

ONLINE APPENDIX

Race and Bankruptcy

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OA1. Procedure for Matching Individuals and Zip Codes

We perform two types of matching in this paper. We conduct individual-level matching to explore the possibility that, once we limit our sample to African Americans and Others who are comparable on observables (including driving distance), the effect of the Emanuel policy may disappear. The analysis based on this matching is reported in Section 4.2 of the main text. We also conduct zip code-level matching to explore the effect of the Emanuel policy on total filings in Chicago relative to a synthetic control group consisting of matched zip codes outside Chicago. The analysis based on this matching is reported in Section 4.4 of the main text.

For both types of matching, we implement propensity score matching using the Stata package *psmatch2* Version 4.0.11. We used nearest-neighbor matching with common support and no replacement.

We used a probit regression to estimate the propensity score. In the case of individual-level matching, the dependent variable was a dummy equal to one if the individual was African American and zero otherwise. The independent variables included case controls (such as assets, liabilities, and monthly income and expenses) from the Federal Judicial Center Integrated Database (IDB). In some specifications, we also matched on census tract fixed effects. Table OA2 shows the covariate balance between African American and Other filers after matching on individual characteristics (Panel B) and after matching on both individual characteristics and census tract (Panel C).

When we conducted zip code-level matching, the dependent variable equaled one if a zip code was located in the city of Chicago and zero otherwise (i.e., if the zip code was anywhere else in the United States). The controls included zip code-level variables such as percentage African American, percentage Hispanic, median household income, percentage living in a food desert, percentage traveling over 45 minutes to work, per capita number of Chapter 13 filings in 2010, and Chapter 13's share of consumer bankruptcies in 2010. Table OA3 shows the covariate balance between the two groups.

OA2. Estimation Using Zip Code-Level Data

In the main text, we analyze the Emanuel policy using individual-level data from Cook County. An alternative strategy is to estimate, at the zip code level, Chapter 13's share of bankruptcy filings during the months before and after Emanuel took office as Mayor. The advantage of this approach is that it allows us to use data from other counties as a control group (we do not have individual-level data for counties outside Cook). We can run a triple-difference

regression that estimates the change in Chapter 13's share (i) after Mayor Emanuel took office (ii) among African American zip codes relative to non-African American zip codes (iii) in Cook County zip codes relative to zip codes in counties unaffected by the change in Mayor Emanuel's policy ("ControlZips"). This specification is estimated by the following equation:

$$\begin{aligned} O_{zq} = & AA_z + Post - Emanuel_q + Cook_z + \\ & AA_z \cdot Cook_z + AA_z \cdot Post - Emanuel_q + Post - Emanuel_q \\ & \cdot Cook_z + \\ & AA_z \cdot Post - Emanuel_q \cdot Cook_z + \varepsilon_{zq} \end{aligned} \tag{OA1}$$

where O_{zt} is Chapter 13's share of bankruptcy filings in zip code z during quarter q ; AA_z indicates whether the zip code is predominantly African American; $Cook_z$ identifies zip codes in Cook County; and $Post - Emanuel_q$ identifies quarters after Mayor Emanuel took office. We define a zip code as "African American" if African Americans account for at least seventy percent of the population.

We select Control Zips from throughout the United States using nearest-neighbor matching: For each Cook County zip code, we use propensity-score matching to select three zip codes outside Cook County ("nearest neighbor") that are most similar in 2010 (the year before Mayor Emanuel took office) along the following dimensions: Chapter 13's share of bankruptcy filings, per capita Chapter 13 filing rate, percentage of residents who commute more than 45 minutes to work, percentage of residents living within a food desert, percentage African American, percentage Hispanic, median household income, and percentage of population with income less than \$15,000 per year (an approximation of the poverty line).¹

Figure OA4 presents the raw statistics, plotting the share of Chapter 13 for Cook County ("treatment") and Control Zips ("control"). Treatment and control track each other closely through 2010, but then diverge, with an increase in Cook County relative to Control Zips.

