

Do Stronger Age Discrimination Laws Make Social Security Reforms More Effective?

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I. Introduction

In coming decades the share of the population aged 65 and over (“seniors”) will rise sharply – from 17 percent of those aged 20 and over in 2000, to 28 percent in 2050 (projected) – and will approach equality with the share aged 45-64 by the middle of the century (Neumark, 2008). This aging of the population will pose fundamental public policy challenges over the next few decades. Most significantly, the very low employment rate of seniors implies slowing labor force growth relative to population, and a rising dependency ratio. This creates an imperative to increase the employment of older individuals, thereby lowering dependency ratios, raising tax revenues, and – as programs are currently structured – decreasing public expenditures on health insurance, retirement benefits, and income support.

Population aging and the need to increase employment of seniors is most strongly tied to the solvency of Social Security, which has led to numerous reforms intended to increase the employment (or hours) of those who would otherwise retire, including: raising the normal retirement age (NRA) from 65 to 67 beginning with the 1938 birth cohort which reached age 65 in 2003, with the NRA rising fairly quickly to 66 for the 1943-1954 birth cohorts (American Academy of Actuaries, 2002; Munnell et al., 2004); and changes in taxation of benefits including reductions in the marginal tax rate on earnings of Social Security recipients in excess of the earnings cap, increases in the exempt amount of earnings (the cap), and broadening of the ages not subject to the earnings test (Friedberg, 2000). And additional changes are likely to be considered as part of efforts to shore up the solvency of Social Security or to reform the system.

The need to delay retirements of older workers, however, may be frustrated by age discrimination. Although the federal Age Discrimination in Employment Act (ADEA) and state age discrimination laws have helped reduce age discrimination in terminations, evidence suggests that age discrimination remains pervasive, especially with regard to hiring older workers (e.g., Adams, 2002, 2004; Bendick et al., 1996, 1999; Hirsch et al., 2000; Hutchens, 1988; Johnson and Neumark, 1997; Kite et al., 2005; Lahey, 2008a).¹ Even though research suggests that age discrimination laws have been effective at increasing employment of protected workers, (Neumark and Stock, 1999; Adams, 2004), the ADEA may be less effective at

¹ The evidence is not cut and dried, however. The following section of the paper reviews this evidence fully, and discusses some of its limitations.

combating hiring discrimination because in hiring cases it is difficult to identify a class of affected workers, and economic damages are smaller than in termination cases (Adams, 2004; Bloch, 1994; Lahey, 2008b; Posner, 1995). This implies that age discrimination may pose particular challenges to efforts to keep workers who might otherwise retire (“seniors”) employed, because increased employment among seniors would likely come largely from new employment in part-time or shorter-term “partial retirement” or “bridge jobs,” rather than from continued employment of workers in their long-term career jobs (e.g., Cahill et al., 2005; Johnson et al., 2009).

If age discrimination deters the employment of older workers, especially beyond what has until recently been the “normal” retirement age of 65, then supply-side incentives – via changes to Social Security as well as other policies – may be rendered less effective or ineffective. A key policy question, then, is whether there are policy complementarities between supply-side efforts to increase labor supply and demand-side efforts to deter age discrimination. In this paper, we consider the specific question of whether stronger age discrimination protections at the *state* level increased the impact – in terms of reducing retirement and increasing employment – from the increases in Social Security’s NRA that occurred in the past decade. We focus on state-level age discrimination laws because, during the period when the NRA began to increase, there were no changes in federal age discrimination law that could be used as identifying variation. Other research – on both age discrimination and discrimination along other dimensions – has found that state discrimination laws can have important effects on labor market outcomes.²

II. Research on Age Discrimination and Age Discrimination Laws

Age Discrimination

Economic research on discrimination – whether on the basis of age or other characteristics – has been and remains controversial. Nonetheless, there is plenty of evidence consistent with age discrimination, both before and after the ADEA. Although this evidence does not decisively rule out alternative interpretations, it is sufficiently compelling that we have to view age discrimination as plausibly

² Research on age discrimination is discussed in the next section. Examples of papers looking at race or sex discrimination include Chay (1998) and Neumark and Stock (2006).

continuing to exert an adverse influence on labor market outcomes for older workers. This, in turn, motivates consideration of the role of laws protecting older workers from discrimination in removing barriers to increasing the employment of seniors and other older individuals.

In the Becker (1957) model, a group suffers from discrimination if employers, other workers, or consumers dislike interactions with members of the group, which is reflected in market transactions. In this model, discrimination stems from “animus.” An alternative that may be more relevant to the case of older workers, yet have similar observable consequences, is that employers hold negative stereotypes about the abilities of older individuals, which may be incorrect. Finally, much of the economics literature on age discrimination is framed in terms of the Lazear (1979) long-term incentive contract (LTIC) model, in which employers pay young, low-tenured workers less than their marginal product, and older, high-tenured workers more than their marginal product, to create incentives for the worker to work hard and avoid losing his job.

The LTIC model provides potential explanations for differential treatment of workers based on age, along a number of dimensions. First, the model suggests an explanation of mandatory retirement, because older workers have wages in excess of the marginal value of their leisure at the date at which, over their career with the firm, the discounted stream of wage payments catches up to the discounted stream of marginal productivity – a date on which, *ex ante*, workers are willing to accept mandatory retirement (Lazear, 1979). Second, LTIC’s may deter hiring of older workers, because these contracts likely impose fixed costs that can be amortized only over a shorter period for older workers (Hutchens, 1986). (Barriers to paying newly-hired older workers much lower wages than current older workers can lead to the same result.) And third, LTIC’s provide an incentive for the employer to renege on the implicit contract, discharging workers unfairly (i.e., not for “shirking”) before their retirement date, so as to pocket some of the difference between a worker’s productivity and compensation to that point. Whether the differential treatment of workers based on age implied by this model represents discrimination may be a semantic issue; however, it has been interpreted as such from a legal perspective (Issacharoff and Harris, 1997), as well as in the economics literature (e.g., Gottschalk, 1982; Cornwell et al., 1991).

Evidence from the pre-ADEA period (Miller, 1966) indicated that older workers who lost their jobs had a more difficult time finding new jobs than did “prime-age” workers, with longer durations of unemployment. In addition, survey evidence of hiring practices found that workers over age 45 were 25 percent of the unemployed, but only 8.6 percent of new hires. Shapiro and Sandell (1985) provided additional evidence of re-employment difficulties for displaced older workers, using data from the National Longitudinal Survey of Older Men (NLSOM). Finally, there was extensive evidence of explicit age restrictions in hiring. For example, in five cities in states without anti-age discrimination statutes, nearly 60 percent of employers imposed upper age limits (usually between ages 45 and 55) on new hires (U.S. Department of Labor, 1965).

The upper age limits for hires may have been due to negative stereotypes. Rosen and Jerdee (1977) provided evidence that managers perceived older workers as less flexible and more resistant to change, and suggested that these attitudes likely had real impacts in denying older workers opportunity, although their evidence is based only on managerial responses to hypothetical scenarios. Subsequent research further corroborated the importance of negative stereotypes about older workers that had adverse effects on their labor market outcomes (e.g., Finkelstein et al., 1995; Kite et al., 2005).

The enactment of the ADEA has surely resulted in the elimination of explicit upper age limits for jobs. However, older workers are still considerably more likely than younger workers to have long unemployment durations (U.S. Department of Labor, Bureau of Labor Statistics, 2007). Of course, as in the earlier period, longer durations do not necessarily reflect discrimination against older workers. Moreover, unemployment *rates* of older individuals are lower than those of other age groups, although some older individuals may not show up as unemployed because they face poor job prospects and therefore simply decide to retire.

Research on age discrimination and its consequences based on self-reported data suggests that employers may discriminate against older workers and that this discrimination has adverse consequences. Using NLSOM data, Johnson and Neumark (1997) study responses to the question “During the past five years, do you feel that so far as work is concerned, you were discriminated against because of your age?”

To avoid the effects of unobserved individual differences in the propensity to report discrimination that might be correlated with labor market behavior, they focus on individuals who switch from reporting no age discrimination to reporting age discrimination. And to account for adverse changes in job characteristics or experiences on the job that might cause a worker to begin reporting age discrimination, they control for job satisfaction. Among those with jobs for whom the question is asked, 7 percent of older men reported age discrimination; this would not include discrimination in hiring experienced by the non-employed. Johnson and Neumark find that workers who start to report age discrimination are more likely to separate from their employer and less likely to be employed subsequently, and that those who separate for this reason suffer a wage loss of 10 percent. Adams (2002) studies self-reported age discrimination in the Health and Retirement Study (HRS). He finds that older workers reporting that their employer gives preference to younger workers in promotions have lower wage growth and a reduced expectation of working past the early or normal Social Security retirement age. Again, because self-reports can reflect negative outcomes other than discrimination, Adams includes controls for the perceived work environment and fairness of pay.

Other research focuses explicitly on hiring, although typically seniors (65 and over) are excluded. Based on Current Population Survey (CPS) data, Hutchens (1988) shows that newly-hired older workers were clustered in a smaller set of industries and occupations than were either newly-hired younger workers or older workers in general, and he suggests that this clustering reflected hiring discrimination. Hirsch et al. (2000) present similar results (by occupation) for more recent data. They report only slight improvement over time in the occupational segregation facing “new older hires,” and hence suggest that the problem did not diminish in the period they studied.

“Audit studies” and “correspondence studies,” while more commonly used to study race or sex discrimination in hiring (e.g., Fix and Struyk, 1993; Neumark, 1996; Heckman, 1998; Riach and Rich, 2002), have also been used to study age discrimination. Two studies by Bendick and co-authors (1996, 1999) find evidence consistent with age discrimination against older workers. However, a fundamental problem with using this method to study age discrimination is that there is no natural way to make older

and younger workers look identical in all respects other than age. One would expect older workers to have more experience than younger workers (overall, and in a particular industry or occupation), but if the information used in the study reflected this, then the extra experience might favor older workers. Consequently, the authors tried to hold human capital constant by giving the older and younger applicants (aged 32 and 57) the same number of years (10) in the occupation for which they were applying, with the older applicants indicating that they had been out of the labor force raising children, working as a high school teacher, or in the military, depending on the job opening. However, this solution could bias the results in the opposite direction, with the fictitious experience negatively affecting the employer's assessment of the older applicants, as perhaps suggesting that interests lie elsewhere, work is not a priority, etc., generating spurious evidence of discrimination.

To address this problem, Lahey (2008a) studies hiring of women, for whom, she suggests, time out of the labor force (even if only inferred by the employer) is less likely to be a negative signal of ability, motivation, etc., than for men. She also studies entry-level jobs, so that one might think that previous experience is a bit less of an issue, and therefore includes only a 10-year job history. Lahey also finds evidence consistent with age discrimination, with older women (aged 50-62) significantly less likely to get a positive response or an interview than younger women (aged 35-45). Although Lahey's modifications are likely helpful, it is not clear that they fully solve the fundamental problem of making older and younger applicants look the same on paper. As a result of this problem, these studies should be viewed as providing at best suggestive evidence of age discrimination in hiring – much like the other evidence on age discrimination.

Research has also considered evidence on behavior emanating from the LTIC model that is more explicitly tied to age discrimination – most notably the hypothesis that LTIC's create incentives for employers to renege on long-term implicit commitments to workers.³ Although Lazear (1979) suggested

³ Of course a precursor to this research is whether the model is, more generally, applicable to understanding the labor market for older workers – in particular the age-earnings (and age-productivity) profile, from which the other implications issue. Although there is evidence pointing to other explanations of the age-earnings profile – in particular, the human capital model (Neumark and Taubman, 1995) and the forced-saving model (Neumark, 1995) – there is also a good deal of evidence that is most consistent with the LTIC model. Using data on earnings and

that reputation effects should deter this opportunistic behavior, reputation effects require strong conditions to work. For example, Neumark and Stock (1999) suggest that information asymmetries between workers and firms allow employers to claim that layoffs of older workers are due to changed economic conditions, which workers cannot fully verify. In addition, institutional innovations may arise that allow employers to “circumvent” damages to reputation stemming from opportunistic behavior. For example, abrogations of LTIC’s can occur following hostile takeovers, because when the company is subsequently resold the new owner suffers no loss of reputation (Shleifer and Summers, 1988; Gokhale et al., 1995). Indeed, there is evidence suggesting that firms renege on LTIC’s with older workers.⁴ And looking at hiring in the context of the LTIC model, Hutchens (1986) constructs an index for industry-occupation pairs measuring the hiring of older workers relative to the employment of older workers, so that lower values of the index indicate jobs that tend to employ but not hire older workers. He finds that the index is negatively related to job characteristics associated with LTIC’s, such as pensions and mandatory retirement, indicating that in such jobs hiring of older workers is suppressed.

