



TRANSPORTATION INVESTMENTS AND THE LABOR MARKET

How many jobs could be generated and what type?

BY JOSH BIVENS, JOHN IRONS, AND ETHAN POLLACK

In February, Congress passed a \$787 billion stimulus package—the American Recovery and Reinvestment Act (ARRA)—which included substantial new funding for infrastructure investment. From a macroeconomic perspective, this is good news: infrastructure spending as economic stimulus provides a high economic “bang-for-the-buck” (that is, extra output and employment created through each dollar increase in the federal deficit) and stands near the top of the list of proposals to spur economic recovery.¹ The largest chunk of this investment focuses on transportation infrastructure, which is likely to provide even more bang-for-the-buck than generic infrastructure investment.

Over the longer-run, if the ARRA represents a broader and more permanent commitment to the maintenance and improvement of the nation’s transportation infrastructure, it could have large labor market implications beyond just lowering the unemployment rate in the current recession. For example, since the *mix* of jobs produced by transportation investments—relative to the overall economy—tips toward sectors that disproportionately employ workers without a college degree and unionized workers, the long-run job-market impacts of transportation investments may push back against the growing economic inequality that has characterized the U.S. economy for decades.

This Issue Brief summarizes some findings on the job impact—both the number and the kinds of jobs created—from investments in transportation infrastructure. In particular, we estimate that each \$100 billion of new infrastructure spending targeted to modernize the American transportation sector would yield:

- Approximately \$160 billion in additional economic output, which translates into roughly 1.1 million net new jobs created in the next two years.
- An increase in the relative wages of those 70% of U.S. workers without a college degree by almost 0.4% each year each year the increased commitment to transportation persists. While modest, this amount *does* represent a wage increase for high school graduates that is roughly 40% as large as the entire increase this group has seen since 1979.

- An increase of roughly 125,000 unionized jobs in the United States, even if all of the jobs supported through this transportation spending merely displaced currently existing jobs (which is unlikely).

Transportation infrastructure and economic stabilization

Recessions happen when an economy experiences a self-reinforcing demand slump. In this regard at least, the current recession is like all others. However, the dual crashes in housing and financial markets have made this recession more severe and long-lasting relative to the most recent downturns. These crashes led to a sharp reduction in household wealth, which led to a pullback in consumer spending, especially on new homes and durable manufactured goods (autos, in particular).

As workers were laid off in the construction, finance, and durable goods sectors, their spending fell. Employed workers followed by cutting consumption, both to make up for savings lost as home prices and stocks plummeted, and also out of fears that they would be next to lose their job. As businesses lost these consumers, they also lost the incentive to purchase new capital goods (plant and equipment) to expand capacity, which further depresses the economy.

While the last two recessions lasted only eight months, the current recession has already lasted 15 months and is only getting worse. The Congressional Budget Office (CBO 2009) recently projected continued economic contraction through 2009 (CBO 2009) and continued layoffs—with unemployment averaging over 9% for the entire year of 2010.² The CBO also estimates that the GDP gap, which measures how much the economy is underperforming, will total about \$2 trillion over the next two years (CBO 2009). This is a staggering economic loss, equivalent to \$6,600 for every man, woman, and child in the United States.

The most reliable tool in policy makers' kit for fighting recessions—the Federal Reserve cutting short-term interest rates—has failed to spark any recovery. These short-term rates are essentially zero today.³

When an economy is mired in recession even with near-zero interest rates, the case for government *directly* boosting demand is clear. This can be accomplished

either through tax cuts or government purchases—that is, either the government gives money back to households to boost their spending or spends the money itself.⁴

