Disability and Distress:

The Effect of Disability Programs on Financial Outcomes

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Online Appendix

A Appendix: Data Sources and Record Linkage

Home Transactions Data. In order to match disability-program applicants to home purchases or sales, we combine four separate datasets from two sources: CoreLogic Deeds records, CoreLogic Deeds History records, Zillow Transaction Data, and Zillow Assessment Data. CoreLogic provides extensive coverage of home deeds prior to 2000, though buyer and seller names are often missing in many counties. By contrast, buyer and seller names are rarely missing in the Zillow data, but the dataset contains few transactions prior to 1993.[36] Given these data limitations, we "harmonize" the data collected by CoreLogic and Zillow, combining both datasets into one file that we merge to records on disability-program applicants. The CoreLogic datasets provide seller and buyer names, transaction dates and amounts, each property's address, and the latitude and longitude of property centroids. If the property's ZIP Code is missing in the CoreLogic record, we use GIS software and the 2017 ZIP Code boundaries shapefiles from the United States Postal Service (USPS) to impute ZIP Codes.[37] Zillow Transaction Data provides similar information as CoreLogic except that the Zillow data does not include latitude-longitude coordinates for property centroids. In the cases where ZIP Code is missing, we link the property with Zillow Assessment Data and use the ZIP Code associated with the most-recent county record. As a last attempt to impute missing ZIP Codes, we use the property mailing ZIP Codes.

Administrative Record Linkage. The bankruptcy data we use was originally compiled by Gross et al. (2016) and is described in their paper. The data consist of names, addresses, the last four digits of each bankruptcy filer's Social Security number (SSN), and dates of

[36] According to staff at CoreLogic and Zillow Research, the heterogeneity across counties and years is driven by different data-collection protocols and changes in the information-release policies of each county's assessor's office.

[37] We obtain 2017 USPS ZIP Code shapefiles based on interpolation from ArcGIS. We validate the imputation procedure using CoreLogic records with non-missing ZIP Codes and find that ArcGIS boundary shapfiles outperform the 2010 Census ZCTA boundary shapefiles.

bankruptcy for a majority of the bankruptcy courts in the United States from the late 1990s through 2009 (2011 for some districts).[38] Since the data include both the last four digits of SSNs and filers' ZIP Codes, we perform the record linkage in the following five steps for each state. These steps are meant to address potential recording errors and name variations in administrative datasets. First, we link individuals in the bankruptcy records with disability records using first name, last name, middle initial, ZIP Code, and the last four digits of SSN. Second, for records that did not match in the first step, to account for the possibility that people might apply for disability-program benefits in a different ZIP Code than the one they used for bankruptcy filings, we use first name, last name, middle initial, and the last four digits of SSN as the merge identifier. Third, for records that did not match in the previous steps, we use first name, last name, and the last four digits of SSN as the merge identifiers to account for potential misreported middle names and location variations. Fourth, for records that did not match in the previous steps, we use last name, middle initial, and the last four digits of SSN as the merge identifiers to account for potential variations in the first name (e.g., "Tom" versus "Thomas") and allow flexibility in location. Finally, for records that did not match in previous steps, we use last name, the last four digits of SSN, and ZIP Code to allow the maximum flexibility in both first name and middle name.

For other merges between the SSA administrative records and the financial-outcome records, ZIP Code serves as a key linking variable in the absence of the last four digits of SSN. For foreclosures, we first link individuals in the foreclosure records who have middle names to the disability-program records using first name, last name, middle initial, and ZIP Code. We then link individuals in the foreclosure records who do not have middle names to the disability-program records using first name, last name, and ZIP Code. In cases where we observe complete middle names in both housing and SSA disability-program records, we exclude false-matched cases based on identical middle initials but different full middle names. To address the name ambiguity, we exclude individuals with more than six events associated under the same first name, last name, middle initial, and ZIP Code.[39] We use the same protocol to merge the disability-program records with eviction and home-transaction records.

We probe the validity of the foreclosure, deeds, and eviction merges using simulations with the bankruptcy data, which contain the most accurate identifiers (particularly last four digits of SSN and full names) of any of the financial records. First, we merge the bankruptcy records to disability records using all of the identifiers in the bankruptcy data: first name,

[38] Depending on the bankruptcy district, other information is also included, such as the disposition of the case, the chapter, the judge, the bankruptcy trustee, whether the filing was *pro se*, and so on.

[39] For most states, this step drops less than 1 percent of records.

middle initial, last name, last four digits of SSN, and ZIP Code. Next, we simulate the deeds and foreclosure merges by dropping last four digits of SSN and conducting the merge using only first name, last name, middle initial, and ZIP Code. Finally, we simulate the eviction merge by dropping both last four digits of SSN and middle initial and conducting the merge using only first name, last name, and ZIP Code.

Table A1: Bankruptcy Record Merge Simulation Comparison

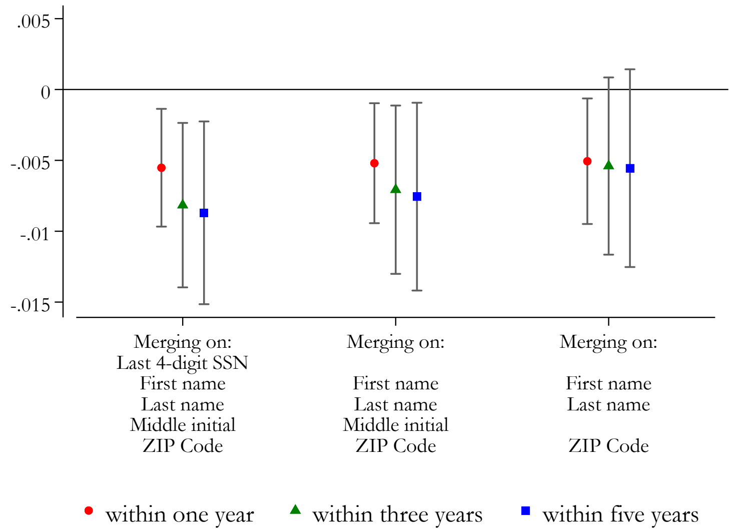
		Ever experienced bankruptcy		"False-Positive" Merge	
	Merge identifiers	Count	Fraction	Count	Fraction
Bankruptcy-type merge	SSN4, FN, LN, MI, ZIP	282,428	9.2%	–	–
Foreclosure/deeds-type merge	FN, LN, MI, ZIP	300,136	9.8%	18,820	6.3%
Eviction-type merge	FN, LN, ZIP	333,555	10.9%	52,496	15.7%
Number of applicants		3,072,972			

Notes: This table presents a comparison of merge results based on bankruptcy record linkages using three sets of merge identifiers. The sample includes disability-program applicants who reach step 5 of the disability determination process, who have an initial decision date in 2000–2009, and whose ZIP Code of residence at application has an average of at least five recorded bankruptcies per year during this period. "SSN4" indicates the last four digits of Social Security Number. "FN" indicates first name, "LN" indicates last name, and "MI" indicates middle initial. The "False-Positive Merge" columns presents the number and the fraction of applicants who are not merged under the "bankruptcy-type merge" but merged under weaker sets of merge identifiers.

Appendix Table A1 presents statistics for this simulation. When we simulate the deeds and foreclosure merges by dropping the last four digits of SSN, about 6 percent of the merges are "false positive" merges that do not occur using the more-accurate bankruptcy merge. When we simulate the eviction merge by dropping the last four digits of SSN and middle initial, the false positive rate increases to 16 percent.

Figure A1 plots the IV estimates for bankruptcy using the three merge simulations. Using all available identifiers in the bankruptcy data, we get a large and statistically significant IV estimate of the effect of disability allowance on bankruptcy rates. Dropping last four digits of SSN—to simulate the deeds and foreclosure merges—increases the confidence intervals slightly. Additionally dropping middle initial—to simulate the eviction merge—leads to a moderate amount of attenuation such that the 3-year and 5-year estimates are no longer statistically significant at conventional levels. Overall, this simulation exercise increases our confidence in the validity of the deeds, foreclosure, and eviction merges. It also explains why the eviction merge is less likely than the deeds, foreclosure, or bankruptcy merges to produce statistically significant causal estimates even if there is a true causal effect.

Figure A1: Bankruptcy Record Merge Simulation with Different Identifiers



Notes: This figure presents a comparison of instrumental-variable estimates of effects based on bankruptcy records linkages using three sets of merge identifiers: those corresponding to the bankruptcy-type merge (last four digits of SSN, first name, last name, middle initial, ZIP Code); those corresponding to the deeds and foreclosure-type merges (first name, last name, middle initial, ZIP Code); and those corresponding to the eviction-type merge (first name, last name, ZIP Code). The sample includes disability-program applicants who reach step 5 of the disability determination process, who have an initial decision date in 2000–2009, and whose ZIP Code of residence at application has an average of at least five recorded bankruptcies per year during this period.

B Appendix: Unobserved Events

In this section, we analyze the potential bias created by purchases, sales, foreclosures, and evictions that occur in ZIP Codes other than the ZIP Code listed on the disability application and are therefore unobserved to us. We observe whether an applicant purchased or sold a home in the application ZIP Code in the years after their application. However, if the applicant were to purchase a home in a different ZIP Code, then we would not observe that purchase. We show in this section that in most cases this shortcoming in our data will simply bias us against finding an effect.

We consider the event of a home purchase, but the same analysis applies to foreclosures and evictions. Suppose that, in the absence of disability allowance, the share of applicants who would purchase a home is $x \in [0, 1]$ and the share who would not purchase a home is $1 - x$. Suppose further that a share $z \in [0, x]$ of the applicants purchase a home outside of their disability-application ZIP Code and the remaining share $x - z$ purchase a home in their application ZIP Code. In this case, the true fraction of applicants who purchase a home is x, but we only observe the fraction $x - z$ since we observe only purchases that occur within the application ZIP Code.

Assumption 1. *Disability allowance does not shift the location of applicants' inframarginal home purchase decision (or eviction or foreclosure) from within the disability-application ZIP to outside the application ZIP Code, or vice versa.*

Assumption **A1** allows disability programs to affect the decision to purchase a home, but not to alter the ZIP Code in which the home is purchased *conditional on the decision to purchase a home* (that is, an inframarginal home purchase). This assumption will be violated if, for instance, an applicant would have purchased a home regardless of disability-program allowance, but because of the allowance, purchases the home in a wealthier neighborhood, and so a different ZIP Code, instead of his or her application ZIP Code.

Proposition 1. *Under **A1**, the only bias in estimates of the causal effect of disability allowance on home purchases (or evictions or foreclosures) will be attenuation bias.*

Proposition **A1** states that under the assumption that disability allowance does not alter the location (within-ZIP versus outside-ZIP) of inframarginal home purchases, the estimates will be biased against finding a causal effect of disability allowance on home purchases. The estimated effect, then, will be an underestimate in magnitude of the true causal effect of disability-program allowance on home purchases.

