Technical Appendix to "Effects of January 2021 Stimulus Payments on Consumer Spending"

Opportunity Insights
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This appendix provides further details on our approach to estimating the effects of direct stimulus on consumer spending for payments made under the CARES Act 2020 and the COVID-Related Tax Relief Act 2020.

We estimate effects on consumer spending by constructing daily national consumer spending series using data from Affinity Solutions Inc, an aggregator of consumer credit and debit card information capturing nearly 10% of debit and credit card spending in the U.S; for further details on Affinity Solutions, see Section II.A and Appendix B of Chetty et al. (2020). The spending series we construct from the Affinity data closely track patterns in the nationally representative Advance Monthly Retail Trade Survey (MARTS) (Figures 1b-1c, Chetty et al. 2020). We then use these series to estimate the effects of each round of stimulus payments on national consumer spending. Finally, we use data on eligibility for stimulus payments to assess the impact per recipient.

Our main finding is that January 2021 stimulus payments substantially increased spending among lower-income households, but had little impact on spending among higher-income households. This contrasts with April 2020 stimulus payments, which increased consumer spending for all household income quartiles.

These differences stem from the different contexts in which the stimulus payments were distributed. Appendix Figure 1a shows that the national savings rate increased substantially since the onset of the COVID-19 pandemic. Using Affinity data to disaggregate national trends, we find that between April 2020 and the end of December 2020, high-income (top ZIP Code income quartile) households reduced their spending relative to 2019 by a cumulative total of slightly over $11,000 (Appendix Figure 1b).[1] As the employment impacts of COVID-19 were relatively small for high-income workers (Figure 7, Chetty et al. 2020), high-income households built up substantial savings balances over this period. By contrast, low-income (bottom ZIP Code income quartile) households, which reduced their spending by a smaller proportion (Appendix Figure 1b) and were more likely to lose employment (Figures 2 and 7, Chetty et al. 2020), built up smaller savings balances, especially after the expiry of supplemental unemployment insurance (Farrell et al. 2020). As households with more liquid balances tend to have lower marginal propensities to consume from income shocks (Johnson et al. 2006; Broda and Parker 2014; Jappelli and Pistaferri 2014), these trends between April 2020 and January 2021 dampened high-income households' response to stimulus payments, while leaving low-income households largely unaffected.

This appendix is organized in two sections. The first section details our methodology in constructing estimates of the effects of stimulus payments on consumer spending. As we do not observe incomes in the Affinity data, these estimates are constructed using ZIP Code income quartile as a proxy for income. Sections 2 examines the implications of this imputation approach by comparing our spending series using

[1] We use 2010 Census ZIP Code Tabulation Areas (ZCTAs) to perform all geographic analyses of ZIP Code-level data. Throughout the text, we refer to these areas simply as "ZIP Codes".

ZIP Code income quartiles to spending series in which income is directly observed. We also conduct a bounding exercise examining the implications of our ZIP Code-level results for underlying variation in MPCs by household income.

1. Methodology to construct main estimates

Estimating the effects of stimulus payments on indexed consumer spending by neighborhood income level

Construction of national spending series. We first construct a national daily consumer spending series by ZIP Code income quartile using data from Affinity Solutions. We receive raw data from Affinity Solutions at the county x ZIP Code income quartile x industry x date level, where cells with fewer than five unique cards with transactions are masked. We allocate ZIP Codes to quartiles using 2014-2018 ACS estimates of ZIP Code median household income, and then calculating the national population-weighted distribution of ZIP Code median incomes. For further details, see Appendix A of Chetty et al. (2020).

We first aggregate the raw data to calculate total card spending on each date, in each ZIP Code income quartile. We then index spending in each ZIP Code income quartile relative to spending in January 2019. Finally, we residualize indexed spending with respect to day-of-week fixed effects calculated using data from 2019.

Calculation of effects of stimulus payments on consumer spending. We use a difference-in-difference approach to estimate the effects of stimulus payments on indexed consumer spending within each income quartile. The most recent date for which Affinity Solutions data are available is January 19, 2021. Using Daily Treasury Statements on Economic Impact Payments distributed either by check or by electronic funds transfer (EFT), we compute that approximately two-thirds of the total $166 billion allocated to stimulus payments under the COVID-related Tax Relief Act of 2020 was distributed on January 4 2021, with another 13% distributed on January 6 2021. We therefore use the period January 4-January 19, 2021 as the treatment period for stimulus payments. We seasonally-adjust consumer spending on each date by subtracting indexed spending in each date x income quartile in December 2019 (January 2020) from the corresponding date x ZIP Code income quartile in December 2020 (January 2021). This creates first-differenced data on changes in consumer spending in December 2020 and January 2021 relative to the previous year. We then take the second difference by subtracting mean indexed consumer spending within each ZIP Code income quartile during December 4-14th, 2020 from indexed consumer spending on each date in January 2021. We choose December 4-14th as the pre-stimulus control period because the daily volatility of spending increases markedly during the holiday period, beginning (in the Affinity data) on December 15th.

