

# PITTSBURGH ECONOMIC QUARTERLY

Center for Social and Urban Research

## WAGE LEVELS IN PITTSBURGH

The average annual wage level of the Pittsburgh region was measured at \$33,837 in 2000. Nominal wage levels in the Pittsburgh region grew 2.4% between 1999 and 2000. That rate of wage growth ranked the Pittsburgh region lowest among the 25 largest metropolitan areas in the U.S. Adjusted for inflation, wage levels declined by 1% over the same time period.

Among large metropolitan areas, the greatest increases in wages between 1999 and 2000 were in San Francisco (+18.3%) and Boston (+10.5%). Seattle, Detroit, Cleveland, and Miami each had average wage growth of under 4%, comparable to Pittsburgh.

Nominal wages in the Pittsburgh region grew fastest in Financial Services, including Insurance and Real Estate in

*Continued on page 4*

### Wage Growth 1999-2000: 25 Largest Metro Areas

	Average Wage 1999	Average Wage 2000	% increase (inflation adjusted)	rank
Atlanta	37,303	39,704	6.4% (3.1%)	11
Baltimore	33,862	35,578	5.1% (1.7%)	14
Boston	40,892	45,191	10.5% (7.2%)	2
Chicago	39,525	41,549	5.1% (1.8%)	15
Cincinnati	33,627	35,049	4.2% (0.9%)	20
Cleveland	33,435	34,704	3.8% (0.4%)	22
Dallas	39,259	42,133	7.3% (4.0%)	9
Denver	38,115	41,413	8.7% (5.3%)	3
Detroit	40,781	42,303	3.7% (0.4%)	23
Houston	38,107	40,986	7.6% (4.2%)	7
Los Angeles	37,788	39,671	5.0% (1.6%)	16
Miami	32,067	33,328	3.9% (0.6%)	21
Minneapolis	37,229	39,549	6.2% (2.9%)	13
New York	52,467	56,377	7.5% (4.1%)	8
Philadelphia	37,333	39,197	5.0% (1.6%)	17
Phoenix	32,430	34,915	7.7% (4.3%)	5
Pittsburgh	33,048	33,837	2.4% (-1.0%)	25
Portland	34,382	37,043	7.7% (4.4%)	6
Sacramento	34,269	36,598	6.8% (3.4%)	10
San Diego	34,722	37,516	8.0% (4.7%)	4
San Fran.	50,125	59,314	18.3% (15.0%)	1
Seattle	43,925	45,171	2.8% (-0.5%)	24
St. Louis	33,354	34,913	4.7% (1.3%)	19
Tampa	29,360	30,781	4.8% (1.5%)	18
Washington	42,660	45,333	6.3% (2.9%)	12

## ECONOMIC IMPACT ANALYSIS: AIRLINE LAYOFFS

The national slowdown in air travel and transportation demand has increased the probability of a long-term decline in the regional air transportation industry. Initial layoffs announced by USAirways include local workers from flight attendants to machinists. The long planned maintenance facility for USAirways appears less certain than in the past.

The impact on the local economy will depend on the magnitude of change in the local airline industry. The total impact on the local economy will exceed the direct impact of the layoffs and will likely be felt across a range of other industries within the region.

The decline can be estimated with various tools and economic models. The Cen-

ter for Social and Urban Research maintains the Pittsburgh REMI model, which is a detailed model of the regional economy. The REMI model can be used to quantify the impact of anticipated changes in the regional economy, from new factories or expansions to major plant closings or layoffs.

The REMI model can simulate the total impact of a

significant decline in the regional air transportation industry. Here a REMI simulation is run to estimate the total impact of potential air transportation industry layoffs of 3,000 local workers over the next year. This simulated mass layoff is not meant to reflect specific plans by local firms but is used to illustrate the use of the REMI

*Continued on page 5*

## Technology Innovation - New Patents

Technology development is becoming increasingly important in economic development across the country. Patent generation is a key indicator of innovation and core technology production. Data provided by CHI Research, Inc. provides a breakdown of patents generated in the Pittsburgh region over the last decade. Between 1995 and 2000, over 4,143 patents were attributed to the Pittsburgh region. The industries generating these patents were spread across a wide range of fields but with a high concentration in traditional industrial and manufacturing industries, including Chemicals, Machinery, and Electrical Components.

The greatest growth in patent generation came in fields that have not had significant patent generation here in the past. Comparing the period in the early 1990s to the period 1995-2000, patent growth was highest in biotechnology-related and pharmaceutical industries.