Proof. Suppose that allowance onto a disability program increases the probability of home purchase by a fraction $y \in [0, 1 - x]$. Suppose that a fraction ay of the new home purchases occur within the disability-application ZIP Code and the remaining fraction $(1 - a)y$ occur outside of the disability-application ZIP Code, where $a \in [0, 1]$. By Assumption **A1**, program allowance does not change the likelihood that inframarginal home purchases occur within the application ZIP Code instead of outside the application ZIP Code, or vice versa. The econometrician observes a fraction of applicants $x - z + ay$ purchasing a home, compared to $x - z$ under the baseline assumption above. The *observed* effect of disability allowance on home purchases is therefore ay, which is attenuated relative to the true effect y, since $0 \leq ay \leq y$ under $a \in [0, 1]$. This case corresponds to Scenario 1 in Table A2.

Analogously, if disability allowance *decreases* the probability of home purchase by $y \in [0, x]$, then the observed fraction of applicants purchasing a home is $x - z - ay$ and the observed effect is $-ay$. Again, the observed effect is attenuated since $-y \leq -ay \leq 0$ under $a \in [0, 1]$. This case corresponds to Scenario 2 in Table A2. □

Table A2: Bias of Unobserved Home Purchase Events

Scenario	Effect on home purchase decision	Effect on home purchase outside ZIP	Purchased Home? No	Purchased Home? Yes	Purchased within ZIP	Purchased outside ZIP	True effect	Observed effect	Bias
Control	–	–	$1-x$	x	$x-z$	z	–	–	–
1	Positive	No effect	$1-x-y$	$x+y$	$x-z+ay$	$z+(1-a)y$	y	ay	Attenuation
2	Negative	No effect	$1-x+y$	$x-y$	$x-z-ay$	$z-(1-a)y$	$-y$	$-ay$	Attenuation
3	No effect	Positive	$1-x$	x	$x-z-b$	$z+b$	0	$-b$	Downward
4	No effect	Negative	$1-x$	x	$x-z+b$	$z-b$	0	b	Upward
5	Positive	Positive	$1-x-y$	$x+y$	$x-z+ay-b$	$z+(1-a)y+b$	y	$ay-b$	Indeterminate
6	Negative	Negative	$1-x+y$	$x-y$	$x-z-ay+b$	$z-(1-a)y-b$	$-y$	$-ay+b$	Indeterminate
7	Positive	Negative	$1-x-y$	$x+y$	$x-z+ay+b$	$z+(1-a)y-b$	y	$ay+b$	Indeterminate
8	Negative	Positive	$1-x+y$	$x-y$	$x-z-ay-b$	$z-(1-a)y+b$	$-y$	$-ay-b$	Indeterminate

Notes: This table summarizes an exhaustive list of scenarios that lead to bias in the causal effect of disability-program allowance on home purchases. Assumption A1 is satisfied in Scenario 1 and 2, whereas it is violated in Scenario 3–8. "Effect on home purchase decision" means the effect of disability-program allowance on the probability of home purchase. "Effect on home purchase outside ZIP" means the effect of disability-program allowance on the fraction of inframarginal home purchases made outside of the disability-program application ZIP (rather than within-ZIP). "(Not) purchase home" indicates the fraction of people who decide (not) to purchase homes with the disability-program allowance. "Purchase within (outside) ZIP" indicates the fraction of people who decide to purchase homes within (outside) the disability-program application ZIP Code.

We discuss below the bias in the causal estimates when Assumption **A1** is violated. We conclude that the direction of the bias varies based on the direction of the true causal effect and the direction of the shift of inframarginal home purchases between "within" and "outside" the application ZIP Code.

I. Suppose that disability-program allowance has no effect on overall home purchases, but increases the fraction of inframarginal home purchases made outside of the application ZIP Code (rather than within-ZIP) by a fraction $b \in [0, x-z]$. As shown in Table A2, Scenario 3, $x-z-b$ of home purchases occur within the application ZIP Code and $z+b$ occur outside the application ZIP Code. Then the observed effect is $-b$, which is smaller than the true effect of zero.

   If instead disability allowance *decreases* the fraction of inframarginal home purchases made outside of the application ZIP Code (rather than within-ZIP) by $b \in [0, z]$, then $x-z+b$ home purchases occur within the application ZIP Code and $z-b$ occur outside the application ZIP Code. Then the observed effect is b, which is larger than the true effect of zero. This case corresponds to Scenario 4 in Table A2.

II. Suppose that disability-program allowance *increases* the likelihood of home purchases by y, where $y \in [0, 1-x]$, and also *increases* the fraction of inframarginal home purchases made outside of the application ZIP Code (rather than within-ZIP) by $b \in [0, x - z]$. As shown in Table A2, Scenario 5, $x - z + ay - b$ of home purchases occur within the disability-application ZIP and $z + (1 - a)y + b$ occur outside of the disability-application ZIP. Then the observed effect of disability allowance is $ay - b$, which is less than the true effect y since $(ay - b) - y = -(1 - a)y - b \leq 0$. However, without additional assumptions, the relationship between ay and b is unknown and the observed effect could have the wrong sign if $ay < b$.

Analogously, suppose that disability allowance *decreases* the likelihood of home purchases by $y \in [0, x]$ and also *decreases* the fraction of inframarginal home purchases made outside of the disability-application ZIP (rather than within-ZIP) by $b \in [0, z]$. Then the observed effect $-ay+b$ is greater than the true effect $-y$ as $(-ay+b)-(-y) = (1 - a)y + b \geq 0$, and might have the wrong sign if $ay < b$. This case corresponds to Scenario 6 in Table A2.

III. Suppose that disability allowance *increases* the likelihood of home purchases by $y \in [0, 1-x]$, but *decreases* the the fraction of inframarginal home purchases made outside of the disability-application ZIP (rather than within-ZIP) by $b \in [0, z]$. As shown in Table A2, Scenario 7, $x-z+ay+b$ of home purchases within the disability-application ZIP Code and $z + (1 - a)y - b$ occur outside of the disability-application ZIP. The relationship between true effect y and observed effect $ay + b$ is indeterminate without further assumptions about the values of a, b, and y.

Analogously, suppose that disability allowance *decreases* the likelihood of home purchases by $y \in [0, x]$, but *increases* the fraction of inframarginal home purchases made outside of the disability-application ZIP (rather than within-ZIP) by $b \in [0, x - z]$. The observed effect is then $-ay - b$, and the relationship between $-ay - b$ and true effect $-y$ is again indeterminate. This case corresponds to Scenario 8 in Table A2.

In general, home purchases (and likewise, evictions or foreclosures) that occur in other ZIP Codes will bias us against finding an effect if Assumption **A1** holds. The likelihood that these events occur in other ZIP Codes may vary by event. For example, in a given amount of time, it is more likely that an applicant purchases a home in another ZIP Code than that an applicant purchases a home in another ZIP Code and experiences foreclosure in that home.

With respect to home sales, we assume disability applicants sell only their primary home. In this case, there is likely little or no bias in the estimate of the causal effect of disability-program allowance on home sale in the initial years after the disability decision because all home sales must be in the application ZIP Code. In future years, applicants may purchase and then sell homes outside of their application ZIP Code, and the bias will be the same as in Proposition 1.

In contrast to "gross" home purchases and "gross" home sales, the bias for "net" home purchases (i.e., purchases not immediately followed or preceded by a sale) and "net" home sales is indeterminate even with Assumption **A1**. The reason is that some purchases (sales) that are part of a move (purchase followed by sale, or vice versa) will be misclassified as "net" purchases (sales) because the other transaction occurs in another ZIP Code and is unobserved. The attenuation bias will bias the estimate toward zero, but the misclassification bias will bias the estimate away from zero, making the net bias indeterminate.

C Appendix: Derivation of the Event-Study Specification

Figure 3 shows that the risk of financial distress peaks during the year of application and then declines. To develop a more nuanced picture of how financial outcomes evolve around the date of application and decision, we use an event-study design at the month level. We define a cohort of applicants, c, by application month, decision month, and allowance status. We define event-time, d, as months until a cohort's initial decision date. We start with a simple event study design around the date of disability decision, similar to that used by Dobkin et al. (2018) to study the effect of hospitalizations on financial outcomes:

$$Y_{ct} = \alpha_c + \gamma_t + \sum_{\tau} \beta_{\tau}^{d} D_{ct}^{d} + \varepsilon_{ct}.$$

Here, D_{ct}^{d} is an indicator function equal to one if cohort c reaches decision event-time τ on calendar-month t. Such a regression specification allows us to capture the average change in financial distress as it evolves before and after initial decision date. This simple regression includes a fixed effect for each cohort, α_c; and a fixed effect for each calendar month, γ_t. The coefficients β_{τ}^{d} capture how the financial outcome, Y, evolves before and after the date of initial decision.

However, by focusing only on the initial decision date, this simple event-study design ignores applicants' choice of when to apply for disability benefits. If there is selection into the timing of application, then such an event-study design might mis-attribute trends that are associated with the timing of the application to the initial decision instead. Since SSA examiners vary in how long they take to decide a case, there is substantial variation in the time between application and decision. Because the application and decision dates are not perfectly co-linear, this variation helps us to separately identify trends associated with the application date versus the decision date. We add a second set of event-time indicators into the regression specification as follows:

$$Y_{ct} = \alpha_c + \gamma_t + \sum_{\tau} \mu_{\tau}^{a} D_{ct}^{a} + \sum_{\tau} \beta_{\tau}^{d} D_{ct}^{d} + \varepsilon_{ct}.$$

Here, D_{ct}^{a} (D_{ct}^{d}) indicate application (decision) event-time for cohort c at calendar-month t. This regression now models financial distress as a function of time since application date and time since decision date, in addition to the effect of calendar time.

