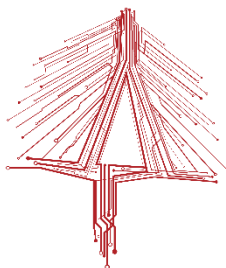




Living in Boston During COVID-19: Economic Strains

Report #3 in a Series



Boston
Area
Research
Initiative



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Partnering Institutions

The Boston Area Research Initiative is an interuniversity partnership based at Northeastern University that convenes researchers, policymakers, practitioners, and community leaders to envision and realize the future of the city. Our primary goal is to leverage data and technology to better understand and serve cities, with a focus on enhancing equity, justice, and democracy.

The Center for Survey Research (CSR) at the University of Massachusetts Boston is a full-scale academic survey research center. CSR conducts basic and applied research that contributes to knowledge and understanding of important social issues and supports public and private agencies and university scholars in carrying out high quality policy-related research. Its projects include BEACON, a panel study on Boston neighborhoods

Boston Public Health Commission, the country's oldest health department, is an independent public agency providing a wide range of health services and programs. Public service and access to quality health care are the cornerstones of our mission—to protect, preserve, and promote the health and well-being of all Boston residents, particularly those who are most vulnerable.

The Team for this Report

Russell K. Schutt, PhD, Professor, Department of Sociology, University of Massachusetts Boston; Clinical Research Scientist I, Beth Israel Deaconess Medical Center, Harvard Medical School

Daniel T. O'Brien, PhD, Associate Professor in the School of Public Policy and Urban Affairs; Director, Boston Area Research Initiative; Northeastern University

Lee Hargraves, PhD, Interim Director, Center for Survey Research, University of Massachusetts Boston

Dan Dooley, PhD, Director, Research and Evaluation Office, Boston Public Health Commission

Floyd (Jack) Fowler, PhD, Senior Research Fellow, Center for Survey Research, University of Massachusetts Boston

Ryan Qi Wang, PhD, Assistant Professor of Civil and Environmental Engineering; Associate Director of Research on Social Media, Boston Area Research Initiative; Northeastern University

Alina Ristea, PhD, Postdoctoral Associate, Boston Area Research Initiative, Northeastern University

Anthony Roman, MA, Senior Research Fellow, Center for Survey Research, University of Massachusetts Boston

Mehrnaz Amiri, Research Assistant and Student in the Masters of Science in Urban Informatics, Boston Area Research Initiative, Northeastern University

Sage Gibbons, Research Assistant and Student in the Masters of Science in Urban Informatics, Boston Area Research Initiative, Northeastern University

Hannah Grabowski, Research Assistant and Student in the Graduate Program in Applied Sociology, Department of Sociology, University of Massachusetts Boston

Nikola Kovacevic, MA, Assistant Study Director, Center for Survey Research, University of Massachusetts Boston

Funding

The survey was funded by the National Science Foundation's Human-Environment and Geographical Sciences (HEGS) program through a grant for rapid-response research (RAPID; [Award #2032384](#)).



Executive Summary

In the Summer of 2020, the Boston Area Research Initiative (BARI) at Northeastern University, the Center for Survey Research (CSR) at University of Massachusetts Boston, and the Boston Public Health Commission (BPHC) conducted a survey that captures the experiences of 1626 Bostonians during the first months of the COVID-19 pandemic, including: their ability and tendency to follow social distancing recommendations; attitudes toward regulations; and the economic and personal impacts of the pandemic.

This third report in a series describes how the pandemic has affected the employment trajectories and economic resources of Boston's residents. By examining how these impacts were distributed by race and ethnicity, socioeconomic status, and family composition, we reveal a range of inequities in how different populations have experienced financial disadvantage due to the pandemic.

Main Findings

- **More than four in ten of Boston's residents experienced an adverse economic impact of the pandemic by the time of the survey.**
 - **About one-quarter of those working just before the pandemic spent some time not working after it began**, but seven percent returned to work by the summer.
 - **About one in five of all respondents reported their personal income had declined "a lot,"** while another one in five reported their income had declined a little.
 - Only seven percent reported that their personal income had gone up during the pandemic.
- **Those who lost income reported much higher levels of economic vulnerability,** including low levels of savings and more worries about finances.
- **There were stark differences in these experiences in relation to sociodemographic characteristics.**
 - **Reports of income loss during the pandemic rose as educational level declined,** with those with no more than an 8th grade education being twice as likely to have lost income than those with a graduate degree.
 - **Latinx, Asian, and Black residents were much more likely to have lost income than white respondents and those who classified themselves as multiracial.** Among Latinx respondents in neighborhoods with a high ethnic concentration, those who responded in Spanish were most likely to have lost a lot of income.
 - Single parents were more likely to have lost income than others.

- **There were stark differences in economic impact between Boston's neighborhoods.**
 - **Few residents in affluent communities suffered a major loss of income, while many of those in the poorest communities lost a lot of income.**
 - **In some communities of color, between one-third and one-half of residents were worried about running out of money for food.**

Conclusions and Next Steps

Lost jobs and income during the pandemic magnified the economic vulnerability of residents who were already struggling. The likelihood of job and income loss also varied in relation to socioeconomic and family status and was concentrated in communities of color. These inequities suggest targeted ways in which we might support low-income communities during the second wave. In an upcoming report, we turn our attention to the impact of economic strains due to the pandemic on exposure to risk of infection.



