THE EARLY TOLL OF COVID-19 ON JOB AND INCOME LOSSES: VULNERABILITY BY OCCUPATION

Randall P. Ellis and Giovanna Marcolongo
Boston University, Department of Economics
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Key message: Early PPP funding may not target the occupations most affected by the COVID-19 shutdown.

While the Department of Labor (DOL) is providing weekly updates about an unprecedented spike in unemployment claims as the labor force has shut down due to COVID-19 (Figure 1), and results are available by major industry, it will be some time before the implications of this spike on various occupations is known. This article highlights results from a survey of health and labor economists about the likely impact by occupation.

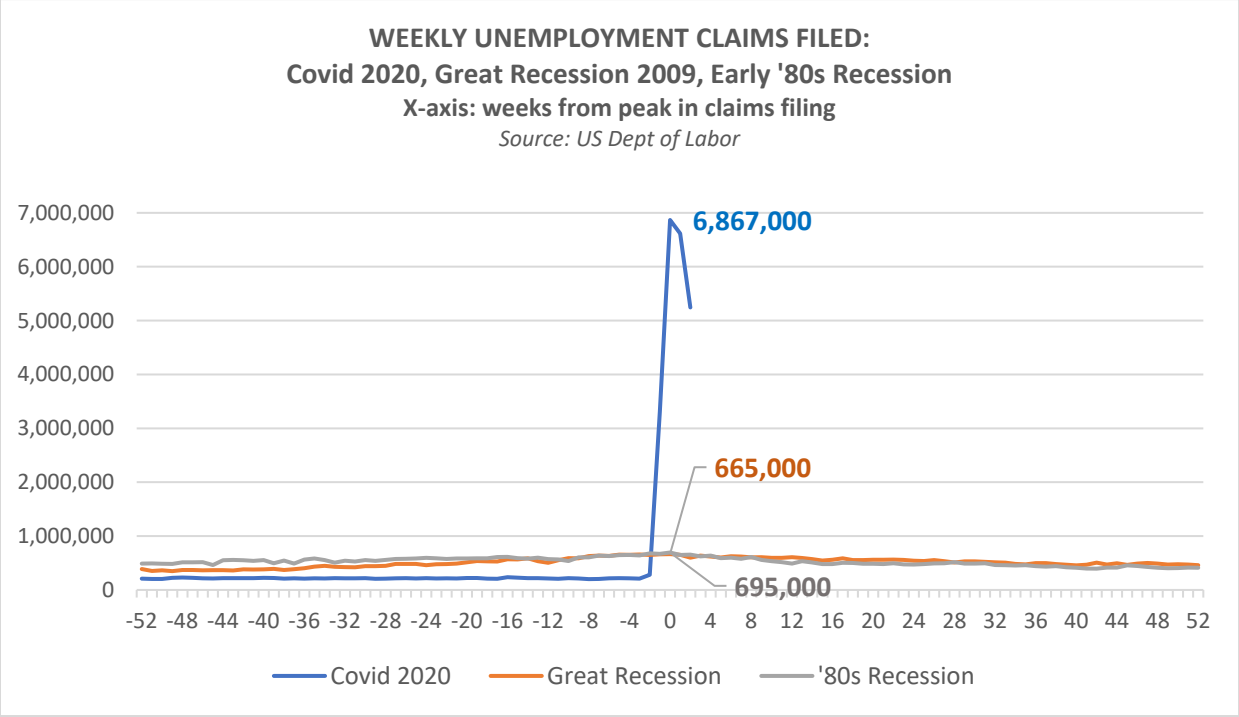

Figure 1. Comparison of peak in unemployment claims during the Covid Crisis (March 28, 2020), the Great Recession (March 28, 2009) and the early '80s recession (October 2, 1982) Figure is by the authors using US Department of Labor statistics through April 16, 2020.

The Federal Reserve Bank of St Louis estimated US unemployment as high as 30% - higher than the rate achieved during the Great Depression - which has fueled concerns on the effects of the pandemic on poverty and inequality. A recent study by researchers at Columbia University warns of the dreary consequences the loss of employment will have on the number of people below the poverty line: a shock that is likely to persist over time. The uncertainty in predicting future scenarios as well as the delay with which statistics register the workers' income losses limit the potential to produce reliable forecasts in the immediate run and so to design effective policy tools.