Figure 1 of "Effects of January 2021 Stimulus Payments on Consumer Spending". The first figure in our analysis, titled "Daily Consumer Spending on Debit and Credit Cards, Pre vs. Post $600 Stimulus", displays these daily values of seasonally-adjusted consumer spending relative to December 2020 over the periods December 4-December 14, 2020 and January 4-January 19, 2021, for ZIP Codes in the bottom income quartile (left panel) and the top income quartile (right panel). Each point represents seasonally-adjusted consumer spending at each date, constructed as described above.

The annotation in each panel displays the estimated effect of stimulus payments on consumer spending over the period January 6-19, 2020. We calculate this effect by averaging seasonally-adjusted consumer spending over the period January 6-January 19, 2021 relative to the period December 4-14, 2020, within each income quartile. We exclude the short-term effect on consumer spending over the first two days after the receipt of stimulus payments.

Estimated portion of stimulus check spent

We take several steps to convert these estimates on indexed consumer spending to estimates of the portion of stimulus checks that was spent. The procedure differs in subtle ways between the April 2020 and January 2021 stimulus rounds. We therefore describe the procedure for January 2021 in full, noting in places where the procedure for April 2020 differs.

Calculation of indexed monthly spending effects of the COVID-related Tax Relief Act of 2020. We first estimate effects on indexed consumer spending over the first month after stimulus payments were received. To do so, we begin by calculating the effect on consumer spending separately over the first two days after the payments (Jan 4-5), following the procedure described above (replacing Jan 6-19 with Jan 4-5). We do so due to the clear "spike" in spending on these days, relative to the days that follow. For the bottom three ZIP Code income quartiles, we then calculate the monthly effect in each ZIP Code income quartile as the mean daily effect over the period January 4-5 multiplied by 2, plus the mean daily effect over the period January 6-19 multiplied by 14, plus the daily effect on January 19 multiplied by 15, making the assumption that stimulus effects observed on January 19 remain constant through February 3. For the top ZIP Code income quartile, we assume that spending remains constant at the level observed over the period January 6-19 through February 4. This assumption differs from the one we make for the other income quartiles because the second-differenced spending level observed for the top income quartile on January 19th is negative.

Calculation of indexed monthly spending effect of the CARES Act of 2020. We estimate the effect of the economic impact payments disbursed in April 2020 as part of the CARES Act on consumer spending using a similar methodology to the one outlined above with the following exceptions: (1) we use April 3rd-April 11th as the pre-period and April 15th-April 30th as the post period; and (2) we obtain our monthly impacts for all ZIP Code income quartiles by taking the sum of consumer spending over April 15th-16th and adding the average spending over the period April 17th-April 30th, multiplied by 29. We impute spending on Easter in both 2019 and 2020 by taking the average of the indexed, seasonally adjusted value of the adjacent days in each year.

Calculating Spending Changes per Check Recipient. We calculate total Affinity Solutions spending in each ZIP Code income quartile in January 2019. We then inflate the spending observed in Affinity data to estimate total spending for the full U.S. population by multiplying by the ratio of January 2019 total spending, as measured in the National Income and Product Accounts, on components of PCE that are likely captured in credit/debit card spending to January 2019 total spending in the Affinity data. For further details on the components of PCE that are likely captured in credit/debit card spending, see notes to Figure 1 of Chetty et al. (2020). We then multiply our estimated effects on indexed spending by January 2019 total spending to calculate effects on spending in dollar terms. We express the effect on consumer spending per stimulus check by dividing our estimated effects on consumer spending (in dollar terms) by the estimated number of recipients of stimulus checks in each ZIP Code income quartile.

Calculation of eligibility rates. To calculate the number of recipients in each ZIP Code income quartile, we begin by calculating stimulus payment eligibility rates by ZIP Code income quartile. We treat households receiving stimulus checks of amounts less than $600 as eligible in proportion to the checks they received, *e.g.* we assign an eligibility value of 0.5 to households receiving $300 stimulus checks. We retrieve ACS 2014-2018 data on the count of individuals in single vs. married households and the count of households in each income bin in each ZIP Code.