Table of Contents

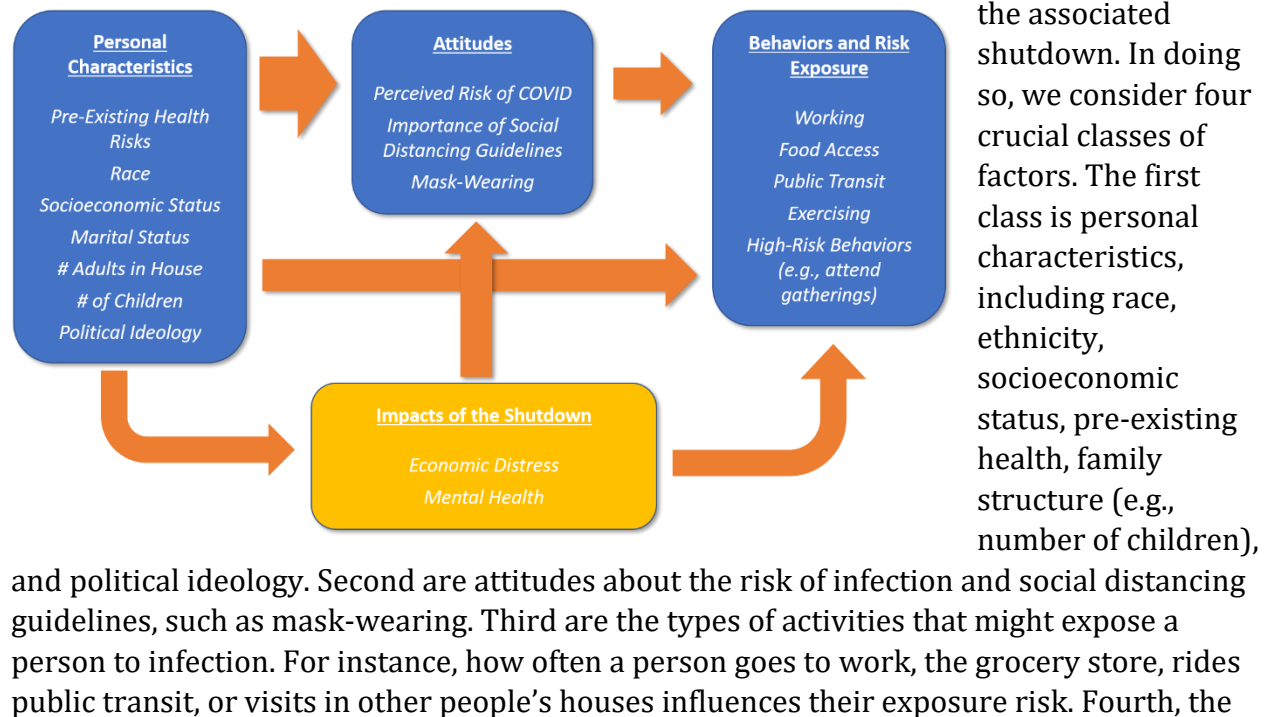
1. Living in Boston During COVID-19: A Neighborhood Survey	4
2. Economic Impact on Boston’s Residents	5
3. Economic Vulnerability Associated with the Pandemic’s Economic Impact	9
4. Economic Impact Associated with Sociodemographic Characteristics	10
5. Economic Impact Varied by Neighborhood	14
6. Conclusions	16
Appendix A. NSF Beacon Survey Methodology	17

1. Living in Boston During COVID-19: A Neighborhood Survey

The NSF-Beacon survey captures the experiences of 1626 Bostonians during the first months of the COVID-19 pandemic, including: their ability and tendency to follow social distancing recommendations; attitudes toward regulations; and the economic and personal impacts of the pandemic. It provides unique insights into how these factors varied across the populations and neighborhoods of a single city—something not currently available from any other source, in Boston or otherwise.

The Center for Survey Research (CSR) at University of Massachusetts Boston conducted the survey over the summer, in collaboration with the Boston Area Research Initiative (BARI) at Northeastern University, and the Boston Public Health Commission (BPHC). The National Science Foundation’s Human-Environment and Geographical Sciences (HEGS) program provided funding through a grant for rapid-response research (RAPID). The survey used a probability-based random sample stratified by 25 neighborhoods and the results presented here were weighted to match the demographic composition of the city. See Appendix A for more detail on the survey methodology.

This is the third in a series of reports describing key insights from the survey. The series focuses especially on the racial and socioeconomic inequities that have exacerbated—and may continue to exacerbate—differential impacts of the pandemic and



survey included items on the impacts of the pandemic: employment, economic insecurity, and mental health.

We have designed the series to walk through the relationship between these features, as illustrated in Figure 1. Our first report described inequities in how Bostonians of different racial and socioeconomic backgrounds engaged in necessary day-to-day activities in April and the Summer. The second report examined how attitudes, beliefs and risky behaviors were distributed across communities. In this third report, we describe economic impacts—job and income loss--across individuals and neighborhoods, revealing inequities in relation to race/ethnicity, socioeconomic status, and family composition, as well as variation between neighborhoods. Future reports will continue with analyses of: how an individual's personal characteristics predict attitudes and perceptions; how those personal characteristics *plus* attitudes and perceptions predict the kinds of activities people have engaged in during the pandemic; how economic impacts further relate to behaviors and attitudes across individuals; and how these results relate to the content of other data sets, such as mobility patterns, administrative records, and social media activity, [collected as part of this project](#).¹

2. Economic Impact on Boston's Residents

Economic effects of the pandemic were estimated by identifying changes in employment between March (before the pandemic), April, and June. Respondents were also asked whether their personal income had been affected by the pandemic.

- *Job change*: working or not working in March (before the pandemic), April, and during the summer (when the survey was conducted);
- *Income loss*: how much personal income changed as a result of the pandemic;
- *Savings*: whether the respondent could pay for a \$1000 emergency expense;

¹ <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/TDKDJJ>

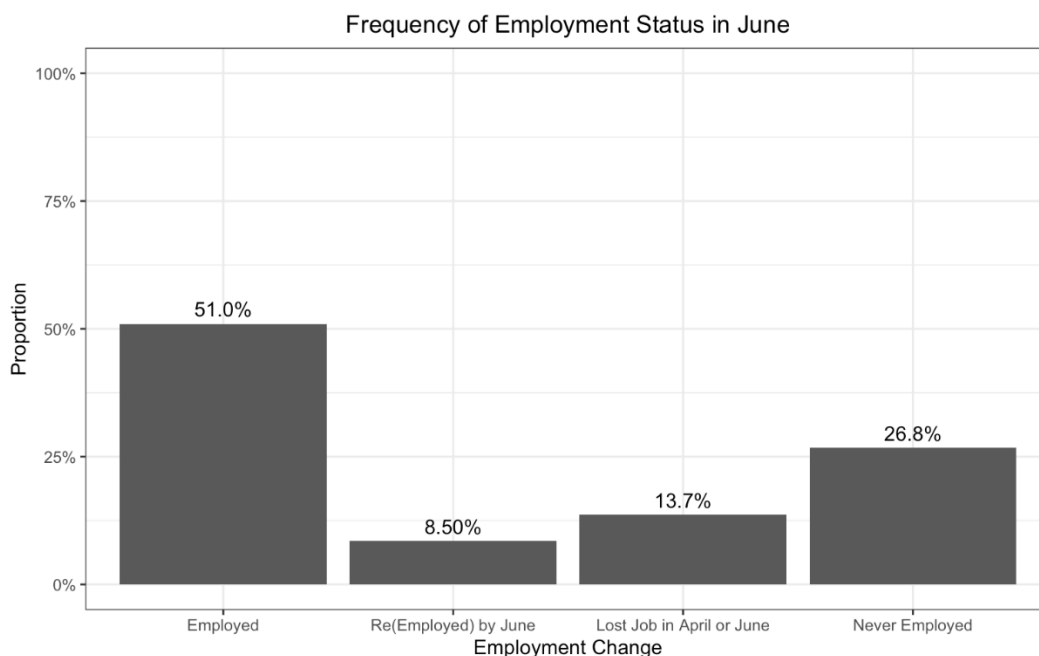
- *Financial worries:* paying bills, buying food, or making a rent or mortgage payment.

Responses to these questions indicate widespread detrimental economic effects of the pandemic on jobs and income.

More than one in five Bostonians had experienced a change in their employment status during the early months of the pandemic (Figure 1). By the time of the survey, 13.7% reported having lost their job, while another 8.5% had gained a job since March. About half were working in March before the pandemic and remained working in April and June, while just over one-quarter were not employed during any of these three months.

