Online Appendix

Disability and Distress:

The Effect of Disability Programs on Financial Outcomes

Manasi Deshpande Tal Gross Yalun Su

A 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.[40] 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 ZIP Code boundaries shapefiles to impute ZIP Codes.[41] 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 recover 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. (2020) 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 bankruptcy for a majority of the bankruptcy courts in the United States from the late 1990s through 2009 (2011 for some districts).[42] 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

[40] 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.

[41] We obtain the United States ZIP Code Boundaries 2017 shapefiles from ArcGIS Online (ArcGIS Online, 2017). 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.

[42] 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.

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.

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	197,465	8.9%	–	–
Foreclosure/deeds-type merge	FN, LN, MI, ZIP	210,221	9.5%	13,481	6.4%
Eviction-type merge	FN, LN, ZIP	233,581	10.5%	36,988	15.8%
Number of applicants		2,222,758			

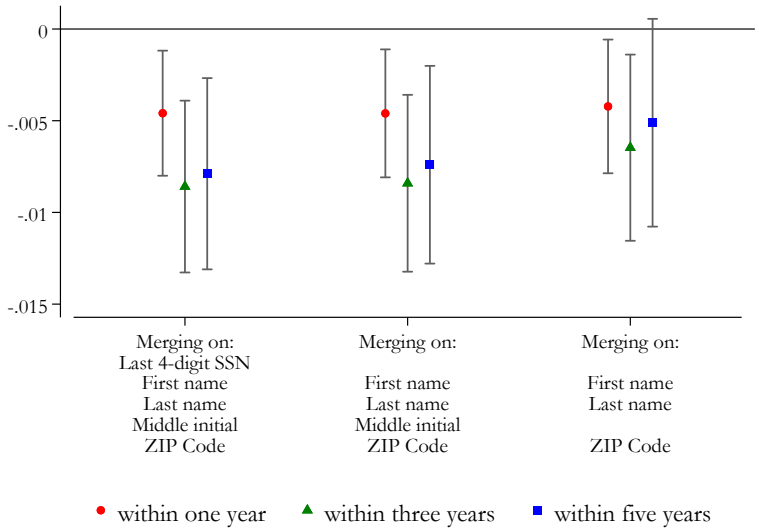
Notes: This table presents a comparison of merge results based on bankruptcy record linkages using three sets of merge identifiers. The sample includes disability-program applicants who reach step 5 of the disability determination process, who have an initial decision date in 2000–2009, and whose ZIP 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.

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.[43] We use the same protocol to merge the disability-program records with eviction and home-transaction records.

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

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.

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 from the office-classification specification 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 three-year and five-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.

B 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. □

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.

Table A2: Bias of Unobserved Home Purchase Events

Scenario	Effect on home purchase decision	Effect on home purchase outside ZIP	Purchased Home? No	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.

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 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

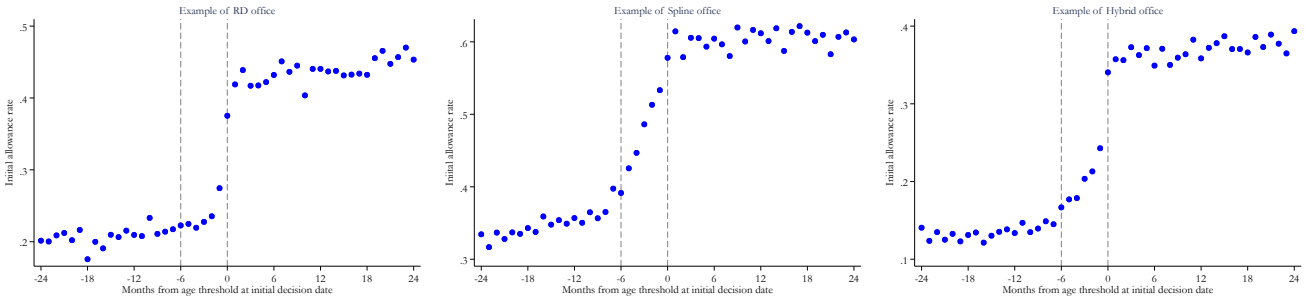
indicators and the decision-event-time indicators:

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

D DDS Office Classification Approach

This section presents an alternative estimation strategy based on heterogeneity in how the age-based thresholds are handled by SSA's examiners. The approximately 130 disability determination services (DDS) offices exercise discretion in implementing the borderline age rule. Some offices ignore the rule entirely and treat applicants in the "borderline" period the same as the other applicants below the cutoff. Other offices fully implement the borderline age rule such that an increasing fraction of applicants in the borderline period are allowed. Still others partially implement the borderline age rule such that there is an increasing fraction of applicants allowed in the borderline period but still a jump in allowance rates at the age cutoff. Appendix Figure A2 presents plots of the first stage for examples of those three types of offices. We take advantage of the variation across offices in the implementation of the borderline age rule in our estimation strategy.

Figure A2: Examples of RD, Spline, and Hybrid Offices



Notes: These figures plot initial allowance rates at step 5 of the disability determination process relative to the disability-program applicant's age at the initial decision date for specific DDS offices. The left-hand-side graph is an example of an RD office; the middle graph is an example of a Spline office; and the right-hand-side graph is an example of a Hybrid office. Age is calculated as months from age 50 or age 55, whichever threshold is closer. These figures are based on all disability-program applicants who reach step 5 of the disability determination process and who have an initial decision date in 2000–2014.

D.1 Classifying Offices

There are several potential ways to classify offices. Our primary classification method relies on the 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 three office-type

specifications on the age-cell means for each DDS office: "RD" (equation 2, above), "Spline" (equation 3, below), and "Hybrid" (equation 4, below). The "Spline" regression specification is:

$$Y_i = \beta_0 + \beta_1 \text{Age}_i + \beta_{\text{Spline1}}(\text{Age}_i \times \mathbb{1}\{\text{Age}_i > -6\}) + \beta_{\text{Spline2}}(\text{Age}_i \times \mathbb{1}\{\text{Age}_i > 0\}) + \varepsilon_i. \tag{3}$$

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 simpler than the "Spline office" specification.

We also use the point estimates from an RD-spline regression as an alternative classification method. We refer to this as the "point estimates method" below.[44] 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:

$$Y_i = \beta_0 + \beta_{\text{RD}}\mathbb{1}\{\text{Age}_i > 0\} + \beta_2 \text{Age}_i + \beta_{\text{Spline1}}\text{Age}_i \times \mathbb{1}\{\text{Age}_i > -6\} + \beta_{\text{Spline2}}\text{Age}_i \times \mathbb{1}\{\text{Age}_i > 0\} + \varepsilon_i. \tag{4}$$

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 $\beta_{\text{Spline1}} < 0.001$.

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.

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

D.2 Derivation of Office-Classification Specification

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

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

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

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

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

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

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:

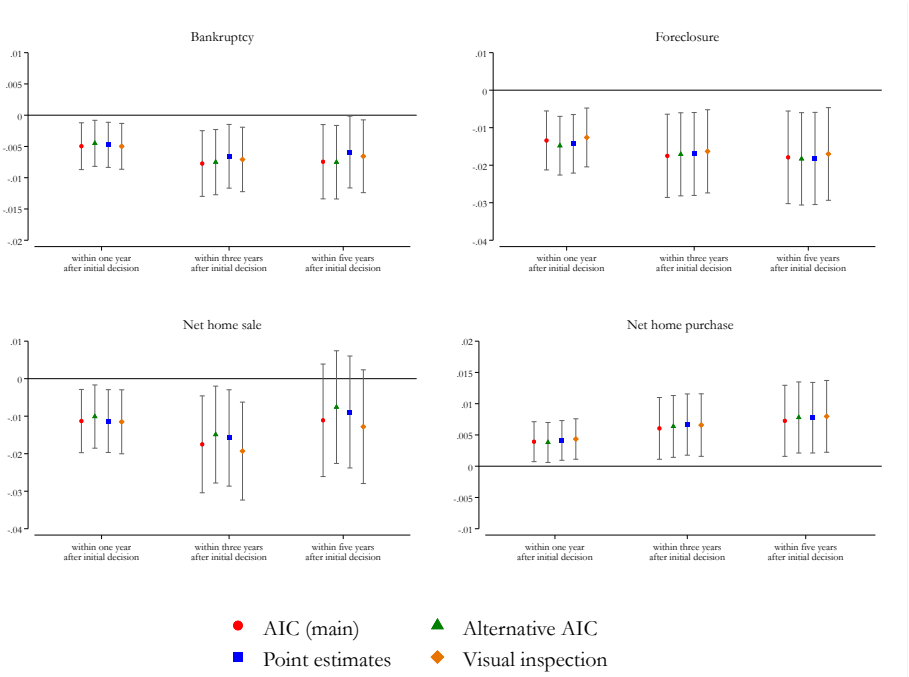
$$\begin{aligned} Y_i = \beta_0 &+ \sum_{\substack{j\in\{\text{TypeRD},\\ \text{TypeHybrid}\}}} \sum_{T\in\{50,55\}} \beta_{\text{RD}_{j,T}} \mathbb{1}\{\text{Age}_i > T\} \times \text{Type } j_i + \sum_{T\in\{50,55\}} \beta_{2,T}\text{Age}_i \\ &+ \sum_{\substack{j\in\{\text{TypeSpline},\\ \text{TypeHybrid}\}}}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

D.3 Estimates Based on Office-Classification Specification

Appendix Table A3 presents IV estimates of equation (5) Appendix Tables A4, A6, and A5 present the associated first-stage and reduced-form estimates. The estimates are similar to those presented in the main text, though slightly more precise. As an additional exercise to probe the robustness of the estimates in Appendix Table A3, Appendix Table A7 presents the same estimates when controls for application characterics are included. The estimates remain

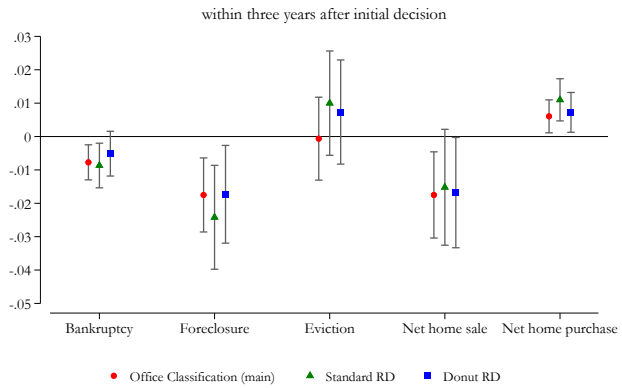
similar after the inclusion of those controls. Finally, we compare office-classification methods and compare the office-classification approach to the estimation strategies presented in the main text. Appendix Figure A3 compares IV estimates of the effect of disability benefits on financial outcomes using the different classification methods described above. The IV point estimates and confidence intervals are similar regardless of how we classify offices. Appendix Figure A4 shows that the point estimates across the three estimation strategies are almost identical, though the estimates are less precise for the standard RD and donut RD strategies.

Figure A3: Instrumental Variable 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 "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 3), and "Hybrid" (equation 4) 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 "Point Estimates" method, we run the "Hybrid office" specification (equation 4) 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 (3); "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 "Visual Inspection" method, we classify DDS offices visually based on the binned scatter plots of initial allowance rate by applicant age.

Figure A4: 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 5), standard and donut RD specifications (equation 2). Donut RD regressions exclude applicants who are under age 50 or 55 by one to five months.

Table A3: Instrumental Variable Estimates of the Effect of Initial Disability Allowance

	After initial allowance			Before initial allowance			N
	Within 1 year	Within 3 years	Within 5 years	Within 1 year	Within 3 years	Within 5 years	(in millions)
	Pt. Est.	Pt. Est.	Pt. Est.	Pt. Est.	Pt. Est.	Pt. Est.	
	(Std. Err.)	(Std. Err.)	(Std. Err.)	(Std. Err.)	(Std. Err.)	(Std. Err.)	
	[Cntrl. Mean]	[Cntrl. Mean]	[Cntrl. Mean]	[Cntrl. Mean]	[Cntrl. Mean]	[Cntrl. Mean]	
Bankruptcy							
	-0.00496***	-0.00773***	-0.00744**	0.00178	0.00210	0.00301	2.22
	(0.00191)	(0.00268)	(0.00303)	(0.00203)	(0.00325)	(0.00402)	
	[0.0123]	[0.0251]	[0.0323]	[0.0132]	[0.0361]	[0.0573]	
Foreclosure (conditional on homeownership)							
	-0.0134***	-0.0175***	-0.0179***	-0.00396	-0.00282	-0.00585	0.60
	(0.00401)	(0.00566)	(0.00630)	(0.00396)	(0.00549)	(0.00616)	
	[0.0251]	[0.0518]	[0.0647]	[0.0229]	[0.0463]	[0.0599]	
Eviction (conditional on non-homeownership)							
	-0.00113	-0.000637	0.00598	0.00249	-0.00113	0.00218	0.64
	(0.00400)	(0.00634)	(0.00752)	(0.00437)	(0.00654)	(0.00765)	
	[0.0173]	[0.0446]	[0.0660]	[0.0196]	[0.0470]	[0.0656]	
Net home sale (conditional on homeownership)							
	-0.0113***	-0.0175***	-0.0111	-0.00106	-0.00240	-0.00147	1.06
	(0.00430)	(0.00659)	(0.00765)	(0.00352)	(0.00500)	(0.00581)	
	[0.0452]	[0.115]	[0.164]	[0.0292]	[0.0624]	[0.0876]	
Net home purchase							
	0.00392**	0.00605**	0.00726**	-0.000511	0.00216	0.00475	3.82
	(0.00163)	(0.00252)	(0.00290)	(0.00174)	(0.00289)	(0.00349)	
	[0.0176]	[0.0438]	[0.0595]	[0.0202]	[0.0595]	[0.0892]	