We assume that mean household size is constant across income bins within each ZIP Code for each household type (*i.e.* we assume the mean household size of married and unmarried households does not vary by income). This assumption permits us to combine these datasets to calculate the number of people in each income bin x household type x ZIP Code. We use total reported income in the ACS as a proxy for adjusted gross income (AGI), which determines eligibility for stimulus payments.

We then calculate the eligibility rate at the ZIP Code level in three steps: (1) computing the share of people in single-headed households who are eligible for stimulus payments; (2) computing the share of people in joint-filing households who are eligible for stimulus payments; and (3) combining these estimates using data on marriage rates to create overall ZIP Code-level eligibility rates.

(1) *Eligibility among single-headed households*. Single households with incomes below $75,000 were eligible to receive the full stimulus amount. The precise structure of payments depends on the number of children within the household; for simplicity, we use the structure of payments for families without children for all families. That is, we assume that stimulus payments were phased out for single-headed households earning over $75,000 at a rate of $5 per person per $100 increment over $75,000, with payments fully phased out at incomes over $87,000 ($99,000) for the January 2021 (April 2020) round of stimulus payments. In practice, since high-income households with children faced more lenient eligibility requirements than we assume, our estimates represent an upper bound for consumption per stimulus recipient. The most granular income bins available in the ACS 2014-2018 data at a ZIP Code level do not disaggregate between households earning $75,000-$99,999. Under the assumption that incomes are uniformly distributed within each ZIP Code x income bin, we assign an eligibility rate of 25% for these households.

(2) *Eligibility among married households.* We treat married households as joint-filers. Married households with incomes below $150,000 were eligible to receive the full stimulus amount. As above, we do not account for the effects of number of children within the household on phase-out; instead, we assume that stimulus payments were phased out for households earning over $150,000 at a rate of $5 per person per $100 increment over $150,000, with payments fully phased out at household incomes over $174,000 ($198,000) for the January 2021 (April 2020) round of stimulus payments. The most granular income bins available in the ACS 2014-2018 data at a ZIP Code level do not disaggregate between households earning $150,000-$199,999 together. Under the assumption that incomes are uniformly distributed within each ZIP Code x income bin, we assign an eligibility rate of 25% for these households.

(3) *ZIP Code-level eligibility rates.* Steps (1) and (2) allow us to assign eligibility rates to each income bin x ZIP Code x household type (*i.e.* single vs. married). We then turn to calculating the composition of household types within each income bin. To do so, we first regress marriage rates on median household income at the ZIP Code level, weighting by population; intuitively, we assume the ZIP Code-level relationship between marriage rates and household income

approximates the individual-level relationship between marriage rates and household income. We then assign a marriage rate equal to the fitted value of marriage rates at the midpoint of each household income bin. This allows us to estimate eligibility rates within each ZIP Code x income bin. Finally, we calculate a population-weighted mean eligibility rate within each ZIP Code income quartile. After that, we multiply this rate by $600 and by the population within each ZIP Code income quartile to calculate total expected stimulus spending in each ZIP Code income quartile.

Share of stimulus spending received. Not all households received payments at the beginning of our treatment period. To calculate stimulus amounts received, we multiply the total amount appropriated for stimulus payments under the COVID-related Tax Relief Act of 2020 by the share of stimulus spending that had been distributed by January 10, 2021. The total amount appropriate for stimulus payments under the COVID-related Tax Relief Act of 2020 is $166 billion (Rows 1-2 of Table 2, Sherlock, Gravelle, Marples and Keightley 2021). We use Daily Treasury Statements to calculate that total spending on stimulus payments prior to January 10 was roughly $130 billion. We therefore find that roughly 78% of payments had been distributed by January 10. A similar calculation for payments made under CARES Act in April 2020 yields estimates that roughly 58% of payments were distributed by April 21.[2] Under the assumption that this rate is constant across ZIP Code income quartiles, we multiply total expected stimulus spending in each ZIP Code income quartile by 78%. We then divide our effects on aggregate consumer spending by the estimated number of recipients to calculate effects per recipient. It is possible that this fraction is higher for higher income households, due to the larger number of low-income households without bank information on file at the IRS; this would cause us to overestimate the total number of stimulus recipients in the lowest ZIP Code Income Quartile, leading to an underestimate of the amount spent per recipient for these households.