<i>Employment Change</i>
In March 2020 that is before the shutdowns related to the COVID-19 coronavirus began, were you employed at a job or do any kind of work for pay?
In April 2020, were you employed at a job or do any kind of work for pay?
In the last 7 days, were you employed at a job or do any kind of work for pay?
<i>Income Loss:</i> How has your personal income been affected by the COVID-19 coronavirus—has it...
<i>Savings:</i> Right now, do you have enough savings to pay for a \$1000 emergency response?
<i>Financial Worries</i>
How worried are you, if at all, with your ability to pay your bills?
How worried are you that you will not be able to make a rent or mortgage payment?
How worried are you that you will run out of food because of a lack of money or resources?

Figure 1



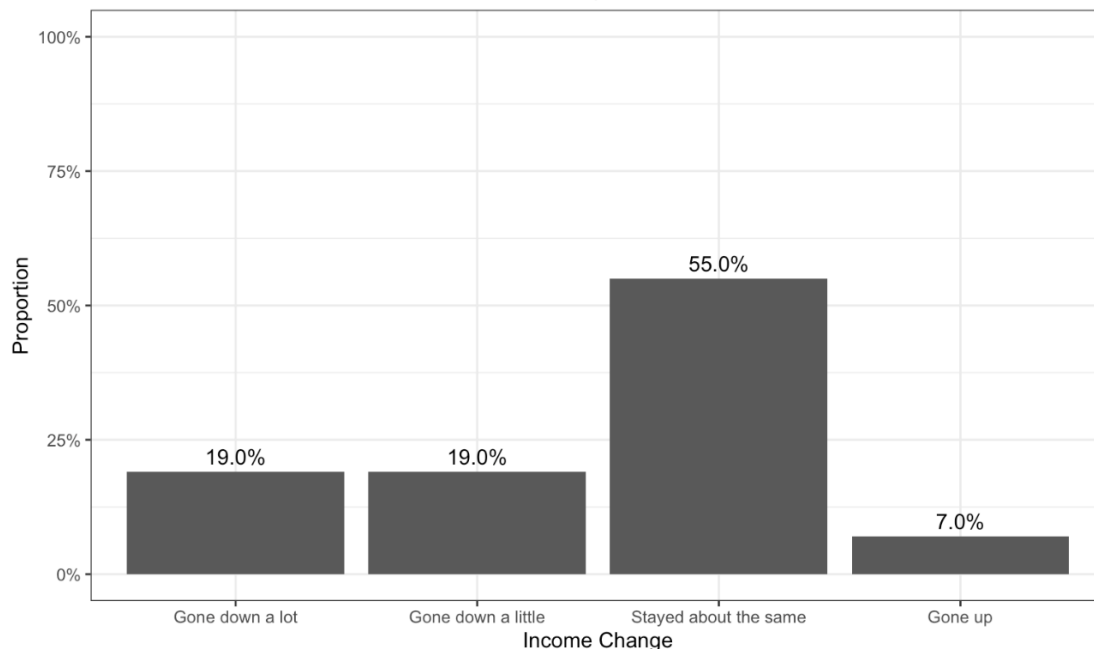
Of those who held a job in March, before the pandemic shutdown, more than one in four lost a job after the pandemic began (more in April than in June) and only 6.8% were working again by June (Table 1). Thus, of those who were working in March, about one in five seemed to experience unemployment that lasted months after the pandemic began. A small percentage of those who were not working in March secured a job in April and/or June (12.3%).

Table 1
Employment Status Details

Employment Status	% of Working in March	March, April, summer details
March, April, summer	73.5%	Working in March (pre-pandemic), April & summer
Lost Job in April but working in summer	6.8%	4.7% working in March and June, but not in April (12.3% of those not working in March gained a job in April or during the summer)
Lost Job: April/ summer	19.6%	11.5% lost job in April; 8.1% lost job in June

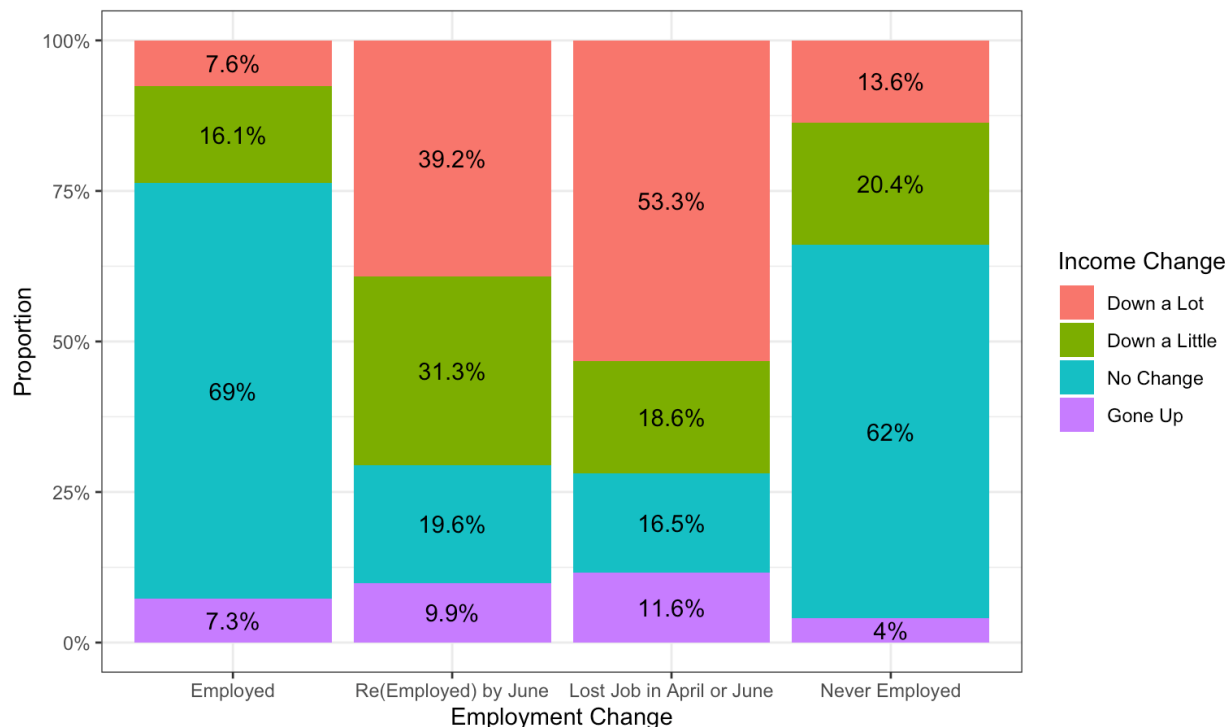
Almost two in five (38%) had seen their personal income decline during the pandemic—about equally divided between those whose income loss was “a lot” and “a little,” while a small fraction (7%) had seen their income rise (Figure 2).

