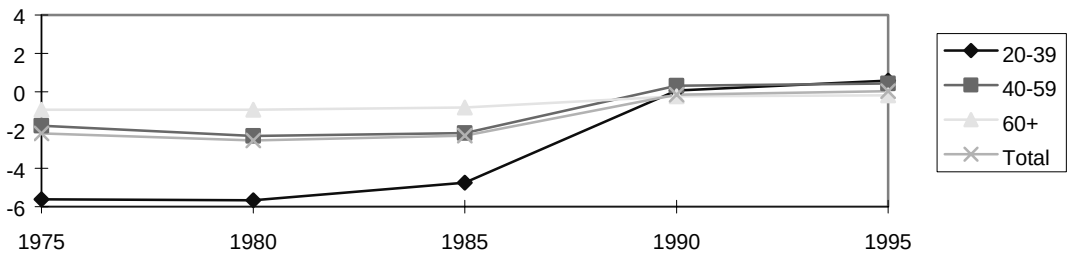
[2] Nolan, C.E. (1996). The public policy implications of current population dynamics in the Pittsburgh metropolitan region. Pittsburgh, PA: University of Pittsburgh. Dr. Nolan finds that Allegheny County has reached a balanced level of population exchange with the rest of the nation but continues to lose population to the surrounding five counties. The surrounding five counties are actually losing population due to out-migration to the rest of the nation. However, this loss is being replaced by in-migration from Allegheny County.

either the long- or short-term history of net migration out of the Region but is believed to be justified because of labor market and economic conditions here. The overall net migration rate of both groups is still a net out-migration of approximately 1,000 per year. This number represents less than 1/10 of 1 percent of the total County population.

Alternative forecasts are available for the Region with results that predict higher or lower population, depending on the source. Appendix III highlights some of the more important forecasts for the Region and compares them to the UCSUR/REMI Model used here. One of the most pessimistic forecasts for the Region is the official forecast produced by the Pennsylvania State Data Center. This forecast predicts a continuing net migration out of Allegheny County, which inhibits growth for the Region into the future.

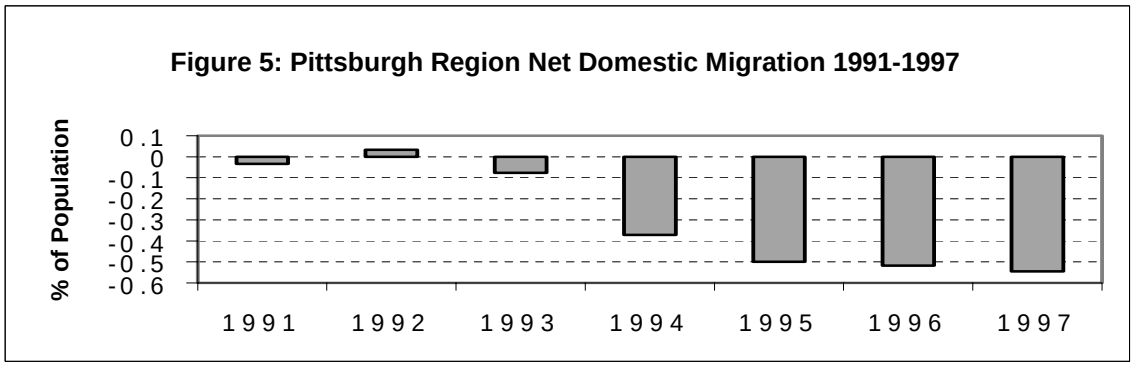
An obvious question is why does the Model predict more growth than the official State forecast? The main reason is that the REMI Model attempts to model future migration patterns based on economic factors, such as the regional wage rate and regional job opportunities compared to national data. Pittsburgh Region economic data compares favorably to the U.S. in both of these categories, with local unemployment rates now at multidecade lows. The official forecast is extremely pessimistic when it comes to Allegheny County. The net-migration rates in the recent past have been quite high, but the long-term trend is very positive.

Figure 4: REMI Estimates of Allegheny County Migration Rates by Age Cohorts



Source: 1997 Pittsburgh UCSUR/REMI Model

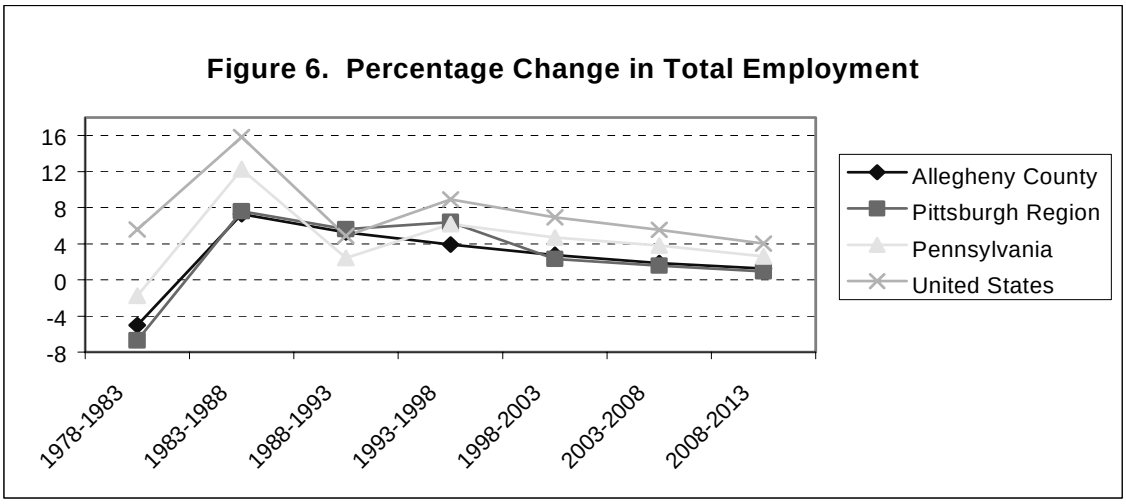
Another reason for this result is additional demographic information that is available in the REMI Model that allows for a breakdown in annual migration rates by age group. The pattern of net migration rates in Allegheny County by age over the last three decades is shown in Figure 4. This trend shows that the rapid loss of younger people that characterized the 1970's and 1980's has been rapidly diminishing and even was slightly positive for the Region in the early 1990's. Unfortunately, the most recent data for the Region is more pessimistic, with net out-migration increasing each year since 1993, as shown in Figure 5. The future of this migration pattern is a key factor in determining future levels of growth for the Region. The UCSUR/REMI forecasts are a conservative middle ground between alternative forecasts that are overly pessimistic or optimistic.



Source: U.S. Bureau of the Census, PE-62 Population Estimates

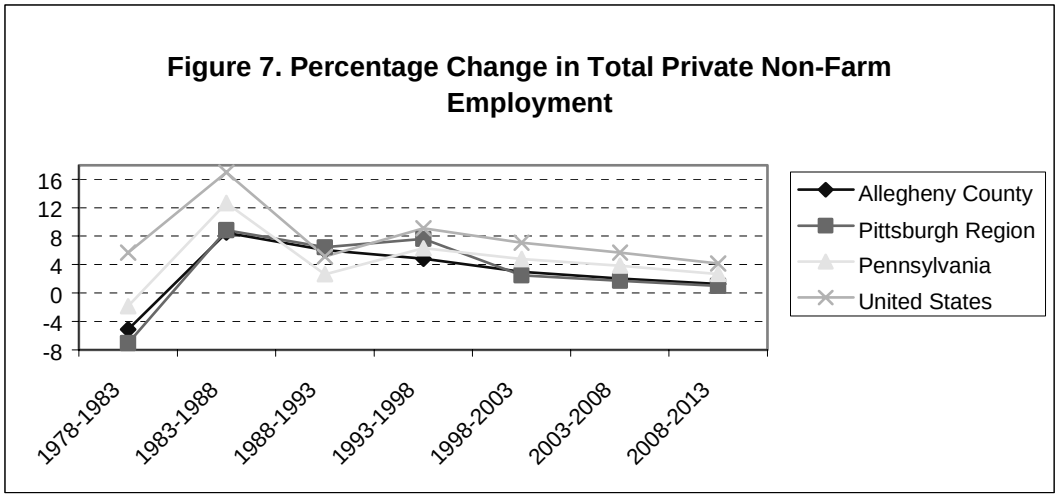
B. Employment

Total employment in Allegheny County and the Pittsburgh Region will continue to increase over the next 10 years but will lag behind the Commonwealth and the nation. Figure 6 shows the comparative growth rates in total employment in the four areas examined. Between 1998-2008, total employment in Allegheny County and the Pittsburgh Region will increase by 4.7 percent and 3.9 percent, respectively. During this period, total employment in Pennsylvania and the nation will grow by 8.7 percent and 12.9 percent, respectively.



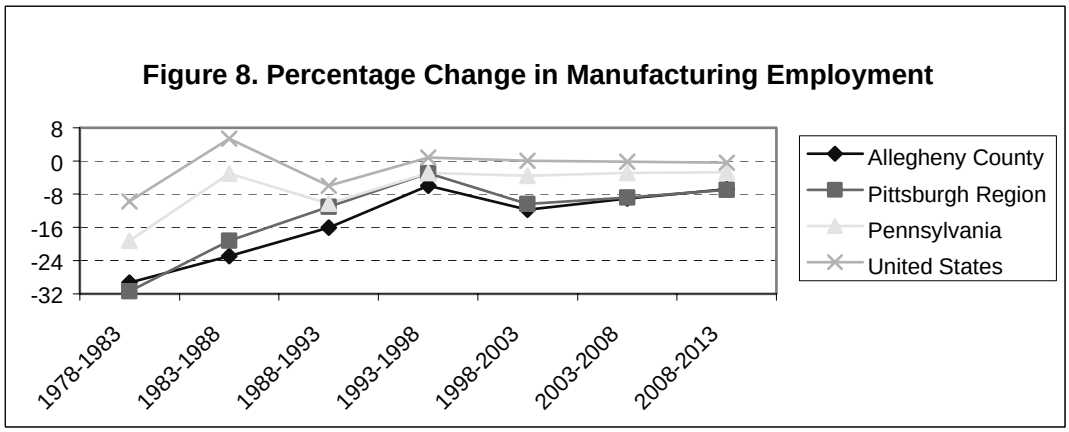
Source: The Pittsburgh REMI Model, U.S. Bureau of Economic Analysis

As seen in Figure 7, the growth of total private non-farm employment in Allegheny County, the Region, Pennsylvania, and the U.S. will follow similar patterns to those for total employment. Between 1998-2008, total private non-farm employment in Allegheny County and the Pittsburgh Region will increase by 5.1 percent and 4.2 percent, respectively. During this period, private non-farm employment for Pennsylvania and the nation will grow by 8.8 percent and 13.2 percent, respectively.



Source: The Pittsburgh REMI Model, U.S. Bureau of Economic Analysis

Manufacturing employment will decline nationally between 1998-2008, with Allegheny County and the Pittsburgh Region suffering considerably larger declines than either the Commonwealth or the nation. During this period, manufacturing employment will decline by 19.6 percent in Allegheny County and 18.2 percent in the Region. In both Allegheny County and the Region as a whole, the decline in durable goods manufacturing employment will account for much of this. Pennsylvania will experience a far lesser decline of only 6.3 percent, and national manufacturing employment will change little, decreasing less than 0.1 percent.



