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# The Law and Policy of Judicial Retirement: An Empirical Study

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## Abstract

Lifetime tenure maximizes judicial independence by shielding judges from political pressures, but it creates problems of its own. Judges with independence may implement their political preferences. Judges may remain in office after their abilities degrade with age. The U.S. federal system addresses these problems in an indirect way. When judges' pensions vest, they receive a full salary regardless of whether they work. Judges can retire, receive their pension, and obtain paying work elsewhere. This limits some of the harmful effects of judicial independence by encouraging judges to vacate their offices when they become old, and by causing judges who lack talent, and therefore find their work burdensome, to leave office. We test the benefits and costs of this system using a database of federal district judges. We find that the vesting system causes judges to retire as expected, but that higher-quality and wealthier judges are less sensitive to the financial incentives of the system; and that some judges appear to time retirement so that the president will appoint likeminded judges.

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## 1. Introduction

Judicial independence is the centerpiece of liberal democracy. In the United States, the founders secured judicial independence by placing the judiciary in a coequal branch of government, protecting judicial pay, and providing for lifetime tenure. Lifetime tenure was crucial: if judges did not have to depend on the whims of elected officials such as the president for their future employment, they would not be afraid to rule independently.[2]

But lifetime tenure has a conspicuous disadvantage. There is the problem of older judges staying on at the job, after their skills have eroded. In theory, the judicial council of a circuit can declare a judge disabled, which in turn allows the President to appoint a replacement. However, judicial councils seem reluctant to declare colleagues with whom they have worked for years unfit, except in extreme situations (Campbell 2009).[3] Anecdotally, the more typical process is for the Chief Judge to have an informal conversation with the judge whose capacity has diminished and try to persuade him or her to retire. However, these uncomfortable conversations are unlikely to occur until the problem becomes serious (Chase 1972, 193; Darrow 2000, 1085).[4] The result is that judges are likely to stay on the bench longer than they should.

Because of advances in longevity, a judge appointed today at the age of 50 can expect to live until the age of 80.9, and hence have a potential de facto term of 30.9

[2] This is not complete independence. Sitting judges might still be motivated by the prospect of promotion to a higher court or the possibility of resigning and obtaining employment elsewhere in government (former judges have been appointed to positions such as the head of the FBI, Attorney General, Solicitor General, Secretary of Homeland Security and so on).

[3] The authority for the judicial council comes from the Judicial Council and Disability Act of 1980. 28 U.S.C. §§ 352-64. The Seventh Circuit used this authority in 199 to remove Judge Paul Riley of the Southern District of Illinois, who had become mentally unfit after five years in office (which meant he was unable to retire at full salary under 28 U.S.C. § 372(a). Cf. U.S. District Judge Paul Riley Will Retire From Bench Because of Medical Problems, St. Louis Post Dispatch, November 10, 1999.

[4] Id.

years.[5] We do not have comparable figures for the eighteenth century but we know that life expectancy at birth was much shorter than it is today—only 56 years for men (Fogel 2004; 2). The first twenty Supreme Court justices died at an average age of 69.7. A sample of twenty Supreme Court justices and circuit court judges who died in recent years indicates an average age of death of 79.6, a difference of nearly a decade.[6]

This is a problem for several reasons.[7] First, if, as appears to be the case, medical technology keeps people alive longer but is not as good at preventing the deterioration of their mental faculties, then judges with eroded skills will stay in office longer today than they did in the past.[8] Second, judges whose judicial philosophies or political commitments are mainstream when they are appointed may linger in office long after those philosophies and commitments lose their respectability. Many commentators argue that presidents should have the option to appoint like-minded judges, which they cannot very often if judges stay in office for long periods of time (Crampton & Carrington 2005).

The contrast with private employment is instructive: private employers fire employees when their skills degrade. The founders rejected this approach for judges because it would compromise judicial independence. If politicians enjoy the power to fire incompetent judges, they can use that power to fire politically inconvenient judges.

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[5] U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States 76 (2011 ed.), available at http://www.census.gov/compendia/statab/2011/tables/11s0102.pdf (last visited Jan. 30, 2010).

[6] Authors' calculations based on data from Administrative Office of the U.S. Courts, Biographical Directory of Federal Judges, available at www.uscourts.gov/JudgesAndJudgeships/BiographicalDirectoryOfJudges.aspx (last visited Jan. 30, 2010).

[7] As urged by a number of scholars, who believe that Supreme Court justices stay in office for too long. See, e.g., Crampton & Carrington (2005); Calabresi & Lindgren (2005).

[8] As suggested anecdotally by Goldstein (2011), which notes that 12 percent of sitting federal district and circuit judges are 80 years older, and that the fraction of judges 80 and older has doubled in the last twenty years.

The impeachment power offered a third way, but it has turned out to be too difficult to use, and has largely been directed against judges who commit crimes.[9]

Other systems address the problem of judicial independence and competence in different ways. In many states and most foreign countries, judges either receive fixed terms or are subject to a retirement age. These approaches are crude but effective ways to remove incompetent judges. But they are not costless. If a judge has a single term, then a highly competent and experienced judge cannot be retained. If the judge has a renewable term, then she might decide cases so as to please her political masters—judicial independence is compromised (e.g., Shepherd 2009). Mandatory retirement also deprives the state of judges who are experienced and whose abilities have not yet eroded.

The U.S. federal system has evolved an approach for removing incompetent judges despite lifetime tenure. It operates on the carrot principle. Rather than remove judges who reach a certain age, the system indirectly bribes judges to leave office or take a reduced workload when they reach a certain age or level of experience.[10] When judges reach the age of 65, they become subject to the Rule of 80. Under the Rule of 80, a judge receives a full pension—equal to his or her salary—when the judge's age and the judge's years of experience on the bench equal 80. For example, a 65-year-old judge with 15 years on the bench qualifies under the Rule of 80, as does a 70-year-old judge with 10 years on the bench.[11]

It is important to understand that because a judge receives full pay upon satisfying

[9] Only a handful of federal judges have ever been impeached. And over the past half century, every one of them has been removed for what either was or would have constituted criminal behavior. See Impeachments of Federal Judges (available at http://www.fjc.gov/history/home.nsf/page/judges_impeachments.html ) (last visited February 5, 2011).
[10] There are also informal means of pressure, as described in Goldstein, supra.
[11] See 28 USC § 371(e)(1).

the Rule of 80, the judge has no pecuniary reason to stay in office. The judge may continue to serve, but does not receive any dollars for doing work. In effect, the judge's salary is reduced to $0. In addition, a judge who leaves office can earn more money in the private sector or simply enjoy leisure with no monetary penalty. And judges who take their pension are exempt from FICA and Medicare payments (in some states, they are also exempt from state and city income taxes) (Block 2007; 539). Thus, the financial benefits to leaving active status are considerable for a federal judge.

The judge who decides to leave office ("active status") faces a further choice: to remain on senior status with a reduced workload or to resign. A judge on senior status usually has a reduced caseload.[12] Table 1 summarizes the effects of these choices (assuming the Rule of 80 is satisfied).

**Table 1**[13]

| | Active Judge | Senior Judge | Resigned |
|---|---|---|---|
| Salary | Full | Full | Full |
| Tax Benefits | No | Yes | Yes |
| Private Sector Pay | No | No | Yes |
| Accoutrements of Power[14] | Yes | Partial | No |
| Caseload | Full | Partial (typically 25 to 100%) | None |

[12] See 28 USC § 371(e)(1). The amount of work that the judge chooses to do can matter for two reasons. First, only judges who maintain a workload above 25% of the typical load are entitled for extraordinary salary increases (that is, increased beyond the cost-of-living increases). Second, the number of support staff a judge is entitled to also depends on his workload (circuits typically have a scale according to which staff reductions are a function of workload decreases).

[13] A fully specified table could include at least three additional columns, for resignation, disability and involuntary disability. We only briefly mention these because they do not change our analysis meaningfully. Retirement differs from "resignation" (column 3) in the sense that the judge retains *some* indicia of office—the retired judge retains his chambers and can use the title "Judge" (as a resigned judge cannot), and remains bound by the Code of Judicial Conduct (hence no private practice), but does not exercise judicial authority and is not allocated any staff. Disability under §372(a) is a form of early senior status. The judge who is certified disabled after 5 years on the bench can receive 50% of his salary without regard to age, and 100% of salary with 10 years of service, again without regard to age. A disabled judge can continue hearing cases, to the extent compatible with the disability. Finally there is involuntary disability retirement under §372(b). It is not used often, because §372(a) (or senior status under the Rule of 80) usually is available for a judge who can be persuaded that the time has come to leave.

[14] Office, robe, honorific, etc.

| | | | |
|---|---|---|---|
| Political Effects | N/A | Creates vacancy (an extra spot) | Creates vacancy (not an extra spot) |

The incentives created by this system are more complex than they first appear. A judge who seeks to maximize her pecuniary return would resign rather than take senior status because resignation permits her to earn income in the private sector. A judge who cares at least a little about money should prefer senior to active status because of the considerable financial benefits. However, that judge's status will be somewhat reduced. At the appeals court level, the judge no longer votes on whether to hear a case en banc and generally does not have the right to assign opinions.[15] At the district court level, there are fewer concrete effects, but there may be a diminishment in status – others may read the choice to take senior status as a sign that the judge has diminished in capacity.[16] Finally, a judge who wants to increase the representation of her party on the bench does best by taking senior status (while a same-party president is in office) so that she remains on the bench while a new position is created.[17] If the judge resigned, the temporary extra

[15] A senior judge may still *sit* en banc if the court rehears a case in which the judge served on the panel. 28 U.S.C. §46(c).

[16] See Block (2007; 533) (noting the reluctance of some law students to apply to senior judges for clerkships). Along these lines, one of the pieces of advice that one law school provides to law students thinking of applying for clerkships is that "The judge's senior status may reduce competition for these clerkships." See St. Louis University Law School Clerkship Website (available at http://law.slu.edu/careers/opportunities/judicial_clerkships.html ).

[17] An intriguing possibility here that is that a judge choosing whether to take senior status might be able to negotiate whether or not he wishes to take that status as a function of who is likely to be appointed to replace him. One senior judge explicitly acknowledged that part of his decision as to whether he was going to take senior status was a function of who the likely candidates were to replace him. Of his choice to take senior status, he explained:

> This reality required me to decide whether I would defer taking senior status until it was more likely that my successor would be of my political persuasion, which would require waiting until one of the Democratic Senators had a pick or a Democrat might be elected President three years hence. . . . . My decision to take senior status would not therefore be driven by my personal political beliefs but rather by the hope that my successor would meet that standard of excellence.
>
> My hope for such a successor was soon realized when the governor's office told me that the governor had two candidates whom he would recommend to the White House to fill my vacancy should I take senior status: One was a former law clerk of mine and one of the very best; the other

position would not be created.

Recall that the purpose of this system is to encourage judges to stop judicial work as their ability erodes. Will it? Let us compare this system to a baseline system where judges work until a mandatory retirement age of 70. Evaluation of this system is straightforward. It removes judges who would become incompetent after age 70, but it also removes judges who would remain competent after age 70 and does not remove judges who became incompetent before age 70. These false positive and false negative costs may well be high.