Figure 2
Personal income affected by the COVID-19 coronavirus



Income loss during the early months of the pandemic was concentrated among those who had lost a job. More than half of those who had not regained a job by June reported their income had gone “down a lot,” and all but 28% said their incomes had gone down at least a little—while the rest had not lost any income (Figure 3). Almost four in ten of those who had gained a job by June reported they had lost a lot of income, and more than two-thirds had experienced at least some income loss. By contrast, two-thirds of those who were not employed before the pandemic and during its early months did not experience any income loss, nor did more than three-quarters of those who remained employed through June. Most of those whose employment status had not changed reported their income had declined only a little. As a fraction of all respondents, 44 percent had experienced some adverse economic impact: job loss and/or income decline.

Figure 3
Income Change by Employment Change



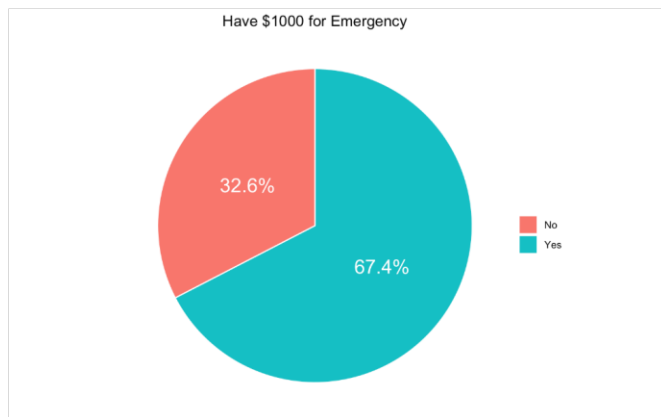
The variation of income change in relation to employment status during the pandemic also provides some insight into the small group who reported that their incomes increased. As Figure 3 indicates, most of those who gained income were in the groups whose employment status had changed as a result of the pandemic. The greatest likelihood of gaining income was among those who had not been working in March, before the pandemic, but then gained a job in April or during the summer (17% of this group reported

an income gain). The others who reported they had stopped working and did not return to work during the months covered by the survey but still said that their personal incomes had risen may have benefitted from the federal \$600 monthly coronavirus relief payments for those unemployed during the period covered by the survey.

3. Economic Vulnerability Associated with the Pandemic's Economic Impact

The survey asked Boston residents about their vulnerability in the face of economic challenges such as those created by the pandemic. Many indicated they had minimal savings and worried about their ability to meet basic financial obligations.

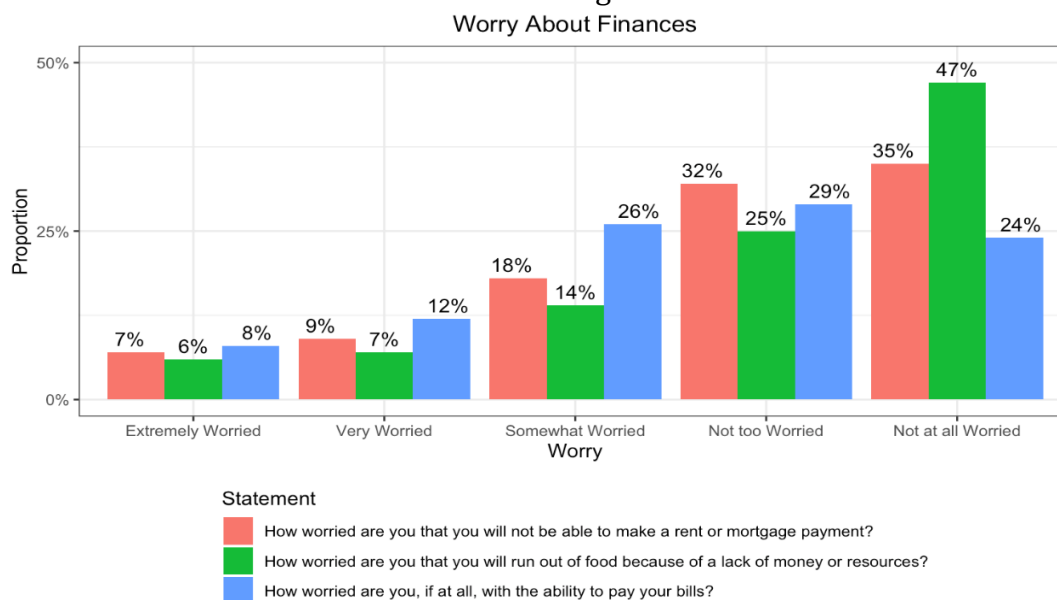
Figure 4



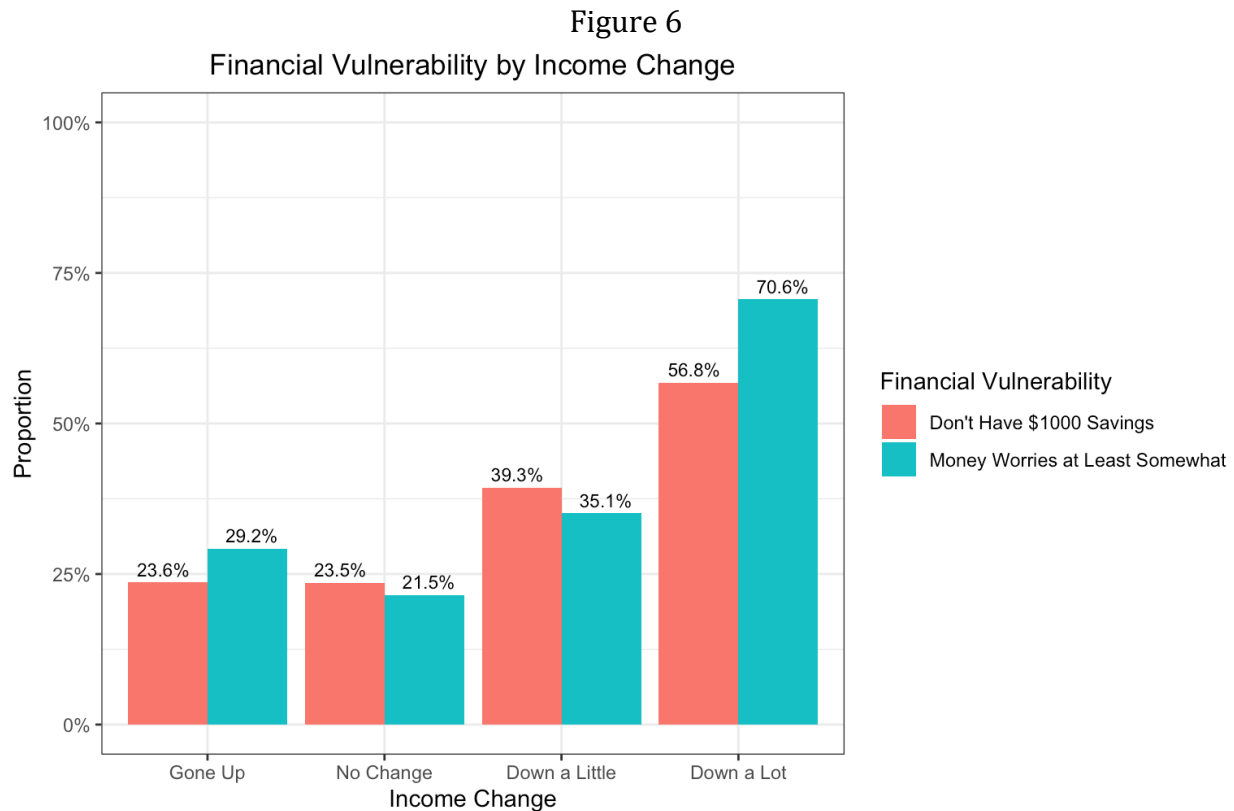
Almost one-third did not have enough savings for a \$1000 emergency (Figure 4).

