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Demographic Analysis of Recovery Act Supported Jobs in Massachusetts, Quarters 1 and 2, 2011: FINAL REPORT

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Demographic Analysis of Recovery Act Supported Jobs in Massachusetts, Quarters 1 and 2, 2011

FINAL REPORT | JANUARY 2013

*Conducted by the Center for Women in Politics and Public Policy and
the Edward J. Collins, Jr. Center for Public Management*

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EXECUTIVE SUMMARY

The American Recovery and Reinvestment Act (ARRA)

In order to address the economic downturn experienced in the United States starting in late 2006, the United States Congress passed the American Recovery and Reinvestment Act (ARRA) in February 2009. This act allocated \$787 billion for tax cuts and spending measures in order to jumpstart economic growth and spur recovery from the effects of this recession. This federal funding was allocated for fiscal years 2009 and 2010, with the expectation that it would continue to have an impact into fiscal year 2014¹.

About this Report

Since 2009, researchers have analyzed the economic and employment impact of ARRA spending and tax policies. The current report is possible due to the efforts of Massachusetts policymakers who went beyond federal reporting requirements to require additional reporting on the number of workers who received ARRA-funded pay. ARRA workers' demographic characteristics were also collected as part of the Massachusetts' ARRA reporting requirements to allow for transparency and determine the fiscal policy's impact on the state and local economy. The Massachusetts Recovery and Reinvestment Office (MassRRO) makes available much of these data on their website (www.mass.gov/recovery), including highlights for each funding quarter.

This report builds on a similar report from 2010, *Demographic Analysis of Recovery Act Supported Jobs in Massachusetts, Quarters 1 and 2, 2010*, providing an in-depth analysis of the data that the MassRRO office collected during Quarters 1 and 2 of 2011. In addition to analyzing the employment and demographic effects of ARRA in Quarters 1 and 2 of 2011, the 2011 data are compared with data from the same two quarters of 2010. The data represent four cross-sections of time demonstrating what the Massachusetts ARRA funding was doing at each point. The analysis emphasizes the employment effects, by race, ethnicity, gender, and disability status. In addition, data are analyzed by geographic location, providing information on the distribution of ARRA workers throughout the Commonwealth of Massachusetts as well as the City of Boston. When possible, data from the MassRRO are compared to the general state population using data obtained from the Center for Economic Policy Research, the U.S. Census, the Boston Indicators Project, and others. However, as with any data there are some limitations, including the consistency of reporting across ARRA contractors.

Findings from this analysis provide policymakers information about how ARRA continues to impact the economy and the working population. Such information may guide policymakers in the future when crafting fiscal policies, especially those intended to spur economic growth.

¹ The Recovery Act, http://www.recovery.gov/About/Pages/The_Act.aspx, accessed July 31, 2012.

Featured Findings

As demonstrated in this report and detailed further below, ARRA-funded employment had a statewide impact with close to 95% of Massachusetts cities and towns being home to an ARRA-funded job holder. ARRA-funded job holders were largely representative of the Massachusetts labor force in terms of race, ethnicity, and gender. In Quarter 1 of 2011, 15,023 jobs² were retained via ARRA-funded paychecks; in Quarter 2 of 2011, 16,871 jobs were retained via ARRA funding. An additional 4,059 jobs were created³ in Quarter 1 through ARRA funding and 4,857 jobs were created in Quarter 2.

Job Creation and Retention by Funding Category

- In Quarter 1 of 2011, 15,023 jobs were retained and an additional 4,059 jobs were created via ARRA funding.
 - Of those retained jobs, close to two thirds were funded through education spending. Additionally, roughly 55% of jobs created through ARRA funding were funded via education grants, awards, and contracts.
 - 11% of retained jobs were in the Clean Energy and Environment field, while close to 20% of the created jobs were funded through Clean Energy and Environment spending.
 - Housing contracts/awards funded about 8% of retained jobs and an additional 11% of jobs that were created in the first quarter of 2011.
- In Quarter 2 of 2011 16,871 jobs were retained and 4,857 jobs were created through ARRA funds.
 - Similar to the first quarter, close to two thirds of the jobs retained were funded through ARRA Education spending and half of the jobs created in Quarter 2 of 2011 were funded through education based funds.
 - Transportation spending funded close to 8% of the jobs retained in Quarter 2 of 2011; 14% of the created jobs in Quarter 2 were funded via Transportation.
 - In Quarter 2, Housing spending accounted for 5% of the jobs retained and 7% of the jobs created.

ARRA Employment by Race, Ethnicity, and Gender

As a whole, data indicate that ARRA-funded workers are representative of the state labor force and patterns within it.

- In both quarters of 2011, Hispanics constituted a greater proportion of ARRA job holders than among those employed in the Massachusetts workforce.
- Although Blacks constituted a greater proportion of ARRA job holders than among those employed in the Massachusetts workforce during Quarters 1 and 2 of 2010, by Quarters 1 and 2 of 2011, their share of ARRA workers declined slightly and was no longer greater than their proportion of the state labor force as whole in 2011 (5.3% and 5.1%, respectively).
- Asian ARRA workers constituted roughly 2.5% of all ARRA workers, below their share of the state labor force (5.8%).
- ARRA-funded job holders were more likely to be women in both Quarters 1 and 2 of 2011 (55.7%, 57.8%, respectively). This is the opposite of Quarter 2 in 2010, in which ARRA workers were more likely to be male (51%).

² In this report, we analyzed job creation and retention using headcount data. These data were supplied to the Massachusetts Reinvestment and Recovery Office by ARRA recipients. Aggregate headcount data reflect the number of people who received an ARRA-funded paycheck within a given quarter. It is possible that an individual could receive an ARRA-funded paycheck in Quarter 1 and in Quarter 2; therefore, they could be counted as a "job" retained/created in one or both quarters.

³ It should be noted that a person receiving an ARRA-funded paycheck for a position created in any quarter of a fiscal year was listed under a created position for the remainder of the fiscal year as long as the position was still in existence. For example, if a person working in a job created in Quarter 1 of 2011 and was still receiving an ARRA-funded paycheck for the same job in Quarter 2 of 2011, then they were listed under created jobs in Quarter 1 and Quarter 2 of 2011.

Distribution of Jobs by Funding Category, Race, and Ethnicity

- Persons of color made up 10.3 % of Massachusetts ARRA-funded job holders in Quarter 1 of 2011; however, this proportion dropped to 9.7% in Quarter 2. Reflecting this shift, Black ARRA workers held 11% of positions in the Housing and Accountability funding categories in Quarter 1, but only 9% of these categories in Quarter 2 of 2011. In comparison, persons of color made up 16.6% of the Massachusetts labor force in 2010 (CEPR, 2010). As examined more deeply in the report, the difference between the ratio of persons of color could reflect a greater proportion of Hispanics and a smaller proportion of Asians in the ARRA workforce than in the Massachusetts labor market as a whole.
- Whites held over 90% of positions in education, Clean Energy and Environment, and Transportation funding categories in Quarter 1 of 2011. In Quarter 2, this proportion remained constant in Education and Transportation, but dipped to 87.7% in Clean Energy and Environment.
- Hispanics held 13% of positions in the Housing funding category in Quarter 1 of 2011; by Quarter 2, this percentage had risen to 19.1%.
- Asian ARRA workers held over 25% of positions in the Technology and Research category in both Quarters 1 and 2 of 2011.
- Close to 8% of Public Safety and Homeland Security jobs were held by those workers who were listed as Other races in Quarter 1 of 2011. However, this percentage dropped to 3.2% in Quarter 2 of the same year.

Distribution of Jobs by Funding Category and Gender

- Men were the majority of ARRA workers in Clean Energy and Environment, Housing, Public Safety and Homeland Security, and Transportation funding categories across both quarters of 2011. Women constituted just 4.5% of Transportation ARRA job holders in Quarter 1 and only 2.6% in Quarter 2 of 2011.
- Women were the majority of ARRA workers in Education, Accountability, Safety Net, and Workforce Programs funding categories in both quarters of 2011.
 - 66% of all Mass-ARRA jobs in Quarter 1 and 61% in Quarter 2 were in Education; the concentration of women in this category is generally consistent with the proportion of women working in the field of Education.
- Technology and Research employment was split fairly evenly between women and men; although the percentage of men was slightly larger than women in this sector (52.9% of workers in Quarter 1 and 52.1% in Quarter 2 were male).

Distribution of Jobs by Disability Status and Funding Category

- Disabled workers held ARRA-funded jobs in Clean Energy and Environment, Education, Housing, Safety Net Programs and Workforce Programs only and were not represented in Accountability, Public Safety and Homeland Security, Technology and Research and Transportation across both Quarters 1 and 2 of 2011.
- The greatest share of disabled ARRA workers was in the Safety Net Programs category with .40% and .38% in Quarters 1 and 2 of 2011, respectively.
- The number of disabled ARRA workers increased from Quarter 1 to Quarter 2 of 2011. However, their share of the total number of ARRA workers decreased. This is due to a larger number of overall ARRA-funded workers from Q1 to Q2 of 2011.

Geographic Analysis: The Impact of ARRA on Massachusetts Communities and Neighborhoods

- Roughly 95% of Massachusetts cities and towns were home to ARRA-funded workers in both quarters of 2011. This suggests a statewide impact of ARRA employment spending.
- In the City of Boston, close to one-third of ARRA workers lived in the Dorchester and Roxbury neighborhoods combined (32.2 %, Quarter 1 of 2011; 31.4%, Quarter 2 of 2011); an additional 10% lived in Jamaica Plain in Quarter 1 increasing to 11.8 % in Quarter 2.

ARRA and Job Quality

- The jobs that have been retained or created by ARRA fall into two broad categories of quality level:
 - Jobs that have been directly created or retained within the public sector and/or within the private sector via government contract tend to be disproportionately good jobs that pay wages at or above the private sector average and include health insurance and pension benefits, or
 - Jobs that were indirectly created in the broader economy thanks to the additional spending of those who were directly hired by ARRA funds reflect the entire wage and benefits spectrum, although there is some reason to believe that these indirectly created jobs may be disproportionately lower wage jobs, considering the industries and regions targeted by ARRA spending.

Conclusion

In sum, although some subpopulations of Massachusetts residents may have benefitted more than others across the distribution of workers by funding category, ARRA-funded job holders did not substantially differ from the Massachusetts labor force. Data show that not only did ARRA spending create many jobs across the state of Massachusetts, it also retained jobs for many people. Although ARRA-funded employment decreased from Quarters 1 and 2 of 2010 to Quarters 1 and 2 of 2011, within 2011, employment increased from Quarter 1 to Quarter 2. These findings highlight the employment effects of ARRA spending.

INTRODUCTION

In 2010 the University of Massachusetts Boston's Center for Women in Politics and Public Policy and the Edward J. Collins Jr. Center for Public Management, both of the McCormack Graduate School of Policy and Global Studies, conducted a demographic analysis of ARRA (American Recovery and Reinvestment Act) data collected in the first two quarters of 2010 by Massachusetts Recovery and Reinvestment Office (MassRRO). This first report, *Demographic Analysis of Recovery Act Supported Jobs in Massachusetts, Quarters 1 and 2, 2010*,⁴ summarized the available data for Massachusetts ARRA recipients from the first and second quarters of 2010 and provided breakdowns of retained or created jobs by location (counties and zip codes), race, ethnicity, gender, and disability status. It found that those employed as a result of ARRA's direct spending measures reflected the population at large in Massachusetts. In other words, in those two quarters of 2010, those for whom jobs were created or retained through ARRA funding reflected the population of the Commonwealth as a whole – at least in terms of the demographic factors under consideration.

Now that data from the second full year of the stimulus program is available⁵ the MassRRO is taking the opportunity to undertake a replication study using data collected from the first two quarters of 2011. This type of analysis is made possible, in part, due to the Commonwealth of Massachusetts' innovative approach to increasing transparency by requiring more detailed reporting than the federal government mandates.

