Where Did the Workers Go? (Update)

Independent Fiscal Office | Research Brief | October 2022

This research brief updates an original release in July 2022 (updated August 2022) to include data for more recent months and new demographics data from the IFO's Demographic Outlook (published October 2022). Tables 1 to 3 and the accompanying text are updates, while Table 4 is new.

For the past year, many employers have noted ongoing challenges hiring and retaining staff due to labor market conditions that remain very tight. For Pennsylvania, the latest data (September 2022) show an unemployment rate of 4.1% and 263,560 unemployed residents seeking work.[1] The unemployment rate is now at the lowest value on record (first published in 1976). Other labor market data show that the unemployment rate and number unemployed are historically low not only due to strong labor demand, but also because many workers have left the labor force and no longer work or actively seek employment. This research brief quantifies the current excess demand for labor, the magnitude of the state labor force contraction and the impact of near-term demographic trends on the state labor force through 2025.

Labor Demand and Job Openings

The primary metric used to quantify labor demand intensity is the ratio of job openings to the number of unemployed.[2] Job openings data are published monthly by the U.S. Bureau of Labor Statistics (BLS) and is known as JOLTS (Jobs Openings and Labor Turnover Survey). The survey data are collected from sampled establishments and the number of unfilled jobs is viewed as an important measure of labor demand.

Table 1 presents the ratio of job openings to the number of unemployed for each August from 2018 to 2022 (latest data) for Pennsylvania and the U.S. Prior to COVID-19, the ratio was roughly 0.9 for Pennsylvania (1.15 for U.S). Hence, for each unemployed person actively seeking employment, there was roughly 0.9 job openings. For August 2022, the data show that there were 1.35 job openings for each unemployed individual in Pennsylvania (1.67 for U.S). Those ratios are notably higher than pre-COVID values. If more residents joined the labor force (i.e., were working or actively seeking work), the ratio would fall because (1) job openings would decline and/or (2) the number of unemployed actively seeking work would increase. The current ratio suggests there is an unusually high demand for workers relative to the number seeking employment. The ratios have been high since last fall and are consistent with the very low unemployment rates for Pennsylvania (4.1%) and the U.S. (3.5%). Under "normal" labor market conditions such as those prior to the pandemic, the Pennsylvania ratio would be closer to 0.9 and job openings and the number unemployed would range from 270,000 to 290,000. Relative to those levels, the current ratio suggests **unusually high demand for 110,000 additional workers**.

[1] Data are seasonally adjusted. Source: U.S. Bureau of Labor Statistics.
[2] Typically, the ratio is depicted as the number of unemployed to job openings but for ease of presentation, the ratio is reversed in this brief.

Table 1: Job Openings vs Number Unemployed

	August 2018	August 2019	August 2020	August 2021	August 2022
Pennsylvania					
Job Openings	261	263	247	433	371
Unemployed	281	293	617	391	276
Ratio	0.93	0.90	0.40	1.11	1.35
United States					
Job Openings	7,211	7,142	6,315	10,629	10,053
Unemployed	6,167	5,993	13,532	8,339	6,014
Ratio	1.17	1.19	0.47	1.27	1.67

Note: Job Openings and Unemployed in 000s. Data are seasonally adjusted. August 2022 data preliminary.
Source: U.S. Bureau of Labor Statistics.

A different measure published by BLS (not shown) is the job openings rate, or the ratio of job openings to the number employed plus job openings. For Pennsylvania, that ratio was typically 4.2% (pre-COVID) and is currently 5.8% (August 2022). Relative to the pre-COVID rate, the current ratio implies **excess demand of roughly 100,000 additional workers** at current wage rates.

Labor Supply and Labor Force Participation Rates

Job openings provide insights into the demand for labor. Labor force participation rates (LFPR) quantify the supply of labor. The LFPR is the share of all residents age 16 or older who are working (includes self-employed) or actively seeking employment. It is based on survey data published monthly at the state and national levels.

Table 2 presents the LFPR for September 2022 for Pennsylvania and the U.S. and the prior three years. Although data are published by age and gender at the state level, only total LFPRs are shown due to the small number of data points at the state level for those subgroups (which makes point estimates unreliable). For Pennsylvania, the LFPR for September 2019 was 63.0%, which implies that 63.0% of all residents age 16 or older were either employed or actively seeking work.[3] For September 2022, the LFPR was 61.7%, a reduction of 1.3 percentage points (ppts). Since September 2019, the state labor force (i.e., actively employed or seeking employment) contracted by **120,000 workers**. For the U.S., the respective figures are 63.2% (September 2019) and 62.3%, a reduction of 0.9 ppts. The U.S. data show slightly more contraction for men (-1.0 ppt) than women (-0.8 ppt), and higher ratios compared to last year.