About one-quarter were at least somewhat worried about running out of money for food, one-third were worried about not having enough for a rent or mortgage payment, and almost half were worried about their ability to pay bills.

Figure 5



Those who lost income during the pandemic were more economically vulnerable than those whose income had not declined. Those who lost a lot of income during the pandemic were more than twice as likely to lack \$1000 in savings and to report some money worries than those who reported no income loss (Figure 6).



Thus, the overall impact of the coronavirus pandemic on personal finances was to exacerbate financial vulnerability. The small fraction who may have benefitted from the special federal unemployment benefits were the exception, not the rule.

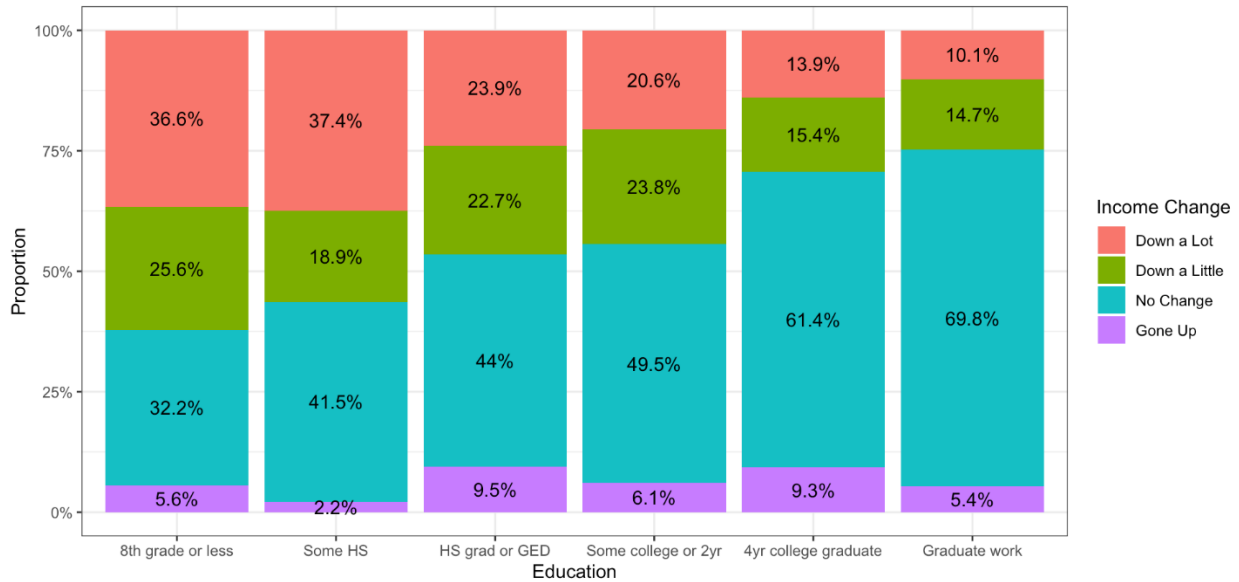
4. Economic Impact Associated with Sociodemographic Characteristics

The likelihood of experiencing income loss as a result of the pandemic varied markedly with sociodemographic characteristics. Those with less education and lower household income were most vulnerable to income loss, but race and ethnicity, and family status also made a difference.

Income loss was much more common among those with less education. Almost two-thirds of those with no more than a grade school education lost income during the first

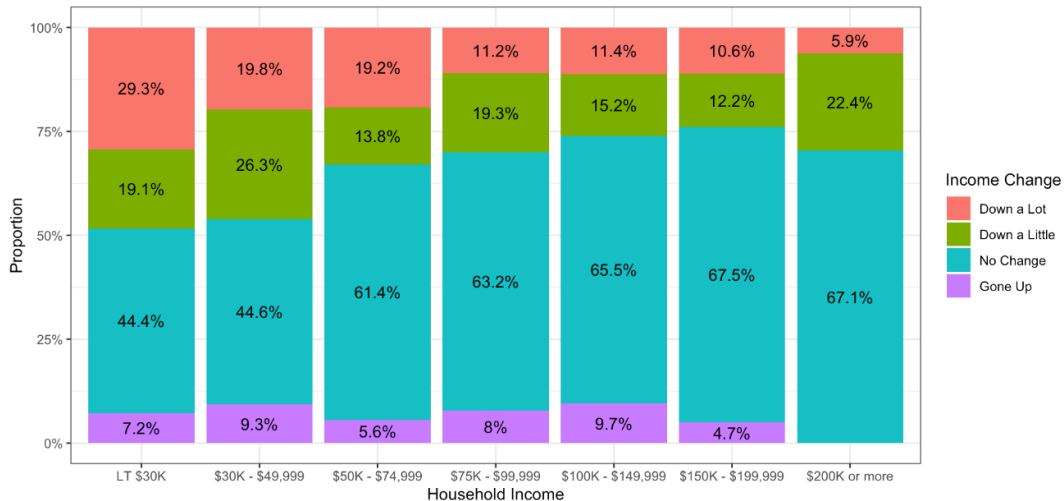
months of the pandemic (and more than half of them lost “a lot” of income), compared to less than one-third of those with a college degree (Figure 7).