Why is technology development important? A recent Brookings Institution report

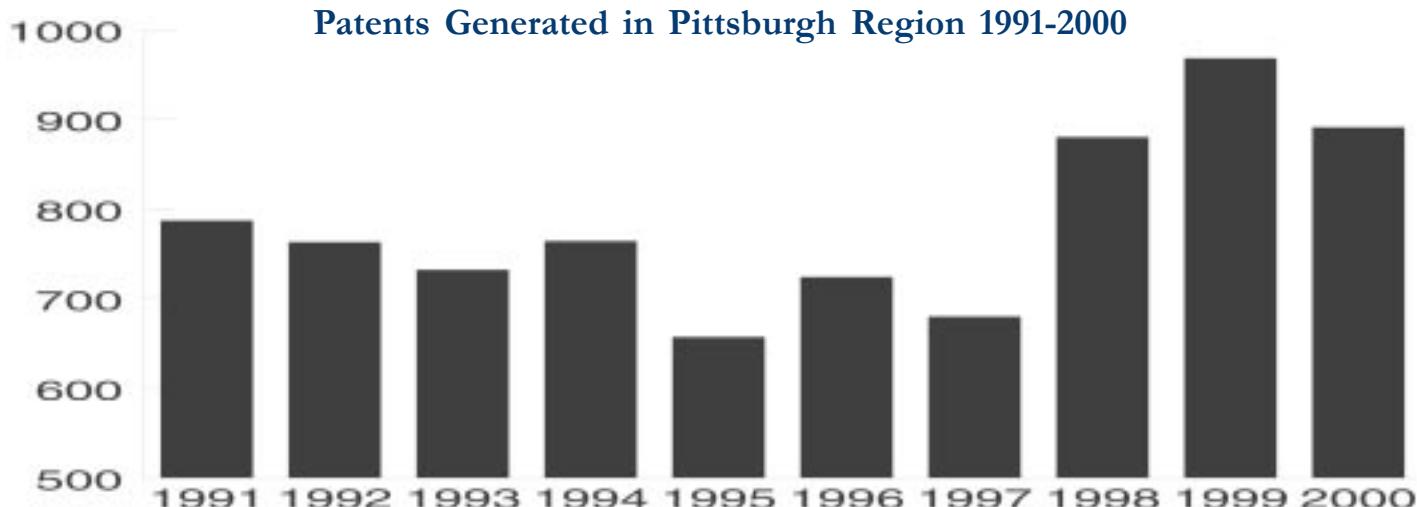
found that in 14 metropolitan regions with significant concentrations of high technology industries, employment growth in the 1990s averaged almost 50% more than in comparable metropolitan regions across the country.

Encouraging new high technology cluster industries to form in the Pittsburgh region is a key part of regional economic development strategies, including the Pittsburgh Digital Greenhouse and numerous biotechnology industry development programs.

One unique calculation by CHI Research is the "Science Index" of the patents generated by region. This represents the number of citations in other new patent applications. A high 'Science Index' represents a high level of innovation in locally generated patents. For Pittsburgh, the CHI calculated Science Index grew almost 600% (from 351 to 2,700) between 1991 and 1999. This may represent a core leading indicator of patent generation in the future from local industries and institutions.

### Pittsburgh Region Patent Production by Industry Ranked by % Growth 1995-2000

Industry	Number of Patents 1995-2000	% Growth 90-95 vs 95-2000
Biotechnology	80	344
Pharmaceuticals	85	193
Computers & Peripherals	238	116
Aerospace & Parts	11	83
Wood & Paper	75	70
Other Transport	102	62
Medical Equipment	177	46
Telecommunications	124	36
Motor Vehicles & Parts	91	34
Agriculture	65	33
Textiles & Apparel	62	32
Misc. Machinery	176	30
Semiconductors & Electronics	85	27
Fabricated Metals	195	20
Office Equipment & Cameras	80	14
Electrical Appliances/Components	310	14
Misc. Manufacturing	384	14
Medical Electronics	45	12
Plastics, Polymers & Rubber	351	7
Chemicals	315	5
Industrial Machinery & Tools	216	2
Measurement & Control Equip.	136	-6
Primary Metals	108	-9
Industrial Process Equipment	232	-13
Heating, Ventilation, Refrigeration	27	-13
Other	140	-18
Oil & Gas, Mining	53	-29
Glass, Clay & Cement	76	-33
Food & Tobacco	16	-41
Power Generation & Distribution	88	-53
Total Patents	<b>4,143</b>	<b>12</b>



Source for figure and table: CHI Research, Inc., with permission.