Source: The Pittsburgh REMI Model, U.S. Bureau of Economic Analysis

Manufacturing industries are not expected to be a major source of new job creation in the Region. However, the rate of decline is far less severe than what was experienced in the 1970's and 1980's. Most of the structural decline in local manufacturing has been completed. Local manufacturing trends are slowly converging toward national trends. This is important, because manufacturing jobs are often viewed as crucial to the economic vitality of a region. There are a variety of reasons for this, including the belief that manufacturing industries create better paying and more secure jobs than the service sector. Input-output analysis highlights another reason why manufacturing industries are important to the local economy. Manufacturing industries create additional economic activity in a region through local purchases of goods and services used in the production process. This means

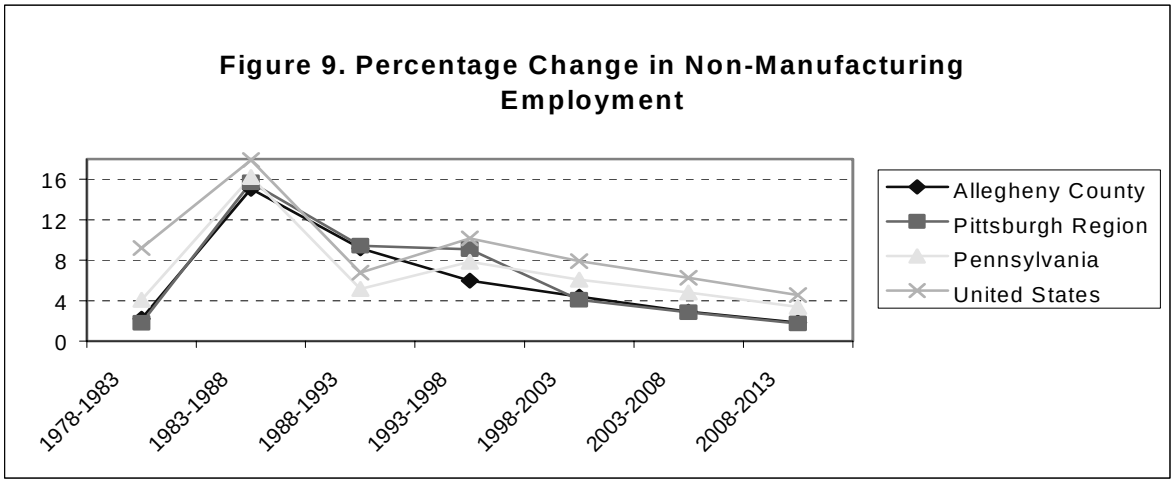
that each local manufacturing job affects multiple other jobs in the local economy. The REMI Model provides a detailed analysis of these linkages in the local economy and can quantify the changes in the economy caused by changes in individual industries or firms. Table 3 highlights REMI estimates of changes that can be expected by job losses in specific industries in the Region. The total impact of job loss in any manufacturing sector is consistently higher than the total impact of a loss in service-based industries. Appendix I provides a more detailed explanation of this type of analysis.

Table 3: REMI Estimates of Total Jobs Affected Per Job Loss in the Pittsburgh Region

By Industry

		after 1 year	*after 5 years*	*after 10 years*
Manufacturing Industries	Primary Metals	4.3	4.1	4.4
	Food Manufacturing	3.3	3.0	3.1
	Instruments	2.6	2.1	1.8
Service-Based Industries	Medical	1.8	1.4	1.2
	Hotels	1.7	1.5	1.4
	Air Transportation	2.9	2.5	1.7
	Retail	1.5	1.3	1.3

Source: The Pittsburgh REMI Model, author's calculations



Source: The Pittsburgh REMI Model, U.S. Bureau of Economic Analysis

Partially compensating for the decline in manufacturing employment has been growth in the non-manufacturing sectors of the economy. Table 4 shows the breakdown in net job creation across industries in the Pittsburgh Region in the first half of the 1990's. Over this time frame, manufacturing jobs have decreased, but jobs in the services and service-related industries have expanded significantly.

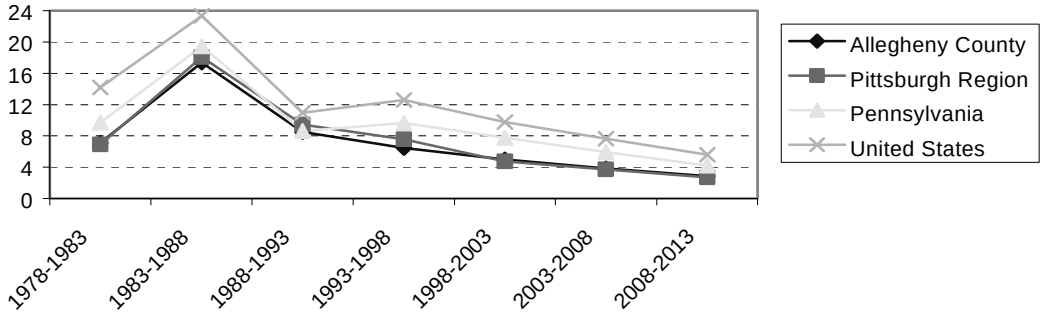
Table 4: Pittsburgh MSA: Employment Change by Industry 1990-1996

Sector	Employment Change
Mining	-1,710
Construction	3,360
Manufacturing	-8,733
Transportation and Public Utilities	4,467
Trade	12,270
Finance, Insurance, And Real Estate	11,604
Services	37,738

Source: Regional Economic Information System, Bureau of Labor Statistics

This shift in job creation is part of a national trend that is expected to continue here. Between 1998-2008, the non-manufacturing sectors will be the nation's main engines of economic growth. During this period, non-manufacturing employment in Allegheny County and the Pittsburgh Region will increase by 7.4 percent and 7.0 percent, respectively, with the services industries accounting for the majority of this growth. Between 1998-2008, non-manufacturing employment in the Commonwealth and the nation will increase by 11.2 percent and 14.7 percent, respectively, again with services industries accounting for most of this growth.

Figure 10. Percentage Change in Service and Trade Sector Employment

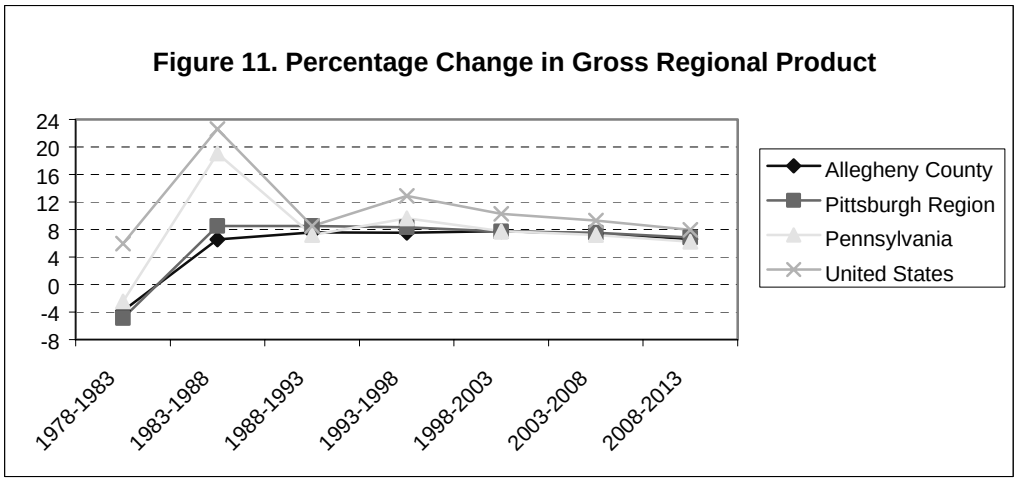


Source: The Pittsburgh REMI Model, U.S. Bureau of Economic Analysis

C. Gross Regional Product

Gross Regional Product (GRP) is an overall measure of the size of the regional economy. It represents the value added in the production process of goods and services. In other words, it measures how much is produced here in goods and services. At the state and national levels, this value added measure is called Gross State Product (GSP) and Gross National Product (GNP). Both mean the same thing, so GRP is used generically. The rate of growth of GRP determines to a large

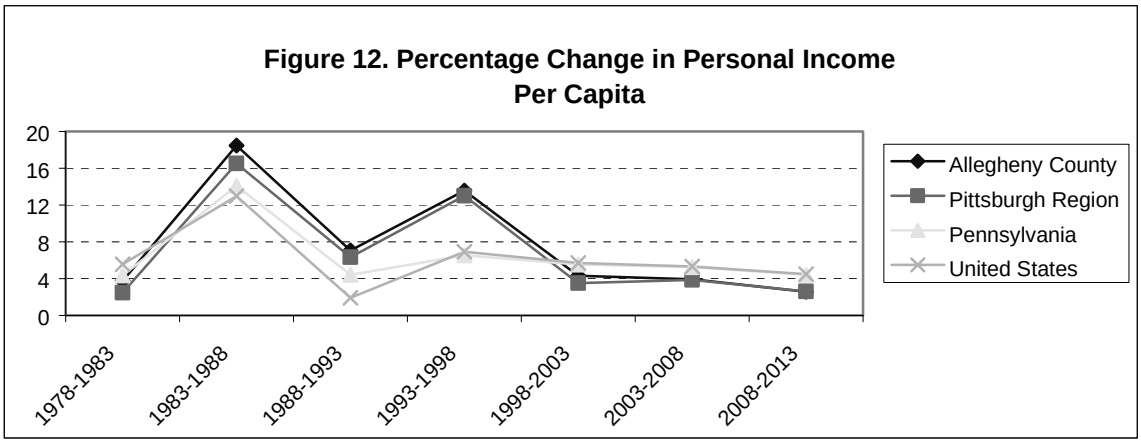
extent the pace at which real income per capita (an indicator of the regional standard of living) will grow over time. Please note that all dollar figures are in 1992 constant dollars (i.e. inflation adjusted). Locally, GRP growth will lag behind the nation, but for the most part keep pace with the Commonwealth. Between 1998-2008, GRP in Allegheny County and the Region will grow by 15.7 percent and 15.9 percent, respectively. During this period, GRP in Pennsylvania and the U.S. will grow by 15.6 percent and 20.6 percent, respectively.



Source: The Pittsburgh REMI Model, U.S. Bureau of Economic Analysis

D. Real Personal Income Per Capita

Real personal income per capita in Allegheny County and the Region has been growing faster than in either the Commonwealth or the nation over the last decade. This has been due to the combined effects of declining population and increasing employment in the Region as compared to the Commonwealth and the nation. This trend is not expected to continue into the future. Between 1998-2008, real personal income per capita in Allegheny County and the Region will grow by 8.4 percent and 7.5 percent, respectively, as compared to Commonwealth and national rates of 11.1 percent and 11.4 percent, respectively.



Source: The Pittsburgh REMI Model, U.S. Bureau of Economic Analysis

E. Pittsburgh Compared to Other Regional Metropolitan Areas

The Pittsburgh economy has many similarities to other metropolitan areas across the country. Table 5 summarizes the changes that have taken place over the last decade in the Cleveland, Columbus, Cincinnati, Philadelphia, and Pittsburgh metropolitan areas. Pittsburgh is the only region in this group that has experienced a population decline over the last decade (-2.7 percent), but the population increases in Cleveland and Philadelphia have been rather anemic at .4 percent and 1.98 percent, respectively. The fastest growth in both population and employment has been in Columbus, with a 13 percent increase in population and almost a 30 percent increase in employment. Pittsburgh's employment growth was under 15 percent, which compares to that of Cleveland.

All areas have seen a decline in manufacturing employment and an increase in jobs in the service sectors. It may be surprising that Pittsburgh's percentage decline is not the lowest in the group at -10 percent, far less than Philadelphia's –20 percent. The decline in the U.S. Steel industry had been over a decade old by 1985, and many of the jobs in the Pittsburgh manufacturing base were already gone by then. Even so, manufacturing jobs continue to leave the Region at a rate more than twice that of Cleveland, Cincinnati, or Columbus.