Figure 7
Income Change by Education

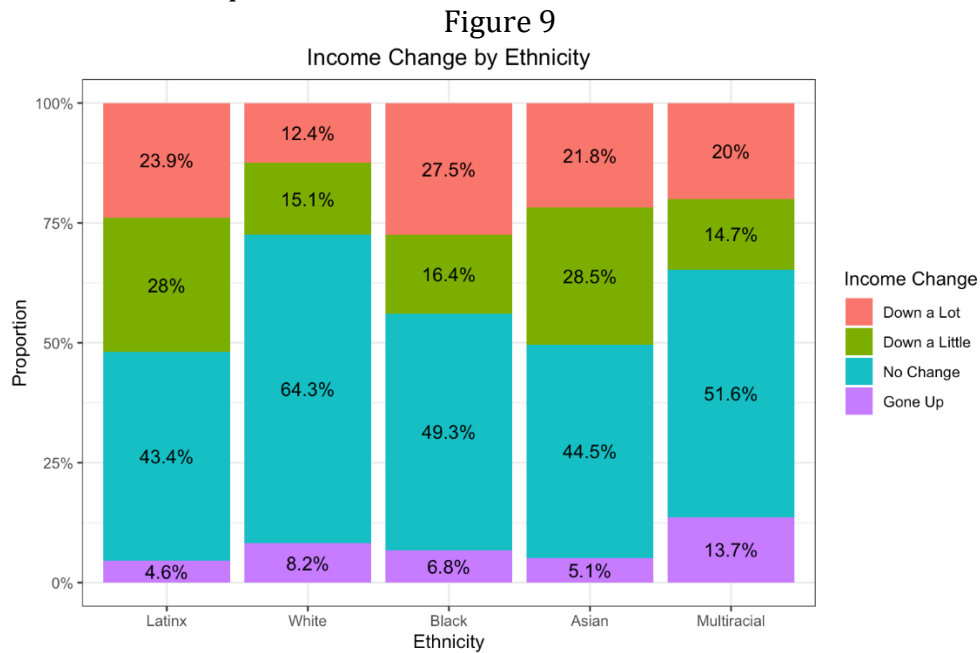


About half of those with household incomes under \$30,000 lost income during the pandemic, but likelihood of income loss declined to just one-quarter of those in the \$150,000 and \$199,999 category. The likelihood of income loss rose slightly among those with household income of \$200,000 or more, but most rated that loss as “a little” rather than “a lot” (Figure 8).

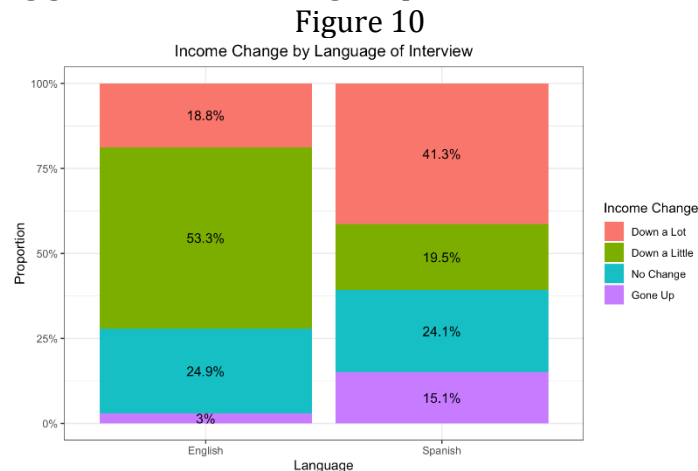
Figure 8
Income Change by Household Income



While fewer than one in three white, non-Hispanic respondents reported any income loss as a result of the pandemic, about half of those who identified as Latinx, Black, or Asian did so; those identifying as in some other group reported somewhat more income loss than whites, but not as much as reported by Latinx, Black, and Asian respondents (Figure 9). Latinx and Asian respondents were also least likely to have experienced any income gain as a result of pandemic.

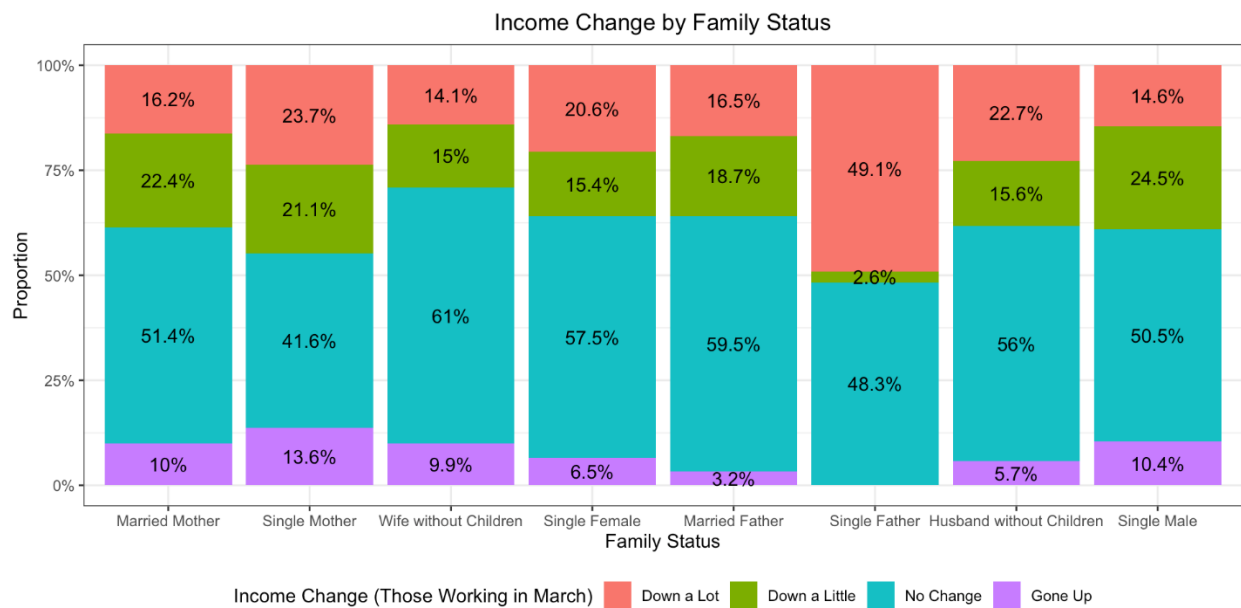


Latinx respondents who completed the interview in Spanish are likely to be first generation immigrants. These respondents were twice as likely to report “a lot” of income loss (41%) during the pandemic compared to those completing the survey in English (19%) (Figure 10). However, these Spanish-speaking respondents were also much more likely to report having gained income during the pandemic.



The likelihood of experiencing personal income loss during the pandemic for those who had been working in March also varied with family status. Single parents—75 percent of whom were women--were most vulnerable: about half experienced some income loss. Married women without children were least likely to report income loss (three in ten), while about four in ten of other groups experienced some income loss (Figure 11).