Figure 2 of "Effects of January 2021 Stimulus Payments on Consumer Spending". The second figure in our analysis, titled "Portion of $600 Stimulus Check Spent, by Household Income Group" presents these estimates by income quartile. Since the April stimulus payments were $1,200 for most families, we halve the values for the CARES Act in this chart to make them comparable to the per-dollar effects of the recent $600 stimulus payments. For example, the "$189" spending statistic for the lowest ZIP Code income quartile households corresponds to first-month spending of $189 x 2 = $378 out of each $1200 check paid in April 2020.

Implications for proposed $1,400 stimulus checks

Estimated proposed spending on stimulus payments to high-income households. We calculate proposed spending on multi-headed households earning over $78,000 and single-headed households earning over $50,000 by applying the income thresholds in the Caring for Americans with Supplemental Help (CASH) Act 2020 to 2014-2018 ACS microdata. As before, for simplicity, we ignore the effects of the number of children on phase-out rates.

Estimated effect of $1,400 stimulus payments on spending among high-income households. We assume that the response of consumer spending to $1,400 stimulus payments would be the same in proportional terms as the response of consumer spending to $600 stimulus payments, within each ZIP Code income

[2] In an update to this analysis on February 4th, 2021, we adjusted our calculation of the fraction of stimulus checks received before April 21st to its current value of 58%. Our previous analysis used a higher value of this number, leading to lower estimated spending effects for each ZIP Code income quartile in Figure 2.

quartile. We also assume that the response of consumer spending that we estimate within the top ZIP Code income quartile, with median household incomes above $78,000, approximates the response of consumer spending among high-income households. Sections 2 presents the case for the validity of this assumption.

Making these assumptions, we calculate the per-recipient effect of the proposed $1400 stimulus checks as the effect of $600 stimulus checks, multiplied by ($1400/$600); following this procedure, we estimate a per-recipient effect of stimulus checks of around $105 among high-income households. To calculate the national aggregate effect on consumer spending, we note that a spending response of $105 represents increased spending of 7.5% of the initial stimulus amount; we therefore multiply total spending on high-income households ($200 billion) by 7.5% to calculate a national effect on consumer spending of around $15 billion.

2. Implications for Stimulus Effects at the Household Level

We do not directly observe cardholders' incomes in the Affinity data. For this reason, we use the median household income of the cardholders' residence, as measured in 2014-2018 ACS data, to split households into groups for our analysis. The section examines the validity of inferring something about the spending patterns of high- vs. low-income households based on this area-level grouping. We discuss these issues in two steps: First, we assess whether the differences in households between areas can be understood solely as differences in the distribution of underlying income; second, we use the specific household income distributions within each ZIP Code income quartile bucket to translate our results into bounds on the underlying spending responses of high-income households.

Validity of Area-Level Estimates. The key assumption to using median ZIP Code income as a proxy for individual income is that there are no sources of individual-level variation in consumer responses to the COVID-19 pandemic that are correlated with median ZIP Code income, other than income itself. For instance, if low-income households in high-income ZIP Codes experienced larger declines in spending than low-income households in low-income ZIP Codes, then our ZIP Code imputation approach would tend to overstate the difference in spending between high-income and low-income households.

Bachas et al. (2020), who observe incomes directly for JPMorgan Chase clients, address this assumption in Table 3, which shows that very little of the relationship between income and the initial decline in consumer spending in response to COVID-19 is driven by geographic fixed effects. This suggests that remaining differences in consumer spending between high-income and low-income areas reflect the differing income composition of households in those areas, rather than reflecting the effects of other characteristics that are correlated with median income.[3] Consistent with this evidence, the series we construct using our ZIP Code imputation approach are generally well aligned with those in Bachas et al. (2020) from January through to May 2020, the last date for which spending series are available in Bachas et al. (2020).

We also directly assess the accuracy of our ZIP Code imputation approach when estimating the effects of April 2020 stimulus payments. (Unfortunately, similar results are not yet available for the January 2021 stimulus payments.) To do so, we compare our estimates of the effects of stimulus payments by ZIP Code

[3] Of course, the fact that the key assumption for our imputation approach holds in the initial period of response to the pandemic does not guarantee that it will continue to hold throughout the full sample period.

income quartile to estimates constructed using the data in Figure 5 of Bachas et al. (2020). The data in Bachas et al. (2020) are available on a weekly basis; for this reason, we cannot directly implement our main approach to estimating the effects of stimulus payments, which treats the first two days after stimulus payments were received differently to subsequent days. Instead, in the Bachas et al. (2020) data, we compare mean indexed spending over the two weeks prior to the receipt of stimulus payments to spending over the subsequent five weeks.[4] In the Affinity data, we use the difference-in-difference approach described in Section 1, except restricting the sample to the same period as in the Bachas et al. (2020) data. Appendix Figure 2 demonstrates that estimated effects on indexed consumer spending are similar in the two samples.[5]

Based on these comparisons, we conclude that the key assumption stated above is likely to hold: households differ in their spending responses between areas with higher and lower ZIP Code median incomes due to the differences in the underlying household income distributions, rather than other correlated factors.