In an effort to identify which occupations are most vulnerable to suffer the negative consequences of the current pandemic, we conducted a small email survey among academic economists, primarily at top tier universities. From April 3 to April 10 we asked labor and health economists at top universities to estimate by each of 15 occupations the percent of workers suffering a job loss, as well as to guess an estimate of the percentage of income loss for the same categories. In their email instructions, we asked them to ignore unemployment insurance benefits or transfer payments. The specific survey questions we emailed was:

As of April 10, when all states will likely have imposed stay at home orders, but before any PPP aid will have arrived, for each of 15 Occupational classes, using the set of all workers (full time or part time, full year or seasonal) for whom this is their longest job:

1- *What fraction are unemployed, laid-off, earning no income?*
2- *Among those working, what fraction of income is lost?*

As the question clarifies, the survey did not aim to assess the impact of unemployment insurance, nor that of the Paycheck Protection Program but rather to construct estimates of occupational vulnerability. Thirteen out of the 25 economists surveyed responded to our survey (a response rate of 52%), and we used their answers to constructed measures of the impact of COVID-19 for each occupation (Figure 2).

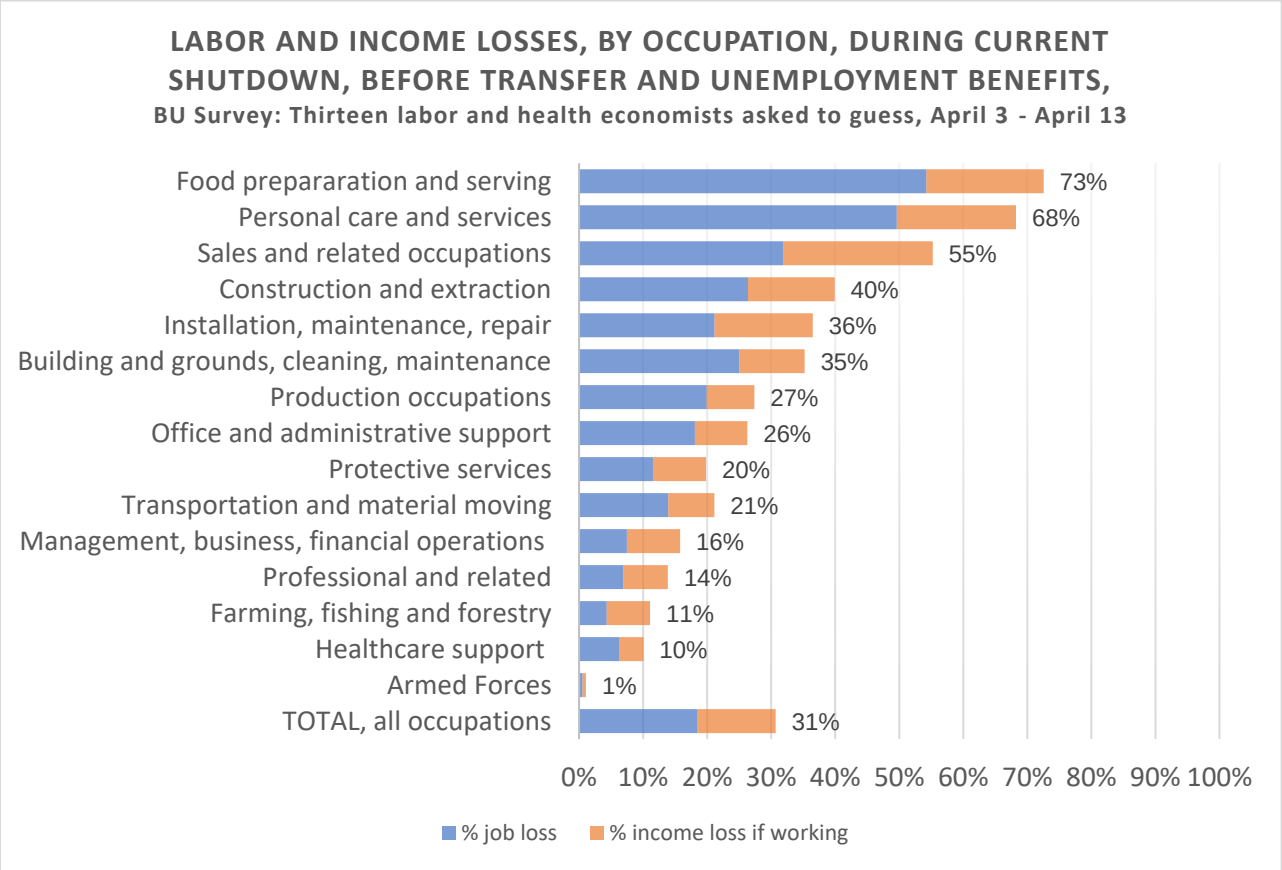

Figure 2. Occupations sorted from highest to lowest estimated percent loss of labor and income in mid-April, 2020. Ellis and Marcolongo survey results, April 3-10, 2020.