The discrepancy between population changes and employment changes is caused by many factors worth noting. One is that the labor force participation rate has been changing over the years. Pittsburgh and other heavy manufacturing areas have historically had lower levels of female labor force participation. One reason for this is thought to be the difficulty that married females have entering the workforce if their husbands are involved in shift work at plants.

Pittsburgh has the highest increase in nominal personal income in the group. The increase in per capita retirement benefits is the result of the large elderly population in the Region. As more receive benefits, a greater part of personal income in the Region is derived from retirement benefits.

Table 5: Pittsburgh Region vs. Regional Metropolitan Areas - % Changes 1986-1996

	Population	Total Employment	Manufacturing Employment	Service Sector Employment	Per Capita Personal Income	Per Capita Retirement Benefits
Cincinnati	6.81	24.62	-5.02	42.13	67.57	83.43
Cleveland	0.40	13.95	-4.88	28.22	62.86	87.22
Columbus	13.47	29.76	-5.30	47.34	65.18	82.36
Philadelphia	1.98	7.07	-20.65	30.79	68.44	90.20
Pittsburgh	-2.73	14.65	-10.33	31.08	70.19	92.99

Source: Regional Economic Information System 1969-1996, Bureau of Economic Analysis

F. Looking Toward the Future

One of the most important and difficult questions to be asked is what will future economic and population growth look like in the Pittsburgh Region. This baseline REMI looks at economic and demographic trends over the last 20 years and provides a reasonable expectation of what the future will look like. The Pittsburgh Region has survived major structural changes caused by the decline of the U.S. manufacturing industry. One positive factor for the future is that the continued decline in

manufacturing industries will be at a much slower rate than in the past, with job growth in many non-manufacturing industries expected to continue.

Regional population growth is closely linked to the future of the regional economy. Jobs are needed to encourage workers to move here and keep those who are already here from leaving. The size and quality of the local labor force itself is an important factor driving growth and is essential to encourage new firms to locate here. The fact that migration out of the Region does not compare to that of preceding decades may prevent some of the most pessimistic forecasts for the Region from coming true. A troubling statistic is that the most recent Census information implies that this trend is not continuing to improve but has turned worse. Whether this is a temporary or long-term shift will have a major impact on any forecast of the future.

The structural changes in the local economy caused by the decline in the steel industry may be over, but the residual effects on the local population are quite real. The out-migration of younger workers over a long period of time has created the large elderly population in the Region. This population will decrease in size over the next 15 years and will impact on the overall size of the local population. Part of the service sector will have to decline with this shift in population. The net effect will be employment and population growth rates that appear to be modest. This does not mean that local economic development policy is not working and that new jobs are not being created. Local public policy cannot significantly affect the underlying demographics of the Region. If economic factors were not to intervene, the local population and employment growth rates would conceivably be negative in the near future.

Appendix I. Impact Analysis and Policy Simulations with the REMI Model

An alternative use of the REMI Model is to quantify the differential impact of specific changes in the local economy. The types of changes that REMI can analyze are numerous, but typical studies look at the impact on employment and output resulting from the expansion of specific industries or even specific plants in the Region. For these types of studies, the impact of a plant-opening goes far beyond the jobs created within that plant itself. Secondary impacts include jobs created in local industries that supply the new plant, and also the economic activity resulting from new consumer expenditures from new jobs and new earnings in the Region.

The following simulations are provided to give the reader a feel for the policy analysis and impact study capabilities of the REMI Model. For this, the researcher has chosen to simulate the potential impact of the recent closings of the Mon Valley LTV plant in early 1998 and the Nabisco bakery in late 1998. These two simulations highlight the ability of REMI to differentiate the economic impact of different industries on the economy. The difference between two manufacturing plants, such as these two examples, can be quite large.

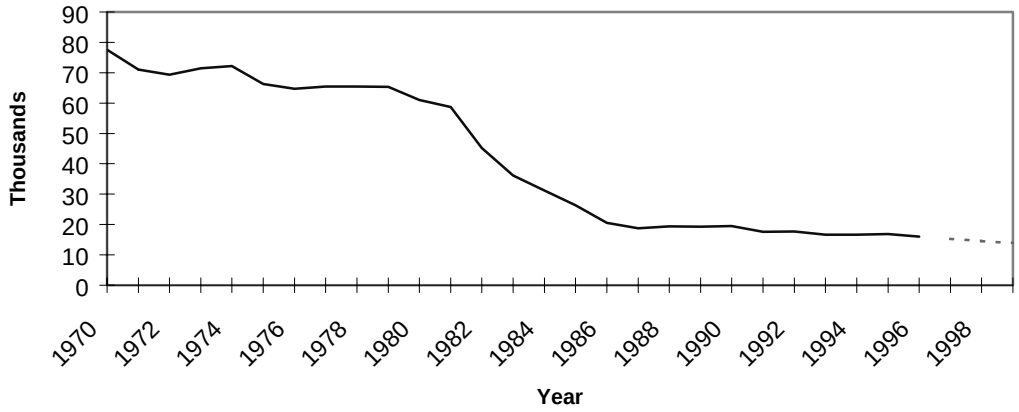
These studies are typical, but REMI can also look at many different changes in the local economy, such as the impact of new infrastructure spending, changes in local tax or fiscal policy, or changes in the local population to name a few.

A. Background

LTV Plant Shutdown in 1998

The decline of the steel industry in the Pittsburgh Region has been continuing over the last several decades. After steep declines in the late 1970's and 1980's, the decline has, for the most part, leveled off. Figure 13 illustrates the long-term trend in employment in the primary metals industries in the Pittsburgh Region.

Figure 13: Pittsburgh Region Employment in Primary Metal and Associated Industries



Source: The Pittsburgh REMI Model

However, steel has not disappeared from the Pittsburgh Region, and employment in primary metals and associated industries is a significant part of the regional economy. Over 16,000 jobs in 1996 were in these industries. In 1997, the LTV Corporation announced the closing of its Mon Valley coke plant. This plant represented the last basic steel industrial plant within the City of Pittsburgh. Beyond the symbolic nature of the closing and its tie to Pittsburgh history, the plant employed over 800 workers. After months of litigation with the local union and with the federal government over environmental problems at the site, the plant was closed in early 1998. Most of the workers at the site lost their jobs, but a majority was given the opportunity to retire with pay from LTV. This represents a sizable part of the metals industry in the Region and a significant number of jobs in itself. Furthermore, the loss of manufacturing jobs has an impact far beyond the plant that closed. The plant closing will have secondary effects resulting in job losses in multiple other industries, and the loss of income will have negative impacts on spending and economic activity throughout the Region. These REMI simulations are an attempt to quantify how large these effects will be. The effects of this plant closing are far larger than may be obvious given the size of the Mon Valley operation.

Nabisco Plant Closing

In 1998, the Nabisco Corporation closed its bakery located in the City of Pittsburgh. Total employment numbered around 350 before the shutdown. All jobs were assumed to be lost with the closing of the plant.

Anticipated Sony Plant Expansion

The Sony Electric Company manufactures television and other electronic components at its plant in East Huntington, Westmoreland County. Sony invested over $500 million to develop this site after the closing of a Volkswagen automobile assembly plant in the late 1980's. The plant specializes in large screen and flat TV screens and has been experiencing continuous growth since its opening, driven by both domestic and international demand for its products. The plant has recently expanded its manufacturing capability into glass production. Together, these forces have allowed for an expansion of employment in Westmoreland County. This scenario quantifies the direct and indirect economic impact of a hypothetical expansion of 1000 workers at the Sony plant in 1999.

B. Simulations

Three scenarios are considered. Scenario 1 assumes that the current status quo as of April 1998 is unchanged into the future. The closing of the LTV plant and the direct loss of 800 jobs are permanent, and there is no attempt on the part of LTV or other firms to build a replacement operation. At the present time, there are no announced plans by either the public or private sector to rehabilitate the site of the plant, so this scenario represents the best estimate of the future impact of the plant closing on the regional economy.

Scenario 2 assumes that half of the jobs lost at the LTV plant are not permanent. For 1998, it must be assumed that all of the 800 jobs are lost in that there exists no plan that could realistically begin on the site before 1999. This scenario assumes that beginning in 1999, half of the jobs are recovered permanently. This could result from one of a number of possibilities. LTV or a competitor could rebuild a facility on the same site. Any other attempt to rehabilitate the site would involve significant resources and employment involved in demolition, cleanup, and construction. One other reason to believe that the negative impacts of the plant closing are not as bad as Scenario 1 assumes is that the majority of the workers were given full or partial retirement benefits. This means that they still have

an income, and many will stay in the Region where their impact on many sectors, in particular retail and associated industries, will continue. However, this is a short-term positive benefit, and the loss of such a sizable number of manufacturing jobs will have the same magnitude of negative impact in the long-run on regional output, employment, and growth.

Scenario 3 looks at the separate effects of the closing of the Nabisco bakery resulting in the direct layoff of 350 workers. The results illustrate how REMI can differentiate between the economic activity generated by the food manufacturing and primary metals industries.

Scenario 4 measures the impact of a 1000-worker expansion in electrical equipment manufacturing plants in Westmoreland County. This is assumed to be driven by expansion of the Sony electronics plant in East Huntington. Different industries will have different impacts on associated industries in the Region, and different earning levels will affect local consumer expenditures. The differences between these scenarios are highlighted in Table 10.

Scenario 1

Table 6a: Simulation 1: Permanent Loss of All LTV Jobs

Impact on Allegheny County

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
TOTAL EMPLOYMENT	-2,870	-2,781	-2,733	-2,693	-2,680	-2,689	-2,724	-2,788
MANUFACTURE	-873	-858	-845	-835	-828	-823	-821	-820
NON MANUFACTURE	-1,967	-1,857	-1,802	-1,754	-1,733	-1,733	-1,758	-1,812
MINING	-37	-37	-37	-38	-38	-39	-39	-40
CONSTRUCTION	-282	-263	-248	-235	-224	-217	-213	-212
TRANSPORTATION +PUBLIC UTILITES	-129	-125	-122	-121	-120	-121	-123	-126
FINANCE, INSURANCE,+ REAL ESTATE	-117	-109	-105	-100	-97	-96	-97	-106
RETAIL TRADE	-477	-442	-421	-401	-387	-378	-375	-377
WHOLESALE TRADE	-219	-222	-226	-231	-237	-244	-252	-262
SERVICES	-696	-650	-633	-621	-620	-629	-650	-681
OTHER	-40	-74	-95	-113	-127	-141	-153	-165
Gross Regional Product (Millions of 1992$)	-140	-139	-138	-138	-139	-140	-143	-147
Personal Income (Millions of 1992$)	-119	-128	-135	-140	-146	-152	-159	-167

Source: The Pittsburgh REMI Model

Table 6b: Simulation 1: Permanent Loss of All LTV Jobs

Impact on Pittsburgh Region

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
TOTAL EMPLOYMENT	-3,291	-3,169	-3,094	-3,029	-2,999	-2,999	-3,033	-3,102
MANUFACTURE	-910	-887	-868	-853	-843	-836	-833	-832
NON MANUFACTURE	-2,341	-2,194	-2,109	-2,035	-1,996	-1,985	-2,006	-2,063
MINING	-42	-42	-42	-42	-42	-43	-43	-44
CONSTRUCTION	-351	-326	-306	-287	-272	-262	-255	-253
TRANSPORTATION +PUBLIC UTILITES	-154	-147	-144	-141	-140	-141	-143	-146
FINANCE, INSURANCE,+ REAL ESTATE	-156	-144	-135	-127	-121	-119	-119	-129
RETAIL TRADE	-601	-556	-525	-497	-478	-465	-460	-462
WHOLESALE TRADE	-236	-237	-240	-243	-248	-254	-263	-272
SERVICES	-787	-730	-706	-688	-683	-691	-713	-746
OTHER	-54	-100	-127	-152	-172	-188	-204	-219
Gross Regional Product (Millions of 1992$)	-157	-155	-154	-153	-153	-154	-156	-162
Personal Income (Millions of 1992$)	-155	-167	-175	-182	-188	-195	-204	-214

Source: The Pittsburgh REMI Model

As can be seen from Tables 6a and 6b, the impact of closing the LTV plant goes far beyond the direct loss of jobs. The relationship between basic manufacturing industries and other related sectors means that the loss of business in one sector has an impact in multiple other sectors. A basic example is the interaction between manufacturing and wholesale and retail trade and services. A business purchases a large amount of its intermediate goods and service inputs from the region that it is located in. The loss of an industrial facility results directly in the loss of business in these secondary sectors. The large losses shown in Tables 6a and 6b for these sectors bear this out. Note also the large loss of employment in the mining industries throughout the Region. The LTV plant was a producer of industrial grade coke. Coke is a basic input into modern integrated steel production and is produced from coal. The loss of a local user of coke can be expected to have a negative impact on the producers and transporters of coal mining industries in the Region.