Implications of Area-Level Estimates for Household-Level Responses. We now use the underlying household income distribution, as it varies between ZIP Code income quartiles, to translate our ZIP Code income quartile-level results into results on how the underlying stimulus effects vary by individual household income. We focus in this section specifically on estimating the spending responses of high-income households.

We begin by characterizing the distribution of stimulus-eligible household within the fourth quartile of ZIP Code median household incomes. We do so using ACS 2014-2018 data on the count of individuals in single vs. married households and the count of households in each income bin in each ZIP Code. As above when computing eligibility rates, we assume that mean household size is constant across income bins within each ZIP Code for each household type (*i.e.* we assume the mean household size of married and unmarried households does not vary by income within a ZIP Code). We assign eligibility for stimulus payments as described above, restricting our attention to the January 2021 round of stimulus payments. Appendix Figures 3a and 3b display the resultant distribution of household incomes among married and unmarried households respectively, restricting to stimulus-eligible households in top income quartile ZIP Codes. Then, in order to combine the income distributions for singles and married households, we follow the Congressional Budget Office and assume that single households have equivalent spending responses to married households with 1.41 times higher household incomes (the "square-root equivalence scale") (Congressional Budget Office 2020).

[4] Stimulus payments on April 15 fall in the middle of a week in the Bachas et al. (2020) data. We treat the week of April 12-18 as a post-stimulus week.

[5] Appendix Figure 2 displays the effects of stimulus payments on indexed consumer spending, whereas Figure 2 of "Effects of January 2021 Stimulus Payments on Consumer Spending" displays spending in dollar terms per recipient of stimulus payments. Spending per recipient of stimulus payments is relatively constant across income quartiles. By contrast, the effect of stimulus payments on indexed consumer spending is decreasing with income. This is because (1) lower-income households were more likely to be eligible for stimulus payments, and (2) spending among lower-income households was lower at baseline, and so a constant increase in spending in dollar terms leads to a larger effect on indexed spending among lower-income households.

Appendix Figure 3c plots this combined distribution. Even in the top quartile of ZIP Codes, by median income, 50% of stimulus-eligible households have incomes lower than $74,000, with a substantial fraction (25%) even below $42,000.

Bound on household-level stimulus response. We now rely on the distribution from Appendix Figure 3c to bound the underlying stimulus response for households with incomes above $75,000. Because roughly half of stimulus payments in these ZIP Codes went to households with incomes above and below $75,000, the overall spending response for these ZIP Codes (in Figure 2) is the average of the spending response for these two groups. Under the assumption that the response for those households earning more than $75,000 is not greater than that for households earning less than $75,000 – an assumption that is consistent with the results in Figure 2 as well as previous literature – then the response for households earning above $75,000 cannot be less than the overall estimated response of $45 per $600 in Figure 2.

More generally, the underlying distributions of household incomes suggest that the differences in Figure 2 of our analysis understate the underlying response differences, as they vary with household income levels. Intuitively, households in high-median-income ZIP Codes are on average higher income than those in low-median-income ZIP Codes, but there is substantial overlap in the distributions. As a result, the responses for high-income households themselves are likely even lower than suggested by Figure 2, once one corrects for the larger responses from those low-income households who live in high-income ZIP Codes. Conversely, the response for low-income households is likely greater than the $126 per $600 suggested by Figure 2, since there are a number of higher-income households whose lack of response pulls down the average. We thus consider our ZIP Code-level estimates as bounds for the underlying household-level responses.

References

Bachas, Natalie, Peter Ganong, Pascal J. Noel, Joseph S. Vavra, Arlene Wong, Diana Farrell, and Fiona E. Greig. 2020. "Initial Impacts of the Pandemic on Consumer Behavior: Evidence from Linked Income, Spending, and Savings Data." NBER Working Paper No. 27617.