By contrast, the current system encourages elderly judges to take senior status or to resign but does not compel them to. It seems to assume that judges will enjoy their work most when their abilities are sharp. As their abilities decline, the burden of work will mount, and hence the incentive to quit will increase. The retirement system removes the pecuniary incentive to remain a judge beyond this point (as long as the Rule of 80 is satisfied). The main advantage of this system, compared to mandatory retirement, is that judges who remain sharp beyond the age of 70 will be less tempted to resign, and thus will continue to contribute to the judicial system—if need be, on a reduced basis. In addition, incompetent judges over 65 who have satisfied the Rule of 80 will be tempted to resign.

However, the assumption that competence and desire to work as a judge are positively correlated might be wrong. Judges might enjoy their status, or they might

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was also known by me to be extraordinarily well-qualified. I had no trouble "making way" for either candidate, and I immediately submitted my letter to the President taking senior status. The Governor quickly sent both candidates to Washington, D.C. to be interviewed by the White House Counsel's Office, and one of them, Brian Cogan, now Judge Cogan, soon became my successor.

Block (2007; 545); cf. Stras & Scott (2007; 470) (describing the deal that was struck on the Ninth Circuit where Judge Betty Fletcher took senior status in order for her son, William Fletcher, to be able to get confirmation).

derive utility from exercising power or influencing policy—and they might do so regardless of their declining competence. Indeed, the mental erosion that ought to compel a judge to resign or take senior status might blind her of the need to do so. Another cost is that the system gives judges the power to influence the composition of the bench. If a judge resigns or takes senior status, the president appoints a replacement. If the judge does not approve of the politics of the existing president, she may hang on until the next; if she does approve of the politics of the existing president, she may be sure to resign or take senior status while that president is still in office. In an unusually clear example of this phenomenon, Judge U.W. Clemon wrote in his resignation letter to President Obama: "When it became clear to me last spring that Almighty God had ordained you as the next president of this great nation, I delayed my retirement so that you would appoint my replacement."[18]

Finally, because the current retirement system exerts influence by pecuniary means, its effects on judicial incentives may vary with the wealth or legal skill of judges. Anecdotal evidence suggests that some former judges are well-paid arbitrators or law firm partners;[19] in a number of cases, judges have cited financial considerations as reasons to resign.[20] Thus, the retirement system may provide less of an incentive to wealthy judges to resign or take senior status than to average judges. It also may be the case that outside job options will be more available to the judges who were more influential and demonstrated greater legal skill when they were active judges. On the flip

[18] Letter from Judge U.W. Clemons to President Barack Obama, January 20, 2009, available at http://blog.al.com/bn/2009/01/Resignationletter.pdf. In a survey of judges asking whether political factors influence their decision to take senior status, 81 percent said no, 16 percent said yes, and 3 percent said maybe. Yoon (2005, 528).
[19] Using web searches, we have found information on 22 judges in our dataset who resigned or retired and then took what appear to be highly paid jobs at prestigious firms or set up arbitration practices.
[20] See, e.g., Lattman (2007).

side, those judges with greater influence and skill may be the ones who enjoyed it more and, therefore, might be the least willing to exit via either senior status or resignation.

So much for theory. In this paper, we test some of these ideas by statistically examining the retirement decisions of a large dataset of federal district judges. We find both that the system works as advertised—pecuniary incentives to take senior status (but not to resign) are effective—and that its incidental costs are real. Judges do time their retirement decisions for political reasons, and wealthy judges are not sensitive to pecuniary incentives. These effects operate differently across types of judges. Judges who work harder and are better at their jobs are less likely to respond to financial and political incentives to retire.

## 2. Literature Review

The judicial behavior literature has uncovered evidence that judges decide cases in a way that at least partly advances their ideological preferences. This evidence has led scholars to examine whether judges' political preferences influence other decisions they make, including the timing of their retirements. On this view, judges should try to take senior status when a like-minded president holds office and thus will have the opportunity to appoint ideologically similar replacement, or when legal or institutional changes make it difficult for them to satisfy their political preferences. Judges are human beings as well as political animals, so retirement may be influenced by factors that contribute to their well-being—including judicial pay, opportunities for higher pay in the private sector, and similar compensation and quality-of-life issues. Vesting of one's pension through satisfaction of the Rule of 80 should increase the probability of taking

senior status or resigning.

Barrow & Zuk (1990) found evidence that district judges time their move to senior status in order to open up vacancies for same-party presidents. Spriggs & Wahlbeck (1995) also found evidence for this political Timing Effect; they also found evidence that judges take senior status when their pensions vest. Baker (2000) also found some evidence of the political Timing Effect. However, all three of these papers are vulnerable to methodological criticisms.[21] More recent work using more appropriate models and more control variables has found little evidence of Timing Effects. This work includes Boylan (2004), who instead finds that the introduction of the Sentencing Guidelines, which reduced judicial discretion, increased the probability of judicial retirement,[22] and Yoon (2005, 2006), who instead finds strong evidence for Pension Effects. A recent study by Hansford et al. (2010) finds that only judges eligible for retirement are influenced by Timing Effects; pre-pension-eligible judges, by contrast, hope to be elevated to the circuit court, and so retire if they are too frequently passed over, regardless of the political party of the president.[23]

We build on this work in several ways. First, the previous work does not distinguish judges according to their abilities; we examine how judges of different abilities respond to the incentives created by the retirement system. Second, the prior work does little to distinguish resignation and senior status, which we also examine. Third, we use a new dataset that contains the retirement decisions over the last ten years—the older studies use data sets covering different time periods from farther in the

[21] For criticisms, see Yoon (2005, 503-05; 2006, 149-150); Boylan (2004, 251).
[22] But because Boylan (2004) tests the effect of the sentencing guidelines by using post 1989 [] as a dummy variable, he actually just captures a time-trend which is open to multiple interpretations.
[23] Other studies have examined the retirement decisions of circuit judges and supreme court justices, with similarly mixed results; see Lindgren & Stolzenberg (2010).

past.

### 3. Judicial Ability and Institutional Design

Given the wide variation in terms of the both the local processes used for selecting nominees for judicial positions and the variety of reasons why someone might be nominated, there is likely to be variance in the types of lawyers who receive judicial appointments. Some judges are dedicated public servants and exceptional intellects and others are purely political appointments. The lore on judicial behavior suggests three broad judicial types. (1) *Time-servers* are those who see judging as a secure, high-status, and well-paying job but not as a source of intellectual enjoyment. (2) *Politicians* are those who see judging as an opportunity to implement their moral and political preferences. (3) *Intellects* are those who derive enjoyment from judging, either because of the intellectual challenges or because of the opportunity to do justice.

We predict that time-servers will be more sensitive to the financial incentives created by the judicial retirement system than are politicians and intellects. Politicians will be most likely to take advantage of the power to time retirement so as to give a same-party president the opportunity to appoint a like-minded replacement. Intellects will be insensitive to both types of incentives.

To test these hypotheses, we need a set of proxies that plausibly separate out the judges who enjoy their jobs or are more dedicated to them from the others.

*Publication Rate:* We define Publication Rate as the number of published opinions for a judge in 2001 and 2002 divided by the average number of filings per judge

in that judge's district (total filings for the district divided by number of judgeships in that district).[24]

*Positive Citations:* We define Positive Citations as the average number of positive outside-circuit citations (including federal appellate and trial courts, and state courts) to a judge's published opinions from 2001 and 2002 as tracked by Westlaw.

*Affirmance Rates*: We define the affirmance rates for a judge as the number of non-overruled published opinions, including non-appealed opinions, divided by the total number of published opinions in 2001 and 2002.[25] The normal intuition might be the judges with low affirmances are likely to be worse (time servers); after all, they are being reversed more. However, judges have a degree of control over how to explain their decisions and can influence the likelihood of reversal (for example, by deciding whether to publish an opinion or not--unpublished opinions are much less likely to get reversed). Hence, other things equal, a lower affirmance rate might indicate a higher degree of engagement; that is, a willingness to take risks. In prior research looking at the decisions of district judges on preliminary motions, we find some results consistent with this premise (Choi, Gulati & Posner 2011).

*Term Clerks versus Permanent Clerks*: Judges can choose to hire either single "term" clerks (short duration clerks, who are usually right out of law school) or multiple

[24] By published opinions, we mean opinions that are available in the published reports issued by Westlaw. Although Westlaw can publish whatever opinions it wants to publish, anecdotal reports suggest that Westlaw simply publishes whatever opinions judges choose to designate as published opinions. In recent years, because of the widespread availability of judicial decisions on the electronic databases, and particularly the passage of the E-Government Act, the distinction between published and unpublished opinions may have become less important. However, we suspect that the choice to send an opinion for inclusion in the print version is still an important one that reveals information about the case in question and the judge. That said, we constrain our database of opinions to roughly the period immediately prior to the passage of the E-Government Act in late 2002. See E-Government Act of 2002 (Pub.L. 107-347, 116 Stat. 2899, 44 U.S.C. § 101, H.R. 2458/S. 803) (enacted December 17, 2002, with an effective date for most provisions of April 17, 2003).

[25] We also collected data on appeal rates for individual judges from Westlaw. However, the data here are particularly noisy because of large variation in particular types of frivolous appeals.

term, often "permanent" clerks. Hiring single term-clerks involves more work for the judge because he has to retrain a fresh group of clerks every year. Judges who are able to easily handle their work and enjoy training young lawyers, however, will happily do this extra work. By contrast, the judges who find the job to be difficult and who need clerks who can do their work for them (in effect, functioning as a junior judge) will be more likely to use a longer-term or permanent clerk.[26] We assume that intellects are more likely to hire term-clerks (that is, one-year clerks).[27]

*Clerks from Top Law Schools*: Judges have considerable discretion in the selection of their law clerks. Given the high status associated with a federal clerkship, federal judges tend to be overwhelmed with applicants. A judge, in choosing her clerks, can hire the best applicants and that is what she would do if she wanted the best team possible to assist her. However, the judge might also choose to give out her clerkships as favors to the children of her friends, rewards to students who signal a particular political bent, or presents to her alma mater. One way to examine whether a judge is more likely to be using her clerk hiring to satisfy personal preferences rather than improving the

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[26] It has been suggested, along these lines, that the availability of law clerks enables judges with diminishing capacities to stay at the job longer than they might otherwise be able to. Makar (1997); Posner (1995; 181). It stands to reason, therefore, that that particular effect is more likely to operate with the use of permanent clerks than with the use of term clerks.