Income losses from losing their jobs was simply the response to the first question. The percent of income lost even by those still working, was calculated by taking the respondents' guesses of conditional income losses, (i.e., percentage decline in earnings among those still working) and converted them to unconditional income losses. We summed these two effect to estimate the total income losses by occupation. Results from the survey, along with additional information from the Current Population Survey (CPS), are presented in Table 1. Overall there was a great deal of concordance in economist guesses, all of which implied rates of job loss much more than the most recent BLS unemployment rates from March. Overall the respondents estimated job loss at 18% and income loss conditional on working at 15%.

Figure 2 reports the results sorted by occupational category from the most to the least affected categories. The blue bar shows the percentage of income loss due to job loss, the orange is the estimated loss of income by those still working, and their sum is an estimate of the total income loss.

Economists believe occupations in the service industry (food preparation, personal care, and sales) will be the ones to suffer the highest income losses. These occupations are characterized by high levels of physical proximity to workers and customers, and are the most directly affected by lock down orders targeting non-essential services to shut down. At the other extreme, the armed forces, healthcare and agriculture occupations were rated the least likely to be affected by the current shutdown. No implications should be drawn about the longer run effects of the pandemic.

To construct a dollar estimate of the income losses implied by these results, we added on mean earnings and total employment levels by occupation category from CPS the 2018. Figure 3 shows the annual mean earnings (converted into 2020 dollars using the CPI) for all workers of 15 years and over (including part-time and seasonal). Figures 2 and 3 together suggest that the occupations incurring the greatest job and income losses are also the ones near the bottom of the earnings distribution. In an April 2020 article on VoxEu, Adams-Prassl et al. show that lower earnings occupations are also the ones whose tasks are less likely to be able to be done at home and whose workers are less likely to receive paid sick leave.