Notes: This table reports instrumental-variable estimates of the effect of disability benefits on financial outcomes. 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. 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 "net home-sale" or "net home-purchase" outcomes exclude ZIP Codes of residence at application that have an average of fewer 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. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A4: 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.	Pt. Est.	Pt. Est.	Pt. Est.	Pt. Est.
	(Std. Err.)	(Std. Err.)	(Std. Err.)	(Std. Err.)	(Std. Err.)
Bankruptcy (N: 2.22 million)					
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeRD}$	0.147***	0.0495***	-0.00198	-0.00257	-0.00230
	(0.00818)	(0.00794)	(0.00190)	(0.00265)	(0.00299)
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	0.0740***	0.0289***	-0.000264	-0.00144	-0.00179
	(0.00326)	(0.00372)	(0.000843)	(0.00122)	(0.00138)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeSpline}$	0.0228***	0.00580***	-0.000116	5.64e-05	6.92e-05
	(0.000555)	(0.000599)	(0.000142)	(0.000202)	(0.000227)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeHybrid}$	0.00912***	0.00293***	9.02e-06	0.000109	0.000245
	(0.000626)	(0.000743)	(0.000169)	(0.000243)	(0.000274)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeSpline}$	-0.0221***	-0.00752***	8.45e-05	-0.000181	-0.000156
	(0.000650)	(0.000667)	(0.000159)	(0.000227)	(0.000254)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	-0.00872***	-0.00518***	-2.01e-05	-0.000123	-0.000232
	(0.000580)	(0.000680)	(0.000155)	(0.000223)	(0.000251)
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeRD}$	0.156***	0.0542***	-0.000925	0.00153	0.00364
	(0.00802)	(0.00668)	(0.00191)	(0.00284)	(0.00319)
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	0.0957***	0.0454***	-0.000442	-0.000539	-6.22e-05
	(0.00392)	(0.00333)	(0.000881)	(0.00123)	(0.00139)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeSpline}$	0.0416***	0.0133***	-0.000343**	-0.000471**	-0.000502**
	(0.000603)	(0.000511)	(0.000144)	(0.000200)	(0.000226)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeHybrid}$	0.0218***	0.00717***	-0.000102	-0.000241	-0.000282
	(0.000783)	(0.000683)	(0.000176)	(0.000247)	(0.000278)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeSpline}$	-0.0447***	-0.0170***	0.000385**	0.000549**	0.000612**
	(0.000660)	(0.000541)	(0.000161)	(0.000225)	(0.000253)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	-0.0240***	-0.0104***	8.98e-05	0.000211	0.000276
	(0.000720)	(0.000622)	(0.000162)	(0.000226)	(0.000254)
Foreclosure (N: 0.60 million)					
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeRD}$	0.220***	0.0509**	-0.0119*	-0.00750	-0.0110
	(0.0223)	(0.0226)	(0.00717)	(0.0110)	(0.0124)
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	0.0661***	0.0296***	-0.00224	-0.000467	-0.000509
	(0.00678)	(0.00742)	(0.00249)	(0.00348)	(0.00386)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeSpline}$	0.0241***	0.00436***	-0.000214	-0.000210	0.000247
	(0.000999)	(0.00114)	(0.000389)	(0.000555)	(0.000615)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeHybrid}$	0.0166***	0.00178	-0.000131	-0.00105	-0.000567
	(0.00129)	(0.00151)	(0.000508)	(0.000711)	(0.000786)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeSpline}$	-0.0233***	-0.00755***	0.000222	8.91e-05	-0.000234
	(0.00114)	(0.00123)	(0.000423)	(0.000606)	(0.000671)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	-0.0169***	-0.00581***	8.07e-05	0.000967	0.000594
	(0.00120)	(0.00137)	(0.000464)	(0.000648)	(0.000715)
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeRD}$	0.163***	0.0468***	-0.00487	-0.00292	-0.000349
	(0.0186)	(0.0157)	(0.00621)	(0.00922)	(0.0106)
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	0.0723***	0.0325***	-0.00370*	-0.00483	-0.00577*
	(0.00652)	(0.00533)	(0.00210)	(0.00294)	(0.00327)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeSpline}$	0.0464***	0.0133***	-0.000686**	-0.000579	-0.000915*
	(0.000996)	(0.000854)	(0.000339)	(0.000470)	(0.000522)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeHybrid}$	0.0295***	0.00712***	0.000103	0.000478	0.000592
	(0.00134)	(0.00114)	(0.000432)	(0.000599)	(0.000665)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeSpline}$	-0.0502***	-0.0179***	0.000633*	0.000717	0.00108*
	(0.00105)	(0.000879)	(0.000372)	(0.000517)	(0.000571)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	-0.0328***	-0.0118***	-7.44e-05	-0.000286	-0.000376
	(0.00122)	(0.00102)	(0.000393)	(0.000545)	(0.000605)

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 (5). 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 A5: Estimates of First Stage and Reduced-Form Effects—Eviction

	First Stage		Reduced Form		
	Initial allowance Pt. Est. (Std. Err.)	Final allowance Pt. Est. (Std. Err.)	Within 1 year Pt. Est. (Std. Err.)	Within 3 years Pt. Est. (Std. Err.)	Within 5 years Pt. Est. (Std. Err.)
Eviction (N: 0.64 million, conditional on non-homeownership)					
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeRD}$	0.164***	0.0621***	-0.00356	0.00122	0.00594
	-0.0126	-0.0135	-0.0044	-0.00693	-0.00808
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	0.0832***	0.0422***	0.00201	0.00274	-0.000215
	-0.00594	-0.00657	-0.00194	-0.00304	-0.00367
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeSpline}$	0.0250***	0.0121***	0.000131	0.000526	0.000594
	-0.00116	-0.00133	-0.000391	-0.000606	-0.000718
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeHybrid}$	0.0155***	0.00513***	-0.000288	0.0000694	0.000308
	-0.00114	-0.00134	-0.000409	-0.000631	-0.000758
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeSpline}$	-0.0258***	-0.0160***	-0.000156	-0.00037	-0.000479
	-0.0014	-0.00155	-0.000448	-0.000695	-0.000824
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	-0.0158***	-0.00844***	0.000261	-0.000027	-0.000297
	-0.00106	-0.00121	-0.000368	-0.000569	-0.000684
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeRD}$	0.205***	0.0748***	0.00228	-0.0006	0.0004
	-0.013	-0.0116	-0.00409	-0.00618	-0.00714
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	0.0627***	0.0340***	0.00280*	0.00247	0.00265
	-0.00662	-0.00593	-0.00167	-0.00272	-0.00331
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeSpline}$	0.0410***	0.0174***	-0.000501	-0.000223	0.000397
	-0.00132	-0.00123	-0.000346	-0.000563	-0.000668
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeHybrid}$	0.0246***	0.00894***	-0.000652*	-0.000691	-0.000105
	-0.00136	-0.00125	-0.000342	-0.000555	-0.000672
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeSpline}$	-0.0441***	-0.0227***	0.000435	0.0000992	-0.000567
	-0.00153	-0.0014	-0.000397	-0.000654	-0.000779
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	-0.0270***	-0.0136***	0.000580*	0.000826	0.000255
	-0.00124	-0.00112	-0.000309	-0.000502	-0.000609

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 (5). 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 A6: 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 sales (N: 1.06 million)					
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeRD}$	0.209***	0.0567**	0.000294	0.0115	-0.00222
	(0.0240)	(0.0239)	(0.0106)	(0.0159)	(0.0180)
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	0.0747***	0.0292***	-0.00222	0.00148	0.000322
	(0.00505)	(0.00547)	(0.00244)	(0.00367)	(0.00428)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeSpline}$	0.0231***	0.00390***	-0.000200	-0.000481	-6.65e-05
	(0.000798)	(0.000891)	(0.000369)	(0.000569)	(0.000663)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeHybrid}$	0.0142***	0.00155	-2.16e-05	-0.000590	0.000500
	(0.000974)	(0.00112)	(0.000495)	(0.000743)	(0.000864)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeSpline}$	-0.0227***	-0.00683***	0.000269	0.000547	0.000392
	(0.000916)	(0.000973)	(0.000398)	(0.000618)	(0.000721)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	-0.0147***	-0.00536***	0.000107	0.000563	-0.000324
	(0.000901)	(0.00102)	(0.000453)	(0.000678)	(0.000789)
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeRD}$	0.143***	0.0488***	-0.00724	-0.0123	0.00176
	(0.0198)	(0.0164)	(0.00851)	(0.0139)	(0.0162)
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	0.0776***	0.0354***	-0.00133	0.00118	0.00464
	(0.00495)	(0.00399)	(0.00222)	(0.00336)	(0.00388)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeSpline}$	0.0462***	0.0132***	-0.000444	-0.000999*	-0.00136**
	(0.000789)	(0.000660)	(0.000339)	(0.000524)	(0.000611)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeHybrid}$	0.0269***	0.00625***	-0.000478	-0.00124*	-0.00149*
	(0.00102)	(0.000855)	(0.000447)	(0.000676)	(0.000781)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeSpline}$	-0.0502***	-0.0177***	0.000121	0.000670	0.00117*
	(0.000842)	(0.000685)	(0.000368)	(0.000570)	(0.000669)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	-0.0299***	-0.0104***	0.000420	0.00122**	0.00140**
	(0.000930)	(0.000767)	(0.000410)	(0.000618)	(0.000713)
Net home purchases (N: 3.82 million)					
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeRD}$	0.194***	0.0800***	-0.00574**	-0.00663	-0.00986**
	(0.0110)	(0.0115)	(0.00261)	(0.00411)	(0.00466)
$\mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	0.0637***	0.0258***	0.00160**	0.00266**	0.00284**
	(0.00247)	(0.00280)	(0.000704)	(0.00111)	(0.00129)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeSpline}$	0.0216***	0.00666***	0.000159	0.000160	0.000249
	(0.000390)	(0.000451)	(0.000113)	(0.000176)	(0.000205)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > -6\} \times \text{TypeHybrid}$	0.0138***	0.00409***	-0.000132	-0.000339	-0.000450*
	(0.000472)	(0.000564)	(0.000141)	(0.000222)	(0.000259)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeSpline}$	-0.0212***	-0.00932***	-0.000197	-0.000236	-0.000408*
	(0.000452)	(0.000499)	(0.000125)	(0.000195)	(0.000227)
$\text{Age50}_i \times \mathbb{1}\{\text{Age50}_i > 0\} \times \text{TypeHybrid}$	-0.0138***	-0.00705***	0.000109	0.000343*	0.000473**
	(0.000438)	(0.000514)	(0.000129)	(0.000203)	(0.000237)
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeRD}$	0.178***	0.0795***	0.00233	0.00147	0.00185
	(0.0107)	(0.00943)	(0.00308)	(0.00468)	(0.00526)
$\mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	0.0789***	0.0357***	0.00124	0.000494	-0.00120
	(0.00283)	(0.00243)	(0.000804)	(0.00125)	(0.00145)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeSpline}$	0.0444***	0.0158***	0.000235*	0.000258	0.000324
	(0.000441)	(0.000392)	(0.000125)	(0.000193)	(0.000223)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > -6\} \times \text{TypeHybrid}$	0.0255***	0.00841***	-1.30e-05	0.000294	0.000754***
	(0.000572)	(0.000507)	(0.000159)	(0.000247)	(0.000286)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeSpline}$	-0.0480***	-0.0204***	-0.000196	-0.000213	-0.000261
	(0.000481)	(0.000416)	(0.000139)	(0.000215)	(0.000248)
$\text{Age55}_i \times \mathbb{1}\{\text{Age55}_i > 0\} \times \text{TypeHybrid}$	-0.0282***	-0.0126***	7.38e-05	-0.000238	-0.000660**
	(0.000522)	(0.000458)	(0.000146)	(0.000227)	(0.000263)

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 (5). 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 A7: Robustness Check—IV Estimates Controlling for Applicant Characteristics

	After initial allowance			
	Within 1 year	Within 3 years	Within 5 years	N
	Pt. Est.	Pt. Est.	Pt. Est.	(in millions)
	(Std. Err.)	(Std. Err.)	(Std. Err.)	
	[Cntrl. Mean]	[Cntrl. Mean]	[Cntrl. Mean]	
Bankruptcy				
	-0.00467**	-0.00701**	-0.00685**	1.99
	(0.00203)	(0.00285)	(0.00321)	
	[0.0123]	[0.0251]	[0.0323]	
Foreclosure (conditional on homeownership)				
	-0.0132***	-0.0171***	-0.0177***	0.58
	(0.00407)	(0.00574)	(0.00639)	
	[0.0251]	[0.0518]	[0.0647]	
Eviction (conditional on non-homeownership)				
	6.15e-05	0.000174	0.00678	0.60
	(0.00412)	(0.00653)	(0.00774)	
	[0.0173]	[0.0446]	[0.0660]	
Net home sale (conditional on homeownership)				
	-0.0139***	-0.0212***	-0.0163**	0.98
	(0.00442)	(0.00678)	(0.00787)	
	[0.0452]	[0.115]	[0.164]	
Net home purchase				
	0.00279*	0.00425*	0.00455	3.55
	(0.00167)	(0.00254)	(0.00291)	
	[0.0176]	[0.0438]	[0.0595]	

Notes: This table reports instrumental-variable estimates of the effect of disability benefits on financial outcomes with controls of application characteristics including earnings, education, body system code, whether applicants experience pre-application financial events. 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. 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 "net home-sale" or "net home-purchase" outcomes exclude ZIP Codes of residence at application that have an average of fewer 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. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

E Bounding the Effect of Strategic Delay

This section presents a simple bounding exercise designed to assess the degree to which those who strategically delay their applications until ages 50 or 55 may affect the main results. Suppose that we consider our main reduced-form RD estimate, β, as a simple difference of means. We write $\beta = \mu_R - \mu_L$, where μ_L is the mean to the left of the threshold and μ_R is the mean to the right of the threshold. Figure A9 demonstrates that the volume of applications increases by 3 percentage points at those key age thresholds. Those applicants thus only affect μ_R. We can thus write μ_R as a weighted average of the means for those who delay their applications and those who do not:

$$\mu_R = \frac{1}{1.03} \cdot \mu_{R,\text{no delay}} + \frac{0.03}{1.03} \cdot \mu_{R,\text{delay}}.$$

Here, were define $\mu_{R,\text{no delay}}$ as the mean for those who do not delay and $\mu_{R,\text{no delay}}$ as the mean for those who do delay their applications.

For the sake of performing a bounding exercise, we assume that there exists *no* direct effect of disability programs: instead, all of the main results are driven by the change in mean characteristics given strategic delay. As a result, $\mu_{R,\text{no delay}} = \mu_L$. Finally, we parameterize the mean characteristics of those who delay application as a share α of the mean characteristics of those who do not delay application: $\mu_{R,\text{delay}} = \alpha \cdot \mu_L$. Combining, this leads to the equation:

$$\begin{aligned}
\beta =& \mu_R - \mu_L \\
=& \left(\frac{1}{1.03} \cdot \mu_{R,\text{no delay}} + \frac{0.03}{1.03} \cdot \mu_{R,\text{delay}} \right) - \mu_L \\
=& \left(\frac{1}{1.03} \cdot \mu_L + \frac{0.03}{1.03} \cdot \alpha \cdot \mu_L \right) - \mu_L.
\end{aligned}$$

This expression involves only one unknown, α, for which we can solve.

