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Additional Infrastructure Spending Would Employ Few New Workers

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Prominent Members of Congress, such as Senate Budget Committee chair Patty Murray (D-WA), have called for substantially increasing infrastructure spending to create jobs. They claim that spending tens of billions of dollars repairing bridges and roads would significantly reduce unemployment and stimulate the economy.¹

These calls misunderstand the nature of infrastructure construction work.² Infrastructure projects are capital intensive, not labor intensive. Road and bridge construction requires a relatively small number of highly skilled workers using advanced equipment and machinery. Across the U.S., just over 300,000 Americans work in highway, street, or bridge construction—less than the population of Wichita, Kansas.³

In total, such construction employs just 0.2 percent of all workers.⁴ This includes less skilled employees on the worksites. Even doubling the number of jobs in the sector would have only small effects on overall employment.⁵

Highly Skilled Occupations. Infrastructure construction requires significant human capital as well as physical capital. Many workers on these jobs need advanced skills to effectively and safely use construction equipment. An unemployed residential

drywall installer cannot simply start building bridges or highways.

Table 1 shows typical apprenticeship requirements for various jobs in infrastructure construction. It takes several years to fully train new employees. A grade and paving equipment operator, for example, needs three years and between 4,000 and 6,000 hours of on-the-job-training. A structural ironworker requires four years and 6,400 hours of on-the-job training.

Most Unemployed Workers Lack These Skills.

The collapse of the housing bubble caused residential construction employment to drop sharply since 2007. The recession had a much smaller effect on infrastructure employment. Of the net 2.1 million job drop in construction employment between 2007 and 2012, only 55,000 occurred in highway, street, and bridge construction.

Unsurprisingly, then, very few unemployed workers have the skills necessary to work on infrastructure projects. Just 8.5 percent of the unemployed previously worked in an occupation heavily utilized in highway, street, or bridge construction.⁶ Even fewer worked in the most highly skilled construction occupations. One-fifth of workers on highway, street, and bridge projects operate heavy construction equipment. Less than one in 200 unemployed workers previously worked in such jobs.

Similarly, Bureau of Labor Statistics data shows just 13,500 unemployed cement masons, concrete finishers, and terrazzo workers in the entire country.⁷ The vast majority of the unemployed would require retraining before working on infrastructure projects.

Reallocating Jobs, Not Creating Them. Additional infrastructure spending would consequently

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TABLE 1

Apprenticeship Requirements in Infrastructure Construction

Trade	On-the-Job Training (hours)	Years of Training
Construction Craft Laborer	4,000–5,100	2
Universal Equipment Operator	4,000–6,000	3
Grade and Paving Equipment Operator	4,000–6,000	3
Heavy Duty Repairer	4,000–6,000	3
Structural Ironworkers	6,400	4
Ironworkers	6,000–8,000	3–4
Heavy Truck Driver	2,000	1
Carpenter	8,000	4
Bridge Carpenter	5,200–8,000	4
Cement Mason	4,500–8,000	3–4
Concrete Finisher	3,900–5,200	3–4