[27] We base this assumption on conversations with federal judges. One district judge told us: "judges who pick [long] term clerks are less ambitious and less confident of their own ability (in my view)…. Smartest clerks are [short] term clerks. Smart hard working judges, who are ambitious and not dependent on their clerks intellectually, want: smart clerks who might end up in leadership/leading positions in government, private practice, the academy, etc." Along these lines, other researchers report both the view that short-term clerks are perceived to be smarter and that the longer term clerks are better able to substitute for the judge. Take the following passage:

> One of our subjects recounted with evident distaste how it had been widely rumored among the bar that the decisions and opinions of one of the career-clerks-equipped district judges were the product of the clerks rather than the judge. One of the district judges' clerks with whom we spoke described his co-clerk [a career clerk]. . . as more concerned with "efficiency" and less inclined to "discursive discussion" than the other clerks . . . the career clerk was also said to be very good at predicting the behavior of his judge.

Oakley & Thompson (1980; 104).

quality of the work being produced is to look at the fraction of a judge's clerks who have attended one of the top fifteen law schools. We assume that every federal district judge, no matter how obscure, can hire a law clerk who finished near the top of her class at a top 15 law school. If the judge systematically hires from below the top 15 schools, she is probably not very concerned about quality of her work product. Such a judge, we predict, is more likely to respond to inducements such as the Rule of 80 and the prospect of furthering policy preferences. As our measure of the fraction of top law school clerks, we compute the fraction of clerks from top law schools for each judge from 1996 to 2000.[28]

We assume that intellect-type judges have higher publication rates, positive citations, and single-term clerk rates as well as greater fraction of top law-school clerks. We are less clear on the relationship between low affirmance rates and intellect-type judges--high numbers of reversals may indicate a problem with a judge's decisionmaking or it may also indicate a judge more willing to take risks with their decisions.

We also look at variables that help us identify judges who are time-servers or politicians, or that otherwise shed light on the incentives created by the judicial retirement system.

*Wealth*: Judges who are wealthy should care little about the Rule of 80. These wealthy judges are not there because of the attractive retirement benefits that a federal judgeship provides. And therefore, we predict that wealthier judges should be less responsive to this particular inducement.

[28] We are grateful to Daniel Katz for sharing his data on law clerks with us.

*Politics:* Judges who are of the opposite party from the president may seek to stay active longer than they would otherwise. Once a same party president takes office, such judges may then have a discontinuously greater change of leaving active status.

*Climate:* Judges who do not enjoy the business of judging may be more likely to leave active status when the opportunity cost of remaining a judge is high. One opportunity cost is the ability to enjoy good weather outside of the judge's chambers. We assume that this weather effect will have relatively little impact at younger ages, when the judge has only recently joined the bench. After all, the judge would have been aware of the weather conditions in her particular location. However, age can make a cold weather climate less attractive. We predict that as a judge ages, a cold weather climate will become increasingly correlated with a greater propensity to leave active status.

In addition to the above factors, we also look at a number of other demographic factors such as race, gender, age, prior occupation (as a judge, prosecutor, private practitioner), and whether one attended a top law school. These are all variables that could influence the choice to retire, although it is not clear that these variables would necessarily separate out our judges in terms of their susceptibility to the Rule of 80 and the opportunity to influence the politics of their successors. Hence we use these as control variables.

## 4. Dataset

Our dataset consists of information about the decisionmaking of all of the federal district judges who held office in 2001 or 2002 (developed in Choi, Gulati, and Posner (2011)). We focus only on those judges who were not senior for at least part of the time

in 2001 or 2002. This leaves us with 596 initially active district judges. Most of the judges in our sample were appointed in 2000 or earlier (95.5%). Some were initially appointed in 2001 (2.0%) and 2002 (2.5%). We track our initial set of active judges from 2000 to 2010.

Table 2 describes our sample of judges. The circuit with the most federal district judges is the Ninth Circuit (85 judges). The circuit with the least is the D.C. Circuit (13 judges). Of the 596 judges who were initially active in our sample, 55.7% were still active at the end of 2010. We focus in this study on voluntary judicial departures—either through resignation (2.0% of the sample) or taking senior status (37.8% of the sample). A small number of judges left involuntarily—either through death (2.0%) or impeachment (0.2%). A small fraction of judges were also elevated to a higher court (the federal court of appeals) (2.4%).

The fraction of the sample that departs voluntarily varies in a relatively narrow range from 2001 to 2008 (from 8.4% to 11.4%). In 2009, the year following Barack Obama's election, however, the fraction of the total sample that departs jumps to 16.9% (the highest fraction for all sample years). In 2010, the fraction drops to 6.3% (the smallest fraction in all sample years).

## 5. Tests

### 5.1. The Rule of 80 and Judicial Quality

For our Rule of 80 test, we define Rule80, a time varying covariate, as equal to 1 if the judge meets the rule of 80 in the year in question or the next year and 0 otherwise. We exclude those judges who leave active status involuntarily (either through death or

impeachment). We also exclude judges who are elevated to a higher court. We therefore test the voluntary decision on the part of district judges either to remain in active status as a district judge or to resign or take senior status.

We tabulate a number of judge characteristics (referred to as the Judge Characteristic variables). The judge characteristics we assess include whether the judge is female (Female), black (Black), and of another minority race other than Black (Other Race). We also look at the age (Age) and number of years of federal judicial experience (Experience) of the judge in the year in question. Next, we tabulate whether the judge was employed immediately before becoming a federal district judge as a state court judge or magistrate (Prior Judge), a prosecutor (Prior Prosecutor), or in private practice (Prior Private Practice). Finally, we look at whether the judge graduated from Harvard, Yale, or Stanford Law School (Top School). Table 3 provides summary statistics on the Judge Characteristic variables as well as other independent variables used in the paper's tests. The Appendix provides a description of the variables.

For our test, we employ a Cox proportional hazard model. The dependent variable is the number of years (from the start of the study period in 2000) until a judge chooses to leave active status. For judges who remain active at the end of our study time period in 2010, the number of survival years is equal to 10 (the number of years from 2000 to 2010). For each judge, the dataset contains separate observations for each year of survival containing both time-invariant characteristics of the judge (including Female, Black, Other Race, Prior Judge, Prior Prosecutor, Prior Private Practice, and Top School) and time-varying characteristics (including Age and Experience). The Cox proportional hazard model we estimate is as follows:

$$h(t, \mathbf{X}) = h_0(t)e^{x'\beta}$$

In the Cox hazard model, $h(t, \mathbf{X})$ is the hazard rate. The Cox model is semiparametric and does not require us to make assumptions about the baseline hazard rate, $h_0(t)$. In the Cox model, $\mathbf{X}$ represents the vector of regressors and $\beta$ is a vector of estimated coefficients. For our first model, we include our Judge Characteristic variables as regressors, including Female, Black Other Race, Age, Experience, Prior Judge, Prior Prosecutor, Prior Private Practice, and Top School. We also include the Rule80 variable.

Model 1 of Table 4 reports the results. The model reports the hazard ratio for each independent variable. The hazard ratio represents a multiplier relative to the baseline hazard rate. A hazard ratio of more than 1 represents a positive effect on the odds of a judge choosing to leave the bench. Conversely, a hazard ratio of less than 1 represents a negative effect on these odds.

We construct two additional models to test whether judges with varying quality (along the dimensions we measure) respond differently to the Rule of 80. In Model 2 of Table 4, we include an indicator variable for whether the judge's Publication Rate is at the 75th percentile or lower for our sample judges (Low Publication Rate). We also include an interaction term between Rule80 and Low Publication Rate to assess the particular impact of the Rule of 80 on such judges. In Model 3 of Table 4, we include an indicator variable for whether the judge's Positive Citations is at the 75th percentile or lower for our sample judges (Low Positive Citations). We also include an interaction term between Rule80 and Low Positive Citations. We select the 75th percentile to separate out the top 25 percent of judges who are more likely to be "superstar" judges.

The judicial behavior literature indicates that superstar judges may have discontinuously greater publication and citations numbers compared with non-superstar judges.[29] Unlike Model 1, we estimate Models 2 and 3 only for those judges still active at the beginning of 2003 to avoid possible endogeneity problems with Low Publication Rate and Low Positive Citations which are both determined based on opinions published in 2001 and 2002.

We find that judges respond strongly to incentives created by the Rule of 80. In the three models of Table 4, the hazard ratio on Rule80 is greater than 1 (significant at the 1% level). In the year a judge meets the Rule of 80 and the year after, the judge is much more likely to take senior status. The magnitude of the hazard ratio is also large. In Model 1, for example, the hazard ratio for Rule80 is 12.22, indicating that judges who have recently qualified for full retirement pay are 1,122% more likely to take senior status than the baseline judge hazard rate. The results provide strong evidence that the Rule of 80 does in fact cause judges to withdraw from active status, consistent with Yoon (2005, 2006).

We also find evidence about the relationship between judicial ability and retirement. In Model 2, the hazard ratio on Low Publication Rate is less than 1 and significant at the 10% level, indicating that less productive judges are generally less likely to leave the federal bench (perhaps because of lower opportunity costs). In contrast, the hazard ratio on Rule80 x Low Publication Rate is greater than 1 and significant at the 1% level. The hazard ratio for the sum of Low Publication Rate + Rule80 x Low Publication Rate is equal to 2.10 (and significant at the 5% level),

[29] For discussions of the distributions of citation and publication rates for appellate judges, see, e.g., Choi & Gulati (2004); Farber (2005).

indicating the Rule of 80 has a particularly strong effect in getting Low Publication Rate judges to depart from active status. These results are consistent with the time-server model: judges who do not work hard remain in office (rather than taking a higher-paying but more challenging private sector job) up until they can make more money and work even less hard by taking senior status.

In Model 3, the hazard ratio on Low Positive Citations is less than 1 and significant at the 1% level, indicating that judges with Low Positive Citations (and thus lower opinion quality) are less likely to leave the federal bench (perhaps again because of lower opportunity costs). In contrast, the hazard ratio on Rule80 x Low Positive Citations is greater than 1 and significant at the 5% level. The hazard ratio for the sum of Low Positive Citations + Rule80 x Low Positive Citations is equal to 1.03 but is not significantly different from zero. These results are consistent with but weaker than the results for low publication rate. Low-citation judges, like low publication-rate judges, remain in office rather than take more challenging private sector jobs, but they are no more likely than other judges to retire when the Rule of 80 kicks in.

In Model 4, we include an indicator variable for whether the judge's Affirmance Rate is at the 75th percentile or lower for our sample judges (Low Affirmance Rate). As with Models 2 and 3, we estimate Models 4 only for those judges still active at the beginning of 2003 to avoid possible endogeneity problems with Low Affirmance Rate, which is determined based on opinions published in 2001 and 2002. The hazard ratio on judges with low affirmance rates is above 1 (significant at the 10% level). This suggests that Low Affirmance Rate judges are more likely to exit than ordinary judges. There are two possibilities here. The first is that it may be that being reversed is a particularly

unpleasant experience (anecdotally at least, judges do not like being reversed). It stands to reason, then, that judges who find the job less rewarding will be those more likely to exit in order to take advantage of other opportunities. The second possibility is that the low affirmance judges are the subset of judges who are more willing to take risks – that is, to write the kinds of opinions that advance the law and risk reversal. These judges may well be the better judges and, assuming that the market recognizes this, will be the ones with better private sector options. We find some clues into which of these possibilities is at play when we look at the interaction with the Rule80 variable.