Age Discrimination Laws

Neumark and Stock (1999) studied the effects of both the federal ADEA and state laws barring age discrimination. Using Decennial Census data covering 1940-1980, for white men, their analysis leads to two key findings regarding employment. The main findings are that age discrimination laws boost employment rates of the entire group of protected workers, but only slightly. However, the employment rates of protected workers aged 60 and over were increased substantially (by about 6 percentage points).⁵

productivity in manufacturing establishments, Hellerstein and Neumark (2007) find that wage profiles are steeper than productivity profiles, consistent with the LTIC model. Evidence on earnings profiles from firm-level data is also consistent with this model (Kotlikoff and Gokhale, 1992). Of course elements of each model may partially account for the age-earnings profile. The key point is that there is evidence consistent with wages being set in part according to the LTIC model, with wages higher than marginal product for older workers; this can create incentives for employers to treat older workers adversely.

⁴ Consistent with the argument regarding hostile takeovers, Gokhale et al. (1995) find that such takeovers are associated with reductions in employment of more senior workers, particularly where older workers earn relatively high wages. Other research finds evidence that hostile takeovers lead to terminations and reversions of pensions, interpreted as breaches of implicit contracts with long-term workers (Pontiff et al., 1999; Ippolito and James, 1992; Mitchell and Mulherin, 1989; Petersen, 1992).

⁵ Because some states enacted age discrimination laws prior to the ADEA, the effects of these state laws in this period are identified from changes in states passing laws relative to changes in other states in the same period, allowing changes for older relative to younger individuals common to all states to control for nationwide changes in the

Adams (2004) uses a similar research design, focusing on the mid-1960s when a number of states passed age discrimination statutes, and then the federal legislation took effect. He uses CPS data, and looks at a richer set of outcomes. Adams finds somewhat larger overall employment effects for protected workers, with an increase of 2.75 percentage points in their employment rate. When he focuses on either those aged 60 and older or 65 and older, he finds more substantial effects of around 3.6 to 4.1 percentage points.⁶ Using the same strategy, he finds that age discrimination laws are associated with lower probabilities that older protected individuals are retired.

Overall, the evidence indicates that both state and federal age discrimination laws increase employment of older individuals. In that sense, there is a good basis for studying how these laws might help raise employment among senior and more generally older population that will grow sharply in coming decades, and how these laws might interact with other policies and changes in the labor market. At the same time, there is not, at this point, evidence indicating that these laws increase *hiring* of older workers, which is problematic given that population aging and the labor force behavior of older individuals suggests that the most significant challenge in coming decades may be barriers to the hiring of older workers, and eliminating whatever role discrimination might play in hiring decisions. And, it is possible that the effect of these laws on hiring is adverse rather than beneficial, as discussed below.

A different perspective on age discrimination laws stems from Lazear's (1979) LTIC model. This model implies that mandatory retirement arises as an outcome of firms and workers solving the incentive problem, and although mandatory retirement is acceptable *ex ante* to workers, when the mandatory retirement date arrives the wages that workers are paid exceed the value of their leisure time, so that from the perspective of these workers mandatory retirement is undesirable *ex post*. Based on this reasoning,

behavior of older workers. Subsequently, the effects of the federal legislation are identified from the changes that occurred at the time of enactment of the ADEA in states that previously did not have their own law, relative to those states that previously had an age discrimination law. A potential limitation of this approach is that state laws and the federal law may not necessarily have the same effects. However, the results of Neumark and Stock suggest – as do those of Adams (2004) (discussed below) – that quite similar answers are obtained from examining variation in state and federal laws.

⁶ These results emerge both for the state quasi-experiment based on state anti-discrimination statutes prior to the ADEA, as well as the federal quasi-experiment based on federal legislation that came into effect but had different effects depending on whether the state already had a law.

Lazear argued that the central effect of the ADEA was the increase and subsequent elimination of mandatory retirement, which in his view would serve mainly to give a windfall to older workers through the elimination of mandatory retirement, while imposing longer-run efficiency costs by reducing the ability of workers and firms to enter into the LTIC's that arise in his model.

Neumark and Stock's (1999) research on age discrimination laws re-examined this critique of the ADEA. They first consider the other problem posed by LTIC's – specifically, that firms have an incentive to renege on these long-term contracts when workers are relatively older. They argue that the main effect of the ADEA may have been to deter this kind of renegeing, which in fact *strengthens* the ability of workers and firms to take advantage of these contracts. Indeed, Neumark and Stock suggest that firms would not necessarily have been opposed to this function of the ADEA, as it provided them with a credible way to make the promises implicit in LTIC's to retain older workers even when their current earnings rose above their current marginal product. They present evidence suggesting that this was, in fact, the effect of age discrimination laws, as these laws led to steeper earnings profiles for cohorts entering the labor market subsequently.

Thus, the evidence presented in Neumark and Stock (1999) casts the effects of age discrimination laws in a more favorable light, arguing that such laws help to resolve problems with respect to the incentives for firms to behave opportunistically in ways that might be viewed as discriminating based on age – in particular, protecting workers, at older ages, from involuntary terminations on their career jobs. At the same time, this perspective on age discrimination laws is not entirely reassuring with respect to the pending challenges associated with population aging in coming decades. Deterring age-based terminations of long-term employees would no doubt contribute to increasing employment of older individuals. But increasing the employment of seniors to help meet the challenges of population aging is likely to require increased *hiring* of these older workers. The existing research fails to establish that age discrimination laws, at least as they currently exist, have helped older workers get hired, and indeed there are some claims that they have the opposite effect.

The evidence that most directly counters the conclusion that age discrimination laws come from

older workers is probably Lahey's (2008b) study of the effects of state age discrimination laws. She argues that workers in states with their own age discrimination laws are protected by stronger laws than are workers in states without their own laws, for two reasons. First, in states with their own laws workers have longer to file age discrimination claims.⁷ And second, fair employment practices agencies in these states may be able to process claims more quickly than the EEOC; however, she presents no evidence that states are more effective or efficient than the EEOC.⁸

Looking first at the period prior to 1978, before the Department of Labor gave administrative responsibility for ADEA enforcement to the EEOC, Lahey finds little evidence that state laws affected older workers. In the subsequent period, however, her evidence suggests that state age discrimination laws reduced employment of white men older than 50 years of age, reduced their hours (including zero hours for the non-employed), made such individuals more likely to be retired, and reduced hiring of them (which she measures better than Adams by using matched CPS files).⁹ Note that the employment (actually, weeks worked) results and the retirement results are the opposite of those in Adams (2004), and the employment results also contrast with those in Neumark and Stock. In addition, the conclusions about adverse hiring effects are stronger than those Adams draws. She suggests that because the ADEA makes it difficult to terminate the employment of older workers, it ends up deterring their hiring in the first place. This may be exacerbated by the difficulty of bringing suit over age discrimination in hiring, as just discussed.

There are, however, some questions about these conclusions. Lahey characterizes the pre-1978 period as one in which the ADEA had little effect, which is why she splits the sample into the pre-1978 period and the subsequent period. However, the results in Neumark and Stock indicated little difference between the effects of the ADEA on employment of older covered workers in the pre-1978 and post-1978 periods, with at most slightly larger impacts in the latter. Nonetheless, if we were to accept Lahey's

⁷ In particular, in states that do not have their own statutes, workers must file a claim with the EEOC within 180 days, whereas when the state has its own statute and an FEP commission or agency, the worker has 300 days to file a claim under federal law with the state's FEP agency or the EEOC.

⁸ She also notes that some states protect workers in smaller firms than those covered by the ADEA, but – unlike in the present paper – does not use state variation in the firm-size cutoff for state age discrimination laws.

⁹ The regression results are only reported for unconditional hours and retirement, but a footnote (26) reports that the results are the same for employment.

characterization of the federal law as becoming effective (to a large extent) in 1978, then there is an important source of identifying information that she ignores – namely, the extension of the federal law to states without anti-discrimination laws. Her evidence shows that between the pre-1978 and the 1978-1991 period, hiring and hours of workers over 50 years of age *fell* in states with their own age discrimination laws, relative to the states without their own laws; there was no such change for those aged 50 and under. This implicit difference-in-difference-in-differences estimator suggests that when the federal law became more effective, employment and hiring of those older than age 50 increased precisely in the states that did not previously have state age discrimination laws. This would seem to imply that age discrimination laws – at least the federal law – boosted employment of protected workers, contrary to Lahey’s conclusions.

In other words, Lahey is identifying the effects of age discrimination laws from the differences – post-1978 – between states with and without their own laws. But if the more important source of variation in the strength of age discrimination laws is the strengthening of the federal legislation post-1978, and the “catching up” of the strength of age discrimination laws in states that did not previously have their own laws to those that did, then the evidence points in the opposite direction.

Overall, then, this study does not establish that age discrimination laws deter employment or specifically hiring of older workers. However, the logic of the argument, and hence the hypothesis that age discrimination laws deter hiring of older workers, may still be correct. And recall that the evidence in Adams (2004) does not suggest any beneficial hiring effects of age discrimination laws, and perhaps the opposite, especially for those aged 65 and over. Finally, it is worth pointing out that the present paper builds on Lahey’s (2008b) analysis in an important way, by exploiting variation in state age discrimination laws. However, it differs by looking at specific variations in these laws – including the firm-size cutoff mentioned above – rather than simply whether there was or was not a state law. Moreover, it turns out that a feature of state laws that Lahey emphasized – the longer time to file a claim (statute of limitations), although in this case the statute of limitations under *state* law – is a feature of state laws that turns out not to matter.

This review establishes that age discrimination may pose significant barriers to increasing

employment of older workers in response to population aging. Moreover, the evidence by and large indicates that age discrimination laws provide protections for older workers, although not necessarily on the hiring dimension, which could potentially be most important with regard to seniors. The next section describes our approach to studying how age discrimination laws influenced the effects of increasing the NRA on retirement and employment. As noted earlier, perhaps the most natural perspective is that if age discrimination deters the employment of older workers, then demand-side efforts to deter age discrimination may boost the effectiveness of supply-side efforts to increase labor supply. As the immediately preceding discussion suggests, however, the opposite is also possible. In particular, if much of the adjustment to a higher NRA occurs via hiring, and age discrimination laws deter hiring of older workers, then in states with stronger age discrimination protections for older workers the response to increases in the NRA could have been weaker, rather than stronger.

III. Data and Empirical Approach

The basic empirical strategy is to ask whether, as the NRA increased, the changes in retirement (delaying it) or employment (continuing it) were stronger where state age discrimination laws provide greater protections to older workers. To implement this strategy, we require data that captures older individuals near age 65 during the period when the NRA increased, and that also provide accurate information on retirement and employment, as well as state identifiers that allow us to distinguish individuals by the state in which they lived when the NRA increased (which come from confidential HRS files). We first describe the data and then the information on state age discrimination laws, before explaining in detail how these are used in the empirical approach.

The Increase in the Normal Retirement Age (NRA)

The original Social Security Act of 1935 set the NRA – the minimum age for receiving full retirement benefits – to be 65, but the Social Security Amendments of 1983 implemented increases in the NRA starting with people born in 1938 or later (Svahn and Ross, 1983). Beginning with the cohorts born in 1938 or later, the NRA was gradually increased by two months per year until it reaches 67, as shown in Table 1. The sample period we study covers most of the first round of phased increases in the NRA, from

65 to 65 and 10 months. These increases were intended to reflect the improvement in life expectancy of older people.¹⁰ However, those eligible for benefits may still start collecting reduced Social Security retirement benefits at age 62.