## Youth Migration Rates in the Pittsburgh Region

The latest estimates of population migration generated by the Center for Social and Urban Research show that the rate of net out-migration among the working age population is approaching some of the lowest levels in the last two decades. For the 1999-2000 period, the estimated net migration rate for the 20-29 year old population is less than 0.3% annually, and the estimates for all working age cohorts are under 1%.

U.S. Census Bureau estimates of total net migration of population from the six-county Pittsburgh region have remained fairly flat from 1994 through 1999, the last year the U.S. Census Bureau produced such statistics. Net migration is the total number of people who move into the region from elsewhere in the country minus the people leaving the region each year. Total net migration from the region has been between a negative 10,510 - 12,749

people annually in that time-frame as more people have left than arrive here each year.

The total net migration number produced by the Census Bureau does not say much about the varied rates of migration among different demographic groups within the population. In particular, the rate of migration is likely to vary significantly between different groups. Economic and social conditions have different impacts on the migration decisions of younger vs. older age cohorts. Working age segments of the population are more influenced by economic incentives to move from one region to another. Older individuals and families have likely spent a larger part of their lives in the area they currently reside in and are likely to remain there following retirement. Retired individuals are more likely to make migration decisions independent of local economic conditions.

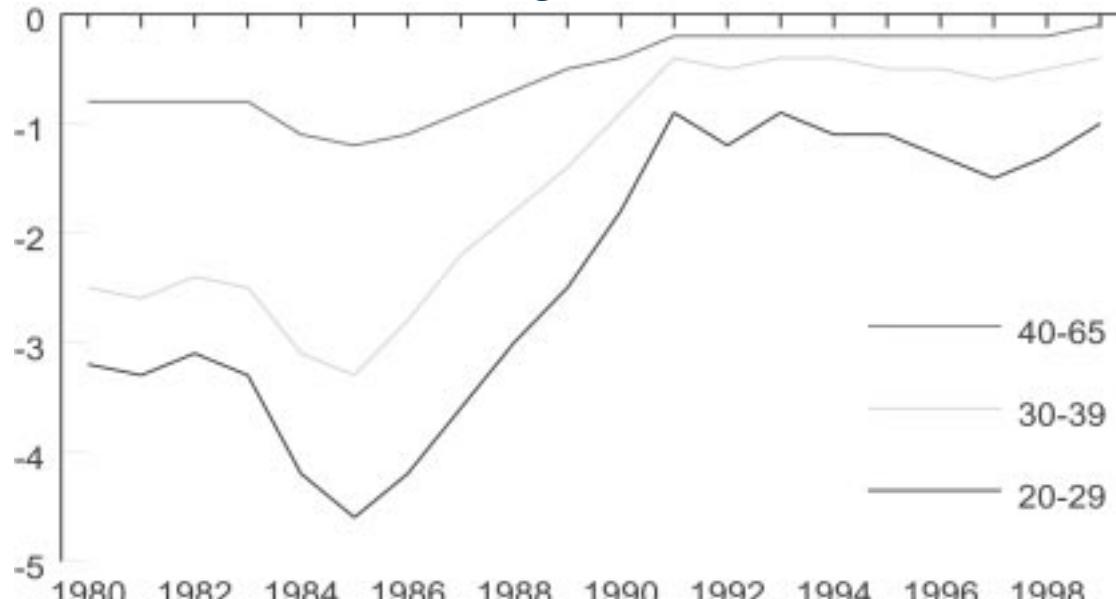
The Pittsburgh REMI model at the Center for Social and Urban Research estimates migration rates within specific age groups in the population with a cohort survival method. This method compares the annual change in population with the expected level of births and deaths. Along with other factors such as estimated international migration and the movement of federal workers, the residual population unexplained by all other factors is attributed to movement of people in or out of the region.

The economic conditions that affect net migration are not limited to local economic conditions in the Pittsburgh region. The choices available to the local labor force include job offers and economic factors in other metro regions across the country. How well the local economy is doing relative to other regional economies is key to understanding changes in net migration flows.

The only time in the last several decades that the Census Bureau estimated net migration *into* the region was in the early part of the 1990s. At that time, the national economy was in recession. That economic slowdown affected Pittsburgh in multiple ways. Some may have been forced to look for employment elsewhere, which would have increased out-migration. At the same time, the economic opportunities elsewhere were lower. This likely gave less incentive for people to leave the region in search of jobs. For regions where the slowdown was worse, some may have had incentives to consider moving to Pittsburgh.