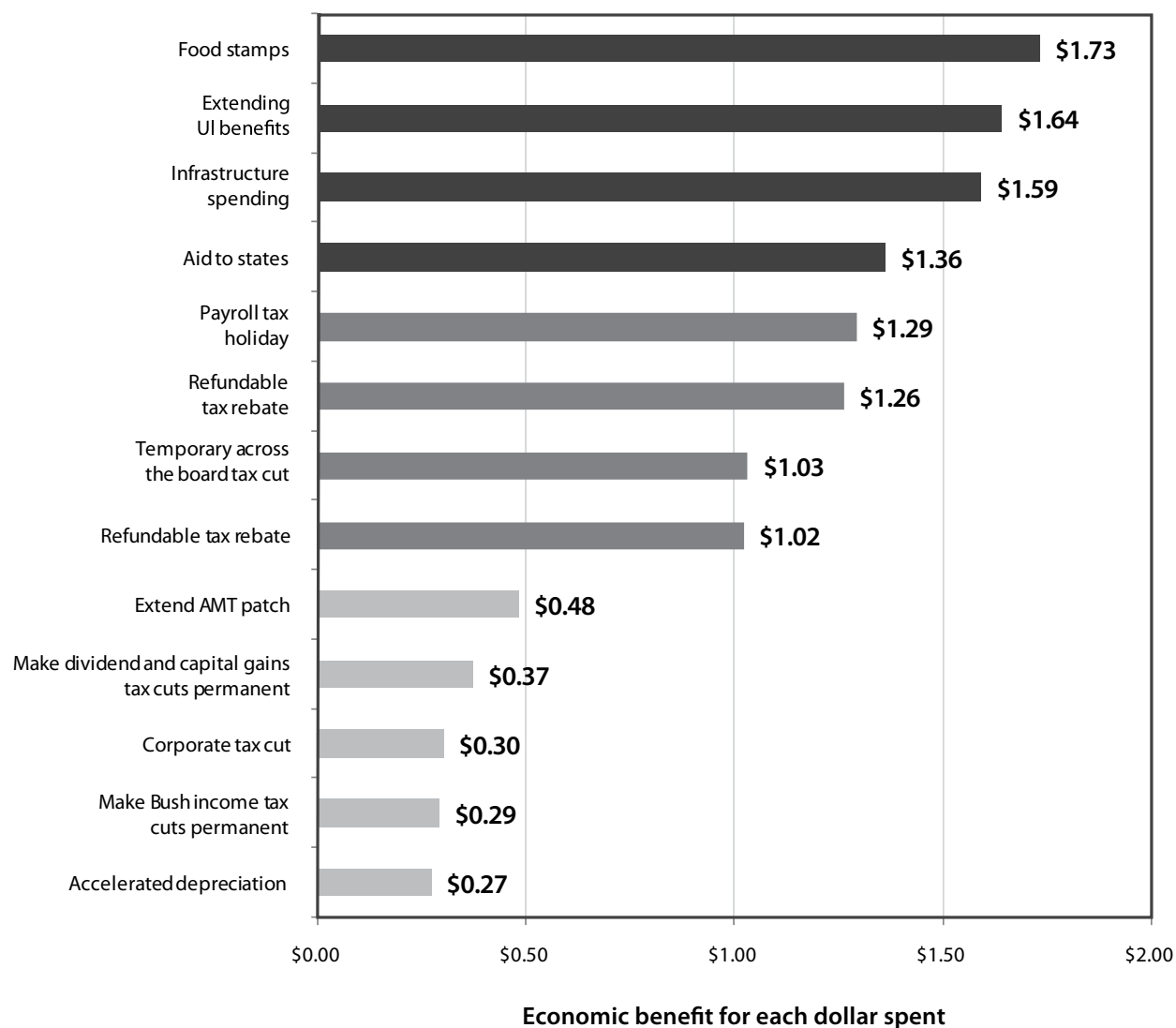
The first round of spending on infrastructure investment is almost guaranteed to be spent back into the domestic economy and boost demand. These investment dollars are used to hire construction workers, planners, architects, engineers, project managers, and foremen, who in turn use their new income to boost their own spending. A key point is that this effect is not limited to the industry *directly* receiving investment funds. For example, every job directly supported in the construction industry supports two additional jobs in supplier industries, such as accounting, office supplies, and construction capital manufacturing (such as Caterpillar, which recently laid off 20,000 workers). Additional jobs are created as these workers spend their income back into the economy—for example, construction workers newly hired by money from ARRA will patronize diners and restaurants around the worksite, spurring demand for cooks and waitresses.