Figure 11

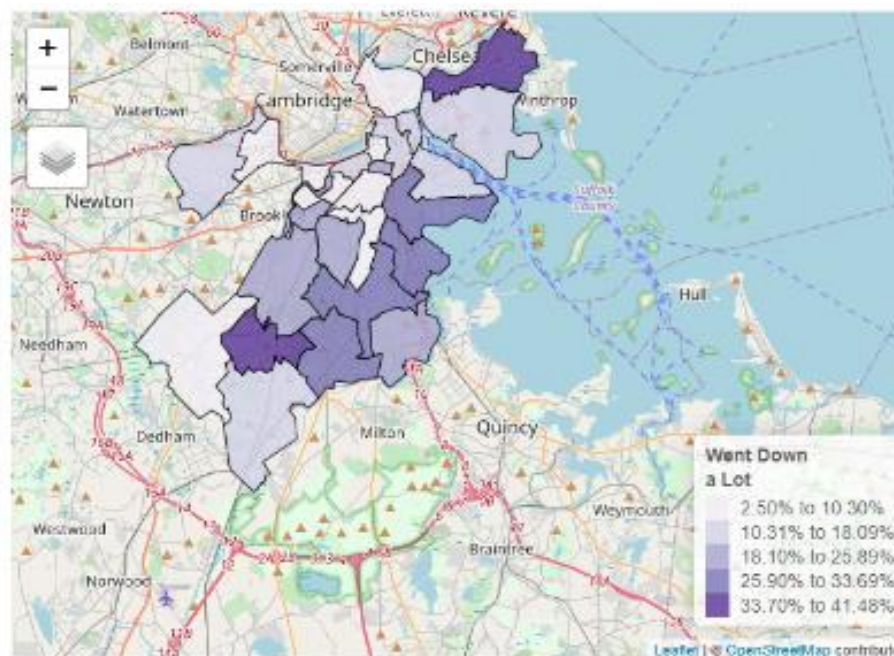


In summary, the coronavirus pandemic exacerbated inequities in economic resources among Boston residents. Those with less education and household income were more likely to have lost income, thus leaving them further behind others. Black and Latinx residents also experienced more income loss than did White and Asian-American residents. However, a small fraction of residents gained income during the pandemic, some likely due to the federal relief payments and some due to gaining new jobs. The economic impact of the pandemic also varied by family status, in a way that reflected the special challenges faced by single parents: with schools and professional childcare providers no longer available, they are most likely to have had to reduce their work hours in order to care for children at home.

5. Economic Impact Varied by Neighborhood

Income loss was also concentrated by neighborhood. In neighborhoods with many affluent residents, like Beacon Hill, Back Bay, the South End, and West Roxbury, few suffered a major loss of income (Figure 12). In some of the less affluent communities like Mattapan and East Boston/Orient Heights, income loss was much more common. But the neighborhood variation only reveals part of the story.

Figure 12
Income Loss by Neighborhood



The association between economic vulnerability and likelihood of income loss among individual survey respondents was also reflected in the pattern of variation between neighborhoods (Figure 13). Worry about running out of food due to insufficient funds was much more common in the communities of color where more residents had experienced income loss during the pandemic, like Hyde Park, Mattapan, Lower Roxbury, and East Boston/Orient Heights, as compared to more affluent, predominantly white, non-

Hispanic communities where few had lost income during the pandemic, like Back Bay, Beacon Hill, and Seaport.

Figure 13
Food Insecurity by Neighborhood

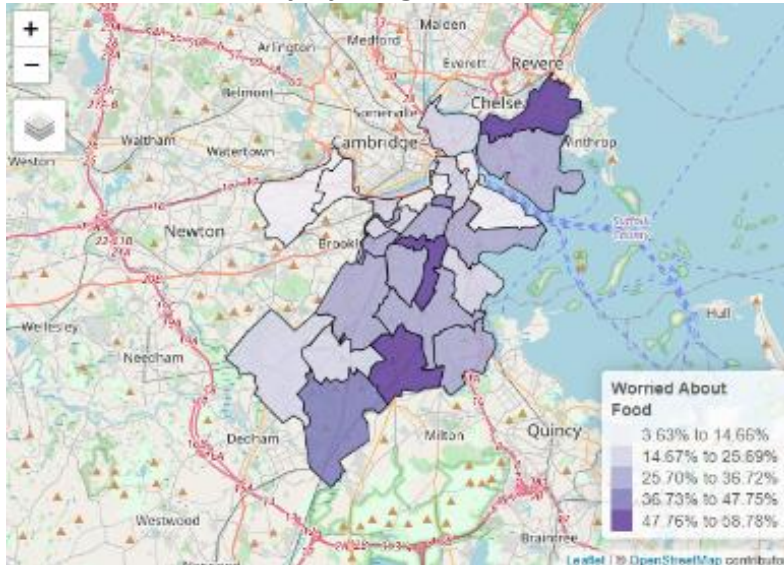
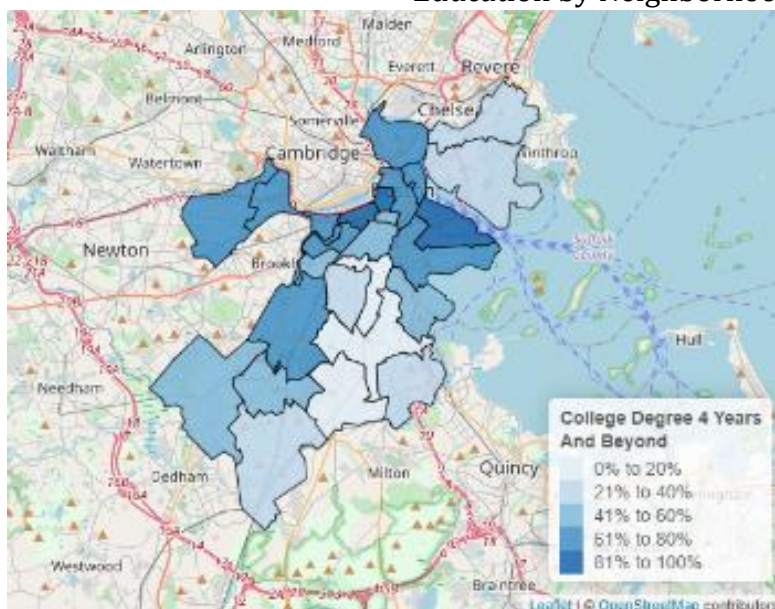


Figure 14 displays the variation across neighborhoods in the proportion of residents who had completed at least four years of college, based on data collected by the U.S. Census in the American Community Survey (2014-2018). The neighborhoods in which more residents had experienced income loss during the pandemic (Figure 12) and reported more worry about having money to buy food

(Figure 13) tended to be those with fewer residents who had a college-level education (Figure 14).

Figure 14
Education by Neighborhood





6. Conclusions

The *Living in Boston during COVID-19* survey captures how the economic impact of the pandemic varies across neighborhoods and populations. In this third report we have concentrated on the extent of economic impact and how income loss varied between individuals in relation to their economic vulnerability, race and ethnicity, education, income, and family status. We have also shown how some of these patterns were reflected in differences between neighborhoods. Disparities in economic impact thus paralleled and so compounded existing inequities in economic resources between neighborhoods and social groups. In another report we will examine how the pandemic's disparate economic impact related to differences in exposure to infection risk at work and in the community.



Appendix A. NSF Beacon Survey Methodology

The NSF-Beacon survey is a collaboration of the Boston Area Research Initiative (BARI) at Northeastern University, the Center for Survey Research (CSR) at University of Massachusetts Boston, and the Boston Public Health Commission (BPHC), funded by the National Science Foundation's Human-Environment and Geographical Sciences (HEGS) program through a grant for rapid-response research (RAPID) for collecting ephemeral data during or following a crisis. The survey captures the experiences of 1370 Bostonians during the first months of the COVID-19 pandemic, including ability and tendency to follow social distancing recommendations, attitudes towards regulations, and economic and personal impacts of the pandemic. The design allows for a unique observation of neighborhood-level estimates for these factors.