The increases in the NRA create incentives for changes in retirement and employment behavior in a number of ways. First, as the age at which a Social Security recipient can receive full benefits increased, the actuarial adjustment of early benefits (for which people are first eligible at age 62) led to a decline in early retirement benefits, with benefits at age 62 lowered by one percent for each two-month increase in the NRA. This presumably reduces incentives to claim benefits early, and increases incentives to work after age 62 – the age at which one could claim benefits early. Second, behavior may change around the NRA, with those who reach age 65 *after* the NRA increases delaying their retirement to their new NRA, and increasing their employment in the interim. Those who would have retired at 65 (where there is a spike in retirement) may delay their retirement for three reasons. First, full benefits are paid at the NRA, and even though the adjustment of benefits based on retirement date is actuarially fair, some may want to attain the maximum benefit level. Second, the earnings test applies before the NRA, reducing incentives to start drawing Social Security benefits before the NRA for those with earnings. And third, once a person reaches the NRA, delaying retirement triggers the Delayed Retirement Credit (DRC), which increases benefits by a given percentage for each year of delay. This adjustment (which was implemented in 1972) has historically been much smaller than the increase in benefits from waiting until the NRA to claim benefits, introducing a kink in the budget constraint that induces retirement at the NRA (Pingle, 2006); although the DRC has increased over time, for the cohorts considered in this paper the rate of increases in benefits for delaying retirement after the NRA was lower than the rate of increases before the NRA, implying a kink in the budget constraint even before one takes account of the earnings test.¹¹

¹⁰ See <http://www.socialsecurity.gov/pubs/ageincrease.htm> (viewed 3/20/2011).

¹¹ The increases in the DRC would be predicted to increase employment and delay retirement at the NRA (reducing the bunching of retirement at the NRA). Thus, there is no reason to expect the increases in the DRC to underlie evidence that retirement dates increase to the new NRA as the NRA increases. There were changes in the earnings test in 2000, changing it so that it only applied to those between age 62 and their NRA (Pingle, 2006), but this does not generate any confounding change with increases in the NRA.

To some extent we focus on changes in behavior of those 65 and a little bit older, when these ages fall from above to below the NRA. But responses among those aged 62-65 are also important.

Mastrobuoni focuses on this latter group only, and finds that those who faced reduced benefits at the early retirement age because of increases in the NRA retired later.¹² He focuses only on the aggregate variation over time induced by the increase in the NRA, rather than any variation across states based on their laws.

Identification of the effects of increases in the NRA on behavior at the NRA (or what *was* the NRA) may also be cleaner because we rely on changes in behavior across very narrow age ranges (defined in months), making it easier to rule out coincident changes in retirement or employment behavior by age as an explanation of our findings (even aside from the issue of looking at across-state variation in age discrimination laws).¹³ Nonetheless, the qualitative predictions for the effects of increases in the NRA are the same at the ages of eligibility for full benefits directly affected by the NRA and at age 62. We therefore estimate models that test for responses at the NRA or what was the NRA – i.e., for those between age 65 (exactly) and the NRA – and for those aged 62-65, and how these responses vary with state age discrimination laws.

HRS Data

The data we use for our analysis is Health and Retirement Study (HRS), a large, longitudinal dataset that covers older individuals biennially starting in 1992. We use data from nine waves from 1992 until 2008, which extends through the first round of increases in the NRA. The initial HRS cohort was born from 1931 to 1941, but newer cohorts have been added to the study, so that currently the oldest cohort in the HRS was born in 1924 and the youngest cohort was born in 1953.¹⁷ In addition, although the criterion for inclusion in the HRS depends on the birth year of the respondents, spouses of the respondents

¹² Pingle (2006) finds that the NRA increased labor supply among those aged 60-64, but not among those aged 65-69. However, his findings are fragile, likely due to using data from a period with very few workers subject to a higher NRA.

¹³ Mastrobuoni (2009) uses CPS data rather than HRS data, arguing that the CPS data are preferable because of larger sample sizes. Although this is true, the HRS offers the advantage of being able to pin down almost exactly who is caught and when by increases in the NRA.

¹⁷ The AHEAD cohort, born before 1924, was part of separate study, but first interviewed in 1993. The Children of Depression (CODA) cohort, born between 1924 and 1930, and the War Baby (WB) cohort, born between 1942 and 1947, were first interviewed in 1998. The youngest Early Baby Boomer (EBB) cohort, born between 1948 and 1953, was first interviewed in 2004.

are also included as separate respondents, with birth years that range from 1890 to 1983. Because the respondents targeted in the original HRS cohort were aged 62-72 in 2003 the HRS data cover exactly the right ages to study the effect of first stage of increases in the NRA. We restricted our data to the 1931-1943 birth cohorts. Although no one in the 1943 birth cohort reaches age 66 by 2008, the extension from the original cohort for a couple of additional years provides substantial numbers of observations in the 65th year on those for whom the NRA increased, hence providing information on how changes in the NRA affect behavior relative to those of very similar ages in earlier years. We omitted both younger and older respondents and spouses to avoid issues relating to sharp differences in retirement at much older or much younger ages.

We study men only, to minimize complexity from issues pertaining to eligibility for Social Security benefits. Social Security eligibility depends on number of credits earned based on the number of years worked. Everyone born in 1929 or later needs 40 covered quarters to be eligible.¹⁸ In 1950, the labor force participation of men aged 16 years and older was 86.4 percent, versus 33.9 percent for women, and by 1960 the difference had narrowed only slightly, to 83.3 percent for men and 37.7 for women (Fullerton, 1999). These differences imply that eligibility concerns for women, among the cohorts in the HRS, can be severe, whereas for men they are likely negligible. Although we could in principle identify women who are eligible, they would represent a highly selective sample.

Our analysis requires the precise measurement of when a person reaches the NRA, down to the level of detail of the two-month increases in the NRA shown in Table 1. The HRS only provides respondents' month and year of birth, and not the exact date, but this generates virtually no measurement error because the NRA depends *only* on the month and year in which the respondent was born. For example, all respondents born between March 2, 1937 and April 1, 1937 reached the NRA at the beginning of March, 2002.¹⁹ Thus, except for this one-day shift, month and year of birth is sufficient to determine whether a person has reached the NRA at the time of an HRS interview. The HRS oversamples Hispanic,

¹⁸ See <http://www.socialsecurity.gov/retire2/credits2.htm> (viewed March 17, 2011).

¹⁹ See <http://www.socialsecurity.gov/retire2/agereduction.htm> (viewed March 21, 2011). (This was also confirmed in a query to the Social Security Administration, response 3796284, April 26, 2010.)

blacks, and residents of Florida, but we do not use the sampling weights since the oversampling can increase efficiency of the estimates.

The dependent variables we study are retirement and employment. We pin down retirement precisely, based on the month in which a person started to collect Social Security benefits. We report results for full-time employment (35 hours or more per week), which is, in a sense, most “opposed” to retirement, and generally results in higher Social Security payroll tax payments. We also report results for any employment, which are qualitatively similar.

Data on Age Discrimination Laws

The empirical strategy also relies on the creation of a database of state age discrimination laws, and the coding of this data. The compilation of our data on state age discrimination laws required extensive background research on state statutes and their histories, culled from legal databases including Lexis-Nexis, Westlaw, and Hein Online. The first step in assembling information on state age discrimination laws was to get the correct code of the appropriate state statute, which can be complicated because the age discrimination law can be listed under various sections of state laws. For example, depending on the state, the age discrimination law may be classified as a human rights law, a fair employment act, or a separate age discrimination act. After the appropriate statute is identified, we trace the history of the statute using the legal databases, recording changes in content and the year of any amendments. Furthermore, in some cases we have to look beyond the statutes to information from state agencies. For example, for Alaska and Vermont information on the statute of limitations was not found in the state statutes, but instead came from state agency websites.²⁰

Getting additional information was not the only purpose of looking beyond the statute. It is complicated to read and interpret the law correctly solely based on statutes and thus we cross-checked our understanding of the statute with other legal references or treatises and additional sources of information on

²⁰ See <http://humanrights.alaska.gov/html/services/complaints.html> and http://hrc.vermont.gov/sites/hrc/files/pdfs/laws/vhrc_rules.pdf (both viewed March 17, 2011).

state laws.²¹ A further challenge in reading statutes is that one section may define what a discriminatory act is, while the authorization to set rules on filing periods may be delegated to the Civil Rights Commission, or the remedies or means of enforcement may be listed under a different section of the statute. Michigan provides a good example illustrating both this complexity and how using multiple sources helps in fully understanding the state's law and its evolution. Article 6(f) of the Elliott-Larsen Civil Right Act in Michigan authorizes the Civil Rights Commission to promulgate rules, and on October 2, 1979, the Commission filed the current rules with the Secretary of State. Thus, Michigan's 180-day period for filing a complaint is not specified in the statute. If we had relied solely on the state statutes, we would not have obtained this information because the actual statute does not record and trace the changes of the specific rules the Civil Rights Commission filed.

Furthermore, to minimize inaccuracies, once all the necessary information was obtained from the statute, we compared this with information from other sources. If information obtained from different sources coincided, we were confident that the information was correct. In cases of what should be unambiguous information – in particular the employment level at or above which the law applies – we use the information from the statute regardless. However, in cases of information that can be more easily misinterpreted from the statute – in particular, regarding remedies or statutes of limitations (like in the Michigan example discussed above), when we found discrepancies we turned to the state agencies for corroborating information (including both checking websites and direct contacts). Despite all these efforts, there are a few cases where we could not fill in the history of the state statutes for our sample period.

Table 2 reports the summary of state laws for 1992 and 2008 – the years that bracket our sample.²² We focus on four aspects of age discrimination laws that, based on our research, seem to have significant variation above and beyond what is specified in the federal law. The first is the firm-size cutoff for applicability of the law; in the statutes, this is typically specified in the definition of “employer.” If the

²¹ These included Fitzpatrick (2005-2007), Fitzpatrick and Perine (2008), Fitzpatrick et al. (2009), Leiter (1993, 1997, 1999, 2003, 2005, 2008), Nelson (1993-2003), Nelson and Fitzpatrick (2004), Northrup (1980), and Ross and Barcher (1983)

²² We assembled data for all the intervening years as well as earlier years. However, the data for the earlier years do not play a role in this paper. And there are few changes of relevance in the intervening years. Nonetheless, there are some changes, and in the empirical analysis we use these laws by state and year.

firm does not have a number of employees greater than or equal to the number of employees specified in the first two columns of the table, the state law is not applicable.²³

Second, we use information on remedies allowed under the state laws. We focus on whether compensatory or punitive damages are allowed, which they are not under the federal law.²⁴ Some states require proof of intent in order for compensatory or punitive damages, whereas others require “willful” violation. Because the federal law allows additional damages (double back pay and benefits) when there is “willful” violation, the question of whether the state requires intent or willful violation may seem to be potentially relevant in deciding whether a state law offers greater protection. However, our understanding is that willful violation is a much stricter standard than intent (Moberly, 1994). Moreover, compensatory or punitive damages are almost certainly greater than liquidated damages, and surely there is a threat that they can be much greater. As a consequence, a state law that provides compensatory or punitive damages, whether or not this requires proof of intent or willful violation, is clearly stronger than the federal law.

Third, we focus on the statute of limitations, or the period in which a claim must be filed. Under the ADEA, if the state does not have a state agency charged with enforcing discrimination laws, the ADEA charge must be filed within 180 days; it has to be filed within 300 days in a state that has a state agency (Gold, 1993 and O’Meara, 1989).

Finally, we also use the variation in recoverability of attorneys’ fees. We would expect more age discrimination claims in states that allow the recovery of the attorneys’ fees because this will provide greater financial incentives for plaintiffs and their attorneys. The law on recovery of attorneys’ fees is not straightforward, and it *cannot* be obtainable solely from state age discrimination statutes. Federal courts follow the American Rule that each side bears its own attorneys’ fees in litigation,²⁵ because given that the

²³ For example, in Florida a worker who works at a firm that employs fewer than 15 employees is not covered under the Florida state law. On the contrary, all employees in Colorado are covered by state law because it is applicable to all firms with at least 1 employee.

²⁴ See U.S. EEOC (2002). In addition, O’Meara (1989) states that damages for pain and suffering are occasionally permitted in ADEA in federal court when they arise out of state claims although pain and suffering are not allowed under the ADEA (pp. 334-335).