Table OA6 implements the model in equation OA1. We begin with simple models that account only for race, geography (Cook County versus other locations), and a time trend centered on the end of the recession. Column (1) confirms that, across all zip codes, Chapter

¹We have verified that our results are virtually the same (but less precise) when we limit the Control Zips to one nearest-neighbor for each Cook County zip code. Our results are also the same when we exclude Cook County zip codes with propensity scores that fall outside the maximum and minimum of the Control Zip propensity scores.

13 accounts for a substantially larger share of bankruptcy filings (21 percentage points larger) in African American zip codes than in other zip codes. Column (2) shows that Chapter 13's share is larger (by about 8.8 percentage points) for African Americans living in Cook County than African Americans living elsewhere. To put this into perspective, Chapter 13's share of bankruptcies in Cook County during 2010 was 44 percent in African American zip codes and 19 percent in other zip codes; outside Cook County, Chapter 13 accounted for 40 percent of filings in African American zip codes and 19 percent in other zip codes.

Column (3) estimates our main specification, equation OA1, where the coefficient of interest is the triple-interaction, $AfricanAmerican \times Post - Emanuel \times Cook$. This is our difference-in-difference-in-difference (DDD) estimator. Although Chapter 13's share during the Post-Emanuel policy period is declining on average across all zip codes (*Post-Emanuel*), it is increasing in Cook County relative to zip codes outside the county, consistent with the hypothesis that the Emanuel policy elevated Chapter 13 filings in Cook County. The triple interaction indicates that the policy caused a 4.4 percentage point increase in Chapter 13's share of bankruptcies in African American zip codes relative to other zip codes in Cook County, relative to the same difference in other counties. This is a ten percent increase relative to Chapter 13's share of filings in Cook County African American zip codes during 2010.

Columns (4) and (5) add zip code and year fixed effects. Zip code fixed effects account for heterogeneity across zip codes, which may be particularly important in this setting, where the control zip codes are drawn from different counties. In both columns, the DDD estimates decline slightly (to about 3.5 percent), but still represent about an eight percent increase relative to Chapter 13's share in 2010.

OA3. Heterogeneity in Policy Impact

In this appendix, we identify two margins along which we expect to see relatively large or small effects, assuming the Emanuel policy caused an increase in Chapter 13 filings.

We expect to see little or no effect among consumers who did not own cars and therefore were largely unaffected by the policy. However, because we measure car ownership at the time of the bankruptcy filing, the absence of car ownership does not imply the absence of an effect. The consumer could have lost her car due to the Policy, but filed for bankruptcy after the car had been seized and sold off (making it impossible to recover). To address this possibility, we analyze the subset of consumers who both (a) list no car ownership and (b) do not list any debt to the City of Chicago at the time of their bankruptcy filings. Figure OA5 reports estimates

from running Equation (1) in the main text on this subsample, showing no positive effect of the Emanuel policy on the relative likelihood of African Americans to file for Chapter 13. If anything, they become less likely to file.

On the other hand, we expect to observe large effects among distressed consumers who (a) saw little benefit to bankruptcy prior to the policy change but (b) obtained a large benefit afterward. Potential proxies for (a) are income and assets. Bankruptcy is a legal device for protecting income (in Chapter 7) and assets (in Chapter 13) from creditor collection efforts. Consumers with meager income and assets (“low benefit debtors”) derive less benefit from bankruptcy, which is in part why Sullivan, Warren, and Westbrook (2001), among others, have called bankruptcy a “middle class phenomenon.” A potential proxy for (b) is occupation: consumers with jobs that require a license or a car (e.g., taxi drivers) are much more likely to benefit from Chapter 13 if these assets are seized through the Emanuel policy.

