

PITTSBURGH ECONOMIC QUARTERLY

University Center for Social and Urban Research

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RESEARCH IN INDUSTRY STUDIES

by Frank Giarratani

A new academic community is coalescing around the idea that industry-based research can meet scholarly and practical objectives more effectively, if faculty members are informed by direct, personal contact with people who work in the subject industry. The Alfred P. Sloan Foundation has been the catalyst for the creation of this new community of scholars, and the foundation's investments in Pittsburgh have been some of the most important in the community's development.

The Center for Industry Studies at the University of Pittsburgh, which was endowed by an anonymous gift to the university in 2001, is a direct outgrowth of the Sloan Steel Industry Center. From its beginning in the early 1990's, the Sloan Industry Centers' program (www.industry.sloan.org) has targeted investments toward excellence in academic research in order to promote industry expertise in key academic research institutions. There are now more than 20 Sloan Industry Centers, but the Sloan Steel Industry Center was one of the first. It was established in 1991 as a partnership by the University of Pittsburgh and Carnegie Mellon University, through the joint leadership of Roger S. Ahlbrandt (Pitt) and Richard Cyert (CMU).

The success of the Sloan Steel Industry Center helped

to stimulate interest in industry-based research here in Pittsburgh, and this led to the establishment of the University of Pittsburgh's Center for Industry Studies (www.industrystudies.pitt.edu/), as well as two new research centers at CMU — the Carnegie Mellon Electricity Industry Center and the Software Industry Center. Collectively, this places Pittsburgh, Pennsylvania with Cambridge, Massachusetts, as currently the two largest geographic concentrations of academic industry-based research coming out of the Sloan program.

The key to our success is that faculty members build partnerships with industry. At a minimum, the partnerships involve direct access to people in their places of work and access to plants, where first-hand experience and primary data can be obtained. Some of the partnerships developed by Sloan Industry Centers go much further and may involve advisory boards, financial support, and contract research targeted to the needs of specific companies. The research is often multi-disciplinary, and always involves scholars who are willing to invest the substantial time that is required to truly understand the markets and institutions in which firms compete in particular industries — nationally and globally.

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Why Recent Hires Came to Pittsburgh

by Susan B. Hansen

The Pittsburgh region needs to encourage more in-migration of young and mid-career college graduates in order to meet the needs of local employers for highly skilled workers, attract business, and boost tax revenues. To find out why some of these people had recently taken jobs in Pittsburgh,

University of Pittsburgh's Susan B. Hansen (Political Science Department) and Leonard Huggins (Graduate School of Public and International Affairs) surveyed college graduates from outside the region in late 2002 to find out what had attracted them to Pittsburgh. The study, "Why Recent New

Hires Came to Pittsburgh and How to Attract More of Them," was funded by the Richard King Mellon Foundation. The goal was to suggest policies that might further encourage in-migration by well-educated young and mid-career professionals who did not have previous ties to this region.

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SINGLE PERSON FIRMS IN THE PITTSBURGH REGION

by Christopher Briem

An often uncounted, but important, sector of the regional economy is made up of one-person, non-employer, business establishments. These micro-enterprises do not have any paid employees but account for 66% or 116,299 of the 174,000+ business establishments in the Pittsburgh Metropolitan Region. Together these non-employer businesses accounted for \$4.8 billion of goods and services produced within the region in 2001.

Small business activity often reflects major trends in the overall economy. Nationally, the non-employer educational services sector, which excludes most schools, colleges, and universities, showed the fastest growth in receipts, up 64% from \$2.8 billion to \$4.6 billion between 1997 and 2002. In the Pittsburgh region the overall number of non-employer establishments has been stable in recent years, though specific industries grew. The fastest growth in regional non-employer establishments was in educational services, up 34% between 1997 and 2001 to 2,383 establishments. Finance and insurance saw the largest growth in receipts, up 64% over the same period to \$363 million. On the other hand, the number of regional non-employer establishments in manufacturing, wholesale trade and profes-

sional services decreased by more than 10% between these years.