There are equally important secondary effects resulting from the loss of employment and income for displaced workers. These workers will spend less in the community on goods and services. Workers not rehired may have to move out of the Region. When they leave, they take with them the economic activity that they would generate had they stayed in the Region.

The overall effect includes the loss of jobs in the region along with an overall decline in the regional economy. Gross Regional Product represents the value of goods and services produced in the regional economy. In simulation 1 the overall decline in GRP for the Pittsburgh region is over 160 million dollars by 2005. Total personal income in the region declines as well going down by 214 million dollars by 2005.

Scenario 2

Table 7a: Simulation 2: Loss of Half LTV Jobs

Impact on Allegheny County

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
TOTAL EMPLOYMENT	-1,435	-1,391	-1,367	-1,347	-1,340	-1,345	-1,362	-1,394
MANUFACTURE	-437	-429	-423	-418	-414	-412	-411	-410
NON MANUFACTURE	-984	-929	-901	-877	-867	-867	-879	-906
MINING	-19	-19	-19	-19	-19	-20	-20	-20
CONSTRUCTION	-141	-132	-124	-118	-112	-109	-107	-106
TRANSPORTATION +PUBLIC UTILITES	-65	-63	-61	-61	-60	-61	-62	-63
FINANCE, INSURANCE,+ REAL ESTATE	-59	-55	-53	-50	-49	-48	-49	-53
RETAIL TRADE	-239	-221	-211	-201	-194	-189	-188	-189
WHOLESALE TRADE	-110	-111	-113	-116	-119	-122	-126	-131
SERVICES	-348	-325	-317	-311	-310	-315	-325	-341
OTHER	-20	-37	-48	-57	-64	-71	-77	-83
Gross Regional Product (Millions of 1992$)	-70	-70	-69	-69	-70	-70	-72	-74
Personal Income (Millions of 1992$)	-60	-64	-68	-70	-73	-76	-80	-84

Source: The Pittsburgh REMI Model

Table 7b: Simulation 2: Loss of Half LTV Jobs

Impact on Pittsburgh Region

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
TOTAL EMPLOYMENT	-1,646	-1,585	-1,547	-1,515	-1,500	-1,500	-1,517	-1,551
MANUFACTURE	-455	-444	-434	-427	-422	-418	-417	-416
NON MANUFACTURE	-1,171	-1,097	-1,055	-1,018	-998	-993	-1,003	-1,032
MINING	-21	-21	-21	-21	-21	-22	-22	-22
CONSTRUCTION	-176	-163	-153	-144	-136	-131	-128	-127
TRANSPORTATION +PUBLIC UTILITES	-77	-74	-72	-71	-70	-71	-72	-73
FINANCE, INSURANCE,+ REAL ESTATE	-78	-72	-68	-64	-61	-60	-60	-65
RETAIL TRADE	-301	-278	-263	-249	-239	-233	-230	-231
WHOLESALE TRADE	-118	-119	-120	-122	-124	-127	-132	-136
SERVICES	-394	-365	-353	-344	-342	-346	-357	-373
OTHER	-27	-50	-64	-76	-86	-94	-102	-110
Gross Regional Product (Millions of 1992$)	-79	-78	-77	-77	-77	-77	-78	-81
Personal Income (Millions of 1992$)	-78	-84	-88	-91	-94	-98	-102	-107

Source: Pittsburgh REMI Model

Scenario 3

Table 8a: Simulation 3: Loss of Nabisco Bakery Jobs

Impact on Allegheny County

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
TOTAL EMPLOYMENT	-1,031	-992	-963	-941	-929	-925	-930	-945
MANUFACTURE	-381	-376	-371	-367	-365	-364	-363	-363
NON MANUFACTURE	-640	-597	-565	-541	-526	-520	-521	-533
MINING	-2	-2	-1	-1	-1	-1	-1	-1
CONSTRUCTION	-74	-67	-61	-56	-52	-48	-46	-45
TRANSPORTATION +PUBLIC UTILITES	-38	-36	-34	-33	-32	-32	-32	-32
FINANCE, INSURANCE,+ REAL ESTATE	-38	-35	-33	-31	-29	-28	-28	-31
RETAIL TRADE	-155	-143	-133	-125	-119	-116	-114	-114
WHOLESALE TRADE	-69	-66	-65	-63	-62	-62	-61	-62
SERVICES	-261	-244	-235	-229	-228	-230	-237	-247
OTHER	-12	-23	-30	-35	-40	-44	-48	-51
Gross Regional Product (Millions of 1992$)	-57	-56	-56	-55	-55	-55	-56	-57
Personal Income (Millions of 1992$)	-37	-39	-41	-42	-44	-45	-47	-49

Source: The Pittsburgh REMI Model

Table 8b: Simulation 3: Loss of Nabisco Bakery Jobs

Impact on Pittsburgh Region

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
TOTAL EMPLOYMENT	-1,153	-1,104	-1,064	-1,034	-1,015	-1,008	-1,011	-1,028
MANUFACTURE	-395	-388	-381	-376	-373	-371	-370	-370
NON MANUFACTURE	-745	-689	-647	-614	-592	-582	-581	-594
MINING	-3	-2	-2	-2	-2	-1	-1	-1
CONSTRUCTION	-93	-84	-76	-69	-63	-59	-56	-54
TRANSPORTATION +PUBLIC UTILITES	-44	-41	-39	-37	-36	-35	-35	-35
FINANCE, INSURANCE,+ REAL ESTATE	-50	-45	-41	-38	-36	-34	-34	-37
RETAIL TRADE	-192	-176	-164	-153	-145	-140	-137	-137
WHOLESALE TRADE	-73	-70	-68	-66	-64	-64	-63	-63
SERVICES	-287	-267	-255	-247	-244	-246	-252	-263
OTHER	-16	-31	-39	-47	-53	-58	-63	-67
Gross Regional Product (Millions of 1992$)	-62	-61	-60	-59	-59	-59	-59	-61
Personal Income (Millions of 1992$)	-47	-51	-53	-55	-56	-58	-60	-63

Source: The Pittsburgh REMI Model

Scenario 4

Table 9a: Simulation 4: Expansion of Sony Plant

Impact on Westmoreland County

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
TOTAL EMPLOYMENT	1782	1746	1689	1626	1592	1561	1538	1524
MANUFACTURE	1038	1025	1012	1000	990	982	975	970
NON MANUFACTURE	727	683	628	567	535	505	483	468
MINING	5	4	3	1	1	0	0	-1
CONSTRUCTION	123	118	108	98	91	85	79	76
TRANSPORTATION +PUBLIC UTILITES	40	37	34	31	29	27	25	24
FINANCE, INSURANCE,+ REAL ESTATE	41	29	16	-2	-8	-16	-23	-28
RETAIL TRADE	223	214	201	188	180	173	168	165
WHOLESALE TRADE	77	75	71	68	66	63	61	60
SERVICES	213	202	191	179	173	169	168	168
OTHER	23	43	54	62	71	78	85	90
Gross Regional Product (Millions of 1992$)	110	112	113	114	117	119	122	125
Personal Income (Millions of 1992$)	57	63	66	68	71	73	75	78

Source: The Pittsburgh REMI Model

Table 9b: Simulation 4: Expansion of Sony Plant

Impact on Pittsburgh Region

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
TOTAL EMPLOYMENT	2,132	2,086	1,998	1,906	1,856	1,813	1,785	1,772
MANUFACTURE	1,061	1,045	1,028	1,013	1,001	991	984	979
NON MANUFACTURE	1,048	993	907	818	770	728	699	685
MINING	5	4	3	2	1	0	0	-1
CONSTRUCTION	149	143	130	116	106	98	91	87
TRANSPORTATION +PUBLIC UTILITES	55	51	46	42	38	36	34	33
FINANCE, INSURANCE,+ REAL ESTATE	65	52	37	16	9	0	-8	-12
RETAIL TRADE	306	295	273	253	240	229	222	218
WHOLESALE TRADE	96	93	88	83	79	76	73	71
SERVICES	366	349	325	302	291	284	282	284
OTHER	29	54	69	80	90	99	106	113
Gross Regional Product (Millions of 1992$)	124	126	126	126	128	130	133	136
Personal Income (Millions of 1992$)	76	84	88	90	93	95	98	101

Source: The Pittsburgh REMI Model

Table 10 highlights the differences between the closing of the LTV and Nabisco plants and the expansion of the Sony plant. For all, the total number of jobs lost or gained is in excess of the direct layoffs or jobs created at the plants. This table also gives the ratios of total jobs lost per direct layoff. There were in excess of three additional jobs lost per layoff for the LTV plant, and in excess of two additional jobs lost per layoff for the Nabisco plant. One of the differences is that the LTV plant had a larger impact on associated industries, such as construction and utilities. Both plants experienced large service sector job losses resulting from the loss of a large amount of personal income in the form of lost earnings. These lost earnings have big impacts in retail and service sectors, where individuals spend a lot of their regular earnings. The Sony plant also has a net job creation in excess of two for every new plant job. There are several reasons for the slightly lower indirect/direct job ratio for job creation at the Sony plant as compared to jobs lost because of the LTV plant. The large steel infrastructure in the Region means that much more steel industry inputs come from the Region. This produces greater linkages between jobs at a local coke production plant and other jobs in the Region. Also, because Westmoreland County is farther from the center of the Region, it may be easier to buy services and other inputs from counties just outside the Region. This simulation does not capture the economic impact outside of the Pittsburgh Region.