Finally, we consider the possibility that allowed and denied applicants differ in how their financial outcomes evolve around the application and decision dates. We allow for this possibility by interacting an indicator for allowed applicants with the application-event-time indicators and the decision-event-time indicators:

$$Y_{ct} = \alpha_c + \gamma_t + \sum_{\tau} \beta_{\tau}^{d} (\text{Allow}_c \times D_{ct}^{d}) + \sum_{\tau} \beta_{\tau}^{\prime d} D_{ct}^{d} + \sum_{\tau} \mu_{\tau}^{a} (\text{Allow}_c \times D_{ct}^{a}) + \sum_{\tau} \mu_{\tau}^{\prime a} D_{ct}^{a} + \varepsilon_{ct}.$$

D Appendix: Derivation of the Main Quasi-Experimental Specification

If all offices were RD offices, we would use a standard RD specification like the following:

$$Y_i = \beta_0 + \sum_{T\in\{50,55\}} \beta_{\mathrm{RD}_T} \mathbb{1}\{\mathrm{Age}_i > T\} + \sum_{T\in\{50,55\}} \beta_{2,T}\mathrm{Age}_i + \sum_{T\in\{50,55\}} \beta_{5,T}\mathrm{Age}_i \times \mathbb{1}\{\mathrm{Age}_i > T\} + \varepsilon_i.$$

If all the offices were Spline offices, we would use a standard spline specification:

$$\begin{aligned} Y_i = {} & \beta_0 + \sum_{T\in\{50,55\}} \beta_{2,T}\mathrm{Age}_i + \sum_{T\in\{50,55\}} \beta_{\mathrm{Spline1}_T}\mathrm{Age}_i \times \mathbb{1}\{\mathrm{Age}_i > T-6\} \\ & + \sum_{T\in\{50,55\}} \beta_{\mathrm{Spline2}_T}\mathrm{Age}_i \times \mathbb{1}\{\mathrm{Age}_i > T\} + \varepsilon_i. \end{aligned}$$

Finally, if all offices were Hybrid offices, we would use a combination of the RD and Spline specifications as follows:

$$\begin{aligned} Y_i = {} & \beta_0 + \sum_{T\in\{50,55\}} \beta_{\mathrm{RD}_T} \mathbb{1}\{\mathrm{Age}_i > T\} + \sum_{T\in\{50,55\}} \beta_{2,T}\mathrm{Age}_i \\ & + \sum_{T\in\{50,55\}} \beta_{\mathrm{Spline1}_T}\mathrm{Age}_i \times \mathbb{1}\{\mathrm{Age}_i > T-6\} + \sum_{T\in\{50,55\}} \beta_{\mathrm{Spline2}_T}\mathrm{Age}_i \times \mathbb{1}\{\mathrm{Age}_i > T\} + \varepsilon_i. \end{aligned}$$

In the end, we rely on the following main specification, which combines multiple sources of variation created by the discretion of DDS offices and interacts instruments with office types:

$$\begin{aligned} Y_i = {} & \beta_0 + \sum_{\substack{j\in\{\mathrm{TypeRD},\\ \mathrm{TypeHybrid}\}}} \sum_{T\in\{50,55\}} \beta_{\mathrm{RD}_{j,T}} \mathbb{1}\{\mathrm{Age}_i > T\} \times \mathrm{Type}\ j_i + \sum_{T\in\{50,55\}} \beta_{2,T}\mathrm{Age}_i \\ & + \sum_{\substack{j\in\{\mathrm{TypeSpline},\\ \mathrm{TypeHybrid}\}}} \sum_{T\in\{50,55\}} \beta_{\mathrm{Spline1}_{j,T}}\mathrm{Age}_i \times \mathbb{1}\{\mathrm{Age}_i > T-6\} \times \mathrm{Type}\ j_i \\ & + \sum_{\substack{j\in\{\mathrm{TypeSpline},\\ \mathrm{TypeHybrid}\}}} \sum_{T\in\{50,55\}} \beta_{\mathrm{Spline2}_{j,T}}\mathrm{Age}_i \times \mathbb{1}\{\mathrm{Age}_i > T\} \times \mathrm{Type}\ j_i \\ & + \sum_{T\in\{50,55\}} \beta_{5,T}\mathrm{Age}_i \times \mathbb{1}\{\mathrm{Age}_i > T\} \times \mathrm{TypeRD}_i + \varepsilon_i. \end{aligned}$$

E Appendix: DDS Office Classification

Figure 5 shows examples of the three DDS office types according to how they implement the borderline age rule: RD, Spline, and Hybrid. There are several potential ways to classify offices. In this section, we discuss different ways to classify offices and demonstrate that the results are robust to alternative classification methods.

Our primary classification method relies on the point estimates from a RD-spline regression. We refer to this as the "point estimates method" below.[40] We start with the sample of applicants who reach step 5 in the disability determination process, combine the age-50 and age-55 thresholds, and run the following "Hybrid" specification for each office separately:

$$\begin{aligned} Y_i = \beta_0 + \beta_{\text{RD}} \mathbb{1}\{\text{Age}_i > 0\} + \beta_2 \text{Age}_i + \beta_{\text{Spline1}} \text{Age}_i \times \mathbb{1}\{\text{Age}_i > -6\} \\ + \beta_{\text{Spline2}} \text{Age}_i \times \mathbb{1}\{\text{Age}_i > 0\} + \varepsilon_i. \end{aligned} \tag{7}$$

This specification allows for both a jump at the cutoff (corresponding to the RD office type) and kinks at the cutoff and six months before the cutoff (corresponding to the Spline office type). We then assign DDS office type as (i) "RD office" if there is at least a 0.05 percentage-point increase in the initial allowance rate at the age thresholds ($\beta_{\text{RD}} \geq 0.05$) and the change in slope at age -6 does not exceed 0.001 ($\beta_{\text{Spline1}} < 0.001$); (ii) "Hybrid office" if $\beta_{\text{RD}} \geq 0.03$ and $\beta_{\text{Spline1}} \geq 0.001$; and (iii) "Spline office" if $\beta_{\text{RD}} < 0.03$ and $\beta_{\text{Spline1}} < 0.001$.

As an alternative classification method, we classify offices based on goodness-of-fit using the Akaike Information Criterion (AIC). We first calculate for each DDS office the initial allowance rate by applicant age. We then run the three office-type specifications on the age cell means for each DDS office: "RD" (equation 2), "Spline" (equation 8, below), and "Hybrid" (equation 7). The "Spline" regression specification is:

$$\begin{aligned} Y_i = \beta_0 + \beta_1 \text{Age}_i + \beta_{\text{Spline1}} (\text{Age}_i \times \mathbb{1}\{\text{Age}_i > -6\}) \\ + \beta_{\text{Spline2}} (\text{Age}_i \times \mathbb{1}\{\text{Age}_i > 0\}) + \varepsilon_i. \end{aligned} \tag{8}$$

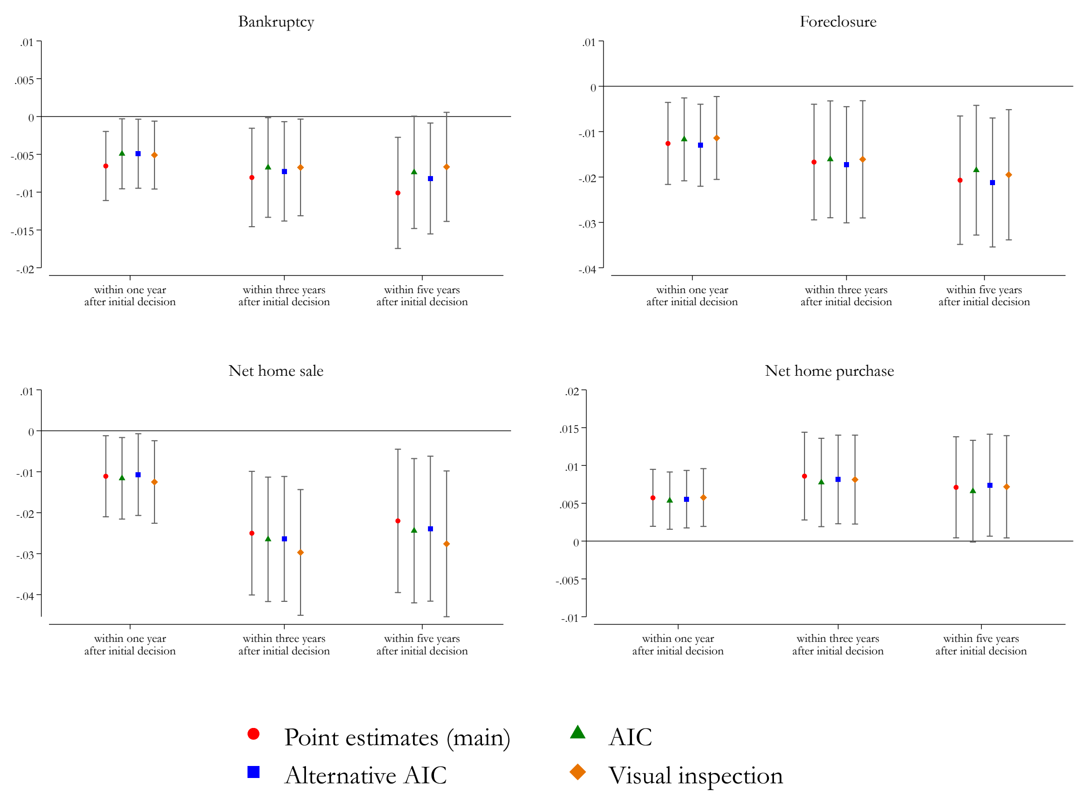
We assign the office type based on the specification which yields the minimum AIC. We refer to this below as the "AIC method."

As an alternative measure, we update the office type to a simpler specification if the difference in AIC values between the simpler specification and the AIC-minimum specification is less than 7. We refer to this as the "Alternative AIC method" below. The purpose of this alternative measure is to choose the simpler model in cases when the difference in goodness-of-fit across models is small. We consider "RD office" and "Spline office" specifications to be simpler than the "Hybrid office" specification, and the "RD office" specification to be

[40] Within the same DDS office, we find no discrepancy in how they implement the borderline age rule at age 50 versus age 55.

simpler than the "Spline office" specification.

Figure A2: Instrumental Variable (IV) Estimates by DDS Office Classification Method



Notes: These figures compare instrumental-variable estimates of the effect of disability-program benefits on financial outcomes using different DDS office classification methods. The outcomes include bankruptcy (top-left), foreclosure (top-right), net home sale (bottom-left), and net home purchase (bottom-right). A "net" home sale is defined as a home sale that is not accompanied by a home purchase within six months before or after the sale, and analogously for net home purchase. In the "Point Estimates" method, we run the "Hybrid office" specification (equation 7) separately for each DDS office and classify them as one of the following: "RD offices" if there is at least a 0.05 percentage point increase at the age thresholds ($\beta_{\text{RD}} \geq 0.05$) and the change in slope at age -6 does not exceed 0.001 ($\beta_{\text{Spline1}} < 0.001$) when the application data is fitted under the equation (8); "Hybrid offices" if $\beta_{\text{RD}} \geq 0.03$ and $\beta_{\text{Spline1}} \geq 0.001$; "Spline offices" if $\beta_{\text{RD}} < 0.03$ and $\beta_{\text{Spline1}} < 0.001$. In the "AIC" method, we first collapse initial allowance rate by applicant age for each DDS office. We then run the following specifications on the collapsed data: "RD" (equation 2), "Spline" (equation 8), and "Hybrid" (equation 7) office. We assign the office type based on the specification that yields the minimum of Akaike information criterion (AIC). The "Alternative AIC" method is similar to "AIC," except that it chooses the simpler specification when the difference in AIC is small. In particular, if the difference in AIC values between simpler specification and minimum-AIC specification is less than 7, "Alternative AIC" chooses the simpler one, where "RD office" and "Spline office" specifications are considered simpler than "Hybrid office," and "RD office" specification is considered simpler than "Spline office" specification. In the "Visual Inspection" method, we classify DDS offices visually based on the binned scatter plots of initial allowance rate by applicant age.