One-person businesses are measured by the non-employer statistics program of the U.S. Census Bureau. These data summarize the number of establishments and receipts of companies with no paid employees. These non-employers are typically self-employed individuals or partnerships operating businesses that they have not chosen to incorporate. To be included in non-employer statistics, businesses must also have annual business receipts of \$1,000 or more (\$1+ in construction industries.) and be subject to federal income taxes. Not all self-employed individuals are counted as non-employers. Self-employed owners of incorporated businesses typically pay themselves wages or salary, and would not be included in non-employer statistics.

Locally and nationally, one-person businesses are dominated by establishments in real estate, construction, professional, scientific, and technical services, and retail trade industries. In the Pittsburgh region, average annual receipts range from over \$81,000 per year in real estate to \$13,000 in educational service establishments.

Non-employer statistics do not cover all small business activity in the

region. Firms that have even one paid employee are not counted in these statistics. There are over 30,000 establishments in the Pittsburgh region with between 1 to 4 employees and over 2,000 establishments with between 5-9 employees.

One-person businesses are an important indicator of entrepreneurial activity. Some small businesses will eventually grow into larger firms which will generate increased investment and employment in the region. Even firms that remain smaller than average contribute to the overall business climate and competitiveness of the region through the goods and services they offer to other employers.

What are the unique problems faced by small and one-person firms? One-person firms must deal with many of the same challenges faced by all small businesses. Arranging for health insurance and other benefits normally offered by larger firms is more difficult for the self-employed. A small business may also need greater support from outside suppliers for goods and services that larger firms can produce in-house. Streamlined access to finance and assistance with government regulation compliance are widely sited as programs that promote small business growth.

Pittsburgh Region Non-Employer Statistics

	2001		1997		Growth 1997-2001	
	Establishment	Receipts	Establishments	Receipts	Establishments	Receipts
Construction	15,228	697,555	15,550	643,059	-2.1%	+8.5%
Manufacturing	1,795	77,067	2,016	74,106	-11.0%	+4.0%
Wholesale trade	2,984	231,091	3,361	239,585	-11.2%	-3.5%
Retail trade	13,330	521,435	14,221	533,755	-6.3%	-2.3%
Transportation, warehousing	4,247	235,946	4,348	218,241	-2.3%	+8.1%
Information	1,614	39,870	1,233	38,221	+30.9%	+4.3%
Finance, insurance	5,663	363,042	5,271	219,078	+7.4%	+65.7%
Real estate, rental, leasing	11,402	919,825	9,784	650,896	+16.5%	+41.3%
Professional, scientific, technical services	18,420	637,923	20,755	597,817	-11.3%	+6.7%
Administrative, support	6,536	133,433	5,748	108,742	+13.7%	+22.7%
Educational services	2,383	30,318	1,817	22,493	+31.2%	+34.8%
Health care, social assistance	8,108	244,219	7,336	246,518	+10.5%	-0.9%
Arts, entertainment, recreation	5,636	100,917	5,018	86,178	+12.3%	+17.1%
Accommodation, food services	1,626	109,995	1,549	78,809	+5.0%	+39.6%
Other services	15,802	391,452	13,537	319,110	+16.7%	+22.7%
All Sectors	116,299	4,828,224	113,272	4,161,183	+2.7%	+16.0%

Source: State of the Cities Data System (SOCDS), Department of Housing and Urban Development

RESEARCH IN INDUSTRY STUDIES (cont'd)

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This approach works because it takes advantage of the natural inclination that faculty members have toward problem-solving. Scholars are driven in their research when they are confronted by interesting puzzles. The trick is to point them toward interesting puzzles that address truly important problems. By visiting plants and building partnerships with industry, scholars are more likely to get their facts straight and more likely to be confronted with problems that matter. In fact, the historical basis for this approach to research and its success can be traced back, at least, to British economist Alfred Marshall (1842-1924), one of the most important economic theorists of all time. Marshall visited manufacturing plants over a 50-year career precisely so that he could get his facts straight and be pointed to problems that affected the well being of society.

A brief description of projects at the Center for Industry Studies will help to explain how this work is accomplished.