Broda, Christian, and Jonathan A. Parker. 2014. "The Economic Stimulus Payments of 2008 and the aggregate demand for consumption." *Journal of Monetary Economics* 68: S20-S36.

Chetty, Raj, John N. Friedman, Nathaniel Hendren, Michael Stepner, and the Opportunity Insights Team. 2020. "The Economic Impacts of COVID-19: Evidence from a New Public Database Built Using Private Sector Data." NBER Working Paper No. 27431.

Congressional Budget Office. 2020. "The Distribution of Household Income, 2017."

Farrell, Diana, Peter Ganong, Fiona Greig, Max Liebeskind, Pascal Noel, Daniel Sullivan, and Joseph Vavra. 2020. "The unemployment benefit boost: Trends in spending and saving when the $600 supplement ended." JPMorgan Chase Institute Policy Brief.

Jappelli, Tullio and Luigi Pistaferri. 2014. "Fiscal Policy and MPC Heterogeneity." *American Economic Journal: Macroeconomics* 6(4): 107-136.

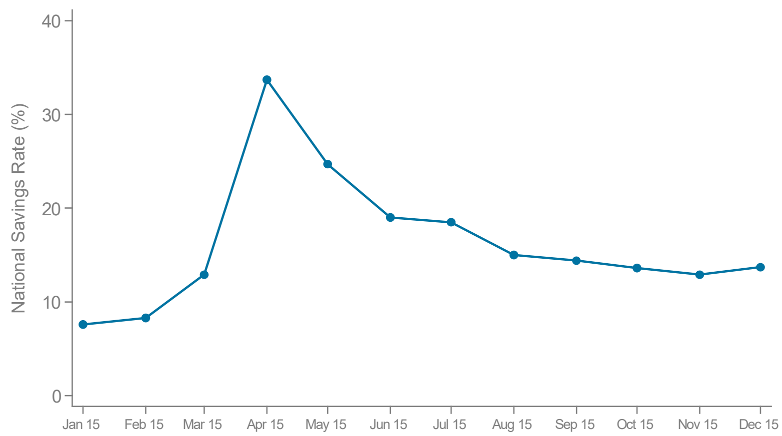
Johnson, David S., Jonathan A. Parker, and Nicholas S. Souleles. 2006. "Household Expenditure and the Income Tax Rebates of 2001." *American Economic Review* 96(5): 1589-1610.

Sherlock, Molly F., Jane G. Gravelle, Donald J. Marples, and Mark P. Keightley. 2021. “The COVID-Related Tax Relief Act of 2020 and Other COVID-Related Tax Provisions in P.L. 116-260.” Congressional Research Service Report R46649.