Table 10: Comparison of Direct vs. Total Job Losses from Plant Closing Simulations

	LTV Plant		Nabisco Bakery		Sony Plant	
	# of jobs	total jobs lost per direct layoff	# of jobs	total jobs lost per direct layoff	# of jobs	total new jobs per new plant job
Direct Layoff:	-800		-350		+1000	
Total Impact:						
TOTAL EMPLOYMENT	-3,291	4.26	-1,153	3.33	2,132	2.10
MANUFACTURE	-910	1.14	-395	1.13	1,061	1.06
NON MANUFACTURE	-2,341	3.08	-745	2.16	1,048	1.04
MINING	-42	0.11	-3	0.01	5	0.00
CONSTRUCTION	-351	0.47	-93	0.27	149	0.15
TRANSPORTATION+PUBLIC UTILITES	-154	0.20	-44	0.13	55	0.06
FINANCE, INSURANCE,+ REAL ESTATE	-156	0.20	-50	0.15	65	0.05
RETAIL TRADE	-601	0.77	-192	0.55	306	0.31
WHOLESALE TRADE	-236	0.30	-73	0.21	96	0.09
SERVICES	-787	1.01	-287	0.82	366	0.37
OTHER	-54	0.07	-16	0.05	29	0.01
Gross Regional Product (Millions of 1992$)	-157		-62		124	
Personal Income (Millions of 1992$)	-155		-47		76	

Appendix II. Baseline UCSUR/REMI Forecasts for Allegheny County & the Pittsburgh Region

Table 11: UCSUR/REMI Projections for Allegheny County

	1978	*1983*	*1988*	*1993*	*1998*	*2003*	*2008*	*2013*
Gross Regional Product*	34.1	32.8	35.0	37.6	40.5	43.6	46.8	49.9
Population#	1473.8	1420.6	1346.5	1329.0	1281.3	1282.0	1286.2	1302.5
Total Employment	769.2	730.4	783.6	824.9	857.2	880.8	897.4	908.7
By Sector								
Total Private Non-Farm	681.3	646.4	701.3	743.9	779.7	802.9	819.1	829.6
MANUFACTURE	158.3	111.8	86.2	72.4	68.1	60.1	54.7	51.0
Durables	122.2	80.9	58.2	48.1	45.3	38.6	33.9	30.9
Non-Durables	36.1	30.9	28.0	24.2	22.8	21.6	20.8	20.1
NON MANUFACTURE	523.0	534.6	615.1	671.5	711.6	742.8	764.5	778.6
Mining	3.7	3.4	3.9	2.7	2.4	2.1	1.9	1.8
Construction	43.1	36.8	40.3	41.5	42.3	43.1	44.0	45.3
Transportation and Utilities	44.9	36.4	37.5	47.2	48.7	48.4	46.7	43.8
Finance Insurance and Real Estate	60.6	60.2	66.6	72.5	77.7	81.6	82.5	81.3
Retail Trade	130.8	131.6	140.8	140.0	149.7	144.3	138.1	133.2
Wholesale Trade	43.3	41.0	42.8	41.5	40.6	38.8	37.0	35.5
Services	194.8	222.6	280.3	321.8	345.4	379.4	408.8	432.1
Agricultural Services	1.9	2.6	2.9	4.3	4.9	5.1	5.4	5.7
Farm Employment	0.9	0.9	0.8	0.6	0.5	0.5	0.4	0.4
Total Government	87.0	83.2	81.5	80.4	77.0	77.4	77.9	78.8
State and Local	65.1	61.3	58.4	58.6	57.2	58.5	58.9	59.2
Federal Civilian	15.9	15.2	16.3	15.3	14.9	14.2	14.3	14.6
Federal Military	6.0	6.6	6.8	6.5	4.9	4.7	4.7	4.9

Source: The Pittsburgh REMI Model

* Gross Regional Product in billions of 1998 adjusted dollars

Population and employment in thousands

Table 16: Pittsburgh Region[&]

	1978	*1983*	*1988*	*1993*	*1998*	*2003*	*2008*	*2013*
Gross Regional Product[*]	49.4	46.9	50.9	55.3	59.9	64.5	69.4	74.1
Population[#]	2513.4	2449.7	2332.7	2335.5	2298.7	2321.3	2334.6	2363.6
Total Employment[#]	1166.4	1088.3	1171.1	1237.3	1316.6	1347.0	1368.3	1381.4
by sector								
Total Private Non-Farm	1021.3	949.0	1032.6	1099.1	1182.7	1212.1	1232.9	1245.0
MANUFACTURE	272.7	187.0	151.1	134.3	130.4	116.9	106.6	99.2
Durables	220.5	141.4	108.8	95.3	92.0	79.9	70.7	64.5
Non-Durables	52.2	45.6	42.3	39.0	38.3	36.9	35.9	34.7
NON MANUFACTURE	748.6	762.0	881.5	964.7	1052.3	1095.3	1126.3	1145.8
Mining	13.7	11.3	9.8	7.6	7.0	6.1	5.6	5.2
Construction	65.8	54.5	64.3	67.8	72.7	74.1	75.7	77.9
Transportation and Utilities	68.2	59.6	62.1	71.4	74.6	74.2	71.8	67.7
Finance Insurance and Real Estate	79.5	78.3	85.4	94.1	119.1	124.7	126.4	125.2
Retail Trade	196.5	197.4	215.5	220.4	238.4	230.2	221.1	213.2
Wholesale Trade	56.9	54.8	59.9	60.8	62.0	59.7	57.2	54.9
Services	265.0	302.0	378.9	435.0	469.8	516.9	558.6	591.2
Agricultural Services	3.1	4.1	5.6	7.6	8.8	9.3	9.9	10.5
Farm Employment	9.6	9.9	9.4	8.0	7.3	6.4	5.8	5.5
Total Government	135.5	129.5	129.1	130.2	126.6	128.5	129.5	130.8
State and Local	105.7	99.3	97.3	99.8	99.4	102.5	103.5	104.1
Federal Civilian	19.9	19.1	20.6	19.5	18.9	18.1	18.1	18.6
Federal Military	9.9	11.1	11.1	10.9	8.3	7.9	7.9	8.1

Source: The Pittsburgh REMI Model

[&] Allegheny, Beaver, Butler, Armstrong, Washington, and Westmoreland counties
[*] Gross Regional Product in billions of adjusted 1998 dollars
[#] Population and employment in thousands

Appendix III. Comparison of Different Demographic Forecasts for the Pittsburgh Region

There are several alternative forecasts available for the Pittsburgh Region from both public and private sector sources. These include the U.S. Bureau of Economic Analysis, the Pennsylvania State Data Center, and various private firms. Two representative private forecasts are included here from Woods and Poole Economics, Inc. and NPA Associates. Each of these forecasts provide a different level of detail of economic and demographic variables. The results are summarized in Table 21 and Figure 14.

Table 21: Comparison of Different Forecasts for the Pittsburgh Region

	1995	2000	2005	2010	2015	2020
UCSUR/REMI	2,317,604	2,323,305	2,332,711	2,349,285	2,383,204	2,435,304
Woods and Poole Economics, Inc.	2,389,504	2,387,676	2,395,421	2,407,064	2,424,374	2,443,082
U.S. Bureau of Economic Analysis	2,416,786	2,441,500	2,482,000	2,537,400	2,609,600	2,776,100
NPA Associates	2,387,930	2,392,172	2,371,480	2,363,233	2,372,261	2,397,251
Pennsylvania State Data Center	2,363,585	2,317,934	2,268,361	2,223,562	2,184,187	2,148,121

The highest predicted population for the year 2020 comes from the U.S. Bureau of Economic Analysis. The lowest predicted population is in the Pennsylvania State Data Center's forecast for the Region. This forecast functions as the official State forecast for population in the Region. The main reason for the State forecast being so low is that it assumes a continuing net out-migration of people from Allegheny County into the future. The two private forecasts are extremely similar to the REMI forecast.

Figure 14: Comparison of Population Forecasts for the Pittsburgh Metropolitan Region

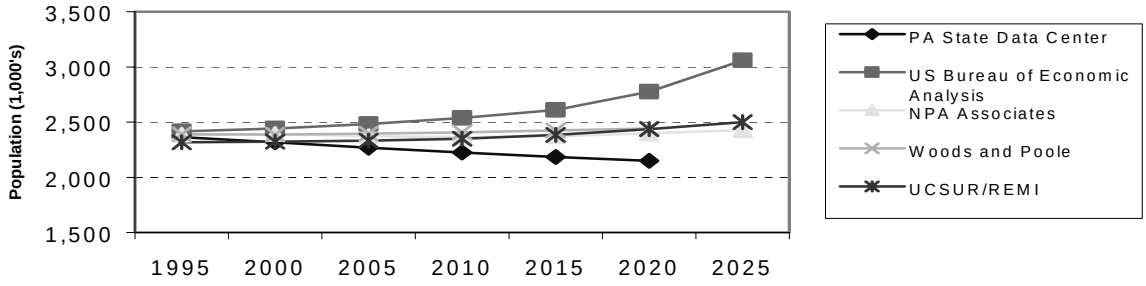


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Table 12: UCSUR/REMI Model Demographic Forecast
Allegheny County 1998-2009

Summary Population Forecast/ Components of Change

	1,998	*1,999*	*2,000*	*2,001*	*2,002*	*2,003*	*2,004*	*2,005*	*2,006*	*2,007*	*2,008*	*2,009*
Last Year Population	1,272,530	1,273,180	1,273,530	1,273,740	1,273,650	1,273,640	1,273,900	1,274,160	1,274,450	1,274,770	1,275,990	1,278,160
TOTAL DEATHS	13,656	13,632	13,603	13,568	13,527	13,480	13,428	13,370	13,318	13,261	13,199	13,134
MALE DEATHS	6,614	6,602	6,589	6,572	6,554	6,533	6,510	6,485	6,461	6,435	6,409	6,382
FEMALE DEATHS	7,042	7,030	7,015	6,996	6,973	6,947	6,918	6,885	6,857	6,825	6,790	6,752
TOTAL BIRTHS	15,223	15,030	14,883	14,782	14,729	14,718	14,756	14,833	14,943	15,087	15,255	15,442
MALE BIRTHS	7,764	7,665	7,590	7,539	7,512	7,506	7,525	7,565	7,621	7,695	7,780	7,876
FEMALE BIRTHS	7,459	7,365	7,293	7,243	7,217	7,212	7,230	7,268	7,322	7,393	7,475	7,567
THIS YR POP B4 MIGS	1,274,090	1,274,580	1,274,810	1,274,950	1,274,850	1,274,880	1,275,230	1,275,620	1,276,080	1,276,600	1,278,050	1,280,470
MALE POPULATION	604,190	605,180	606,030	606,840	607,510	608,240	609,120	610,010	610,930	611,870	613,270	615,160
FEMALE POPULATION	669,910	669,400	668,780	668,120	667,350	666,640	666,110	665,610	665,140	664,730	664,780	665,310
UNDER 65	1,041,681	1,045,548	1,048,769	1,052,074	1,054,992	1,057,305	1,060,319	1,063,166	1,065,815	1,067,901	1,068,832	1,072,245
OVER 65	232,414	229,032	226,041	222,881	219,862	217,573	214,907	212,459	210,260	208,698	209,218	208,222
TOTAL MIGRANTS	-1,053	-1,190	-1,210	-1,441	-1,354	-1,123	-1,206	-1,315	-1,445	-752	-46	77
UNDER 65	2,317	2,162	2,136	1,888	1,958	2,172	2,068	1,942	1,790	2,470	3,190	3,304
Economic Migrants	380	243	236	6	93	325	238	130	89	759	1,470	1,585
International Migrants	1,754	1,754	1,754	1,754	1,754	1,754	1,754	1,754	1,754	1,754	1,754	1,754
Change in Military&Dependents	183	164	146	128	110	92	75	58	-53	-43	-35	-36
MALE	1,133	1,053	1,039	911	946	1,055	1,001	936	854	1,203	1,573	1,631
FEMALE	1,184	1,109	1,097	977	1,012	1,117	1,067	1,006	936	1,267	1,617	1,673
OVER 65	-3,370	-3,352	-3,346	-3,330	-3,312	-3,295	-3,274	-3,257	-3,235	-3,222	-3,236	-3,226
MALE	-1,265	-1,260	-1,260	-1,257	-1,253	-1,251	-1,245	-1,240	-1,236	-1,236	-1,248	-1,249
FEMALE	-2,105	-2,092	-2,086	-2,073	-2,058	-2,044	-2,029	-2,017	-1,999	-1,987	-1,988	-1,978
TOTAL MIGR DEATHS	-113	-113	-114	-114	-114	-114	-114	-114	-114	-113	-112	-111
TOTAL MIGR BIRTHS	27	25	26	23	25	27	27	26	27	34	42	43
Subtotal	1,273,180	1,273,530	1,273,740	1,273,650	1,273,640	1,273,900	1,274,160	1,274,450	1,274,770	1,275,990	1,278,160	1,280,700
TOT MILITARY & DEP	1,197	1,186	1,176	1,165	1,154	1,144	1,133	1,123	1,127	1,136	1,144	1,152
TOT SPECIAL POP.	6,910	6,910	6,910	6,910	6,910	6,910	6,910	6,910	6,910	6,910	6,910	6,910
TOTAL POPULATION	**1,281,290**	**1,281,630**	**1,281,830**	**1,281,730**	**1,281,700**	**1,281,950**	**1,282,200**	**1,282,480**	**1,282,810**	**1,284,040**	**1,286,210**	**1,288,760**