The American Recovery and Reinvestment Act: Background

When faced with the prospect of the country sliding into another Great Depression, the federal government passed the American Recovery and Reinvestment Act in February 2009. Congress dedicated a total of \$787 billion to tax cuts and spending measures to stimulate economic growth after the economy had shrunk for three quarters in a row. Spending measures under ARRA comprised both increased transfer payments, such as temporarily higher and longer unemployment insurance benefits and modifications to Social Security benefits, and spending on projects, such as roads, schools, weatherization, and green technology. ARRA, for instance, dedicated a total of \$117.2 billion to green investments – energy efficiency and alternative energy sources.⁶ Economists generally credit ARRA with helping to jumpstart the economy by the middle of 2009, although there is some disagreement about the extent to which ARRA contributed to this economic growth.⁷

It is critical for the design of future policies to gather as much relevant information on the impact of current policy efforts as possible. Jobs estimates based on macroeconomic models, for instance, provide one crucial data point regarding the employment impact of such a massive economic policy initiative as ARRA. ARRA has helped to increase the number of people employed by between 0.3 million and 2.0 million in the 4th quarter of 2011, according to the Congressional Budget Office.⁸ These job effects have been strong enough to help turn the

⁴ See: http://www.whitehouse.gov/files/documents/cea_4th_arra_report.pdf http://www.umb.edu/editor_uploads/images/centers_institutes/center_women_politics/CWPPP_ARRA_FinalReport_9Feb2011.pdf

⁵ Although appropriated for FY 2009 and FY 2010, the Congressional Budget Office indicates that spending will continue through FY 2014 as implementation continues (Congressional Budget Office Cost Estimate, H.R.1 American Recovery and Reinvestment Act of 2009, January 26, 2009, <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/99xx/doc9968/hr1.pdf>, accessed July 5, 2012).

⁶ Bernard, S., et al. (2009, March 2). The greenest bail-out? Financial Times. Retrieved September 1, 2010, from <http://www.ft.com/home/uk>

⁷ Executive Office of the President, Council of Economic Advisors. (2010, July 14). The Economic Impact of the American Recovery and Reinvestment Act of 2009, Fourth Quarterly Report. Retrieved July 17, 2011, from http://www.whitehouse.gov/files/documents/cea_4th_arra_report.pdf

⁸ Congressional Budget Office. (2012, February). Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output from October 2011 through December 2011. Retrieved June 30, 2012, from <http://www.cbo.gov/publication/43013>

corner from massive U.S. job losses throughout 2009 to eventual job gains in 2010.⁹ State level estimates show that Massachusetts has indeed gained much needed economic momentum due to ARRA. The Council of Economic Advisors estimates that Massachusetts had 79,000 more jobs in the second quarter of 2010 than it would have had without ARRA.¹⁰

Policymakers undertook additional measurement efforts to improve the effectiveness of fiscal policy in the case of ARRA. Underlying this effort is an attempt to actually count the number of people who have received an ARRA-funded paycheck, where possible. Contractors receiving ARRA funds had to report initially on the number of hours which were paid for by the utilization of recovery funds, and since 2009 the federal government has required the additional reporting of FTEs for the current quarter, not cumulatively as was originally planned.¹¹ This reporting effort is a novel approach to increase the transparency of government actions through enhanced performance measures with the ultimate goal of improving the efficiency of public policies.

Massachusetts has gone beyond what the federal government suggested as far as collecting and reporting how ARRA money has been spent. The Massachusetts Recovery and Reinvestment Office website (www.mass.gov/recovery) has a wealth of information available including the number of awards by funding category and location, amount of monies awarded and expended, and FTEs and headcounts of jobs retained and created by county and city. They also provide quarterly Citizen Updates which outline expenditures in each category, cumulative spending, program and project highlights, and aggregate data on who benefits from the awards.

An Updated and Comparative Analysis

This study builds on the earlier report by providing an analysis of the first two quarters of 2011 as well as by comparing data from these quarters with comparable data from the first two quarters of 2010. Such a comparison will highlight the differences between the first full year of funding (2010) and a period during the middle of the administration of funding (2011). Therefore, this report is largely a replication of the earlier study, focused on Quarters 1 and 2 of 2011. However, there are instances highlighted below where substantial differences between 2010 and 2011 were identified.

This analysis pays particular attention to retained or created jobs, broken down by race, ethnicity, gender, and disability status. It also examines retained or created jobs by location, including a neighborhood analysis through the use of zip codes. When possible, ARRA data are compared to state labor force data allowing for an examination of the degree to which ARRA-funded workers are representative of the Massachusetts working population. The analysis approach is complementary to the use of economic models typically used to analyze the efficacy of a specific fiscal policy such as ARRA. While standard macroeconomic approaches assume that the economic relationships of the past will continue to hold under ARRA, the possibility remains that, due to its size, ARRA spending might have shifted such relationships through the emphasis of some projects over other spending measures. The approach undertaken in this study can demonstrate the industries and localities in which jobs have been created or retained, indicating the jobs effect of ARRA's direct spending.

This report builds upon the unprecedented analysis and data collection of 2010. While the

⁹ U.S. Bureau of Labor Statistics. (2010). Current Employment Statistics. Washington, DC: U.S. Government Printing Office.

¹⁰ These employment figures are larger than the numbers in Table 1 since the total jobs effect includes indirectly impacted jobs, because of the additional spending of ARRA contractors, the additional transfer benefits funded through ARRA, and the tax cuts enacted under ARRA. Executive Office of the President, Council of Economic Advisors (2010, July 14). The Economic Impact of the American Recovery and Reinvestment Act of 2009, Fourth Quarterly Report. Retrieved September 3, 2010, from http://www.whitehouse.gov/files/documents/cea_4th_arra_report.pdf

¹¹ Recovery Accountability and Transparency Board. (2010, January 15). How Jobs are Calculated. Retrieved September 3, 2010, from <http://www.recovery.gov/News/featured/Pages/Calculator.aspx>

previous analysis was able to capture the initial impact of a major policy intervention, the current analysis allows for evaluation of the later effects of this intervention as ARRA spending continued in 2011. Policymakers and researchers should use the information from both periods as a guide for crafting future policy interventions, particularly in the case of policies with an emphasis on job growth. Better data collection techniques are key to the continued transparency of government needed to sustain an informed public. Moreover, such measures will enable researchers and policymakers alike to create more efficient policies which reach their intended audience.

Data Analysis and Limitations

The analysis presented below provides a description of ARRA's impact on the Massachusetts labor market, through direct-spending projects only excluding transfer payments. Because data were collected in Quarters 1 and 2 of 2010 and 2011, the analysis describes the employment impact of ARRA during four different quarters. The data exclude funds that have been committed, but not spent. ARRA spending, after all, continued through 2011, with some programs, such as Race to the Top, continuing into 2014. As with any study, there are a number of data limitations; these include:

- The data collected on created and retained jobs are self-reported by the contractors; as a result, there may be systematic biases inherent in self-reporting.
- Similarly, race, ethnicity, and gender are reported subjectively by the contractors and may not reflect individual workers' personal identifications.
- The data are collected in the aggregate, thus capturing characteristics of ARRA workers only by groups; it is not possible to match individual demographic characteristics, funding category, and location with specific individuals. As a result, these characteristics must be examined independently; therefore, it is not possible to analyze the data using standard statistical modeling.
- Data were collected only on the direct spending effort of ARRA and only cover

jobs that have been retained or created by ARRA spending. This includes money spent on road construction, new schools, weatherization, and other green investments, among other projects and activities, and their estimated jobs effects. However, since the data do not include the employment effects of tax cuts and transfer payments, they cannot measure the entire impact of ARRA.

- While spending data are cumulative, jobs data only capture the jobs resulting from hours worked in each respective quarter. Thus the data reported here offer a snapshot in time of the effectiveness of ARRA's direct spending efforts.

2011 IMPACT OF ARRA FUNDING IN MASSACHUSETTS

Analyses of data from the first two quarters for 2011 demonstrate the geographic, gender, and race/ethnicity effects of ARRA funding for Massachusetts workers. Geographic patterns illustrate the importance of ARRA spending not only for individual job holders, but for Massachusetts as a whole. Racial, ethnic, gender, and geographic patterns highlight the ways in which fiscal policies can be tools to provide opportunities and benefits across a state population.

The Distribution of ARRA Job Holders by Funding Categories

Because the data were collected from ARRA contractors, it is possible to determine the distribution of ARRA job holders across the nine funding categories through which ARRA funds were awarded. Table 1 identifies the categories in which ARRA funding provided jobs in each quarter.

Education was the largest funding category for both Quarters 1 and 2 of 2011, employing close to two-thirds of all ARRA-funded workers more than 12,000 job holders in Quarter 1 and 13,599 in Quarter 2 (see Table 1). Clean Energy

TABLE 1: TOTAL ARRA JOB HOLDERS BY FUNDING CATEGORY, QUARTER 1 AND QUARTER 2, 2011

Funding Category	Quarter 1 ARRA Job Holders		Quarter 2 ARRA Job Holders	
	N	%	N	%
Accountability	81	0.4	80	0.4
Clean Energy and Environment	2,489	13.0	2,694	12.0
Education	12,087	63.3	13,599	62.6
Housing	1,746	9.1	1,228	5.7
Public Safety and Homeland Security	261	1.4	162	0.7
Safety Net Programs	538	2.8	385	1.8
Technology and Research	505	2.6	573	2.6
Transportation	424	2.2	2,014	9.3
Workforce Programs	951	5.0	993	4.6
TOTAL	19,082		21,728	

*Note: May not total 100 due to rounding.
Source: MassRRO Data, Quarters 1 and 2 of 2011.*

and Environment had the next largest number and share of jobs (13 percent for Quarter 1 and over 12 percent for Quarter 2). Comparing share and number of jobs by funding category

TABLE 2. ARRA JOB HOLDER DEMOGRAPHICS, QUARTER 1 AND QUARTER 2, 2011

Race	Quarter 1		Quarter 2		MA Labor Force 2010
	N	%	N	%	
Asian	452	2.6	479	2.4	5.2
Black	922	5.3	1,059	5.3	5.1
Other	419	2.4	388	2.0	0.2
White	15,667	89.7	17,898	90.3	83.4
TOTAL	17,460		19,827		
Hispanic	1,261	6.6	1,551	7.1	6.1
Gender					
Female	10,553	55.7	10,553	57.8	49.8
Male	8,395	44.3	9,019	42.2	50.2
TOTAL	18,948		21,378		

Sources: MassRRO Data, 1st and 2nd quarters, 2011;

Center for Economic and Policy Research. 2010. CPS ORG Uniform Extracts, Version 1.7. Washington, DC.

Note: "Race" does not include Hispanics or those for whom race was not reported, since Hispanics may be of any race. The total N for race calculations includes only those for whom race was reported. The total N for Hispanic calculations is taken from the headcount of ARRA-funded job holders in each quarter.

Therefore, the N for Hispanic calculations was 19,082 in Quarter 1 and 21,728 in Quarter 2. The Asian category includes Hawaiians; Other includes those reported as "two or more races," and American Indians/Native Americans.

and quarter, it is clear that the number of jobs declined in most categories. The exception was Transportation, which increased its share of jobs from 2 percent of the total in Quarter 1 to almost 10 percent in Quarter 2. In fact, the number of ARRA workers funded through transportation projects and/or grants rose from 424 in Quarter 1 to over 2,000 in Quarter 2. Housing, in contrast, declined substantially: from 9.15 percent to 5.65 percent, losing over 500 jobs in the process. The gender and race impacts of this shift in the distribution of ARRA workers are explored in the following sections.

Race/Ethnicity Effects of ARRA

In order to see the effect ARRA has had on created and retained jobs for different demographic groups, data were analyzed by race/ethnicity and gender and compared to each group's share in the Massachusetts labor market.

Table 2 shows that, for the two quarters in 2011, the share of ARRA jobs held by Whites increased marginally from 89.7% to 90.3% between Quarter 1 and Quarter 2; the share held by Blacks remained stable, while Asians and those identified as other races, declined proportionately. Hispanics, who may be of any race, experienced a modest increase in ARRA-funded jobs.