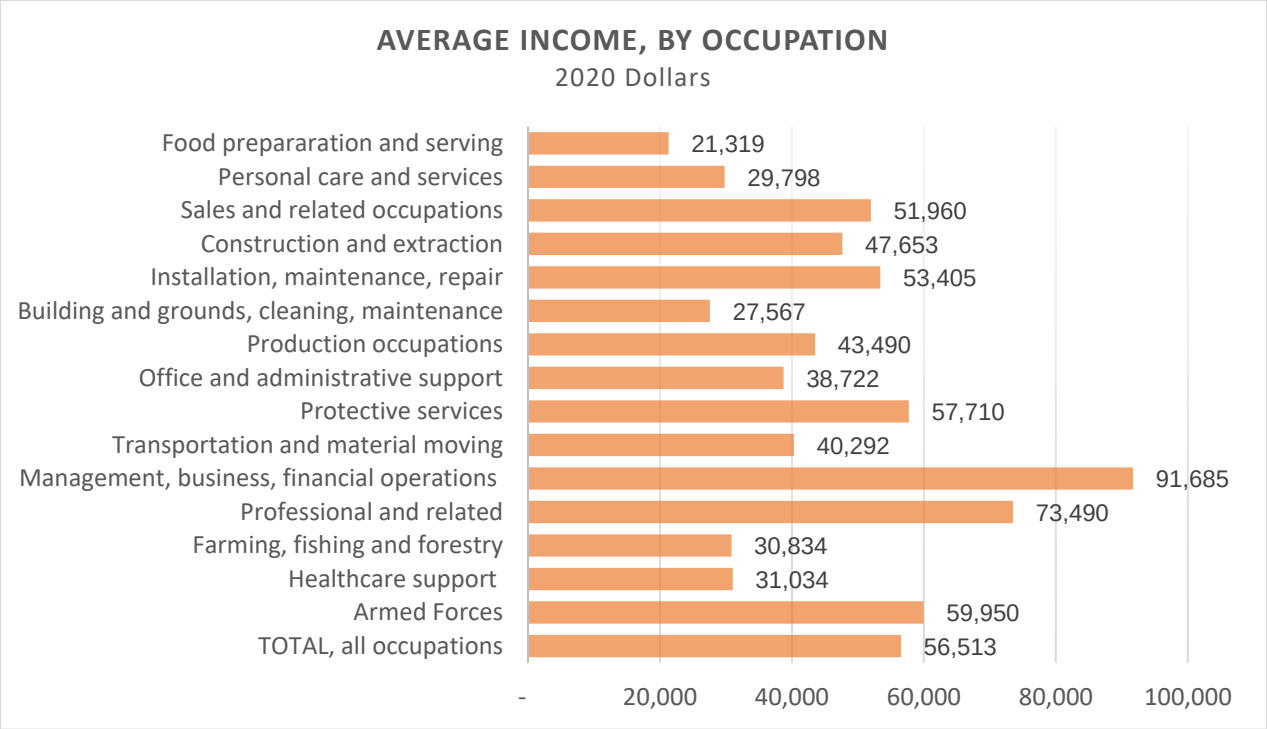

Figure 3 Mean earnings by occupation for all workers (including seasonal and part-time) 15 years old and over reported in 2018. Occupations sorted from highest to lowest estimated percent loss of labor and income from survey. Source: US Census, Current Population Survey

Figure 4 shows the DOL estimates of the number of workers by occupational category in 2018. The top two occupations that economists estimate experiencing highest labor and income losses are among the lowest income occupations. However, this is not the case for sales occupations: this category reports earnings below the average (56,513$), it employs 10% of the workforce and it is likely to face severe job and income losses (55%).

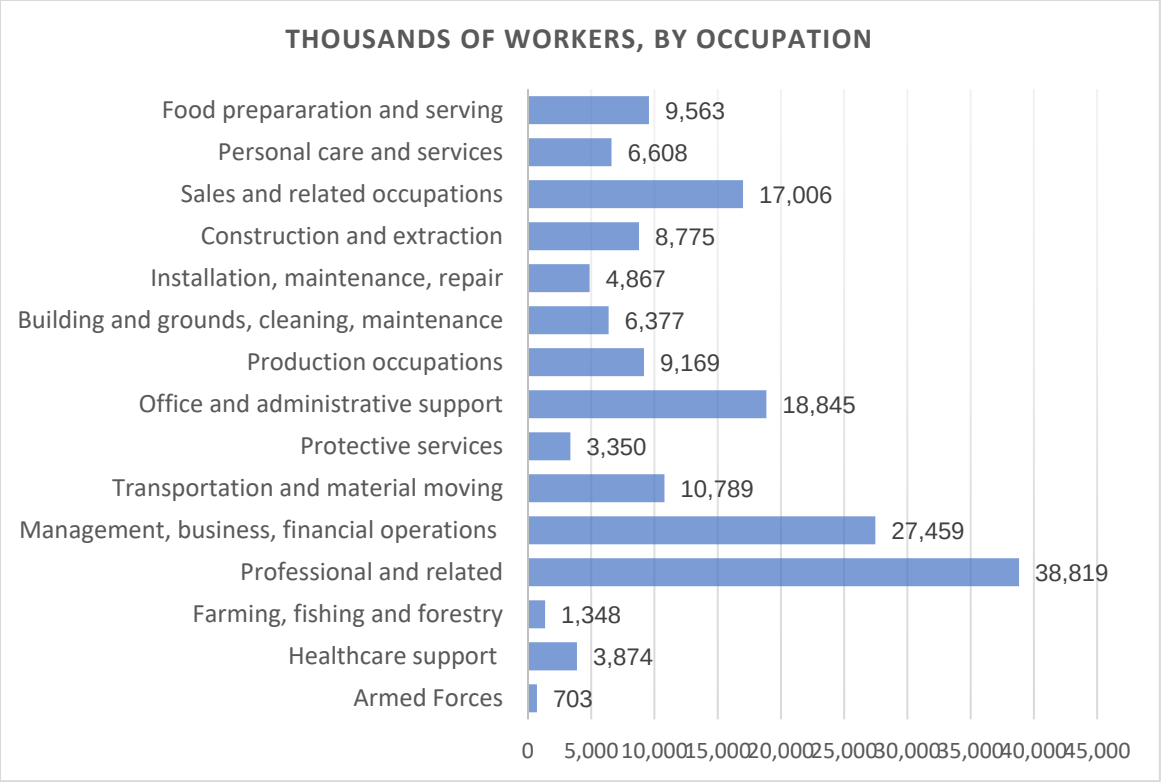

Figure 4 Number of workers by occupation in 2018. Occupations sorted from highest to lowest estimated percent loss of labor and income from survey. Source: US Census, Current Population Survey, 2018