The value of α provides the degree to which the applicants who delay need to be different from all other applicants in order to entirely account for the main findings. Appendix Table A8 lists the values of α given the reduced-form estimates and associated control means from Appendix Table A16.

In the case of bankruptcy and foreclosure, there exists no value of $\alpha \in [0, \infty)$ that can solve the equation above. This suggests that, for those outcomes, it is highly unlikely that the existence of applicants who delay can explain all of the reduced-form results. By contrast, for net home sale, applicants who delay must have a mean net-home-sale rate that is at most 33 percent of the overall control mean in order to explain away all of the three-year

reduced-form effect.[45] Similarly, applicants who delay must have a mean net-home-purchase rate that is at least 216 percent of the overall control mean in order to explain away all of the three-year reduced-form effect.

Table A8: Bounding Exercise

	Values of α		
	Within 1 year	Within 3 years	Within 5 years
Bankruptcy	−0.99	−0.58	−0.07
Foreclosure (conditional on homeownership)	−3.11	−1.38	−0.76
Net home sale (conditional on homeownership)	−0.61	0.33	0.89
Net home purchase	3.03	2.16	1.83

Notes: This table reports estimates of α for the bounding exercise described above. The parameter α describes the degree to which the mean outcomes of applicants who delay their application must be different from the control mean in order to entirely explain the main, reduced-form results. A negative value for α suggests that such an explanation is not possible.

F Welfare Calculation

F.1 Adapting Optimal-Benefit Calculations to Consider Tail Consumption Risk

We use our estimates to illustrate that tail consumption risk, as proxied by the financial events we observe, can play an important role in the calculation of optimal benefits. We make several assumptions to illustrate this point. First, we assume that these tail events—foreclosure, bankruptcy, eviction, and home sale—represent risk, which is uncertain from the agent's perspective, rather than heterogeneity, which is known to the agent. Second, we assume that there are no other forms of formal or informal insurance, such as spousal labor supply. Third, we consider only the ex-post value of disability benefits conditional on becoming disabled, not the ex-ante insurance value of the disability system prior to becoming disabled. We also abstract away from the ex-ante moral-hazard incentive problem that considering financial distress in the calculation of optimal benefits might encourage financial distress or applications from financially distressed individuals.

Consider the following adaptation of the Baily-Chetty (Baily, 1978; Chetty, 2006) framework, in which a social planner sets the benefit amount b and tax t to balance risk protection for the agent against the effect of moral hazard on the government budget. In this adaptation, agents face a small risk of a large consumption loss and the risk for disabled agents

[45] We perform this calculation using the main reduced-form point estimates. Were we to use the confidence intervals, of course, we would obtain a wider range of values for α.

depends on b:

$$\begin{aligned}
\max_{c_a^l, c_a^h, c_d^l, c_d^h} \quad & (1-p)[(1-q_a)u(c_a^h) + q_a u(c_a^l)] + p[(1-q_d(b))u(c_d^h) + q_d(b)u(c_d^l)] + \Psi(p) \\
\text{s.t.} \quad & c_a^h = A_a + w - t, \quad c_a^l = A_a + w - t - L, \\
& c_d^h = A_d + b, \quad c_d^l = A_d + b - L, \\
& t(1-p) - pb \geq 0.
\end{aligned}$$

Here, p is the likelihood of disability, c_a^l (c_a^h) represents low (high) consumption in the able-bodied state (including assets A_a and wages w), c_d^l (c_d^h) represents low (high) consumption in the disabled state, q_a is the likelihood of a large consumption loss L associated with an extreme financial event in the able-bodied state, and $\Psi(p)$ reflects the leisure value of not working. The parameter $q_d(b)$ is the likelihood of loss L in the disabled state and depends on the benefit b. Making q_d endogenous reflects the evidence from our IV estimates that disability programs not only increase consumption through the cash transfer but also make the worst states of the world (those with large consumption losses) less likely to arise.

Rewriting the problem in terms of b yields the following first-order condition:

$$\begin{aligned}
& (1-p)[-(1-q_a)u'(c_a^h) - q_a u'(c_a^l)]\frac{dt}{db} \\
+ \quad & p[(1-q_d(b))u'(c_d^h) + q_d(b)u'(c_d^l) - q_d'(b)u(c_d^h) + q_d'(b)u(c_d^l)] = 0.
\end{aligned}$$

Totally differentiating the balanced budget constraint yields

$$(1-p)\frac{dt}{db} = p\left[1 + \varepsilon_{p,b}\frac{1}{1-p}\right],$$

where $\varepsilon_{p,b}$ is the elasticity of the likelihood of disability with respect to the benefit b. Finally, substituting terms yields the following condition at the optimal b^*:

$$\frac{\varepsilon_{p,b}}{1-p} = \frac{Eu'(c_d^*) - Eu'(c_a^*) - q_d'(b)[u(c_d^{*h}) - u(c_d^{*l})]}{Eu'(c_a^*)}. \tag{6}$$

We parameterize the probability of loss in the disabled state as follows:

$$q_d(b) = a_0 - a_1 b,$$

where a_0 is the baseline probability of consumption loss for the disabled population from our descriptive estimates, and a_1 is the scaled causal effect of benefits on likelihood of an extreme consumption loss from our causal estimates. This parameterization assumes that the effect of disability benefits on the likelihood of the loss is linear—in other words, that the first dollar of benefits has the same effect as the ten-thousandth dollar.

We calculate L from survey data. Note that L need not be the causal effect of bankruptcy or foreclosure on consumption. Instead, we seek to measure the consumption drop *associated*

with the financial distress for which these events are proxies. In order to estimate L, we calculate the average household food and housing expenses within three years of an adverse event based on households experiencing foreclosure or bankruptcy in the Panel Study of Income Dynamics (PSID). We find an annual drop of $6,300 in average household food and housing expenses within three years of a foreclosure.[46]

Baseline: $a_0 \neq 0$, $a_1 = 0$, approximate average marginal utility with marginal utility of average consumption. We first establish a baseline in which $a_0 \neq 0$ and $a_1 = 0$, meaning that we temporarily ignore the causal effect of b on tail consumption risk q_d. This baseline corresponds to the standard Baily-Chetty condition, which is usually implemented by approximating average marginal utility with the marginal utility of average consumption. In our context, this approximation is:

$$\frac{\varepsilon_{p,b}}{1-p} = \frac{Eu'(c_d^*) - Eu'(c_a^*)}{Eu'(c_a^*)} \approx \frac{u'(\bar{c}_d^*) - u'(\bar{c}_a^*)}{u'(\bar{c}_a^*)}, \tag{7}$$

where

$$\begin{aligned} \bar{c}_d &= q_d c_d^l + (1-q_d)c_d^h = \bar{A}_d + b - q_d L, \\ \bar{c}_a &= q_a c_a^l + (1-q_a)c_a^h = \bar{A}_a + \bar{w} - t(b) - q_a L. \end{aligned}$$

To establish the baseline, we take the current average annual disability benefit of $13,000 to be the optimal benefit amount, b^*, under a utility function with constant relative risk aversion (CRRA) and a coefficient of relative risk aversion, γ, of 2. Using our estimates of $\varepsilon_{p,b}$, q_a, and q_d and an estimate of $\bar{A}_a + \bar{w}$ from survey data, we solve for the value of $\bar{A}_d$ that rationalizes the current benefit level as optimal. We use these parameters in our calculations. Table A9 reports the baseline optimal benefit amount for $\gamma = 2$ and $\gamma = 4$ using the empirical approximation in equation (7). Note that this column simply reflects the *assumption* that $13,000 is optimal under $\gamma = 2$. Using the parameter values that rationalize this assumption, the optimal benefit is slightly larger for $\gamma = 4$.

Scenario 1: $a_0 \neq 0$, $a_1 = 0$, use exact average marginal utility. The approximation in equation (7) is less accurate when agents are more prudent (i.e., non-linear marginal utility of consumption) and when they face larger consumption losses or a higher likelihood

[46] We use the PSID-provided measures on household expenses since 1999 and calculate annual household expenses using the sum of food and housing expenses. Due to data limitations, we apply the estimated consumption drop associated with foreclosure to all adverse financial events: foreclosure, bankruptcy, and distressed home sales. Questions on bankruptcy were only added to the survey in 1996, so we have insufficient power to estimate the consumption drop associated with bankruptcy alone. Appendix Figure A16 presents the event-study plot.

of consumption loss. The exact implementation of equation (6) when $a_1 = 0$ is

$$\frac{\varepsilon_{p,b}}{1-p} = \frac{Eu'(c_d^*) - Eu'(c_a^*)}{Eu'(c_a^*)} = \frac{[(1-q_d)u'(c_d^h) + q_d u'(c_d^l)] - [(1-q_a)u'(c_a^h) + q_a u'(c_a^l)]}{(1-q_a)u'(c_a^h) + q_a u'(c_d^l)}.$$

Scenario 1 in Table A9 shows optimal benefit calculations using this parameterization. Depending on the value of γ and the baseline risk, the optimal benefit increases by up to \$170 relative to the baseline.[47] The optimal benefit is higher using the exact formula because the increase in marginal utility from the consumption loss is larger than the decrease from a comparable consumption gain. Note that this increase is likely an underestimate of the true increase in the optimal benefit amount we would obtain were we able to consider the full distribution of consumption. We observe only certain extreme events, but if disability benefits shift mass from bad states to good states more generally, then considering effects on the full distribution of consumption could increase the optimal benefit amount under Scenario 1 substantially.

Scenario 2: $a_0 \neq 0$, $a_1 \neq 0$, use exact average marginal utility. Finally, we consider the implementation of equation (6) when $a_0 \neq 0$ and $a_1 \neq 0$, so that $q_d(b)$ depends on b. Making q_d endogenous has an ambiguous effect on optimal benefits. On the one hand, a higher benefit level has even more value to the agent than before, in that it reduces the likelihood of extreme consumption loss. This effect is reflected in the additional term in equation (6): $q_d'(b)[u(c_d^{*h}) - u(c_d^{*l})]$. On the other hand, by reducing the likelihood of extreme consumption loss, a higher benefit level means more equal consumption between the able and disabled states. This offsetting effect is reflected in the term $Eu'(c_d^*) = q_d(b)u'(c_d^l) + (1 - q_d(b))u'(c_d^h)$, which is smaller, and therefore closer to $Eu'(c_a^*)$, when b is larger. From Scenario 2 in Table A9, making q_d endogenous increases the optimal benefit by about \$100 relative to Scenario 1 when $\gamma = 2$ and decreases it by about \$40 when $\gamma = 4$.

F.2 Adapting Optimal-Benefit Calculations to Consider Spillovers

In addition to tail risk, we adapt optimal-benefit calculations to consider the spillovers associated with allowance onto disability programs. Previous research on foreclosures, evictions, and bankruptcies suggests that these events impose negative externalities on third parties. For example, Campbell et al. (2011) extrapolate from their difference-in-difference estimates

[47] We consider three scenarios for baseline risk: one based on foreclosure risk only (2 percent for the able-bodied, 5 percent for the disabled); one based on foreclosure plus bankruptcy risk (3 percent for the able-bodied, 8 percent for the disabled); and one based on foreclosure plus bankruptcy plus net-home-sale risk where we assume that 50 percent of net-home sales are distressed (5 percent for the able-bodied, 13 percent for the disabled).

Table A9: Annual Optimal Benefit Calculations

	Baseline risk		Optimal benefit			
γ	q_a	a_0	Baseline	Scenario (1)	Scenario (2)	Scenario (1) w/ spillover
2	0.02	0.05	\$13,000	\$13,040	\$13,120	\$13,180
4	0.02	0.05	\$13,230	\$13,310	\$13,280	\$13,400
2	0.03	0.08	\$13,000	\$13,060	\$13,160	\$13,190
4	0.03	0.08	\$13,230	\$13,340	\$13,300	\$13,430
2	0.05	0.13	\$13,000	\$13,100	\$13,230	\$13,230
4	0.05	0.13	\$13,230	\$13,400	\$13,350	\$13,490

Notes: This table presents the optimal benefit in different scenarios, assuming a constant relative risk aversion (CRRA) utility function and a risk of becoming disabled of $p = 0.06$. The parameter q_a (a_0) denotes the baseline risk of experiencing an adverse event in the able-bodied (disabled) state. In the first two rows of both panels, we consider the probability of experiencing foreclosure only; in the next two rows, we consider the probability of experiencing foreclosure or filing for bankruptcy; in the last two rows, we consider the probability of experiencing foreclosure, filing for bankruptcy, or selling a home in distress (assuming 50 percent of net home sales are distressed). For the optimal benefit calculation, we assume $A_a + w = \$40,000$. Under the assumption that the current disability benefit level \$13,000 is optimal based on equation (7) under CRRA with $\gamma = 2$, we obtain $A_d = \$31,880$ under $q_a = 0.02$ and $a_0 = 0.05$, $A_d = \$31,980$ under $q_a = 0.03$ and $a_0 = 0.08$, and $A_d = \$32,220$ under $q_a = 0.05$ and $a_0 = 0.13$. foreclosure. We estimate $L = \$6,300$ from the Panel Study of Income Dynamics (PSID, 2018), and we calculate the elasticity of non-employment with respect to the benefit amount $\varepsilon_{p,b} = 0.021$ from our data. For Scenario (3), $q_d(b^*)$ denotes the endogenous probability of experiencing an adverse event in the disabled state under the optimal disability benefit. We use $b = \$13,000$ to scale the casual estimates. The dollar amounts are adjusted in 2016 dollars using Consumer Price Index for all urban consumers (U.S. Bureau of Labor Statistics, 2016).

and forecasting models to calculate that each foreclosure during the Great Recession lowers neighborhood property values by \$148,000 to \$477,000.

Consider the Social Planner's problem in the previous subsection. We model the spillovers related to property values by assuming that the program benefit, b, produces some fraction $s \in [0, 1]$ in aggregate spillovers to property values. In other words, benefits not only increase consumption in the disabled state, but also increase consumption in the able-bodied state, through the reduction in nearby foreclosures. The aggregate spillover amount, $s \times b$, is divided among all able-bodied agents, which in the model is $\frac{1-p}{p}$. The only change in the Social Planner's problem from the previous subsection is the consumption of the able-bodied agent:

$$c_a = A_a + w - t + \frac{sb}{\frac{1-p}{p}}.$$

The Baily-Chetty condition under Scenario 1 with spillovers becomes

$$\frac{\varepsilon_{p,b}}{1-p} = \frac{Eu'(c_d^*) - Eu'(c_a^*) \cdot [1 - sp]}{Eu'(c_a^*)}. \tag{8}$$

All else equal, a larger spillover, s, increases the difference in the marginal utilities across states and therefore increases the optimal benefit, b^*.