What is the demographic portrait of those who obtained or retained jobs through ARRA in Massachusetts when compared to the labor force as a whole? For a full understanding of the demographic differences discussed above, it is essential to compare these numbers with each group's share in the labor force in Massachusetts. In comparing the effects of ARRA spending in Massachusetts to the labor force in the Commonwealth, 2010 data from the Center for Economic Policy Research was used (see note in Box 1).

In general, we may conclude that ARRA-spending in Massachusetts created or retained jobs in rough proportion to those employed in the labor force as a whole. Whites, for example, made up about 90 percent of ARRA-funded job holders and constituted 83.4% of the Massachusetts labor force. As may be seen in Box 1, Hispanics, who may be of any race, had a greater proportion of representation among ARRA job holders than their share in the labor force as a whole. ARRA employment for Blacks was representative of their numbers in the labor force. In contrast, Asians constituted a lower percentage of ARRA job holders than they did in the labor force.

Box 1. ARRA-funded Job Holders as Compared to the Massachusetts Labor Force, 2011

Although some racial and ethnic groups experienced an increase in ARRA employment from Quarter 1 to Quarter 2, 2011 (see Table 2); on the whole, the race/ethnic distribution of ARRA employment reflected that of the labor force.

- As of 2010, Hispanics constituted 6.1% of the Massachusetts labor force (according to the most recent CEPR data from 2010*) whereas in Quarters 1 and 2 of 2011 they made up 6.6% and 7.1% of ARRA-funded workers, respectively.
- Blacks made up 5.1% of those employed in the labor force and 5.3% of ARRA job holders were Black for both Quarters 1 and 2.
- Asians, who comprise 5.2% of those employed in the labor force, made up 2.6% of ARRA job holders in Quarter 1 and 2.7% in Quarter 2.

**Note: It is important to note that the Massachusetts labor force data are based on 2010 Center for Economic Policy Research labor estimates. Data from 2010 were used since they are the most recent data available for comparison. Given the slow economic growth of the period, such a comparison is possible.*

**Source of labor force data: Center for Economic and Policy Research. 2010. CPS ORG Uniform Extracts, Version 1.7. Washington, DC. All data presented are for the Commonwealth of Massachusetts.*

Note: The percentages for non-Whites and Hispanics in the labor force should be viewed with some caution as their numbers in the CEPR sample are quite small.

TABLE 3. JOB HOLDER DEMOGRAPHICS, QUARTER 1 AND QUARTER 2, 2010 AND 2011

Race	Quarter 1 2010		Quarter 2 2010		Quarter 1 2011		Quarter 2 2011	
	N	%	N	%	N	%	N	%
Asian	483	3.4	660	2.7	452	2.6	479	2.4
Black	1,036	7.2	1,470	6.1	922	922	1,059	5.3
Other	219	1.5	479	2.0	419	2.4	388	2.0
White	12,580	87.9	21,661	89.3	15,667	89.7	17,898	90.3
TOTAL	14,381		24,720		17,460		19,824	
Hispanic	1,123	6.7	1,720	6.4	1,261	6.6	1,551	7.1
TOTAL	1,123		1,720		1,261		1,551	

*Source: MassRRO Data, 1st and 2nd quarters, 2010 and 2011.
Note: "Race" does not include Hispanics or those for whom race was not reported. Race calculations only include those for whom race was given. The Asian category includes Hawaiians; Other includes those reported as "two or more races," and American Indians/Native Americans. Hispanics may be of any race*

Comparing Job Holders by Race/Ethnicity, 2010 and 2011

As indicated earlier, while, for the most part, this report is a replication of our earlier study and focuses on Quarters 1 and 2 of 2011, there are instances where substantial differences between 2010 and 2011 were found. In these cases, we report these differences by comparing the respective quarters for each year: for example, Quarter 1 of 2010 with Quarter 1 of 2011 and Quarter 2 of 2010 with Quarter 2 of 2011, so as to avoid seasonal effects.

One set of noteworthy differences are the share of job holders by race/ethnicity over the two years (see Table 3).

As can be seen in Table 3, the share of Asian and Black ARRA-funded workers, as well as those workers identified as being of an Other race, declined from Quarter 2 of 2010 to Quarter 2 of 2011 whereas the proportion of White and Hispanic workers increased over the same period. The total number of Asian workers declined from Quarter 2 of 2010 to Quarter 2 of 2011, dipping below the number in the first quarter of 2010. The total number of Black workers declined from Quarter 2 of 2010 to Quarter 2 of 2011, but remained above the initial number of workers in Quarter 1 of 2010.

While the total number of workers classified as an Other race decreased from Quarter 2 of 2010 to Quarter 2 of 2011, similar to Blacks, their numbers remained above the first quarter of 2010. The total number of White workers decreased from Quarter 2 of 2010 to Quarter 2 of 2011, however, their proportion of ARRA workers increased over this time period. The total number of Hispanics decreased from Quarter 2 of 2010 to Quarter 2 of 2011, but remained higher than Quarter 1 of 2010. Similar to Whites, the share of Hispanic workers increased from Quarter 2 of 2010 to Quarter 2 of 2011.

ARRA Spending and the Distribution of Jobs by Race/Ethnicity

By the end of Quarter 2 over \$7.4 billion had been awarded to state agencies in the Commonwealth for job creation and retention as well as direct benefit programs such as Unemployment Insurance, the Supplemental Nutrition Assistance Program, and Medicaid.¹² About \$6.6 billion of that amount had been expended to date.¹³ The demographic effects of such spending on job creation and retention were estimated through the analysis of ARRA spending by funding category. This analysis was further refined to examine the impact of

¹² Over \$3.1 billion had been awarded to preserving safety net services through these direct benefit programs.

¹³ An award includes, "A contract, grant, or loan given by a federal agency to a non-federal recipient"; while expended refers to "The amount of money paid out to vendors for the execution of ARRA programs" (Terms/Definitions for Recovery Website, pg. 1, obtained from <http://www.mass.gov/recovery/resources/>). Thus "awarded" represents the monies allocated in the grant, while "expended" refers to the actual dollar amount that was spent out of the total funds that were allocated or awarded.

ARRA- funded jobs for persons of color. To this end, the number of persons of color was calculated across each category.

More significant patterns/differences were identified when examining race funding category. For example, as seen in Tables 4 and 5:

TABLE 4. SPENDING AND RACE/HISPANIC BY MASS-ARRA FUNDING CATEGORY, QUARTER 1, 2011

	Quarter Spending	Race % (N)				Hispanic % (N)
		Asian	Black	Other	White	
Total for All Funding Categories	\$567,294,701	2.6 (N=452)	5.3 (N=922)	2.4 (N=419)	89.7 (N=15,667)	6.6 (N=1,261)
By Category						
Accountability	\$2,423,334	8.1 (N=5)	11.3 (N=7)	1.6 (N=1)	79.0 (N=49)	1.2 (N=1)
Clean Energy and Environment	\$17,134,724	3.2 (N=64)	3.4 (N=68)	2.3 (N=45)	91.0 (N=1,799)	3.8 (N=95)
Education	\$178,816,667	1.7 (N=205)	4.7 (N=549)	1.8 (N=209)	91.8 (N=10,810)	5.9 (N=719)
Housing	\$28,223,332	1.6 (N=21)	11.5 (N=149)	6.8 (N=88)	80.1 (N=1,037)	13.0 (N=227)
Public Safety and Homeland Security	\$2,878,992	3.2 (N=4)	3.2 (N=8)	7.6 (N=19)	87.6 (N=219)	10.0 (N=26)
SafetyNetPrograms	\$302,491,892	5.2 (N=25)	9.3 (N=45)	2.5 (N=12)	83.1 (N=402)	8.7 (N=47)
TechnologyandResearch	\$8,867,847	27.1 (N=102)	2.1 (N=8)	3.2 (N=12)	67.6 (N=254)	4.2 (N=21)
Transportation	\$20,956,953	1.2 (N=5)	5.2 (N=21)	2.0 (N=8)	91. (N=368)	5.2 (N=22)
Workforce Programs	\$5,500,961	2.5 (N=21)	8.0 (N=67)	3.0 (N=25)	86.6 (N=729)	10.8 (N=103)

Source: MassRRO data from Quarters 1 and 2 of 2011. The N for race calculations was 17,460 in Quarter 1 of 2011. The N for Hispanic calculations was 1,261 in Quarter 1 of 2011.

TABLE 5. SPENDING, HEADCOUNT, AND RACE/HISPANIC BY MASS-ARRA FUNDING CATEGORY, QUARTER 2, 2011

	Quarter Spending	Race % (N)				Hispanic % (N)
		Asian	Black	Other	White	
Total for All Funding Categories	\$518,516,334	2.4 (N=479)	5.3 (N=1,059)	2.0 (N=388)	90.3 (N=17,898)	7.1 (N=1,551)
By Category						
Accountability	\$376,639	6.1 (N=4)	9.1 (N=6)	0.0 (N=0)	84.8 (N=56)	1.3 (N=1)
Clean Energy and Environment	\$18,796,634	3.5 (N=72)	5.1 (N=106)	3.7 (N=76)	87.7 (N=1806)	4.8 (N=130)
Education	\$173,201,650	1.6 (N=215)	5.0 (N=668)	1.7 (N=221)	91.7 (N=12,204)	91.7 (N=12,204)
Housing	\$15,659,649	1.6 (N=12)	8.9 (N=69)	3.1 (N=24)	86.4 (N=666)	19.1 (N=235)
Public Safety and Homeland Security	\$1,246,734	1.9 (N=3)	6.4 (N=10)	3.2 (N=5)	88.5 (N=139)	4.3 (N=7)
Safety Net Programs	\$264,563,270	6.9 (N=23)	8.7 (N=29)	4.2 (N=14)	80.2 (N=268)	7.9 (N=29)
Technology and Research	\$8,196,780	27.6 (N=116)	2.4 (N=10)	3.3 (N=14)	66.7 (N=280)	3.6 (N=21)
Transportation	\$28,942,365	0.5 (N=9)	4.7 (N=89)	0.5 (N=10)	94.3 (N=1,777)	6.4 (N=129)
Workforce Programs	\$7,532,613	3.0 (N=25)	8.7 (N=72)	2.9 (N=24)	85.3 (N=702)	10.2 (N=101)

Source: MassRRO data from Quarters 1 and 2 of 2011. The N for race calculations 19,824 in Quarter 2 of 2011. The N for Hispanic calculations was 1,551 in Quarter 2 of 2011.

- Blacks held roughly 11% of positions in the Housing and Accountability funding categories in Quarter 1. This percentage dropped to roughly 9% in Quarter 2.
- Whites held over 90% of positions in the funding categories of Education, Clean Energy and Environment, and Transportation in Quarter 1. Similarly, in Quarter 2, Whites held over 90% of positions in the funding category of Education and Transportation. The percentage of Whites in ARRA positions in Clean Energy and Environment decreased slightly to 87.7 in Quarter 2.
- Asians held over a quarter (27%) of positions in the Technology and Research category in both Quarter 1 and Quarter 2.
- 7.6% of Public Safety and Homeland Security jobs were held by those who were listed as Other race in Quarter 1; an additional 6.8% of those listed as Other race held jobs in the Housing category in the first quarter. In the second quarter, the percentage of Other race job holders in Public Safety and Homeland Security and Housing dipped to 3.2% and 3.1%, respectively.
- Moving beyond percentages to look at the raw numbers, we see shifts both in and out of funding categories across racial and ethnic groups. Meaning that while one funding category may have a decrease in a particular

race, another funding category may have an increase. For example, in Quarter 1 there were 149 Blacks in the Housing funding category and this number dropped to 69 in Quarter 2; however, the number of Blacks in the Education category increased from 549 in Quarter 1 to 668 in Quarter 2.