Of course, a portion of all these new hires will just pull already-employed resources out of other sectors and industries. However, a portion of these new hires will instead put currently idle resources to work. **Figure A** reports on the *net* addition to employed resources resulting from various measures of economic stimulus, ranked by comparative effectiveness.

Each dollar of infrastructure investment provides on net about \$1.59 in additional economic growth, making it about 33% more effective than generic tax cuts and 10-15 times more effective than many variants of business tax cuts. These multipliers imply that each \$100 billion in infrastructure spending generates roughly \$160 billion in additional economic output. This additional economic output would support roughly 1.1 million net new jobs in the American economy. In short, infrastructure spending, broadly speaking, is about as good a form of economic stimulus as there is.

Job impact of alternative infrastructure investments

Not all infrastructure investment options are created equally in terms of job creation. Investments vary by

FIGURE A**Economic benefits of various stimulus provisions**

SOURCE: Mark Zandi from Moody's Economy.com.

magnitude, speed, type, and location of the jobs created. Existing research suggests that two types of specific transportation investments—"fix-it-first" and public transportation—provide an exceptionally large bang-for-the-buck as economic stimulus.

Fix-it-first

Fix-it-first, which would focus investments on the maintenance and repair of existing transportation capacity,

would create more jobs per dollar than investments in new capacity. A new overpass, for example, requires huge amounts of steel beams, rebar, and concrete, along with heavy machinery. New capacity also often involves land costs, either purchasing the rights-of-way or the land itself. By contrast, maintenance and repair projects do not have as costly capital and land expenses, so a larger share of each fix-it-first dollar goes toward job creation. Recent studies have found that about 8% to 17% more

jobs are created by fix-it-first investments than by investments in new capacity (Mattera and LeRoy 2003; Surface Transportation Policy Project 2004; see Bivens, Irons, and Pollack 2009, Appendix 1).

From the perspective of short-term economic recovery, a fix-it-first strategy also has the benefit of speed, a key advantage in a recessionary economy. New capacity projects must first go through a lengthy planning process, often including cost analysis, environmental impact assessments, engineering plans, and land acquisition. By contrast, the lead time for maintenance and repair projects is much shorter, often a highly truncated version of the above process and much less land acquisition. An economy in a recession can deteriorate quickly, so the faster the government can create jobs and boost aggregate demand, the better.

Public transportation

Investments in public transportation also create more jobs per dollar than investments in the traditional mix of transportation modes (such as roads, bridges, and tunnels), for many of the same reasons that advantage fix-it-first over new capacity. Public transportation investments require less money for land and capital, although this varies across types of investments; for example, investments in new rail systems tend to have higher land costs than bus systems. Research has found that investments in public transportation create 9% to 29% more jobs than those in the traditional road and bridge infrastructure (Surface Transportation Policy Project 2004; Heintz, Pollin, and Garrett-Peltier 2009).

Although most discussion regarding the recently passed stimulus package focused attention on capital investments, temporary federal operations aid to transit agencies would be a very effective economic stimulus. Nearly every state must balance its budget, and as the downturn causes tax revenues to fall, states are forced to cut services such as public transportation. This leads to layoffs for transit workers and rising transportation costs for transit users, both of which depress demand and shrink the economy. Reducing transit services also decreases labor force mobility, making it more difficult for many workers to get to their current jobs or find

new jobs. Federal operating assistance to transit agencies would act as an immediate stimulus, preventing layoffs, increasing disposable income, and helping low-income households that are in the most need of support.

Long-run structural change and job composition

Public investments in transportation and other infrastructure can have a more permanent impact on labor markets—most notably the composition of jobs (wage levels, educational requirements, union status, etc.)—and should be assessed in light of broader economic trends. For example, while the economic downturn is a recent and (hopefully) temporary problem, inequality of hourly wages has been growing for decades. This rising inequality has been the single largest impediment to raising the living standards of typical American workers, even in an era of respectable productivity growth.