²⁵ See American Jurisprudence 2ed. Section 55, 194.

outcome of lawsuit is uncertain, the litigant should not be penalized for defending or bringing a lawsuit.²⁶ Thus, the general rule is that a specific statute is necessary to authorize recovery of attorneys' fees. The ADEA specifically allows the recovery of attorneys' fees if an ADEA plaintiff is successful; it states that the "court in such action shall [...] allow a reasonable attorneys' fee to be paid by the defendant, and costs of the action."²⁷

In general, classifying a state age discrimination law as allowing recovery of attorneys' fees would be most clear if a state age discrimination statute specifies this recoverability. Things are more complex, however, because some states instead have a general statute authorizing fee-shifting in whole categories of cases. Thus, accurate information on the recovery of attorneys' fees required research beyond state age discrimination laws. For example, in Alabama, age discrimination is a violation of Alabama Age Discrimination in Employment Act (AADEA) under Title 25, Industrial Relations and Labor, Chapter 1, Article 3. The statute governing AADEA does not specifically authorize the recovery of attorneys' fees for the prevailing party. However, Alabama's general statute governing civil actions allows the recovery of reasonable attorneys' fees. It states that "in any civil action commenced or appealed in any court of record in this state, the court shall award, as part of its judgment ... reasonable attorneys' fees and costs ..."²⁸ Thus, although AADEA does not specify on the recovery of the attorneys' fees, the plaintiff may still be allowed to recover the attorneys' fees pursuant to the general statute on civil actions. In contrast, Idaho's Human Rights Act does *not* allow an award of attorneys' fees to a prevailing plaintiff in age discrimination case because the Idaho Human Rights Act does not grant an award of attorneys' fees.²⁹

In collecting information on provisions regarding attorneys' fees, we relied first on state age discrimination statutes. If recoverability of attorneys' fees is specified under the state age discrimination

²⁶ Some legal scholars argue that American Rule has become the exception because of nearly 100 federal fee-shifting statutes such as Civil Rights Attorney's Fees Awards Act of 1976. See Larson (1982).

²⁷ This language is stated under Title 29, Section 216 (b), which is incorporated in the ADEA by Title 29, Chapter 14, Section 621 (b).

²⁸ This is from Title 12, Chapter 19, Article 6, Section 292.

²⁹ *Stout v. Key Training Corporation* (144 Idaho 195, 158 P. 3d 971, 2007) exemplifies the stringency of the courts in awarding attorney's fees in Idaho. The jury's verdict was in favor of former employees on a statutory discrimination claim under the Idaho Human Rights Act. Although the former employee may have been able to recover the attorney's fee under a contract claim, the court did not award the attorney's fee under Human Rights statutory claim because the act does not make explicit allowance and she prevailed under the Human Rights statutory claim.

statute, we are confident that the state allows the recovery of attorneys' fee. If it is not specified under the age discrimination statute, we had to research general statutes authorizing fee-shifting. To do this we looked for the age discrimination cases filed under the state age discrimination law, relying on court decisions and the language used in those decisions. Even for the states where provision of the attorneys' fees is specified we searched court decisions to cross-check our understanding of the provision. For example, in New Mexico the state age discrimination statute only specifies the recovery of attorneys' fees for appeal. However, in *Smith v. FDC Corporation v. Cox*³⁰ the court states that "reasonable attorney's fees may be awarded at court's discretion to prevailing complainant pursuant to New Mexico Human Rights Act." When we can find these explicit statements in court's ruling, we determine that the state allows the recovery of the attorneys' fees. Similarly, in New York, the provision of the attorneys' fees is not codified. However, the ruling *Lightfoot v. Union Carbide Corp*³¹ states that "attorney fees are *not* recoverable under New York State Human Rights Law which prohibits employer from engaging in unlawful discriminatory practices because of age." Appendix Table A provides extensive documentation of our coding of recoverability of attorneys' fees.

Table 3A shows our coding of the state laws for use in our empirical analysis, and the comparison with the federal law. Note that we use a statute of limitations variable that codes whether a worker has more than 300 days to file a claim. This captures whether a state law allows a longer statute of limitations than the ADEA establishes in states with age discrimination laws and enforcement agencies. Another potential coding of this variable would be simply whether there is a state age discrimination law and enforcement agency, since in that case the statute of limitations for federal claims is longer (300 days) than if there is not a state law and agency (180 days).³² However, as Table 2 shows, very few states do not have age discrimination laws. Table 3B shows the means for these coded variables. And Table 3C documents the very limited variation in state age discrimination laws, which is why we rely on the identification strategy discussed below.

³⁰ *Smith v. FDC Corporation v. Cox*, 109 N.M. 514, 787 P.2d 433 (1990)

³¹ *Lightfoot v. Union Carbide Corporation*, 901 F. Supp. 166 (1995)

³² This would be more in line with Lahey's (2008) analysis.

Empirical Approach

The basic empirical strategy is to identify those who are “caught” by the increase in the NRA, relative to those of the same age in earlier years, to estimate their response to the increase in the NRA, and to ask how this response differs for those in states with stronger age discrimination laws. For simplicity of exposition, the empirical model is explained in the stark case in which there is a single increase in the NRA (say, a one-time increase from 65 to 66, so that those between their 65th and 66th birthdays are no longer eligible for normal retirement benefits), there is a dichotomous distinction in age discrimination laws across states (say, between states with no separate law, where the ADEA prevails, and states with stronger laws), and we include only 64 and 65 year-olds (i.e., up to but not including those of age 66). The framework readily generalizes to more realistic cases.³³ We explain this for the case of retirement, but the analysis carries over completely to the case of employment, for which the signs of the predicted effects should be reversed.

Denote by R a dummy variable for whether an individual is retired, $A65$ a dummy variable for 65 year-olds, $INRA$ a dummy variable for the years after which the NRA has increased, and PA a dummy variable for states with stronger age discrimination laws.³⁴ Letting i index individuals, s states, and t years, the regression model is:

$$R_{ist} = \alpha + \beta A65_{ist} \cdot INRA_t \cdot PA_s + \gamma A65_{ist} \cdot INRA_t + \delta A65_{ist} \cdot PA_s + \phi A65_{ist} \\ + \beta' INRA_t \cdot PA_s + \gamma' INRA_t + \delta' PA_s + \varepsilon_{ist}$$

For those subject to a higher NRA after the policy change ($A65 = 1$ and $INRA = 1$), the regression estimates the difference in retirement probabilities between states with strong ($PA = 1$) versus weak age discrimination laws (captured by β). To ensure that this difference does not reflect cross-state differences in retirement of those subject to the higher NRA that existed prior to the increase in the NRA, the regression also uses data from earlier years ($INRA = 0$) to subtract out the difference in retirement

³³ It also generalizes to those aged 62-65 who are affected by increases in the NRA because of changes in early retirement benefits.

³⁴ The individual-level control variables that we include in the model, such as health and education, are suppressed. These are listed in the notes to the tables. These have no bearing on the identification argument.

probabilities of those of the same age, across the same states (captured by δ and φ). The calculation thus far is based on a difference between two differences. To make certain that the model identifies a change in retirement between those at ages subject to the higher NRA versus those not subject to the higher NRA – i.e., to ensure that we detect an effect on age *differentials* in retirement – the regression model also subtracts out the same difference-in-differences for older workers who *are* affected by age discrimination laws but are *not* affected by the change in the NRA because they are 64 ($A65 = 0$). Thus, we use the difference between two difference-in-differences, or a DDD estimator.

In our simple example, the DDD estimator asks whether retirement of 65 relative to 64 year-olds declines *more* when the NRA goes up in the states with strong versus weak age discrimination laws. β in the above regression equation is precisely this estimator. If stronger age discrimination laws enhance the effect of increasing the NRA on delaying retirement, by removing demand-side barriers to the employment of older individuals, then the estimate of β should be negative.³⁵ The empirical strategy is applied to the data from the HRS and the coded age discrimination laws.

We incorporate information on recoverability of attorneys' fees a little differently. This recoverability should not matter unless we find that (some dimension of) state age discrimination laws matters, and in that case recoverability of attorneys' fees might enhance the effect of state age discrimination laws. Therefore when we study attorneys' fees, we introduce interactions between recoverability of these fees and the other three features of state age discrimination laws.

In the actual implementation, we focus on a much finer distinction among HRS respondents based on month of birth, which is best explained with reference to Table 1. Consider those aged 65 years and 4 months in different years of HRS data. Those observed at this age *before* the NRA increased to 65 years and 4 months are *not* “caught” by the increase in the NRA, while those observed after the NRA increased to 65 years and 4 months *are* “caught” by the increase. We collapse all those caught by the increase in the NRA into a single dummy variable – “caught by the increase in the NRA” – which will capture the difference in retirement or employment behavior as a result of the increase in the NRA, relative to those at

³⁵ Note that we could also simply look at whether or not there is state age discrimination law. However, as just noted, only four states do not have laws, and they are all quite small states.

the same age in months in different states or years. Table 4 shows that we have many observations in the HRS, in the 2002-2008 waves, on individuals who are caught by the increase in the NRA.³⁶ Identification of the effect of the NRA seems quite compelling because it comes from differences in behavior of those at very similar ages in nearby years, and in that sense has the same flavor as a regression discontinuity design. Nonetheless, to control for other potential sources of changes in retirement or employment behavior, the regression models include a full set of state-year interactions.

IV. Results

The Effect of Increases in the NRA on Retirement and Employment

We begin with preliminary evidence on how increases in the NRA changed retirement and employment behavior, because it is *variation* in these changes in behavior with state age discrimination laws that is ultimately our question of interest. In Table 5A, we present estimates of a simpler version of the equation above, which just includes a rich set of age dummy variables, and a dummy variable for whether one was “caught” by the increase in the NRA.⁴⁰

Table 5A reports the estimates of the effects of being caught by the increase in the NRA, as well as a large set of the dummy variables for age in months⁴¹ – not all of them, but enough to see the changes around age 62 and 65. Note, first, that there is a distinct increase in the probability of retirement at age 62, when people are first eligible for Social Security benefits. There is also a distinct increase near age 65. Such changes are less pronounced for both employment measures, although the data certainly point to fairly sharp declines in periods of many months surrounding these ages. We would not expect as distinct behavior for employment, as one can make a transition to receiving Social Security benefits without a change in employment status (being either non-employed in the period before and after starting to receive benefits, or employed).

Of more direct interest are the estimates in the first row of the table. For retirement, there is a

³⁶ Of course we capture more 62-65 year-olds affected by increases in the NRA through changes in early retirement benefits. Note that we can also describe people in this age range as caught by the increase in the NRA, if they arrive in the 62-65 age range after the NRA has increased.

⁴⁰ Appendix Table B gives descriptive statistics for the HRS data used in the regressions.

⁴¹ To reduce the number of coefficients to estimate, the age in month dummy variables are based on two-month intervals.

sharp change induced by the increase in the NRA, lowering the probability of retirement (in percentage terms) by 16.6 percentage points.⁴² Recall that this is measured relative to retirement probabilities for the very narrow age range that is affected by the increase in the NRA in our sample period. The magnitude corresponds quite closely to the overall increase in the probability of retirement for those not affected by the increase in the NRA. For example, measuring the change from age 64 and 8 or 9 months to age 65 and 2 or 3 months, the increase in retirement probability is 15.4 percentage points, indicating that the decline in retirement for those caught by the increase in the NRA largely offsets the increase over age range just surrounding the 65th birthday. For employment, the estimates are positive rather than negative, as we would expect, although the estimate is much smaller (in absolute value) and statistically significant, and only at the 10-percent level, just for full-time employment. Nonetheless, the magnitudes – a 4.4 percentage point increase in full-time employment (and 3.3 for any employment) – roughly offset the declines of 5.7 (4.1) percentage points that otherwise occur over this same age range. Again, though, we would anticipate that the effects would be stronger for retirement.⁴³

Table 5B reports parallel results where we test for changes at ages 62-65 for those who are subsequently caught by the increase in the NRA. The simple specifications, in columns (1) and (4), simply look at the age group as a whole. Retirement is estimated to decline by 4.7 percentage points. The estimated effects on employment, while positive, are small and not statistically significant. We modify this in two ways. First, in columns (2) and (5) we break up this age range into three single-year cells. There is an indication that, as we might expect, the effects are largest for 62 year-olds; but the differences between the estimates are small relative to their standard errors. Second, in columns (3) and (6) we instead distinguish people by how large an increase in the NRA they were caught by – 2 or 4 months, 6 or 8 months, or 10 or 12 months – on the presumption that the response at younger ages might be larger the larger the increase in the NRA. For retirement, the results are consistent with this expectation, with much

⁴² Note that what this variable does is to capture shifts in retirement (or employment) from months in which the person is past his 65th birthday but below the NRA to the month in which he arrives at the NRA.