With the interaction between Affirmance Rate and Rule80, we see a hazard ratio below 1 (significant at the 5% level), telling us that these low-affirmance judges are less likely to be influenced by the Rule of 80. That, in turn, suggests that judges who are willing to court reversal more, at the district court level, are of the more engaged type (intellects).[30] The hazard ratio for the sum of Low Affirmance Rate + Rule80 x Low Affirmance Rate is equal to 0.83 but is not significantly different from zero.[31]

As for our control variables, in all three models, the hazard ratio for Female is less than 1 (ranging in significance from the 5% to 10% levels), indicating that female judges are less likely than male judges to leave active status. The hazard ratio on Female in Model 1 indicates that the rate of voluntary departure from active service for female judges is 37.9% less than for male judges (holding all other variables constant). One can

[30] A possible selection effect may also occur. Those low affirmance judges who find reversal unpleasant may have exited the judiciary prior to reaching the Rule of 80. Those low affirmance judges who remain up to the Rule of 80 may consist of the more risk-taking and engaged judges.

[31] We calculated the average affirmances per appeal for the 2001 to 2002 period for each of our district judges based on all appealed cases, including both published and unpublished decisions (termed "Affirmances Per Appeal"). As a robustness test, we re-estimated Model 4 replacing Affirmance Rate with Affirmances Per Appeal and Rule 80 x Affirmance Rate with Rule 80 x Affirmances Per Appeal. Unreported, the hazard ratios on Affirmances Per Appeal and Rule 80 x Affirmances Per Appeal were not significantly different from zero.

speculate about this result—perhaps women find the job more interesting or become senile later in life, and thus are less likely to find judging burdensome, or perhaps our control variables do not fully account for differential opportunity costs—but we do not have an explanation.

In all three models, the hazard ratios for Age and Experience are greater than 1 (and significant at the 1% level), indicating that judges with greater age and judicial experience are more likely to leave active status. This result is consistent with the hypothesis that older judges grow tired of judging—either because judging becomes more difficult at advanced age (the Age Effect) or because judging becomes more tedious with experience (the Boredom Effect).

We performed a number of robustness tests. We re-estimated the models in Table 4 with the addition of alternate definitions of Top School,[32] an independent variable for district court workload,[33] an independent variable for the number of judges in the district court,[34] and squared terms for Age and Experience.[35] The ability of senior judges to

[32] We do not employ a continuous measure of school quality because we conjecture that a discontinuous drop exists in school quality. For example, there is likely a bigger drop in quality between the top 15 law schools and then next 15 law schools compared with the drop in quality between the schools ranked 86 to 100 and the schools ranked 101 to 115. Instead, we re-estimated the models in Table 4 with an expanded definition of Top School encompassing the top 10 schools as ranked by US News in 1987 (Top 10 School). Unreported, we obtained the same qualitative results as in Table 4. The hazard ratios on Top 10 School were insignificant in all the models. We also re-estimated the models in Table 4 with an expanded definition of Top School encompassing the top 15 schools as ranked by US News in 1987 (Top 15 School). Unreported, we obtained the same qualitative results as in Table 4. The hazard ratios on Top 15 School were insignificant in all the models.

[33] We re-estimated the models in Table 4 with the addition of the number of filings of civil and criminal cases per judge for the district court in 2000 (Filings Per Judge) as an independent variable (to proxy for the workload facing judges in the specific district court). Unreported, we obtained the same qualitative results as in Table 4. The hazard ratios on Filings Per Judge were insignificant in all the models except for the re-estimated Model 4 where the hazard ratio for Filings Per Judge was greater than 1 and significant at the 10% level.

[34] We re-estimated the models in Table 4 with the addition of the number of district judges in the specific district court as an independent variable (to test whether the size of the court matters to the retirement decision). Unreported, we obtained the same qualitative results as in Table 4 with the following differences. The hazard ratios on Female in the re-estimated Models 2 and 3 were significant at only the

avoid cases may depend on district specific rules. To control for this possibility we added district court effects to the models of Table 4.[36] We also re-estimated the models in Table with errors clustered by judge[37] and re-estimated the models in Table 4 using a logistic regression on judge-year data with errors clustered by judge.[38] We obtained qualitatively similar results as in Table 4 in all our robustness tests.

### 5.2. The Rule of 80 and Other Judicial Characteristics

We examine a number of other judicial characteristics that may affect how the Rule of 80 affects individual judges. We first divide our sample of judges based on a proxy for the engagement a particular judge has with the job of judging. Our proxy looks at whether a judge hires one-term clerks (who typically come from top law schools) or uses clerks who stay with the judge for multiple terms. We assume that judges who use one-term clerks are more inclined to expend effort training clerks or, alternatively, do not

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10% levels. The hazard ratios on the number of district judges independent variable were insignificant in all the models.

[35] We re-estimated the models in Table 4 with the addition of squared terms for the Age and Experience variables to control for possible non-linearities in the relationship of these variables with the decision to retire. Unreported we obtain the same qualitative results for the other independent variables as in Table 4 with the following differences. The hazard ratio on Low Publication Rate in the re-estimated Model 2 is less than 1 but significant at the 10% level. The hazard ratio on Low Positive Citations in the re-estimated Model 3 is less than 1 but significant at the 5% level. The hazard ratio on Low Affirmance Rate in the re-estimated Model 4 is greater than 1 but significant at only the 11.6% level. In addition, the hazard ratios on Age and Age^2 are not significant in any of the models. The hazard ratio on Experience is greater than 1 and significant at the 1% level while the hazard ratio on Experience^2 is less than 1 and significant at the 1% level in all the models. This indicates that greater experience initially correlates with an increased propensity to retire; but at greater levels of experience each additional year of experience correlates with a diminishing increase in the propensity to retire.

[36] We re-estimated the models in Table 4 with district court effects. Unreported, we obtained the same qualitative results as in Table 4 with the following differences. In Model 1, the hazard ratio on Female was significant at the 10.6% level, just beyond conventional significance. In Model 3, the hazard ratio on Female was significant at the 10% level. In Model 4, the hazard ratio on Low Affirmance Rate was not significant; the hazard ratio on the Rule 80 x Low Affirmance Rate interaction term was less than 1 and significant at the 10% level.

[37] We re-estimated the models in Table 4 with errors clustered by judge. Unreported, we obtained the same qualitative results as in Table 4 with the following differences. In Model 1, the hazard ratios on Female and Experience are significant at only the 10% and 5% levels respectively.

[38] We re-estimated the models in Table 4 using a logit model instead of a Cox model on the judge-year data (with robust errors clustered by judge). Unreported we obtained the same qualitative results as in Table 4.

rely on clerks as much and thus do not find having inexperienced clerks as costly. We classify a judge as using either one-term or multiple-term clerks (Multiple-Term Clerks) by examining each judge's hiring patterns from 1996 to 2000.[39] We use Model 1 of Table 4 as our base model and add a variable for Multiple-Term Clerks as well as an interaction term between Rule of 80 and Multiple-Term Clerks. We report the results as Model 1 of Table 5.

We construct a second model to examine whether judges who hire clerks from top school differ from other judges. We divide our sample of judges based on the fraction of their clerks that came from a top 15 law school (as assessed from 1996 to 2000). We define a Non-Top School Clerk Judge as a judge who has a fraction of top school clerks that is at the 75th percentile or lower for the judges in our sample. We use Model 1 of Table 4 as our base model and add a variable for Non-Top School Clerk as well as an interaction term between Rule of 80 and Non-Top School Clerks. We report the results as Model 2 of Table 5.

We construct a third model to address the possibility that judges with a high net worth may not respond to financial incentives to take senior status as much as judges with a lower net worth. We define Large Net Worth as equal to 1 if the judge's net worth is at the 75th percentile or greater for all judges in the sample ($1.18 million) and 0 otherwise. We use Model 1 of Table 4 as our base model and add Large Net Worth and interaction terms between Large Net Worth and Rule80 and Post-Rule80 to assess whether a pre-existing high net worth diminishes the importance of the Rule of 80 in the decision by a judge to leave active status. Model 4 of Table 5 reports the results.

In Model 1, the hazard ratios for Multiple-Term Clerks and Rule80 x Multiple-

[39] If a judge has one single-term clerk and one multi-term clerk, we code that as a multi-term clerk judge.

Term Clerks are not significantly different from zero. We find no evidence that a judge's preference for short-term or long-term clerks is correlated with the general decision to leave active status and the specific influence of reaching the Rule of 80. Multiple-Term Clerks include judges with both two-year clerks and more permanent clerks. To test the separate importance of permanent clerks, we replace Multiple Term Clerks and Rule80 x Multiple Term Clerks with an indicator variable for a judge with permanent clerks (Permanent Clerks) and a Rule80 x Permanent Clerks interaction term.[40] Unreported, the hazard ratios on Permanent Clerks and Rule80 x Permanent Clerks are not significant at conventional levels. The hazard ratio on Rule80 x Permanent Clerks is greater than 1 (indicating judges with permanent clerks are more likely to retire upon hitting the Rule of 80) but significant at only the 15.3% level.

In Model 2, the hazard ratio on Non-Top School Clerks is less than 1 and significant at the 10% level, indicating that judges with Non-Top School Clerks are generally less likely to leave the federal bench. In contrast, the hazard ratio on Rule80 x Non-Top School Clerks is greater than 1 and significant at the 5% level. The hazard ratio for the sum of Non-Top School Clerks + Rule80 x Non-Top School Clerks is equal to 1.51 and is significant at the 10% level. This result is consistent with the Rule of 80 having a particularly strong effect in getting judges who utilize non-top law school clerks to retire.

Lastly, Model 3 provides evidence for a Wealth Effect: judges with a high net worth do not respond as strongly to reaching the Rule of 80. While the hazard ratio on Rule80 (for judges of all wealth levels) is greater than 1 (significant at the 1% level), the Rule80 x Large Net Worth interaction term has a hazard ratio below 1 (significant at the

[40] Two-year clerks are grouped with one-year clerks in this alternate specification as the base category.

10% level). The hazard ratio for Large Net Worth + Rule80 x Large Net Worth is equal to 0.599 (significant at the 5% level). This indicates that Large Net Worth judges have a higher propensity to leave office before they hit the Rule of 80, but a lower propensity to take senior status once they hit the Rule of 80 compared with judges with lower net worth who reach the Rule of 80. The Wealth Effect shows the disadvantages of using financial carrots to encourage judges to leave office or reduce their caseload. Rich judges can afford to leave office if they do not enjoy it (which is good), but are hard to force out when they get old (which is bad). A selection effect is also possible. Those high net worth judges who stay in office to reach the Rule of 80 are the subset of high net worth judges for whom serving as a judge is inherently valuable (hence why these judges did not resign earlier despite having the financial resources to do so). It is not surprising that this specific subset of judges will be more inclined to remain judges past the Rule of 80.