Figure OA6A implements our proxy for (a). Here, we define “low benefit debtors” as those who are not homeowners, have no secured debt, have no non-exempt property, and have annual income below 150% of the poverty line. By limiting the sample to non-homeowners, we exclude one of the principal reasons for using Chapter 13 (to save your home), as discussed in White and Zhu (2010). Similarly, by excluding consumers with secured debt, we rule out another common reason for using Chapter 13: to protect assets from foreclosure. Non-exempt property consists of assets that would be liquidated in Chapter 7 (every state allows consumers to retain certain assets—“exempt property”—even if they file for Chapter 7; the remaining assets are called “non-exempt”). If a consumer has no non-exempt property, she has no assets that are at risk of liquidation in Chapter 7. Equivalently, she has no assets that can be protected through a Chapter 13 filing. Finally, by focusing on debtors with low incomes, we limit our sample to consumers who have relatively small incentive to use any form of bankruptcy, because they are unlikely to be subject to creditor collection efforts if they are sufficiently poor. Figure OA6A shows that the Emanuel policy had a strong effect on “low benefit” consumers, with a sharp post-Emanuel policy increase among both African Americans and other races.

Figure OA6B implements our proxy for (b), i.e., consumers who saw a large benefit from Chapter 13 after the advent of the Emanuel policy. Here we analyze the subset consisting of all “low benefit debtors”, but compare “drivers” to other debtors. We define a consumer as a “driver” if the bankruptcy petition listed an occupation with the word “driver” in it. We view this as a proxy for debtors who are highly likely to see a benefit in filing for Chapter 13 if their cars or licenses are seized. Figure OA6B confirms that, prior to the Emanuel policy, Chapter 13 accounted for a relatively small share (around 20 percent) of bankruptcy filings by low-

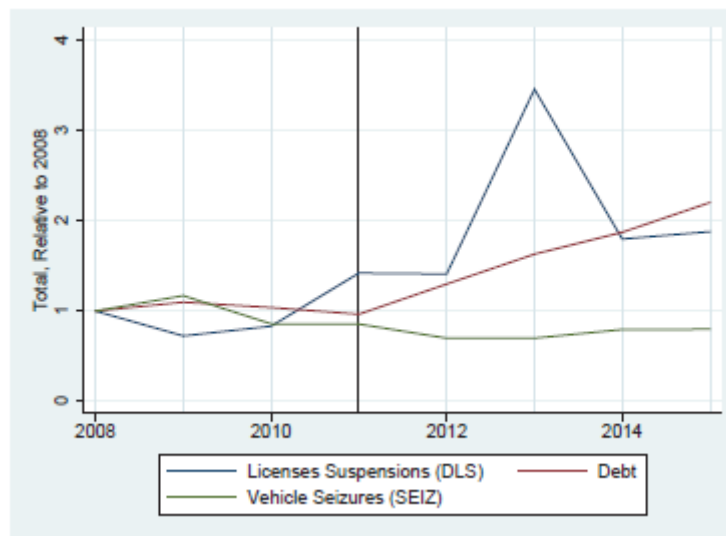
benefit debtors, and among these debtors, drivers were about as likely to file for Chapter 13 as other filers. After the advent of the Emanuel policy, we observe a sharp separation between drivers and other low-benefit debtors. This separation, however, does not appear to be larger for African Americans than other races. Our sample is too small to permit strong inferences, but this (tentative) finding is consistent with our hypothesis that racial differences in the propensity to file for Chapter 13 reflect differences in the value placed on transportation. Once we condition on a group of debtors who equally value transportation (drivers), racial differences attenuate.

References

- Sullivan, Teresa A., Elizabeth Warren, and Jay Lawrence Westbrook. 2001. *The Fragile Middle Class: Americans in Debt*. New Haven, CT: Yale University Press.
- White, Michelle and Ning Zhu. 2010. "Saving Your Home in Chapter 13 Bankruptcy." *Journal of Legal Studies* 39 (1):33–61.