Looking at the variation by funding category for Hispanics, we see that:

- Hispanics made up between 6% and 7% of Massachusetts-ARRA job holders in each quarter.
- Hispanics, like Blacks, held 13% of positions in the Housing funding category during Quarter 1. Unlike Blacks, however, this percentage increased to 19.1% in Quarter 2.
- Such an increase among Hispanic job holders between Quarter 1 and Quarter 2 was not found in other funding categories. While Hispanics constituted 10% of the positions held in Public Safety and Homeland security in Quarter 1, this percentage decreased to 4.3% in Quarter 2. A similar decrease was seen in the Workforce Programs category, where in Quarter 1, Hispanics made up 10.8% of ARRA job holders; in Quarter 2 this percentage declined to 10.2%.

Women’s Employment and the Role of ARRA

As noted in Table 6 below, women made up a higher percentage of all Mass-ARRA job holders than men in both Quarter 1 (55.7% women to 44.3% men) and Quarter 2 (57.8% women to 42.2% men). This is due to the significant level of ARRA spending within the Education category. Specifically, roughly 65% of retained jobs in both Quarter 1 and Quarter 2 were funded via educational grants, contracts, or awards. At the same time, women constituted over 70% of ARRA job holders in Education over both quarters 1 and 2 of 2011.

In contrast, certain types of Mass-ARRA-funded jobs are predominantly – and in the case of Transportation almost exclusively – male. As the data shows, 95.5% of ARRA job holders in Transportation were men in Quarter 1; this percentage increased to 97% in Quarter 2. Men were also much more likely to hold jobs in the Clean Energy and Environment category (85.3% in Quarter 1 and 87.4% in Quarter 2) than women (14.7% in the first and 12.6 % in

the second quarter). Thus, men gained employment in male-dominated sectors, in contrast to a greater proportion of women ARRA job holders across most other sectors.

Similar to 2010¹⁴, women and men each made up about half of the technology and research jobs, but men were underrepresented in the Safety Net Programs, Education, and Workforce Programs categories for both quarters. Given that both Safety Net Programs and Education reflect areas/sectors where more women than men are traditionally employed, this does not come as a surprise.

Examining the Education category more closely, one can see that women comprised over seventy percent (71.2%) of ARRA job holders in Education during the first quarter of 2011. The 7.1 percentage point difference between Quarter 1 and Quarter 2 (78.3%) represents a 23.4 percentage increase in the share of female ARRA job holders who are employed in the Education category (See Table 6). As discussed previously, this pattern is similar

for women in the Massachusetts labor force in general. Furthermore, since 66% of all Mass-ARRA jobs in Quarter 1 and 61% in Quarter 2 were in Education, this gender concentration is significant and merits analysis about the financial impact on women. Because over 75% of ARRA-funded jobs were retained jobs, the majority of which were funded by educational spending, the gender pattern could be driven by women who kept their jobs as a result of education-based ARRA funds. Therefore, the data suggest that ARRA funding mirrored the gender distribution in the Massachusetts labor force.

TABLE 6. GENDER OF MASS-ARRA JOB HOLDERS BY FUNDING CATEGORY, QUARTER 1 AND QUARTER 2, 2011

	Quarter 1		Quarter 2	
	Female % (N)	Male % (N)	Female % (N)	Male % (N)
Total for All Funding Categories	55.7 (N=10,553)	44.3 (N=8,345)	57.8 (N=12,359)	42.2 (N=9,019)
By Funding Category				
Accountability	35.8 (N=29)	64.2 (N=52)	40.0 (N=32)	60.0 (N=48)
Clean Energy and Environment	14.7 (N=357)	85.3 (N=2,077)	12.6 (N=324)	87.4 (N=2,252)
Education	71.2 (N=8,606)	28.8 (N=3,477)	78.3 (N=10,620)	21.7 (N=2,946)
Housing	12.6 (N=219)	87.4 (N=1513)	11.6 (N=134)	88.4 (N=1,019)
Public Safety and Homeland Security	24.7 (N=64)	75.3 (N=193)	32.7 (N=52)	67.3 (N=107)
Safety Net Programs	71.5 (N=374)	28.5 (N=149)	68.9 (N=237)	31.1 (N=107)
Technology and Research	47.1 (N=217)	52.9 (N=244)	47.9 (N=260)	52.1 (N=283)
Transportation	4.5 (N=19)	95.5 (N=405)	2.6 (N=52)	97.4 (N=1,652)
Workforce Programs	70.2 (N=668)	29.8 (N=283)	68.7 (N=648)	31.3 (N=295)

Source: MassRRO Data, 1st and 2nd quarters, 2011.

The N for gender calculations were 18,948 for Quarter 1 and 21,378 for Quarter 2.

*Because the overall numbers are relatively large in all categories by gender, we did not include the Ns for each by gender in funding category as we did in Tables 2 and 3.

¹⁴ See Table 4. Gender of Mass-ARRA Job Holders by Funding Category, Quarter 1 and Quarter 2, in Demographic Analysis of Recovery Act Supported Jobs in Massachusetts, Quarters 1 and 2, 2010, (p. 9).

In fact, the 2010 policy brief, *Women in the Down Economy: Impacts of the Recession and the Stimulus in Massachusetts*, supports this finding using statewide employment data, e.g., ARRA-funded employment mirrored statewide occupational segregation.¹⁵ The brief documented gendered employment impacts of ARRA particularly in sectors such as physical infrastructure¹⁶ and energy and environment (including “Green” initiatives). Since women comprise less than

eight percent of all workers in the construction industry and less than three percent (2.2%) of all construction workers,¹⁷ the brief’s finding that women did not benefit from jobs created and/or retained in the Transportation and clean energy/environment ARRA spending to the degree that men did is not unexpected, but instead is in line with existing occupational patterns.

TABLE 7. GENDER OF MASS-ARRA JOB HOLDERS BY FUNDING CATEGORY, QUARTER 1 AND QUARTER 2, 2010 AND QUARTER 1 AND QUARTER 2, 2011

	Quarter 1 2010		Quarter 2 2010		Quarter 1 2011		Quarter 2 2011	
	Female % (N)	Male % (N)	Female % (N)	Male % (N)	Female % (N)	Male % (N)	Female % (N)	Male % (N)
Total for All Funding Categories	55.3 (N=9,198)	44.7 (N=7,435)	49.0 (N=13,064)	51.0 (N=13,591)	55.7 (N=10,553)	44.3 (N=8,345)	57.8 (N=12,359)	42.2 (N=9,019)
By Funding Category								
Accountability	31.7 (N=40)	68.3 (N=86)	36.8 (N=46)	63.2 (N=79)	35.8 (N=29)	64.2 (N=52)	40.0 (N=32)	60.0 (N=48)
Clean Energy and Environment	14.9 (N=1760)	85.1 (N=1,003)	13.5 (N=251)	86.5 (N=1,602)	14.7 (N=357)	85.3 (N=2,077)	12.6 (N=324)	87.4 (N=2,252)
Education	62.9** (N=6622)	37.1** (N=3,902)	62.0 (N=10,020)	38.0 (N=6,191)	71.2 (N=8,606)	28.8 (N=3,477)	78.3 (N=10,620)	21.7 (N=2,946)
Housing	48.5** (N=613)	51.5** (N=650)	32.7 (N=800)	67.3 (N=1,649)	12.6 (N=219)	87.4 (N=1,513)	11.6 (N=134)	88.4 (N=1,019)
Public Safety and Homeland Security	41.9 (N=520)	58.1 (N=722)	26.5 (N=299)	73.5 (N=831)	24.7 (N=64)	75.3 (N=193)	32.7 (N=52)	67.3 (N=107)
Safety Net Programs	66.7 (N=293)	33.3 (N=146)	68.3 (N=478)	31.7 (N=222)	71.5 (N=374)	28.5 (N=149)	68.9 (N=237)	31.1 (N=107)
Technology and Research	50.0 (N=187)	50.0 (N=187)	47.4 (N=229)	52.6 (N=254)	47.1 (N=217)	52.9 (N=244)	47.9 (N=260)	52.1 (N=283)
Transportation	3.2 (N=10)	96.8 (N=300)	2.9 (N=71)	97.1 (N=2,402)	4.5 (N=19)	95.5 (N=405)	2.6 (N=52)	97.4 (N=1,652)
Workforce Programs	62.7 (N=737)	37.3 (N=439)	67.9 (N=870)	32.1 (N=411)	70.2 (N=668)	29.8 (N=283)	68.7 (N=648)	31.3 (N=295)

Source: MassRRO Data, 1st and 2nd quarters, 2011.

The N for gender calculations were 18,948 for Quarter 1 and 21,378 for Quarter 2.

* Because the overall numbers are relatively large in all categories by gender, we did not include the Ns for each by gender in funding category as we did in Tables 2 and 3.

** Due to coding error, this percentage was misreported in the 2010 report as 60.9% women and 39.1% men; the table has been corrected to reflect the accurate percentage. The 2010 report has also been corrected online (see below).

***Due to coding error, this percentage was misreported in the 2010 report as 67.6% women and 34.4% men; the table has been corrected to reflect the accurate percentage. The 2010 report has also been corrected online at http://www.umb.edu/editor_uploads/images/centers_institutes/center_women_politics/CWPPP_ARRA_FinalReport_9Feb2011.pdf

¹⁵ Albelda, R., Kelleher, C., with Parekh, J., & Salas, D. (2010, March). *Women in the Down Economy: Impacts of the Recession and the Stimulus in Massachusetts*. University of Massachusetts Boston, McCormack Graduate School of Policy Studies, Center for Women in Politics & Public Policy. Retrieved on June 30, 2011, from http://www.mccormack.umb.edu/centers/cwppp/documents/CWPPPWomenDownEconomy-March2010_001.pdf

¹⁶ Physical infrastructure projects include transportation and construction and “those trained for or already employed in the construction industry will be the primary beneficiaries of these funds.” Ibid.

¹⁷ Note: the percentage of women in the construction industry is higher than that of female construction workers because the former includes those in clerical, managerial, administrative, and other non-construction-work positions.

Comparing Women's Employment in ARRA-funded Jobs, 2010 and 2011

As we did for race/ethnicity earlier in this report, we also compared women's employment in ARRA-funded jobs across Quarters 1 and 2 for both 2010 and 2011. For 2011, we see a similar gendered pattern of employment as we did in the 2010 report (*see page 9, Demographic Analysis of Recovery Act Supported Jobs in Massachusetts, Quarters 1 and 2, 2010*).

As shown in Table 7 above, men constituted the majority of job holders in Accountability, Clean Energy and Environment, and Transportation sectors from Quarter 1 of 2010 to Quarter 2 of 2011—indicating a similar gendered pattern of employment seen in Quarters 1 and 2 of 2011. The exception occurred in fields typically dominated by women such as Education, Safety Net Programs, and Workforce Programs.

Interestingly, in both Housing and Public Safety and Homeland security, the gender distribution was roughly equal in the first quarter of 2010, but the share of men increased to a majority in both sectors by Quarter 1 of 2011 (87.4% in housing, 75.3% in Public Safety and Homeland Security). This increase for men is mirrored by a dramatic drop in the percentage of women employed in the Housing sector, dropping from 48.5% in Quarter 1 of 2010 to 11.6% in Quarter 2 of 2011. It should be noted that the Housing category included significant funding for construction and it would not be unexpected for construction employment to increase in the second quarter of the year¹⁸. In the field of Technology and Research, the gender distribution remained roughly split across Quarters 1 and 2 of 2010 to Quarters 1 and 2 of 2011.

Box 2. People with Disabilities' Share of ARRA Jobs Declines, 2010-2011

Our 2010 report showed that in Quarter 1, people with disabilities held 5.2% of all ARRA jobs, a share higher than that in the labor force as a whole.

In Quarter 2 of 2010, the percentage declined to 1.7%. By the first quarter of 2011, their share declined even further, to less than 1 percent.