From 1990 through the end of the decade, economic conditions across the country improved. Even though local labor market conditions were very favorable, the improved conditions elsewhere made competition for people difficult.

**Estimated Annual Percentage Net Migration Rates by Age Group  
Pittsburgh MSA 1980-2000**



## WAGE LEVELS IN THE PITTSBURGH REGION (CONT)

*Continued from page 1*

dustries which increased by 7.7% between 1999 and 2000. Mining industries, though much smaller overall in the region, had a larger increase of 8%. Manufacturing had one of the lowest overall increases in average wage and earning levels, increasing by just 1% in the year. Adjusting for inflation, manufacturing wage levels actually decreased in real purchasing power. Inflation between 1999 and 2000 is estimated at 3.3%. Nominal wages would have had to increase by at least that much just to maintain parity with the previous year. Accounting for inflation, only Mining, Construction, and Financial Services industries had meaningful increases in real income over the year.

Wage levels for specific occupations in the Pittsburgh re-

gion and their comparison to the national average are available online (see box below).

Among major industries, the average pay in Mining industries of \$63k annually per worker far exceeded other industries. However, Mining employment has been continuously decreasing in the region for most of the last century. The next highest paying industry in the region was in Financial Services, with an average annual pay of \$45k per worker in 2000. Financial Services may rank as one of the highest paid local industries, but compared to national averages, it is comparably one of the least paid, falling 13% below the national average of \$55k per worker.

Differences between local and national wage levels may represent a difference in the structure of the local industry

and labor force. Local wage levels are also affected by recent growth or decline in regional industries, which may result in wage pressure on specific occupations. Metropolitan regions that have experienced some of the highest employment growth rates

such as San Jose, CA, have correspondingly had some of the largest increases in annual wages (see description of wage data from the Bureau of Labor Statistics on the following page).