Sources: U.S. Department of Labor, “Standards of Apprenticeship,” Construction Craft Laborer and Home Performance Laborer, http://www.doleta.gov/oa/bul11/Bulletin_2011_13_LIUNA_CCL-HPL_Stand.pdf (accessed November 6, 2013); U.S. Department of Labor, “National Guidelines for Apprenticeship Standards,” Universal Equipment Operator, Grade and Paving Equipment Operator, and Heavy Duty Repairer, http://www.doleta.gov/oa/bul08/IUOE_NTF_NGS_OE.doc (accessed November 6, 2013); U.S. Department of Labor, “Work Process Schedule, Cement Mason Concrete Finisher,” http://www.doleta.gov/OA/pdf/APPENDIX_A_CEMENT.pdf (accessed November 6, 2013); U.S. Department of Labor and Associated Builders and Contractors, Inc., “ABC National Tiered Carpentry Training Apprenticeship Standards,” http://www.doleta.gov/oa/pdf/200903_ABC_Revised_NGS.pdf (accessed November 6, 2013); U.S. Department of Labor and International Masonry Institute, “National Guidelines for Apprenticeship Standards,” http://www.doleta.gov/OA/pdf/guidelines_apprenticeship.pdf (accessed November 6, 2013); Washington State Department of Labor and Industries, “Standards of Apprenticeship Adopted by Pacific NW Ironworker and Employer JATC,” <http://www.oregon.gov/boli/ATD/docs/Standards/YEAR%20-%202013/1000/1013%200669-0-0311-WA.pdf> (accessed November 6, 2013); Washington State Department of Labor and Industries, “Catalog of Programs and Services,” <http://www.lni.wa.gov/tradelicensing/apprenticeship/files/pubs/appcat.pdf> (accessed November 6, 2013); Washington State Department of Labor and Industries, “Standards of Apprenticeship adopted by Washington State UBC JACT,” <http://www.lni.wa.gov/TradesLicensing/Apprenticeship/files/standards/0128.pdf> (accessed November 6, 2013); and Anderson Trucking Service, Standards of Apprenticeship, <http://www.ats-inc.com/veteran/pdf/standards.pdf> (accessed November 6, 2013).

employ relatively few unemployed workers. Instead, federal construction contractors would hire the skilled workforce they need away from private construction projects. New jobs created would come primarily at the expense of other jobs in the private sector.

Exactly this happened with the stimulus. Stimulus funds did not go primarily to unemployed workers. Instead, the government hired workers and firms with the necessary skills for their construction projects. Surveys found that more workers on stimulus projects were hired away from other companies than were previously unemployed.⁸ As researchers at George Mason University found:

Six of the organizations we interviewed, primarily engineering firms, said that there was little or no change in their work level due to the stimulus. They were niche firms with services in high demand. When they took [stimulus] work, they were turning down other work. These six were an extreme version of what many firms told our teams: The lunch wasn’t nearly as free as advertised. Tradeoffs mattered, and skilled firms and workers were scarce even in a world of 10 percent unemployment.⁹

Additional infrastructure spending would do more to shuffle jobs around than reduce unemployment.

Infrastructure in Historically Good Shape.

New federal infrastructure spending would provide questionable value for taxpayers. As a share of gross domestic product, infrastructure spending has remained fairly stable for the past two decades.¹⁰ Further, the states best know their highway and bridge maintenance and rehabilitation priorities. Funneling resources from the states to Washington and back to the states promotes a Washington-centric approach to infrastructure needs. Spending decisions should be made by states based on the condition of existing infrastructure and future capacity needs—not by Washington on the basis of economic conditions.

The interstate highway system is wearing out and will require reconstruction, and states will face repairs or reconstruction of their bridges and roads. Yet the country’s infrastructure is not crumbling before the traveling public’s very eyes. These future infrastructure needs do not constitute a national crisis in need of massive federal cash infusions. In fact, America’s infrastructure quality has improved markedly over the past two decades.

TABLE 2

Change in Construction Industry Employment, by Sector

Sector	2007	2012	Change Since 2007	
			Number	Percent
All Construction	7,671,680	5,611,950	-2,059,730	-27%
Construction of Buildings	1,780,160	1,226,290	-553,870	-31%
Residential	968,660	570,970	-397,690	-41%
Nonresidential	811,510	655,320	-156,190	-19%
Heavy Civil and Engineering	1,011,860	865,400	-146,460	-14%
Utility System Construction	448,250	420,120	-28,130	-6%
Land Subdivision	92,040	41,390	-50,650	-55%
Highway, Street, and Bridge Construction	358,500	303,650	-54,850	-15%
Other Heavy and Civil Engineering Construction	113,080	100,240	-12,840	-11%
Specialty Trade Contractors	4,879,650	3,520,270	-1,359,380	-28%
Foundation, Structure, and Building Exterior Contractors	1,109,420	688,280	-421,140	-38%
Building Equipment Contractors	2,033,290	1,662,910	-370,380	-18%
Building Finishing Contractors	1,009,230	627,030	-382,200	-38%
Other Specialty Trade Contractors	727,720	542,040	-185,680	-26%

Source: U.S. Department of Labor, Bureau of Labor Statistics, "Occupational Employment Statistics," May 2007 and May 2012, http://www.bls.gov/oes/current/naics2_23.htm (accessed November 1, 2013).