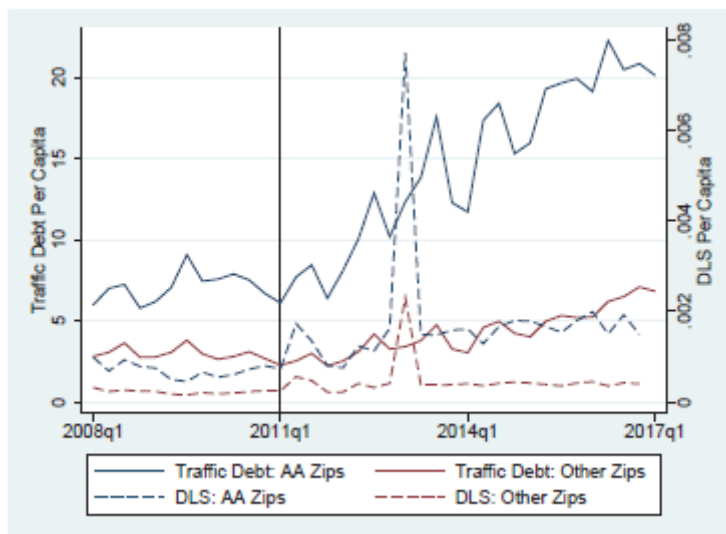
Online Appendix Figures

FIGURE OA1. Chicago Enforcement Policy, 2008–2016: Counting Only First DLS Notices



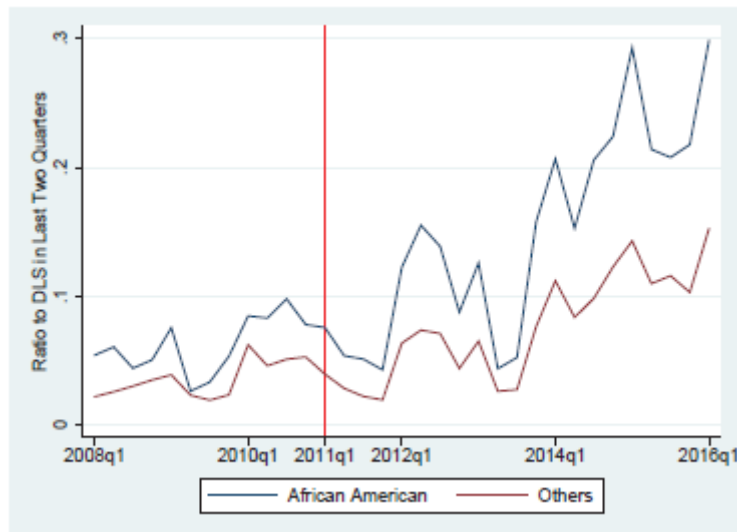
Note: This figure replicates Figure 1 in the main text, but limits the data to first DLS notices (instead of all DLS notices).

FIGURE OA2. Debt and License Suspensions Per Capita, African American and Other Zip Codes: Counting Only First DLS Notices



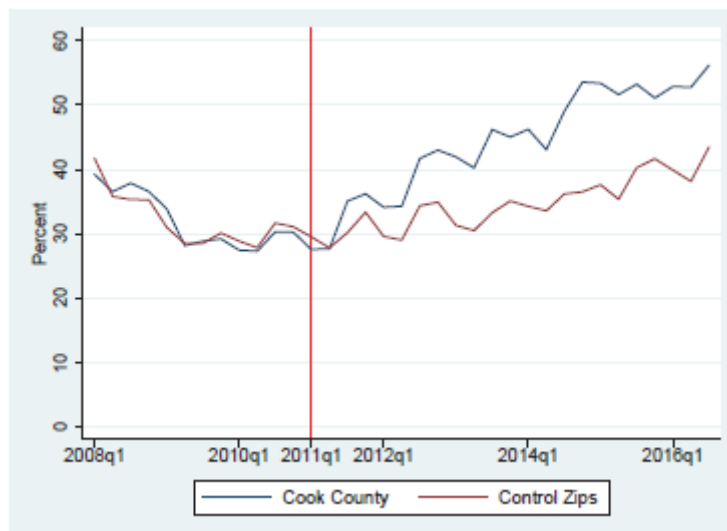
Note: This figure replicates Figure 2 in the main text, but limits the data to first DLS notices (instead of all DLS notices).