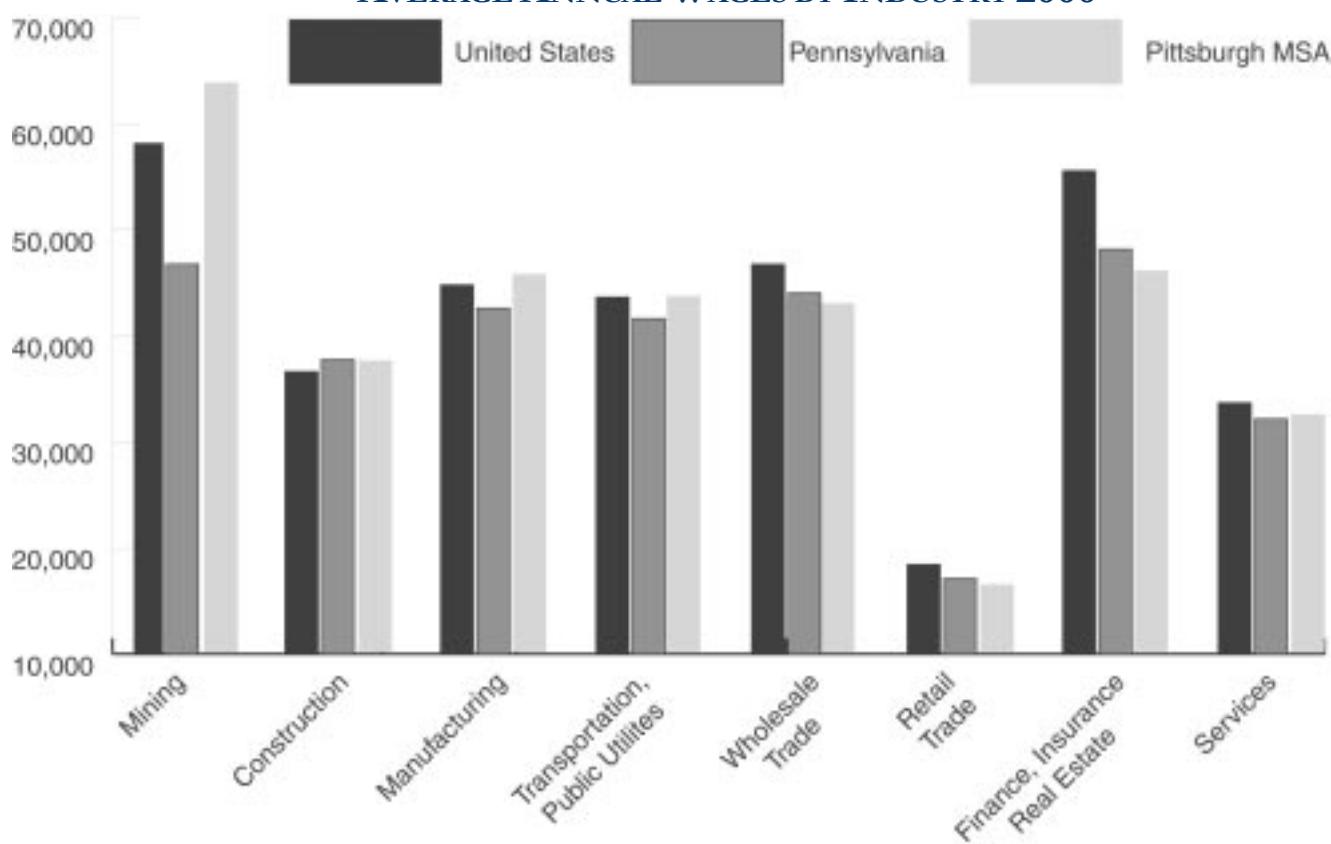
### What We Earn

How much do Pittsburghers earn compared to workers around the country? The PEQ has compiled U.S. Census Bureau annual wage estimates for both the Pittsburgh metropolitan region and the United States. Detailed comparisons for 530 separate occupational categories can be viewed online at the PEQ web site:

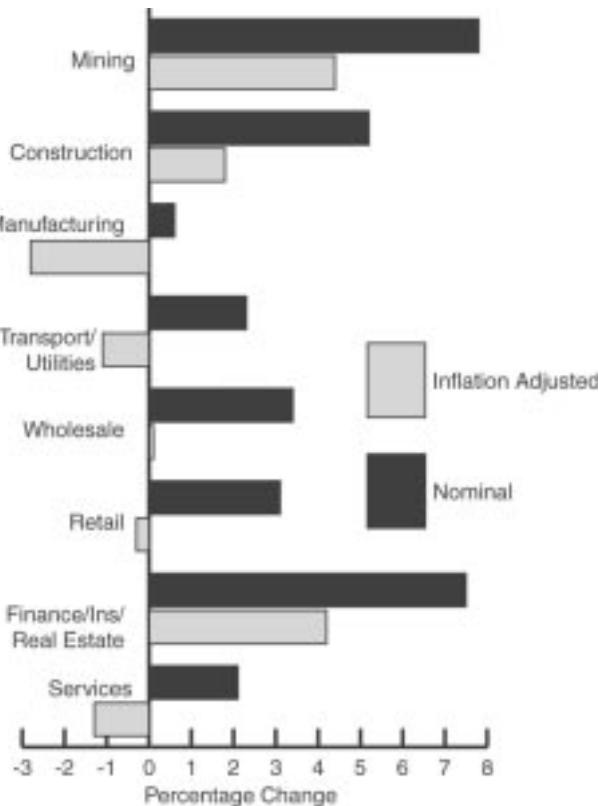
[www.pitt.edu/~peq](http://www.pitt.edu/~peq)

Select "Occupational Wage Levels" at the bottom of the web page.

### AVERAGE ANNUAL WAGES BY INDUSTRY 2000



## PITTSBURGH INDUSTRIES WAGE CHANGES 1999-2000



## Average Annual Wages in Metropolitan Areas 2000

Source: Bureau of Labor Statistics

Average annual pay of employees in the nation's 318 metropolitan areas increased by 6.0% from 1999 to 2000, according to preliminary data from the Bureau of Labor Statistics of the U.S. Department of Labor. The over-the-year gain was larger than last year's rise of 4.4%. Annual pay in metropolitan areas averaged \$36,986 in 2000, up from \$34,890 in 1999. Average annual pay for the entire nation, metropolitan and non-metropolitan areas combined, was \$35,296 in 2000, a 5.9% increase from 1999. Average annual pay data are compiled from reports submitted by employers subject to state and federal unemployment insurance (UI) laws covering 129.9 million full- and part-time jobs. Average annual pay is computed by dividing the total annual payrolls of employees covered by UI programs by the average monthly number of these employees. Pay differences between areas reflect the varying composition of employment by occupation, industry,

and hours of work, as well as other factors. Similarly, over-the-year pay changes may reflect shifts in these characteristics, as well as changes in the level of average pay.