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The Federal Reserve Bank of Chicago analyzed Federal Highway Administration data and reports:

Since the mid-1990s, our nation's interstate highways have become indisputably smoother and less deteriorated.... [They] were smoother in 2006 than in any other year since 1980.... In view of this finding, accelerated expenditures on improving road surfaces are unlikely to yield significant direct benefits unless they are carefully targeted to specific interstate segments that are in need of improvement.¹¹

Similarly, the number of structurally deficient bridges has fallen steadily since 1992.¹² While 21.7 percent of bridges had structural deficiencies in 1992, by 2012 that number fell in half to 11.0 percent.

Repeal Davis-Bacon. Instead of spending more, Congress should clear red tape, prioritize current appropriations more effectively, and empower states to spend their federal gas tax dollars on priorities of their own choosing, not those of federal bureaucrats.

The Davis-Bacon Act, for example, requires contractors to pay union wage rates and use union work rules on federally funded construction projects.

This inflates the cost of federal construction projects by almost 10 percent.¹³

Repealing the Davis-Bacon Act would allow for the repair of approximately one-tenth more bridges and roads at no additional cost to taxpayers. Eliminating the need to apply union work rules—such as maximum numbers of apprentices at a worksite—would also enable employers to train new workers more quickly.

Little Effect on Unemployment. Supporters argue increased infrastructure spending would create jobs and boost the economy. These arguments have little empirical justification. Infrastructure projects require more physical and human capital than brute labor.

Consequently, most workers hired on new federal construction projects would come from existing projects—not unemployment lines. Additional infrastructure spending would do little to reduce unemployment.

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Technical Appendix

The Heritage Foundation used data from the 2012 Current Population Survey (CPS) and May 2012 Occupational Employment Statistics (OES) to estimate the proportion of unemployed workers who previously worked in occupations heavily involved in infrastructure.

OES data was used to identify the occupations that account for 80 percent of highway, street, and bridge construction employment, including every occupation that accounted for at least 2.5 percent of total highway, street, and bridge employment.

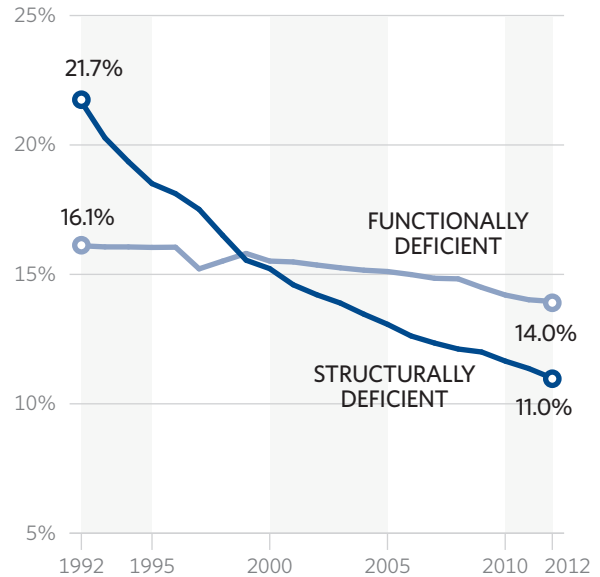
The CPS asks unemployed workers what occupation they previously worked in. However, the CPS uses a different occupational coding system than the OES, which employs the Standard Occupational Classification (SOC).

The Heritage Foundation used a Bureau of Labor Statistics crosswalk to match the occupations identified by the SOC to the corresponding CPS occupation code (see table below). Analysis of CPS data revealed that 8.5 percent of unemployed workers in 2012 previously worked in these occupations.