We performed a number of robustness tests. We re-estimated Model 3 of Table 5 with an alternate definition of Large Net Worth and a continuous measure of Net Worth.[41] We also re-estimated the models in Table 5 with errors clustered by judge[42] and re-estimated the models in Table 5 using a logistic regression on judge-year data with errors clustered by judge.[43] We obtained qualitatively similar results as in Table 5.

[41] We re-estimated Model 3 of Table 5 with a definition of Large Net Worth based on a net worth greater than the 90th percentile for our sample of district judges ($2.71 million). Unreported, the hazard ratio on Large Net Worth at the 90th percentile is greater than 1 but not significant. The hazard ratio on the Rule80 x Large Net Worth at the 90th percentile interaction term is less than 1 and significant at the 1% level. We also re-estimated Model 3 of Table 5 with the log of Net Worth to provide a continuous measure of net worth. Unreported, the hazard ratio on the log of Net Worth is greater than 1 and significant at the 5% level. The hazard ratio on the Rule80 x the Log of Net Worth is less than 1 and significant at the 1% level. Consistent with our results in Table 5, the Rule of 80 effect is moderated for judges with a high net worth.

[42] We re-estimated the models in Table 5 with errors clustered by judge. Unreported, we obtained the same qualitative results as in Table 5 with the following difference. In Model 3, the hazard ratio on Large Net Worth is now significant at the 1% level.

[43] We re-estimated the models in Table 5 using a logit model instead of a Cox model on the judge-year data (with robust errors clustered by judge). Unreported we obtained the same qualitative results as in Table 5.

### 5.3. Political Timing Effects

Federal district judges of the opposite party to the President's party may seek to remain in active status longer than they otherwise would have with a same-party President. By remaining in active status, the judge is able to occupy a seat in the district, reducing the number of seats available for the opposite-party President to fill. Once the opposite-party President leaves office and is replaced by a same-party President, a judge with political goals should be more inclined to leave office. We test for such a political Timing Effect.

For our test, we use the hazard model from Model 1 of Table 4 (with both Judge Characteristic variables and the Rule80 variable). We add Judge Democrat, defined as equal to 1 if the judge was appointed by a Democratic President and 0 otherwise. Model 1 of Table 6 reports our results. During the time period of our study from 2000 to 2010, the President changed from a Republican (Bush) to a Democrat (Obama) in early 2009. We define the variable Obama as equal to 1 if the year in question is either 2009 or 2010 and 0 otherwise. We add Obama and an interaction term between Obama and Judge Democrat to Model 1 of Table 6. Model 2 of Table 6 reports the results.

In both models of Table 6, the hazard ratio for Judge Democrat is less than 1 (significant at the 1% level), indicating that Democratic judges are less likely to take senior status compared to their Republican counterparts. Judge Democrats are 30.8% less likely to leave active status compared with Republican judges.

In Model 2, the hazard ratio for Obama is not significant. In contrast, the hazard ratio for Obama x Judge Democrat is greater than 1 (and significant at the 5% level).

While Democratic judges are less likely to take senior status prior to Obama, this relationship switches once Obama becomes president. With Obama as president, Democratic judges are no longer less likely to leave compared with Republican judges.[44] The hazard ratio for Judge Democrat + Obama x Judge Democrat is equal to 1.182. Once Obama is President, Democrat judges are 18.2% more likely to leave active service compared with Republican judges.[45] This pattern is consistent with a Timing Effect: Democrat judges hold onto their seats while a Republican is President—in hope for a shift to a Democrat president, whereupon they resign or take senior status.

Thus, the results are consistent with the worry that a real cost of the federal retirement system is that it enables judges to delay retirement for partisan reasons. Our findings are at odds with those of Yoon (2005, 2006) and Boylan (2004), but consistent with those in prior papers such as Barrow and Zuk (19900 and Spriggs and Wahlbeck (1995). A possible explanation for this difference is that our dataset is more recent than their datasets, and that the judiciary has become more highly politicized in the last few decades. Yoon's dataset, in particular, extends for more than a hundred years, and so recent trends may be masked.

We performed two robustness tests. We re-estimated the models in Table 6 with errors clustered by judge[46] and re-estimated the models in Table 5 using a logistic

[44] Indeed, those judges we code as "Republican" who depart when Obama is President may not be fully aligned with other Republican judges. We code Kimba Wood, for example, as Republican because Reagan appointed her. But Clinton later nominated Wood for Attorney General, indicating that Wood's views may have in fact been more attuned with Democrats. Wood retired and took senior status on June 1, 2009.

[45] The sum of Judge Democrat and Obama x Judge Democrat is not significant, indicating that we cannot rule out the hypothesis that once Obama is President, Democrat and Republican judges have an equal propensity to leave active service. Even equality, nonetheless, is a significant shift from the pre-Obama time period in our study when Democrat judges are much less likely to retire compared with Republican judges.

[46] We re-estimated the models in Table 6 with errors clustered by judge. Unreported, we obtained the same qualitative results as in Table 6 with the following differences. In both models, the hazard ratios on Female

regression on judge-year data with errors clustered by judge.[47] We obtained qualitatively similar results as in Table 6.

### 5.4. Weather Effects

A judge's decision to leave active status may turn on the geographical location of the district in which the judge sits. In particular, we hypothesize that judges from districts with colder weather (and harsher winters) will be more likely to resign or take senior status so that they can move to, or spend more time in, warmer climates.

For our test, we use the hazard model from Model 1 of Table 4 (with both Judge Characteristic variables and the Rule80 variable). We add Cold Weather, defined as equal to 1 if the judge is located in a cold weather district and 0 otherwise.[48] Model 1 of Table 7 reports our results. To Model 1 of Table 7, we add an interaction term between Age and Cold Weather, reflecting the likely greater sensitivity of elderly people to harsh climates. Model 2 of Table 7 reports the results.

In Model 1 of Table 7, the hazard ratio on Cold Weather is not significant. Cold Weather districts in general do not have a significant effect on the propensity of judges to leave active status. This makes sense, since these judges are the ones who chose to take

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is less than 1 and now significant at the 10% level. The hazard ratios in both models on Experience are greater than 1 and now significant at the 1% level. The hazard ratio in Model 2 on Obama is less than 1 and now significant at the 1% level. The hazard ratio in Model 2 on Obama x Judge Democrat is greater than 1 and now significant at the 1% level.

[47] We re-estimated the models in Table 6 using a logit model instead of a Cox model on the judge-year data (with robust errors clustered by judge). Unreported we obtained the same qualitative results as in Table 6.

[48] We treat the following districts as cold weather districts: C.D. Illinois, D Kansas, D Maine, D Mass, D. Alaska, D. Colorado, D. Connecticut, D. Delaware, D. District Columbia, D. Idaho, D. Maryland, D. Minnesota, D. Montana, D. Nebraska, D. New Hampshire, D. New Jersey, D. North Dakota, D. Oregon, D. Rhode Island, D. South Dakota, D. Utah, D. Vermont, D. Wyoming, E.D. + W.D. Missouri, E.D. Michigan, E.D. Missouri, E.D. New York, E.D. Oklahoma, E.D. Pennsylvania, E.D. Texas, E.D. Virginia, E.D. Washington, E.D. Wisconsin, ED Tennessee, M.D. Pennsylvania, N.D. Illinois, N.D. Indiana, N.D. Iowa, N.D. New York, N.D. Ohio, N.D. Oklahoma, N.D. West Virginia, S.D. Illinois, S.D. Indiana, S.D. Iowa, S.D. New York, S.D. Ohio, S.D. West Virginia, W.D. Michigan, W.D. Missouri, W.D. New York, W.D. Oklahoma, W.D. Pennsylvania, W.D. Virginia, W.D. Washington, or W.D. Wisconsin.

jobs in cold areas in the first place. In Model 2, the hazard ratio on Cold Weather is less than 1 and significant at the 5% level. In contrast, the interaction term between Age and Cold Weather is greater than 1 and significant at the 5% level. When judges are younger, location in a cold weather district is associated with an increased propensity to remain at the job as compared with more mild weather districts. When the age of the judge is equal to the median age in our sample (56.45 years), then a Cold Weather district corresponds with a 42.5% decreased likelihood of departing from active status (and thus an increased likelihood of staying on at the job). Remember, however, that judges under the age of 65 do not really have much of an option to reduce their workload, unless they resign – and, if they do, they do not receive a pension. The more interesting effects are when the judges get older and within the range of eligibility for their pensions.

When the age of the judge is equal to 70 years, a Cold Weather district corresponds with an 18.8% *increased* likelihood of departing active status. With greater age, continuing as a judge in a cold weather district becomes increasingly less attractive—sunny retirement locations beckon seductively.[49]

The lesson is that when assessing a judge's incentive to resign or take senior status, one must take into account all factors that relate to the attractiveness of work and the magnitude of opportunity costs. Work impinges on opportunities to travel or move one's residence; for older judges in colder areas of the countries, this cost may be significant.

[49] In theory, a judge who takes senior status can move from a cold location to a sunnier one. However, the sunny location has to have a need and the Chief Justice has to approve the assignment. There are examples of judges moving, such as Judge Aldisert of the Third Circuit, who moved his chambers to Santa Barbara for health reasons. See Stras & Scott (2007; 453) (noting the large number of cases from outside his circuit that Judge Aldisert has appeared on). While we do not have data on how common such practices are, our anecdotal impression is that they are rare.

We performed two robustness tests. We re-estimated the models in Table 7 with errors clustered by judge[50] and re-estimated the models in Table 5 using a logistic regression on judge-year data with errors clustered by judge.[51] We obtained qualitatively similar results as in Table 7.

### 5.5. Taking Senior Status Versus Resignation

Hazard models have a binary structure. The dependent variable is the number of years before an event occurs. In each year, the event either occurs or does not occur; there can be no third possibility. For that reason, we have treated the event as "voluntary departure" even though judges can voluntarily depart in two ways: through resignation and through taking senior status.

However, there are differences between these two types of departure. When a judge resigns, she leaves the bench and may take a new job as a practicing lawyer without losing her pension if she satisfies the Rule of 80. When a judge takes senior status, she stays on the bench. She may not obtain a new job; instead, she will continue to hear cases, albeit her caseload will be reduced. In addition, she opens up a slot for the president to fill, thus increasing (compared to resignation) representation of her party on the bench if she takes senior status while a same-party president is in office.