Metropolitan and primary metropolitan statistical areas such as San Jose, CA led the country with an average annual pay level of \$76,076 in 2000. This area has had the highest average annual pay since 1997. San Francisco, CA had the second highest average annual pay level (\$59,314), followed by New York, NY (\$56,377), New Haven-Bridgeport-Stamford-Waterbury-Danbury, CT (\$50,585), and Middlesex-Somerset-Hunterdon, NJ (\$48,977). Average pay levels in these five metropolitan areas ranged from 32% to 106% above the average for all metropolitan areas in the nation. Of the 318 metropolitan areas in the nation, 34 reported average annual pay levels above the national metropolitan pay average of \$36,986.

## POTENTIAL AIRLINE INDUSTRY DECLINE (CONT)

model in quantifying the total economic impact of specific industry slowdowns.

The changes to the regional economy can be expected to include both immediate and long-term effects. Some changes will take place over a number of years as workers and firms adjust. Looking at what the model predicts 10 years from the initial layoffs, projections will better reflect the long-term impact of a potential change in the region.

Laid-off workers who can find local jobs can be expected to stay in the region, but some will look for work elsewhere. Migration out of the region is estimated by the REMI model to increase as a result of the simulated layoffs. The loss of workers and families from the region is estimated to be a total of 10,250 people by 2010.

The local air transportation industry serves a national ridership more than local demand. Exports of goods and services from the region are expected to decline by approximately \$69 million.

The loss of jobs will have the effect of pushing up local labor supply without a corresponding increase in labor de-

mand by other firms. Pressure on local wages is estimated to push down average wages by \$115 per person annually.

Though small, some industries will have positive labor market impacts as laid-off workers switch into industries with higher labor demand.

### Projected Impact of a 3,000 Person Reduction in Air Transportation Employment - 10 Years Out

Total Regional Employment	-7,019
Gross Regional Product*	-\$414
Personal Income *	-\$577
Population	-10,250
Labor Force	-6,216
Output *	-\$764
Exports from Region*	-\$69
Average Annual Wage Rate	-\$115

\* Millions of 1992 adjusted dollars(\$)

## Census 2000: Housing Vacancy Rates

As more data from the 2000 U.S. Census is released, a more complete picture of the regional economy can be drawn. Included in statistics released over the summer are detailed vacancy rates for housing units by municipality in the Pittsburgh region.

Within the region, Allegheny County has the highest variation in vacancy rates between municipalities within the county. There are 583,646 housing units in Allegheny County among the 130 municipalities that make up the county.

The overall rate of housing unit vacancy is 8% for Allegheny County and 7.6% for the region as a whole. Those overall statistics do not show what is a wide variation in the vacancy rate among different areas within the region. Municipalities within the Mon Valley continue to maintain some of the highest vacancy rates within the region and the state. Braddock, Homestead, Clairton, and Wilmerding all fall within the top 10 municipalities in Allegheny County with the highest vacancy rates.

Braddock in particular has one of the highest housing unit vacancy rates in the state after accounting for seasonal housing units. Only Centralia Borough, evacuated over two decades ago due to uncontrolled mine fires, has a higher adjusted vacancy rate at 37.5%.