Table 13: UCSUR/REMI Model Demographic Forecast
Allegheny County 2010-2020

Summary Population Forecast/ Components of Change

	2,010	*2,011*	*2,012*	*2,013*	*2,014*	*2,015*	*2,016*	*2,017*	*2,018*	*2,019*	*2,020*
Last Year Population	1,280,700	1,283,370	1,286,070	1,289,720	1,294,370	1,299,400	1,304,640	1,310,010	1,316,160	1,323,110	1,330,470
TOTAL DEATHS	13,067	13,000	12,934	12,872	12,814	12,762	12,716	12,676	12,645	12,624	12,613
MALE DEATHS	6,356	6,329	6,305	6,284	6,268	6,255	6,247	6,243	6,244	6,251	6,264
FEMALE DEATHS	6,712	6,670	6,629	6,587	6,546	6,507	6,469	6,433	6,401	6,373	6,350
TOTAL BIRTHS	15,635	15,813	15,972	16,138	16,304	16,458	16,596	16,717	16,838	16,964	17,090
MALE BIRTHS	7,974	8,064	8,146	8,230	8,315	8,394	8,464	8,526	8,587	8,652	8,716
FEMALE BIRTHS	7,661	7,748	7,826	7,907	7,989	8,065	8,132	8,191	8,250	8,313	8,374
THIS YR POP B4 MIGS	1,283,270	1,286,180	1,289,110	1,292,990	1,297,860	1,303,100	1,308,520	1,314,050	1,320,350	1,327,450	1,334,940
MALE POPULATION	617,230	619,340	621,440	624,020	627,080	630,310	633,620	636,950	640,660	644,750	649,030
FEMALE POPULATION	666,040	666,840	667,670	668,970	670,780	672,790	674,910	677,100	679,690	682,700	685,910
UNDER 65	1,076,577	1,081,404	1,080,245	1,080,628	1,082,901	1,085,456	1,087,480	1,088,253	1,089,156	1,091,006	1,092,665
OVER 65	206,690	204,778	208,865	212,360	214,961	217,643	221,043	225,792	231,197	236,444	242,280
TOTAL MIGRANTS	-52	-261	456	1,222	1,377	1,381	1,322	1,948	2,583	2,843	3,032
UNDER 65	3,164	2,925	3,670	4,454	4,611	4,621	4,576	5,236	5,918	6,222	6,464
Economic Migrants	1,441	1,197	1,933	2,705	2,862	2,866	2,817	3,479	4,152	4,457	4,694
International Migrants	1,754	1,754	1,754	1,754	1,754	1,754	1,754	1,754	1,754	1,754	1,754
Change in Military&Dependents	-32	-27	-17	-6	-5	1	5	3	12	11	16
MALE	1,559	1,437	1,820	2,222	2,303	2,308	2,285	2,623	2,974	3,130	3,254
FEMALE	1,604	1,488	1,850	2,232	2,308	2,313	2,291	2,612	2,944	3,092	3,210
OVER 65	-3,215	-3,186	-3,214	-3,232	-3,234	-3,240	-3,254	-3,288	-3,336	-3,379	-3,431
MALE	-1,248	-1,241	-1,262	-1,278	-1,285	-1,292	-1,307	-1,331	-1,361	-1,387	-1,417
FEMALE	-1,967	-1,945	-1,952	-1,954	-1,950	-1,948	-1,947	-1,957	-1,975	-1,993	-2,014
TOTAL MIGR DEATHS	-111	-110	-108	-106	-105	-103	-102	-100	-99	-97	-96
TOTAL MIGR BIRTHS	42	39	47	56	58	58	58	65	73	77	80
Subtotal	1,283,370	1,286,070	1,289,720	1,294,370	1,299,400	1,304,640	1,310,010	1,316,160	1,323,110	1,330,470	1,338,150
TOT MILITARY & DEP	1,160	1,167	1,173	1,178	1,182	1,186	1,189	1,193	1,196	1,199	1,202
TOT SPECIAL POP.	6,910	6,910	6,910	6,910	6,910	6,910	6,910	6,910	6,910	6,910	6,910
TOTAL POPULATION	**1,291,440**	**1,294,150**	**1,297,800**	**1,302,460**	**1,307,500**	**1,312,740**	**1,318,100**	**1,324,260**	**1,331,210**	**1,338,580**	**1,346,270**

Table 14: UCSUR/REMI Forecast - Allegheny County
Population by 5-year age cohorts - 1998-2009

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*
MALE POP 0- 4	38,323	38,027	37,661	37,472	37,263	37,033	36,911	36,892	36,973	37,215	37,602	38,056
FEM POP 0- 4	36,869	36,611	36,260	36,078	35,879	35,655	35,537	35,516	35,592	35,824	36,197	36,633
MALE POP 5- 9	40,312	40,217	40,017	39,501	39,084	38,864	38,559	38,180	37,991	37,807	37,618	37,562
FEM POP 5- 9	38,602	38,523	38,384	37,922	37,556	37,387	37,120	36,756	36,574	36,397	36,210	36,152
MALE POP 10- 14	40,093	40,532	40,722	40,850	40,996	41,013	40,911	40,700	40,178	39,778	39,593	39,333
FEM POP 10- 14	38,513	38,898	39,034	39,146	39,269	39,265	39,179	39,030	38,563	38,213	38,076	37,851
MALE POP 15- 19	38,980	39,636	40,501	41,205	41,487	41,820	42,256	42,439	42,563	42,731	42,794	42,745
FEM POP 15- 19	37,984	38,633	39,472	40,140	40,399	40,700	41,081	41,210	41,318	41,466	41,510	41,479
MALE POP 20- 24	36,222	36,625	36,903	37,795	38,788	39,816	40,477	41,339	42,037	42,357	42,763	43,275
FEM POP 20- 24	37,503	37,907	38,222	39,080	40,050	41,061	41,710	42,542	43,206	43,503	43,877	44,338
MALE POP 25- 29	36,805	35,284	33,970	32,319	31,944	32,172	32,552	32,801	33,669	34,688	35,783	36,528
FEM POP 25- 29	40,062	38,505	37,203	35,523	35,111	35,347	35,745	36,046	36,898	37,903	38,987	39,724
MALE POP 30- 34	43,404	41,706	39,996	39,426	38,339	36,856	35,331	34,008	32,366	32,020	32,299	32,748
FEM POP 30- 34	46,003	44,367	42,718	42,338	41,296	39,878	38,316	37,004	35,326	34,942	35,229	35,694
MALE POP 35- 39	53,745	52,849	51,542	49,725	47,971	46,206	44,507	42,798	42,224	41,159	39,723	38,264
FEM POP 35- 39	53,654	52,473	51,082	49,253	47,481	45,727	44,088	42,435	42,052	41,029	39,646	38,135
MALE POP 40- 44	51,356	52,847	54,436	55,068	54,556	53,415	52,507	51,194	49,388	47,661	45,941	44,301
FEM POP 40- 44	54,879	55,590	56,146	56,154	55,234	53,783	52,605	51,216	49,393	47,640	45,912	44,309
MALE POP 45- 49	43,983	45,331	47,042	48,337	49,494	50,741	52,193	53,741	54,351	53,852	52,746	51,879
FEM POP 45- 49	48,278	49,715	51,474	52,877	53,999	54,916	55,624	56,181	56,194	55,292	53,868	52,720
MALE POP 50- 54	34,821	36,632	38,858	41,707	42,139	43,098	44,419	46,094	47,369	48,516	49,760	51,207
FEM POP 50- 54	40,592	42,258	44,232	46,846	46,898	47,815	49,239	50,977	52,368	53,489	54,416	55,141
MALE POP 55- 59	29,303	29,778	29,798	29,607	32,273	33,737	35,494	37,639	40,389	40,831	41,794	43,102
FEM POP 55- 59	34,732	35,489	35,868	35,742	38,612	39,903	41,542	43,478	46,033	46,101	47,023	48,438
MALE POP 60- 64	26,041	26,069	25,950	26,153	26,581	27,703	28,170	28,201	28,033	30,608	32,047	33,729
FEM POP 60- 64	31,068	31,324	31,520	31,791	32,335	33,641	34,377	34,743	34,617	37,419	38,699	40,302
MALE POP 65- 69	27,292	25,749	24,198	23,295	22,877	22,944	22,989	22,912	23,123	23,537	24,602	25,023
FEM POP 65- 69	33,677	31,881	30,095	28,944	28,429	28,471	28,708	28,892	29,137	29,641	30,882	31,555
MALE POP 70- 74	25,027	24,847	24,846	24,418	23,498	22,296	21,074	19,867	19,174	18,868	18,963	19,023
FEM POP 70- 74	34,605	33,852	33,200	32,268	30,808	29,126	27,578	26,057	25,076	24,642	24,694	24,904
MALE POP 75- 79	19,539	19,466	19,271	18,968	18,795	18,905	18,823	18,889	18,594	17,916	17,030	16,120
FEM POP 75- 79	30,898	30,509	29,879	29,204	28,672	28,483	27,884	27,380	26,625	25,428	24,058	22,792
MALE POP 80- 84	11,402	11,712	12,100	12,364	12,542	12,539	12,525	12,459	12,302	12,237	12,355	12,332
FEM POP 80- 84	21,555	21,898	22,413	22,636	22,702	22,479	22,220	21,831	21,373	21,023	20,921	20,498
MALE POP 85-***	6,773	7,022	7,353	7,628	7,918	8,220	8,507	8,883	9,155	9,389	9,529	9,661
FEM POP 85-***	18,396	18,864	19,460	19,947	20,430	20,936	21,446	22,153	22,586	22,914	23,067	23,207
TOTAL POPULATION	1,281,290	1,281,630	1,281,830	1,281,730	1,281,700	1,281,950	1,282,200	1,282,480	1,282,810	1,284,040	1,286,210	1,288,760

Table 15: UCSUR/REMI Forecast - Allegheny County
Population by 5-year age cohorts - 2010-2020