Much (though far from all) of this rise in wage inequality is attributable to the rapid increase in the “college premium” since 1979. The college premium refers to the pay advantage enjoyed by workers who have completed a four-year college degree that persists even after controlling for other relevant labor market characteristics, such as gender, race, ethnicity, experience, region of residence, etc. In 1979 the college premium was roughly 50% (college workers earned wages that were 50% higher than those of non-graduates), and by 2007 it had risen to roughly 80%.

Another key contributing factor to this rising inequality is the de-unionization of the U.S. workforce over the last few decades (DiNardo, Fortin, and Lemieux 1996). Unions provide bargaining power to many workers who otherwise lack it in the modern U.S. economy. Consequently, the union “wage-and-benefit premium” (that wage-and-benefit advantage enjoyed by union members that persists even after controlling for other relevant labor market characteristics) averages roughly 15%, and is much larger for lower-wage workers. This disproportionate advantage that unions provide to low-wage workers is a key reason why de-unionization has led to a much less equal U.S. economy. Since 1979, unionization rates have fallen by more than half, from 27% of the workforce to 12.3%.

The number and types of jobs supported by transportation spending

In a companion piece, we describe the model used to determine the number and types of jobs that would be supported through large scale public infrastructure investment aimed at modernizing the American transportation system (see Appendix and Bivens, Irons, and Pollack 2009).

To better describe the potential impact of investments in transportation, this paper uses three scenarios forwarded by advocates of increased transportation spending as necessary to meet pressing social goals as the model's policy *inputs*. Note, that the job impact assessed here is only the impact of the construction of the projects (and operation, in the case of transit projects). The projects would likely have broader lasting impacts on the economy; however an assessment of those impacts is beyond the scope of this work. The three scenarios are derived from the following (see **Table 1**):

- **Scenario 1.** A report from the group Reconnecting America (2008) claims that roughly 400 new rail, streetcar, and bus rapid transit projects have been proposed across the United States yet remain unfunded. Meeting this need would require approximately \$250 billion in new funding.

- **Scenario 2.** The American Public Transport Association (APTA) and the American Association of State Highway and Transportation Officials (AASHTO), who cite a report by Cambridge Systematics (1999) to argue that improving (not just maintaining) physical conditions and service performance in the nation's public transportation infrastructure would require an investment of approximately \$750 billion.
- **Scenario 3.** A discussion paper from APTA (2009) argued that in order to replace oil imports on a scale equivalent to what the United States imports from the Persian Gulf each year and to spur an 8% reduction in carbon emissions from the U.S. transportation sector, investments of 1.6% of total U.S. GDP would have to be made annually. Over the decade, this translates into approximately \$2.3 trillion dollars.

Using these spending flows as inputs into our model, we find that the jobs supported by transportation investments would skew heavily away from workers with a four-year college degree—only 19% of the jobs occupied by workers with a college degree or greater (**Table 2**), compared to roughly 28% in the overall economy. These jobs also skew heavily toward workers without a high school degree or those with a degree but who have not attended college. Despite having less education on average,

TABLE 1

Model inputs for receiving industry flows

Industry	Share	Three scenarios (\$ billions)		
		Scenario 1	Scenario 2	Scenario 3
Construction	33%	\$83	\$248	\$759
Manufacturing				
Railroad rolling stock	17%	43	128	391
Other transportation	17	43	128	391
Rail transportation	17	43	128	391
Transit/ground psgr transport	17	43	128	391
TOTAL	100%	\$250	\$750	\$2,300

SOURCE: Authors' analysis of BLS and Census data. For more information on methodology, see Bivens, Irons, and Pollack (2009).

the workers' wages are actually concentrated in the middle of the overall wage distribution, with relatively few high-paying jobs (top fifth) but also relatively few low-paying jobs (bottom fifth).