To test the differences between resignation and taking senior status, we use a multinomial logit model.[52] The dependent variable Outcome1 is equal to 0 if the judge stays in active service, 1 if the judge takes senior status, and 2 if the judge resigns in any

[50] We re-estimated the models in Table 7 with errors clustered by judge. Unreported, we obtained the same qualitative results as in Table 7.
[51] We re-estimated the models in Table 7 using a logit model instead of a Cox model on the judge-year data (with robust errors clustered by judge). Unreported we obtained the same qualitative results as in Table 7.
[52] The difference between the two is muddied by the fact that a judge might "retire" in year 1 and then subsequently "resign" in year 2 in order to avoid the minimum 25 percent caseload or to enter private practice. We treat these delayed resignations as retirements.

given year. The model is estimated on judge-year data. Errors are clustered by judge. The model is as follows:

$$\begin{aligned}\text{Outcome1}_i = {} & \alpha + ß_{1i}\text{Female}_i + ß_{2i}\text{Black}_i + ß_{3i}\text{Other Race}_i \\ & + ß_{4i}\text{Age}_i + ß_{5i}\text{Experience}_i + ß_{6i}\text{Prior Judge}_i \\ & + ß_{7i}\text{Prior Prosecutor}_i + ß_{8i}\text{Prior Private Practice}_i \\ & + ß_{9i}\text{Top School}_i + ß_{10i}\text{Rule80}_i + ß_{11i}\text{Large Net Worth}_i \\ & + ß_{12i}\text{Rule80 x Large Net Worth}_i + ß_{13i}\text{Judge Democrat}_i \\ & + ß_{14i}\text{Obama}_i + ß_{15i}\text{Obama x Judge Democrat}_i \\ & + ß_{16i}\text{Cold Weather}_i + ß_{17i}\text{Age x Cold Weather}_i + \varepsilon_i\end{aligned}$$

Table 8 reports our results. We saw before that women are less likely to depart from active status than men are; we see in Table 7 that women who do depart from active status tend to take senior status rather than resign. A possible reason for this is that women enjoy the job of judging more than their male counterparts. Or it could be that they have fewer opportunities in the private sector.

Table 8 also complicates our results for age. The hazard model indicated that older judges are more likely to depart from active status than younger judges are. The multinomial logit model suggests that older judges are more likely to take senior status than to remain on active status, but they are less likely to resign than to remain on active status. These results suggest that judges who like judging remain in office; when they become old, they prefer judging on a reduced caseload to resigning and entering private practice or stopping work. The reason for what we are seeing may be that beyond a certain age, these older judges do not have private sector options (or, even if those options exist, they do not want them). Thus, the pension system does not necessarily eliminate incompetent judges; it just ensures that their caseloads are reduced.

However, there is also evidence for the Boredom Effect. Those with Prior Judge

or Prior Prosecutor experience are more likely to resign than to remain on active status, and less likely to take senior status. Also there is an Opportunity Costs Effect: those with Prior Private Practice are more likely to resign, which allows them to go back to private practice and earn money, and less likely to take senior status, which does not.

Judges who satisfy the Rule of 80 are more likely to take senior status than to remain on active status, but they are less likely to resign. The first result is predictable, the second is puzzling. A judge who resigns receives her full pension, so one would expect a judge who satisfies the Rule of 80 to be more likely to resign than to remain on active status. After all, doing no work for full pay seems preferable to doing some work for the same pay. A possible explanation for the result we find may be that there are significant status and privilege benefits associated with being a judge. A judge who is old enough to satisfy the Rule of 80 may be too old to obtain (or enjoy) lucrative work in the private sector, so she may as well take senior status and retain the title and other accoutrements of power.

Wealthy judges are more likely to take senior status than to remain on active status; they are no more or less likely to resign than to remain on active status. These results weakly support the Wealth Effect: wealthy judges have less incentive to resign so as to earn money in the private sector.

The Timing Effect exists but only for taking senior status, not for resignation. This is consistent with a story about political incentives. Democratic judges take senior status rather than resign so that they continue to exert influence on policy while opening up a slot for the president to fill. Judges who resign do not open an extra vacancy for the president to fill; thus, they are more likely influenced by nonpolitical factors such as ill

health.

Finally, the Cold Weather Effect is important for older judges who choose to resign. Judges who are based in cold climates are more likely to resign as they grow older rather than stay in active status. In contrast, we find no increased propensity to become a senior judge for judges based in cold climates as they grow older.

### 5.6. Productive and Unproductive Senior Judges

Not all judges who choose to become senior are the same. Some senior judges continue at a high level of productivity, sometimes taking on even greater caseloads than when they were active judges. Other senior judges continue to draw their federal pay but reduce drastically their workload.[53] To assess workload, we collect data from Westlaw on each judge's caseload for the years 2001 to 2009. For each judge who took senior status, we compute the percentage change in their average caseload from their active-judge to senior-judge years (excluding the year in which she took senior status).

Panel A of Table 9 provides summary statistics for the senior status judges. The mean (median) drop in workload for a senior judge was 40.1% (51.2%). A wide variation exists in the change in workload. Senior judges at the 25th percentile dropped their workload by 67.7%; senior judges at the 75th percentile dropped their workload by only 24.9%.

There is an initial puzzle. If a judge doesn't like to work, it makes sense for her to take senior status and a reduced workload (or to resign). But if a judge likes to work, why would she take senior status with a heavy load rather than remain on active status?

[53] This wide variation in the caseloads of senior judges was noted by Yoon (2005; 522) who used survey data. Yoon observed that there was significant variation among the caseloads taken by senior district court judges; with thirty-five percent carrying loads between twenty-six percent and fifty percent of a full load and twenty-three percent reporting that they had a full caseload.

The most likely answer is that (1) the judge wants only a modest reduction in her caseload; (2) she wants to jettison the more boring cases such as the pro se claims (senior judges can choose to avoid certain categories of cases[54]); (3) she wants the financial benefits of senior status; or (4) she wants to open a vacancy for the President to fill.

We assess whether the decision to become a low workload senior judge is different from the decision to become a high workload senior judge. We categorize our judges based on whether they are at or below the 75th percentile in terms of percentage change in average caseload (Small Workload Senior Judge) or above the 75th percentile (High Workload Senior Judge). So a High Workload Senior Judge is a judge who reduced her caseload by less than 24.9% (corresponding to the 75th percentile) from their average caseload in their active-judge years.

We estimate a multinomial logit model with the same independent variables as the model in Table 8. For the dependent variable we use Outcome2 defined as equal to 0 if the judge stays in active service, 1 if the judge takes senior status with a small decline in caseload (High Workload Senior Judge), 2 if the judge takes senior status with a large decline in caseload (Small Workload Senior Judge), and 3 if the judge resigns in any given year. We assume that when judges choose to take senior status, they also make a choice about the workload they expect to take on when they continue as a senior judge. The model is estimated on judge-year data. Errors are clustered by judge. The model is as follows:

[54] See Block (2007).

$$\begin{aligned}\text{Outcome2}_i = {} & \alpha + \beta_{1i}\text{Female}_i + \beta_{2i}\text{Black}_i + \beta_{3i}\text{Other Race}_i \\ & + \beta_{4i}\text{Age}_i + \beta_{5i}\text{Experience}_i + \beta_{6i}\text{Prior Judge}_i \\ & + \beta_{7i}\text{Prior Prosecutor}_i + \beta_{8i}\text{Prior Private Practice}_i \\ & + \beta_{9i}\text{Top School}_i + \beta_{10i}\text{Rule80}_i + \beta_{11i}\text{Large Net Worth}_i \\ & + \beta_{12i}\text{Rule80 x Large Net Worth}_i + \beta_{13i}\text{Judge Democrat}_i \\ & + \beta_{14i}\text{Obama}_i + \beta_{15i}\text{Obama x Judge Democrat}_i \\ & + \beta_{16i}\text{Cold Weather}_i + \beta_{17i}\text{Age x Cold Weather}_i + \varepsilon_i\end{aligned}$$

Panel B of Table 9 reports the results. The coefficient on Female and Black are both negative and significant (at the 10% and 1% levels respectively) for the High Workload Senior Judge outcome. In other words, Female and Black judges are *less* likely to serve as High Workload Senior Judges compared with remaining in active service. Those Black and Female judges who otherwise would be High Workload Senior Judges, and thus have both the preference and ability to remain productive, choose to remain in active status. In contrast the coefficients on Female and Black are not significantly different from zero for the Low Workload Senior Judge and Resign outcomes. Female and Black judges are no less likely compared with other judges to become a Low Workload Senior Judge or to Resign. For those female judges without the preference and ability to remain productive, this finding cuts against the hypothesis we had suggested based on earlier findings (where we found that female judges were less likely to resign than their male counterparts).

The coefficient on Rule80 is not significantly different from zero for the High Workload Senior Judge outcome. In contrast the coefficient on Rule80 is positive and significant at the 5% level for the Low Workload Senior Judge outcome. In other words, when a judge satisfies the Rule of 80, she is more likely to become a Low Workload Senior Judge compared with remaining in active status. By contrast, a judge who satisfies the Rule of 80 is no more likely to become a High Workload Senior Judge

compared with remaining in active status. Judges who otherwise would be High Workload Senior Judges unsurprisingly are not more likely to leave active status at the Rule of 80. These judges are not motivated by the desire to consume more leisure by reducing workloads and the timing of their choices to take senior status appear largely unrelated to satisfying the Rule of 80.

One might wonder whether the judges who are unmotivated by the prospect of a lower workload upon reaching the Rule of 80 are instead motivated by the Political Timing Effect. That turns out not to be the case. The effect of Obama becoming president on the relative propensity of Democrat and Republican judges to take senior status is driven primarily by judges who decided to become Low Workload Senior Judges. While the coefficient on Judge Democrat is negative and significant at the 1% level, the coefficient on Obama x Judge Democrat is positive and significant at the 1% level for the Low Workload Senior Judge outcome. The coefficients on Democrat and Obama x Judge Democrat, in contrast, are not significantly different from zero for the High Workload Senior Judge outcome. Democratic judges who otherwise would prefer senior status but choose to remain in active status in hopes for a change in the presidency may artificially suppress a preference for a lower workload. Once they do in fact take senior status (once Obama becomes president), these judges will give full effect to their preference for a low workload.

Put simply, the judges with the preference and ability to remain productive not only do a great deal of work for free (that is, even after they reach the Rule of 80 and could get the same salary for no work or a lot less work), they also happen to be less political. These judges are the intellects, who derive utility from judging.

## 6. Conclusion: Judicial Buyouts?

Judges respond to incentives, including financial incentives, just like everyone else. The empirical evidence of their responses to the incentives created by the retirement system confirms this claim. The system seems to be designed to usher out elderly judges by offering them no compensation for doing judicial work once they satisfy the Rule of 80—and it works as advertised. But the system has imperfections, as we have seen.

Wealthy judges are less sensitive to these financial incentives than poorer judges are, while judges with high opportunity costs are more sensitive to them. Judges with partisan goals can manipulate the timing of their retirement in order to advance those goals. However, some (but not all) of our results suggest reasons for optimism regarding the retirement system. In particular, we see that the time-server judges (as contrasted with the intellect-type judges) are highly motivated by the Rule of 80 to leave active status. Roughly speaking, we see this result hold up across three of the four proxies for judge type (high citations, high publications, hires clerks primarily from top schools) that we used. The intellect-type judges are relatively unmotivated by the financial and leisure inducements of the Rule of 80. The retirement system, by offering financial incentives least attractive to the most talented judges, therefore eliminates a lot of the chaff while preserving some of the wheat.