To determine a reasonable value for s, we use our estimates of the effect of initial disability allowance on foreclosure combined with estimates from the literature of the decline in neighboring property values from foreclosure. We find that initial disability allowance reduces the likelihood of foreclosure by 1.73 percentage points. Campbell et al. (2011) estimate a decline of at least $148,000 in neighboring property values for each foreclosure. Multiplying these two numbers, we approximate that 6.6 percent of the disability benefit amount accrues to neighboring property owners through the reduction in foreclosures.

We use this value of s to determine how the optimal benefit changes. As shown in Table A9, considering property-value spillovers increases the optimal benefit by approximately $130 for $\gamma = 2$ and by $90 for $\gamma = 4$ relative to Scenario 1. The increase is smaller for a larger degree of risk aversion because the consumption of able-bodied agents is valued less at higher levels of risk aversion. Disability programs may also create other spillovers that we do not consider here.[48]

F.3 Considering Optimal Benefit Timing

In addition to the optimal benefit *level*, this analysis can also inform the optimal *timing* of disability benefits. Figure 3 suggests that applicants, on average, apply for disability benefits when they are in peak financial distress and have a high marginal utility of consumption relative to their lifetime average. In addition, our causal estimates suggest that initial disability allowance, which occurs several months after application and often after the 5-month statutory waiting period, dramatically lowers rates of financial distress. Based on those two findings, it is likely that awarding disability benefits sooner would avert a substantial amount

[48] Another way to put the real-estate-related spillovers in context is to compare it to the effect of the disability programs on earnings. We find that disability allowance reduces labor market earnings by $3,450 over three years, and it increases housing values due to averted foreclosures by roughly $2,590, which is 75 percent of the decrease in earnings. We also calculate the marginal value of public funds (MVPF), which is the ratio of the marginal benefits of a policy to its marginal cost (see Jacobs (2018) for a review). In Appendix G, we use our estimates to calculate the MVPF, as derived by Hendren (2016) and Hendren (2019), incorporating spillovers to third parties and fiscal externalities. We calculate an MVPF of 1.04 for disability programs 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.

of financial distress among applicants.[49] Of course, awarding benefits sooner also involves higher administrative costs and could change the composition of the applicant pool. Determining the optimal wait time requires weighing these considerations against the benefits suggested by our estimates.

G 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, 2019). 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.[50] 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 \$2,560 in spillover benefits to homeowners in the surrounding neighborhood.[51]

[49] Autor et al. (2015) find that longer waiting times result in worse labor market outcomes for rejected applicants. Prenovitz (2018) uses backlogs as an instrument and find small increases in DI wait time can have negative implications that extend beyond labor force participation for applicants.

[50] 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. (2019) find that non-disabled Medicaid recipients value the program far less than \$1-for-\$1.

[51] 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 Great Recession. We take the lower bound of this estimate and multiply it by our 3-year estimate of the reduction in foreclosure risk, 1.73 percentage points, to estimate \$2,560 in positive spillovers to neighboring households.

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.[52] We estimate that disability allowance reduces government costs by $137 through higher property tax collections.[53] For bankruptcy, we estimate a reduction in government costs of $86 since lenders discharge debt in bankruptcy and deduct the discharged debt from taxable income.[54] Finally, we calculate a $553 decrease in tax revenues from reduced recipient earnings.[55] Summing all three types of fiscal externalities yields a net *increase* in government cost of $330.

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 (2019) calculates the following MVPF ranges for other programs targeted at low-income populations: 0.88 for 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

[52]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.

[53]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 1.73 percentage points, the reduction in foreclosure *reduces* government costs by $137.

[54]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 0.51 percentage points, the reduction in bankruptcy *reduces* government cost by $86.

[55]From our estimates, we find that the initial disability-program allowance reduces annual earnings by $1,229, or $3,687 over 3 years. Assuming a 15 percent combined income and payroll tax rate, the reduction in recipient labor income *increases* government costs by $553.

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 A10: 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	0.0173	Authors' 3-year estimates
Total spillovers from foreclosure reduction	\$2,560	
Total spillovers	\$2,560	$\times \eta_{EX} = \$1,920$ 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	0.0173	Authors' 3-year estimates
Total FE from foreclosure reduction	-\$137	
From reduction in bankruptcy		
Taxes foregone on debt discharged by lenders	-\$16,758	Assume 20% corporate tax rate[c]
Causal effect on bankruptcy	0.0051	Authors' 3-year estimates
Total FE from bankruptcy reduction	-\$86	
From reduction in recipient earnings		
Reduction in recipient earnings	\$3,687	Authors' 3-year estimates
Total FE from earnings reduction	\$553	Assume 15% income and payroll tax rate
Total fiscal externalities	\$330	
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.

H Understanding the Channels through which Disability Benefits Affect Financial Outcomes

We find that initial disability allowance leads to large reductions in bankruptcies, foreclosures, and home sales. In order to assess the implications of these results for recipients' welfare, we must consider the mechanisms through which disability benefits affect household financial outcomes. One possible channel is a wealth effect: disability programs relax the recipient's budget constraint by increasing income, reducing income volatility, and providing access to health insurance. If the reduced-form results reflect primarily a wealth channel, then we can interpret the reductions in bankruptcy and foreclosure as reductions in financial distress and therefore as improvements in recipient welfare.[56]

There are, however, alternative mechanisms through which disability benefits might affect financial outcomes, and those mechanisms have more-ambiguous implications for recipients' welfare. For example, if disability benefits change access to credit or demand for credit, then benefits could affect bankruptcy rates and foreclosure rates mechanically by changing either the number of disability recipients who use credit or the amount of credit they use. We discuss these alternative mechanisms and the expected direction and magnitude of their effects. A combination of empirical evidence and institutional details suggests that a wealth effect is the most likely channel through which disability benefits affect financial outcomes. If so, we can interpret the reduced-form results as a reduction in financial distress and an improvement in recipient welfare.

Credit access and credit demand. Disability benefits could affect either the supply of credit or demand for credit. On the supply side, benefits could increase access to credit, prompting lenders to offer more credit cards, bank loans, and mortgages in response to the higher incomes of disability recipients. This increase in access to credit could have two potential effects. First, it could mechanically increase bankruptcy and foreclosure rates since individuals can only default if they have access to credit. Indeed, we find that benefits increase home purchases, which likely means they increase mortgage underwriting. But overall we find that disability benefits lead to a *decline* in bankruptcies and foreclosures, so such an "access to credit" effect would lead us to under-estimate the wealth effect.

Second, greater access to credit could lead households to roll over debt onto credit cards

[56] In the short term, the wealth channel could actually increase bankruptcy filings by providing households with enough money to pay bankruptcy fees. Bankruptcy attorney fees typically cost at least $1,000, and many households must thus "save up" for bankruptcy (Gross et al., 2020), filing only when they have the funds to do so. If so, this would make our reduced-form estimates an under-estimate of the wealth effect operating through lower financial distress.

or other new products and thus avoid default. If this were the case, we would expect the additional loans to postpone bankruptcy but not to eliminate it entirely. Yet the 5-year estimates in Table A3 do not suggest a reversal in the effects on bankruptcy, foreclosure, or home sale in later years. Although we cannot rule out a later increase in adverse financial events entirely, we think that is unlikely based on the long-term estimates of Table A3.

Disability benefits could also affect demand for credit through an income effect. We find that disability benefits increase recipient income (see Appendix Table A17). If credit is a normal good, then disability benefits will increase demand for credit, which could mechanically increase bankruptcies and foreclosures. However, as with greater credit access, this mechanical increase would lead us to under-estimate the wealth effect. On the other hand, if credit is an inferior good, then disability benefits will decrease demand for credit, which could mechanically reduce bankruptcies and foreclosures. Although this is possible, we think it is unlikely that demand for credit is decreasing in income for households with such low levels of income—recall that average annual pre-decision earnings are less than $20,000. Calculations based on the 2016 Survey of Consumer Finances indicate that, for the lower part of the income distribution, applications for credit are increasing in income.

Incentive Effects. Another way that disability benefits could mechanically affect financial outcomes is by changing the incentive to file for bankruptcy or repay debts. Suppose, for instance, that disability-program rules (e.g., income or asset tests) either impose restrictions on or encourage recipients to file for bankruptcy, default on a mortgage, or buy or sell a home. Or suppose that the bankruptcy process (or foreclosure or home-transaction process) treats disability recipients differently than other individuals. In either case, benefits could then affect the rates of these financial events.

To the best of our knowledge, however, disability program rules do not affect the incentives to file for bankruptcy or default on a mortgage. Disability benefits are not contingent on bankruptcy or foreclosure and adjudicators at the SSA are not supposed to consider financial markers like bankruptcy or foreclosure when deciding whether to continue a recipient's benefits.[57] In terms of home transactions, the SSI asset test exempts one home, so one might hypothesize that some recipients purchase a home (or do not sell their home) in order to shift assets from non-exempt to exempt categories in order to maintain eligibility. In practice, however, we find effects on home purchases are concentrated among the DI population and

[57]Initial examiners do not interact with the recipient in person during a continuing disability review. Administrative law judges do interact with disability applicants and recipients in person, so it is possible that they consider financial distress. Official agency guidelines require adjudicators to restrict their attention to only medical and vocational criteria.

are smaller for the SSI population.[58]

Turning to bankruptcy, Social Security benefits are exempt from the Chapter 7 means test, meaning that allowance onto disability programs does not reduce the ability to file for Chapter 7. For Chapter 13, Social Security benefits may help recipients create a debt repayment plan that a court is more likely to approve, but we would consider this a wealth effect rather than an incentive effect. Federal disability benefits are protected in bankruptcy, which might increase the incentive to take on debt and file for bankruptcy, but this incentive would work in the opposite direction of the reduced-form results.[59]

Considering foreclosure, regulations prohibit lenders from garnishing disability benefits to cover mortgage debt not covered by the foreclosure sale, which could increase the incentive to default on a mortgage. But this too would lead to an *increase* in foreclosure rates after allowance, which would lead us to under-estimate the wealth effect.[60]

Finally, turning to home transactions, some public lending programs treat disability recipients differently than other potential homeowners.[61] This could mean that SSI recipients get better loan terms and therefore are more likely to purchase a house than disability applicants who are denied. However, rates of homeownership among SSI applicants are low and these lending programs are small in scale.

Summary. Although we cannot rule out these alternative mechanisms, we conclude from the evidence and institutional details that, for the most part, they either work in the opposite direction of the results or would likely be small in magnitude. The most likely channel then is the wealth channel: allowance onto disability programs increases applicants' wealth and thus they become solvent. Newly allowed applicants can meet their financial obligations, and this wealth leads to a decrease in bankruptcies, foreclosures, and home sales.

Why does disability allowance have such a large effect on financial distress? One reason is that disability applicants are in severe financial distress at the time of application. Figure 2 suggests that applicants' risk of bankruptcy, foreclosure, and eviction is much higher than the general population, and Figure 3 shows that it is high relative to the applicants' lifetime risk, peaking just after they apply for benefits. For this population, then, it is perhaps unsurprising that a monthly disability check and health insurance has a large effect on

[58]Importantly, SSI determination involves an asset test: applicants with assets beyond a threshold are automatically denied. That aspect of SSI creates an incentive for applicants not to purchase a home. That said, the SSDI determination process includes no such asset test, and we find roughly similar treatment effects across the two programs.

[59]See, e.g., "Bankruptcy Can Help Seniors Protect Assets," *New York Times*, May 13, 2015.

[60]Section 207 of the Social Security Act, 42 U.S.C. §407.

[61]For example, Connecticut's "Home of Your Own Program" offers better terms to recipients with disabilities and accepts SSI allowance as proof of disability. See https://mymortgageinsider.com/qualify-mortgage-disability-income

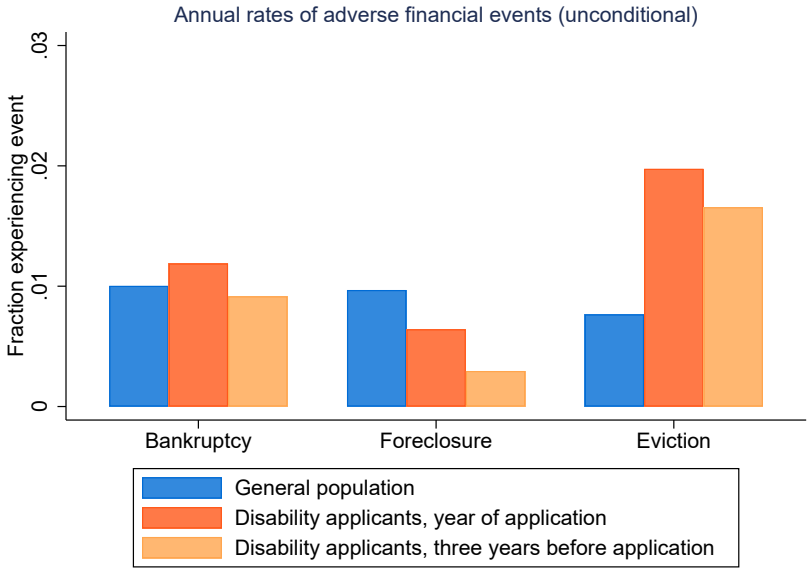
financial outcomes. Indeed, the monthly disability check represents an increase in income for applicants. Appendix Table A17 presents IV estimates for earnings and income. Disability allowance causes annual earnings to decline by $1,230 and total observed income—annual earnings plus disability-program benefits—to decrease by $360 within three years after the decision.[62]

These results are consistent with previous studies showing that the social safety net can have a large effect on these same outcomes. Hsu et al. (2018) study unemployment insurance and foreclosure and find that increases in benefits drastically reduce foreclosures. Their estimates suggest that a one-standard-deviation increase in unemployment-insurance benefits cuts a layoff-related increase in foreclosures by more than half. Similarly, in studying the Oregon Health Insurance Lottery, Baicker et al. (2013) find that Medicaid "nearly eliminates" catastrophic medical debt, reducing its incidence by 81 percent. Gallagher et al. (2019) find that households eligible for Affordable Care Act marketplace subsidies experienced a 25 percent decline in mortgage delinquency rates.

[62]This decline in earnings is smaller than previous estimates of the effect of disability programs on earnings. For instance, it is roughly 40 percent of the effect on earnings estimated by Maestas et al. (2013). The earnings effect we estimate may be smaller for a number of reasons. The sample here, by necessity, includes only older applicants. Moreover, the variation we study comes from the fifth step of the initial-determination process, while the variation studied by Maestas et al. (2013) comes from initial examiner assignment. The complier populations for these instruments could be different. In particular, the complier population for the instrument in this paper is likely to have lower earnings potential than the complier population for the examiner instrument, since the average rejected applicant at step 5 has been judged unable to do their previous job in step 4.