The Steel Plant Database, Frank Giarratani, Gene Gruver, and Carey Treado, Principal Investigators

The database compiled at the Center for Industry Studies to support research on the steel industry is extensive, and it includes records related to all plants in the United States with raw steel-making capacity from 1978 onward. We track steel-making and casting capacities by drawing data from industry sources, and the data can be analyzed using relational database software. When questions about basic data arise, we turn for help to industry partners and consult with technology experts. The database is now a powerful tool for economic and geographic analysis related to steel markets in the United States, and public access to the data for Pennsylvania plants is available free-of-charge via the internet (www.industrystudies.pitt.edu/

[database.htm](#)).

The U.S. Regional Ferrous Scrap Model, Gene Gruver and Frank Giarratani, Principal Investigators

Ferrous scrap markets are an important factor determining the competitiveness of American steel producers. In order to better understand how events, like changes in regional steel-making capacity, can link to the price of ferrous scrap, we developed a computer-based model that solves for the structure of ferrous scrap prices, given the observed distribution of supply and demand across the continental United States. Place-specific prices are generated for 1,212 supply and 240 demand regions, and the model also describes detailed flows of ferrous scrap across regional boundaries. Maps of the solution clearly delineate price gradients that are highly characteristic of known geographic pricing patterns.

Industry Clusters Related to Steel Minimills, Frank Giarratani, Gene Gruver, and Randall Jackson, Principal Investigators.

The advent of slab casting in electric arc furnace (EAF) steel mills resulted in a new wave of minimill construction during the 1990s. In less than 10 years, 11 plants were constructed in the United States based on this new technology. Some were built in established steel industry agglomerations, but others were built in regions that had little or no prior steel-making activity — known as greenfield locations. Our research compares key characteristics of the inter-industry relationships that developed around steel plants in greenfield locations with those of new slab manufacturers who located in established industry agglomerations. In this way, we bring new evidence to bear on: (1) the strategies adopted by EAF steel plants for market entry; (2) the beneficial economic effects of collocation by steel makers and related facilities; and (3) the process of ag-

glomeration in greenfield locations. Our goal is to identify the most important aspects of agglomeration economies for firm competitiveness in the steel industry, especially as they relate to product and process innovations.

In each of these projects, scholars rely on contacts with partners in industry to help bring about research results. We use this approach when we lay the groundwork for new projects. In April 2004, for example, the Center for Industry Studies and the Katz Graduate School of Business organized a workshop on Globalization in the Steel Industry. The goal of the workshop was to help establish a research agenda that would engage scholars from around the world. With financial support from the University Center for International Studies and the International Business Center, academic steel experts from Asia, Europe, and North America came to Pittsburgh, where they learned from leading American and European steel executives how the industry views the problems and promise associated with this important phenomenon.

The goal of research in the Center for Industry Studies is excellence in scholarship and public service. Education also is an important part of our mission. Because our scholarship is grounded in real world problems, the partnerships that we develop with industry lead to research that also can be effective in practical ways. In particular, our ongoing project related to steel industry clusters may be especially relevant to steel industry specialists in Pittsburgh and to those interested in this region's economic development. We will look forward to reporting our findings from this study in a later issue of the *Pittsburgh Economic Quarterly*.

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CITY OF PITTSBURGH EMPLOYMENT PATTERNS

by Christopher Briem

In recent decades, population growth in suburban areas has greatly outpaced that in central cities. Business activity has also shifted to the suburbs. In many metropolitan areas, the downtown central business district (CBD) has long since ceased to be the economic hub of the region. The national trend is reflective of, but not identical to, changes within the Pittsburgh region.

There are distinct differences between the current patterns of economic activity here compared to typical regions. In particular, the City of Pittsburgh has retained a large proportion of regional employment. Population has declined, but increasing levels of commuting into the city have translated into a continued retention of jobs within the city. At the same time, the types of jobs located in the city have changed significantly compared to the jobs that have emerged in the surrounding region.

To compare job growth in the City of Pittsburgh and its suburbs, we can measure the location of economic activity by analyzing the location of jobs by establishment rather than the resi-

dence of the worker. Many employment measures use Census data, which count jobs by worker residence. Using data developed by the U.S. Department of Housing and Urban Development, a special extract of County Business Patterns data provides a breakdown of employment based on the location of individual firm establishments. This source also allows us to examine differences in average annual pay between city and suburban jobs. The "suburbs" are defined as the metropolitan area total less the equivalent data for the City of Pittsburgh.