FIGURE OA3. Ratio of Bankruptcy Filings to DLS Notices by Race: Counting Only First DLS Notices



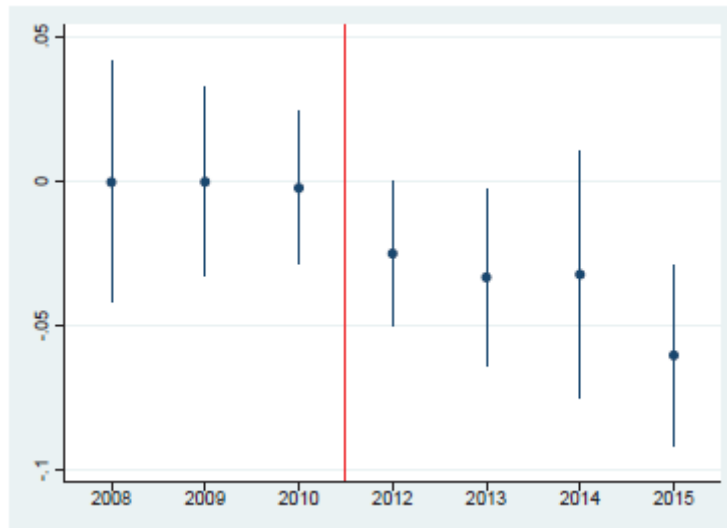
Note: This figure replicates Figure 5 in the main text, but limits the data to first DLS notices (instead of all DLS notices).

**FIGURE OA4. Chapter 13's Share of Bankruptcy Filings:
Cook County vs. Control Zip Codes**



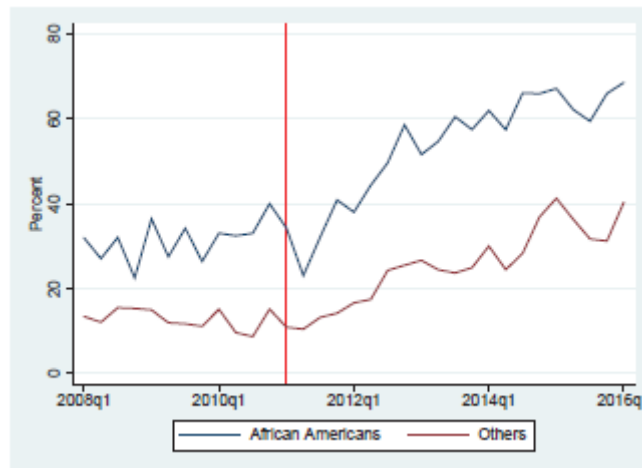
Note: This figure plots Chapter 13's share of bankruptcy filings among (a) Cook County zip codes and (b) a synthetic control group consisting of zip codes, throughout the Country, that were matched to the Cook County zip codes. As discussed in Appendix OA2, for each Cook County zip code, we selected three zip codes that were nearest-neighbors as measured by 2010 data. The vertical line identifies the year 2011, when the Emanuel Policy commenced.

FIGURE OA5. Effect of Emanuel Policy on Subset of Consumers Who Do Not Own Cars and Have No City Debt



Note: This figure plots coefficients from estimating our baseline event-study specification (Equation ?? in the main text) on a subsample of consumers who should be unresponsive to the Emanuel Policy: consumers whose bankruptcy filings list (a) no car ownership and (b) no debt to the City of Chicago. The vertical line identifies the year 2011, when the Emanuel Policy commenced.

FIGURE OA6. Proportion of Chapter 13 Filings Involving “Low Benefit” Debtors



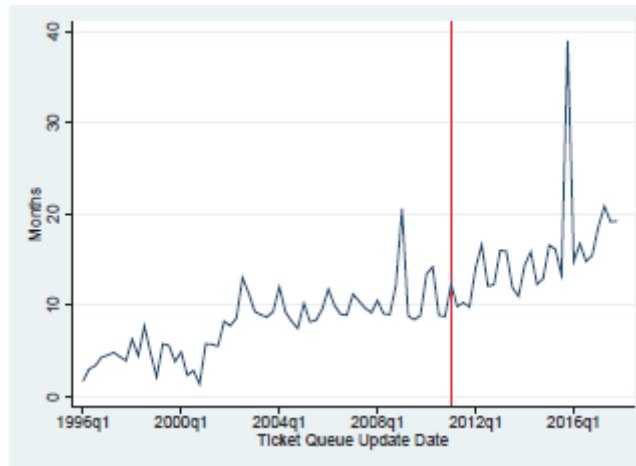
A. Chapter 13’s Share of Filings Among “Low Benefit” Consumers