The bottom portion of Table 2 shows adjusted LFPRs for Pennsylvania and the U.S. These figures exclude individuals age 75 or older who have very low LFPRs (roughly 7% to 9%). The adjusted figures control for the general aging of populations which reduce LFPRs over time due to long-term demographic trends. Using that metric, there is less LFPR contraction for the U.S. Data are not yet available for 2022 to make a reliable computation for Pennsylvania.

[3] Data are seasonally adjusted. For "prime working age" adults age 25 to 54, the LFPR for 2019 was 83.8%.

Table 2: Labor Force Participation Rates

	Sept 2019	Sept 2020	Sept 2021	Sept 2022	Change 2019-22
Pennsylvania LFPR	**63.0%**	**62.3%**	**61.1%**	**61.7%**	-1.3%
Unemployed (000s)	297	581	372	264	-34
Employed (000s)	6,271	5,916	6,003	6,185	-86
Sum: Labor Force	6,568	6,497	6,375	6,449	-120
United States LFPR	**63.2%**	**61.4%**	**61.7%**	**62.3%**	-0.9%
Men	69.1%	67.5%	67.7%	68.1%	-1.0%
Women	57.6%	55.7%	56.0%	56.8%	-0.8%
Adjusted LFPR (Age 16 to 74)					
Pennsylvania	68.9%	67.8%	67.0%	--	--
United States	68.0%	66.7%	66.7%	67.4%	-0.6%

Note: Data are seasonally adjusted. LFPR is (employed + unemployed) / residents age 16+. Adjusted LFPRs exclude age 75+. See IFO Demographics Report for more detail (October 2022).
Source: U.S. Bureau of Labor Statistics.

Which Employment Sectors Contracted?

In addition to supply and demand conditions, factors that could motivate departures from the state labor force can be gleaned from published employment data by sector and subsector. **Table 3** displays the change in payroll jobs from September 2019 to September 2022. The data show a total contraction of 85,200 payroll jobs. Three subsectors comprise 73% of the September net jobs contraction: nursing home and residential care (-26,500), employment services (i.e., temp jobs, -19,200) and full-service restaurants (-16,600). Other sectors or subsectors with notable job losses include non-profits and advocacy entities (-15,200), colleges and universities (-15,000) and state government-education (-9,300). The bottom of the table displays two subsectors with significant job gains: warehousing and storage (+31,500) and couriers-messengers (+10,600).

Table 3: Change in Payroll Employment by Subsector

	Sept 2019	Sept 2022	Change
Total Payroll Employment (000s)	**6,095.8**	**6,010.6**	**-85.2**
Nursing Home and Residential Care	202.0	175.5	-26.5
Employment Services	122.5	103.3	-19.2
Full-Service Restaurants	196.1	179.5	-16.6
Non-Profit, Professional, Advocacy	136.2	121.0	-15.2
Colleges, Universities and Professional	163.3	148.3	-15.0
State Government Education	60.3	51.0	-9.3
All Manufacturing	572.4	564.0	-8.4
Accommodation	61.4	55.1	-6.3
Amusements and Gaming	75.2	70.3	-4.9
Childcare	47.4	45.4	-2.0
Couriers and Messengers	36.1	46.7	10.6
Warehouse and Storage	93.5	125.0	31.5
All Other	4,329.4	4,325.5	-3.9

Note: Data not seasonally adjusted. Thousands of payroll jobs. Excludes self-employed.
Source: U.S. Bureau of Labor Statistics.

Impact of Demographic Trends on the State Labor Force

The two previous releases of this research brief examined various factors that could motivate the contraction of the state labor force since the onset of the pandemic. The reasons for the contraction are important because policymakers cannot immediately impact long-term demographic trends, but might be able to impact other factors such as childcare costs that could be sufficiently high to discourage labor force participation. Potential factors that could motivate labor force contraction include: long-term demographic trends, increased home schooling, care of elderly parents reluctant to enter nursing homes, recent accumulation of savings and wealth due to inflated asset markets, on-going COVID emergency declarations, early retirements, personal preferences (e.g., health concerns or greater value placed on leisure time) and possible health impacts from long COVID.[4] This update focuses on the impact of long-term demographic trends. Based on the latest data, the analysis finds that slightly more than one-half of the contraction of the state labor force since the onset of the pandemic is attributable to long-term demographic trends. Residual contraction would then be attributable to other factors, such as those noted above.