⁴³ Note, though, that the smaller average changes in employment for those caught by the increases in the NRA do not imply that we will not find strong interactions of age discrimination protections and being caught by increases in the NRA for employment.

sharper and statistically significant changes for those facing increases in the NRA of 6 months or more.

Do Stronger Age Discrimination Laws Enhance the Effects of Increases in the NRA?

Finally, we turn to estimates of the regressions that interact the effects of being caught by the increase in the NRA with the indicators for stronger age discrimination laws in terms of firm-size cutoffs, remedies, and statutes of limitations. Table 6A reports our main evidence, for changes in behavior when people are caught by the increase in the NRA. Like the models in Table 5A, these regression models include dummy variables for age in months and a full set of state-year interactions. What is reported in the table, however, are the main interactions of interest, along with the main effect of being caught by the increase in the NRA.

Columns (1)-(4) report the results for retirement. The estimates indicate in columns (1)-(3) look at the different features of age discrimination laws one at a time. The evidence indicates that the increase in the NRA has a much larger negative effect on retirement in states with lower firm-size cutoffs for the applicability of age discrimination laws. The estimated interactions for stronger remedies and longer statutes of limitations are also negative, but not significant (although the estimate for stronger remedies has a t-statistic near 1.5). Thus longer statutes of limitations, in particular, do not enhance the effects of increases in the NRA in slowing retirement.⁴⁴ In the case of lower firm-size cutoffs, the differential impact on retirement is 17.4 percentage points. Moreover, the estimate of the main effect of being caught by the increase in the NRA in column (1) is considerably smaller than the corresponding estimate from Table 5A, and in fact close to 0, implying that in states without this kind of stronger age discrimination protection, the increase in the NRA does not lower retirement among those caught by the increase in the NRA.

Finally, in column (4) all of the interactions are entered simultaneously. The estimates are fairly similar, although they are a bit smaller the effect of the firm-size cutoff effect is no longer statistically significant. Nonetheless, the sign and size of the estimates, and the result in column (1), indicate that state age discrimination laws that extend to smaller firms, enhance the effect of the increases in the NRA in

⁴⁴ Note that this does not necessarily imply that state statutes of limitations are completely unrelated to the strength of age discrimination protections. But at least in this case (retirement decisions of those affected by the increase in the NRA), the data are consistent with this.

reducing retirement.

Columns (5)-(12) instead look at employment. Paralleling the retirement results, we find evidence that in states with stronger age discrimination laws with respect to firm size, and also in this case strength of remedies, employment rose more in response to increases in the NRA. However, the evidence for is statistically stronger for any employment than for full-time employment. In the columns where the age discrimination variables are entered separately, the estimate for firm size is not statistically significant for full-time employment, but is statistically significant at the 10-percent level for any employment. The estimate for stronger remedies is statistically significant at the 10-percent level for full-time employment, but at the 5-percent level for any employment. None of these estimates are statistically significant at these levels when the age discrimination law characteristics are entered simultaneously, which perhaps is not surprising.⁴⁵ Finally, note that the main effects on employment, which pertain to the states without age discrimination protections, are negative in six of the eight columns (and close to zero in the others), although not statistically significant. The implication of the point estimates is that the increase in the NRA did not increase employment for those caught by the increase in states that only offered the age discrimination protections of the ADEA, without stronger state protections.

Again, we report parallel results where we test for changes at ages 62-65 for those who are subsequently caught by the increase in the NRA, in Table 6B. In these estimates, there is a positive and statistically significant result for stronger remedies for full-time employment, and a positive but insignificant effect on any employment. For this variable, increases in the NRA are also associated with lowering retirement (with a marginally significant estimate in column (4)). This table presents one anomalous result, which is the negative effect of the state age discrimination law applying to smaller firms on employment of those aged 62-65 who are caught by the increase in the NRA, which is statistically significant in one case.

Next, we extend the results in a few ways; we restrict these extensions to our main analyses of interest – of those over age 65 for whom the NRA increases. First, in Table 7, we provide a richer

⁴⁵ Note that we obtain these findings paralleling those for retirement despite the earlier evidence of weaker direct effects of the increases in the NRA on employment.

characterization of the firm-size cutoffs in state age discrimination laws, breaking the “less than 20” range into less than 10 and 10-19, and less than 15 and 15-19. We might expect stronger effects the lower the size cutoff; and asking whether we do helps assess the validity of our findings. This is borne out for the employment results, which are strengthened, relative to Table 6A. For both alternatives, there is now stronger evidence that state age discrimination that extend to smaller firms boost employment, with the estimates for the smallest range larger (in absolute value) than the corresponding estimate in columns (5) and (9) of Table 6A, and statistically significant at either the 5-percent level. For retirement, the estimates are not in the direction of a larger effect for the lowest firm-size cutoff; but the estimates are not very different either.

Second, we incorporate the information on the recoverability of attorneys’ fees, in Table 8. The main estimates of interest, in our view, are the interactions between whether these fees are recoverable and the other features of state age discrimination law that increase protection relate to the ADEA, because one might expect recoverability of fees under state law to enhance the effects of these other state protections. As a consequence, we report results for the lower firm-size cutoff and stronger remedies, which in earlier tables were estimated to influence the retirement and employment response in a direction suggesting that stronger age discrimination laws led to the NRA inducing a sharper reduction in retirement and increase in employment. As shown in the table, however, we find no consistent or statistically significant evidence that recoverability of attorneys’ fees has these effects. In general, all of the estimates become much less precise, suggesting that this specification is beyond the level of informativeness in the data.

Finally, Appendix Table C reports results paralleling Table 6A, but more saturated to include age-state interactions and age-year interactions, instead of the more restricted version of these differences by age across states, and by age across years, in the DDD equation described earlier. The findings are very similar for retirement, and for employment there is somewhat stronger evidence (statistically significant at the 10-percent level) that this feature of state age discrimination laws also causes the increase in the NRA to do more to increase employment (although we found similar evidence for lower firm-size cutoffs in Table 7).

Potential Implications of the Findings

An implication one would like to draw from these results is that if states without stronger age discrimination protections adopted them, then we would observe stronger responses – in terms of less retirement and more employment – among older individuals for whom the NRA is increased. This could potentially hold retrospectively – i.e., it would have occurred in response to the past increases in the NRA – and prospectively – i.e., in response to the next round of increases in the NRA (Table 1).

There are, however, a few challenges to drawing this implication. Specifically, inferences regarding how stronger age discrimination laws – if extended to other states – would influence the effectiveness of Social Security reforms, could be invalid if individuals who want to delay retirement or work longer when the NRA increases migrate to states with stronger age discrimination protections. This does not seem particularly plausible, given the very narrow age range over which the effects are identified. Moreover, past work looking at migration in this age group in response to economic incentives (in this case, variation in SSI benefits) fails to detect evidence of migration responses (Neumark and Powers, 2006). Nonetheless, we cannot rule out migration responses in this case, nor other potential threats to identification of the effects of exogenous variation in state laws, without additional work.

V. Conclusions

The evidence indicates that in states with stronger protections against age discrimination in the labor market, older individuals were more responsive to increases in the Social Security Normal Retirement Age (NRA). Specifically, where the state laws applied to smaller firms than those covered by the ADEA, retirement decreased more at ages that were initially beyond but subsequently lower than the NRA – i.e., for those older individuals “caught” by increases in the NRA. In addition, where the state laws applied to smaller firm or provided stronger remedies (harsher penalties), employment stayed higher at ages that were initially beyond but subsequently lower than the NRA – i.e., for those older individuals “caught” by increases in the NRA. We find some parallel results for those beyond the earlier retirement age (62) but younger than 65, but only for employment and only for stronger remedies.

The employment findings are particularly significant. Because benefits taken before the NRA are

actuarially adjusted, whether or not workers begin to take benefits before the NRA does not directly affect the financial solvency of Social Security. However, if people work longer, they pay taxes into the system for a longer period, which has direct financial implications. As Mastrobuoni, studying the same policy change, puts it, “An increase in labor force participation generates more contributions, which are the trust fund’s main source of revenue” (2009, p. 1224). Interestingly, the results suggest that *only* in states with stronger age discrimination protections was the employment effect positive.

This conclusion suggests that Social Security reforms on the supply side that enhance incentives for older individuals to remain in the workforce – whether in the form of the second schedule round of increases in the NRA, or other changes in incentives – will be more effective if public policy reduces demand-side barriers to the employment of older workers that stem from discrimination. Moreover, the states that currently provide stronger age discrimination protections may provide a model for changes in the ADEA that might be expected to enhance the effectiveness of future Social Security reforms. Given that these reforms impose costs on the older individuals who are affected, and given that these supply-side reforms impose costs on older individuals, it seems reasonable to try to eliminate demand-side barriers to older workers’ employment that would otherwise necessitate stronger supply-side changes to achieve solvency of the Social Security system.

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Table 1: Increases in the Normal Retirement Age (NRA)

Year of birth	NRA (years)
1937 or earlier	65
1938	65 + 2 months
1939	65 + 4 months
1940	65 + 6 months
1941	65 + 8 months
1942	65 + 10 months
<hr/>	
1943-1954	66
1955	66 + 2 months
1956	66 + 4 months
1957	66 + 6 months
1958	66 + 8 months
1959	66 + 10 months
1960 and later	67

Source: U.S. Social Security Administration

(www.ssa.gov/oact/progdata/nra.html, viewed March 11, 2011).

Note: Our sample includes cohorts from birth year 1931 through 1943.

The birth cohorts above the dark line reach the NRA in our sample period.

Table 2: Age Discrimination Laws 1992 and 2008

	Firm size (number of employees)		Compensatory/punitive damages		Statute of limitations (days)		Attorneys' fees	
	1992	2008	1992	2008	1992	2008	1992	2008
Federal	20	20	Does not allow compensatory or punitive damages (only liquidated damages are allowed)		180 days; 300 days if there is a state age discrimination law and enforcing agency		Allows attorneys' fees to be recovered	
Alabama	No law	20	No law	No	No law	180	No law	Yes
Alaska	1	1	Yes	No	Unknown	Not specified	Yes	Yes
Arizona	15	15	Yes	Yes	180	180	Yes	Yes
Arkansas	No law	No law	No law	No law	No law	No law	No law	No law
California	5	5	Yes	Yes	365	365	Yes	Yes
Colorado	1	1	No	No	180	180	No	No
Connecticut	3	3	No	No	180	180	No	No
Delaware	4	4	Unknown	Yes	120	120	Unknown	Yes
District of Columbia	Unknown	1	Unknown	Yes	Unknown	365	Unknown	Yes
Florida	15	15	Yes	Yes	365	365	Yes	Yes
Georgia	1	1	Unknown	No	180	180	Yes	Yes
Hawaii	1	1	Yes	Yes	180	180	Yes	Yes
Idaho	5	5	Yes	Yes	365	365	No	No
Illinois	15	15	Unknown	Yes	180	180	Yes	Yes
Indiana	1	1	No	No	120	120	No	No
Iowa	4	4	Yes	Yes	180	300	Yes	Yes
Kansas	4	4	Yes	Yes	180	180	Unknown	Yes
Kentucky	8	8	No	Yes	180	180	Yes	Yes
Louisiana	8	1	Yes	Yes	180	365	Yes	Yes
Maine	1	1	No	Yes	180	180	Yes	Yes
Maryland	Unknown	15	Unknown	Yes	Unknown	180	Yes	Yes
Massachusetts	6	6	No	No	180	300	Yes	Yes
Michigan	1	1	Yes	Yes	180	180	Yes	Yes
Minnesota	1	1	Yes	Yes	365	365	Yes	Yes
Mississippi	No law	No law	No law	No law	No law	No law	No law	No law
Missouri	6	6	Yes	Yes	180	180	Yes	Yes
Montana	1	1	Unknown	Yes	180	180	Yes	Yes
Nebraska	25	20	No	No	300	300	Yes	Yes
Nevada	15	15	No	No	180	300	Yes	Yes
New Hampshire	6	6	Yes	Yes	180	180	Yes	Yes
New Jersey	1	1	Yes	Yes	180	180	Yes	Yes