Jobs created through transportation investments are also about 40% more likely to be unionized, producing

17% union jobs versus 12% in the overall economy (see **Table 3**). Thus, a large-scale and permanent commitment to transportation infrastructure investment would help reverse the de-unionization that has characterized the last few decades and in turn lead to rising wages for non-college workers and a reduction

TABLE 2

Direct and indirect jobs supported through \$250 billion in transit investment

	Direct	Indirect	Total	Direct	Indirect	Total
	(% of total)					
Totals	1,497,093	1,322,367	2,819,460	53%	47%	100%
Gender						
<i>Male</i>	1,228,085	831,745	2,059,829	82%	63%	73%
<i>Female</i>	269,009	490,622	759,631	18	37%	27%
Race						
<i>White</i>	1,031,612	848,949	1,880,561	69%	64%	67%
<i>Black</i>	111,213	229,290	340,503	7	17	12
<i>Hispanic</i>	283,303	179,339	462,642	19	14	16
<i>Asian</i>	29,605	62,678	92,283	2	5	3
<i>Other</i>	41,360	2,809	44,169	3	0	2
Union status						
<i>Covered</i>	171,490	315,453	486,943	11%	24%	17%
<i>Non-covered</i>	1,325,603	1,007,106	2,332,709	89	76	83
Education						
<i>Less than high school</i>	229,238	164,622	393,860	15%	12%	14%
<i>High school only</i>	598,257	473,116	1,071,373	40	36	38
<i>Some college</i>	402,788	403,509	806,297	27	31	29
<i>BA or greater</i>	266,810	544,356	547,930	18	41	19
Wage quintiles						
<i>First (lowest)</i>	170,579	266,508	437,087	11%	20%	16%
<i>Second</i>	296,111	328,185	624,295	20	25	22
<i>Third</i>	295,117	337,903	633,020	20	26	22
<i>Fourth</i>	363,374	259,999	623,374	24	20	22
<i>Fifth (highest)</i>	371,912	130,078	501,990	25	10	18
Region						
<i>Northeast</i>	160,049	443,614	603,663	11%	34%	21%
<i>Midwest</i>	289,597	392,178	681,775	19	30	24
<i>South</i>	737,199	211,565	948,764	49	16	34
<i>West</i>	310,248	275,010	585,258	21	21	21

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TABLE 2 (cont.)

Direct and indirect jobs supported through \$250 billion in transit investment

	Direct	Indirect	Total	Direct	Indirect	Total
	(% of total)					
Totals	1,497,093	1,322,367	2,819,460	53%	47%	100%
Occupations						
<i>Mgt, business and finance</i>	198,934	145,302	344,237	13%	11%	12%
<i>Professional</i>	123,758	103,818	227,576	8	8	8
<i>Service</i>	16,358	123,019	139,377	1	9	5
<i>Sales & related</i>	25,646	125,494	151,140	2	9	5
<i>Office & admin support</i>	139,345	181,618	320,963	9	14	11
<i>Farm, fish, forest</i>	0	0	0	0	0	0
<i>Construction & extraction</i>	481,856	-18,398	463,457	32	-1	16
<i>Install, maintain & repair</i>	87,129	87,019	174,149	6	7	6
<i>Production</i>	244,239	125,524	369,762	16	9	13
<i>Transport</i>	179,376	439,237	618,613	12	33	22
Central city status						
<i>In central city of MSA</i>	328,651	415,938	744,589	22%	31%	26%
<i>In MSA, not central city</i>	583,927	638,685	1,222,612	39	48	43
<i>Not in MSA</i>	331,300	114,964	446,264	22	9	16
<i>Not identified</i>	253,216	152,780	405,996	17	12	14

* Estimates do not include spending effects.

SOURCE: Authors' analysis of BLS and Census data. For more information on methodology, see Bivens, Irons, and Pollack (2009).

in inequality. Greater unionization will also result in more access to job training and mentorship programs that could prove key to expanding job opportunities to high-unemployment communities.