Table 4 displays IFO estimates and projections of the state population based on the latest data from the U.S. Census. Three years are shown (2019, 2022 and 2025) for various age groups.[5] From 2019 to 2022,

[4] Lack of adequate childcare was also noted previously. However, based on the latest payroll jobs data, that subsector has largely recouped all lost jobs. There are also fewer working adults and fewer children in 2022 compared to 2019. However, although care may be available, it could be cost prohibitive.
[5] Data for 2019 are estimates that use a "backwards vintaging" methodology based on the official Census estimate for 2020.

the state population contracted by an estimated 36,000 residents and the median age increased.[6] While the first outcome is relatively new, the second is a continuation of a long-term trend. Both factors cause the state labor force to contract: the first due to fewer potential workers and the second because older residents have lower LFPRs. The data are as follows for 2019 (estimate) to 2022 (projection):

- Residents age 25 to 54 (prime working age) contracted by 63,000. Their LFPR is 82.7% based on U.S. data (September 2022).
- Residents age 55 to 64 who might consider early retirement contracted by 75,000. Based on U.S. data, their LFPR is 65.0%.
- Residents age 65 to 69 increased by 54,000 due to aging Baby Boomers and their LFPR is 34.7%.
- Residents age 70 to 74 increased by 57,000 and their LFPR is 17.9%.
- Residents age 75 or older increased by 64,000 and their LFPR is 8.6%.

Table 4: Pennsylvania Demographic Trends by Age Group

	Number of Residents (000s)			Change (000s)		2022
	2019	2022	2025	19-22	22-25	LFPR
0 to 17	2,721	2,651	2,580	-70	-71	--
18 to 24	1,143	1,141	1,153	-2	12	70.2%
25 to 54	4,920	4,857	4,811	-63	-46	82.7%
55 to 64	1,854	1,779	1,682	-75	-96	65.0%
65 to 69	769	823	853	54	30	34.7%
70 to 74	602	659	714	57	55	17.9%
75 or older	991	1,055	1,166	64	112	8.6%
Total	**13,001**	**12,965**	**12,960**	**-36**	**-4**	

Note: LFPRs are September 2022 for U.S. due to small number of data points for state by age group. Rate for 18 to 24 age cohort is rate for 20 to 24 year olds.
Source: U.S. Census Bureau and IFO projections. See 2022 Demographic Outlook (October 2022).

If national LFPRs by age group can be used for Pennsylvania, then the combination of the decline in total population and lower LFPRs for older residents implies a contraction in the state labor force of roughly 65,000. These recent demographic trends motivate slightly more than one-half of the current labor force contraction and related worker shortage. The impact is more noticeable due to the dramatic reversal in the state economy when large numbers of workers were laid off or furloughed due to COVID-19 mitigation efforts, but then demand rebounded rapidly due to business re-openings and multiple large federal stimulus programs.

[6] The overall population contraction was driven by three factors: (1) a net domestic outflow to other states (-8,496 for 2020 to 2021, 2022 data not yet available), (2) lower international migration and (3) deaths that exceeded births (-38,543 for 2020 to 2021). For 2020 and 2021, the IFO estimates that COVID-19 caused 38,650 "excess deaths," and the great majority (nearly 90%) impacted residents age 65 or older. See IFO Research Brief *COVID-19 Impact on Pennsylvania Deaths*.

Near-term demographic trends suggest that the outlook for the next three years will not improve and the state labor market will remain exceptionally tight. The prime working age cohort is projected to contract again (-46,000) while those nearing retirement (age 55 to 64) record a stronger contraction (-96,000). By contrast, retirees and elderly residents expand rapidly. These trends illustrate the near-term headwinds for further expansion of the Pennsylvania economy. Even if LFPRs revert to pre-COVID rates (roughly 1.3 ppt higher than current rates), it would still be insufficient to generate "normal" payroll jobs growth of 40,000 to 50,000 workers per annum recorded prior to the pandemic assuming normal rates of unemployment.

In the near term, the tightness in the state labor market can only be alleviated through three channels:

- A reduction in domestic out-migration. Data show net domestic out-migration to other states across all age cohorts, including retirees and elderly. The factors that motivate out-migration are not known with certainty, but relevant factors typically include employment, family, climate and quality of life issues.
- Higher levels of international migration. When managed in a controlled and stable manner, research finds that international migration has net positive economic impacts for state and national economies.
- Enactment of policies that encourage labor force participation, or alternatively, policies that do not discourage it. For example, the previous update discussed the current lack of income phase-outs for expanded SNAP benefits (emergency allotments) that effectively result in a marginal income tax rate that could approach 100% for certain workers (i.e., a vertical benefits cliff). Economic research finds that very high marginal tax rates clearly discourage labor force participation.