B. Chapter 13’s Share Among “Low Benefit” Consumers: Drivers vs. Non-Drivers

Note: This figure plots coefficients from estimating our baseline event-study specification (Equation ?? in the main text) on subsamples of consumers who we hypothesize should exhibit large responses to the Emanuel Policy. Panel (a) limits the sample to “low benefit” debtors who should derive little benefit from a bankruptcy filing, absent the Emanuel Policy. These consumers have no homes, no secured debt, no non-exempt property, and annual income below 150% of the poverty line. Panel (b) also limits the sample to “low benefit” debtors, but compares those who list the word “driver” in their occupations to those who do not list this word. The vertical lines identify the year 2011, when the Emanuel Policy commenced.

FIGURE OA7. Age and Price of Tickets



A. Average Age of Ticket at Resolution (payment or a bankruptcy filing)



B. Distribution of Average Ticket Price by Year of Issuance

Note: These plots use ticket-level data obtained by ProPublica via a FOIA request submitted to the City of Chicago. The vertical lines identify the year 2011, when the Emanuel Policy commenced.

Online Appendix Tables

Table OA1. Change in Composition of Chapter 13 Filers: Comparing Three Years Before and After the Emanuel Policy Went On-Line

	2008 - 2010	2012 - 2014	t-test
	Mean	Mean	p value
Panel A: All Cases			
% African American	.35	.40	0.00
% Joint Filing	.25	.16	0.00
% Below 200% of Poverty Line	.27	.40	0.00
% Homeowner	.61	.43	0.00
% Car Owner	.83	.83	0.75
% Car Owner but Not Homeowner	.33	.50	0.00
% Not Car Owner, Not Homeowner	.10	.13	0.00
% COC Debt	.34	.55	0.00
Observations	37,437	51,396	88,833
Panel B: Homeowners			
% African American	.30	.28	0.00
% Joint Filing	.35	.29	0.00
% Below 200% of Poverty Line	.09	.13	0.00
% Car Owner	.87	.88	0.00
% City Debt	.23	.28	0.00
Total City Debt (\$)	335	789	0.00
Total Assets (\$)	267,231	206,695	0.00
Secured Debt (\$)	256,837	217,543	0.01
Total Debt (\$)	306,905	265,281	0.01
Observations	22,756	20,945	43,701
Panel C: Car Owner but Not Homeowner			
% African American	.50	.55	0.00
% Joint Filing	.08	.06	0.00
% Below 200% of Poverty Line	.51	.59	0.00
% COC Debt	.50	.73	0.00
Total City Debt (\$)	1,528	3,030	0.00
Total Assets (\$)	18,647	17,282	0.24
Secured Debt (\$)	13,722	11,287	0.00
Total Debt (\$)	48,578	48,380	0.74
Observations (\$)	8,489	18,654	27,143
Panel D: Not Car Owner, Not Homeowner			
% African American	.49	.55	0.00
% Joint Filing	.02	.02	0.06
% Below 200% of Poverty Line	.68	.74	0.00
% COC Debt	.55	.78	0.00
Total City Debt (\$)	2,373	4,273	0.00
Total Assets (\$)	7,061	5,588	0.00
Secured Debt (\$)	2,648	1,901	0.28
Total Debt (\$)	36,436	38,588	0.06
Observations (\$)	2,499	4,728	7,227

Note: This table compares the mean characteristics of Chapter 13 debtors before and after initiation of the Emanuel Policy in 2011. Panel A presents statistics for the full sample; the other panels analyze subsamples with different asset ownership profiles. We use two-sided t-tests to test the difference between pre- and post-Emanuel characteristics.