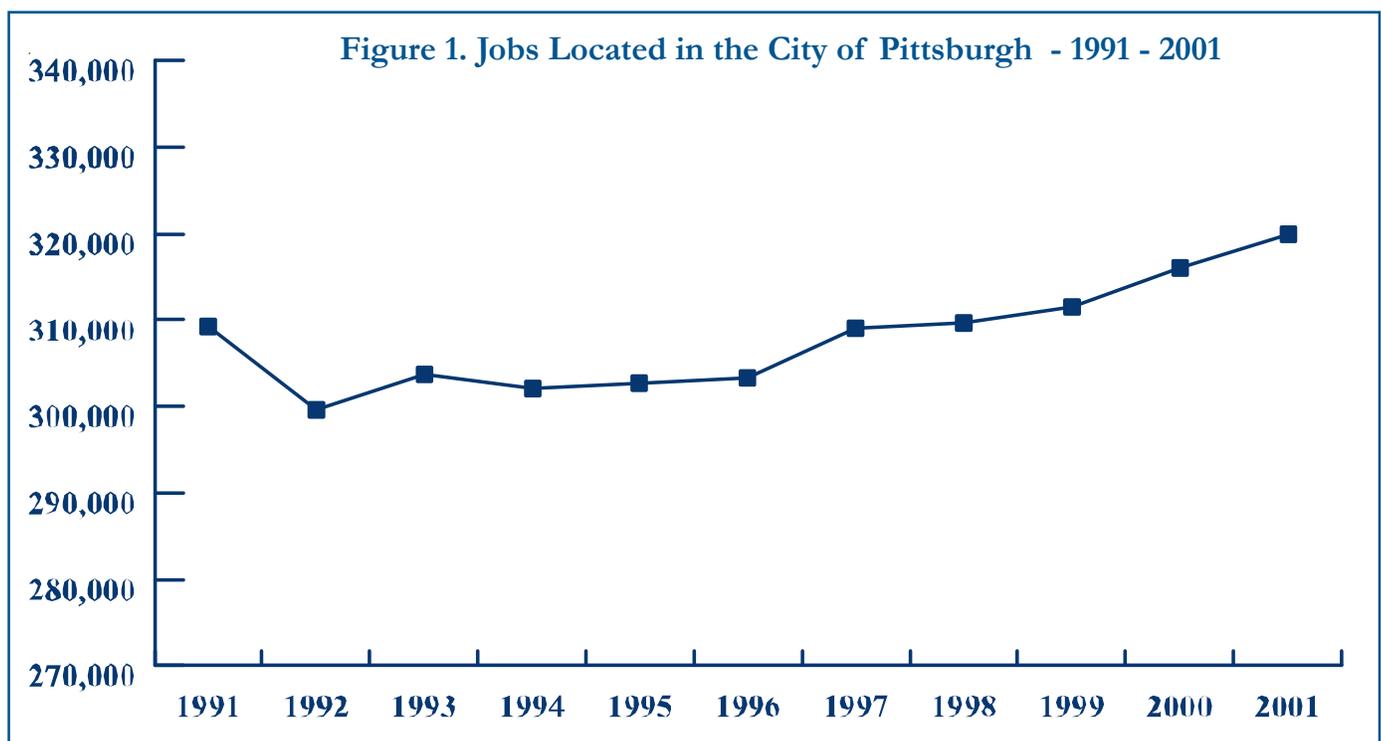
Jobs located in the City of Pittsburgh increased from 299,691 in 1992 to 319,946 in 2001, an increase of 6.8%. Over the same period, jobs in the suburbs increased by 12.1% to 718,695.

As is typical with many metropolitan areas, the jobs located in the central city pay more than typical jobs elsewhere in the region. In 2001, jobs located in the City of Pittsburgh paid an average of \$39,794 annually compared to \$30,284 for jobs elsewhere in the Pittsburgh region. Annual pay for jobs in the City of Pittsburgh rose faster

than suburban jobs. The average job in the City paid 31.4% more than the typical suburban job in 2001, an increase from a 20.6% disparity in 1991.