	Firm size (number of employees)		Compensatory/punitive damages		Statute of limitations (days)		Attorneys' fees	
	1992	2008	1992	2008	1992	2008	1992	2008
New Mexico	4	4	Unknown	Yes	180	300	Unknown	Yes
New York	4	4	Yes	Yes	365	365	No	No
North Carolina	15	15	No	No	Not Specified	Not Specified	Yes	Yes
North Dakota	1	1	No	No	300	300	Yes	Yes
Ohio	4	4	Yes	Yes	180	180	Yes	Yes
Oklahoma	15	15	No	No	180	180	Yes	Yes
Oregon	1	1	Unknown	Yes	365	365	Unknown	Yes
Pennsylvania	4	4	Yes	Yes	180	180	Yes	Yes
Rhode Island	4	4	Yes	Yes	Unknown	365	Yes	Yes
South Carolina	15	15	No	No	180	180	No	No
South Dakota	No law	No law	No law	No law	No law	No law	No law	No law
Tennessee	8	8	Yes	Yes	180	180	Yes	Yes
Texas	15	15	No	Yes	180	180	Yes	Yes
Utah	15	15	No	No	180	180	Yes	Yes
Vermont	1	1	No	Yes	Unknown	365	Yes	Yes
Virginia	5-15	5-15	No	No	180	180	Unknown	Yes
Washington	8	8	Yes	Yes	180	180	Yes	Yes
West Virginia	12	12	No	No	180	365	Yes	Yes
Wisconsin	1	1	No	No	300	300	Unknown	Yes
Wyoming	2	2	Yes	Yes	90	180	Unknown	Yes

Notes: "No Law" indicates there is no state age discrimination law; "Unknown" means we were not able to trace back the history of the statute; "Not Specified" indicates that the relevant dimension of the law was not specified under the state age discrimination law. In the empirical analysis, given that there was little time variation within states, we artificially backfilled the information for the earlier years for the "Unknown" cases. For "Not Specified" we dropped observations; there is no basis on which to fill in the missing information, and "Not Specified" does not necessarily imply either a stronger or a weaker state law. In the "Statute of limitations" columns, the statute of limitations under *state* law is listed; when there is a state law (and a fair employment practices agency or commission) workers in the state have 300 days to file under federal law. California's statute of limitations may be extended by an additional 90 days to 3 years under certain circumstances listed on the statute. The state age discrimination law in Alabama was first enacted in 1997. Under "Compensatory/punitive damages," "Yes" indicates that the state allows compensatory and/or punitive damages either with or without proof of intent, and "No" indicates otherwise. In North Carolina, individuals cannot file lawsuits under a state anti-discrimination law, but they can file a "public policy" claim in court (see http://www.workplacefairness.org/age_minimum?agree=yes#NC, viewed March 17, 2011). In Pennsylvania, civil penalties from \$10,000 to \$50,000 may be imposed; although this differs from compensatory or punitive damages, for the purposes of our analysis we treated this case as stronger remedies.

Table 3A: Coding of State Age Discrimination Laws

Variable	Coding for state	Federal law
Lower firm size	1 if state law is applicable to firms with fewer than 20 employees, 0 otherwise	ADEA covers firms with 20 or more employees
Stronger remedies	1 if state law allows compensatory and/or punitive damages either with or without proof of intent, 0 otherwise	ADEA allows back pay and benefits; it doubles this amount (“liquidated damages”) if there is willful violation
Longer statute of limitations	1 if state law allows a filing period longer than ADEA – specifically, if the state law allows longer than 300 days to file a claim and it has its own enforcement agency	Filing period for states without a law is 180 days, and 300 days for states with a state law and enforcement agency
Attorney’s fees	1 if state law allows to recover attorney’s fees, 0 otherwise	ADEA awards a reasonable attorney’s fees and costs of the action.

Notes: Additional details on the coding of “Stronger remedies” are given in the notes to Table 2.

Table 3B: Means of Coded State Age Discrimination Law Variables by HRS Wave Year

Variable	1992	1994	1996	1998	2000	2002	2004	2006	2008
Lower firm size (<i>N</i> =51)	0.902 (0.300)	0.902 (0.300)	0.902 (0.300)	0.882 (0.325)	0.902 (0.300)	0.902 (0.300)	0.902 (0.300)	0.902 (0.300)	0.902 (0.300)
Stronger remedies (<i>N</i> =51)	0.529 (0.504)	0.549 (0.502)	0.549 (0.502)	0.568 (0.500)	0.607 (0.493)	0.607 (0.493)	0.607 (0.493)	0.607 (0.493)	0.627 (0.488)
Longer statute of limitations (<i>N</i> =49)	0.183 (0.391)	0.204 (0.407)	0.204 (0.407)	0.204 (0.407)	0.224 (0.824)	0.224 (0.824)	0.224 (0.824)	0.224 (0.824)	0.224 (0.824)
Attorney's fees (<i>N</i> =51)	0.804 (0.401)	0.804 (0.401)	0.804 (0.401)	0.824 (0.385)	0.824 (0.385)	0.824 (0.385)	0.824 (0.385)	0.824 (0.385)	0.824 (0.385)

Note: Standard deviations are reported in the parenthesis. We do not have information on statute of limitations for Alaska and North Carolina (Table 2).

Table 3C: States with Time Variation in Age Discrimination Laws in Sample Period (1992-2008)

Lower firm size	AL – no law to 20 in 1997; NE – Decreased from 25 to 20 in 2007; LA – Increased from 8 to 20 in 1997. Decreased to 1 in 1999.
Stronger remedies	AK – 1997; KY – 1999; ME – 2008; TX – 1993; VT – 1999
Longer statute of limitations	LA – Increased from 180 to 365 in 1999; WV – Increased from 180 to 365 in 1994
Attorney's fees	AL – 1997 with enactment of law

Table 4: Number of Individuals “Caught” by Increase in NRA, by Age and Year of Interview

	65 and 0 or 1 month		65 and 2 or 3 months		65 and 4 or 5 months		65 and 6 or 7 months		65 and 8 or 9 months		65 and 10 or 11 months	
	Caught	Not caught	Caught	Not caught	Caught	Not caught	Caught	Not caught	Caught	Not caught	Caught	Not caught
1992-2002	0	220	0	210	0	187	0	184	0	151	0	181
2003	1	0	0	1	0	1	0	2	0	0	0	2
2004	55	0	48	6	0	59	0	65	0	47	0	64
2005	2	0	1	0	0	0	0	1	0	0	0	2
2006	65	0	48	0	52	0	22	36	0	50	0	49
2007	2	0	1	0	0	0	3	0	0	1	0	3
2008	24	0	29	0	32	0	39	0	21	0	1	19
2009	0	0	2	0	0	0	0	0	0	0	1	0

Note: “Caught” by increase in NRA is a dummy variable equal to 1 for individuals who were subject to an NRA beyond their 65th birthday but have not yet reached the NRA, and 0 otherwise. In this table, looking at people above age 65, it captures those in age ranges older than the original NRA of 65 before the NRA started to increase, but younger than the NRA given their year and month of birth. In each age year cell, the left column shows the number of people who are “caught” and the right column show the number of people who are not “caught” by the increase in NRA. We can observe both people who are caught and not caught in some age-year cells when they are interviewed in different months. For example, person A born in May 1939 (whose NRA is 65 years and 4 months) and interviewed in August 2004 is caught because his age at interview is 65 years and 3 months but he has *not* reached his NRA yet. But person B was born in December 1938 (whose NRA is 65 years and 2 months) and interviewed in March 2004 is not caught because his age at interview is 65 years and 3 months and he *has* reached his NRA. We do not show observations on those younger than 65, who are never caught by the increase in the NRA, or those 66 or older, who – in our sample period – are never caught by the increase in the NRA. The sample used for this table includes a total of 35,023 observations, which corresponds to our employment regression in Table 5A and subsequent tables. Note that some interviews are in odd-numbered years that do not correspond exactly to the even-numbered-year HRS waves.

Table 5A: Effects of Being Caught by Increase in Normal Retirement Age on Retirement and Employment after Age 65

	(1)	(2)	(3)
	Retirement (collecting SS benefits)	Employment (full- time)	Any employment
<i>Caught by increase in NRA</i> × <i>Age</i> ≥ 65	-0.166 (0.022)	0.044 (0.024)	0.033 (0.025)
61 and 6 or 7 months	0.079 (0.020)	-0.117 (0.025)	-0.100 (0.025)
61 and 8 or 9 months	0.042 (0.018)	-0.138 (0.026)	-0.156 (0.025)
61 and 10 or 11 months	0.040 (0.020)	-0.165 (0.026)	-0.189 (0.026)
62 and 0 or 1 month	0.173 (0.024)	-0.214 (0.026)	-0.218 (0.026)
62 and 2 or 3 months	0.442 (0.028)	-0.274 (0.028)	-0.295 (0.028)
62 and 4 or 5 months	0.428 (0.028)	-0.265 (0.028)	-0.281 (0.028)
64 and 6 or 7 months	0.586 (0.026)	-0.395 (0.026)	-0.419 (0.027)
64 and 8 or 9 months	0.590 (0.026)	-0.361 (0.026)	-0.376 (0.027)
64 and 10 or 11 months	0.610 (0.024)	-0.332 (0.027)	-0.353 (0.027)
65 and 0 or 1 month	0.707 (0.024)	-0.434 (0.026)	-0.452 (0.026)
65 and 2 or 3 months	0.744 (0.023)	-0.418 (0.027)	-0.417 (0.028)
65 and 4 or 5 months	0.813 (0.019)	-0.422 (0.026)	-0.438 (0.026)
R ²	0.626	0.294	0.313
Sample size	34,059	35,023	35,023

Note: The retirement variable is equal to 1 if an individual is collecting Social Security benefits and 0 otherwise. The employment variable is equal to 1 if an individual has a full-time job (second column) or any job (third column) and 0 otherwise. The variable “Caught by increase in NRA” is explained in notes to Table 4. All specifications include dummy variables for age in months (by two-month increments), state-year interactions and individual level dummy-variable controls for urban or rural residence, race, marital status, education level, and self-reported health. The omitted age group is individuals 60 years old or younger; age dummy variables are included for all other ages, but only some (around ages 62 and 65) are shown. Urban-rural status includes urban, suburban, or ex-urban residence based on the Beale Rural-Urban Continuum code; race includes white, black, and other; marital status includes married and married with spouse absent, partnered, separated/divorced/widowed, and never married; education includes less than high school, GED or high school graduate, some college, and college and above; self-reported health includes excellent, very good, good, fair, or poor. The linear probability model is used for estimation and the standard errors reported in parentheses are clustered at the individual level. The sample period for this analysis is from 1992 to 2008. The HRS data for timing of the start of collecting Social Security benefits and employment status are sometimes missing, which is why the sample sizes differ. We restrict the sample to males born 1931-1943 to avoid any issues relating to retirement associated with very old or young spouses and to minimize the Social Security benefit eligibility issues.