Finally, we classify offices based on visual inspection and refer to this as the "Visual inspection method" below. For each DDS office, we create binned scatter plots of the initial allowance rate relative to applicant age at the initial decision date for applicants, where age is calculated as months from age 50 or age 55, whichever threshold is closer.

The classification results are consistent across methods, with approximately 20 percent of the offices "RD" offices, 40 percent "Spline" offices, and 40 percent "Hybrid" offices. Appendix Figure A2 compares IV estimates of the effect of disability benefits on financial outcomes using different classification methods. The IV point estimates and confidence intervals are similar.

F Appendix: Calculating the Marginal Value of Public Funds

We use our estimates, along with other estimates from the literature, to calculate the marginal value of public funds (MVPF) of disability programs, (Hendren, 2016, 2017). The MVPF is the ratio of the marginal benefits of a policy to its marginal cost. The MVPF of disability programs can be written as follows:

$$\text{MVPF} = \frac{\text{WTP} + \eta_{EX}\text{EX}}{1 + \text{FE}}, \tag{9}$$

where WTP is the recipient's willingness to pay for \$1 of the disability-program transfer; EX indicates the externalities of \$1 of disability benefits to third parties with an efficient welfare weight of η_E; and FE is the fiscal externality on the government's budget imposed by \$1 of disability transfer. The goal of the exercise is to compare the efficiency of disability programs when financial outcomes are considered versus when they are not, especially taking into account spillovers to third parties. This calculation will also facilitate the comparison of disability programs to other social-safety-net programs.

To start, we assume that WTP is one, as is the case for most cash programs, since recipients value \$1 of a transfer as \$1.[41] The second term in the numerator of equation (9) is EX, the positive externalities to non-recipients, which are not reflected in the cash transfer itself. To our knowledge, previous studies have not considered disability programs' externalities. Foreclosures lower the property values of nearby houses (Campbell et al., 2011; Anenberg and Kung, 2014), and so any evidence that disability programs deter foreclosures suggests that the program benefits third parties. We estimate that each disability allowance produces \$2,472 in spillover benefits to homeowners in the surrounding neighborhood.[42]

[41] WTP could be larger than one if, as we illustrate in the welfare discussion, benefits have an insurance value beyond their cash value. On the other hand, if we consider the value of health insurance provided by disability programs, WTP could be less than one. Finkelstein et al. (Forthcoming) find that non-disabled Medicaid recipients value the program far less than \$1-for-\$1.

[42] Campbell et al. (2011) extrapolate from their difference-in-difference estimates and forecasting models to calculate that each foreclosure lowers neighborhood property values from \$148,000 to \$477,000 during the

The denominator of equation (9) represents the costs of disability programs that are not internalized by the recipient. In particular, the FE term reflects the net effect of disability programs on the government's budget. We consider effects on the government budget through the reduction in foreclosures and bankruptcies and the decrease in labor supply. Apgar et al. (2005) estimate that the median cost of a foreclosure to local governments is $5,000 due to increased crime and fire risk. In addition, we calculate that each foreclosure costs the government on average $2,392 in reduced taxes from the lender.[43] We estimate that disability allowance reduces government costs by $132 through higher property tax collections.[44] For bankruptcy, we estimate a reduction in government costs of $135 since lenders discharge debt in bankruptcy and deduct the discharged debt from taxable income.[45] Finally, we calculate a $485 decrease in tax revenues from reduced recipient earnings.[46] Summing all three types of fiscal externalities yields a net *increase* in government cost of $218.

Based on these calculations, and assuming that third parties have a social welfare weight that is 75 percent of the recipient's welfare weight, equation (9) suggests that disability programs have an MVPF of 1.04 when considering effects on foreclosure and bankruptcy. The ratio is smaller, 0.99, when we ignore these effects because of the large positive spillovers to third parties and to the government from reductions in foreclosures and bankruptcies. The MVPF is useful primarily to compare programs to each other. Hendren (2017) calculates the following MVPF ranges for other programs targeted at low-income populations: 0.88 for

Great Recession. We take the lower bound of this estimate and multiply it by our 3-year estimate of the reduction in foreclosure risk, 1.67 percentage points, to estimate $2,472 in positive spillovers to neighboring households.

[43]For foreclosures where the remaining mortgage balance exceeds the auction price, lenders can deduct the discharged debt from their taxable income. U.S. Department of Housing and Urban Development (2010) reports the median price of existing homes sold in May 2010: $179,400. Assume a 20-percent chance that foreclosure auctions cannot cover the remaining mortgage balance and one-third of this amount is discharged. Multiplying the discharged debt by a 20-percent corporate-income tax rate leads to a reduction in tax collections of $2,392.

[44]As discussed above, foreclosures also lower nearby property values (Campbell et al., 2011; Anenberg and Kung, 2014), which reduce local property tax collections from that neighborhood. Property taxes are generally computed based on recent sales, and so will reflect an average of foreclosed houses and houses that were sold but not foreclosed upon. For this reason, we multiply the lower bound of the Campbell et al. (2011) estimate by 10 percent before multiplying by a property tax rate of 1.15 percent. This calculation yields $511 in lost property taxes over 3 years. Since disability allowance reduces foreclosure rates by 1.67 percentage points, the reduction in foreclosure *reduces* government costs by $132.

[45]On average, $167,576 of debt is discharged in each bankruptcy based on authors' calculations using data from the Federal Judicial Center covering all consumer bankruptcies in the United States in 2008. We use 50% of this average amount to account for disability recipients having less access to credit and lower debt levels. We multiply this by a 20-percent corporate-income tax rate, and obtain a reduction in tax collections of $16,800. Since disability programs reduce bankruptcies by 0.81 percentage points, the reduction in bankruptcy *reduces* government cost by $135.

[46]From our estimates, we find that the initial disability-program allowance reduces annual earnings by $1,100, or $3,300 over 3 years. Assuming a 15 percent combined income and payroll tax rate, the reduction in recipient labor income *increases* government costs by $485.

an expansion of the Earned Income Tax Credit (EITC), 0.53–0.66 for an expansion of the Supplemental Nutrition Assistance Program (SNAP), 0–1.85 for job-training programs, and 0.79 for housing vouchers. Although most have a smaller MVPF than disability programs, these estimates do not incorporate the effects of these programs on financial outcomes. It is possible that considering reductions in financial events like bankruptcy and foreclosure would also increase the MVPF of these other programs.

Table A3: Marginal Value of Public Funds (MVPF) Calculation

	Amount	Notes
Spillover benefits to third parties (EX)		
From reduction in foreclosure		
Property value decline	\$148,000	Lower bound from Campbell et al. (2011)
Causal effect on foreclosure	0.0167	Authors' 3-year estimates
Total spillovers from foreclosure reduction	\$2,472	
Total spillovers	\$2,472	$\times\ \eta_{EX} = \$1,854$ assuming $\eta_{EX} = 0.75$
Fiscal externalities (FE)		
From reduction in foreclosure		
Administrative cost of foreclosure to government	-\$5,000	Apgar et al. (2005)
Taxes foregone on debt discharged by lenders	-\$2,392	Assume 20% corporate income tax rate[a]
Local property tax decline from foreclosure	-\$511	Assume 1.15% property tax rate[b]
Causal effect on foreclosure	0.0167	Authors' 3-year estimates
Total FE from foreclosure reduction	-\$132	
From reduction in bankruptcy		
Taxes foregone on debt discharged by lenders	-\$16,758	Assume 20% corporate tax rate[c]
Causal effect on bankruptcy	0.0081	Authors' 3-year estimates
Total FE from bankruptcy reduction	-\$135	
From reduction in recipient earnings		
Reduction in recipient earnings	\$3,231	Authors' 3-year estimates
Total FE from earnings reduction	\$485	Assume 15% income and payroll tax rate
Total fiscal externalities	\$218	
Average annual disability cash transfer	\$13,000	
MVPF of disability programs (with financial outcomes)	1.04	
MVPF of disability programs (without financial outcomes)	0.99	

[a]Calculation is based on \$59,800 debt discharged in each foreclosure, which is one-third of the median price of existing homes sold in May 2010 and assuming the amount recovered by auction are not sufficient to repay the remaining mortgage balance.

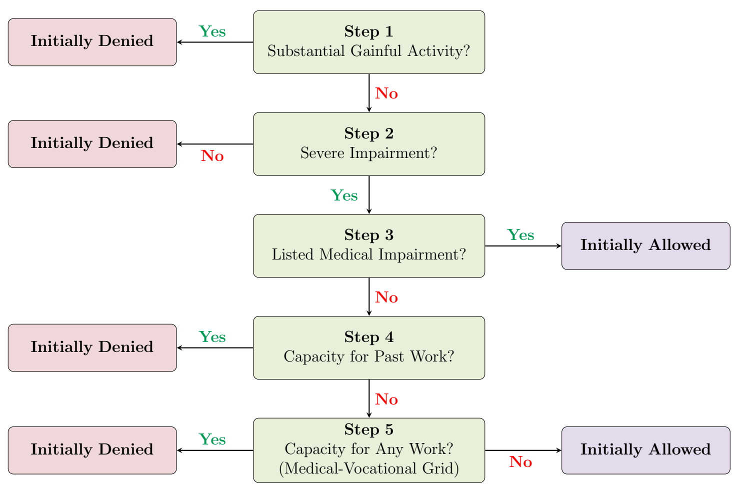
[b]Calculation is based on \$44,400, which is a total of three-year price drop of neighboring sold properties. Since property taxes are generally computed based on recently transacted homes, we use 10 percent of the lower bound estimates (\$14,800) of nearby property values drop.

[c]Calculation is based on \$83,800 debt discharged in each bankruptcy, which is 50 percent of the average debt discharged in consumer bankruptcies in 2008.

Notes: This table presents the calculation of marginal value of public funds (MVPF) from equation (9), where we assume $\eta_{EX} = 0.75$ for the relative social welfare weight of third parties.