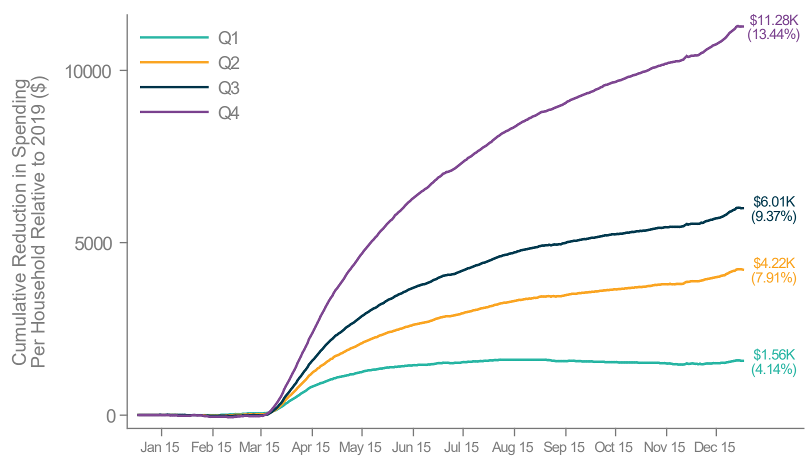
APPENDIX FIGURE 1

Trends in Saving Around COVID-19 Pandemic

A. National Savings Rate in Bureau of Economic Analysis Data



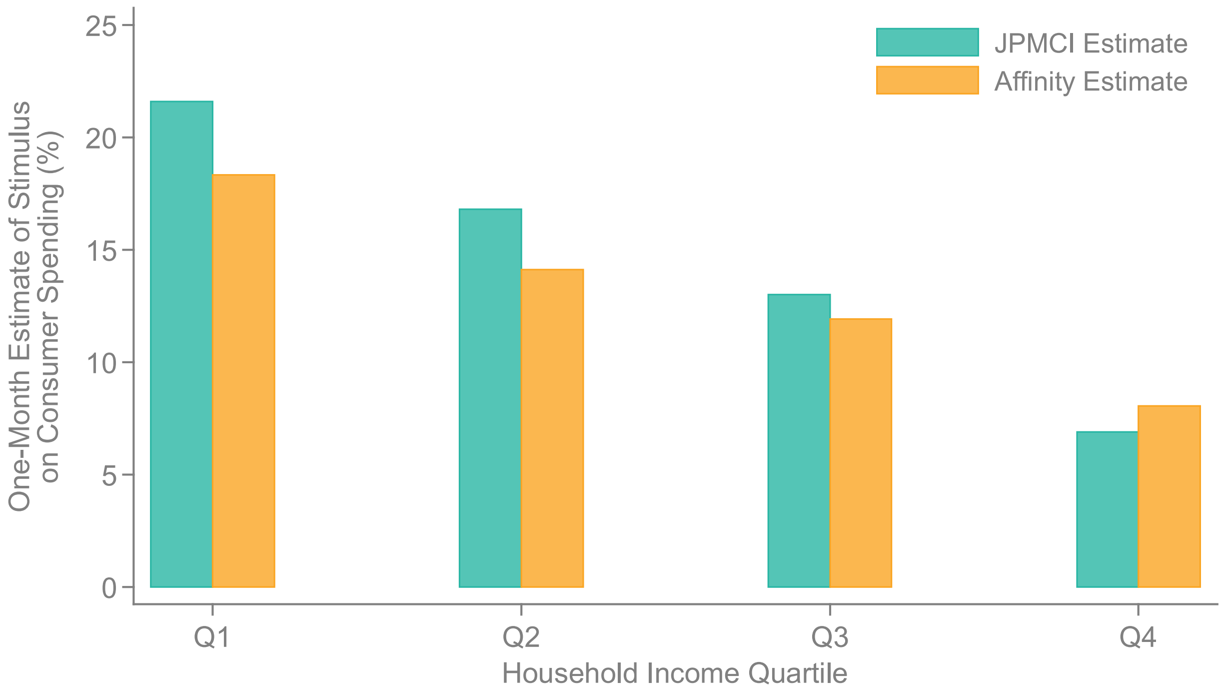
B. Reduction in Spending per Household by Income Quartile in Affinity Data



Notes: This figure shows trends in savings throughout 2020. Panel A shows the seasonally-adjusted national personal savings rate in Bureau of Economic Analysis data. Panel B shows the cumulative reduction in spending per household relative to 2019 in Affinity Solutions data, by income quartile. To construct Panel B, we first compute total spending by income quartile on each day in 2019 and 2020. We then rescale from Affinity spending to national spending by multiplying by the ratio of January 2019 total spending on components of PCE that are likely captured in credit/debit card spending to January 2019 total spending in the Affinity data. We measure spending on components of PCE that are likely captured in credit/debit card spending using the National Income and Product Accounts; for details, see notes to Figure 1 of Chetty et al. (2020). We then calculate the difference between 2020 spending and 2019 spending on each date, and plot the cumulative reduction in spending over time, divided by the number of households in each ZIP Code income quartile, as measured in 2014-2018 ACS data. The annotation to the right of the panel displays the cumulative reduction in spending over the year 2020 for each income quartile.

APPENDIX FIGURE 2

Estimated One-Month Impacts of Stimulus on Consumer Spending in JP Morgan Chase Institute (JPMCI) vs. Affinity Data