Municipalities with the

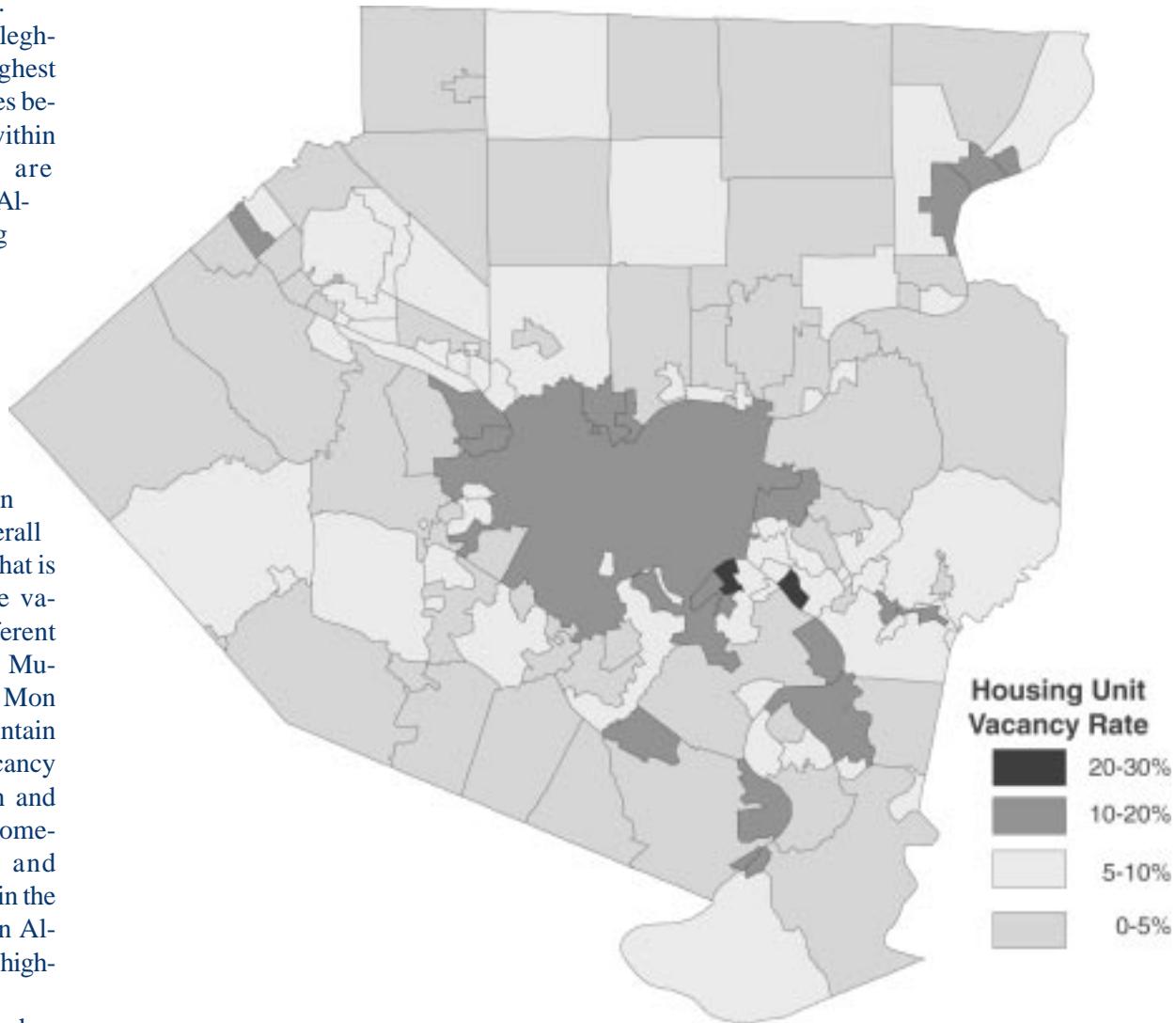
highest vacancy rates correlate closely with the municipalities with the largest drops in population over the last decade.

Municipalities that have the lowest vacancy rates include Baldwin (1.3%), Upper

St. Clair (1.8%), and Kennedy Township (2.1%).

The vacancy rate is an indicator of local economic conditions. Where housing markets are strong, housing unit vacancy rates can be expected to be low.

Housing unit vacancy rates for all Allegheny County municipalities are available online at the PEQ web site: <http://www.pitt.edu/~peq/vacancy.html>



**Vacancy Rates for Allegheny County Municipalites 2000**

Municipality	Highest Vacancy Rate	Municipality	Lowest Vacancy Rate
Braddock Borough	28.5%	Baldwin Township	1.3%
Homestead Borough	22.4%	Upper St. Clair Township	1.8%
Duquesne City	15.6%	Kennedy Township	2.1%
Tarentum Borough	15.1%	Kilbuck Township	2.5%
Clairton City	14.7%	Green Tree Borough	2.6%
McKees Rocks Borough	14.6%	Franklin Park Borough	2.7%
Wilkinsburg Borough	14.6%	Osborne Borough	2.7%
Wilmerding Borough	13.9%	Thornburg Borough	2.7%
Stowe Township	13.9%	Bradfordwoods Borough	2.9%
West Homestead	13.6%	Churchill Borough	3.1%

*Source: Compiled from Census 2000 statistics*

## Minority and Women Business Enterprises Update

Some of the final data released by the Census Bureau from the 1997 Economic Census includes data on breakdown of minority and women owned business enterprises (MWBE) in the Pittsburgh region.

There were 6,949 (12%) firms identified as being owned by women and 1,693 (3%) identified as having minority owners among 46,069 firms with paid employees in the Pittsburgh region. Minority owned firms increased by 81% compared to five years earlier when total minority owned firms with paid employees measured 933 in the region.