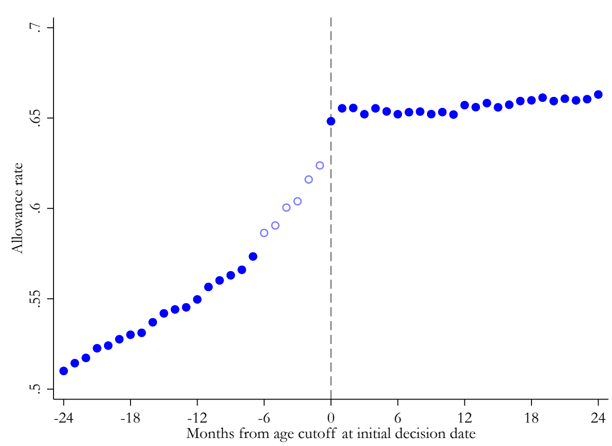
G Appendix Figures and Tables

Figure A.3: Steps of the Disability Determination Process



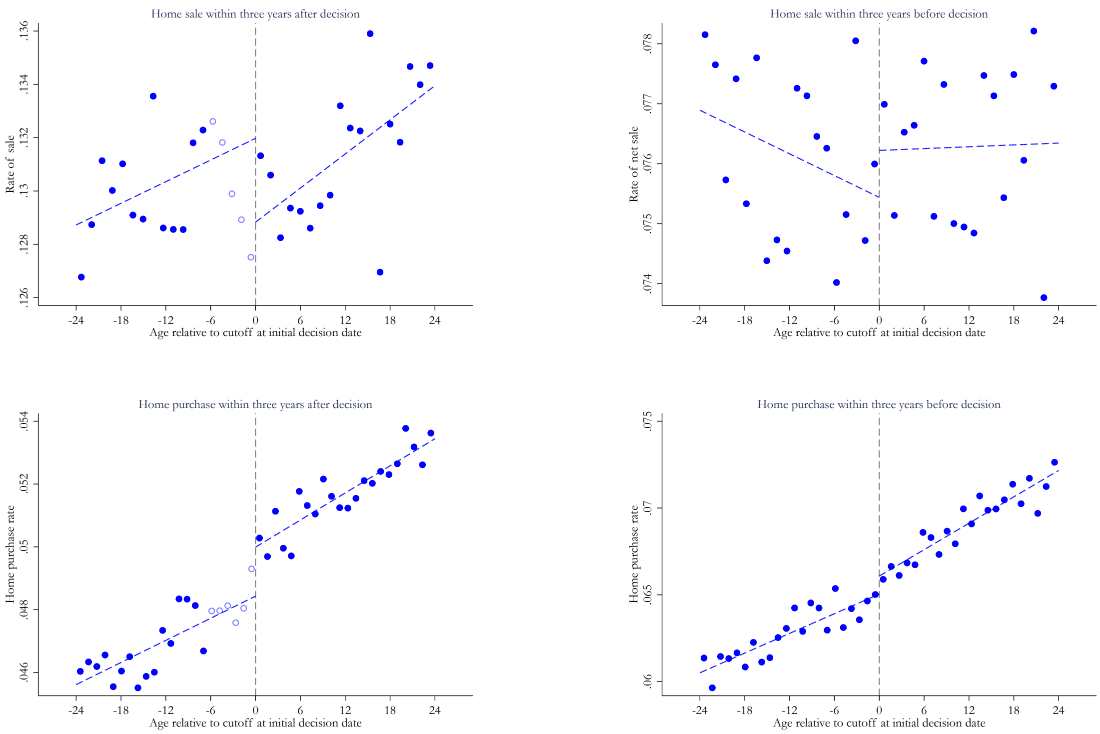
Notes: This figure presents the steps of the Social Security Administration's disability determination process. In step 1, disability-program applicants who are earning greater than substantial gainful activity levels ($1,170 per month in 2017) are denied. In step 2, applicants who are determined to have a non-severe impairment are denied. In step 3, applicants whose diagnosis meets the medical listings are allowed. In step 4, applicants who are determined to have capacity for past work are denied. In step 5, applicants who are determined to have capacity for substantial gainful activity in any form are denied, while those determined not to have capacity for substantial gainful activity are allowed.

Figure A.4: Final Allowance Rate at Step 5 Relative to Applicant Age



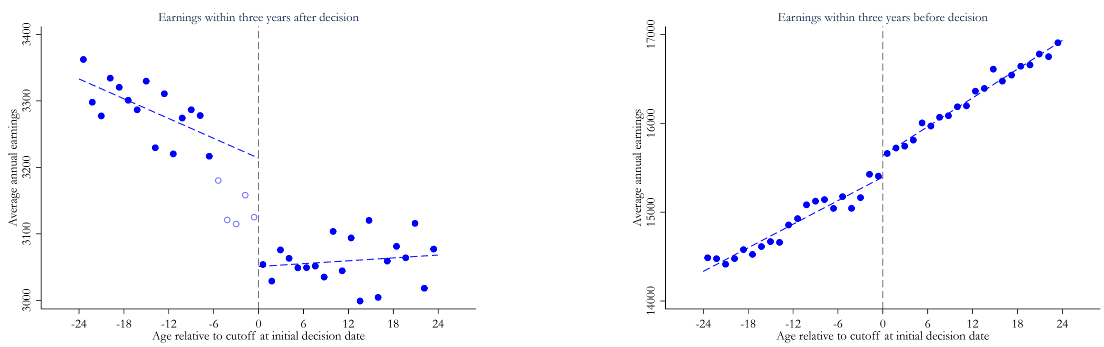
Notes: This figure plots the final allowance rate after all appeals relative to the disability-program applicant's age at the initial decision date for applicants in the home-purchase sample: disability-program applicants who reach step 5 of the disability determination process, who have an initial decision date in 2000–2014, and whose ZIP Code of residence at application has an average of at least fifteen recorded home purchases per year during this period. Age is calculated as months from age 50 or age 55, whichever threshold is closer.

Figure A.5: Gross Home-Sale and Gross Home-Purchase Rates Relative to Applicant Age



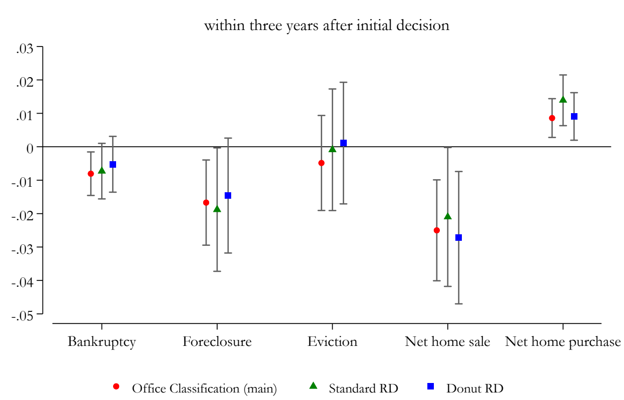
Notes: These figures plot the gross home-sale and gross home-purchase rates within three years after initial decision (left-hand side) and the gross home-sale and the gross home-purchase rates within three years before initial decision (right-hand side) relative to the disability-program applicant's age at the initial decision date. Age is calculated as months from age 50 or age 55, whichever threshold is closer. Figures are based on quantile spaced binning, which allow each bin to have the same number of observations. Dashed lines are fitted using a donut strategy, excluding the hollow markers that correspond to the borderline age period. The "home-sale sample" consists of disability-program applicants who appear in the deeds records (homeowners), who reach step 5 of the disability determination process, and who have an initial decision date in 2000–2014. The "home-purchase sample" consists of disability-program applicants who reach step 5 of the disability determination process and who have an initial decision date in 2000–2014. Each sample excludes ZIP Codes of residence at application that have an average of fewer than fifteen recorded events per year during the corresponding period.

Figure A.6: Earnings Relative to Applicant Age



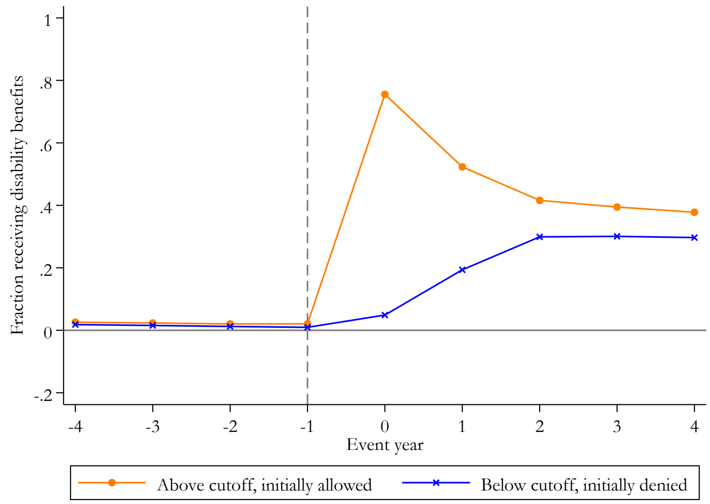
Notes: These figures plot the earnings within three years after initial decision (left-hand side) and the earnings within three years before initial decision (right-hand side) relative to the disability-program applicant's age at the initial decision date. Age is calculated as months from age 50 or age 55, whichever threshold is closer. Figures are based on quantile spaced binning, which allow each bin to have the same number of observations. Dashed lines are fitted using a donut strategy, excluding the hollow markers that correspond to the borderline age period. This figure is based on the bankruptcy sample, disability-program applicants who reach step 5 of the disability determination process, who have an initial decision date in 2000–2009, and whose ZIP Code of residence at application has an average of at least five recorded bankruptcies per year during this period.

Figure A.7: Robustness Check of Estimation Strategies



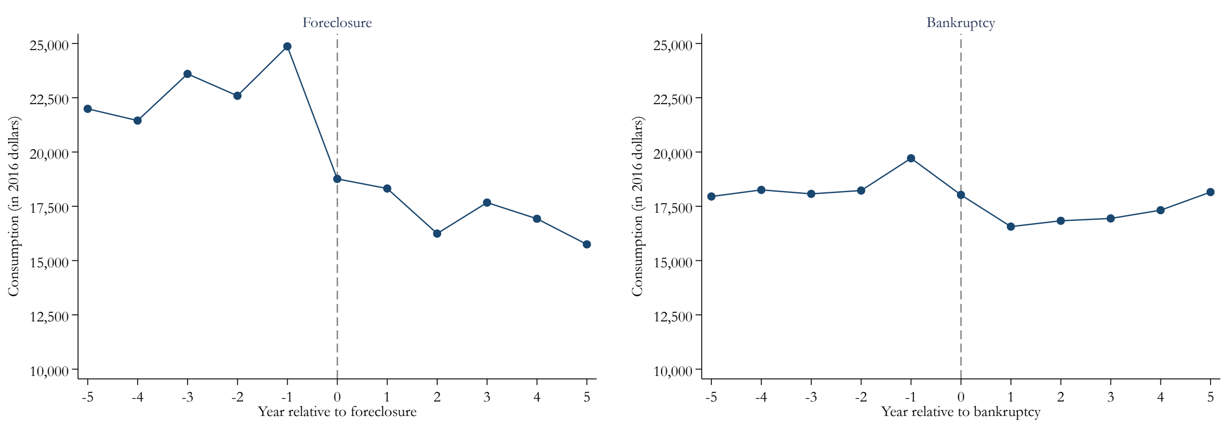
Notes: This figure presents instrumental-variable estimates of the effect of disability benefits on financial outcomes within three years of initial decision under the main specification by classifying types of DDS offices (equation 3), standard and donut RD specifications (equation 2). Donut RD regressions exclude applicants who are under age 50 or 55 by one to five months.

Figure A.8: Source of First Stage Attenuation



Notes: This figure plots the fraction of applicants receiving disability-program benefits relative to their initial decision date, for the bankruptcy sample. The "O" series plots fraction receiving disability-program benefits in each event year for individuals who are above 50 or 55 years (whichever threshold is closer) at the initial decision date and have a favorable initial decision. The "X" series plots fraction receiving disability-program benefits in each event year for individuals who are under 50 or 55 years (whichever threshold is closer) at the initial decision date and have an unfavorable decision. Sample is disability-program applicants who reach step 5 of the disability determination process, who have an initial decision date in 2000–2009, and whose ZIP Code of residence at application has an average of at least five recorded bankruptcies per year during this period.