	2010	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*
MALE POP 0- 4	38,531	38,994	39,511	40,075	40,621	41,127	41,585	42,052	42,527	42,985	43,424
FEM POP 0- 4	37,090	37,533	38,030	38,573	39,097	39,583	40,022	40,470	40,928	41,368	41,789
MALE POP 5- 9	37,625	37,799	38,117	38,561	39,080	39,644	40,228	40,845	41,483	42,114	42,731
FEM POP 5- 9	36,210	36,377	36,681	37,105	37,601	38,141	38,702	39,293	39,903	40,508	41,098
MALE POP 10- 14	39,002	38,861	38,724	38,582	38,574	38,694	38,935	39,314	39,813	40,392	41,027
FEM POP 10- 14	37,530	37,392	37,258	37,115	37,102	37,212	37,440	37,800	38,275	38,827	39,433
MALE POP 15- 19	42,583	42,106	41,756	41,627	41,423	41,152	41,075	41,001	40,921	40,981	41,175
FEM POP 15- 19	41,379	40,953	40,652	40,572	40,404	40,144	40,067	39,997	39,917	39,974	40,160
MALE POP 20- 24	43,528	43,706	43,943	44,089	44,124	44,049	43,660	43,402	43,367	43,264	43,101
FEM POP 20- 24	44,538	44,701	44,917	45,044	45,095	45,080	44,741	44,530	44,543	44,475	44,322
MALE POP 25- 29	37,470	38,241	38,647	39,146	39,754	40,111	40,403	40,750	41,008	41,164	41,226
FEM POP 25- 29	40,640	41,380	41,759	42,221	42,773	43,072	43,347	43,671	43,900	44,065	44,178
MALE POP 30- 34	33,075	34,018	35,105	36,260	37,077	38,104	38,984	39,489	40,071	40,770	41,242
FEM POP 30- 34	36,070	36,996	38,071	39,218	40,025	41,026	41,870	42,344	42,885	43,526	43,933
MALE POP 35- 39	37,016	35,459	35,173	35,492	35,983	36,365	37,374	38,514	39,708	40,577	41,670
FEM POP 35- 39	36,881	35,269	34,937	35,265	35,772	36,203	37,200	38,334	39,527	40,390	41,460
MALE POP 40- 44	42,664	42,143	41,132	39,751	38,350	37,165	35,688	35,451	35,802	36,324	36,745
FEM POP 40- 44	42,698	42,352	41,365	40,016	38,543	37,334	35,779	35,489	35,847	36,386	36,856
MALE POP 45- 49	50,621	48,877	47,209	45,547	43,968	42,398	41,928	40,972	39,643	38,299	37,173
FEM POP 45- 49	51,364	49,577	47,857	46,160	44,591	43,020	42,708	41,754	40,437	39,001	37,834
MALE POP 50- 54	52,750	53,372	52,911	51,855	51,036	49,838	48,164	46,562	44,963	43,452	41,957
FEM POP 50- 54	55,722	55,758	54,888	53,500	52,385	51,069	49,325	47,645	45,986	44,459	42,934
MALE POP 55- 59	44,755	46,021	47,166	48,407	49,842	51,374	52,009	51,592	50,597	49,836	48,716
FEM POP 55- 59	50,158	51,536	52,656	53,589	54,326	54,927	54,987	54,156	52,814	51,745	50,482
MALE POP 60- 64	35,760	38,365	38,828	39,786	41,058	42,660	43,903	45,037	46,264	47,667	49,169
FEM POP 60- 64	42,185	44,651	44,744	45,662	47,050	48,731	50,080	51,186	52,115	52,857	53,475
MALE POP 65- 69	25,035	24,882	27,276	28,652	30,161	31,942	34,232	34,732	35,663	36,821	38,265
FEM POP 65- 69	31,875	31,724	34,365	35,604	37,080	38,780	40,971	41,118	42,006	43,299	44,852
MALE POP 70- 74	18,985	19,186	19,557	20,490	20,857	20,875	20,762	22,828	24,049	25,344	26,851
FEM POP 70- 74	25,072	25,288	25,730	26,826	27,411	27,686	27,543	29,865	30,974	32,267	33,744
MALE POP 75- 79	15,248	14,756	14,556	14,668	14,737	14,734	14,919	15,241	16,029	16,334	16,353
FEM POP 75- 79	21,564	20,778	20,438	20,505	20,692	20,847	21,037	21,417	22,360	22,858	23,091
MALE POP 80- 84	12,424	12,233	11,787	11,222	10,640	10,125	9,846	9,751	9,872	9,937	9,962
FEM POP 80- 84	20,174	19,619	18,731	17,743	16,822	15,976	15,441	15,225	15,324	15,485	15,630
MALE POP 85-***	9,819	9,872	9,966	10,117	10,186	10,342	10,274	10,088	9,879	9,623	9,470
FEM POP 85-***	23,397	23,371	23,362	23,415	23,255	23,208	22,875	22,348	21,816	21,203	20,737
TOTAL POPULATION	1,291,440	1,294,150	1,297,800	1,302,460	1,307,490	1,312,740	1,318,100	1,324,260	1,331,210	1,338,580	1,346,270

Table 17: UCSUR/REMI Model Demographic Forecast
Pittsburgh Region 1998-2009

Summary Population Forecast/ Components of Change

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*
Last Year Population	2,300,110	2,309,220	2,316,350	2,322,010	2,325,990	2,329,080	2,331,850	2,334,070	2,335,910	2,337,530	2,340,550	2,345,070
TOTAL DEATHS	24,819	24,849	24,868	24,877	24,873	24,858	24,832	24,795	24,773	24,740	24,697	24,647
MALE DEATHS	12,237	12,244	12,247	12,243	12,235	12,220	12,201	12,177	12,157	12,134	12,110	12,083
FEMALE DEATHS	12,582	12,605	12,623	12,634	12,639	12,638	12,631	12,618	12,616	12,605	12,587	12,564
TOTAL BIRTHS	27,062	26,832	26,642	26,504	26,427	26,403	26,453	26,563	26,718	26,920	27,159	27,428
MALE BIRTHS	13,802	13,684	13,587	13,517	13,478	13,465	13,491	13,547	13,626	13,730	13,851	13,989
FEMALE BIRTHS	13,260	13,148	13,055	12,987	12,949	12,938	12,962	13,016	13,092	13,191	13,308	13,440
THIS YR POP B4 MIGS	2,302,340	2,311,210	2,318,120	2,323,630	2,327,540	2,330,630	2,333,470	2,335,840	2,337,860	2,339,710	2,343,020	2,347,850
MALE POPULATION	1,098,390	1,103,800	1,108,210	1,111,920	1,114,800	1,117,260	1,119,600	1,121,690	1,123,610	1,125,430	1,128,000	1,131,350
FEMALE POPULATION	1,203,970	1,207,410	1,209,910	1,211,720	1,212,750	1,213,360	1,213,870	1,214,150	1,214,240	1,214,280	1,215,020	1,216,510
UNDER 65	1,894,943	1,908,445	1,919,536	1,929,363	1,937,254	1,942,967	1,948,596	1,953,016	1,957,069	1,960,310	1,961,782	1,967,603
OVER 65	407,405	402,763	398,588	394,275	390,289	387,658	384,872	382,826	380,790	379,402	381,234	380,249
TOTAL MIGRANTS	6,633	4,914	3,669	2,147	1,339	1,025	415	-113	-514	644	1,844	2,032
UNDER 65	10,519	8,791	7,551	6,022	5,206	4,883	4,260	3,723	3,307	4,460	5,683	5,866
Economic Migrants	7,348	5,650	4,442	2,944	2,158	1,866	1,272	766	544	1,679	2,887	3,072
International Migrants	2,856	2,856	2,856	2,856	2,856	2,856	2,856	2,856	2,856	2,856	#VALUE!	2,856
Change in Military&Dependent	315	283	253	222	191	161	131	101	-93	-75	-61	-63
MALE	5,322	4,434	3,796	3,010	2,590	2,423	2,101	1,825	1,602	2,194	2,822	2,916
FEMALE	5,197	4,357	3,755	3,012	2,616	2,461	2,158	1,898	1,705	2,266	2,860	2,950
OVER 65	-3,886	-3,876	-3,882	-3,876	-3,868	-3,858	-3,845	-3,837	-3,821	-3,815	-3,838	-3,833
MALE	-1,459	-1,458	-1,462	-1,463	-1,462	-1,463	-1,460	-1,458	-1,456	-1,459	-1,475	-1,478
FEMALE	-2,426	-2,419	-2,420	-2,413	-2,404	-2,395	-2,385	-2,379	-2,366	-2,358	-2,364	-2,355
TOTAL MIGR DEATHS	-129	-131	-133	-135	-136	-136	-137	-138	-138	-137	-136	-135
TOTAL MIGR BIRTHS	113	95	83	67	60	57	52	47	47	59	72	74
Subtotal	2,309,220	2,316,350	2,322,010	2,325,990	2,329,080	2,331,850	2,334,070	2,335,910	2,337,530	2,340,550	2,345,070	2,350,100
TOT MILITARY & DEP	2,003	1,985	1,968	1,950	1,932	1,915	1,897	1,879	1,886	1,901	1,915	1,929
TOT SPECIAL POP.	-12,578	-12,536	-12,541	-12,508	-12,507	-12,496	-12,454	-12,421	-12,361	-12,298	-12,367	-12,498
TOTAL POPULATION	2,298,650	2,305,800	2,311,440	2,315,430	2,318,500	2,321,260	2,323,510	2,325,370	2,327,060	2,330,160	2,334,620	2,339,520

Table 18: UCSUR/REMI Model Demographic Forecast
Pittsburgh Region 2010-2020

Summary Population Forecast/ Components of Change

	2010	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*
Last Year Population	2,352,520	2,357,470	2,362,960	2,369,880	2,377,950	2,386,480	2,395,230	2,404,480	2,414,780	2,425,930	1,330,470
TOTAL DEATHS	24,599	24,538	24,479	24,424	24,374	24,331	24,297	24,273	24,265	24,273	12,613
MALE DEATHS	12,056	12,029	12,006	11,988	11,978	11,973	11,977	11,989	12,010	12,042	6,264
FEMALE DEATHS	12,544	12,508	12,472	12,434	12,396	12,358	12,320	12,284	12,254	12,231	6,350
TOTAL BIRTHS	27,785	28,022	28,234	28,447	28,645	28,820	28,964	29,090	29,218	29,352	17,090
MALE BIRTHS	14,170	14,291	14,400	14,507	14,609	14,698	14,772	14,836	14,901	14,970	8,716
FEMALE BIRTHS	13,614	13,731	13,835	13,938	14,036	14,122	14,192	14,254	14,316	14,383	8,374
THIS YR POP B4 MIGS	2,355,700	2,360,960	2,366,710	2,373,910	2,382,220	2,390,970	2,399,900	2,409,290	2,419,730	2,431,010	1,334,940
MALE POPULATION	1,136,460	1,140,000	1,143,780	1,148,300	1,153,350	1,158,610	1,163,940	1,169,460	1,175,500	1,181,920	649,030
FEMALE POPULATION	1,219,250	1,220,950	1,222,930	1,225,610	1,228,870	1,232,360	1,235,970	1,239,830	1,244,240	1,249,090	685,910
UNDER 65	1,977,557	1,980,577	1,978,371	1,978,165	1,979,373	1,981,118	1,982,358	1,982,821	1,984,282	1,987,234	1,092,665
OVER 65	378,144	380,382	388,343	395,744	402,850	409,850	417,545	426,468	435,454	443,776	242,280
TOTAL MIGRANTS	1,567	1,791	2,954	3,819	4,030	4,042	4,345	5,258	5,952	6,196	3,032
UNDER 65	5,394	5,590	6,781	7,662	7,874	7,892	8,210	9,162	9,908	10,203	6,464
Economic Migrants	2,589	2,773	3,947	4,815	5,023	5,031	5,347	6,294	7,032	7,324	4,694
International Migrants	2,856	2,856	2,856	2,856	2,856	2,856	2,856	#VALUE!	2,856	2,856	1,754
Change in Military&Depende	-52	-40	-21	-10	-4	5	7	12	20	23	16
MALE	2,674	2,776	3,388	3,840	3,950	3,959	4,122	4,610	4,994	5,145	3,254
FEMALE	2,719	2,814	3,393	3,822	3,925	3,933	4,088	4,551	4,914	5,058	3,210
OVER 65	-3,826	-3,799	-3,827	-3,843	-3,844	-3,850	-3,865	-3,904	-3,957	-4,007	-3,431
MALE	-1,481	-1,476	-1,498	-1,514	-1,521	-1,529	-1,546	-1,573	-1,606	-1,636	-1,417
FEMALE	-2,345	-2,323	-2,329	-2,329	-2,324	-2,320	-2,319	-2,331	-2,351	-2,373	-2,014
TOTAL MIGR DEATHS	-136	-134	-132	-130	-128	-126	-125	-122	-121	-119	-96
TOTAL MIGR BIRTHS	69	71	84	94	96	96	100	111	119	123	80
Subtotal	2,357,480	2,362,960	2,369,880	2,377,950	2,386,480	2,395,230	2,404,480	2,414,780	2,425,930	2,437,450	1,338,150
TOT MILITARY & DEP	1,946	1,958	1,967	1,975	1,981	1,987	1,993	1,999	2,004	2,009	1,202
TOT SPECIAL POP.	-12,829	-12,893	-12,893	-12,893	-12,893	-12,893	-12,893	-12,893	-12,893	-12,893	6,910
TOTAL POPULATION	2,346,590	2,352,020	2,358,950	2,367,030	2,375,570	2,384,330	2,393,570	2,403,890	2,415,040	2,426,570	1,346,270