ARRA's Impact on Persons with Disabilities in the Workforce

Our analysis of Quarters 1 and 2 of 2011 shows that people with disabilities made up a smaller percentage of Mass-ARRA job holders than they do in the labor force as a whole. As mentioned previously, the data reported on demographics including disability status are aggregated estimates provided by the employer and may not reflect a given individual's self-identification. In the case of disability status, contractors may be unaware of the presence or extent of workers' disabilities and thus may be under-reported. According to the Institute for Community Inclusion at the University of Massachusetts Boston,¹⁹ in 2010 (the year for which most current data are available), about one third (32.3%) of people with any disability in Massachusetts were employed and, people with disabilities make up close to four (3.8) percent of all those who are employed in Massachusetts.²⁰ In contrast, people with disabilities made up less than one percent of all ARRA job holders in both Quarter 1 and Quarter 2 of 2011, falling well below the figures of 2010 (see Box 2). The decline in ARRA job holders with disabilities seems to reflect the decline experienced by all ARRA job holders from Quarter 1 of 2010 to Quarter 2 of 2011 (See Table 1). The specific nature of the decline and its causes are unclear from available data.

More research is needed to understand the nature of ARRA employment among persons with disabilities.

¹⁸ Jeffrey Simon, Director, Massachusetts Recovery and Reinvestment Office, indicates this may reflect the change in seasons allowing construction projects to be fully implemented (Personal Communication, December 3, 2012).

¹⁹ Butterworth, J. Smith, F.A., Cohen Hall, A., Migliore, A., Winsor, J., Domin, D. and Timmons, J. (2012). Table 2. Employment Participation for Working-Age People (Ages 16-64). In, StateData: The National Report on Employment Services and Outcomes 2011. Boston, MA: Institute for Community Inclusion (UCEED), University of Massachusetts Boston.

²⁰ U.S. Bureau of Labor Statistics. (2010). Table A-6. Employment status of the civilian population by sex, age, and disability status, not seasonally adjusted. Retrieved October 2, 2010, from <http://www.bls.gov/news.release/empsit.t06.htm>

TABLE 8. DISABLED WORKERS AS PERCENT OF ALL MASS-ARRA JOB HOLDERS, AND BY FUNDING CATEGORIES, QUARTER 1 AND QUARTER 2, 2011

	Quarter 1		Quarter 2	
	(N)	%	(N)	%
Among All ARRA Job Holders	167	0.88	205	0.9
By Funding Category				
Accountability	0	0	0	0
Clean Energy and Environment	22	0.12	43	0.20
Education	36	0.19	39	0.18
Housing	1	0.01	2	0.01
Public Safety and Homeland Security	0	0	0	0
Safety Net Programs	76	0.40	82	0.38
Technology and Research	0	0	0	0
Transportation	0	0	0	0
Workforce Programs	32	0.17	39	18

*Source: MassRRO data, 1st and 2nd quarters, 2011.
The N for disabled calculations was 167 in Quarter 1 and 205 in Quarter 2.*

Examining employment by funding category, disabled workers held ARRA jobs in Clean Energy and environment, Education, Housing, Safety Net Programs, and Workforce Programs only. Their greatest share was in Safety Net Programs at .40% in Quarter 1 and .38% in Quarter 2; these analyses should be viewed with caution as the numbers of job holders are relatively small.

Comparing Disabled ARRA Job Holders, 2010 and 2011

(see Appendix A for 2010 tables)

Disabled workers were not represented across three fields in both 2010 and 2011: Technology and Research, Transportation, and Accountability (with the exception of the first quarter of 2010 when N=1 in Accountability).

Both Clean Energy and Environment and Safety Net Programs saw an increase in the number of disabled workers. Safety Net Programs increased from 53 workers in the first quarter of 2010 to 82 workers in the second quarter of 2011. While their numbers increased, disabled ARRA workers remained less than 1 percent of the ARRA-funded Safety Net Programs workers. Despite a slight dip in Quarter 2 of 2010, the number of disabled ARRA workers in Clean Energy and

Environment increased from 13 in the first quarter of 2010 to 43 in the second quarter of 2011. The Housing sector experienced a decline across Quarters 1 and 2 of 2010 to Quarters 1 and 2 of 2011, eventually resulting in no ARRA-funded disabled workers.

Once the largest sector for disabled workers, Public Safety and Homeland Security, experienced a sharp decline from Quarter 1 of 2010 to Quarter 2 of 2010 and by Quarter 1 of 2011, there were no ARRA-funded disabled

workers in this sector (see appendix for 2010 percentages).

GEOGRAPHICAL ANALYSIS: WHERE DO MASS-ARRA JOB HOLDERS LIVE?

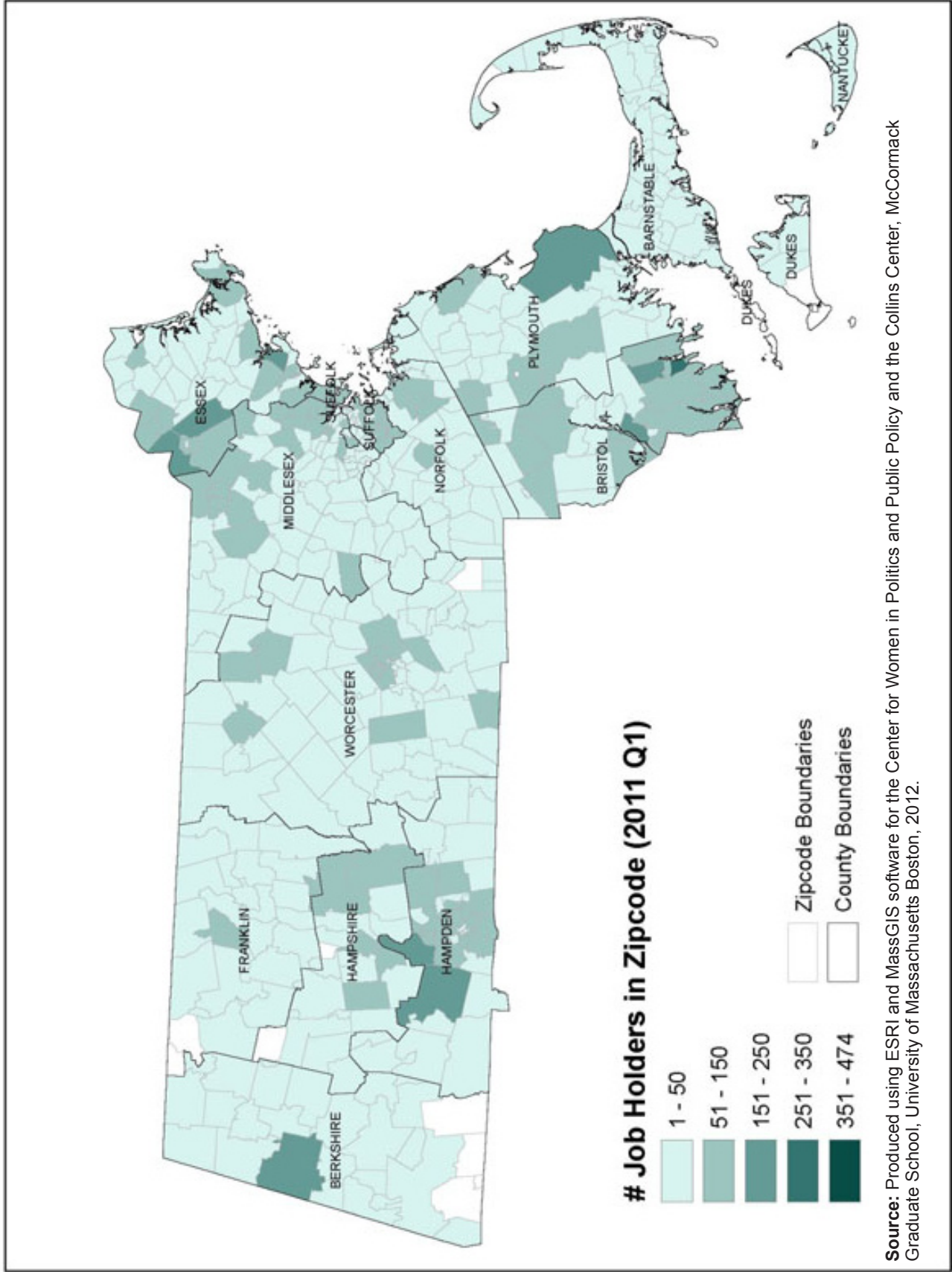
Zip Code Analysis

Massachusetts has 694 zip codes across 351 cities and towns. A zip code can include a neighborhood, community, or postal entity (such as a university or college).

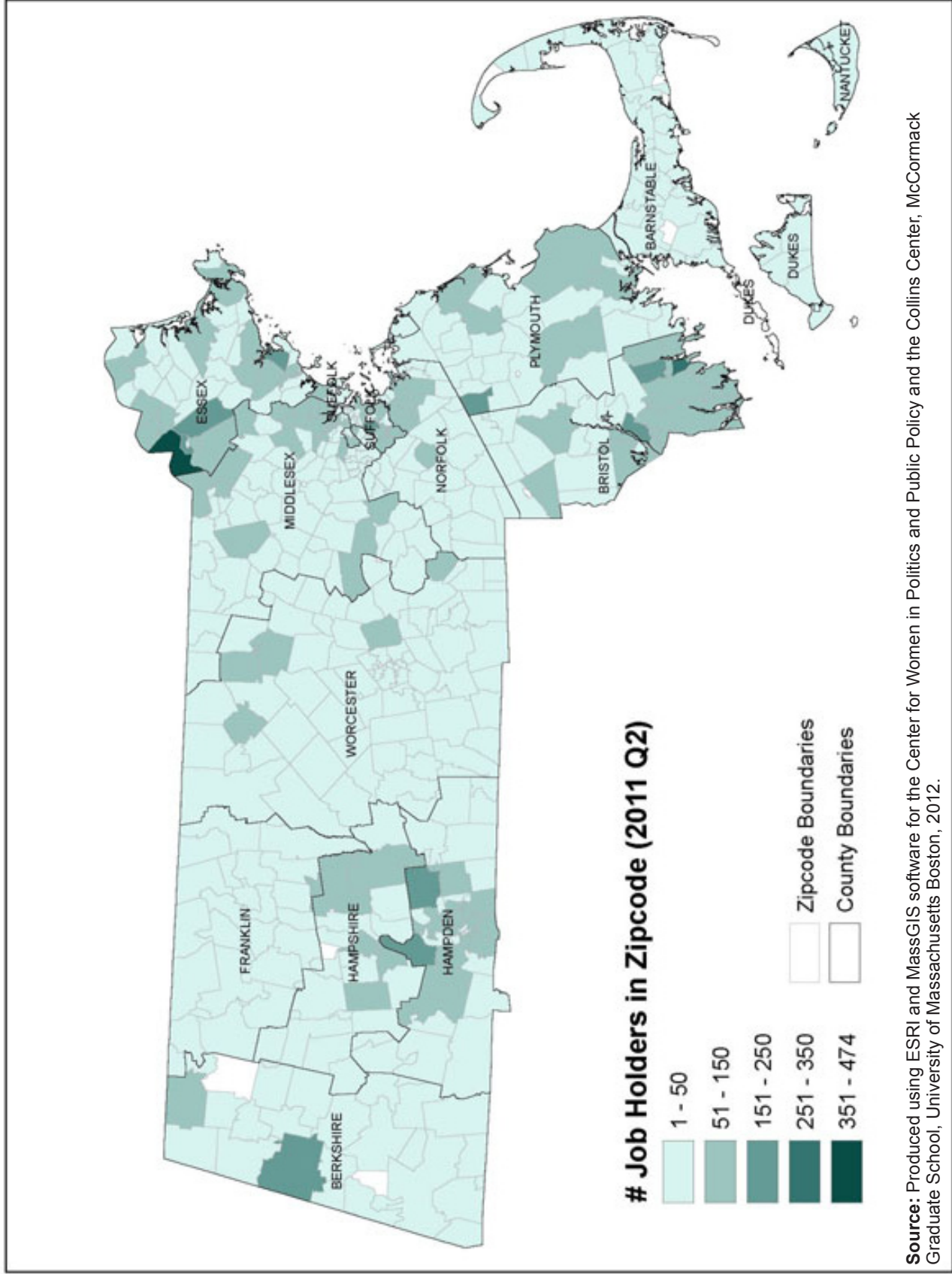
Analysis of 2011 ARRA data shows that for both quarters, 80% of all Massachusetts zip codes had at least someone whose job was created or retained through ARRA funding. (Specifically, ARRA jobholders resided in 556 zip codes in Quarter 1 and 546 in Quarter 2.) This means that in Quarter 1, 329 out of 351 cities/towns in MA had at least one person in a created or retained job funded through ARRA.