Figure A.9: Household Consumption around Foreclosure and Bankruptcy from the PSID



Notes: This figure plots the annual average of food and housing (mortgage and rent) expenses in 2016 dollars based on households that had gone through foreclosures (left) and bankruptcies (right) in the Panel Study of Income Dynamics (PSID).

Table A.4: Covariate Balance Test – Eviction Sample

	Eviction sample		
	Pt. Est. (Std. Err.)	Mean	% of mean
Covariate			
Pre-application event	-0.000936	0.102	-0.9%
	(0.00139)		
Pre-app earnings	5.378	$11,146	0.0%
	(67.97)		
Years of education	-0.0217*	11.6	-0.2%
	(0.0124)		
Musculoskeletal	0.0136***	0.442	3.1%
	(0.00232)		
Respiratory	0.000441	0.034	1.3%
	(0.000856)		
Cardiovascular	-0.00108	0.082	-1.3%
	(0.00129)		
Endocrine	-0.000746	0.046	-1.6%
	(0.000995)		
Neurological	-0.00200*	0.061	-3.3%
	(0.00112)		
Mental	-0.00684***	0.174	-3.9%
	(0.00176)		
Special/other	-0.00114	0.070	-1.6%
	(0.00119)		
p-value on joint F-test		0.000	
Predicted event occurs	-0.000108	0.0995	-0.1%
	(0.000104)		
N (in millions)		0.83	

Notes: This table reports reduced-form estimates for the listed covariates for the eviction sample, where we put the covariate on the left-hand-side of the RD specification in equation (2) and report β with standard errors in parentheses. The table reports the p-value on the F test for the joint significance of all covariates. Pre-application earnings are average annual applicant earnings in the three years prior to the year of application, from the Master Earnings File. Years of education is self-reported years of education from the 831 Disability File. Body system codes (musculoskeletal, respiratory, cardiovascular, endocrine, neurological, mental, special/other) come from the 831 Disability File. "% of mean" denotes point estimate as a percent of control mean, where control means are the average value of the variable for applicants who are under age 50 or 55 by 6 to 10 months. For "predicted adverse financial outcome," we first regress an indicator for having the adverse financial outcome prior to the initial decision date on a set of covariates (pre-application earnings, years of education, male, body system code dummies, and ZIP dummies). We then put "predicted adverse financial outcome" on the left-hand-side of the RD specification in equation (2) and report estimates of β. The eviction sample consists of disability-program applicants who reach step 5 of the disability determination process, who have an initial decision date in 2000–2009, and whose FIPS county code of residence at application that has an average of at least fifteen recorded events per year during this period. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.5: Covariate Balance Test – Net-home-sale and Net-home-purchase Samples

	Net home-sale sample			Net home-purchase sample		
	Pt. Est. (Std. Err.)	Mean	% of mean	Pt. Est. (Std. Err.)	Mean	% of mean
Covariate						
Pre-application event	8.42e-05	0.147	0.1%	0.00232***	0.174	1.3%
	(0.00123)			(0.000695)		
Pre-app earnings	318.2***	$21,853	1.5%	183.0***	$14,800	1.2%
	(74.06)			(32.58)		
Years of education	-0.00199	12.0	0.0%	-0.0137***	11.7	-0.1%
	(0.00856)			(0.00471)		
Musculoskeletal	0.00588***	0.483	1.2%	0.00713***	0.440	1.6%
	(0.00174)			(0.000931)		
Respiratory	0.000615	0.037	1.7%	0.000754**	0.043	1.7%
	(0.000663)			(0.000385)		
Cardiovascular	0.000590	0.098	0.6%	0.000734	0.104	0.7%
	(0.00105)			(0.000579)		
Endocrine	-0.00254***	0.044	-5.8%	-0.00106***	0.047	-2.2%
	(0.000723)			(0.000406)		
Neurological	0.000774	0.073	1.1%	0.000267	0.064	0.4%
	(0.000908)			(0.000459)		
Mental	-0.00383***	0.135	-2.8%	-0.00519***	0.161	-3.2%
	(0.00119)			(0.000691)		
Special/other	4.72e-05	0.041	0.1%	-0.000798*	0.050	-1.6%
	(0.000691)			(0.000409)		
p-value on joint F-test		0.000			0.000	
Predicted event occurs	-0.000261***	0.143	-0.2%	0.000907***	0.166	0.55%
	(8.88e-05)			(0.000149)		
N (in millions)		1.45			5.12	

Notes: This table reports reduced-form estimates for the listed covariates for the net-home-sale and net-home-purchase samples, where we put the covariate on the left-hand-side of equation (2) and report β with standard errors in parentheses. The table reports the p-value on the F test for the joint significance of all covariates. Pre-application earnings are average annual applicant earnings in the three years prior to the year of application, from the Master Earnings File. Years of education is self-reported years of education from the 831 Disability File. Body system codes (musculoskeletal, respiratory, cardiovascular, endocrine, neurological, mental, special/other) come from the 831 Disability File. "% of mean" denotes point estimate as a percent of control mean, where control means are the average value of the variable for applicants who are under age 50 or 55 by 6 to 10 months. For "predicted adverse financial outcome," we first regress an indicator for having the adverse financial outcome prior to the initial decision date on a set of covariates (pre-application earnings, years of education, male, body system code dummies, and ZIP dummies). We then put "predicted adverse financial outcome" on the left-hand-side of equation (2), and report IV estimates. The outcome "net home-sale" is based on the home-sale sample: disability-program applicants who appear in the deeds records (homeowners), who reach step 5 of the disability determination process, and who have an initial decision date in 2000–2014. The outcome "net home-purchase" is based on the home-purchase sample: disability-program applicants who reach step 5 of the disability determination process, and who have an initial decision date in 2000–2014. A "net" home sale is defined as a home sale that is not accompanied by a home purchase within six months before or after the sale, and analogously for net home purchase. Both samples exclude ZIP Codes of residence at application that have an average of fewer than fifteen recorded corresponding events per year during 2000–2014. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.6: Estimates of First Stage and Reduced-Form Effects – Bankruptcy and Foreclosure

	First Stage		Reduced Form		
	Initial allowance	Final allowance	Within 1 year	Within 3 years	Within 5 years
	Pt. Est. (Std. Err.)	Pt. Est. (Std. Err.)	Pt. Est. (Std. Err.)	Pt. Est. (Std. Err.)	Pt. Est. (Std. Err.)
Bankruptcy (N: 3.07 million)					
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeRD}$	0.0700***	0.0298***	-0.000217	-0.000363	-0.000106
	(0.00216)	(0.00269)	(0.000683)	(0.000982)	(0.00111)
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	0.0747***	0.0271***	-0.000552	-0.00133	-0.00194
	(0.00451)	(0.00541)	(0.00129)	(0.00182)	(0.00208)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeSpline}$	0.0119***	0.00395***	-0.000124	-0.000104	-0.000115
	(0.000311)	(0.000374)	(8.53e-05)	(0.000122)	(0.000137)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeHybrid}$	0.00528***	0.00314***	-9.78e-05	-0.000233	-0.000201
	(0.000736)	(0.000918)	(0.000220)	(0.000310)	(0.000354)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeSpline}$	-0.0126***	-0.00586***	6.45e-05	-3.71e-05	-3.58e-05
	(0.000367)	(0.000424)	(9.78e-05)	(0.000139)	(0.000156)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	-0.00592***	-0.00492***	4.62e-05	0.000232	0.000191
	(0.000738)	(0.000912)	(0.000220)	(0.000309)	(0.000352)
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeRD}$	0.132***	0.0555***	4.83e-05	0.000484	0.000286
	(0.00280)	(0.00259)	(0.000701)	(0.00101)	(0.00114)
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	0.0879***	0.0390***	-0.000878	-0.00184	-0.00144
	(0.00555)	(0.00511)	(0.00128)	(0.00178)	(0.00200)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeSpline}$	0.0249***	0.00895***	-0.000251***	-0.000310**	-0.000304**
	(0.000384)	(0.000345)	(8.52e-05)	(0.000122)	(0.000137)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeHybrid}$	0.00449***	0.00213**	-2.38e-05	-1.08e-05	-0.000174
	(0.000931)	(0.000876)	(0.000217)	(0.000304)	(0.000341)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeSpline}$	-0.0286***	-0.0122***	0.000281***	0.000318**	0.000316**
	(0.000445)	(0.000385)	(9.73e-05)	(0.000139)	(0.000156)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	-0.00802***	-0.00531***	1.21e-05	2.59e-06	0.000232
	(0.000929)	(0.000869)	(0.000217)	(0.000302)	(0.000339)
Foreclosure (N: 0.81 million)					
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeRD}$	0.118***	0.0385***	-0.00173	-0.00970*	-0.00656
	(0.0102)	(0.0114)	(0.00418)	(0.00581)	(0.00661)
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	0.0483***	0.00973	-0.000230	0.00350	0.00194
	(0.00652)	(0.00756)	(0.00256)	(0.00359)	(0.00401)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeSpline}$	0.0172***	0.00111	-9.13e-05	-0.000215	0.000193
	(0.000691)	(0.000876)	(0.000289)	(0.000413)	(0.000459)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeHybrid}$	0.0151***	0.00270*	-0.000389	-0.00119*	-0.000823
	(0.00118)	(0.00146)	(0.000496)	(0.000696)	(0.000776)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeSpline}$	-0.0171***	-0.00441***	2.82e-05	7.96e-05	-0.000299
	(0.000747)	(0.000896)	(0.000293)	(0.000419)	(0.000466)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	-0.0153***	-0.00632***	0.000294	0.00106	0.000775
	(0.00113)	(0.00137)	(0.000464)	(0.000650)	(0.000724)
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeRD}$	0.115***	0.0362***	-0.00475	-0.00319	-0.00180
	(0.0103)	(0.00932)	(0.00361)	(0.00505)	(0.00561)
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	0.0625***	0.0274***	-0.00456**	-0.00570*	-0.00687**
	(0.00668)	(0.00578)	(0.00215)	(0.00299)	(0.00334)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeSpline}$	0.0314***	0.00715***	-0.000319	-0.000362	-0.000615
	(0.000776)	(0.000704)	(0.000249)	(0.000346)	(0.000385)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeHybrid}$	0.0205***	0.00373***	0.000519	0.000681	0.000719
	(0.00127)	(0.00115)	(0.000418)	(0.000579)	(0.000646)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeSpline}$	-0.0348***	-0.0114***	0.000408	0.000508	0.000826**
	(0.000814)	(0.000708)	(0.000254)	(0.000354)	(0.000392)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	-0.0237***	-0.00808***	-0.000425	-0.000517	-0.000535
	(0.00119)	(0.00106)	(0.000390)	(0.000540)	(0.000602)