Table 19: UCSUR/REMI Forecast - Pittsburgh Region
Population by 5-year age cohorts - 1998-2009

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*
MALE POP 0- 4	69,256	69,062	68,523	68,136	67,649	67,067	66,676	66,474	66,462	66,748	67,292	67,950
FEM POP 0- 4	66,703	66,570	66,050	65,672	65,204	64,636	64,255	64,054	64,039	64,312	64,836	65,468
MALE POP 5- 9	71,667	71,774	71,990	71,634	71,357	71,218	70,727	69,934	69,374	68,816	68,237	67,921
FEM POP 5- 9	68,365	68,585	68,970	68,755	68,596	68,562	68,144	67,383	66,841	66,301	65,733	65,418
MALE POP 10- 14	75,619	75,458	74,643	74,018	73,647	73,475	73,399	73,458	72,991	72,679	72,561	72,126
FEM POP 10- 14	71,930	71,734	70,950	70,416	70,127	70,031	70,084	70,326	70,011	69,820	69,807	69,443
MALE POP 15- 19	79,318	80,964	82,496	83,486	83,419	83,130	82,791	81,828	81,099	80,705	80,577	80,572
FEM POP 15- 19	76,152	77,657	78,983	79,805	79,639	79,293	78,919	77,986	77,347	77,040	76,991	77,118
MALE POP 20- 24	57,588	59,717	62,384	65,630	68,599	71,063	72,474	73,809	74,653	74,567	74,356	74,127
FEM POP 20- 24	59,295	61,367	64,016	67,124	69,965	72,292	73,550	74,670	75,345	75,158	74,888	74,625
MALE POP 25- 29	69,187	65,603	60,852	56,521	55,258	55,821	57,514	59,760	62,680	65,576	68,088	69,608
FEM POP 25- 29	69,174	65,158	60,547	56,178	54,904	55,569	57,329	59,712	62,632	65,423	67,810	69,184
MALE POP 30- 34	71,751	71,267	72,264	73,542	72,641	70,043	66,193	61,261	56,845	55,592	56,196	57,916
FEM POP 30- 34	79,307	77,961	77,275	77,539	75,698	72,480	68,192	63,357	58,837	57,512	58,204	60,044
MALE POP 35- 39	99,000	95,491	90,155	85,397	82,060	79,984	79,337	80,234	81,424	80,468	77,803	73,932
FEM POP 35- 39	98,537	96,297	93,190	89,729	86,891	84,601	83,066	82,221	82,370	80,491	77,294	73,076
MALE POP 40- 44	90,467	94,539	99,756	102,197	101,612	98,761	95,137	89,742	84,958	81,629	79,589	78,992
FEM POP 40- 44	95,470	97,866	100,746	102,102	101,358	99,102	96,761	93,573	90,061	87,214	84,941	83,450
MALE POP 45- 49	82,041	83,157	84,020	85,105	86,885	89,665	93,564	98,598	100,929	100,328	97,534	94,008
FEM POP 45- 49	87,946	89,409	90,547	91,963	93,702	95,759	98,074	100,882	102,193	101,446	99,218	96,921
MALE POP 50- 54	64,497	68,528	73,493	78,885	79,476	80,569	81,609	82,412	83,458	85,207	87,959	91,813
FEM POP 50- 54	72,286	76,103	80,828	85,935	86,078	87,261	88,666	89,756	91,137	92,862	94,922	97,245
MALE POP 55- 59	54,880	55,517	55,221	54,882	59,692	62,601	66,467	71,223	76,402	77,000	78,105	79,156
FEM POP 55- 59	63,180	64,020	63,899	63,526	68,554	71,176	74,882	79,476	84,442	84,594	85,781	87,187
MALE POP 60- 64	46,686	47,265	47,899	48,806	49,860	51,907	52,505	52,222	51,911	56,542	59,383	63,076
FEM POP 60- 64	54,681	55,691	56,884	57,896	59,058	61,243	62,020	61,876	61,492	66,384	68,966	72,575
MALE POP 65- 69	48,857	46,162	43,434	41,865	41,238	41,574	42,132	42,755	43,618	44,614	46,545	47,096
FEM POP 65- 69	59,092	55,995	52,976	51,050	50,319	50,674	51,606	52,718	53,646	54,721	56,791	57,502
MALE POP 70- 74	44,994	44,850	44,971	44,321	42,723	40,567	38,408	36,256	35,042	34,600	34,965	35,498
FEM POP 70- 74	61,241	60,166	59,107	57,524	54,966	51,970	49,258	46,644	44,981	44,367	44,716	45,565
MALE POP 75- 79	35,204	35,107	34,751	34,272	34,074	34,418	34,416	34,633	34,196	33,011	31,407	29,786
FEM POP 75- 79	53,479	53,261	52,670	51,851	51,222	51,150	50,291	49,462	48,161	46,036	43,560	41,312
MALE POP 80- 84	20,673	21,265	21,987	22,512	22,883	22,913	22,915	22,791	22,560	22,530	22,852	22,914
FEM POP 80- 84	36,916	37,661	38,677	39,334	39,768	39,707	39,602	39,286	38,752	38,365	38,384	37,778
MALE POP 85-***	11,943	12,446	13,095	13,658	14,243	14,834	15,395	16,110	16,660	17,137	17,425	17,691
FEM POP 85-***	31,270	32,124	33,190	34,167	35,138	36,147	37,157	38,489	39,504	40,362	40,905	41,428
TOTAL POPULATION	2,298,650	2,305,800	2,311,440	2,315,430	2,318,500	2,321,260	2,323,510	2,325,370	2,327,060	2,330,160	2,334,620	2,339,520

Table 20: UCSUR/REMI Forecast - Pittsburgh Region
Population by 5-year age cohorts - 2010-2020

	2010	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*
MALE POP 0- 4	68,839	69,527	70,286	71,073	71,809	72,465	73,059	73,646	74,212	74,733	43,424
FEM POP 0- 4	66,321	66,980	67,711	68,468	69,174	69,803	70,373	70,936	71,481	71,982	41,789
MALE POP 5- 9	67,813	68,076	68,577	69,255	70,038	70,876	71,746	72,650	73,556	74,424	42,731
FEM POP 5- 9	65,307	65,557	66,035	66,682	67,430	68,232	69,067	69,932	70,799	71,630	41,098
MALE POP 10- 14	71,067	70,579	70,075	69,697	69,581	69,713	70,081	70,674	71,437	72,308	41,027
FEM POP 10- 14	68,416	67,940	67,445	67,068	66,946	67,064	67,410	67,973	68,698	69,528	39,433
MALE POP 15- 19	80,788	80,426	80,171	79,895	79,338	78,769	78,385	77,980	77,697	77,679	41,175
FEM POP 15- 19	77,613	77,373	77,224	77,035	76,527	75,975	75,600	75,205	74,924	74,901	40,160
MALE POP 20- 24	72,462	72,118	72,208	72,441	72,822	72,884	72,665	72,554	72,421	72,007	43,101
FEM POP 20- 24	73,091	72,837	73,002	73,330	73,848	74,065	73,967	73,959	73,910	73,544	44,322
MALE POP 25- 29	71,261	71,679	71,521	71,336	70,911	70,533	70,378	70,641	71,046	71,599	41,226
FEM POP 25- 29	70,493	70,796	70,577	70,363	69,953	69,612	69,538	69,869	70,353	71,034	44,178
MALE POP 30- 34	62,240	65,026	67,553	69,514	70,897	72,190	72,784	72,781	72,735	72,460	41,242
FEM POP 30- 34	64,651	67,399	69,806	71,623	72,812	73,939	74,407	74,330	74,242	73,969	43,933
MALE POP 35- 39	66,152	63,672	63,799	65,530	68,173	70,766	73,702	76,296	78,319	79,780	41,670
FEM POP 35- 39	65,545	63,025	63,116	64,837	67,488	70,072	72,926	75,417	77,308	78,583	41,460
MALE POP 40- 44	81,707	81,313	79,106	75,367	70,368	66,409	64,053	64,247	66,013	68,679	36,745
FEM POP 40- 44	83,217	82,038	79,258	75,227	70,307	66,346	63,912	64,064	65,829	68,524	36,856
MALE POP 45- 49	85,858	82,560	80,594	79,976	80,965	81,156	80,835	78,722	75,091	70,224	37,173
FEM POP 45- 49	92,133	89,273	87,025	85,452	84,721	83,721	82,597	79,872	75,904	71,057	37,834
MALE POP 50- 54	98,481	99,018	96,919	93,277	88,577	84,565	81,395	79,525	78,974	80,006	41,957
FEM POP 50- 54	101,358	101,557	99,901	97,387	94,534	91,594	88,806	86,618	85,099	84,419	42,934
MALE POP 55- 59	79,791	81,669	84,305	87,904	92,684	95,883	96,450	94,457	90,970	86,467	48,716
FEM POP 55- 59	88,291	90,278	92,526	95,043	97,987	99,870	100,100	98,507	96,072	93,313	50,482
MALE POP 60- 64	69,877	72,657	73,278	74,010	74,526	75,980	77,849	80,445	83,948	88,557	49,169
FEM POP 60- 64	79,350	81,912	82,273	83,192	83,995	85,702	87,664	89,884	92,363	95,251	53,475
MALE POP 65- 69	46,733	48,506	52,229	55,461	59,239	63,116	65,604	66,280	67,028	67,522	38,265
FEM POP 65- 69	57,114	58,960	62,853	65,983	69,870	73,732	76,028	76,436	77,334	78,090	44,852
MALE POP 70- 74	36,681	37,406	38,562	39,627	39,781	39,732	41,360	44,649	47,528	50,829	26,851
FEM POP 70- 74	47,203	47,935	49,138	50,270	50,434	50,499	52,197	55,684	58,517	61,991	33,744
MALE POP 75- 79	27,843	27,282	27,340	27,864	28,474	28,972	29,603	30,602	31,515	31,667	16,353
FEM POP 75- 79	38,617	37,699	37,639	38,275	39,214	39,911	40,551	41,609	42,591	42,736	23,091
MALE POP 80- 84	23,055	22,525	21,609	20,580	19,563	18,839	18,553	18,683	19,125	19,604	9,962
FEM POP 80- 84	36,822	35,556	33,836	32,106	30,521	29,282	28,680	28,726	29,303	30,090	15,630
MALE POP 85-***	18,083	18,286	18,581	18,855	19,083	19,242	19,064	18,730	18,341	17,960	9,470
FEM POP 85-***	42,320	42,580	42,880	43,029	42,975	42,821	42,185	41,308	40,360	39,418	20,737
TOTAL POPULATION	2,346,590	2,352,020	2,358,950	2,367,030	2,375,560	2,384,330	2,393,570	2,403,890	2,415,040	2,426,570	1,346,270