Table OA2. Effect of Propensity-Score Matching on Covariate Balance: Individual-Level Data

Panel A: Without Matching				
	African Americans		Others	
	mean	sd	mean	sd
Assets (\$)	70,031.06	466.27	124,686.10	596.84
Debt (\$)	115,889.50	570.21	206,061.30	2,076.39
Secured Debt	73,092.83	491.28	133,321.20	722.17
% with Secured Debt	73.20	0.17	72.43	0.14
% with Debt to City of Chicago	44.34	0.20	17.38	0.12
% with Real Estate	37.59	0.19	48.47	0.16
% Car Owner	77.52	0.16	78.48	0.13
Average Monthly Income	2,812.95	6.65	3,125.76	7.94
Average Monthly Expenses	2,553.38	5.82	3,446.65	309.25
% Income Below \$15,000	10.12	0.12	11.73	0.10
Observations	64,593		101,207	
Panel B: Matched on Case Controls				
	African Americans		Others	
	mean	sd	mean	sd
Assets (\$)	70,039.31	466.34	87,985.54	624.47
Debt (\$)	115,903.90	570.29	147,469.30	2,014.67
Secured Debt	73,098.85	491.36	92,922.79	744.38
% with Secured Debt	73.20	0.17	70.31	0.18
% with Debt to City of Chicago	44.34	0.20	22.62	0.17
% with Real Estate	37.60	0.19	35.55	0.19
% Car Owner	77.52	0.16	77.83	0.17
Average Monthly Income	2,812.19	6.62	2,993.96	10.22
Average Monthly Expenses	2,553.33	5.82	2,827.38	6.74
% Income Below \$15,000	10.13	0.12	10.84	0.12
Observations	64,581		62,881	
Panel C: Matched on Case Controls and Tracts				
	African Americans		Others	
	mean	sd	mean	sd
Assets (\$)	80,384.08	676.89	94,373.09	795.74
Debt (\$)	130,208.60	813.04	156,485.50	3,427.68
Secured Debt	85,367.03	698.03	99,911.04	956.24
% with Secured Debt	75.41	0.23	75.09	0.23
% with Debt to City of Chicago	39.04	0.26	30.31	0.24
% with Real Estate	43.08	0.26	45.98	0.26
% Car Owner	79.00	0.21	79.48	0.21
Average Monthly Income	2,964.21	9.28	3,076.46	10.41
Average Monthly Expenses	2,700.89	8.22	2,877.27	8.92
% Income Below \$15,000	9.38	0.15	10.08	0.16
Observations	36,393		35,927	

Note: This table compares the mean characteristics of African American and Other debtors before and after applying the matching procedure described in Appendix OA1. Panel A presents debtor characteristics before matching; Panel B analyzes the data after matching on debtor characteristics; Panel C analyzes the data after matching on both debtor characteristics and census tract.

Table OA3. Effect of Propensity-Score Matching on Covariate Balance: Zip Code-Level Data

	Chicago		Control Group		Full Sample	
	mean	sd	mean	sd	mean	sd
% African American	27.55	4.20	26.78	3.96	8.02	0.10
% Hispanic	21.54	2.73	22.76	3.26	9.09	0.10
Log Median Income	10.86	0.06	10.86	0.07	10.82	0.00
% Food Desert	20.74	3.35	19.76	3.41	20.17	0.19
% Commute More Than 45 Minutes	27.48	1.10	27.46	1.56	16.89	0.07
% Income Below \$15,000	15.86	1.04	15.47	1.57	12.97	0.05
# Ch. 13 Cases per 1,000 Residents in 2010	2.01	0.23	1.33	0.25	1.22	0.03
% Ch. 13 in 2010	27.47	1.69	25.51	2.93	26.21	0.15
Observations	66		66		27,853	

Note: This table compares the characteristics of Chicago and non-Chicago zip codes, before and after applying the matching procedure described in Appendix OA1. The first column shows summary statistics for Chicago zip codes; the second shows them for matched zip codes; the third shows them for all non-Chicago zip codes.