The pattern of employment is significantly different between the City and suburbs. Service industry jobs make up over one-half of all jobs located in the City of Pittsburgh, compared to just over one-third in the suburbs. The City also has a much larger proportion of jobs in the financial services industries compared to the suburbs, 13% vs. 4%, respectively. Likewise, suburban employment has a greater percentage of jobs in manufacturing, construction, retail and wholesale trade industries.

The Pittsburgh region has historically had an economic and population base spread out along the rivers. The concentration of population in associated mill towns left the City with a relatively smaller proportion of regional population than was typical in many large cities. With City boundaries mostly unchanged in a century, coupled with residential suburbanization trends, the City accounted for only 14% of regional population in



Source: State of the Cities Data System (SOCDS), Department of Housing and Urban Development

2000. But unlike many other metro areas, it has retained a relatively high proportion of the region’s jobs. Though suburban employment growth continues to outpace job growth in the City limits, jobs in the City have grown over the past decade and held nearly one-third of the region’s total jobs in 2001.

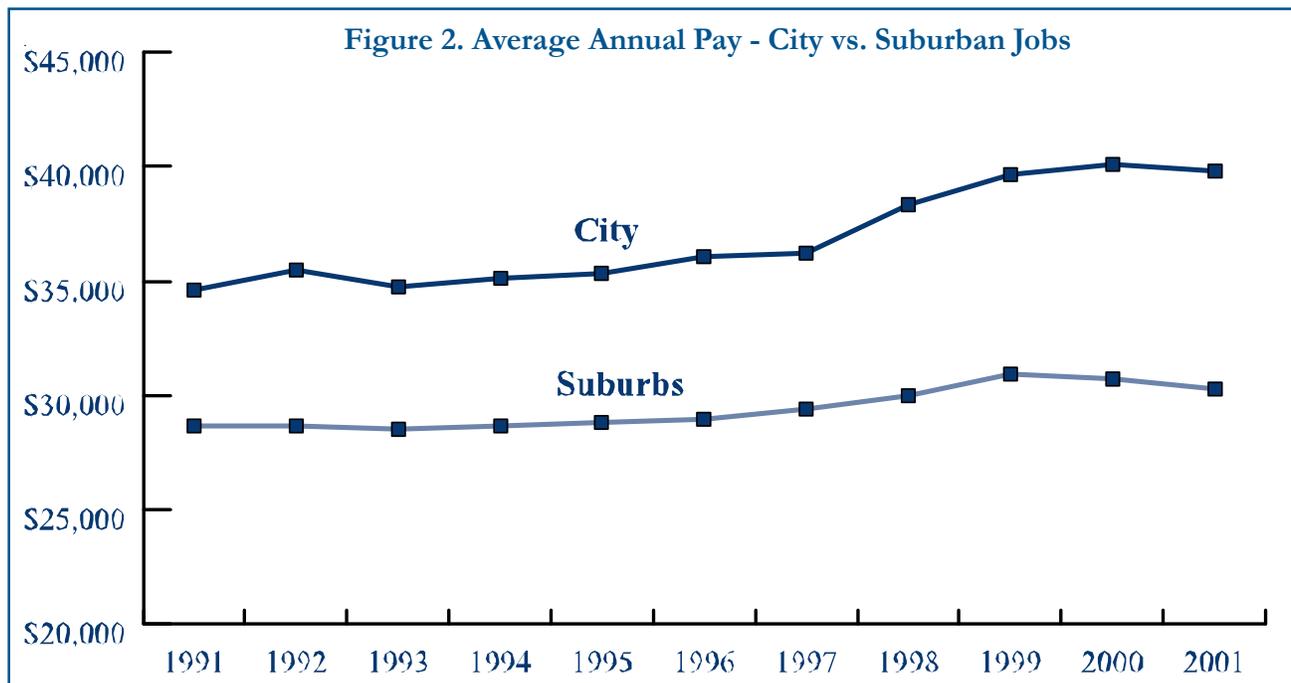
Most City jobs are held by suburban commuters. Census 2000 data show that the total number of City of Pittsburgh residents actually employed in the City stood at just over 110,000. Roughly 200,000 workers, holding two-thirds of the City’s jobs, commute into the City from elsewhere in the region.