Table 3 also shows how the jobs created through increased transportation investments stack up against a number of other benchmarks, including the total economy as well as the direct jobs created in the construction sector alone (the single largest recipient of transportation investment funds). The table also compares jobs created through transportation investments to those in the finance, insurance, and real estate (FIRE) sector. Going forward, it is extremely likely that the economic footprint of the FIRE sector will shrink considerably in the coming decade. If the jobs shed in this sector are made up for with jobs created through transportation in-

vestments, the inequality-fighting impacts of this swap could be large indeed.

All told, the jobs created by transportation investments should be expected to raise the wages of non-college workers (both through the impact on relative demands as well as through the union channel) by roughly 0.1-0.7% each year that the increased commitment to transportation infrastructure investment persists. For the purpose of this paper, we assume that the full value of the scenarios we score with our model span the next decade. **Table 4** summarizes the results associated with each of the scenarios.

These investments will not change the face of American wage inequality on its own, but it is encouraging to see that truly ambitious transportation infrastructure investments *would* have some visible (and welcome) impacts in pushing back against many trends that have reduced the

demand for and bargaining power of non-college workers in the United States for decades.

It should be noted, however, that not all of the labor market outcomes of transportation investment

are unambiguously positive: the jobs skew heavily toward men, with only 27% of the direct and indirect jobs going toward women (although the full impact—once re-spending jobs are included—would not be as

TABLE 3

How do transit-created jobs stack up?
Comparing jobs created through transit investments to other sectors

	Total economy	Transit package	Construction only	Rail operations	Rail manufacturing	FIRE
Totals	100%	2%	7%	1%	0.1%	6%
Gender						
Male	60%	73%	90%	70%	68%	80%
Female	40	27	10	30	32	20
Race						
White	67%	67%	63%	72%	70%	78%
Black	11	12	5	9	10	5
Hispanic	15	16	29	13	13	11
Asian	4	3	1	3	4	1
Other	2	2	2	3	3	5
Union status						
Covered	12%	17%	14%	11%	13%	7%
Non-covered	88	83	86	90	87	93
Education						
Less than high school	11%	14%	25%	8%	5%	7%
High school only	31	38	41	36	40	35
Some college	30	29	24	29	27	32
BA or greater	28	19	10	27	28	27
Wage quintiles						
First (lowest)	19%	16%	13%	13%	16%	6%
Second	21	22	23	17	17	14
Third	20	22	24	17	21	8
Fourth	20	22	23	24	21	29
Fifth (highest)	20	18	16	29	24	44
Region						
Northeast	18%	21%	15%	11%	14%	2%
Midwest	23	24	18	20	7	26
South	35	34	41	48	53	56
West	23	21	26	21	25	16

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	Total economy	Transit package	Construction only	Rail operations		
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Totals	100%	2%	7%	1%	0.1%	6%
Occupations						
<i>Mgt, business and finance</i>	15%	12%	10%	17%	20%	17%
<i>Professional</i>	14	8	2	13	8	16
<i>Service</i>	13	5	1	4	5	0
<i>Sales & related</i>	8	5	1	4	6	1
<i>Office & admin support</i>	15	11	6	14	17	10
<i>Farm, fish, forest</i>	0	0	0	0	0	0
<i>Construction & extraction</i>	7	16	70	4	0	10
<i>Install, maintain & repair</i>	8	6	5	6	3	8
<i>Production</i>	10	13	2	16	3	21
<i>Transport</i>	10	22	3	21	38	16
Central city status						
<i>In central city of MSA</i>	28%	26%	27%	21%	21%	17%
<i>In MSA, not central city</i>	44	43	45	42	55	29
<i>Not in MSA</i>	14	16	14	22	12	36
<i>Not identified</i>	14	14	14	15	11	19

SOURCE: Authors' analysis of BLS and Census data. For more information on methodology, see Bivens, Irons, and Pollack (2009).

skewed toward men). Weighting jobs so heavily toward men could, among other things, exacerbate the gender pay gap, clearly a negative outcome. Furthermore, given that over half the individuals in poverty are in households lacking adult males, a jobs program like infrastructure investment would not be, by itself, an effective anti-poverty tool unless significant changes are made so that it provides ample job opportunities to women.