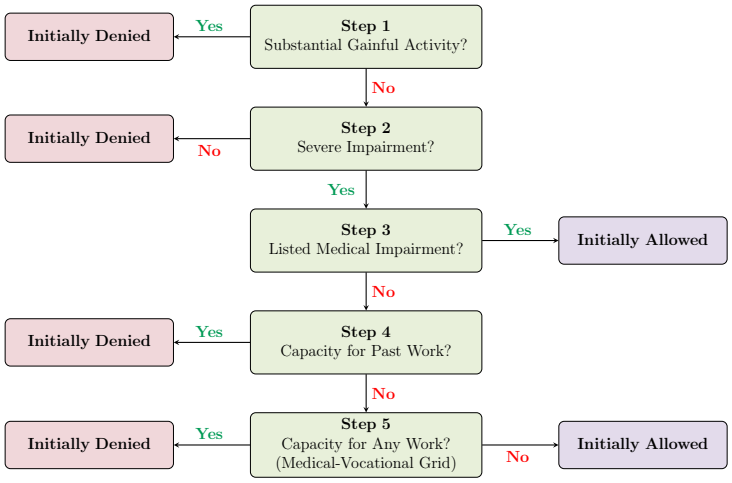
I Appendix Figures and Tables

Figure A5: Rates of Adverse Financial Events in the General vs. Disability-Applicant Population (Unconditional)



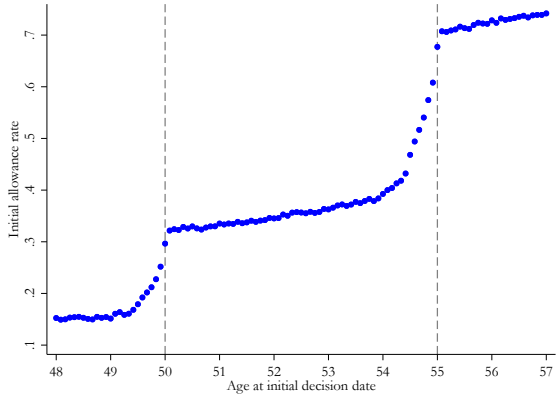
Notes: This figure presents bankruptcy, foreclosure, and eviction rates among the general population and the disability-program applicants across different application cohorts. The unconditional bankruptcy sample consists of disability-program applicants who have an initial decision date in 2000–2009. The unconditional foreclosure and eviction sample consists of disability-program applicants who have an initial decision date in 2005–2014. Samples involving bankruptcy and foreclosure 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. The denominator of the bankruptcy, foreclosure, and eviction rates for the general population is calculated using the 2010 Census population for individuals 18 years or older (U.S. Census Bureau, 2010)

Figure A6: Steps of the Disability Determination Process



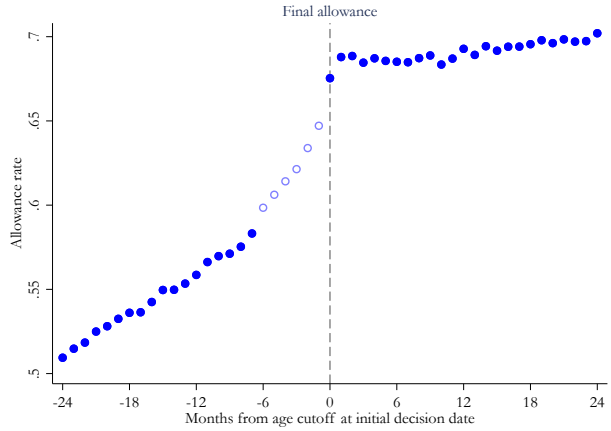
Notes: This figure presents the steps of the Social Security Administration's disability determination process. In step 1, disability-program applicants who are earning greater than substantial gainful activity levels ($1,170 per month in 2017) are denied. In step 2, applicants who are determined to 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 A7: Initial Allowance Rate at Step 5 By Age



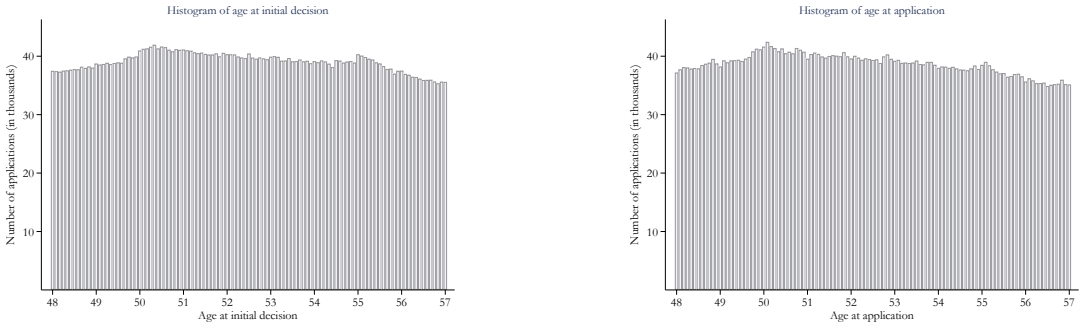
Notes: This figure plots the initial allowance rate by disability-program applicant age at step 5 of the disability determination process. This figure is based on the home-purchase sample: applicants who reach step 5 of the disability determination process, who have an initial decision date in 2000–2014, and whose ZIP Code of residence at application has an average of at least fifteen recorded home purchases per year during this period.

Figure A8: Final Allowance Rate at Step 5 Relative to Applicant Age



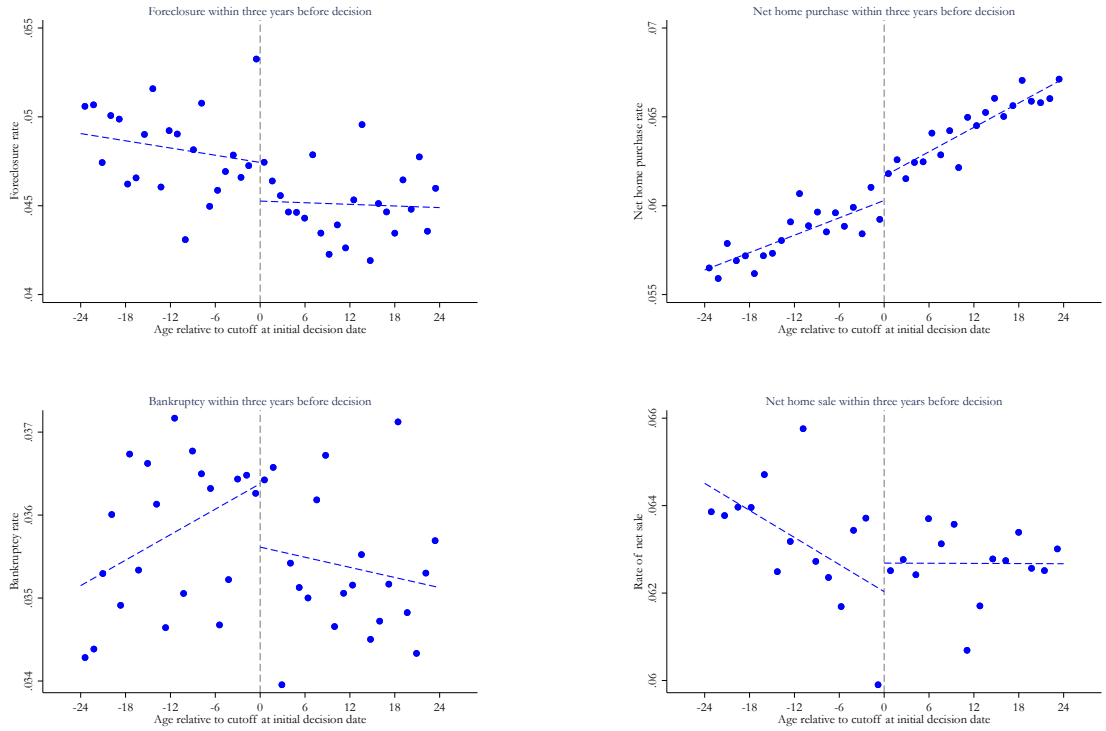
Notes: This figure plots the final allowance rate after all appeals relative to the disability-program applicant's age at the initial decision date for applicants in the home-purchase sample: disability-program applicants who reach step 5 of the disability determination process, who have an initial decision 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 A9: Histograms of Age at Initial Decision and Application at Step 5



Notes: These figures present histograms of age at initial decision (left panel) and application (right panel) for disability-program applicants in the home-purchase sample: 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.

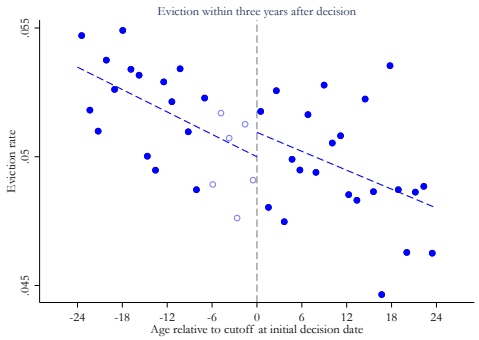
Figure A10: Falsification Test—Rates of Financial Outcomes Before Initial Decision Relative to Applicant Age



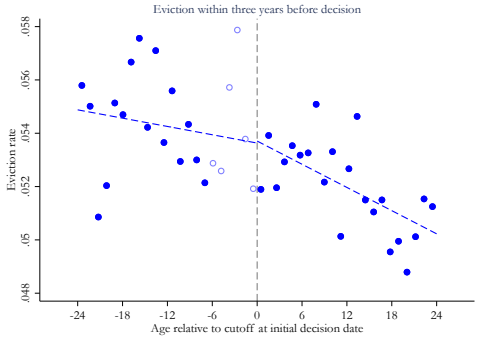
Notes: These figures plot the bankruptcy, foreclosure, net home-sale, and net home-purchase rates within three years before initial decision relative to the disability-program applicant's age at the initial decision date. Age is calculated as months from age 50 or age 55, whichever threshold is closer. Figures are based on quantile spaced binning, allowing each bin to have the same number of observations. Dashed lines are fitted using a RD strategy. The bankruptcy sample consists of disability-program applicants who reach step 5 of the disability determination process and who have an initial decision date in 2000–2009. The foreclosure 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 2005–2014. The "net 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 "net 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. 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 "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.

Figure A11: Eviction Rate Relative to Applicant Age

Rates after initial decision



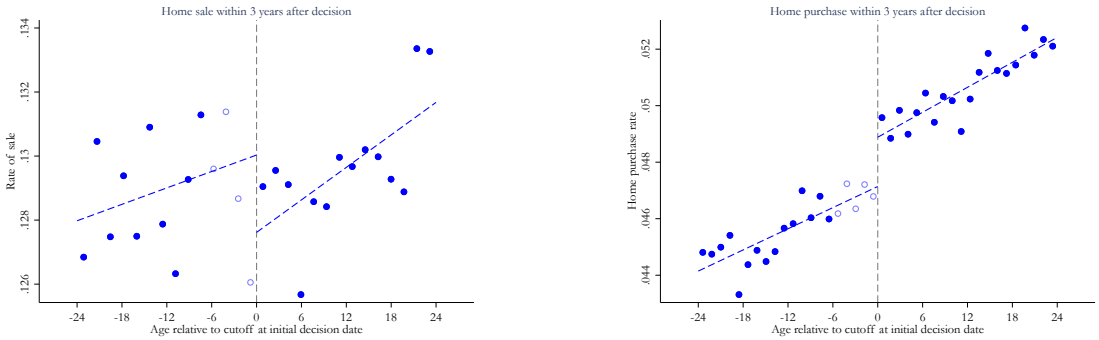
Rates before initial decision (falsification test)



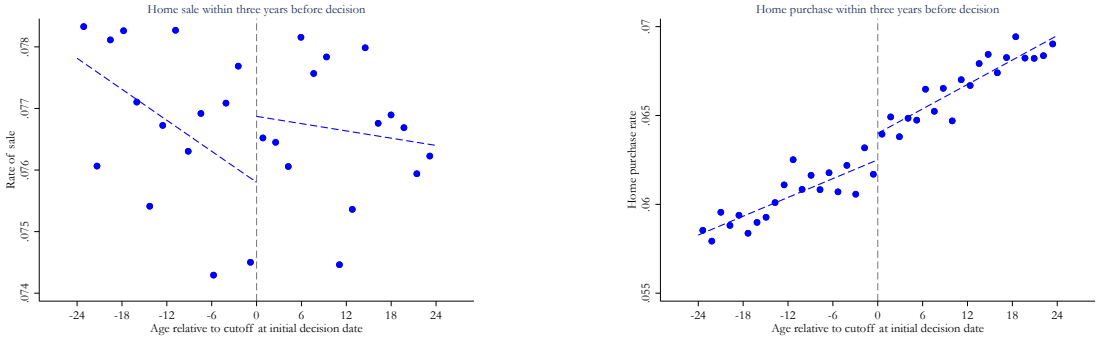
Notes: These figures plot the eviction rate within three years after initial decision (upper panel) and before initial decision (lower panel) relative to the disability-program applicant's age at the initial decision date. Age is calculated as months from age 50 or age 55, whichever threshold is closer. Figures are based on quantile spaced binning, allowing 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 eviction sample consists of 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 in 2005–2014. 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.