The current buyout system could be improved. If we are correct that judges segment into different types; and there are some who are more engaged with the job and others who are relatively uninterested in the job and are biding time until they can take a

cushy retirement, it may make sense to reduce the pension penalty for a judge to leave prior to age 65. At a younger age, there may be a greater range of outside opportunities available to an ex-federal judge. If judges who are bored with the job can leave earlier without suffering quite as much of a pension penalty, they may be able to take on employment that suits them better and where they could contribute more to society (for example, in the private sector or an academic position). That, in turn, would make it possible for someone else, who was perhaps more engaged with the job of judging, to take on the judgeship.

The current system also assumes that older judges slow down but do not become less competent; senior status enables them to work less, while still contributing to the judiciary and permitting the President to appoint a replacement who can take up the slack. But if they become incompetent as well as slow, a better system would improve the incentive to resign. For example, judges could be given the choice between remaining on active status with a full load or resigning with full pay—and no intermediate senior status choice. Under this system, less talented judges would be significantly more likely to leave office.

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**Table 2**

| Circuit | Freq. | Percent |
|---|---|---|
| 1 | 28 | 4.7 |
| 2 | 59 | 9.9 |
| 3 | 53 | 8.9 |
| 4 | 50 | 8.4 |
| 5 | 70 | 11.7 |
| 6 | 61 | 10.2 |
| 7 | 46 | 7.7 |
| 8 | 39 | 6.5 |
| 9 | 85 | 14.3 |
| 10 | 34 | 5.7 |
| 11 | 58 | 9.7 |
| D.C. | 13 | 2.2 |
| Total | 596 | 100.0 |

| **Judge Status** | **Freq.** | **Percent** |
|---|---|---|
| Death | 12 | 2.0 |
| Resigned | 12 | 2.0 |
| Senior | 225 | 37.8 |
| Elevated | 14 | 2.4 |
| Impeached | 1 | 0.2 |
| Still Active | 332 | 55.7 |
| Total | 596 | 100.0 |

| **Year Departed (if Resigned or Took Senior Status)** | **Freq.** | **Percent** |
|---|---|---|
| 2001 | 25 | 10.6 |
| 2002 | 20 | 8.4 |
| 2003 | 22 | 9.3 |
| 2004 | 20 | 8.4 |
| 2005 | 26 | 11.0 |
| 2006 | 22 | 9.3 |
| 2007 | 20 | 8.4 |
| 2008 | 27 | 11.4 |
| 2009 | 40 | 16.9 |
| 2010 | 15 | 6.3 |
| Total | 237 | 100.0 |

**Table 3**

| Variable | N | Mean | p25 | Median | p75 | Standard Deviation |
|---|---|---|---|---|---|---|
| Female | 596 | 0.225 | 0 | 0 | 0 | 0.418 |
| Black | 596 | 0.114 | 0 | 0 | 0 | 0.318 |
| Other Race | 596 | 0.057 | 0 | 0 | 0 | 0.232 |
| Age2000 | 596 | 56.451 | 51 | 56 | 61 | 7.385 |
| Experience2000 | 596 | 8.156 | 3 | 7 | 12 | 6.375 |
| Prior Judge | 596 | 0.435 | 0 | 0 | 1 | 0.496 |
| Prior Prosecutor | 596 | 0.091 | 0 | 0 | 0 | 0.287 |
| Prior Private Practice | 596 | 0.403 | 0 | 0 | 1 | 0.491 |
| Top School | 596 | 0.136 | 0 | 0 | 0 | 0.343 |
| Publications Rate | 428 | 0.025 | 0.005 | 0.012 | 0.026 | 0.036 |
| Positive Citations | 573 | 1.776 | 0.750 | 1.355 | 2.171 | 1.934 |
| Affirmance Rate | 573 | 0.917 | 0.875 | 0.952 | 1.000 | 0.124 |
| Multiple-Term Clerks | 559 | 0.798 | 1.000 | 1.000 | 1.000 | 0.402 |
| Fraction of Top School Clerks | 512 | 0.380 | 0.000 | 0.333 | 0.667 | 0.349 |
| Net Worth ($ mill) | 553 | 1.120 | 0.280 | 0.590 | 1.182 | 1.971 |
| Judge Democrat | 596 | 0.532 | 0 | 1 | 1 | 0.499 |
| Cold Weather | 596 | 0.485 | 0 | 0 | 1 | 0.500 |

**Table 4: Rule80 and Judge Quality (Cox Proportional Hazards Model)**

| | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Female | 0.621* | 0.595* | 0.625* | 0.627* |
| | (0.138) | (0.142) | (0.140) | (0.141) |
| Black | 0.850 | 0.848 | 0.885 | 0.908 |
| | (0.240) | (0.259) | (0.260) | (0.267) |
| Other Race | 0.831 | 0.772 | 0.762 | 0.760 |
| | (0.277) | (0.270) | (0.267) | (0.265) |
| Age | 1.099** | 1.127** | 1.117** | 1.113** |
| | (0.0147) | (0.0160) | (0.0154) | (0.0153) |
| Experience | 1.043** | 1.050** | 1.040** | 1.040** |
| | (0.0115) | (0.0121) | (0.0117) | (0.0116) |
| Prior Judge | 1.432 | 1.266 | 1.295 | 1.345 |
| | (0.403) | (0.399) | (0.372) | (0.390) |
| Prior Prosecutor | 0.752 | 0.617 | 0.750 | 0.793 |
| | (0.293) | (0.267) | (0.294) | (0.310) |
| Prior Priv. Prac. | 1.432 | 1.362 | 1.369 | 1.409 |
| | (0.398) | (0.425) | (0.387) | (0.401) |
| Top School | 1.109 | 1.047 | 1.015 | 1.031 |
| | (0.219) | (0.231) | (0.206) | (0.209) |
| Rule80 | 12.22** | 5.220** | 6.562** | 15.85** |
| | (1.792) | (1.509) | (1.803) | (3.603) |
| Low Pub. Rate | | 0.562* | | |
| | | (0.142) | | |
| Rule 80 x Low Pub. Rate | | 2.845** | | |
| | | (0.962) | | |
| Low Pos. Cit. | | | 0.494** | |
| | | | (0.129) | |
| Rule 80 x Low Pos. Cit. | | | 2.084* | |
| | | | (0.676) | |
| Low Aff. Rate | | | | 1.539+ |
| | | | | (0.385) |
| Rule 80 x Low Aff. Rate | | | | 0.538* |
| | | | | (0.159) |
| N | 4617 | 3781 | 3773 | 3773 |
| Log Likelihood | -1151.1 | -1022.7 | -1105.3 | -1106.4 |
| Pseudo-R2 | 0.206 | 0.201 | 0.203 | 0.202 |

Exponentiated coefficients; Standard errors in parentheses. Models 2 through 4 are estimated only for those judges who were active at the beginning of 2003 to avoid possible endogeneity issues with Low Publication Rate, Low Positive Citation, and Low Affirmance Rate that are defined based on opinions

published in 2001 and 2002.
$^{+}$ $p < 0.10$, $^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$

**Table 5: Rule80 and Other Factors (Cox Proportional Hazards Model)**

| | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| Female | 0.621* | 0.591* | 0.549** |
| | (0.142) | (0.143) | (0.125) |
| Black | 0.813 | 0.759 | 0.843 |
| | (0.238) | (0.241) | (0.240) |
| Other Race | 0.851 | 0.857 | 1.110 |
| | (0.284) | (0.287) | (0.365) |
| Age | 1.106** | 1.100** | 1.139** |
| | (0.0152) | (0.0158) | (0.0177) |
| Experience | 1.039** | 1.040** | 1.062** |
| | (0.0118) | (0.0123) | (0.0145) |
| Prior Judge | 1.497 | 1.522 | 1.738+ |
| | (0.431) | (0.512) | (0.545) |
| Prior Prosecutor | 0.821 | 0.949 | 1.237 |
| | (0.324) | (0.406) | (0.527) |
| Prior Private Practice | 1.533 | 1.499 | 1.644 |
| | (0.438) | (0.497) | (0.517) |
| Top School | 1.145 | 1.115 | 1.034 |
| | (0.232) | (0.251) | (0.213) |
| Rule80 | 8.126** | 6.198** | 14.45** |
| | (3.230) | (1.925) | (2.704) |
| Multiple-Term Clerks | 1.139 | | |
| | (0.368) | | |
| Rule80 x Multiple-Term Clerks | 1.520 | | |
| | (0.641) | | |
| Non Top School Clerks | | 0.611+ | |
| | | (0.176) | |
| Rule80 x Non Top School Clerks | | 2.465* | |
| | | (0.875) | |
| Large Net Worth | | | 1.991* |
| | | | (0.542) |
| Rule80 x Large Net Worth | | | 0.301** |
| | | | (0.0984) |
| N | 4308 | 3942 | 4300 |
| Log Likelihood | -1132.7 | -1024.3 | -1066.7 |
| Pseudo-R2 | 0.203 | 0.207 | 0.223 |

Exponentiated coefficients; Standard errors in parentheses.
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

**Table 6 Political Party and Obama (Cox Proportional Hazards Model)**

| | Model 1 | Model 2 |
|---|---|---|
| Female | 0.692 | 0.707 |
| | (0.156) | (0.160) |
| Black | 1.003 | 0.994 |
| | (0.291) | (0.288) |
| Other Race | 0.953 | 0.956 |
| | (0.318) | (0.319) |
| Age | 1.111** | 1.109** |
| | (0.0156) | (0.0157) |
| Experience | 1.029* | 1.032* |
| | (0.0129) | (0.0131) |
| Prior Judge | 1.392 | 1.347 |
| | (0.391) | (0.379) |
| Prior Prosecutor | 0.706 | 0.692 |
| | (0.273) | (0.267) |
| Prior Private Practice | 1.406 | 1.378 |
| | (0.391) | (0.384) |
| Top School | 1.168 | 1.204 |
| | (0.232) | (0.240) |
| Rule80 | 11.69** | 11.39** |
| | (1.718) | (1.681) |
| Judge Democrat | 0.657** | 0.543** |
| | (0.105) | (0.0989) |
| Obama x Judge Democrat | | 2.176* |
| | | (0.731) |
| Obama | | 4.13e-13 |
| | | (0.000000995) |
| N | 4617 | 4617 |
| Log Likelihood | -1147.5 | -1144.4 |
| Pseudo-R2 | 0.208 | 0.211 |

Exponentiated coefficients; Standard errors in parentheses.
$^{+}$ $p < 0.10$, $^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$