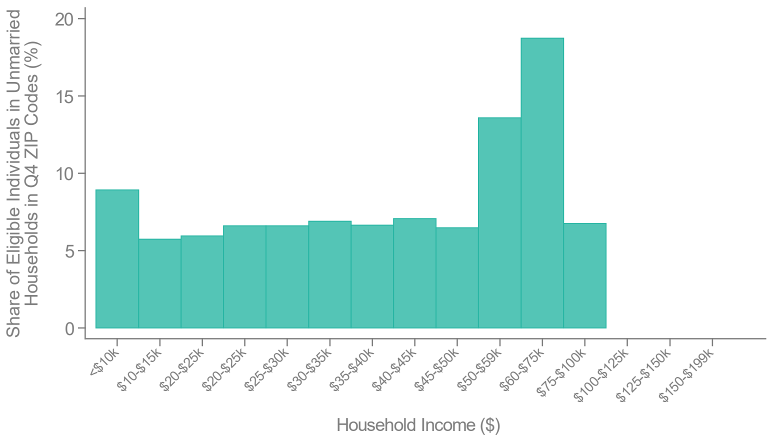


Notes: This figure compares estimates of the impact of stimulus spending in JP Morgan Chase Institute data contained in Bachas et al. (2020) to corresponding estimates in Affinity data. In the JP Morgan Chase Institute data, household income quartiles are directly observed; in the Affinity data, household income quartiles are imputed using ZIP Code median income. To estimate the impact of stimulus payments in JP Morgan Chase Institute data, we begin by retrieving weekly data on indexed consumer spending by income quartile from Figure 5 of Bachas et al. (2020). We estimate the effect of stimulus payments in each income quartile as mean indexed spending over the five weeks after the receipt of stimulus payments minus mean indexed spending over the two weeks prior to the receipt of stimulus payments. Stimulus payments on April 15 fall in the middle of the week April 12-18 in Bachas et al. (2020); we treat this entire week as a post-stimulus week. In the Affinity data, we use a difference-in-difference approach as described in Section 1, restricting the sample to the same period as in the Bachas et al. (2020) data.

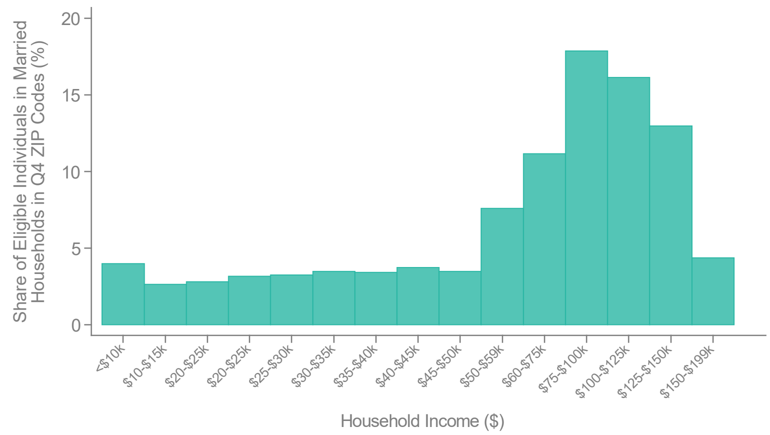
APPENDIX FIGURE 3

Household Income Distributions in Top Income Quartile ZIP Codes

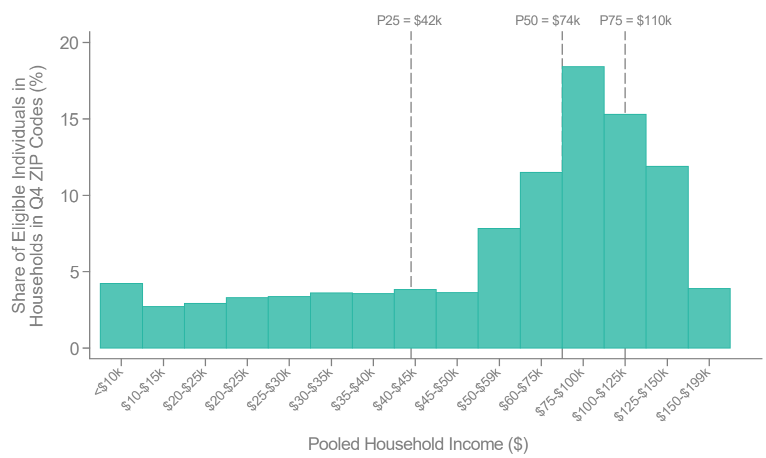
A. Distribution of Household Incomes Among Eligible Unmarried Households in Top Income Quartile ZIP Codes



B. Distribution of Household Incomes Among Eligible Married Households in Top Income Quartile ZIP Codes



C. Distribution of Household Income Among Married Households Eligible for January 2021 Stimulus Payments Residing in Top Income Quartile ZIP Codes



Notes: This figure presents the household income distribution of individuals residing in top income quartile ZIP Codes who are eligible for January 2021 stimulus checks. To construct each panel, we use 2014-2018 ACS data on the distribution of incomes and household types by ZIP Code. We assign eligibility for stimulus payments as described in section 1. Panel A shows the income distribution among unmarried households. Panel B shows the income distribution among married households. To construct Panel C, we multiply household income among unmarried households by 1.41, under the assumption that incomes are uniformly distributed within each income bin x ZIP Code. The annotations in Panel C display the 25th, 50th and 75th percentiles of the income distribution.