Table OA4. Commuting Distance, Race, and Bankruptcy Filing Rates by Zip Code in the Northern District of Georgia (including Atlanta)

Distance Quintile	Distance Measure: %			% African American	% Chapter 13	Chapter 13 Filings per Thousand	Median Income
	Travel > 45 min. or Food Desert	% Travel > 45 min.	% Food Desert				
1	12.94 (3.96)	12.81 (3.86)	0.16 (0.59)	4.58 (9.05)	35.25 (21.78)	1.70 (1.56)	38.69 (5.67)
2	22.87 (3.95)	20.22 (6.17)	2.92 (7.00)	7.73 (12.01)	39.76 (14.40)	1.97 (1.13)	40.29 (5.12)
3	45.90 (7.16)	20.60 (8.13)	30.68 (11.89)	17.83 (22.16)	41.48 (15.53)	2.65 (2.01)	41.29 (4.77)
4	69.61 (7.64)	21.86 (6.75)	60.42 (9.49)	49.72 (33.31)	46.37 (11.12)	3.90 (2.60)	40.63 (6.32)
5	91.82 (6.47)	20.92 (6.84)	89.49 (8.48)	50.80 (27.03)	48.06 (9.07)	3.33 (1.91)	36.18 (7.53)
Obs.	145	145	145	145	145	145	145

Note: This table stratifies Northern District of Georgia zip codes ($n=145$) into quintiles of "Distance," measured as the percent of zip code residents who travel at least 45 minutes to work or live at least one mile from a supermarket ("food desert"). Within each quintile, we present mean zip code characteristics and associated standard deviations (in parentheses).

Table OA5. Commuting Distance, Race, and Bankruptcy Filing Rates by Zip Code in the Western District of Tennessee (including Memphis)

Distance Quintile	Distance Measure: % Travel > 45 min. or Food Desert		% Food Desert	% African American	% Chapter 13	Chapter 13 Filings per Thousand	Median Income
	% Travel > 45 min.	% Food Desert					
1	11.41 (2.55)	10.58 (3.06)	0.96 (2.61)	11.37 (14.64)	64.74 (14.71)	4.46 (2.16)	33.33 (3.36)
2	18.03 (3.17)	17.04 (2.80)	1.18 (4.41)	9.63 (13.21)	57.13 (13.52)	3.69 (1.21)	31.53 (3.68)
3	41.88 (11.57)	21.81 (10.34)	25.46 (19.90)	15.69 (16.24)	62.40 (14.34)	4.23 (2.55)	32.84 (3.20)
4	78.14 (6.59)	12.01 (7.94)	74.97 (7.53)	37.78 (29.22)	70.11 (14.36)	8.01 (4.67)	31.13 (4.59)
5	97.40 (3.90)	14.07 (11.16)	96.71 (5.17)	66.31 (34.32)	79.36 (8.37)	12.94 (6.41)	28.19 (6.02)
Obs.	73	73	73	73	73	73	73

Note: This table stratifies Western District of Tennessee zip codes ($n=73$) into quintiles of "Distance," measured as the percent of zip code residents who travel at least 45 minutes to work or live at least one mile from a supermarket ("food desert"). Within each quintile, we present mean zip code characteristics and associated standard deviations (in parentheses).

Table OA6. Baseline Regression (Zip Code-Level Data)

% Chapter 13	(1)	(2)	(3)	(4)	(5)
African American Zip	0.21** (0.000)	0.17** (0.000)	0.18** (0.000)		
Cook County		0.0011 (0.925)	-0.031** (0.004)		
× African American Zip		0.088** (0.000)	0.060** (0.010)		
Post-Emanuel			-0.036** (0.000)	-0.040** (0.000)	-0.016 (0.078)
× African American Zip			-0.026* (0.028)	-0.018 (0.119)	-0.018 (0.111)
× Cook County			0.052** (0.000)	0.057** (0.000)	0.057** (0.000)
× African American Zip × Cook County			0.044** (0.005)	0.035* (0.021)	0.036* (0.019)
Time Trend	Yes	Yes	Yes	Yes	Yes
Zip Code Fixed Effect	No	No	No	Yes	Yes
Year Fixed Effect	No	No	No	No	Yes
Observations	19,348	19,348	19,348	19,348	19,348

Note: This table estimates Equation (OA1) using zip code-level data, with each Cook County zip code matched to three nearest neighbors, located anywhere in the United States. The dependent variable is Chapter 13's share of bankruptcy filings. The coefficient of interest (the DDD estimate) is the final row of the table (*Post-Emanuel* × *African American zip* × *Cook County*). Parentheses present p-values; the symbols have the following meanings: * $p < 0.05$ and ** $p < 0.01$.