**Table 7: Cold Weather (Cox Proportional Hazards Model)**

| | Model 1 | Model 2 |
|---|---|---|
| Female | 0.619* | 0.617* |
| | (0.138) | (0.137) |
| Black | 0.850 | 0.861 |
| | (0.241) | (0.243) |
| Other Race | 0.842 | 0.863 |
| | (0.282) | (0.288) |
| Age | 1.099** | 1.075** |
| | (0.0147) | (0.0184) |
| Experience | 1.044** | 1.044** |
| | (0.0116) | (0.0116) |
| Prior Judge | 1.451 | 1.679+ |
| | (0.412) | (0.500) |
| Prior Prosecutor | 0.753 | 0.928 |
| | (0.294) | (0.373) |
| Prior Private Practice | 1.453 | 1.622+ |
| | (0.410) | (0.472) |
| Top School | 1.094 | 1.089 |
| | (0.221) | (0.220) |
| Rule80 | 12.19** | 12.07** |
| | (1.790) | (1.781) |
| Cold Weather | 1.046 | 0.0280* |
| | (0.145) | (0.0477) |
| Age x Cold Weather | | 1.055* |
| | | (0.0266) |
| N | 4617 | 4617 |
| Log Likelihood | -1151.0 | -1148.7 |
| Pseudo-R2 | 0.206 | 0.208 |

Exponentiated coefficients; Standard errors in parentheses.
$^{+}$ $p < 0.10$, $^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$

**Table 8: Senior Status Versus Resignation (Multinomial Logit Model)**

| | 1 = Senior | 2 = Resign |
|---|---|---|
| Female | -0.759* | -0.882 |
| | (0.316) | (0.642) |
| Black | 0.122 | -0.369 |
| | (0.367) | (1.002) |
| Other Race | 0.186 | -0.442 |
| | (0.414) | (1.319) |
| Age | 0.188** | -0.148** |
| | (0.0413) | (0.0385) |
| Experience | 0.0763** | 0.0390 |
| | (0.0194) | (0.0794) |
| Prior Judge | 0.562 | 18.39** |
| | (0.396) | (2.492) |
| Prior Prosecutor | -0.183 | 19.16** |
| | (0.581) | (2.325) |
| Prior Private Practice | 0.556 | 18.35** |
| | (0.393) | (2.330) |
| Top School | 0.109 | 0.355 |
| | (0.267) | (0.943) |
| Rule80 | 3.406** | -29.00** |
| | (0.257) | (0.627) |
| Large Net Worth | 0.822* | 0.673 |
| | (0.346) | (0.818) |
| Rule80 x Large Net Worth | -1.738** | 0.912 |
| | (0.478) | (0.765) |
| Judge Democrat | -0.857** | 0.533 |
| | (0.220) | (0.881) |
| Obama x Judge Democrat | 1.498** | -1.068 |
| | (0.461) | (1.647) |
| Obama | -0.741* | 1.315 |
| | (0.346) | (1.367) |
| Cold Weather | -1.639 | -11.03** |
| | (3.317) | (2.896) |
| Age x Cold Weather | 0.0251 | 0.163** |
| | (0.0499) | (0.0463) |
| Constant | -17.62** | -16.19 |

| | | |
|---|---|---|
| | (2.825) | (.) |
| N | | 4384 |
| Log Likelihood | | -532.6 |

Standard errors in parentheses. Base category for the multinomial logit is active status. The model is estimated on judge-year data. Errors are clustered by judge.
$^{+}$ $p < 0.10$, $^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$

## Table 9: Productive and Unproductive Senior Judges

### Panel A

| Variable | N | Mean | p25 | Median | p75 | Standard Deviation |
|---|---|---|---|---|---|---|
| Pre-Senior Load | 142 | 411.4 | 314.5 | 425.8 | 493.0 | 155.5 |
| Post-Senior Load | 142 | 211.2 | 113.5 | 192.5 | 301.3 | 135.6 |
| Change in Load | 142 | -0.401 | -0.677 | -0.512 | -0.249 | 0.768 |

Change in Load is defined as Post-Senior Load minus Pre-Senior Load divided by Pre-Senior Load. Pre-Senior Load, Post-Senior Load, and Change in Load are reported only for judges who became senior and have a positive load while a senior judge.

### Panel B: Multinomial Logit Model

| | 1 = High Workload Senior Judge | 2 = Low Workload Senior Judge | 3 = Resign |
|---|---|---|---|
| Female | -1.769$^{+}$ | -0.643 | -0.539 |
| | (1.006) | (0.486) | (0.709) |
| Black | -36.15$^{**}$ | -0.416 | 0.0808 |
| | (0.422) | (0.515) | (1.015) |
| Other Race | -0.401 | -0.00349 | -2.403$^{+}$ |
| | (1.047) | (0.606) | (1.421) |
| Age | 0.167$^{**}$ | 0.190$^{**}$ | -0.158$^{**}$ |
| | (0.0463) | (0.0591) | (0.0560) |
| Experience | -0.0188 | -0.0222 | 0.00235 |
| | (0.0485) | (0.0349) | (0.0445) |
| Prior Judge | 0.516 | 0.285 | 18.91$^{**}$ |
| | (1.077) | (0.755) | (2.730) |
| Prior Prosecutor | -35.40$^{**}$ | 0.184 | 20.10$^{**}$ |
| | (1.070) | (0.881) | (2.958) |
| Prior Private Practice | 0.926 | 0.785 | 19.05$^{**}$ |
| | (1.056) | (0.756) | (2.686) |
| Top School | 0.226 | 0.262 | -0.267 |
| | (0.596) | (0.451) | (0.738) |
| Rule80 | 0.235 | 0.408$^{*}$ | -35.62$^{**}$ |
| | (0.182) | (0.179) | (0.669) |
| Large Net Worth | -0.175 | -1.047$^{*}$ | 0.921 |
| | (0.503) | (0.407) | (0.883) |
| Rule80 x Large Net Worth | 0.151 | 0.0479 | -0.868 |
| | (0.325) | (0.291) | (0.617) |

| | | | |
|---|---|---|---|
| Judge Democrat | -0.574 | -1.339** | -0.237 |
| | (0.528) | (0.360) | (0.766) |
| Obama x Judge Democrat | -0.0356 | 1.529** | 0.132 |
| | (1.352) | (0.286) | (1.207) |
| Obama | -3.922** | -38.72** | -0.811 |
| | (0.998) | (0.242) | (0.852) |
| Cold Weather | -6.110 | -3.521 | -8.817+ |
| | (3.721) | (4.087) | (4.868) |
| Age x Cold Weather | 0.0883 | 0.0531 | 0.129+ |
| | (0.0592) | (0.0650) | (0.0778) |
| Constant | -12.51** | -12.68** | -13.54 |
| | (2.847) | (3.590) | (.) |
| N | | | 4398 |
| Log Likelihood | | | -1914.4 |

Standard errors in parentheses. Base category for the multinomial logit is active status. The model is estimated on judge-year data. Errors are clustered by judge.
$^{+}$ $p < 0.10$, $^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$

## Appendix: Variable Definitions

| Variable | Description |
|---|---|
| Female | Indicator variable defined as equal to 1 if the judge is female and 0 if the judge is male. |
| Black | Indicator variable defined as equal to 1 if the judge is black and 0 otherwise. |
| Other Race | Indicator variable defined as equal to 1 if the judge is Hispanic, Asian, or racial minority other than Black and 0 otherwise. |
| Age2000 | Age of the judge in the year 2000. |
| Age | Age of the judge in the year in question. |
| Experience2000 | Number of years between the year of appointment for the judge in question and the year 2000. |
| Experience | Number of years between the year of appointment for the judge in question and the year in question. |
| Prior Judge | Indicator variable defined as equal to 1 if the judge's immediate prior position before appointment was as a magistrate judge or a judge in another court system and 0 otherwise. |
| Prior Prosecutor | Indicator variable defined as equal to 1 if the judge's immediate prior position before appointment was as a prosecutor and 0 otherwise. |
| Prior Private Practice | Indicator variable defined as equal to 1 if the judge's immediate prior position before appointment was as in private practice and 0 otherwise. |
| Top School | Indicator variable defined as equal to 1 if the judge in question graduated from Harvard, Yale, or Stanford Law School and 0 otherwise. |
| Publication Rate | The average number of published opinions in 2001 and 2002 for the judge in question as a fraction of the per judge number of filings for the district court in which the judge sits. |
| Low Publication Rate | Indicator variable defined as equal to 1 if the judge's Publication Per Filing is at the 75th percentile or lower for our sample judges or 0 otherwise. |
| Positive Citations | The average number of positive citations per opinion published in 2001 and 2002 for the judge. |
| Low Positive Citations | Indicator variable defined as equal to 1 if the judge's Positive Citations is at the 75th percentile or lower for our sample judges or 0 otherwise. |
| Affirmance Rate | Number of non-overruled published opinions, including non-appealed opinions, divided by the total number of published opinions for the judge in question in 2001 and 2002. |
| Low Affirmance Rate | Indicator variable defined as equal to 1 if the judge's Affirmance Rate is at the 75th percentile or lower for our sample judges or 0 otherwise. |

| | |
|---|---|
| Rule80 | Indicator variable defined as equal to 1 if the judge meets the rule of 80 in the year in question or the year after the year in question and 0 otherwise. |
| Net Worth | Net worth of the judge (in millions of dollars) |
| Large Net Worth | Indicator variable defined as equal to 1 if the judge's net worth is at the 75th percentile or greater for all judges in the sample ($1.18 million) and 0 otherwise. |
| Obama | Indicator variable defined as equal to 1 if the year in question is 2009 or 2010 and 0 otherwise. |
| Democrat | Indicator variable defined as equal to 1 if the judge in question was appointed by a Democrat President and 0 otherwise. |
| Cold Weather | Indicator variable defined as equal to 1 if the judge is located in the C.D. Illinois, D Kansas, D Maine, D Mass, D. Alaska, D. Colorado, D. Connecticut, D. Delaware, D. District Columbia, D. Idaho, D. Maryland, D. Minnesota, D. Montana, D. Nebraska, D. New Hampshire, D. New Jersey, D. North Dakota, D. Oregon, D. Rhode Island, D. South Dakota, D. Utah, D. Vermont, D. Wyoming, E.D. + W.D. Missouri, E.D. Michigan, E.D. Missouri, E.D. New York, E.D. Oklahoma, E.D. Pennsylvania, E.D. Texas, E.D. Virginia, E.D. Washington, E.D. Wisconsin, ED Tennessee, M.D. Pennsylvania, N.D. Illinois, N.D. Indiana, N.D. Iowa, N.D. New York, N.D. Ohio, N.D. Oklahoma, N.D. West Virginia, S.D. Illinois, S.D. Indiana, S.D. Iowa, S.D. New York, S.D. Ohio, S.D. West Virginia, W.D. Michigan, W.D. Missouri, W.D. New York, W.D. Oklahoma, W.D. Pennsylvania, W.D. Virginia, W.D. Washington, or W.D. Wisconsin and 0 otherwise. |
| President Same Party | Indicator variable defined as equal to 1 if the judge is of the same political party as the President for the year in question and 0 otherwise. |
| Salient | Fraction of cases published by the judge in 2001 and 2002 that involved church and state, campaign finance, federalism, first amendment, and other constitutional rights. |
| Circuit Quality | Out-of-circuit citations to majority opinions of appellate judges in circuit |
| Circuit GHP Distance | Distance between the district court judge in question's political ideology and the average Giles, Hettinger & Peppers (2001) score for the circuit court judges |
| Circuit Diversity | Equality of Republican and Democratic appellate judges in circuit |