Figure 5 combines the calculations of the previous three figures in order to estimate income losses in the past two months by category of occupation. Each row is the product of the estimated percentage of income losses (Figure 2), the mean earnings (Figure 3) and the number of employed workers (Figure 4) in each occupation (Figure 4). Sales occupations, management and professional related occupations display the highest income losses. However, while the last two categories are characterized by higher earnings, that is not the case for workers employed in retail and sales occupations. The current shutdown, before any government measure is in place, is estimated to cause an overall income loss of about 485 billion dollars in two months.

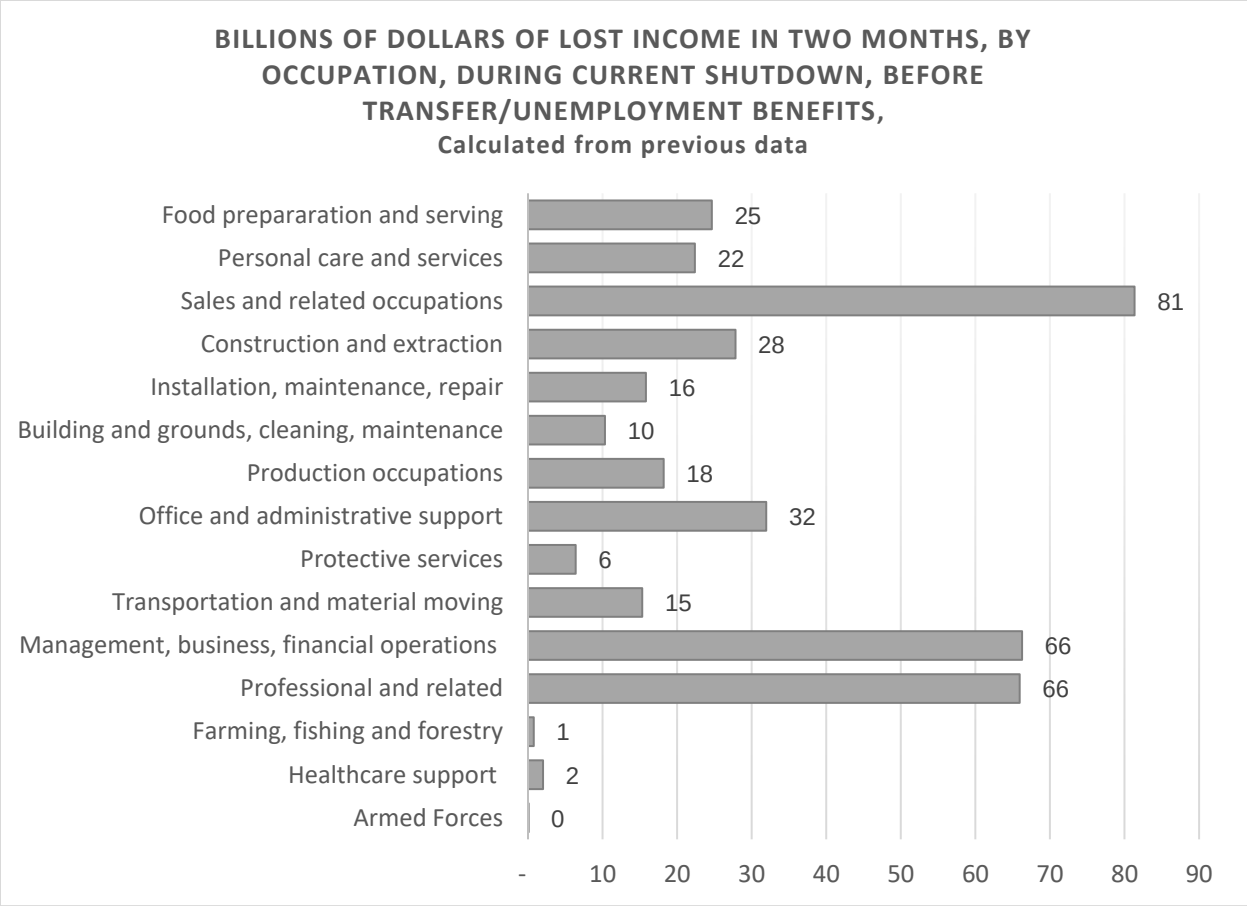

Figure 5 Billions of dollars of lost income over two months by occupation. The product of economists' survey answers, CPS data on mean earnings for two months, and levels of employment. Occupations sorted from highest to lowest estimated percent loss of labor and income from survey results.