Table 5B: Effects of Being Caught by Increase in Normal Retirement Age on Retirement and Employment at Ages 62-65

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Retirement (collecting SS benefits)			Employment (full-time)			Any employment		
Caught by increase in NRA × (Age ≥ 62 and < 65)	-0.047 (0.015)	...	...	0.015 (0.015)	...	...	0.019 (0.015)	...	...
Caught by increase in NRA × (Age ≥ 62 and < 63)	...	-0.059 (0.022)	...	...	0.033 (0.022)	...	...	0.034 (0.023)	...
Caught by increase in NRA × (Age ≥ 63 and < 64)	...	-0.038 (0.021)	...	...	0.011 (0.020)	...	...	0.009 (0.021)	...
Caught by increase in NRA × (Age ≥ 64 and < 65)	...	-0.044 (0.021)	...	...	0.001 (0.021)	...	...	0.013 (0.022)	...
(Age ≥ 62 and < 65) ×									
Caught by 2 or 4 month increase in NRA after age 65	...	...	-0.019 (0.021)	...	...	0.004 (0.021)	...	...	0.008 (0.021)
Caught by 6 or 8 month increase in NRA after age 65	...	...	-0.068 (0.021)	...	...	0.042 (0.021)	...	...	0.046 (0.021)
Caught by 10 or 12 month increase in NRA after age 65	...	...	-0.072 (0.026)	...	...	-0.008 (0.025)	...	...	-0.006 (0.026)
R ²	0.626	0.626	0.623	0.294	0.294	0.294	0.313	0.313	0.313
Sample size	34,059	34,059	34,059	35,023	35,023	35,023	35,023	35,023	35,023

Note: Except for the variables shown, the specifications and estimation are identical to those in Table 5A.

Table 6A: Effects of State Age Discrimination Laws on Impact of Being Caught by Increase in Normal Retirement Age on Retirement and Employment between Age 65 and the Normal Retirement Age

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Retirement (collecting SS benefits)				Employment (full-time)				Any employment			
Caught by increase in NRA \times Age \geq 65 \times Lower firm size	-0.174 (0.068)	...	...	-0.128 (0.085)	0.127 (0.084)	...	...	0.062 (0.099)	0.155 (0.086)	...	...	0.079 (0.101)
Stronger remedies	...	-0.073 (0.049)	...	-0.047 (0.063)	...	0.096 (0.052)	...	0.097 (0.067)	...	0.113 (0.054)	...	0.109 (0.069)
Longer statute of limitations	...	...	-0.046 (0.048)	-0.016 (0.051)	...	...	-0.004 (0.050)	-0.035 (0.056)	...	...	0.007 (0.053)	-0.030 (0.058)
<i>Main effect:</i>												
Caught by increase in NRA \times Age \geq 65	-0.004 (0.064)	-0.115 (0.041)	-0.147 (0.028)	-0.004 (0.064)	-0.076 (0.081)	-0.024 (0.043)	0.044 (0.031)	-0.075 (0.081)	-0.113 (0.082)	-0.048 (0.044)	0.028 (0.053)	-0.113 (0.082)
<i>Combined effect:</i>												
Interaction plus main effect	-0.178 (0.024)	-0.189 (0.027)	-0.192 (0.039)	...	0.051 (0.025)	0.071 (0.029)	0.040 (0.041)	...	0.042 (0.026)	0.065 (0.030)	0.035 (0.042)	...
R ²	0.627	0.627	0.628	0.629	0.295	0.296	0.296	0.299	0.314	0.314	0.315	0.318
Sample size	34,059	34,059	34,059	34,059	35,023	35,023	35,023	35,023	35,023	35,023	35,023	35,023

Note: All specifications include dummy variable for age in months (by two-month increments), state-year interactions, and the individual-level controls for urban-rural, race, marital status, education level, self-reported status described in the note to Table 5A. See Tables 2 and 3A for information on state age discrimination laws. OLS estimates are reported with standard errors, reported in parentheses, clustered at the individual level. HRS restricted data with state identifiers are used.

Table 6B: Effects of State Age Discrimination Laws on Impact of Being Caught by Increase in Normal Retirement Age on Retirement and Employment at Ages 62-65

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Retirement (collecting SS benefits)				Employment (full-time)				Any employment			
Caught by increase in NRA × (Age ≥ 62 and < 65) × Lower firm size	-0.008 (0.058)	...	...	0.039 (0.064)	-0.008 (0.063)	...	...	-0.079 (0.069)	-0.069 (0.066)	...	...	-0.141 (0.071)
Stronger remedies	...	-0.039 (0.031)	...	-0.060 (0.037)	...	0.068 (0.032)	...	0.102 (0.037)	...	0.051 (0.032)	...	0.101 (0.038)
Longer statute of limitations	...	...	-0.016 (0.032)	-0.002 (0.034)	...	...	0.017 (0.032)	-0.009 (0.033)	...	...	0.015 (0.032)	-0.006 (0.034)
<i>Main effect:</i> Caught by increase in NRA after age 65 × (Age ≥ 62 and < 65)	-0.039 (0.056)	-0.022 (0.026)	-0.039 (0.018)	-0.039 (0.056)	0.021 (0.062)	-0.029 (0.026)	0.010 (0.019)	0.020 (0.062)	0.081 (0.064)	-0.014 (0.027)	0.013 (0.019)	0.080 (0.064)
<i>Combined effect:</i> Interaction plus main effect	-0.047 (0.015)	-0.061 (0.018)	-0.056 (0.026)	...	0.013 (0.015)	0.038 (0.018)	0.027 (0.026)	...	0.013 (0.016)	0.037 (0.018)	0.028 (0.026)	...
R ²	0.626	0.627	0.627	0.629	0.295	0.296	0.296	0.299	0.314	0.314	0.315	0.318
Sample size	34,059	34,059	34,059	34,059	35,023	35,023	35,023	35,023	35,023	35,023	35,023	35,023

Note: See notes to Table 6A.

Table 7: Effects of Different Firm-Size Cutoffs in State Age Discrimination Laws on Impact of Being Caught by Increase in Normal Retirement Age on Retirement and Employment between Age 65 and the Normal Retirement Age

	(1)	(2)	(3)	(4)	(5)	(6)
	Retirement (collecting SS benefits)		Employment (full-time)		Any employment	
Caught by increase in NRA × Age ≥ 65 × Lower firm size (below 10)	-0.140 (0.059)	...	0.151 (0.071)	...	0.205 (0.073)	...
Lower firm size (10-19)	-0.174 (0.063)	...	0.096 (0.073)	...	0.141 (0.076)	...
Lower firm size (below 15)	...	-0.167 (0.070)	...	0.146 (0.087)	...	0.173 (0.088)
Lower firm size (15-19)	...	-0.191 (0.076)	...	0.088 (0.091)	...	0.119 (0.093)
<i>Main effect:</i> Caught by the increase in NRA × Age ≥ 65	-0.026 (0.053)	-0.004 (0.064)	-0.076 (0.066)	-0.076 (0.081)	-0.134 (0.068)	-0.113 (0.082)
<i>Combined effect:</i> Interaction (below 10 or 15) plus main effect	-0.166 (0.029)	-0.170 (0.029)	0.075 (0.031)	0.071 (0.032)	0.070 (0.031)	0.059 (0.033)
Interaction (10-19 or 15-19) plus main effect	-0.199 (0.036)	-0.194 (0.041)	0.019 (0.036)	0.013 (0.042)	0.007 (0.038)	0.006 (0.045)
R ²	0.626	0.628	0.294	0.297	0.313	0.316
Sample size	34,059	34,059	35,023	35,023	35,023	35,023

Note: See notes to Table 6A.

Table 8: Influence of Recoverability of Attorneys' Fees on Effects of State Age Discrimination Laws on Impact of Being Caught by Increase in Normal Retirement Age on Retirement and Employment between Age 65 and the Normal Retirement Age

	(1)	(2)	(3)	(4)	(5)	(6)
	Retirement (collecting SS benefits)		Employment (full- time)		Any employment	
Caught by increase in NRA × Age ≥ 65 × Lower firm size × attorneys' fees recoverable	-0.110 (0.133)	...	0.019 (0.154)	...	-0.001 (0.157)	...
Stronger remedies × attorneys' fees recoverable	...	0.041 (0.118)	...	0.014 (0.105)	...	-0.071 (0.113)
<i>Main effect:</i>						
Caught by the increase in NRA × Age ≥ 65 × State law feature	-0.116 (0.106)	-0.098 (0.108)	0.092 (0.116)	0.074 (0.095)	0.131 (0.120)	0.157 (0.104)
Caught by the increase in NRA × Age ≥ 65 × Attorneys' fees Recoverable	0.078 (0.114)	-0.051 (0.074)	0.034 (0.142)	0.038 (0.076)	0.048 (0.144)	0.085 (0.078)
Caught by the increase in NRA × Age ≥ 65	-0.033 (0.083)	-0.081 (0.060)	-0.088 (0.101)	-0.050 (0.065)	-0.131 (0.104)	0.085 (0.078)
R ²	0.627	0.627	0.295	0.296	0.314	0.314
Sample size	34,059	34,059	35,023	35,023	35,023	35,023

Note: See notes to Table 6A. There is no main effect of recoverability of attorneys' fees, since for every state-year observation with an age discrimination law, there is no within-state variation in recoverability, so the main effect is subsumed in the state-year interactions.

Appendix Table A: Source Summary on Provisions for Recoverability of Attorneys' Fees

	Attorneys' fees recoverable	Source
Federal	Yes	Codified in Title 29, Ch. 8, §216 (b), which is incorporated in ADEA by Title 29, Ch. 14, §626 (b). It states that "the court in such action shall [...] allow a reasonable attorney's fee to be paid by the defendant, and costs of the actions."
Alabama	Yes	Alabama Age Discrimination in Employment Act (AADEA) is listed under Title 25, Industrial Relations and Labor, Chapter 1, Article 3; it does not specify on the recovery of attorneys' fees. However, Alabama's general statute governing civil actions allows the recovery of reasonable attorneys' fees (Title 12, Chapter 19, Article 6, Section 292). It states that "in any civil action commenced or appealed in any court of record in this state, the court shall award, as part of its judgment [...] reasonable attorneys' fees and costs [...]."
Alaska	Yes	Specified under the state age discrimination law; it is codified under Title 18, Ch. 80, Article 2, §18.80.130.
Arizona	Yes	Specified under the state age discrimination law; it is codified under Title 41, Ch. 9, Article 6 §41-1481.
Arkansas	No	No state age discrimination law.
California	Yes	Specified under the state age discrimination law; it is codified under Title 2, Division 3, Part 2.8, Ch.7, Article 1, §12965.
Colorado	No	Not specified under the state age discrimination law. The age discrimination law is codified under Title 24, Article 34. In <i>Denver Building v. Shore</i> , the court states that "in the absence of contract or appropriate valid statutory enactment, attorneys' fees are not recoverable by way of damages, are not allowable as part of the cost of litigation for which recovery may be had by the successful litigant." Although this case was an unfair labor practices dispute, we believe that the court's rationale behind attorneys' fees would be applicable to employment disputes.
Connecticut	No	Not specified under the state age discrimination law. The age discrimination law is codified under Title 46A, Ch. 814 C, Part III, §46a-86. In <i>Bridgeport Hospital v. Commission on Human Rights and Opportunities et al.</i> the Supreme Court, Katz, J. held that neither emotional distress damages nor attorneys' fees could be awarded for violation of statute prohibiting discriminatory employment practices; legislature excluded the statute sections of discriminatory practice complaint procedure statute which authorized awards of attorneys' fees and compensatory damages other than back pay. C.G.S.A. §§46a-60, 46a-86.
Delaware	Yes	Specified under the state age discrimination law; it is codified under Title 19, Part I, Ch. 7, Subchapter II §715 (1)d.
District of Columbia	Yes	Specified under the state age discrimination law; it is codified under Title 2, Ch. 14, Unit A, Subchapter III, §2-1403.13 (a)(1)(E).
Florida	Yes	Specified under the state age discrimination law; it is codified under Title XLIV, Ch. 760, Part I §760.11 (13).