Employment patterns in the City of Pittsburgh have influenced ongoing debate over the City budget crisis. The City currently collects an annual Occupational Privilege Tax (\$10) for each employee who works within the City limits, regardless of where they live. City residents also pay an earned income tax to both the City and School District. Various proposals, including the “Act 47” comprehensive report have recommended significant changes in both the tax rates and tax structure for the City.

Industry	City of Pittsburgh		Suburbs	
Agriculture	1,851	(0.6%)	3,347	(0.5%)
Mining	494	(0.2%)	*	
Construction	7,926	(2.5%)	53,404	(7.4%)
Manufacturing	21,520	(6.7%)	110,090	(15.3%)
Transportation, public utilities	16,997	(5.3%)	*	
Wholesale trade	16,719	(5.2%)	49,095	(6.8%)
Retail trade	38,587	(12.1%)	166,556	(23.2%)
Finance, insurance, real estate	41,647	(13.0%)	32,237	(4.5%)
Services	173,975	(54.4%)	240,539	(33.5%)
Other (includes suppressed data)			63,427	(8.8%)
Total	319,946		718,695	

* Certain data suppressed due to confidentiality restrictions.

Source: State of the Cities Data System, Dept of Housing and Urban Development



Source: State of the Cities Data System (SOCDS), Department of Housing and Urban Development

Why Recent Hires Came to Pittsburgh (cont'd)

Continued from page 1

Seventy-seven New Hires were located, comprised of a diverse group coming from all across the country, including the Sun Belt. The parameters of this small sample are quite similar in terms of age, sex, diversity, graduate vs. undergraduate degrees, and technological vs. non-technological fields to those found for subjects in the 2001 survey of over 2000 recent graduates of the University of Pittsburgh, Carnegie Mellon University, and Duquesne University (see Fall 2003 *Pittsburgh Economic Quarterly*). New Hires were employed in a broad range of occupations, were technologically savvy, and made extensive use of the Internet during their job searches.

Four factors persuaded these subjects to consider a job in Pittsburgh:

1. Young professionals at a pivotal point in life looking for the next step.
2. Transfer or relocation initiated or encouraged by their previous employer.
3. Dissatisfaction with their previous job or location.
4. Serendipity; an opportunity in Pittsburgh presented itself to someone not actively looking for

a job here.

A “process” model was developed to research how subjects explored career options and weighed opportunities in Pittsburgh. Personal connections proved to be crucial in the recruiting process, and many area employers were proactive in their efforts to recruit.

The major reason for taking the Pittsburgh job was the chance to gain experience in a particular field. Family ties in this area for one’s “significant other” were often important considerations for New Hires, and a job for one’s spouse or partner was the second most important reason given for taking a job in Pittsburgh. Many of these New Hires perceived significant economic opportunities in the Pittsburgh region, as compared with their previous location or position, but a few did take a pay cut to come here. As in the earlier study and a recent analysis of recent area graduates working for nonprofits, significant gender disparities in salaries were found.

As the table below shows, gaining experience and family/partner issues were more important for women; men stressed salary and work with a par-

ticular employer.

Many of these New Hires had the “smoky city” image of Pittsburgh before coming here, but their current perceptions of the City were positive with respect to housing costs, amenities, family considerations, and opportunities for leisure activities. Nearly 60% plan to stay in Pittsburgh. However, *none* of the minorities in the group expect to be here three years from now, and they raised troubling questions about the lack of diversity in the City.

Major recommendations for attracting and retaining more New Hires include:

For employers: Pay competitive salaries, address gender disparities in salaries, provide on-site amenities and a family-friendly workplace, offer advancement opportunities, such as tuition benefits, and put adequate resources into recruiting and diversity efforts.