A key part of the agenda for policy makers interested in long-run transportation investments should address this gender imbalance, perhaps by including provisions that set hiring goals or divert a portion of the investment toward job training programs for women.

However, public investments in infrastructure of these kinds will tighten the labor market more broadly,

and the wage and employment gains will not be limited to the narrow construction sector. Given the competitive nature of the U.S. labor market, wage gains would likely spill over from the sectors most directly impacted to a broad range of sectors and occupations.

Conclusion

An ambitious investment in transportation would leave a visible footprint on the American job market. In the short run, this investment would provide a sorely needed boost to the economy and aid efforts to move the U.S. economy out of recession. In the longer run, such investments could increase demand for non-college and unionized labor, providing a firm nudge back against the rise in inequality that the U.S. economy has seen in recent decades.

TABLE 4

Effect of transit investments on relative labor demands

	\$250 billion investment	\$750 billion investment	\$2,300 billion investment
(1,000s)			
Total jobs	281,946	845,838	2,593,903
<i>College degree +</i>	54,793	164,379	504,095
<i>High school grads</i>	107,137	321,412	985,663
(Percent of U.S. labor force)			
Total jobs	0.2%	0.6%	1.9%
<i>College degree +</i>	0.1%	0.4%	1.3%
<i>High school grads</i>	0.2%	0.7%	2.3%
Transit jobs replace "typical" jobs			
<i>Relative demand change</i>			
<i>High school grads/college degree</i>	0.1%	0.3%	1.0%
<i>Relative wage change</i>			
<i>High school grads/college degree</i>	0.1%	0.2%	0.7%

SOURCE: Authors' analysis of BLS and Census data. For more information on methodology, see Bivens, Irons, and Pollack (2009).

Despite its importance, we continue year after year to invest less and less as a share of GDP in our nation's infrastructure, which now requires a massive new commitment just to maintain the existing structures. Beyond just bringing the infrastructure to good condition, investments in modernizing the transportation system could yield many additional benefits. Reducing congestion and expanding labor markets

could improve business productivity, while increasing mobility and lowering transportation costs could play a role in reducing poverty. A modern transportation system would also be more efficient and rely less on automotive travel, which would lower greenhouse gas emissions and improve national security by reducing our dependence on fossil fuels. These issues will be further examined in future analyses.

Appendix: Estimating the number and kind of jobs

To assess the impact of federal investments, we merge industrial data on input-output relationships with household-level data on demographic and labor market variables. This allows us to characterize the job outcomes that would result from the change in industrial mix accompanying increased infrastructure investment. Essentially, input-output data allows us to translate a given amount of industry spending into a total number of jobs supported directly and in supplying industries. The household data then allows us to characterize the demographic and labor-market composition of each industry's workforce. Combining this information allows us to characterize both the total number of jobs supported by a given level of industrial spending as well as the types of jobs and workers that are supported.

Both the direct and indirect jobs associated with a given amount of spending are derived from the employment requirements matrix (ERM) compiled by the Bureau of Labor Statistics (BLS). To estimate the characteristics of jobs created through different kinds of spending, we use data from the Current Population Survey (CPS) to calculate the share of each industry's employment by relevant categories (gender, race, ethnicity, wage levels, etc). To insure we have a large enough sample size, we

pool together data from 2005 to 2007. To match up the CPS data on demographic and labor market variables with the BLS data on industry input-output relationships, we needed to construct a cross-walk between the industry coding schemes used in the respective datasets. This crosswalk matches up both the CPS and the BLS industry codes to a third classification system (the North American Industrial Classification System, or NAICS) that maps cleanly onto both the CPS and BLS data.

It is important to note that these estimates are based on currently existing pattern of employment across sectors. As such the final results tell us how many and what kinds of jobs would be created with our current economy. However, to the extent that the new investments are aimed at transforming the economy or labor market, our results are not precisely indicative of the true impact. For example, policy restrictions on the kinds or quality of jobs created, and specific policy targeting of job creation would lead to different outcomes than estimated here. However, the numbers presented here compose an estimated baseline for policy makers to consider.