	Attorneys' fees recoverable	Source
Georgia	Yes	Not specified under the state age discrimination. The age discrimination law is codified under Title 45, Ch. 19, Article 2. In <i>Kilmark v. Board of Regents</i> (1985), the court has held under Georgia Fair Employment Practices Act, providing for monetary awards for actual damages resulting from discrimination in violation of the Act, discretion was <i>not</i> abused in awarding attorneys' fees even though the general rule in GA is that attorney fees are not recoverable by a prevailing litigant unless specifically authorized by statute or contract. This case was sex discrimination, but Georgia's fair employment governs both sex and age discrimination in GA.
Hawaii	Yes	Specified under the state age discrimination law; codified under Title 21, Ch. 378, Part I, §378-5 (c).
Idaho	No	Not specified under the state age discrimination law. The age discrimination law is codified under Title 67, Ch. 59. In <i>Stout v. Key Training Corporation</i> , the court stated that remedy provision of the Idaho Human Rights Act authorizes court to award an "appropriate remedy" for unlawful discrimination, but does not contain any express provision relating to attorney fees.
Illinois	Yes	Specified under the state age discrimination law; codified under Ch. 775, Act 5, Article 8A, §5/8A-104 (G).
Indiana	No	No specified under the state age discrimination law. The age discrimination law is codified under Title 22, Article 9, Ch. 2. Vlink (2011) clarifies that Indiana Age Discrimination Act "offers no remedy to an individual" including provision for attorneys' fees.
Iowa	Yes	Specified under the state age discrimination law; it is codified under Title VI, Subtitle 1, Ch. 216, §216.15 9 a (9).
Kansas	Yes	Not specifies under the state age discrimination law. The age discrimination law is codified under Ch. 44, Article 10 and 11. We were not able to find a case that we can reference in regard to attorneys' fees. However, we have found an employment case (unlawful discharge) where the court awarded damages and attorney fees. See <i>Schuessler v. Benchmark Marketing and Consulting, Inc.</i> (1993).
Kentucky	Yes	Specified under the state age discrimination law; it is codified under Title XXVII, Ch. 344, §344.450.
Louisiana	Yes	Specified under the state age discrimination law; it is codified under Title 23, Ch. 3-A, Part I, §303.
Maine	Yes	Specified under the state age discrimination law; it is codified under Title 5, Part 12, Ch. 337, Subchapter 6, §4614.
Maryland	Yes	Specified under the state age discrimination law; it is codified under Title 20, Subtitle 10, Part I, §20-1015.
Massachusetts	Yes	Provision on attorneys' fees for age discrimination was not clear under the statute, which is codified under Title XXI, Ch. 151B, §9, fourth paragraph. The fourth paragraph is designated to discuss the remedies in age discrimination. It doesn't specify on the provision of the attorneys' fees. However, references in <i>Powers v. H.B. Smith Company, Inc</i> and <i>Fontaine v. Ebtec Corporation</i> state that plaintiff is entitled to recover attorneys' fees.

	Attorneys' fees recoverable	Source
Michigan	Yes	Specified under the state age discrimination law; it is codified under Ch. 37, Article 8, §37.2802, which is Civil Rights Act. However, plaintiffs who prevail in age discrimination action under Fair Employment Practices Act [§ 423.301 et seq.; repealed] could not recover attorneys' fees. See <i>Matras v. Amoco Oil Co.</i> (1986).
Minnesota	Yes	Specified under the state age discrimination law; it is codified under Ch. 363A, §363A.33. Provision on attorneys' fee in case of mandatory retirement is codified under Ch. 181, §181.81.
Mississippi	No	No state age discrimination law.
Missouri	Yes	Specified under the state age discrimination law; it is codified under Title XII, Ch. 213, §213.111.
Montana	Yes	Specified under the state age discrimination law; it is codified under Title 49, Ch. 2, Part 5 §49-2-505 (8).
Nebraska	Yes	Not specified under the state age discrimination. The age discrimination law is codified under Ch. 48, Article 10. In <i>Synacek v. Omaha Cold Storage Terminals, Inc.</i> the trial court awarded front pay and attorney fees in addition to the jury's damage award to the employee. However, this case was reversed because the Supreme Court held that employee's action was pled in equity, and jury's findings thus were not binding on trial court. In determining on Nebraska's provision on attorneys' fees, we follow the trial court's decision on awarding attorneys' fees. It seems that once the court finds there was age discrimination they award attorneys' fees.
Nevada	Yes	Not specified under the state age discrimination. The age discrimination law is codified under Title 53, Ch. 613. The reference cited in <i>Chavez v. Sievers</i> states that "whether to award attorney fees, pursuant to offer of judgment statute and rule, lies within the discretion of the district court" governed by Title 2. Civil, Practice, Ch. 17, Judgments §17.115 and Rules of Civil Procedure for the Nevada District Courts, Rule 68.
New Hampshire	Yes	Specified under the state age discrimination law; it is codified under Title XXXI, Ch. 354-A, §354-A:22 (II).
New Jersey	Yes	Specified under the state age discrimination law; it is codified under Title 10, Ch. 5, §10:5-27.1.
New Mexico	Yes	Not specified under the state age discrimination. The state age discrimination law is codified under Ch. 28, Article I. It only specifies the provision on attorneys' fee for appeal (§28-1-13). The reference cited in <i>Smith v. FDC Corporation v. Cox</i> states that "reasonable attorney's fees may be awarded at court's discretion to prevailing complainant pursuant to New Mexico Human Rights Act."
New York	No	Not specified under the state age discrimination. The state age discrimination law is codified under Executive Law, Ch. 18, Article 15. The reference cited in <i>Lightfoot v. Union Carbide Corp</i> cites that "attorney fees are not recoverable under New York State Human Rights Law (NYSHRL) which prohibits employer from engaging in unlawful discriminatory practices because of age.

	Attorneys' fees recoverable	Source
North Carolina	Yes	Not specified under the state age discrimination. The age discrimination law is codified under Ch. 143, Article 49A. Although the age discrimination case in general employment does not specify provisions on the attorneys' fees, Ch. 126, Article 8 §126-41 allows the recovery of attorneys' fees in cases against state employment system. See <i>Area Mental Health, Mental Retardation and Substance Abuse Authority of Vance, Warren, Franklin and Granville Counties v. Speed</i> . In <i>Gadson v. North Carolina Memorial Hospital</i> , the plaintiff was awarded back pay and attorneys' fees for racial discrimination in 1977. Civil procedures regarding arbitration allows the recovery of attorneys fee (see Ch. 1, Subchapter XV, Article 45C, §1-569.21).
North Dakota	Yes	Specified under the state age discrimination law; it is codified under Title 14, Ch. 14-02.4 §14-02.4-20.
Ohio	Yes	Specified under the state age discrimination law; it is codified under Title XLI, Ch. 4112, §4112.05 (G)(1).
Oklahoma	Yes	Specified under the state age discrimination law; it is codified under Title 25, Ch. 21, Article 5, §1506.8.
Oregon	Yes	Specified under the state age discrimination law; it is codified under Title 51, Ch. 659A, §659A.885.
Pennsylvania	Yes	Specified under the state age discrimination law; it is codified under Title 43, Ch. 17, §959.
Rhode Island	Yes	Specified under the state age discrimination law; it is codified under Title 28, Ch. 5, §28-5-24.
South Carolina	No	Not specified under the state age discrimination. The age discrimination law is codified under Title 1, Ch. 13. In <i>Harris-Jenkins v. Nissan Car Mart, Inc.</i> , the court states that "In South Carolina, the authority to award attorneys' fees can come only from a statute or be provided for in the language of a contract. There is no common law right to recover attorneys' fees.
South Dakota	No	No state age discrimination law.
Tennessee	Yes	Specified under the state age discrimination; it is codified under Title 4, Ch. 21, Part 3, §4-21-306 (a)(7).
Texas	Yes	Specified under the state age discrimination; it is codified under Title 2, Subtitle A, Ch. 21, Subch. F §21.259.
Utah	Yes	Specified under the state age discrimination; it is codified under Title 34A, Ch. 5, §34A-5-107, (9)(b)(iii).
Vermont	Yes	Specified under the state age discrimination; it is codified under Title 21, Ch. 5, Subch. 6, §495b.
Virginia	Yes	Specified under the state age discrimination; it is codified under Title 2.2, Subtitle I, Part D, Ch. 26, Article 12, §2.2-2639
Washington	Yes	Specified under the state age discrimination; it is codified under Title 49, Ch. 49.60, §49.60.030 (2).

	Attorneys' fees recoverable	Source
West Virginia	Yes	Specified under the state age discrimination; it is codified under Ch. 5, Article 11, §5-11-13.
Wisconsin	Yes	Not specified under the state age discrimination. The state age discrimination law is specified under Ch. 111, Subch. II. In <i>Watkins v. Labor and Industry Review Commission</i> , the court reasoned that "an award of reasonable attorney's fees to a prevailing complainant is justified to promote the second purpose of the Act: to discourage discriminatory practices in employment. [...] We therefore hold that under sec. 111.36(3)(b), Stats. 1975, Department of Industry, Labor and Human Relations has the authority to award reasonable attorneys' fees to a complainant who prevails in an action brought pursuant to the Fair Employment Act.
Wyoming	Yes	Not specified under the state age discrimination. The state age discrimination law is codified under Title 27, Ch. 9. In <i>Spivey v. Lucky Mc Uranium Corp</i> , the district court awarded damages and attorney fees in favor of Spivey.

Appendix Table B: HRS Summary Statistics

	Retirement (collecting SS benefits) regression sample		Employment (full-time) regression sample		Any employment	
	Mean	St. dev.	Mean	St. dev.	Mean	St. dev.
<i>Dependent variables:</i>						
Retirement (Collecting SS)	0.494	0.500	...	...	...	...
Employment	...	...	0.418	0.493	0.456	0.498
<i>Independent variables:</i>						
Caught by increase in NRA	0.013	0.112	0.013	0.112	0.013	0.112
High school	0.348	0.476	0.347	0.476	0.347	0.476
Some college	0.192	0.394	0.192	0.394	0.192	0.394
College and above	0.224	0.417	0.222	0.416	0.222	0.416
Very good health condition	0.292	0.454	0.290	0.455	0.290	0.455
Good health condition	0.309	0.462	0.309	0.462	0.309	0.462
Fair health condition	0.167	0.373	0.169	0.375	0.169	0.375
Poor health condition	0.078	0.268	0.080	0.271	0.080	0.271
Partnered	0.032	0.177	0.033	0.179	0.033	0.179
Separated/divorced/widowed	0.136	0.343	0.137	0.344	0.137	0.344
Single	0.030	0.171	0.031	0.173	0.031	0.173
Black	0.138	0.345	0.141	0.349	0.141	0.349
Other race	0.035	0.185	0.036	0.187	0.036	0.187
Suburban	0.268	0.443	0.268	0.443	0.268	0.443
Ex-urban	0.312	0.463	0.311	0.463	0.311	0.463
Sample size	34,059		35,023		35,023	

Appendix Table C: Effects of State Age Discrimination Laws on Impact of Being Caught by Increase in Normal Retirement Age on Retirement and Employment between Age 65 and the Normal Retirement Age, With Age-State and Age-Year Interactions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Retirement (collecting SS benefits)				Employment (full-time)				Any employment			
Caught by increase in NRA \times Age \geq 65 \times Lower firm size	-0.184 (0.071)	...	...	-0.145 (0.088)	0.167 (0.090)	...	...	0.139 (0.106)	0.155 (0.086)	...	...	0.079 (0.101)
Stronger remedies	...	-0.063 (0.053)	...	-0.025 (0.069)	...	0.084 (0.057)	...	0.046 (0.075)	...	0.113 (0.054)	...	0.109 (0.069)
Longer statute of limitations	...	...	-0.063 (0.050)	-0.036 (0.055)	...	...	0.022 (0.055)	-0.012 (0.061)	...	...	0.007 (0.053)	-0.030 (0.058)
<i>Main effect:</i>												
Caught by increase in NRA \times Age \geq 65	0.131 (0.115)	0.010 (0.108)	-0.012 (0.100)	0.127 (0.115)	-0.174 (0.146)	-0.080 (0.127)	-0.029 (0.122)	-0.175 (0.146)	-0.113 (0.082)	-0.048 (0.044)	0.028 (0.032)	-0.113 (0.082)
<i>Combined effect:</i>												
Interaction plus main effect	-0.053 (0.100)	-0.053 (0.102)	-0.051 (0.106)	...	-0.006 (0.119)	0.004 (0.122)	-0.006 (0.124)	...	0.042 (0.026)	0.065 (0.030)	0.035 (0.042)	...
R ²	0.666	0.666	0.666	0.666	0.350	0.350	0.350	0.350	0.314	0.314	0.315	0.318
Sample size	34,059	34,059	34,059	34,059	35,023	35,023	35,023	35,023	35,023	35,023	35,023	35,023

Note: Notes to Table 6A apply, but age (in two-month increments) interactions with state and year are added. The main effect of “Caught by increase in NRA” is still identified for reasons explained in the notes to Table 4.