I. Sample Design and Final Sample

The NSF-Beacon survey used a stratified random sample that divided the city of Boston into 25 distinct neighborhoods. The neighborhoods were defined in collaboration with members of the Mayor's Office and other experts based on social, demographic, and historical salience. They were constructed to conform to census block group boundaries, meaning that metrics associated with census geographies (including from the U.S. Census Bureau) could be linked with the data. The Marketing Systems Group (MSG) was contracted to draw a simple random sample of residential addresses from within each neighborhood. They used the most recent United States Postal Service Computerized Delivery Sequence File (CDSF) to draw Address-Based Samples (ABS) of residential addresses. Four neighborhoods with a higher proportion of Black or Latinx populations were oversampled (Hyde Park, Mattapan, Lower Roxbury, and East Boston-Eagle Hill). As shown in Table 1, there were unbalanced sample sizes and selection probabilities across neighborhoods, meaning analysis of the data requires survey weights to correct for these differences. In addition to the survey being administered to the sample obtained for the NSF-Beacon study, we also invited participants in the previously constructed Beacon panel, which had been recruited using the same 25 neighborhood stratified sample design.

II. Data Collection Methodology

Paper copies of the survey, plus instructions for completing and returning, and a \$2 cash incentive were mailed to all sampled addresses. For three neighborhoods known to have higher percentages of Hispanic households, the materials mailed, including the survey instrument, were in both English and Spanish. All recipients were also given the option of completing the survey online and an associated URL. A randomly assigned half of the mailed questionnaires had instructions for the oldest adult 18+ in the household to complete the survey while the other random half had instructions for the youngest adult 18+ to complete the survey. In this manner, an attempt was made to randomize the age of the respondent within the household completing the survey. Approximately two weeks after the initial mailing of materials, a second mailing was sent to nonrespondents, though with no additional incentive.

Table 1. NSF-Survey neighborhood sampling specifications

Neighborhood	# of Sampled Addresses	Prob. of Selection	# of Completed Surveys	Response Rate ¹
Allston	192	0.01702	51	28.81%
Back Bay	194	0.01871	53	31.36
Beacon Hill	204	0.03593	53	30.11
Brighton	187	0.00839	58	31.87
Central	198	0.06119	50	27.78
Central Northeast	196	0.02839	58	33.14
Central West	200	0.01665	55	32.35
Charlestown	190	0.02286	62	34.25
Dorchester Central	189	0.01042	39	21.08
Dorchester North	188	0.02661	42	23.86
Dorchester South	191	0.01671	60	32.97
East Boston	189	0.02501	43	24.29
East Boston-Eagle Hill	355	0.04189	93	27.84
Fenway/Kenmore	195	0.01169	39	21.91
Hyde Park	364	0.02967	59	17.10
Jamaica Plain	188	0.01138	71	39.66
Jamaica Plain-Mission Hill	191	0.02737	55	30.73
Lower Roxbury	372	0.05977	57	17.59
Mattapan	362	0.02704	61	17.58
Roslindale	188	0.01820	73	40.11
Roxbury	188	0.01511	37	20.67
Seaport	192	0.04554	40	22.47
South Boston	191	0.01150	45	24.86
South End	188	0.01070	57	32.02
West Roxbury	189	0.01407	59	32.24
Total	5481		1370	26.88%

III. Data Collection Results

The final sample included 1370 completed surveys (1208 paper, 162 online; 30 were completed in Spanish). The number of completed surveys ranged from 37 in Roxbury to 93 in East Boston-Eagle Hill. Overall response rate was 26.88% and ranged from a low of 17.10% in Hyde Park to a high of

40.11% in Roslindale. Full details on each neighborhood sample are presented in Table 1. An additional 256 completed surveys were obtained from members of the previously constructed Beacon panel, bringing the total number of completed surveys to 1626.

IV. Weighting of survey data

The sample requires weighting to account for both differing probabilities of selection and response rates across neighborhoods, especially insofar as these differences create a sample that is demographically and geographically non-representative. We created two survey weights, one for sample design factors including probability of selection and number of adults in the household adjusted for nonresponse bias across neighborhoods, the other which adds a post-stratified weight to account for demographic non-representativeness. Additionally, we conducted this process twice. First, we did it only for respondents to the NSF-Beacon survey. Second, we replicated the procedures for the dataset that combined the NSF-Beacon survey responses with respondents from the previously constructed Beacon panel (values reported in Table 2 for weighting are highly similar for the NSF-Beacon responses alone and the merged data set).

Weights for Nonresponse Bias

Weighting for nonresponse began by neighborhood with the inverse of the probabilities of selection adjusted for the response rates displayed by neighborhood according to the equation (see Table 1 for values):

$$W_b = (\text{Inverse of probability of selection}) / (\text{neighborhood response rate})$$

The final nonresponse adjusted weight further multiplies the base weight by the number of adults 18+ in the household (capped at 4 to prevent excessively large weights). Finally, these weights are adjusted so that the percentage of the total 18+ population in Boston that belongs in each neighborhood agreed with control percentages computed from the 2014-2018 5-year American Community Survey (ACS) data from the Census Bureau. These weights sum to the ACS estimate of the total 18+ population in the city of Boston. Therefore, the final nonresponse adjusted weight can be defined as:

$$W_{NR} = (W_b)(\text{number of adults in household})(\text{ACS population adjustment factor})$$



Post-Stratified Weights

As shown in Table 2, even after nonresponse weights, the respondents to the survey were not demographically representative of Boston's population. Most notably, people with education beyond 4-year college degrees were overrepresented and those with a high school education or less were underrepresented. Women were also overrepresented relative to men and White non-Hispanics were overrepresented relative to Blacks and Hispanics. There was also a smaller age bias with too many 65+ people and too few 18-34. A final adjustment to the survey weights was implemented to adjust for differential survey nonresponse by age, gender, race/Hispanic origin, and education. Control percentages for these categories were computed from the 2014-2018 5-year ACS data. Post-stratification factors were then computed to match weighted survey data to citywide percentages. The final post-stratified weight can be expressed as:

$$W_{PS} = (W_{NR})(\text{post-stratified factors})$$

It should be noted, though, that a small amount of trimming of weights, less than one percent of all sample cases, was employed to prevent some extreme values in the post-stratified weights. As shown in Table 2, this additional adjustment process brought the weighted survey estimates much more in line with ACS citywide estimates.

Table 2. Comparison of ACS controls to nonresponse and post-stratified weights

	ACS	Nonresponse	Post-stratified
Age			
18-34	46.90%	38.40%	46.20%
35-49	21.3	20.1	21.5
50-64	18.4	22.1	18.6
65+	13.4	19.4	13.7
Gender			
Male	47.60%	38.00%	47.60%
Female	52.4	62	52.4
Education			
High School including GED or less	33.60%	16.40%	32.50%
Some college including 2-year degree	17.8	14.8	18
4-year college degree	26.5	29.3	27
Beyond 4-year college degree	22.1	39.5	22.5
Race/Hispanic origin			
White non-Hispanic	49.40%	57.50%	49.40%
Black non-Hispanic	20.6	15.8	20.6
Hispanic	16.9	12.4	16.9
Other	13.1	14.3	13.1