Figure A12: Gross Home-Sale and Gross Home-Purchase Rates Relative to Applicant Age

Rates after initial decision



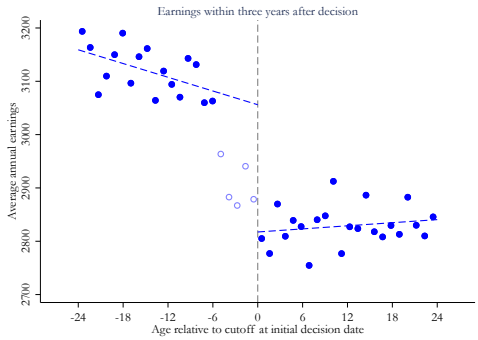
Rates before initial decision (falsification test)



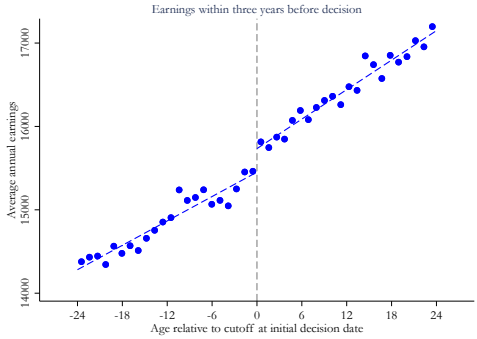
Notes: These figures plot the gross home-sale and gross home-purchase rates within three years after initial decision (left-hand side) and the gross home-sale and the gross home-purchase rates within three years before initial decision (right-hand side) relative to the disability-program applicant's 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 A13: Earnings Relative to Applicant Age

Earnings after initial decision

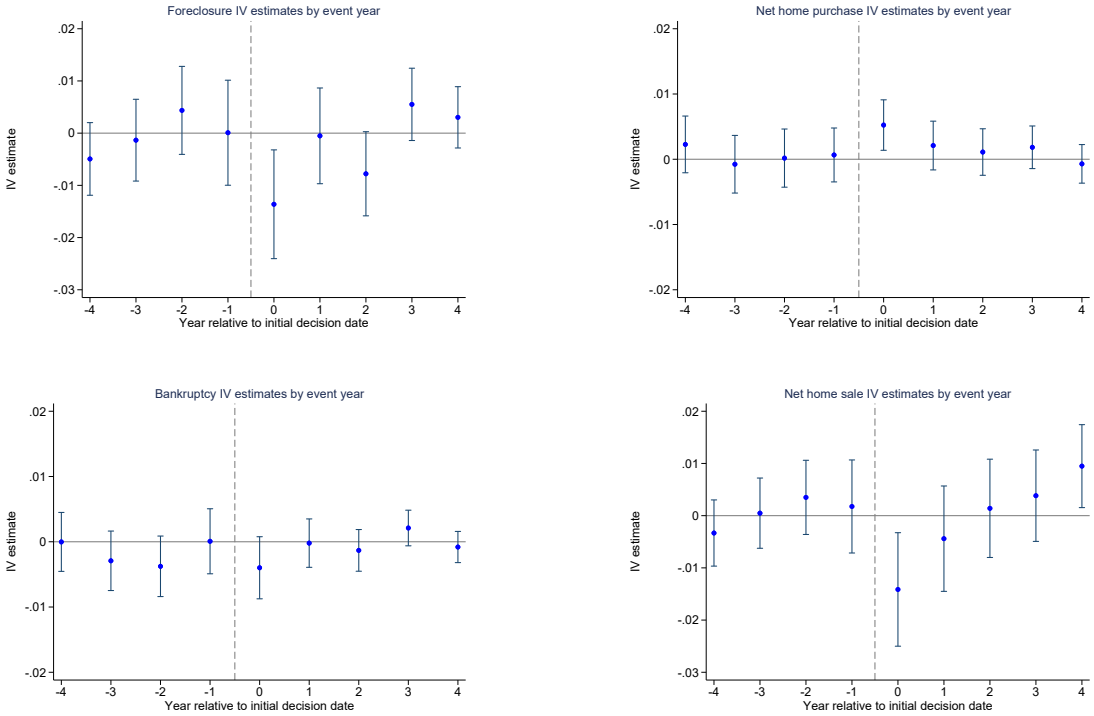


Earnings before initial decision (falsification test)



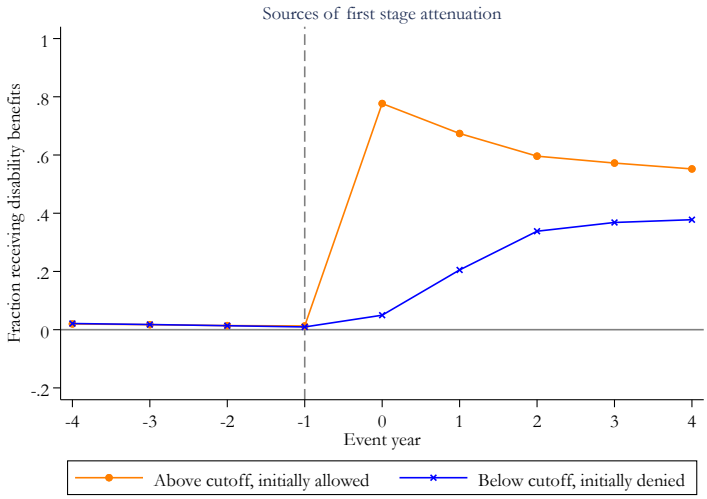
Notes: These figures plot the earnings within three years after initial decision (upper side) and the earnings within three years before initial decision (lower side) relative to the disability-program applicant's age at the initial decision date. Age is calculated as months from age 50 or age 55, whichever 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 A14: Instrumental Variable Estimates by Event Year



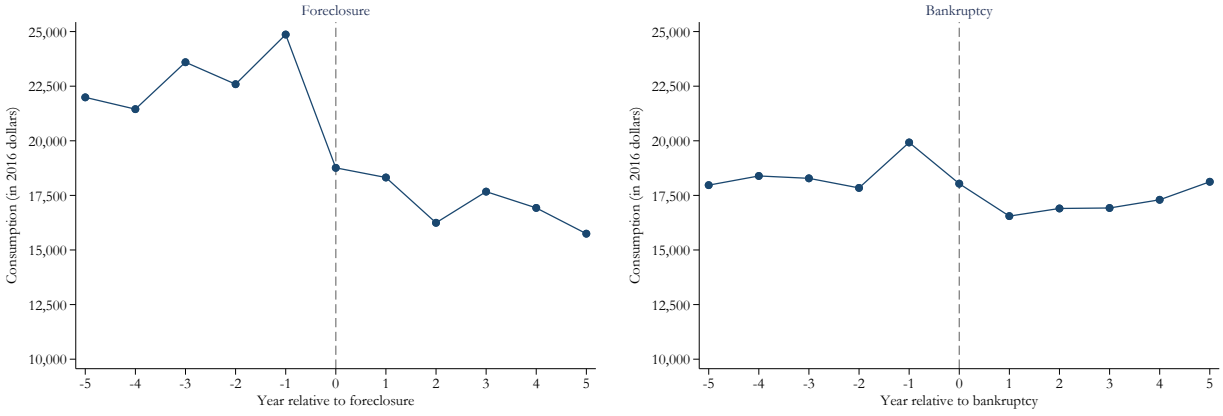
Notes: These figures present instrumental variable estimates of the effect of disability-program allowance on financial outcomes by event year around the initial decision date. The "bankruptcy" regressions are based on the bankruptcy sample: disability-program applicants who reach step 5 of the disability 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. 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. 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. 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" or "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 "net home-sale" or "net home-purchase" outcomes exclude ZIP Codes of residence at application that have an average of fewer than fifteen recorded corresponding events per year during 2000–2014.

Figure A15: 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 based on 20% randomly selected 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 A16: Household Consumption around Foreclosure and Bankruptcy from the PSID



Notes: This figure plots the annual average of food and housing (mortgage and rent) expenses based on households that had gone through foreclosures (left) and bankruptcies (right) in the Panel Study of Income Dynamics (PSID, 2018). The dollar amounts are adjusted in 2016 dollars using Consumer Price Index for all urban consumers (U.S. Bureau of Labor Statistics, 2016).

Table A11: Summary Statistics for the Bankruptcy, Foreclosure, and Eviction Samples

	Full samples					
	Bankruptcy		Foreclosure		Eviction	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Fraction SSI adults	0.54	0.50	0.31	0.46	0.55	0.50
Fraction DI adults	0.60	0.49	0.83	0.38	0.62	0.49
Fraction reaching step 5	0.68	0.47	0.70	0.46	0.69	0.46
Fraction initially allowed	0.35	0.48	0.44	0.50	0.38	0.48
Fraction finally allowed	0.54	0.50	0.64	0.48	0.51	0.50
Mental condition	0.26	0.44	0.16	0.36	0.27	0.44
Musculoskeletal condition	0.30	0.46	0.37	0.48	0.31	0.46
Age	44.4	12.6	51.1	10.0	45.6	13.06
Male	0.52	0.50	0.52	0.50	0.54	0.50
Pre-decision annual earnings	$14,349	$18,334	$20,831	$21,327	$12,182	$16,946
Years of education	11.5	2.53	12.3	2.40	11.8	2.55
Ever experience financial event	0.12	0.32	0.13	0.33	0.18	0.38
Experience event before decision	0.09	0.28	0.06	0.24	0.09	0.28
Experience event after decision	0.04	0.19	0.07	0.26	0.10	0.30
Number of states	47		48		16	
Number of state-ZIP/FIPS	20,973		14,422		319	
Number of applicants (millions)	18.7		3.6		5.8	

Notes: This table presents summary statistics for the bankruptcy, foreclosure (conditional on homeownership), and eviction (conditional on non-homeownership) full samples used in Section 3. The "bankruptcy sample" consists of disability-program applicants who have an initial decision date in 2000–2009. The "foreclosure sample" consists of disability-program applicants who appear in the deeds records (homeowners) and who have an initial decision date in 2005–2014. The "eviction sample" consists of disability-program applicants who do not appear in the deeds records (non-homeowners) and who have an initial decision in 2005–2014. 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 the corresponding period. "Reaching step 5" denotes reaching step 5 of the disability determination process as depicted in Appendix Figure A6. "Pre-decision annual earnings" are average annual earnings in the three years before the decision date. "Ever experience financial event" and "experience event before/after decision" are indicators for filing for bankruptcy, experiencing foreclosure, or experiencing eviction. "Number of states" includes the District of Columbia for the foreclosure sample.

Table A12: Summary Statistics for the Home-Sale and Home-Purchase Samples

	Full samples			
	Home sale		Home purchase	
	Mean	Std. Dev.	Mean	Std. Dev.
Fraction SSI adults	0.31	0.46	0.55	0.50
Fraction DI adults	0.81	0.40	0.63	0.48
Fraction reaching step 5	0.69	0.46	0.69	0.46
Fraction initially allowed	0.43	0.50	0.35	0.48
Fraction finally allowed	0.63	0.48	0.52	0.50
Mental condition	0.16	0.37	0.26	0.44
Musculoskeletal condition	0.37	0.48	0.31	0.46
Age	50.42	10.15	44.8	12.8
Male	0.52	0.50	0.53	0.50
Pre-decision annual earnings	$22,047	$22,227	$13,175	$17,244
Years of education	12.1	2.4	11.6	2.4
Ever experience event	0.44	0.50	0.18	0.38
Experience event before decision	0.17	0.38	0.14	0.35
Experience event after decision	0.30	0.46	0.07	0.26
Number of states	49		49	
Number of state-ZIPs	22,631		24,094	
Number of applicants (millions)	6.6		29.3	

Notes: This table presents summary statistics for the home-sale and home-purchase full samples used in Section 3. The home-sale sample consists of disability-program applicants who appear in the deeds records (homeowners) and who have an initial decision date in 2000–2014. The home-purchase sample consist of disability-program applicants 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 2000–2014. "Reaching step 5" denotes reaching step 5 of the disability determination process as depicted in Appendix Figure A6. "Pre-decision annual earnings" are average annual earnings in the three years before the decision date. "Ever experience event" and "experience event before/after decision" are indicator functions for home purchases or sales. "Number of states" includes the District of Columbia.

Table A13: Covariate Balance Test—Eviction Sample

	Eviction sample		
	Pt. Est. (Std. Err.)	Mean	% of mean
Covariate			
Pre-application event	-0.000863	0.099	-0.9%
	(0.00215)		
Pre-app earnings	3.198	$11,135	0.0%
	(105.5)		
Years of education	-0.0516***	11.5	-0.4%
	(0.0186)		
Musculoskeletal	0.0174***	0.435	4.0%
	(0.00355)		
Respiratory	-0.00166	0.034	-4.8%
	(0.00130)		
Cardiovascular	0.00125	0.080	1.6%
	(0.00192)		
Endocrine	-0.00248*	0.040	-6.2%
	(0.00144)		
Neurological	-0.000442	0.063	-0.7%
	(0.00171)		
Mental	-0.0101***	0.183	-5.5%
	(0.00288)		
Special/other	-0.00120	0.079	-1.5%
	(0.00199)		
p-value on joint F-test		0.000	
Predicted event occurs	-0.000235	0.1003503	-0.2%
	(0.000149)		
R^2 of prediction regression		0.0422	
N (in millions)		0.57	

Notes: This table reports reduced-form estimates for the listed covariates for the eviction sample excluding applicants with six months of the age thresholds, 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 A14: 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	0.00154	0.146	1.1%	0.00218**	0.167	1.3%
	(0.00197)			(0.00107)		
Pre-app earnings	315.0***	$22,058	1.4%	203.0***	$14,455	1.4%
	(119.6)			(51.34)		
Years of education	-0.0467***	12.0	-0.4%	-0.0375***	11.6	-0.3%
	(0.0135)			(0.00728)		
Musculoskeletal	0.00304	0.470	0.6%	0.00787***	0.421	1.9%
	(0.00278)			(0.00145)		
Respiratory	0.00160	0.034	4.7%	0.000467	0.041	1.1%
	(0.00102)			(0.000585)		
Cardiovascular	0.00185	0.091	2.0%	0.00214**	0.097	2.2%
	(0.00163)			(0.000878)		
Endocrine	-0.00289***	0.038	-7.5%	-0.00198***	0.042	-4.7%
	(0.00108)			(0.000594)		
Neurological	0.00258*	0.075	3.5%	0.00134*	0.065	2.1%
	(0.00147)			(0.000724)		
Mental	-0.00457**	0.166	-2.8%	-0.00710***	0.191	-3.7%
	(0.00207)			(0.00115)		
Special/other	0.000166	0.044	0.4%	-0.000854	0.059	-1.5%
	(0.00115)			(0.000690)		
p-value on joint F-test		0.000			0.000	
Predicted event occurs	-0.000251*	0.146	-0.2%	0.000919***	0.162	0.57%
	(0.000145)			(0.000238)		
R^2 of prediction regression		0.0265			0.0117	
N (in millions)		0.95			3.34	

Notes: This table reports reduced-form estimates for the listed covariates for the net-home-sale and net-home-purchase samples excluding applicants with six months of the age thresholds, 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 A15: Instrumental Variable Estimates Using Standard RD and Donut RD Specifications—Eviction

Within 1 year		Within 3 years		Within 5 years	
Pt. Est.		Pt. Est.		Pt. Est.	
(Std. Err.)		(Std. Err.)		(Std. Err.)	
[Cntrl. Mean]		[Cntrl. Mean]		[Cntrl. Mean]	
N (in millions)		N (in millions)		N (in millions)	
Standard RD	Donut RD	Standard RD	Donut RD	Standard RD	Donut RD
Eviction (conditional on non-homeownership)					
0.00319	-0.00282	0.01000	0.00734	0.0128	0.0126
(0.00505)	(0.00509)	(0.00797)	(0.00796)	(0.00949)	(0.00944)
[0.0195]	[0.0203]	[0.0503]	[0.0510]	[0.0735]	[0.0740]
0.64	0.57	0.64	0.57	0.64	0.57