For colleges and universities: Keep tuition affordable and continue to recruit actively outside Western Pennsylvania

For public, private, and non-profit groups concerned with economic development: Use the Internet to stress Pittsburgh’s economic opportunities and attractions for young people, develop and advertise opportunities for trailing spouses/partners, and promote more local amenities attractive to younger people (both men and women). Downplay the emphasis on professional sports and on Pittsburgh as a low-wage region.

For all of us: Confront the on-going racial problems in Pittsburgh with respect to hiring, housing markets, police conduct, and cultural amenities for a diverse population. Provide more leadership opportunities and recognition for young professionals from minority backgrounds.

Most Important Reason for Taking Job in Pittsburgh

	All	Men	Women
Gain experience in this field	23.8%	11.5%	32.4%
Partner/family issues	14.3%	11.5%	16.2%
Work in field of study	12.7%	11.5%	13.5%
Work with this company	9.5%	15.4%	5.4%
Salary, benefits	9.5%	15.4%	5.4%
Location in SW PA	9.5%	11.5%	8.1%
Advancement opportunities	7.9%	7.7%	8.1%
Unhappy with previous job	3.2%	3.8%	3.2%
Transferred by company	3.2%	3.8%	2.7%
Other	6.4%	7.7%	5.4%

Recent Migration Trends in Pittsburgh: July 1, 2002-July 1, 2003

Metropolitan Regions With Largest Net Migration Flows from the Pittsburgh Region

Metropolitan Region	To Pittsburgh	From Pittsburgh	Net-Migrants
1) Tampa-St. Petersburg-Clearwater, FL	273	635	-362
2) Phoenix-Mesa-Scottsdale, AZ	271	631	-360
3) Washington-Arlington-Alexandria, DC-VA-MD-WV	1,008	1,364	-356
4) Youngstown-Warren-Boardman, OH-PA	687	994	-307
5) Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	957	1,256	-299
6) Columbus, OH	384	594	-210
7) Orlando, FL	111	300	-189
8) Cape Coral-Fort Myers, FL	69	247	-178
9) Miami-Fort Lauderdale-Miami Beach, FL	428	598	-170
10) Charlotte-Gastonia-Concord, NC-SC	170	335	-165
11) Raleigh-Cary, NC	92	242	-150
12) Baltimore-Towson, MD	350	487	-137
13) Sarasota-Bradenton-Venice, FL	78	200	-122
14) Atlanta-Sandy Springs-Marietta, GA	320	434	-114
15) Los Angeles-Long Beach-Santa Ana, CA	377	489	-112
16) Jacksonville, FL	51	135	-84
17) Indianapolis, IN	26	109	-83
18) Lakeland, FL	22	93	-71
19) Deltona-Daytona Beach-Ormond Beach, FL	55	120	-65
20) San Diego-Carlsbad-San Marcos, CA	184	249	-65

Metropolitan Regions With Largest Number of In-Migration to the Pittsburgh Region

Metropolitan Region	To Pittsburgh
1) Washington-Arlington-Alexandria, DC-VA-MD-WV	1,008
2) New York-Northern New Jersey-Long Island, NY-NJ-PA	973
3) Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	957
4) Youngstown-Warren-Boardman, OH-PA	687
5) Cleveland-Elyria-Mentor, OH	574
6) Erie, PA	571
7) Chicago-Naperville-Joliet, IL-IN-WI	470
8) Miami-Fort Lauderdale-Miami Beach, FL	428
9) Columbus, OH	384
10) Los Angeles-Long Beach-Santa Ana, CA	377
11) Boston-Cambridge-Quincy, MA-NH	363
12) Johnstown, PA	352
13) Baltimore-Towson, MD	350
14) Harrisburg-Carlisle, PA	344
15) Atlanta-Sandy Springs-Marietta, GA	320
16) Weirton-Steubenville, WV-OH	305
17) Tampa-St. Petersburg-Clearwater, FL	273
18) Phoenix-Mesa-Scottsdale, AZ	271
19) San Francisco-Oakland-Fremont, CA	249
20) Dallas-Fort Worth-Arlington, TX	227

Compiled from Internal Revenue (IRS) Service County to County Migration Data.

Both in-migration and out-migration imputed from the total number of exemptions claimed on IRS tax filings.

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