Maps 1 and 2 provide a visual display of the statewide impact of Mass-ARRA on the communities of the Commonwealth. Map 1 shows the distribution of Mass-ARRA job holders by zip code for Quarter 1 and Map 2 for Quarter 2. The light gray lines are zip code boundaries, and the heavy black lines are county boundaries.

Map 1. Mass-ARRA Job Holders by Zip Codes, 2011 Quarter 1



Map 2. Mass-ARRA Job Holders by Zip Codes, 2011 Quarter 2



Source: Produced using ESRI and MassGIS software for the Center for Women in Politics and Public Policy and the Collins Center, McCormack Graduate School, University of Massachusetts Boston, 2012.

Map 3. Massachusetts Cities, Towns, and Counties.



Close to 95% of Commonwealth cities and towns are home to people in ARRA-created or retained jobs in both Quarters 1 and 2.

ARRA JOB HOLDERS IN CITIES/TOWNS

Although 80% of zip codes were represented among ARRA job holders, close to 95% of Commonwealth cities and towns have been home to people in ARRA-created or retained jobs. This is because zip codes often represent smaller towns or sections/neighborhoods within a larger city or geographic area. This

pattern can be seen in Maps 1 and 2, which show much of the Commonwealth shaded with 1-100 ARRA job holders. In fact, only 23 cities/towns in Massachusetts did not have ARRA job holders in Quarter 1 of 2011; even fewer (just 18) had none in Quarter 2 of 2011.²¹

A comparison between Maps 1 and 2, shows marginal ARRA employment growth around the Lawrence/Methuen areas, increasing to between 351 and 474 ARRA jobholders located in that zip code²². Other areas of growth appeared to be in Essex County, where several zip codes

TABLE 9. DISTRIBUTION OF MASS-ARRA JOB HOLDERS BY SELECTED NEIGHBORHOODS FOR THE CITY OF BOSTON, QUARTER 1 AND QUARTER 2, 2011

Neighborhood	As % of Boston Population, 2010**	Quarter 1 % (N)	Quarter 2 % (N)
Allston/Brighton	12.1	8.6 (N=111)	8.3 (N=108)
Back Bay/Beacon Hill	3.7	.6 (N=8)	1.5 (N=20)
Central Boston (includes Chinatown)	5.5	7.8 (N=102)	9.0 (N=117)
Charlestown	2.7	2.6 (N=34)	2.6 (N=34)
Dorchester	14.1	23.5 (N=304)	22.6 (N=294)
East Boston	6.6	5.4 (N=70)	3.5 (N=45)
Hyde Park (includes Readville)	5.2	6.9 (N=89)	6.0 (N=78)
Jamaica Plain	6.8	10.4 (N=135)	11.8 (N=153)
Fenway/Kenmore	6.8	.7 (N=9)	1.5 (N=19)
Mattapan	5.5	5.6 (N=72)	3.5 (N=45)
Roslindale	5.2	6.7 (N=87)	8.1 (N=106)
Roxbury	10.7	8.7 (N=113)	8.8 (N=115)
South Boston	5.5	7.5 (N=97)	7.8 (N=101)
West Roxbury	4.9	5.0 (N=65)	5.1 (N=66)
Total	95.3	100	100

Source: MassRRO Data, 1st and 2nd quarters, 2011.

The N was 1,296 for Quarter 1 and 1,301 for Quarter 2.

Note: Data did not always provide consistent place names linked to zip codes, and time did not permit recoding of all zip codes to precise neighborhoods; these numbers should be considered estimates.

**Source: The Boston Indicators Project, based on U.S. Census, 2010. Email correspondence from Jessica Martin of TBF (Feb. 28, 2012)

** Does not add up to 100 because some zip codes could not be coded into a neighborhood.

²¹ In Quarter 1 of 2011, the towns of Alford, Chilmark, Clarksburg, Gosnold, Greenfield, Hawley, Longmeadow, Mendon, Monroe, Montgomery, Mt. Washington, New Ashford, Peru, Phillipston, Plainfield, Rowe, Sandisfield, Sheffield, Tolland, Tyringham, Washington and Westhampton did not have ARRA job holders. In Quarter 2 of 2011, Alford, Chilmark, Clarksburg, Gosnold, Greenfield, Hawley, Lanesborough, Longmeadow, Montgomery, Mt. Washington, New Ashford, Peru, Phillipston, Savoy, Tolland, Tyringham, Washington, and Westhampton did not have ARRA job holders.

²² Map 3 shows city/town and county boundaries as a guide for geographic comparison with the other two maps.

increased from 1-50 workers to 51-150. There were fewer zip codes with no ARRA job holders in Quarter 2 than there were in Quarter 1 as indicated by fewer blank/white spaces. Overall, Maps 1 and 2 indicate a widespread employment effect of ARRA-funded jobs across the state of Massachusetts.

Taking a closer look at the state's capital city, Boston, whose workforce constitutes roughly three-quarters of the state labor force (73.03%),²³ can provide an example of the impact ARRA employment can have on a given neighborhood within Massachusetts. The city of Boston has 53 zip codes;²⁴ however, these zip codes do not necessarily follow neighborhood boundaries established by the communi-

ties within them.²⁵ This, along with the fact that Boston neighborhoods tend to have unique racial and ethnic identities, makes this analysis challenging.

In Table 7 we see that Boston neighborhoods – and especially those with considerable racial/ethnic diversity (such as Roxbury and Dorchester²⁶) – had a greater share of Mass-ARRA job holders than others. In Quarter 1, for example, 304 (23.5%) of the 1,296 Mass-ARRA job holders in the city of Boston lived in Dorchester; 10.4% in Jamaica Plain; and 8.6% in Roxbury. Maps 4 and 5 provide a visual display of the impact of Mass-ARRA on the Greater Boston neighborhoods in Quarters 1 and 2 of 2011.

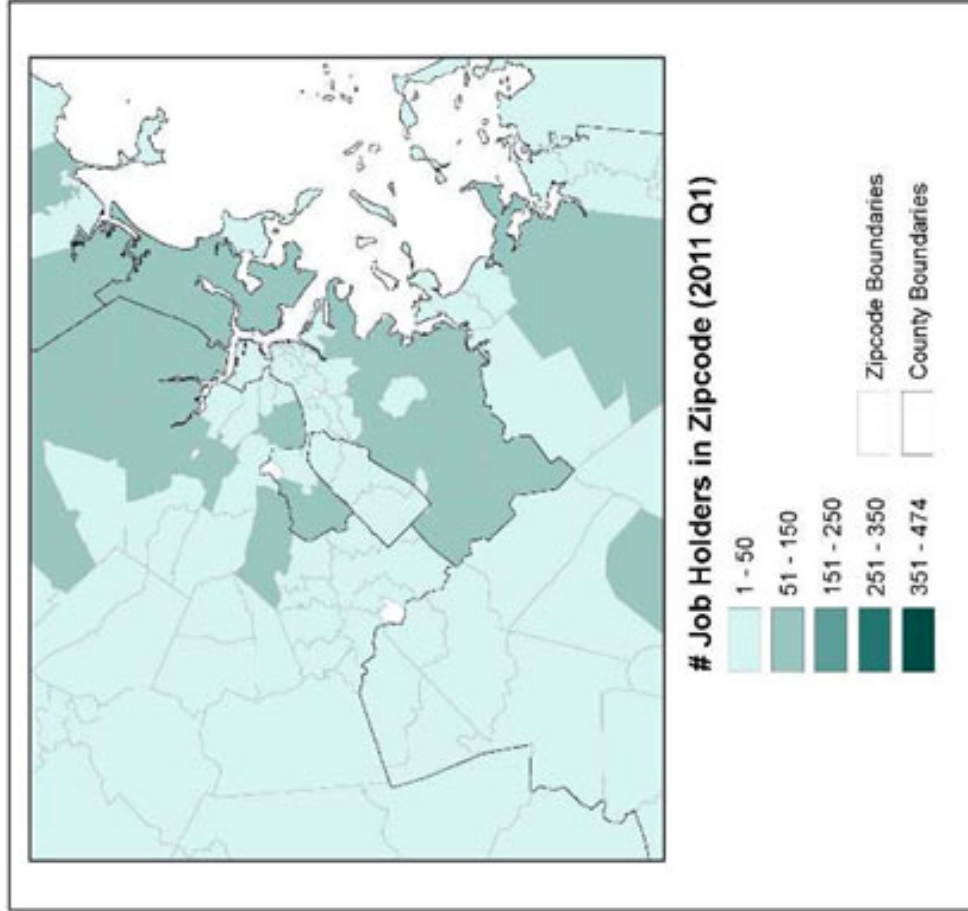
²³ Percentage was calculated from the civilian labor force for Massachusetts and dividing it by the civilian labor force for the Boston-Quincy-Cambridge (3458.7 people per thousand, 2525.8 people per thousand, respectively). Data were obtained from the U.S. Department of Labor, Bureau of Labor Statistics, http://www.bls.gov/eag/eag.ma.htm#eag_ma.f.P, accessed July 16, 2011.

²⁴ United States Postal Service, Look Up a Zip Code, <https://www.usps.com/>, accessed July 10, 2012

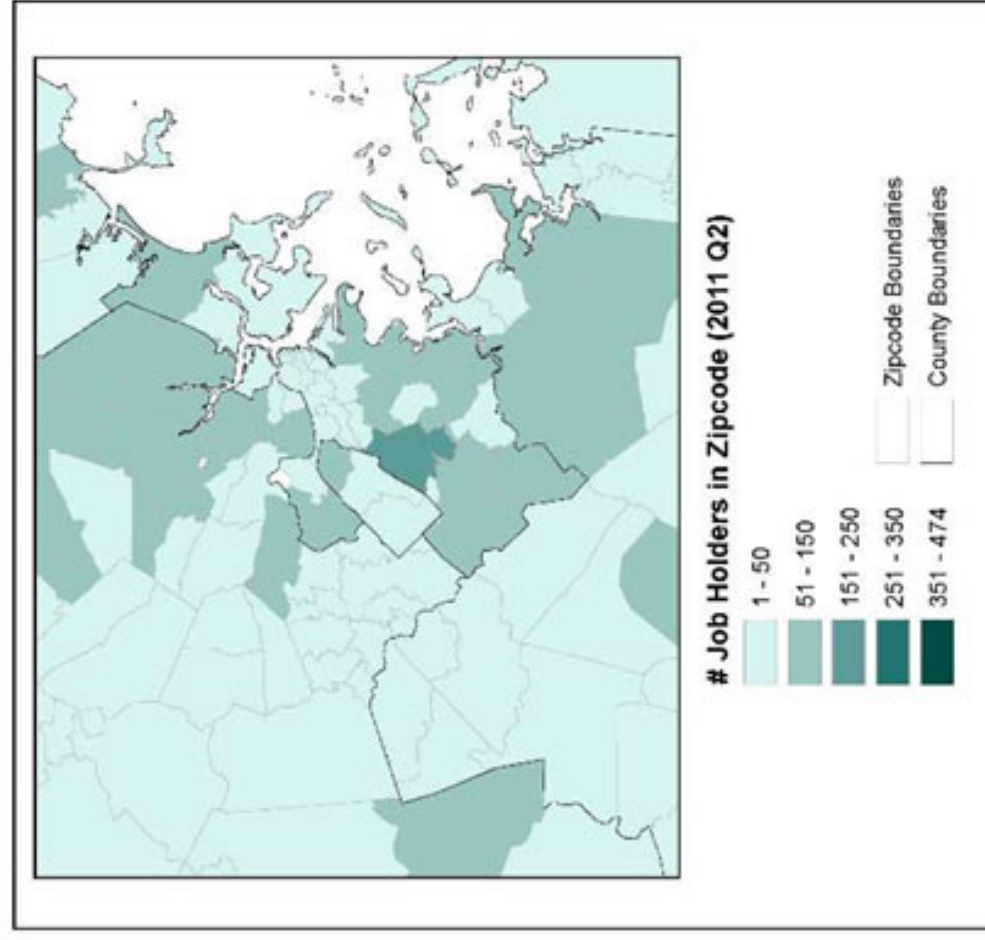
²⁵ See for example- Commonwealth of Massachusetts. (2010). City of Boston: Various Boundaries. Retrieved October 17, 2010, from <http://hubmaps1.cityofboston.gov/datahub/GalleryDocuments/Boundaries.pdf>

²⁶ Boston Indicators Project, Profiles: Peoples and Places, Roxbury, Dorchester, <http://www.bostonindicators.org/Indicators2008/ProfilesPeople-Places/Default.aspx?id=10456>, accessed July 10, 2012.