CHART 1

Fewer Bridges Are Deficient

PERCENTAGE OF ALL BRIDGES



Source: Heritage Foundation calculations using data from U.S. Department of Transportation, Federal Highway Administration, "Deficient Bridges by State and Highway System," <http://www.fhwa.dot.gov/bridge/deficient.cfm#sthash.x0tBPZeA.dpuf> (accessed November 1, 2013).

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APPENDIX TABLE 1

Matching Up NAICS Occupations and CPS Occupation Codes

Standard Occupation Code	Occupation Title	CPS Occupation Code	Occupation Title	Percent of Employment in Highway, Bridge, and Street Construction	Percent of Unemployed Previously in that Occupation
11-9021	Construction Managers	220	Construction managers	2.75%	0.4%
13-1051	Cost Estimators	600	Cost Estimators	1.75%	0.1%
17-2051	Civil Engineers	1360	Civil Engineers	0.97%	0.1%
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	6200	First-line supervisors/managers of construction trades and extraction workers	7.73%	0.3%
47-2031	Carpenters	6230	Carpenters	4.66%	1.7%
47-2061	Construction Laborers	6260	Construction laborers	24.88%	2.6%
47-2050	Cement Masons, Concrete Finishers, and Terrazzo Workers	6250	Cement masons, concrete finishers, and terrazzo workers	4.03%	0.1%
47-2070	Construction Equipment Operators	6300	Paving, surfacing, and tamping equipment operators	20.19%	0.5%
		6310	Pile-driver operators		
		6320	Operating engineers and other construction equipment operators		
49-3000	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	7220	Heavy vehicle and mobile equipment service technicians and mechanics	2.80%	0.1%
53-3030	Driver/Sales Workers and Truck Drivers	9130	Driver/sales workers and truck drivers	8.13%	2.0%
53-7000	Material Moving Workers	9510	Crane and tower operators	2.13%	0.6%
		9520	Dredge, excavating, and loading machine operators		
		9560	Hoist and winch operators		
		9600	Industrial truck and tractor operators		
Total				80.02%	8.5%

Sources: U.S. Census Bureau, North American Industry Classification System, <http://www.census.gov/eos/www/naics/> (accessed November 4, 2013), and Heritage calculations using data from the U.S. Census Bureau, 2012 Current Population Survey, <http://www.census.gov/cps/> (accessed November 4, 2013).

Endnotes

1. Jonathan Weisman, "Senate Passes \$3.7 Trillion Budget, Setting Up Contentious Negotiations," *The New York Times*, March 23, 2013, http://www.nytimes.com/2013/03/24/us/politics/senate-passes-3-7-trillion-budget-its-first-in-4-years.html?_r=0 (accessed October 31, 2013).
2. This paper abstracts from the debate over whether government spending has a multiplier effect in the economy. Whether it does or not, spending on infrastructure creates fewer direct jobs than other projects would.
3. U.S. Department of Labor, Bureau of Labor Statistics, "Occupational Employment Statistics," May 2012, http://www.bls.gov/oes/current/naics2_23.htm (accessed November 5, 2013).
4. Heritage Foundation calculations using data from the Bureau of Labor Statistics, "Occupational Employment Statistics" and "Current Employment Statistics"/Haver Analytics. Note that the payroll survey reported 133.7 million Americans with jobs in 2012.
5. While additional workers would obtain jobs supplying materials for the projects, this would also apply if Congress spent the money elsewhere (such as defense procurement) or left the resources in the private sector to invest.
6. Heritage Foundation calculations using data from the 2012 Current Population Survey. See appendix for details.
7. Ibid.
8. Garrett Jones and Daniel Rothschild, "Did Stimulus Dollars Hire the Unemployed? Answers to Questions about the American Recovery and Reinvestment Act," Mercatus Center, September 2011, http://mercatus.org/sites/default/files/publication/Did_Stimulus_Dollars_Hire_The_Unemployed_Jones_Rothschild_WP34.pdf (accessed November 5, 2013).
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