Notes: This table reports standard RD and donut RD instrumental-variable estimates of the effect of disability-program benefits on eviction. Donut RD regressions exclude applicants who are under age 50 or 55 by 1 to 5 months. 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. Sample excludes FIPS county codes of residence at application that have an average of fewer than fifteen recorded events per year during 2005–2014. 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 1 to 5 months or fewer for standard RD and by 6 to 10 months or fewer for donut RD. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A16: 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.		Pt. Est.		Pt. Est.		Pt. Est.		Pt. Est.		
	(Std. Err.)		(Std. Err.)		(Std. Err.)		(Std. Err.)		(Std. Err.)		
	[Cntrl. Mean]		[Cntrl. Mean]		[Cntrl. Mean]		[Cntrl. Mean]		[Cntrl. Mean]		
	Standard RD	Donut RD	Standard RD	Donut RD	Standard RD	Donut RD	Standard RD	Donut RD	Standard RD	Donut RD	
Bankruptcy											
	0.135***	0.181***	0.0499***	0.0628***	-0.000703**	-0.000656	-0.00117**	-0.000930	-0.00101*	-0.000671	Standard RD: 2.22
	(0.00142)	(0.00185)	(0.00133)	(0.00183)	(0.000324)	(0.000438)	(0.000459)	(0.000620)	(0.000516)	(0.000698)	Donut RD: 1.99
	[0.399]	[0.303]	[0.653]	[0.604]	[0.0121]	[0.0123]	[0.0254]	[0.0251]	[0.0324]	[0.0322]	
Foreclosure (conditional on homeownership)											
	0.148***	0.218***	0.0431***	0.0598***	-0.00299***	-0.00288**	-0.00357***	-0.00378**	-0.00334**	-0.00310*	Standard RD: 0.60
	(0.00260)	(0.00346)	(0.00237)	(0.00337)	(0.000833)	(0.00115)	(0.00117)	(0.00163)	(0.00131)	(0.00181)	Donut RD: 0.54
	[0.462]	[0.333]	[0.707]	[0.707]	[0.0250]	[0.0250]	[0.0516]	[0.0518]	[0.0651]	[0.0647]	
Eviction (conditional on non-homeownership											
	0.143***	0.197***	0.0619***	0.0829***	0.000457	-0.000555	0.00143	0.00144	0.00184	0.00248	Standard RD: 0.64
	(0.00259)	(0.00340)	(0.00252)	(0.00347)	(0.000723)	(0.00100)	(0.00114)	(0.00156)	(0.00136)	(0.00186)	Donut RD: 0.57
	[0.423]	[0.312]	[0.602]	[0.534]	[0.0195]	[0.0203]	[0.0503]	[0.0510]	[0.0735]	[0.0740]	
Net home-sale (conditional on homeownership)											
	0.146***	0.211***	0.0433***	0.0581***	-0.00208**	-0.00294**	-0.00222*	-0.00354**	-0.000528	-0.000976	Standard RD: 1.06
	(0.00199)	(0.00265)	(0.00179)	(0.00254)	(0.000845)	(0.00116)	(0.00129)	(0.00178)	(0.00150)	(0.00206)	Donut RD: 0.95
	[0.461]	[0.337]	[0.715]	[0.662]	[0.0444]	[0.0452]	[0.114]	[0.115]	[0.163]	[0.164]	
Net home-purchase											
	0.136***	0.194***	0.0501***	0.0683***	0.00103***	0.00101***	0.00149***	0.00141**	0.00144***	0.00161**	Standard RD: 3.82
	(0.00105)	(0.00137)	(0.00101)	(0.00139)	(0.000283)	(0.000382)	(0.000439)	(0.000591)	(0.000508)	(0.000683)	Donut RD: 3.43
	[0.409]	[0.297]	[0.639]	[0.580]	[0.0174]	[0.0188]	[0.0440]	[0.0464]	[0.0597]	[0.0629]	

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). 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 55 by 1 to 5 months or fewer for standard RD and by 6 to 10 months or fewer for donut RD. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A17: Instrumental Variable Estimates for Earnings and Total Income

	Within 1 year Pt. Est. (Std. Err.) [Cntrl. Mean]		Within 3 years Pt. Est. (Std. Err.) [Cntrl. Mean]		N (in millions)
	Standard RD	Donut RD	Standard RD	Donut RD	
Earnings					
	-341.1**	-700.7***	-901.3***	-1,229***	Standard RD: 2.19
	(172.9)	(175.2)	(151.3)	(156.0)	Donut RD: 1.96
	[$3,471]	[$3,596]	[$2,891]	[$3,090]	
Total Income					
	1,442***	1,221***	-19.91	-360.5**	Standard RD: 2.19
	(190.1)	(191.2)	(171.8)	(174.6)	Donut RD: 1.96
	[$5,297]	[$5,201]	[$5,238]	[$5,316]	

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 1 to 5 months or fewer for standard RD and by 6 to 10 months or fewer for donut RD. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A18: IV Estimates with Cumulative Benefits as the Endogenous Variable (20 Percent Sample)

	Within 1 year Pt. Est. (Std. Err.) [Cntrl. Mean]		Within 3 years Pt. Est. (Std. Err.) [Cntrl. Mean]		Within 5 years Pt. Est. (Std. Err.) [Cntrl. Mean]		N (in millions)
	Standard RD	Donut RD	Standard RD	Donut RD	Standard RD	Donut RD	
Bankruptcy							
	-0.00565	-0.00307	-0.00374	-0.000517	-0.00328	-0.00157	Standard RD: 0.50
	(0.00389)	(0.00467)	(0.00547)	(0.0066)	(0.00613)	(0.00746)	Donut RD: 0.45
	[0.0121]	[0.0123]	[0.0254]	[0.0251]	[0.0324]	[0.0322]	
Foreclosure (conditional on homeownership)							
	-0.0137	-0.00276	-0.0153	-0.0106	-0.0222	-0.00914	Standard RD: 0.14
	(0.0111)	(0.0103)	(0.0155)	(0.0147)	(0.0174)	(0.0163)	Donut RD: 0.12
	[0.0250]	[0.0250]	[0.0516]	[0.0518]	[0.0651]	[0.0647]	
Net home-sale (conditional on homeownership)							
	-0.0223	-0.0128	-0.0276	-0.0165	-0.0239	-0.0106	Standard RD: 0.23
	(0.0103)	(0.0102)	(0.0156)	(0.0156)	(0.0179)	(0.018)	Donut RD: 0.21
	[0.0444]	[0.0452]	[0.114]	[0.115]	[0.163]	[0.164]	
Net home-purchase							
	0.00706	0.00620	0.00516	0.00565	0.00138	0.00200	Standard RD: 0.88
	(0.00415)	(0.00414)	(0.00644)	(0.00643)	(0.00747)	(0.00746)	Donut RD: 0.79
	[0.0174]	[0.0188]	[0.0440]	[0.0464]	[0.0597]	[0.0629]	

Notes: This table reports standard RD and donut RD instrumental-variable estimates of the effect of disability-program benefits on financial outcomes. The endogenous variable is the cumulative benefits in \$10,000. Donut RD regressions exclude applicants who are under age 50 or 55 by 1 to 5 months. The data for this table only consist of a 20-percent random sample of disability-program applicants. In addition, 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 "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 "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 1 to 5 months or fewer for standard RD and by 6 to 10 months or fewer for donut RD. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A19: Robustness Check—Reduced Form Estimates by Donut RD Specification

	Within three years			
	Standard RD Pt. Est. (Std. Err.) [Cntrl. Mean]	3-month Donut RD Pt. Est. (Std. Err.) [Cntrl. Mean]	6-month Donut RD Pt. Est. (Std. Err.) [Cntrl. Mean]	N (in millions)
Bankruptcy				
	-0.00117**	-0.00155***	-0.000930	Standard RD: 2.22
	(0.000459)	(0.000510)	(0.000620)	Donut RD (3-month): 2.13
	[0.0254]	[0.0261]	[0.0251]	Donut RD (6-month): 1.99
Foreclosure (conditional on homeownership)				
	-0.00357***	-0.00379***	-0.00378**	Standard RD: 0.60
	(0.00117)	(0.00131)	(0.00163)	Donut RD (3-month): 0.58
	[0.0516]	[0.0517]	[0.0518]	Donut RD (6-month): 0.54
Eviction (conditional on non-homeownership)				
	0.00143	0.00107	0.00144	Standard RD: 0.64
	(0.00114)	(0.00127)	(0.00156)	Donut RD (3-month): 0.61
	[0.0503]	[0.0507]	[0.0510]	Donut RD (6-month): 0.57
Net home-sale (conditional on homeownership)				
	-0.00222*	-0.00353**	-0.00354**	Standard RD: 1.06
	(0.00129)	(0.00144)	(0.00178)	Donut RD (3-month): 1.02
	[0.114]	[0.116]	[0.115]	Donut RD (6-month): 0.95
Net home-purchase				
	0.00149***	0.00143***	0.00141**	Standard RD: 3.82
	(0.000439)	(0.000485)	(0.000591)	Donut RD (3-month): 3.67
	[0.0440]	[0.0440]	[0.0464]	Donut RD (6-month): 3.43

Notes: This table reports reduced-form estimates of the effect of disability-program benefits on financial outcomes within three years of initial allowance. Three-month donut RD regressions exclude applicants who are under age 50 or 55 by 1 to 2 months; six-month 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 1 to 5 months or fewer for standard RD and by 6 to 10 months or fewer for donut RD. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A20: Robustness Check—Instrumental Variable Estimates by Donut RD Specification

	Within three years			
	Standard RD Pt. Est. (Std. Err.) [Cntrl. Mean]	3-month Donut RD Pt. Est. (Std. Err.) [Cntrl. Mean]	6-month Donut RD Pt. Est. (Std. Err.) [Cntrl. Mean]	N (in millions)
Bankruptcy				
	-0.00868**	-0.0100***	-0.00513	Standard RD: 2.22
	(0.00341)	(0.00330)	(0.00342)	Donut RD (3-month): 2.13
	[0.0254]	[0.0261]	[0.0251]	Donut RD (6-month): 1.99
Foreclosure (conditional on homeownership)				
	-0.0242***	-0.0212***	-0.0173**	Standard RD: 0.60
	(0.00794)	(0.00731)	(0.00747)	Donut RD (3-month): 0.58
	[0.0516]	[0.0517]	[0.0518]	Donut RD (6-month): 0.54
Eviction (conditional on non-homeownership)				
	0.01000	0.00635	0.00734	Standard RD: 0.64
	(0.00797)	(0.00760)	(0.00796)	Donut RD (3-month): 0.61
	[0.0503]	[0.0507]	[0.0510]	Donut RD (6-month): 0.57
Net home-sale (conditional on homeownership)				
	-0.0152*	-0.0203**	-0.0168**	Standard RD: 1.06
	(0.00886)	(0.00831)	(0.00843)	Donut RD (3-month): 1.02
	[0.114]	[0.116]	[0.115]	Donut RD (6-month): 0.95
Net home-purchase				
	0.0110***	0.00891***	0.00724**	Standard RD: 3.82
	(0.00322)	(0.00301)	(0.00304)	Donut RD (3-month): 3.67
	[0.0440]	[0.0440]	[0.0464]	Donut RD (6-month): 3.43

Notes: This table reports instrumental-variable estimates of the effect of disability-program benefits on financial outcomes within three years of initial allowance. Three-month donut RD regressions exclude applicants who are under age 50 or 55 by 1 to 2 months; six-month 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 1 to 5 months or fewer for standard RD and by 6 to 10 months or fewer for donut RD. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A21: Falsification Test—IV Estimates for Applicants Who Did Not Reach Step 5

	Within 1 year Pt. Est. (Std. Err.) [Cntrl. Mean]		Within 3 years Pt. Est. (Std. Err.) [Cntrl. Mean]		Within 5 years Pt. Est. (Std. Err.) [Cntrl. Mean]		N (in millions)
	Standard RD	Donut RD	Standard RD	Donut RD	Standard RD	Donut RD	
Bankruptcy							
	0.0116	0.0343	-0.00631	0.0331	-0.00610	0.0367	Standard RD: 2.27
	(0.0237)	(0.0278)	(0.0334)	(0.0390)	(0.0376)	(0.0438)	Donut RD: 2.04
	[0.0122]	[0.0122]	[0.0250]	[0.0253]	[0.0319]	[0.0323]	
Foreclosure (conditional on homeownership)							
	0.0531	0.0930	0.0908	0.127	0.0233	0.124	Standard RD: 0.55
	(0.0776)	(0.114)	(0.111)	(0.161)	(0.122)	(0.179)	Donut RD: 0.49
	[0.0250]	[0.0250]	[0.0516]	[0.0518]	[0.0651]	[0.0647]	
Eviction (conditional on non-homeownership)							
	0.0120	0.0149	0.0849	0.0314	0.122	0.0725	Standard RD: 0.52
	(0.0748)	(0.0741)	(0.120)	(0.116)	(0.143)	(0.140)	Donut RD: 0.47
	[0.0195]	[0.0203]	[0.0503]	[0.0510]	[0.0735]	[0.0740]	
Net home-sale (conditional on homeownership)							
	0.0616	0.0803	0.255**	0.358**	0.314**	0.433**	Standard RD: 1.02
	(0.0818)	(0.0959)	(0.128)	(0.158)	(0.148)	(0.183)	Donut RD: 0.91
	[0.0444]	[0.0452]	[0.114]	[0.115]	[0.163]	[0.164]	
Net home-purchase							
	-0.0453*	-0.00278	-0.0630	-0.00930	-0.0157	0.0303	Standard RD: 3.48
	(0.0262)	(0.0300)	(0.0402)	(0.0460)	(0.0458)	(0.0531)	Donut RD: 3.12
	[0.0177]	[0.0176]	[0.0446]	[0.0438]	[0.0607]	[0.0595]	

Notes: This table reports instrumental-variable estimates from the falsification test based on applicants who did *not* reach step 5 of the disability determination process. The "bankruptcy" regressions are based on the bankruptcy sample: disability-program applicants who did *not* 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 did *not* 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 did *not* 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 did *not* 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 Codes of residence at application that have an average of fewer 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 1 to 5 months or fewer for standard RD and by 6 to 10 months or fewer for donut RD. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A22: IV Set Estimates with Manipulated Running Variables (Gerard et al., Forthcoming)

	Within 3 years after initial allowance	
	Lower bound	Upper bound
Bankruptcy	-0.148	-0.001
Foreclosure (conditional on homeownership)	-0.254	-0.002
Eviction	-0.256	0.035
Net home sale (conditional on homeownership)	-0.347	0.048
Net home purchase	-0.212	0.034

Notes: This table reports set estimates of the effect of disability-program benefits on financial outcomes after the initial decision using the procedure suggested by Gerard et al. (Forthcoming). 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.