Notes: This table reports first stage and reduced-form estimates of the effect of being 50 years or older and 55 years or older at the initial decision date on the initial allowance rate, the final allowance rate after all appeals, and on reduced-form outcomes, specifically estimates of $\beta_{\text{RD}_{j,T}}$, $\beta_{\text{Spline1}_{j,T}}$, and $\beta_{\text{Spline2}_{j,T}}$ from equation (3). The "bankruptcy" regressions are based on the bankruptcy sample: disability-program applicants who reach step 5 of the disability determination process and who have an initial decision date in 2000–2009. The "foreclosure" regressions are based on the foreclosure sample: disability-program applicants who appear in the deeds records (homeowners), who reach step 5 of the disability determination process, and who have an initial decision date in 2005–2014. Each sample excludes ZIP Codes of residence at application that have an average of fewer than five recorded events per year during the corresponding period. Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.7: Estimates of First Stage and Reduced-Form Effects – Eviction

	First Stage		Reduced Form		
	Initial allowance	Final allowance	Within 1 year	Within 3 years	Within 5 years
	Pt. Est. (Std. Err.)	Pt. Est. (Std. Err.)	Pt. Est. (Std. Err.)	Pt. Est. (Std. Err.)	Pt. Est. (Std. Err.)
Eviction (N: 0.83 million, conditional on non-homeownership)					
$\mathbb{1}\{\text{Age50}_i > 0\} \times$ TypeRD	0.115***	0.0367***	-0.00386	0.00213	-0.00131
	(0.00805)	(0.00910)	(0.00275)	(0.00433)	(0.00509)
$\mathbb{1}\{\text{Age50}_i > 0\} \times$ TypeHybrid	0.0647***	0.0335***	0.000578	-0.000647	-0.00190
	(0.00510)	(0.00599)	(0.00179)	(0.00279)	(0.00334)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times$ TypeSpline	0.0173***	0.00919***	-0.000530	-9.88e-05	-0.000152
	(0.000934)	(0.00116)	(0.000358)	(0.000551)	(0.000650)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times$ TypeHybrid	0.0123***	0.00312***	1.73e-06	0.000380	0.000548
	(0.000969)	(0.00120)	(0.000366)	(0.000569)	(0.000681)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times$ TypeSpline	-0.0175***	-0.0130***	0.000690*	0.000307	0.000286
	(0.00112)	(0.00135)	(0.000415)	(0.000637)	(0.000749)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times$ TypeHybrid	-0.0128***	-0.00655***	-3.25e-05	-0.000315	-0.000552
	(0.000900)	(0.00110)	(0.000334)	(0.000518)	(0.000619)
$\mathbb{1}\{\text{Age55}_i > 0\} \times$ TypeRD	0.117***	0.0481***	-0.00216	-0.00533	-0.00280
	(0.00920)	(0.00876)	(0.00246)	(0.00378)	(0.00455)
$\mathbb{1}\{\text{Age55}_i > 0\} \times$ TypeHybrid	0.0457***	0.0200***	0.00304**	0.000572	0.00128
	(0.00608)	(0.00565)	(0.00151)	(0.00247)	(0.00297)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times$ TypeSpline	0.0295***	0.0112***	-0.000170	-8.94e-05	-0.000366
	(0.00115)	(0.00111)	(0.000315)	(0.000499)	(0.000588)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times$ TypeHybrid	0.0193***	0.00699***	-0.000710**	-0.000339	-0.000109
	(0.00120)	(0.00115)	(0.000306)	(0.000498)	(0.000600)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times$ TypeSpline	-0.0326***	-0.0158***	0.000108	8.14e-05	0.000480
	(0.00135)	(0.00129)	(0.000366)	(0.000584)	(0.000685)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times$ TypeHybrid	-0.0216***	-0.0114***	0.000626**	0.000402	0.000184
	(0.00110)	(0.00105)	(0.000278)	(0.000454)	(0.000546)

Notes: This table reports first stage and reduced-form estimates of the effect of being 50 years or older and 55 years or older at the initial decision date on the initial allowance rate, the final allowance rate after all appeals, and on reduced-form outcomes, specifically estimates of $\beta_{\text{RD}_{j,T}}$, $\beta_{\text{Spline1}_{j,T}}$, and $\beta_{\text{Spline2}_{j,T}}$ from equation (3). The "eviction" regressions are based on the eviction sample: disability-program applicants who do not appear in the deeds records (non-homeowners), who reach step 5 of the disability determination process, who have an initial decision date in 2005–2014, and whose FIPS county code of residence at application that has an average of at least fifteen recorded events per year during this period. Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.8: Estimates of First Stage and Reduced-Form Effects – Net Home-sale and Net Home-purchase

	First Stage		Reduced Form		
	Initial allowance	Final allowance	Within 1 year	Within 3 years	Within 5 years
	Pt. Est.	Pt. Est.	Pt. Est.	Pt. Est.	Pt. Est.
	(Std. Err.)	(Std. Err.)	(Std. Err.)	(Std. Err.)	(Std. Err.)
Net home-sale (N: 1.45 million, conditional on homeownership)					
$\mathbb{1}\{\text{Age50}_i > 0\} \times$ TypeRD	0.105***	0.0259***	-0.00270	-0.0108**	-0.00583
	(0.00653)	(0.00741)	(0.00334)	(0.00508)	(0.00588)
$\mathbb{1}\{\text{Age50}_i > 0\} \times$ TypeHybrid	0.0605***	0.0221***	-0.00113	0.00360	0.00258
	(0.00474)	(0.00561)	(0.00252)	(0.00378)	(0.00439)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times$ TypeSpline	0.0163***	0.00107	-0.000286	-0.000805*	-0.000585
	(0.000535)	(0.000664)	(0.000282)	(0.000430)	(0.000501)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times$ TypeHybrid	0.0114***	0.00103	6.28e-05	-0.000728	-0.000264
	(0.000864)	(0.00108)	(0.000483)	(0.000724)	(0.000840)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times$ TypeSpline	-0.0164***	-0.00421***	0.000384	0.000897**	0.000711
	(0.000585)	(0.000687)	(0.000288)	(0.000441)	(0.000515)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times$ TypeHybrid	-0.0119***	-0.00460***	-2.09e-05	0.000628	0.000299
	(0.000820)	(0.00101)	(0.000453)	(0.000679)	(0.000787)
$\mathbb{1}\{\text{Age55}_i > 0\} \times$ TypeRD	0.140***	0.0449***	-0.00404	-0.00456	-0.00715
	(0.00678)	(0.00601)	(0.00309)	(0.00469)	(0.00536)
$\mathbb{1}\{\text{Age55}_i > 0\} \times$ TypeHybrid	0.0698***	0.0277***	-0.000763	0.000770	0.00440
	(0.00510)	(0.00444)	(0.00225)	(0.00338)	(0.00391)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times$ TypeSpline	0.0305***	0.00748***	-0.000557**	-0.00108***	-0.00161***
	(0.000599)	(0.000534)	(0.000252)	(0.000387)	(0.000451)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times$ TypeHybrid	0.0163***	0.00332***	-0.000356	-0.000879	-0.00112
	(0.000965)	(0.000873)	(0.000429)	(0.000647)	(0.000747)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times$ TypeSpline	-0.0338***	-0.0115***	0.000373	0.000974**	0.00155***
	(0.000634)	(0.000542)	(0.000258)	(0.000399)	(0.000465)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times$ TypeHybrid	-0.0191***	-0.00711***	0.000286	0.000984	0.00108
	(0.000907)	(0.000811)	(0.000403)	(0.000606)	(0.000700)
Net home-purchase (N: 5.12 million)					
$\mathbb{1}\{\text{Age50}_i > 0\} \times$ TypeRD	0.0934***	0.0328***	0.000276	0.00141	0.00148
	(0.00302)	(0.00364)	(0.000956)	(0.00148)	(0.00169)
$\mathbb{1}\{\text{Age50}_i > 0\} \times$ TypeHybrid	0.0520***	0.0194***	0.00208***	0.00335***	0.00335**
	(0.00236)	(0.00288)	(0.000744)	(0.00116)	(0.00136)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times$ TypeSpline	0.0157***	0.00354***	5.64e-05	-8.82e-05	-0.000137
	(0.000266)	(0.000339)	(8.64e-05)	(0.000135)	(0.000157)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times$ TypeHybrid	0.0113***	0.00324***	-0.000236*	-0.000456**	-0.000630**
	(0.000425)	(0.000548)	(0.000141)	(0.000220)	(0.000257)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times$ TypeSpline	-0.0156***	-0.00634***	-6.42e-05	0.000108	0.000143
	(0.000296)	(0.000357)	(9.06e-05)	(0.000142)	(0.000166)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times$ TypeHybrid	-0.0113***	-0.00619***	0.000214	0.000443**	0.000626***
	(0.000405)	(0.000513)	(0.000133)	(0.000207)	(0.000241)
$\mathbb{1}\{\text{Age55}_i > 0\} \times$ TypeRD	0.143***	0.0565***	0.00240**	0.00104	0.00214
	(0.00365)	(0.00343)	(0.00107)	(0.00161)	(0.00183)
$\mathbb{1}\{\text{Age55}_i > 0\} \times$ TypeHybrid	0.0646***	0.0263***	0.000198	0.000849	-0.00115
	(0.00288)	(0.00262)	(0.000830)	(0.00127)	(0.00147)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times$ TypeSpline	0.0299***	0.00909***	0.000321***	0.000412***	0.000424**
	(0.000334)	(0.000312)	(9.51e-05)	(0.000147)	(0.000170)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times$ TypeHybrid	0.0166***	0.00508***	0.000126	0.000204	0.000667**
	(0.000537)	(0.000508)	(0.000156)	(0.000239)	(0.000276)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times$ TypeSpline	-0.0329***	-0.0131***	-0.000306***	-0.000386**	-0.000361**
	(0.000360)	(0.000322)	(0.000101)	(0.000157)	(0.000181)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times$ TypeHybrid	-0.0191***	-0.00895***	-3.62e-05	-0.000159	-0.000563**
	(0.000507)	(0.000474)	(0.000147)	(0.000225)	(0.000260)

Notes: This table reports first-stage and reduced-form estimates of the effect of being 50 years or older and 55 years or older at the initial decision date on the initial allowance rate, the final allowance rate after all appeals, and on reduced-form outcomes, specifically estimates of $\beta_{\text{RD}_{j,T}}$, $\beta_{\text{Spline1}_{j,T}}$, and $\beta_{\text{Spline2}_{j,T}}$ from equation (3). The "net home-sale" regressions are based on the home-sale sample: disability-program applicants who appear in the deeds records (homeowners), who reach step 5 of the disability determination process, and who have an initial decision date in 2000–2014. The "net home-purchase" regressions are based on the home-purchase sample: disability-program applicants who reach step 5 of the disability determination process and who have an initial decision date in 2000–2014. A "net" home sale is defined as a home sale that is not accompanied by a home purchase within six months before or after the sale, and analogously for net home purchase. Each sample excludes ZIP Codes of residence at application that have an average of fewer than fifteen recorded events per year during the corresponding period. Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.9: Standard RD and Donut RD Estimates of First Stage and Reduced-Form Effects