Map 4. Mass-ARRA Job Holders, Greater Boston, Quarter 1, 2011



Map 5. Mass-ARRA Job Holders, Greater Boston, Quarter 2, 2011



Source: Produced using ESRI and MassGIS software for the Center for Women in Politics and Public Policy and the Collins Center, McCormack Graduate School, University of Massachusetts Boston, 2012.

In Quarter 2, the areas of Mattapan and East Boston experienced the biggest decrease in ARRA- funded jobs although this does not come close to the decrease in jobs from Quarter 1 to Quarter 2 of 2010 experienced by Dorchester and Mattapan (see Table 7 of 2010, Demographic Analysis of Recovery Act Supported Jobs in Massachusetts, Quarters 1 and 2, 2010).

Spending data obtained from the federal ARRA recovery website indicate that, between February 2009 and March 2012, close to 8.5 million dollars was provided as grants to recipients in Dorchester.²⁷ Roughly 90 million dollars was used for the provision of grants to recipients in Roxbury over the same period.²⁸ Mattapan and Jamaica Plain received roughly 17 million each between February of 2009 and March of 2012.²⁹ However, it is unclear how these funds were distributed across quarters. Depending on spending patterns, a decrease in grants-awarded could account for the decline in the share of ARRA job holders from Quarter 2 in 2010 to Quarter 2 in 2011.

ARRA and Job Quality

Job creation is only one part of the labor market that matters to people and the economy. Job quality is another aspect.³⁰ Well-paying jobs that offer health insurance and retirement benefits will boost households' income and their spending power more than jobs that pay little and offer few benefits. An economic recovery will be stronger if people have more good jobs.

The data we analyzed for this report do not include information on wages or benefits. We can, however, offer some – even if limited – analysis of the job quality that likely characterizes the jobs created and retained due to ARRA, as we did in the previous report.

ARRA helped to create or retain directly and indirectly created jobs. The directly created jobs included public employees, whose agencies received ARRA funding as well as private sector contractors and subcontractors, who created or retained jobs due to ARRA contracts, either with government agencies directly or with other sub-recipients. There are also “indirect jobs” that only exist because the employees of contractors and subcontractors whose jobs were saved or created with direct recipients of ARRA fund jobs then spent their income and this spending thus helped to create more jobs. The breakdown into the three types of jobs – public jobs (directly created and retained), private jobs, and indirectly created or retained private jobs – allows for a consideration of the quality of these jobs. We discuss each subsection separately and bring as much of the available evidence to bear as possible.

²⁷ \$8,449,847 Recovery.gov, Track the Recovery, Recipient Data by Zip Code <http://www.recovery.gov/Transparency/RecipientReportedData/Pages/RecipientReportedDataMap.aspx>

²⁸ \$90,431,062, Ibid.

²⁹ \$16,962,039 and \$17,162,091, respectively. Ibid.

³⁰ Job quality has many facets. It includes, but is not limited to the wage rate per hour, employer sponsorship of benefits – health insurance, pensions, time off, among others – job stability, career advancement opportunities, and flexible work arrangements. Many of these aspects are hard to quantify. John Schmitt (2007) offers one of the most comprehensive assessments of job quality in the United States by focusing on wages, health insurance, and pensions offered through the employer. The discussion here focuses primarily on wages, health insurance, and pension benefits, where possible. See Schmitt, J. (2007). *The Good, the Bad, and the Ugly: Job Quality in the United States over the Three Most Recent Business Cycles*. Washington, DC: Center for Economic and Policy Research.

First, we consider directly created public jobs from ARRA contracts. School districts, water districts, police departments, and other public entities received ARRA money for particular projects or programs. Many of these jobs were local and state government jobs.

It is well documented that the public sector workforce tends to be more highly educated than the rest of the labor force and thus looks different from its private sector counterparts.³¹ So, there are typically more jobs with above-average compensation in the public sector than in the private sector simply because there are people with more education and experience working in state and local governments than in the private sector.

But, somebody in a high-skill public sector job in state or local governments receives slightly less compensation than they would if they had sought out a private sector job that required the same skills. Total compensation consists of wages plus benefits. The distinction between wages and benefits is critical when considering the quality of directly created jobs in state and local governments. State and local government workers typically receive lower wages than their private sector counterparts,³² but those lower wages are in part offset by higher retirement and health insurance benefits.³³ The net compensation effect is still slightly lower compensation than private sector counterparts would get paid. For instance, a teacher with a masters' degree and ten years of experience will receive less compensation than somebody with the same skills and experience who works in communications in the private sector.

Other directly retained or created jobs are those of private sector government contractors. They include, for example, the employees of a construction company that receives a contract to rebuild a road, repair a school, or weatherize a government office building, among other projects.

These jobs are governed by federal and state regulations intended to prevent contractors from winning bids for government contracts by under-cutting the labor market's wages and benefits. Federal regulations include the Service Contract Act of 1965 for service jobs, which is also referred to as the prevailing wage law, Walsh Healey Public Contracts Act of 1936 for private sector contractors of the federal government, and the Davis Bacon Act of 1931 for construction jobs. Massachusetts has its own prevailing wage law that governs treatment of construction jobs in state contracts. This requires that, private contractors and subcontractors on state contracts have to be paid the wage that is prevailing for the same work in the private sector.

These laws have remained in place in recent years through the period during which ARRA helped to create and retain jobs. ARRA actually broadened the scope of the existing prevailing wage laws for construction-related jobs to encompass more projects and to include a wider array of contractors than was the case under the previously existing laws.³⁴ This suggests that the wages of private sector contractors and subcontractors for ARRA-funded projects reflect those paid for the same work on non-government funded projects in the private sector.

³¹ There has been a recent resurgent interest in the compensation differentials between public and private sector employees. Raw data show that public sector workers receive higher wages and more compensation than private sector workers. But, all of the differences disappear when critical factors, such as age and education are accounted for. The research generally finds that public sector workers receive either about the same or a little less compensation than their private sector counterparts with similar qualifications. For more details, see, for example, Bender, K. & Heywood, J. (2010, April). *Out of Balance? Comparing Public and Private Sector Compensation over 20 Years*. Washington, DC: Center for State and Local Government Excellence and National Institute on Retirement Income Security; Lewin, D., Kochan, T., Cutcher-Gershenfeld, J., Ghilarducci, T., Katz, H., Keefe, J. Mitchell, J., Olson, C., Rubinstein, S. & Weller, C. (2011). *Getting it Right: Empirical Evidence and Policy Implications from Research on Public-Sector Unionism and Collective Bargaining*, Urbana-Champaign: Employment Policy Research Network. Schmitt, J. (2010). *The Benefits of State and Local Government Employees*. Washington, DC: Center for Economic and Policy Research.

³² Ibid.

³³ Ibid.

³⁴ U.S. Department of Labor, Wage and Hour Division. (2009, June). *Prevailing Wage Requirements Expand Under ARRA, Stimulus Priority Alert* [Video file]. Retrieved September 2, 2010, from <http://www.dol.gov/whd/recovery/index.htm#DBConferences>; U.S. Department of Labor, Wage and Hour Division. (2009). *WHD Information Related to the American Recovery and Reinvestment Act of 2009* [Video file]. Retrieved on September 2, 2010 from <http://www.dol.gov/whd/recovery/index.htm#DBConference>

TABLE 10. PRIVATE SECTOR WAGE DATA FOR ARRA-COMPARABLE SECTORS

Mass-ARRA Funding Category	BLS Category	Average Hourly Wage June 2010	Average Hourly Wage June 2011
N.A.	Private Sector	\$22.37	\$22.85
Accountability	N.A.	N.A.	N.A.
Clean Energy and Environment	Construction (50%) and durable goods manufacturing (50%)	\$24.74*	\$25.10*
Education	Education and health services	\$22.83	\$23.50
Housing	N.A.	N.A.	N.A.
Public Safety and Homeland Security	Security systems services	\$24.20	\$24.59
Safety Net Programs	Social assistance	\$14.57	\$14.86
Technology and Research	Scientific research and development services	\$41.11	\$42.17
Transportation	Transportation and warehousing	\$20.93	\$21.64
Workforce Programs	N.A.	N.A.	N.A.

*Calculated as: $0.5 \times 24.92 + 0.5 \times 24.53$

Source: U.S. Bureau of Labor Statistics, 2012, Current Employment Statistics, Washington, DC: BLS. All figures are in dollars. All data are non-seasonally adjusted average hourly earnings.

We can infer that ARRA may have helped to directly create above-average jobs, for instance, if we can identify in which industries the jobs of contractors and subcontractors have been created and if these industries on average pay above-average wages.

This requires matching the ARRA data broken down by industry with publicly available wage data broken down by industry. The industry categories, however, used to categorize ARRA jobs by the federal government do not match standard industry classifications by the Bureau of Labor Statistics (BLS), for which we have average wage information. Therefore, we need to make some assumptions to match the ARRA information with the BLS information.

ARRA classifies jobs into Accountability, Clean Energy and Environment, Education, Housing, Public Safety and Homeland Security, Safety Net Programs, Technology and Research, Transportation, and Workforce Programs. We tried to match them as best as we can with BLS jobs categories, generally following the kinds of jobs that are done by people in each category. First, Education, mainly teachers, and Transportation such as bus drivers find

rough counterparts in BLS categories with the supra-categories of education/health services and transportation/warehousing. Also, BLS jobs in security systems services, private security guards at office buildings and retail stores, for instance, are comparatively close to public safety. The BLS job categorization of scientific research/development services, research assistants and technical drawers, are relatively close to ARRA's Technology and Research category. And, BLS jobs categorization into social assistance such as social workers is sufficiently close to ARRA's Safety Net Programs category. And, we assume that ARRA's Clean Energy and Environment jobs match BLS jobs in construction and durable goods manufacturing split evenly between the two since ARRA's Clean Energy and Environment spending went into improving the energy efficiency of residences and of energy production, which required the upgrading of existing homes and facilities and the building of new ones. We cannot make reasonable assumptions about ARRA's remaining categories, Accountability, Housing and Workforce Programs, to find comparable wage data from the BLS and we thus do not make an assessment of the job quality of these jobs created or retained by ARRA.

Table 10 summarizes the relevant wage data from the BLS for the matched ARRA industry categories, based on our assumptions. The data reflect national data since detailed industry categories for each state are unavailable in the BLS' public data files.

The wage data for the BLS categories refer to wages paid in the private sector. By comparing the average hourly wages in each category (see third column in Table 10) against the average hourly wage of \$22.37 in June 2010 and \$22.85 in June 2011 for the private sector as a whole, Table 10 provides a sense of the job quality of private sector contractor and subcontractor jobs retained or created by ARRA.