Table A23: Robustness Check—IV Estimates Controlling for Applicant Characteristics

	Within 1 year Pt. Est. (Std. Err.) [Cntrl. Mean]		Within 3 years Pt. Est. (Std. Err.) [Cntrl. Mean]		Within 5 years Pt. Est. (Std. Err.) [Cntrl. Mean]		N (in millions)
	Standard RD	Donut RD	Standard RD	Donut RD	Standard RD	Donut RD	
Bankruptcy							
	-0.00471*	-0.00301	-0.00707**	-0.00392	-0.00622	-0.00249	Standard RD: 1.99
	(0.00255)	(0.00255)	(0.00360)	(0.00359)	(0.00405)	(0.00404)	Donut RD: 1.79
	[0.0121]	[0.0123]	[0.0254]	[0.0251]	[0.0324]	[0.0322]	
Foreclosure (conditional on homeownership)							
	-0.0199***	-0.0138**	-0.0240***	-0.0176**	-0.0230**	-0.0150*	Standard RD: 0.58
	(0.00573)	(0.00539)	(0.00806)	(0.00758)	(0.00896)	(0.00844)	Donut RD: 0.52
	[0.0250]	[0.0250]	[0.0516]	[0.0518]	[0.0651]	[0.0647]	
Eviction (conditional on non-homeownership)							
	0.00465	-0.00114	0.0111	0.00730	0.0135	0.0115	Standard RD: 0.60
	(0.00520)	(0.00525)	(0.00821)	(0.00821)	(0.00976)	(0.00973)	Donut RD: 0.54
	[0.0195]	[0.0203]	[0.0503]	[0.0510]	[0.0735]	[0.0740]	
Net home-sale (conditional on homeownership)							
	-0.0176***	-0.0174***	-0.0213**	-0.0222**	-0.0127	-0.0116	Standard RD: 1.06
	(0.00597)	(0.00569)	(0.00913)	(0.00866)	(0.0106)	(0.0100)	Donut RD: 0.95
	[0.0444]	[0.0452]	[0.114]	[0.115]	[0.163]	[0.164]	
Net home-purchase							
	0.00610***	0.00410**	0.00850***	0.00522*	0.00705*	0.00510	Standard RD: 3.55
	(0.00213)	(0.00200)	(0.00326)	(0.00306)	(0.00376)	(0.00352)	Donut RD: 3.18
	[0.0174]	[0.0188]	[0.0440]	[0.0464]	[0.0597]	[0.0629]	

Notes: This table reports standard RD and donut RD instrumental-variable estimates of the effect of disability-program benefits on financial outcomes controlling for applicant characteristics. 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 1 to 5 months or fewer for Standard RD and by 6 to 10 months or fewer for Donut RD. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A24: Instrumental Variable Estimates by Subgroup

	After initial allowance—within 3 years			
	Pt. Est.	(Std. Err.)	Cntrl. Mean	N (in millions)
Bankruptcy				
All	-0.00513	(0.00342)	[0.0251]	1.99
Less than high school education	-0.00667	(0.00495)	[0.0187]	0.58
High school or more	-0.00305	(0.00477)	[0.0275]	1.23
Male	0.00132	(0.00441)	[0.0231]	1.05
Female	-0.0135**	(0.00577)	[0.0280]	0.86
SSDI adults	-0.00379	(0.00427)	[0.0308]	1.25
SSI adults	-0.00678*	(0.00380)	[0.0179]	0.99
Foreclosure (conditional on homeownership)				
All	-0.0173**	(0.00747)	[0.0518]	0.54
Less than high school education	-0.00602	(0.0153)	[0.0483]	0.11
High school or more	-0.0197**	(0.00872)	[0.0527]	0.41
Male	-0.0220**	(0.00958)	[0.0532]	0.29
Female	-0.0115	(0.0122)	[0.0499]	0.24
SSDI adults	-0.0203**	(0.00794)	[0.0537]	0.44
SSI adults	-0.0225*	(0.0124)	[0.0524]	0.18
Net home sale (conditional on homeownership)				
All	-0.0168**	(0.00843)	[0.115]	0.95
Less than high school education	-0.0240	(0.0162)	[0.101]	0.20
High school or more	-0.0198*	(0.0101)	[0.118]	0.69
Male	-0.0131	(0.0107)	[0.111]	0.51
Female	-0.0212	(0.0141)	[0.121]	0.42
SSDI adults	-0.0215**	(0.00893)	[0.119]	0.76
SSI adults	-0.00399	(0.0139)	[0.102]	0.30
Net home purchase				
All	0.00724**	(0.00304)	[0.0464]	3.43
Less than high school education	0.00953**	(0.00438)	[0.0279]	0.99
High school or more	0.00766*	(0.00407)	[0.0499]	2.23
Male	0.00988**	(0.00398)	[0.0439]	1.82
Female	0.00487	(0.00502)	[0.0450]	1.47
SSDI adults	0.00922**	(0.00403)	[0.0573]	2.22
SSI adults	0.00192	(0.00279)	[0.0198]	1.81

Notes: This table reports donut RD instrumental-variable estimates of the effect of being 50 years or older and 55 years or older at the initial decision date on reduced-form financial outcomes within three years of initial allowance by subgroups. 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. 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 or bankruptcy 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 net home-sale or net home-purchase outcomes exclude ZIP Codes of residence at application that have an average of less than fifteen recorded corresponding events per year during 2000–2014. Control means are the average value of the variable for applicants who are under age 50 or 55 by 6 to 10 months. Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

References

American Information Research Services, "Bulk Eviction Data," 2016.

Anenberg, Elliot and Edward Kung, "Estimates of the Size and Source of Price Declines Due to Nearby Foreclosures," *American Economic Review*, August 2014, *104* (8), 2527–51.

Apgar, William C., Mark Duda, and Rochelle Nawrocki Gorey, "The Municipal Cost of Foreclosures: A Chicago Case Study," *Homeownership Preservation Foundation*, 2005, pp. 1–57.

ArcGIS Online, "United States ZIP Code Boundaries 2017," 2017. https://www.arcgis.com/home/item.html?id=78778fe9e4244f71b8194122d1f228ae.

Autor, David, Andreas Kostl, Magne Mogstad, and Bradley Setzler, "Disability Benefits, Consumption Insurance, and Household Labor Supply," *American Economic Review*, July 2019, *109* (7), 2613–54.

Autor, David H, Nicole Maestas, Kathleen J Mullen, and Alexander Strand, "Does Delay Cause Decay? The Effect of Administrative Decision Time on the Labor Force Participation and Earnings of Disability Applicants," Working Paper 20840, National Bureau of Economic Research January 2015.

Baicker, Katherine, Sarah L. Taubman, Heidi L. Allen, Mira Bernstein, Jonathan H. Gruber, Joseph P. Newhouse, Eric C. Schneider, Bill J. Wright, Alan M. Zaslavsky, and Amy N. Finkelstein, "The Oregon experiment—Effects of Medicaid on clinical outcomes," *New England Journal of Medicine*, 2013, *368* (18), 1713–1722.

Baily, Martin Neil, "Some Aspects of Optimal Unemployment Insurance," *Journal of Public Economics*, 1978, *10* (3), 379–402.

Bound, John, "The Health and Earnings of Rejected Disability Insurance Applicants," *American Economic Review*, 1989, *79* (3), 482–503.

Bronchetti, Erin Todd, "Workers' compensation and consumption smoothing," *Journal of Public Economics*, 2012, *96* (5), 495 – 508.

Campbell, John Y., Stefano Giglio, and Parag Pathak, "Forced Sales and House prices," *American Economic Review*, 2011, *101* (5), 2108–2131.

Carey, Colleen, Nolan Miller, and David Molitor, "Why Does Disability Increase During Recessions? Evidence from Medicare," 2019. Unpublished.

Chen, Susan and Wilbert van der Klaauw, "The Work Disincentive Effects of the Disability Insurance Program in the 1990s," *Journal of Econometrics*, 2008, *142* (2), 757–784.

Chetty, Raj, "A general formula for the optimal level of social insurance," *Journal of Public Economics*, 2006, *90* (10-11), 1879–1901.

CoreLogic, Inc., "CoreLogic Deeds and Deeds History Records," 2016.

CoreLogic, Inc., "CoreLogic Foreclosure Records," 2016.

Desmond, Matthew, *Evicted: Poverty and Profit in the American City*, New York: Crown, 2016.

Dobkin, Carlos, Amy Finkelstein, Raymond Kluender, and Matthew J. Notowidigdo, "The Economic Consequences of Hospital Admissions," *American Economic Review*, 2018, *108* (2), 308–52.

Evans, William N and Timothy J Moore, "The short-term mortality consequences of income receipt," *Journal of Public Economics*, 2011, *95* (11-12), 1410–1424.

Finkelstein, Amy, Nathaniel Hendren, and Erzo F.P. Luttmer, "The Value of Medicaid: Interpreting Results from the Oregon Health Insurance Experiment," *Journal of Political Economy*, December 2019.

French, Eric and Jae Song, "The Effect of Disability Insurance Receipt on Labor Supply," *American Economic Journal: Economic Policy*, 2014, *6* (2), 291–337.

Gallagher, Emily A., Radhakrishnan Gopalan, and Michal Grinstein-Weiss, "The effect of health insurance on home payment delinquency: Evidence from ACA Marketplace subsidies," *Journal of Public Economics*, 2019, *172*, 67 – 83.

Gelber, Alexander, Timothy Moore, and Alexander Strand, "Disability Insurance Income Saves Lives," Working Paper 18-005, Stanford Institute for Economic Policy Research March 2018.

Gerard, François, Miikka Rokkanen, and Christoph Rothe, "Bounds on Treatment Effects in Regression Discontinuity Designs with a Manipulated Running Variable," *Quantitative Economics*, Forthcoming.

Gross, Tal, "Eviction Records from Harris County, TX Court Filings.," 2016. Unpublished data.

Gross, Tal and Brad Trenkamp, "Risk of Bankruptcy among Applicants to Disability Insurance," *Journal of health care for the poor and underserved*, 2015, *26* (4), 1149–1156.

_ **, Matthew J. Notowidigdo, and Jialan Wang**, "The Marginal Propensity to Consume over the Business Cycle," *American Economic Journal: Macroeconomics*, April 2020, *12* (2), 351–84.

Gruber, Jonathan, "The consumption smoothing benefits of unemployment insurance," *American Economic Review*, 1997, *87* (1), 192.

Hendren, Nathaniel, "The Policy Elasticity," *Tax Policy and the Economy*, 2016, *30* (1), 51–89.

_ , "Efficient Welfare Weights," Working Paper 20351, National Bureau of Economic Research December 2019.

Hsu, Joanne W., David A. Matsa, and Brian T. Melzer, "Unemployment Insurance as a Housing Market Stabilizer," *American Economic Review*, January 2018, *108* (1), 49–81.

Jacobs, Bas, "The marginal cost of public funds is one at the optimal tax system," *International Tax and Public Finance*, Aug 2018, *25* (4), 883–912.

Kolsrud, Jonas, Camille Landais, Peter Nilsson, and Johannes Spinnewijn, "The Optimal Timing of Unemployment Benefits: Theory and Evidence from Sweden," *American Economic Review*, April 2018, *108* (4-5), 985–1033.

Lawson, Nicholas, "Fiscal Externalities and Optimal Unemployment Insurance," *American Economic Journal: Economic Policy*, November 2017, *9* (4), 281–312.

Low, Hamish and Luigi Pistaferri, "Disability Insurance and the Dynamics of the Incentive Insurance Trade-Off," *American Economic Review*, October 2015, *105* (10), 2986–3029.

Lusardi, Annamaria, Daniel Schneider, and Peter Tufano, "Financially Fragile Households: Evidence and Implications," *Brookings Papers on Economic Activity*, 2011, p. 83.

Maestas, Nicole, Kathleen Mullen, and Alexander Strand, "Does Disability Insurance Receipt Discourage Work? Using Examiner Assignment to Estimate Causal Effects of SSDI Receipt," *American Economic Review*, 2013, *103* (5), 1797–1829.

McCrary, Justin, "Manipulation of the running variable in the regression discontinuity design: A density test," *Journal of Econometrics*, 2008, *142* (2), 698–714.

Meyer, Bruce D. and Wallace K.C. Mok, "Disability, earnings, income and consumption," *Journal of Public Economics*, 2018.

Moore, Timothy, "The employment effects of terminating disability benefits," *Journal of Public Economics*, 2015, *124*, 30 – 43.

Prenovitz, Sarah, "Effects of DI Wait Time on Health and Financial Well-Being," 2018. Unpublished.

PSID, "Panel Study of Income Dynamics, public use dataset," 2018. Data produced and distributed by the Survey Research Center, Institute for Social Research, University of Michigan, Ann Arbor, MI. Supplementary data is stored on PSID Public Data Extract Repository https://doi.org/10.3886/E119421V1.

Social Security Administration, "831 Disability File," 2014.

_ , "Master Beneficiary Record," 2014.

_ , "Master Earnings File," 2014.

_ , "Structured Data Repository," 2014.

_ , "Supplemental Security Record," 2014.

_ , *Program Operations Manual System (DI 25025.035)* 2015. http://policy.ssa.gov/poms.nsf/lnx/0425025035 (accessed February 8, 2018).

_ , *Annual Statistical Report on the Social Security Disability Insurance Program, 2018* 2019.

_ , *Fast Facts and Figures About Social Security, 2019* 2019.

U.S. Bureau of Labor Statistics, "Consumer Price Index for All Urban Consumers: All Items in U.S. City Average [CPIAUCNS]," 2016. "https://fred.stlouisfed.org/series/CPIAUCNS (retrieved from FRED, Federal Reserve Bank of St. Louis; July 17, 2017)".

U.S. Census Bureau, "2010 United States Census," 2010. (accessed July 17, 2017).

U.S. Department of Housing and Urban Development, "Economic Impact Analysis of the FHA Refinance Program for Borrowers in Negative Equity Positions," 2010.

von Wachter, Till, Jae Song, and Joyce Manchester, "Trends in Employment and Earnings of Allowed and Rejected Applicants to the Social Security Disability Insurance Program," *American Economic Review*, December 2011, *101* (7), 3308–29.

Wixon, Bernard and Alexander Strand, "Identifying SSA' s Sequential Disability Determination Steps," *Social Security Administration Research and Statistics Note*, 2013, pp. 1–16.

Zillow Research, "Zillow Transaction and Assessment Dataset.," 2016.