Minority owned firms had total annual sales in excess of \$1.1 billion in 1997 and total annual payroll measured at just over \$342 million.

Minority owned businesses were concentrated in service and retail industries. Among minority owned businesses, 37% were in service-related industries and 21% were in retail trade. Most minority owned firms reported having African American owners (557 of 1,693), but significant numbers of minority owned firms were Hispanic (308 of 1,693) and American Indian (127 of 1,693) owned.

Complete information on minority and women owned business enterprises in the Pittsburgh region can be obtained from the Census Bureau online at the following URL:

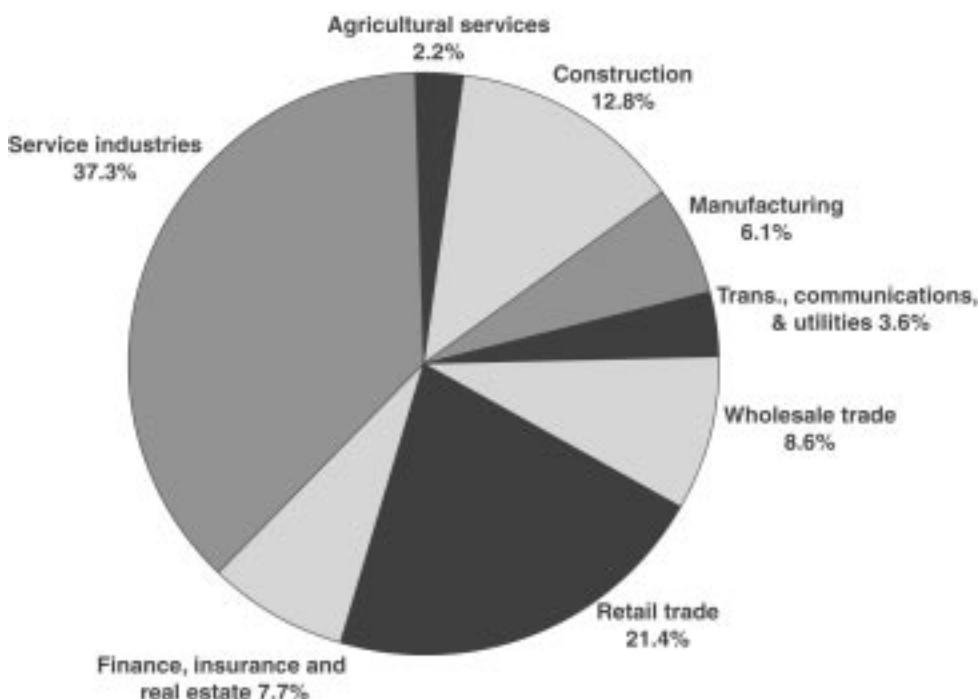
<http://www.census.gov/epcd/mwbe97/metro/M6280.html>

### Breakdown of Firms in the Pittsburgh Region - 1997

All Firms	Firms*	Receipts(\$1,000)	Employees	Payroll(\$1,000)
	46,069	175,853,910	973,896	27,060,306
Total minorities	1,693	1,135,127	13,954	342,930
Black	557	269,317	4,033	70,937
Hispanic	308	140,908	1,946	38,349
Cuban	3	D	20 to 99	D
Mexican American	11	1,290	28	342
Puerto Rican	96	58,505	730	16,377
Spaniard	96	25,926	393	6,597
Hispanic Latin American	43	31,714	416	10,814
Other Spanish/Hispanic/Latino	59	D	250 to 499	D
American Indian and Alaska Natives	127	35,752	622	5,952
Asian and Pacific Islander	728	692,536	7,408	230,437
Asian Indian	238	445,613	5,364	193,224
Chinese	181	84,691	908	9,862
Filipino	32	16,557	261	9,189
Japanese	16	D	20 to 99	D
Korean	182	80,620	622	13,572
Vietnamese	0	0	0	0
Other Asian	63	39,794	181	2,605
Hawaiian	5	D	20 to 99	D
Other Pacific Islander	10	D	0 to 19	D
Women	6,949	5,871,079	58,402	1,100,708

\* = Firms with paid employees D=non-disclosable due to confidentiality restrictions

### Breakdown By Industry - Minority Owned Enterprises Pittsburgh Region 1997



Source: 1997 Economic Census - U.S. Census Bureau

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