An important limitation of this analysis is that we do not know anything about the distribution of job loss by firm size or income within each occupation shown. But it is plausible to believe that the largest impact will be focused on smaller size firms and lower income workers within each occupational category. These small, less than full-time, lower paying jobs are also the least likely to have unemployment compensation, employers applying for PPP loans, or a commitment to support their employees for the duration of the shutdown. The PPP loan program, which targets money to employers rather than workers and their families, seems less likely to allocate to the occupations at the top of the four figures who are most affected by the crisis. It seems PPP loans are more likely to allocate funds to firms in the management, business, financial, and professional occupations, that are better able to apply for PPP loans, and account for a great deal of income loss but are not the workers most vulnerable to job and income losses from the pandemic in the short run.

This analysis suggests that the current PPP income support strategy implemented by the government and designed to maintain the payrolls of all businesses with less than 500 employees may not be the most effective in limiting the consequences incomes losses imposed by COVID-19. The scheme may fail in

targeting most vulnerable occupations effectively while at the same time posing a large burden on our federal budget by channeling much of the money to high income occupations not facing the greatest risks. Our analysis concludes that employees in the food preparation, personal services, and sales occupations, along with construction, maintenance, and cleaning service occupations appear likely to face the most severe needs (Figure 2). Yet these workers often work in very small firms that are not well capitalized, face high worker turnover and hence are the prone to not receiving unemployment benefits. Particularly concerning is that they may also be less likely to apply for a PayCheck Protection Program (PPP) bailout loans and more likely to have shut down before PPP funds became available. Greater attention is needed on strategies that target these most needy occupations.

Table 1. Summary statistics of survey answers, estimates of income loss, CPS data on earnings and number of workers by occupation category.

Occupation of longest job	***Question 1*** **What fraction are unemployed or laid-off, earning no income?**		***Question 2*** **Among those working, what fraction of income is lost?**		**Combined Loss of Income**	**Mean annual Earnings in 2020 $**	**Thousands of workers** *(including seasonal, and non full-time)*	**Mean per capita income loss over 2 months**	**Billions of Dollars of Lost Income over 2 months**
	Pr(work)		% Income Loss|Work		Pr(work) + [1-Pr(work)]* (%IncLoss |Work]	Figure 3	Figure 4	Combined loss* mean earnings *(2/12)	Figure 5 Combined Loss of Income * Total Income p. Occupation * (2/12)
	Mean	Std. Error	Mean	Std. Error					
Food preparation and serving related occupations	54%	5%	40%	6%	73%	21,319	9,563	2,577	24.6
Personal care and service occupations	50%	6%	37%	6%	68%	29,798	6,608	3,388	22.4
Sales and related occupations	32%	4%	34%	4%	55%	51,960	17,006	4,783	81.3
Construction and extraction occupations	26%	4%	18%	2%	40%	47,653	8,775	3,170	27.8
Installation, maintenance, and repair occupations	21%	3%	19%	3%	36%	53,405	4,867	3,249	15.8
Building and grounds cleaning and maintenance occupations	25%	5%	14%	4%	35%	27,567	6,377	1,618	10.3
Production occupations	20%	4%	9%	2%	27%	43,490	9,169	1,984	18.2
Office and administrative support occupations	18%	3%	10%	2%	26%	38,722	18,845	1,695	31.9
Transportation and material moving occupations	14%	4%	8%	2%	21%	40,292	10,789	1,420	15.3
Protective service occupations	12%	3%	9%	4%	20%	57,710	3,350	1,908	6.4
Management, business and financial operations occupations	7%	1%	9%	2%	16%	91,685	27,459	2,413	66.3
Professional and related occupations	7%	1%	7%	1%	14%	73,490	38,819	1,699	65.9
Farming, fishing and forestry occupations	4%	1%	7%	3%	11%	30,834	1,348	569	0.8
Healthcare support occupations	6%	2%	4%	2%	10%	31,034	3,874	520	2.0
Armed forces	1%	0%	1%	0%	1%	59,950	703	107	0.1
TOTAL ALL Workers	18%	2%	15%	1%	31%	56,514	167,552	2,892	484.6
Number of Answers	13		13						

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