Full details can be found in Bivens, Irons, and Pollack (2009).

The Economic Policy Institute is grateful to the Rockefeller Foundation, the Annie E. Casey Foundation, and an anonymous donor for supporting this research.

Endnotes

1. See, for example, M. Zandi. Written Testimony Before the U.S. Senate Budget Committee, “The Economic Outlook and Stimulus Options,” November 19, 2008, at http://www.economy.com/mark-zandi/documents/Senate_Budget_Committee_11_19_08.pdf; or Macroeconomic Advisers “Fiscal Policy to the Rescue” *Macro Focus*, 4(1), January 15, 2009.
2. Based on data found at <http://www.cbo.gov/ftpdocs/99xx/doc9957/econproj.xls>
3. One reason for the ineffectiveness of monetary policy is the fact that the housing sector is plagued by record levels of inventory. Traditionally, increased home sales were a key “transmission mechanism” through which interest rate cuts sparked economic recovery. Today, as record inventories put relentless downward pressure on home prices, prospective buyers remain on the sideline even in the face of low interest rates. Without new buyers, builders will stay on the sidelines as well.
4. Generally, tax cuts are much less effective than government spending at boosting domestic demand. During a recession, households save rather than spend much of their tax cuts, thereby providing only a modest boost to demand. With high levels of debt and huge losses in their housing equity, households are today even more likely to save tax cuts than in a normal recession. Tax cuts are also more likely to be spent on imported goods, which do not spur domestic production and employment.

References

- American Public Transportation Association. 2009. *Changing the Way America Moves: Creating a More Robust Economy, a Smaller Carbon Footprint, and Energy Independence*. Washington, D.C.: APTA. Spring. http://www.apta.com/research/info/online/documents/america_moves_09.pdf
- Bivens, Josh, John Irons, and Ethan Pollack. 2009. *Tools for Assessing the Labor Market Impacts of Infrastructure Investment*. Economic Policy Institute Working Paper #283. Washington, D.C.: EPI.
- Cambridge Systematics, Inc. 1999. *Public Transportation and the Nation's Economy: A Quantitative Analysis of Public Transportation's Economic Impact*. Washington, D.C.: Cambridge Systematics. October. <http://www.apta.com/research/info/online/documents/vary.pdf>
- Congressional Budget Office (CBO). 2009. “The State of the Economy and Issues in Developing an Effective Policy Response” Testimony before the House Budget Committee, January 27. http://www.cbo.gov/ftpdocs/99xx/doc9967/01-27-StateofEconomy_Testimony.pdf
- DiNardo, John, Nicole M. Fortin, and Thomas Lemieux. 1996. Labor market institutions and the distribution of wages, 1973-1992: A semiparametric approach. *Econometrica*. Econometric Society, Vol. 64, No. 5, pp. 1001-44, September.
- Heintz, Robert, James Pollin, and Heidi Garrett-Peltier. 2009. *How Infrastructure Investments Support the U.S. Economy: Employment, Productivity and Growth*. Amherst, Mass.: Political Economy Research Institute. January. <http://www.peri.umass.edu/236/hash/efc9f7456a/publication/333/>
- Mattera, Philip, and Greg LeRoy. 2003. *The Jobs are Back in Town: Urban Smart Growth and Construction Employment*. Washington, D.C.: Good Jobs First. November. <http://www.goodjobsfirst.org/pdf/backintown.pdf>
- Reconnecting America. 2008. *Jumpstarting the Transit Space Race: How the New Administration Could Make America Energy-Independent, Create Jobs, and Keep the Economy Strong*. Washington, D.C.: Reconnecting America. October. <http://reconnectingamerica.org/public/download/jumpstartingtransit>
- Surface Transportation Policy Project. 2004. *Setting the Record Straight: Transit, Fixing Roads and Bridges Offer Greatest Job Gains*. Washington, D.C.: STPP. January. http://www.transact.org/library/decoder/jobs_decoder.pdf