The wages in Table 10 show that most categories for which we can find comparable industry classifications pay on average wages that are close to or higher than the private sector average. One exception is jobs in social assistance with an average wage of \$14.56 per hour in June 2010 and \$14.86 in June 2011, which are more than one-third below the private sector average hourly wages during the same time period. Wages in transportation are also about six percent below the private sector average in June 2010 and June 2011.

These wage differentials also allow us to draw out some very tentative implications about the job quality of the newly created and retained jobs by demographic characteristics. Women are overrepresented in social Safety Net Programs jobs, as discussed earlier, and these jobs pay well below average wages. Men, on the other hand, are heavily overrepresented in the directly created ARRA Transportation jobs, which pay slightly below average when compared to private sector jobs in this sector. And, Asians are overrepresented in technology and research jobs, which pay well above the private sector average.

This brings us to consider how we might assess the job quality of the positions that have been

indirectly retained or created due to additional spending by public and private government contractors. Indirectly created jobs are jobs that exist because people who had a job because of ARRA money spent their wages in the economy on all kinds of goods and services. These indirectly created jobs are often captured by so-called multiplier effects that describe the spillover from directly created or retained jobs to indirectly created jobs.

Model estimates of the quality of jobs that are created by stimulus spending are rare. Spillover effects are generally stronger in the industries where the initial direct spending occurred, e.g. direct spending in construction will first lead to more jobs in construction and related jobs as businesses stay open and suppliers are paid. Later and smaller indirect job creation effects occur across other sectors of the economy, for instance, in retail as construction workers spend their money in grocery stores. That is, direct ARRA spending will indirectly create jobs especially in the industries that are primary beneficiaries of ARRA spending and to a somewhat lesser degree across the entire economy. We consequently will need to know the quality of jobs that follow from direct ARRA spending, as compared to other policy measures in ARRA such as higher unemployment insurance benefits.

One example for the employment effect of direct ARRA spending is a joint report by the Center for American Progress in Washington, DC, and the Political Economy Research Institute at the University of Massachusetts Amherst. The report analyzed the job creation potential by skill and earnings level that followed from investments in green technologies, compared to investments in fossil fuels. Their estimate shows that \$1 million in spending could create 16.7 jobs in green technologies compared to only 5.3 jobs through investments in fossil fuels.³⁵ There are even larger differences in the job creation effects in lower-skilled and lower-paid jobs, i.e. green investments create a lot of job opportunities for low-skilled, low-wage workers compared to investments in fossil fuels.

³⁵ Heintz, J., Pollin, R., & Garrett-Peltier, H. (2009). The Economic Benefits of Investing in Clean Energy, Retrieved on September 3, 2010, from http://www.americanprogress.org/issues/2009/06/clean_energy.html

These data suggest that the benefits of ARRA, which dedicated over \$100 billion nationally to green investments,³⁶ are more likely than traditional spending to flow to lower-skilled and thus lower-paid workers.³⁷ The report shows that on average the jobs created by ARRA green investment spending tend to require fewer skills and thus pay less than the jobs created by spending on fossil fuels or a number of other investments. That is, many indirectly created jobs may have been below-average quality because lower-skilled and thus lower-paid workers disproportionately benefited from ARRA spending.

Many of the indirectly created jobs that follow from direct ARRA spending, though, will be spread out across the economy. There is no good way of accounting for all of these jobs and their quality. It is reasonable to assume that they will be of average quality since ARRA spending was large and widespread enough to impact the labor market as a whole in a substantial way and not just a few industries or regions.

This very general assessment allows us to reach two broad conclusions on the job quality impact of ARRA's job creation. The jobs that have been directly created or retained for public sector jobs and private sector government contractors likely tend to be good jobs that pay wages at or above the private sector average and include health insurance and pension benefits, or both. However, the jobs that are indirectly created by additional spending of contractors over the entire income spectrum may in fact be disproportionately lower-paid jobs.

An assessment of the quality of jobs that are created by a massive policy intervention, such as ARRA, can substantially determine policymakers' and the public's assessment of the policy's success. Future data collection efforts in connection with specific policies should consider the inclusion of data on job quality, especially on wage rates and health insurance and pension coverage.

³⁶ The amount for Massachusetts was \$233 million when counting the "Clean Energy" category as a "green investment" and \$244 million when including all energy and environment jobs.

³⁷ These calculations are based on national totals. All indications are that Massachusetts received a proportional share of clean energy spending from ARRA. There is no reason to believe that the employment impact differences of green technology spending relative to investments in fossil fuels will be qualitatively different in Massachusetts than for the national average.

CONCLUSION

Findings from this analysis show that ARRA employment increased between the first and second quarters in both years; however, overall ARRA employment decreased from the second quarter of 2010 to the second quarter of 2011. It is important to remember that this does not represent a trend across time, but rather measures of employment at four different points in time. Data from Quarters 1 and 2 of 2011 show that ARRA spending helped people keep their jobs; over three-quarters of the 20,000 ARRA-funded jobs in each quarter were retained jobs. The jobs created and the jobs retained had a statewide impact—employing Massachusetts residents from across the state. Demographic analysis demonstrates that ARRA spending largely mirrored state labor force patterns. With the exception of housing, much of the employment changes between Quarters 1 and 2 of 2010 and Quarters 1 and 2 of 2011 were relatively small. Since these data are taken at four points in time, this finding suggests that in each quarter ARRA spending had a similar impact on employment.

Analysis Highlights

The breadth of the employment effects across the Commonwealth is shown in Maps 1 and 2, which document the number of ARRA job holders by zip code. Nearly 95% of Massachusetts cities and towns have been home to an ARRA job holder. Looking to the capital city, more than 1,200 Boston job holders have been ARRA funded in both Quarter 1 and Quarter 2 of 2011.

Demographic Patterns of Impact

Demographic results show that, the population of ARRA job holders is largely representative of the state labor force as a whole. In fact, in some cases, there was a greater proportion of ARRA job holders for certain populations than in the labor force, such as Hispanics. The employment picture for Blacks remained stable across both quarters of 2011 as well as for Asians. Whites made a small gain in the proportion of job holders from Quarter 1 of 2011 to Quarter 2 of 2011. However, minorities

made up a smaller share of job holders in 2011 than they did in either quarter of 2010.

While women constituted a greater proportion of ARRA job holders in 2011, women's employment was largely concentrated in traditionally female-dominated sectors such as Education, Safety Net Programs, and Workforce Programs. With the exception of technology/research, men were the majority of ARRA-funded job holders in the remaining funding categories (Accountability, Housing, Clean Energy and Environment, Public Safety and Homeland Security, and Transportation). In the case of Housing, however, this was not initially the situation. In Quarter 1 of 2010, women represented 48.5% of ARRA job holders in this category. By Quarter 2 of 2011, women represented just below 12% of ARRA job holders in housing. This may be the result of seasonal variation in construction jobs added in Housing in the second quarter of 2011, but further research is needed to understand the mechanisms by which this decline occurred and the extent to which these mechanisms may have been gendered which had a differential impact on women.

ARRA Employment and Quality

ARRA has, in all likelihood, created jobs of varying quality. Three types of jobs resulted from ARRA spending. These include directly created public jobs, directly created private sector jobs, and indirectly created jobs due to increased spending by those directly hired from ARRA spending. It is probable that directly created jobs were of average quality or better. They paid average or higher wages and had typical or better benefit coverage. ARRA spending created jobs of varying quality depending on the mechanisms through which government spending impacted job creation.

Overall Impact

Data from the first two quarters of 2010 and 2011 indicate that ARRA had a substantial impact on employment within the Massachusetts workforce. For instance, ARRA spending

created and/or retained over 15,000 jobs in each quarter. The equity effects of ARRA are mixed. While Hispanics represented a greater proportion of ARRA job holders in 2010 and in 2011 than in the state's labor force as a whole, this pattern did not hold for Blacks or Asians. Blacks' proportion of ARRA job holders was nearly equivalent to their proportion of the Massachusetts labor force and the proportion of Asians in the ARRA workforce was less than in the general workforce. Thus while overall ARRA jobs generally mirrored the population as a whole, some groups benefited marginally more from ARRA-funded employment. The case is similar for women, who hold a large share of jobs in the Education sector, a sector that received substantial ARRA investment.

Overall, this study documents the employment impact of ARRA spending in the Commonwealth of Massachusetts. The ability to analyze such effects demonstrates the importance of the transparency of policy interventions. The data collected as part of transparency efforts made by the Commonwealth of Massachusetts and the U.S. government allows policymakers and researchers to better understand how the dispersion of spending measures like ARRA can have a statewide impact across demographic populations. Such information can be useful to policymakers as new fiscal policies are developed to address the transition from a period of direct ARRA spending to the newly recovering economy.

**Appendix A: Relevant Tables from
Demographic Analysis of *Recovery
Act Supported Jobs in Massachusetts,
Quarters 1 and 2 of 2010***

**JOB HOLDER DEMOGRAPHICS, QUARTER 1
AND QUARTER 2, 2010**

	Quarter 1 % (N)	Quarter 2 % (N)
Race		
White	87.9 (N=12,580)	89.3 (N=21,661)
Black	7.2 (N=1,036)	6.1 (N=1,470)
Asian	3.4 (N=483)	2.7 (N=660)
Other	1.5 (N=219)	2.0 (N=479)
Hispanic	6.7 (N=1,123)	6.4 (N=1,720)
Gender		
Female	55.3 (N=9,198)	49.0 (N=13,064)
Male	44.7 (N=7,435)	51.0 (N=13,591)

Source: MassRRO Data, 1st and 2nd quarters, 2010.
Note: "Race" does not include Hispanics or those for whom race was not reported.
The N for race calculations was 14,318 in Quarter 1 and 24,270 in Quarter 2. Hispanics may be of any race, and the N for Hispanic calculations was 16,790 in Quarter 1 and 27,045 in Quarter 2. The Asian category includes Hawaiians; Other includes those reported as "two or more races," and American Indians/Native Americans. The N for gender calculations was 16,642 in Quarter 1 and 26,655 in Quarter 2.

**DISABLED WORKERS AS PERCENT OF ALL
MASS-ARRA JOB HOLDERS, AND BY FUNDING
CATEGORIES, QUARTER 1 AND QUARTER 2,
2010**

	Quarter 1 % (N)	Quarter 2 % (N)
Among All Job Holders	5.2 (N=493)	1.7 (N=318)
By Funding Category		
Accountability	0.01 (N=1)	0 (N=0)
Clean Energy/ Environment	0.14 (N=13)	0.04 (N=7)
Education	0.32 (N=30)	0.19 (N=35)
Housing	0.19 (N=18)	0.03 (N=6)
Public Safety/ Homeland Security	3.0 (N=285)	0.71 (N=133)
Safety Net	.56 (N=53)	0.33 (N=62)
Technology/ Research	0 (N=0)	0 (N=0)
Transportation	0 (N=0)	0 (N=0)
Workforce	.98 (N=93)	0.40 (N=75)

Source: MassRRO data, 1st and 2nd quarters, 2010.
The N for disabled calculations was 9,481 in Quarter 1 and 18,749 in Quarter 2.

Appendix B: Data Sources

1. Data were provided by the Massachusetts Recovery and Reinvestment Office (MassRRO) for the 1st and 2nd quarters of 2010 and 2011.

2. To compare MassRRO data to the statewide labor force, data was obtained from the Center for Economic Policy Research (CEPR). CEPR maintains an online database that includes data sets extracted from the U.S. Census Bureau's Community Population Survey and Survey of Income and Program Participation. The data used in this study, a composite of data from the American Community Survey of 2010, includes data points on population demographics and workforce status—including reasons for absence from the labor force such as unemployment. Monthly extracts were used for this study, a file called CEPR_ORG_2010 data file. Data includes labor force participation from a sample taken across all fifty states. For this purposes of this study, only Massachusetts respondents were included in data analysis (with 21 missing excluded, N=4,986). In order to compare CEPR data with MassRRO data, a subset of the Massachusetts respondents was created based on reported labor force status (N=3,265), including those currently employed and unemployed (n=2,982 ; n=283, respectively). Analysis was limited to those currently in the workforce.