	First Stage				Reduced Form						N
	Initial allowance		Final allowance		Within 1 year		Within 3 years		Within 5 years		(in millions)
	Pt. Est. (Std. Err.) [Cntrl. Mean]		Pt. Est. (Std. Err.) [Cntrl. Mean]		Pt. Est. (Std. Err.) [Cntrl. Mean]		Pt. Est. (Std. Err.) [Cntrl. Mean]		Pt. Est. (Std. Err.) [Cntrl. Mean]		
	Standard RD	Donut RD	Standard RD	Donut RD	Standard RD	Donut RD	Standard RD	Donut RD	Standard RD	Donut RD	
Bankruptcy											
	0.0938***	0.127***	0.0317***	0.0388***	-0.000500*	-0.000459	-0.000684*	-0.000664	-0.000604	-0.000607	Standard RD: 3.07
	(0.00113)	(0.00145)	(0.00116)	(0.00159)	(0.000279)	(0.000379)	(0.000398)	(0.000539)	(0.000449)	(0.000609)	Donut RD: 2.71
	[0.292]	[0.292]	[0.606]	[0.606]	[0.0126]	[0.0126]	[0.0262]	[0.0262]	[0.0339]	[0.0339]	
Foreclosure (conditional on homeownership)											
	0.109***	0.162***	0.0248***	0.0356***	-0.00164**	-0.00143	-0.00204**	-0.00237*	-0.00194*	-0.00214	Standard RD: 0.81
	(0.00218)	(0.00285)	(0.00213)	(0.00299)	(0.000726)	(0.00101)	(0.00102)	(0.00142)	(0.00114)	(0.00159)	Donut RD: 0.73
	[0.262]	[0.262]	[0.621]	[0.621]	[0.0253]	[0.0253]	[0.0530]	[0.0530]	[0.0667]	[0.0667]	
Eviction (conditional on non-homeownership											
	0.109***	0.149***	0.0438***	0.0568***	0.000130	-0.000970	-9.75e-05	0.000164	0.000259	0.000689	Standard RD: 0.83
	(0.00221)	(0.00287)	(0.00226)	(0.00308)	(0.000640)	(0.000891)	(0.00101)	(0.00138)	(0.00120)	(0.00164)	Donut RD: 0.74
	[0.255]	[0.255]	[0.505]	[0.505]	[0.0206]	[0.0206]	[0.0512]	[0.0512]	[0.0742]	[0.0742]	
Net home-sale (conditional on homeownership)											
	0.105***	0.153***	0.0264***	0.0359***	-0.00129*	-0.00255**	-0.00221**	-0.00416***	-0.00159	-0.00310*	Standard RD: 1.45
	(0.00165)	(0.00215)	(0.00160)	(0.00225)	(0.000731)	(0.00101)	(0.00111)	(0.00154)	(0.00129)	(0.00178)	Donut RD: 1.30
	[0.350]	[0.350]	[0.667]	[0.667]	[0.0458]	[0.0458]	[0.117]	[0.117]	[0.167]	[0.167]	
Net home-purchase											
	0.0995***	0.143***	0.0324***	0.0445***	0.00106***	0.000853**	0.00138***	0.00130**	0.00103**	0.00121**	Standard RD: 5.12
	(0.000806)	(0.00112)	(0.000862)	(0.00122)	(0.000239)	(0.000337)	(0.000372)	(0.000520)	(0.000429)	(0.000601)	Donut RD: 4.60
	[0.316]	[0.316]	[0.599]	[0.599]	[0.0183]	[0.0183]	[0.0451]	[0.0451]	[0.0615]	[0.0615]	

Notes: This table reports standard RD and donut RD first-stage estimates of the effect of being 50 years or older and 55 years or older at the initial decision date on the initial allowance rate, the final allowance rate after all appeals, and on reduced-form outcomes, specifically estimates of β from equation (2). Donut RD regressions exclude applicants who are under age 50 or 55 by 1 to 5 months. The "bankruptcy" standard RD regressions are based on the bankruptcy sample: disability-program applicants who reach step 5 of the disability determination process, who have an initial decision date in 2000–2009. The "foreclosure" standard RD regressions are based on the foreclosure sample: disability-program applicants who appear in the deeds records (homeowners), who reach step 5 of the disability determination process, and who have an initial decision date in 2005–2014. The "eviction" standard RD regressions are based on the eviction sample: disability-program applicants who do not appear in the deeds records (non-homeowners), who reach step 5 of the disability determination process and who have an initial decision date in 2005–2014. The "net home-sale" standard RD regressions are based on the home-sale sample: disability-program applicants who appear in the deeds records (homeowners), who reach step 5 of the disability determination process, and who have an initial decision date in 2000–2014. The "net home-purchase" standard RD regressions are based on the home-purchase sample: disability-program applicants who reach step 5 of the disability determination process and who have an initial decision date in 2000–2014. A "net" home sale is defined as a home sale that is not accompanied by a home purchase within six months before or after the sale, and analogously for net home purchase. Samples involving "foreclosure" and "bankruptcy" outcomes exclude ZIP Codes of residence at application that have an average of fewer than five recorded events per year during the corresponding period; samples involving "eviction" outcomes exclude FIPS county codes of residence at application that have an average of fewer than fifteen recorded events per year during 2005–2014; samples involving "net home-sale" or "net home-purchase" outcomes exclude ZIP Code of residence at application that has an average of less than fifteen recorded corresponding events per year during 2000–2014. Standard errors in parentheses; control means in square brackets are the average value of the variable for applicants who are under age 50 or age 55 by 6 to 10 months or fewer. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.10: Instrumental Variable Estimates Using Standard RD and Donut RD Specification

	Within 1 year Pt. Est. (Std. Err.) [Cntrl. Mean] Standard RD	 Donut RD	Within 3 years Pt. Est. (Std. Err.) [Cntrl. Mean] Standard RD	 Donut RD	Within 5 years Pt. Est. (Std. Err.) [Cntrl. Mean] Standard RD	 Donut RD	*N* (in millions)
Bankruptcy	-0.00534*	-0.00362	-0.00729*	-0.00524	-0.00644	-0.00479	Standard RD: 3.07
	(0.00298)	(0.00299)	(0.00424)	(0.00426)	(0.00479)	(0.00481)	Donut RD: 2.71
	[0.0126]	[0.0126]	[0.0262]	[0.0262]	[0.0339]	[0.0339]	
Foreclosure (conditional on homeownership)							
	-0.0151**	-0.00881	-0.0188**	-0.0146*	-0.0178*	-0.0132	Standard RD: 0.81
	(0.00668)	(0.00621)	(0.00942)	(0.00877)	(0.0105)	(0.00979)	Donut RD: 0.73
	[0.0253]	[0.0253]	[0.0530]	[0.0530]	[0.0667]	[0.0667]	
Eviction (conditional on non-homeownership)							
	0.00120	-0.00650	-0.000898	0.00110	-0.000898	0.00462	Standard RD: 0.83
	(0.00589)	(0.00597)	(0.00928)	(0.00928)	(0.00928)	(0.0110)	Donut RD: 0.74
	[0.340]	[0.340]	[0.558]	[0.558]	[0.0206]	[0.0206]	
Net home-sale (conditional on homeownership)							
	-0.0123*	-0.0167**	-0.0210**	-0.0272***	-0.0152	-0.0202*	Standard RD: 1.45
	(0.00696)	(0.00660)	(0.0106)	(0.0101)	(0.0123)	(0.0116)	Donut RD: 1.30
	[0.0458]	[0.0458]	[0.117]	[0.117]	[0.167]	[0.167]	
Net home-purchase							
	0.0106***	0.00596**	0.0139***	0.00907**	0.0104**	0.00846**	Standard RD: 5.12
	(0.00250)	(0.00236)	(0.00387)	(0.00363)	(0.00448)	(0.00420)	Donut RD: 4.60
	[0.0182]	[0.0182]	[0.0459]	[0.0459]	[0.0625]	[0.0625]	

Notes: This table reports standard RD and donut RD instrumental-variable estimates of the effect of disability-program benefits on financial outcomes. Donut RD regressions exclude applicants who are under age 50 or 55 by 1 to 5 months. The "bankruptcy" regressions are based on the bankruptcy sample: disability-program applicants who reach step 5 of the disability determination process, who have an initial decision date in 2000–2009. The "foreclosure" regressions are based on the foreclosure sample: disability-program applicants who appear in the deeds records (homeowners), who reach step 5 of the disability determination process, and who have an initial decision date in 2005–2014. The "eviction" regressions are based on the eviction sample: disability-program applicants who do not appear in the deeds records (non-homeowners), who reach step 5 of the disability determination process, and who have an initial decision date in 2005–2014. The "net home-sale" regressions are based on the home-sale sample: disability-program applicants who appear in the deeds records (homeowners), who reach step 5 of the disability determination process, and who have an initial decision date in 2000–2014. The "net home-purchase" regressions are based on the home-purchase sample: disability-program applicants who reach step 5 of the disability determination process and who have an initial decision date in 2000–2014. A "net" home sale is defined as a home sale that is not accompanied by a home purchase within six months before or after the sale, and analogously for net home purchase. Samples involving "foreclosure" and "bankruptcy" outcomes exclude ZIP Codes of residence at application that have an average of fewer than five recorded events per year during the corresponding period; samples involving "eviction" outcomes exclude FIPS county codes of residence at application that have an average of fewer than fifteen recorded events per year during 2005–2014; samples involving "net home-sale" or "net home-purchase" outcomes exclude ZIP Code of residence at application that has an average of less than fifteen recorded corresponding events per year during 2000–2014. Standard errors in parentheses; control means in square brackets are the average value of the variable for applicants who are under age 50 or 55 by 6 to 10 months or fewer. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.11: Instrumental Variable Estimates for Earnings and Income

	Within 1 year Pt. Est. (Std. Err.) [Cntrl. Mean]	Within 3 years Pt. Est. (Std. Err.) [Cntrl. Mean]	N (in millions)
Earnings			
	-413.4**	-1,077***	3.02
	(171.6)	(148.2)	
	[$2247]	[$2144]	
Total Income			
	1,327***	269.4*	1.65
	(146.7)	(139.0)	
	[$3387]	[$3124]	

Notes: This table reports instrumental-variable estimates of the effect of disability-program benefits on average annual earnings after the initial decision and average annual earnings including disability-program benefit. Estimates here are based on the bankruptcy sample: disability-program applicants who reach step 5 in the disability determination process, who have an initial decision date in 2000–2009, and whose ZIP Code of residence at application that has an average of at least five recorded bankruptcies per year during this period. Standard errors in parentheses; control means in square brackets are the average value of the variable for applicants who are under age 50 or 55 by 6 to 10 months. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.