

**RETIREMENT AND DEATH-IN-OFFICE  
OF U.S. SUPREME COURT JUSTICES \***

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# RETIREMENT AND DEATH-IN-OFFICE OF U.S. SUPREME COURT JUSTICES

## ABSTRACT

We construct demographic models of retirement and death-in-office of U.S. Supreme Court justices, a group that has gained demographic notice, evaded demographic analysis, and is said to diverge from expected retirement patterns. Models build on prior multi-state labor force status studies, and data permit an unusually clear distinction between voluntary and “induced” retirement. Using data on every justice from 1789 through 2006, with robust, cluster-corrected, discrete time, censored, event history methods, we (1) estimate retirement effects of pension eligibility, age, health, and tenure on the timing of justices’ retirements and deaths-in-office, (2) resolve decades of debate over the *Politicized Departure Hypothesis* that justices tend to alter the timing of their retirements for the political benefit or detriment of the incumbent President, (3) reconsider the nature of rationality in retirement decisions, and (4) consider the relevance of organizational conditions as well as personal circumstances to retirement decisions.

Methodological issues are addressed.

## I. INTRODUCTION

This paper constructs demographic models of retirement and death-in-office of U.S. Supreme Court justices from 1789 through 2006. We use these models to exploit unique features of Supreme Court appointments and data for three purposes: (1) We examine determinants of labor force exit by mortality and retirement in this “small but extremely important social group” (Preston 1977: 171) that has escaped prior demographic analysis, even as its retirement and mortality patterns have captured demographic notice and popular attention (e.g. Garrow 1998; Woodward and Armstrong 1979; Toobin 2007; *New York Times* 2007; *USA Today* 2007). Others have argued that justices tend to delay retirement from the Court, in purposeful disregard for their old age, “decrepit” health (Garrow 2000) and superannuated tenure (Walker, Segal, Spaeth and Epstein 2006; Yoon 2006; also see Table 1 and discussion below), in spite of generous pension benefits. To assess these claims, we estimate the effects of age, vitality, job tenure and pension benefit eligibility on Supreme Court justice retirement. (2) We reconsider and resolve the inconsistent findings of more than 70 years of rancorous debate in historical, legal and political research concerning the *Politicized Departure Hypothesis*, the assertion that Supreme Court justices tend to alter the timing of their retirements (and thereby indirectly alter their probabilities of death in office) for the benefit of the political parties of the Presidents who appointed them (see Table 1 and discussion below). And (3) we use the *Politicized Departure Hypothesis* to reexamine the adequacy of “economic rationality” as the sole basis for understanding retirement decisions, and we consider the relevance of “value rationality” to understanding retirement decisions.

Our models of retirement and death-in-office build on previous multi-state labor force status studies that direct attention concurrently to both death and retirement as modes of labor force exit (e.g. Land, Guralnik and Blazer 1994; Schoen and Woodrow 1980). Our focus on Supreme Court justices (rather than a broader social group) builds upon analyses that find

occupational differences in both longevity (Guralnik 1962; Kitagawa and Hauser 1973; Fletcher 1983, 1988; Norman, Sorlie and Backlund 1999), and labor force exit by retirement and by death (Hayward and Hardy 1985; Hayward Grady Hardy and Sommers 1989). Further, our concentration on Supreme Court justices extends a body of mortality research and labor force exit studies of very small social groups that are defined by their members' high levels of achievement, influence and power (e.g., Abel and Kruger 2005; Redelmeier and Singh 2001a, b; Gavrilov and Gavrilova 2001; Waterbor, Cole, Delzell and Jelkovich 1988; Treas 1977; McCann 1972; Quint and Cody 1970).<sup>1</sup>

Our focus on Supreme Court justices also helps to address three current methodological issues in retirement studies by application of the venerable demographic strategy of exploiting unusual data from special populations. *First*, general population survey respondents have a known tendency to misreport *involuntary unemployment* as *voluntary retirement*, thereby confounding these labor force statuses (Gustman, Mitchell and Steinmeier 1995: s63; Stolzenberg 1989). However, this problem is obviated in Supreme Court analyses because justices are Constitutionally protected from involuntary job termination.<sup>2</sup>

*Second*, because general population retirement data focus primarily on worker characteristics, especially health and finance (Hayward, Grady, Hardy and Sommers 1989; Moen, Kim and Hofmeister 2001; Lumsdaine 1995), analyses of general population data are precluded from investigating the effects on retirement of characteristics and organizational conditions of the employer organizations from which workers retire. The relevance of organizational conditions to retirement is hypothesized in organizational demography (Lawrence 1997; Stewman 1986), and suggested indirectly by research on employer organization effects on other aspects of employment (Haveman 2000; Fujiwara-Greve and Greve 2000; Baron and Pfeffer 1994; Stewman 1986; Stolzenberg 1978). Because the President appoints justices to the Court, Presidential political

circumstances are part of the Court's organizational environment, and changes in the political party of the incumbent President constitute important, directly observable changes in the Court's organizational environment. We measure the effect of these environmental conditions on retirement patterns.

Third, unlike other retirement data, Supreme Court data permits examination of rationality in retirement decisions. Although our models follow the contemporary analytic focus on personal "economic rationality" of labor force participants as the basis for their retirement decisions (Moen, Kim and Hofmeister 2001; Lumsdaine 1995), the Political Departure Hypothesis asserts that justices *also* tend to delay or accelerate their retirement without discernible personal health benefit or financial gain, for political benefit of the party of the President who appointed them to the Court. Although such behavior would not be "economically" or "instrumentally" rational for individual justices (see e.g. Vriend 1996), it would be consistent with the Weberian concept of *value rationality* (Kalberg 1980; Swidler 1973), i.e. rational action in service to the actor's values (see also Posner 1993). The concept of value rationality is not mentioned in previous research on Supreme Court retirement and death-in-office, but it is consistent with the *Politicized Departure Hypothesis*.

Although this paper is not undertaken to address specific policy questions concerning the Supreme Court, our findings bear on general questions about the political behavior of U.S. judges, and debates about term limits for Supreme Court justices. Because Supreme Court decisions have such widespread effects, these controversies have extensive legal, political and public policy implications that affect virtually every person, government and organization in the United States, and many elsewhere.

The next section explains the Politicized Departure Hypothesis, states it in testable form, and describes previous research on it. Section III considers methods and measurement. Section IV

reports analyses. Section V discusses findings and their implications for the issues that motivate this research.

## II. Hypotheses and Prior Research

By law, Supreme Court appointment is explicitly political, involving nomination and appointment by the President “with the Advice and Consent of the Senate” (U.S. Const., Art. II, sec. II). But law dictates no role for Presidents, politics, or public scrutiny in selecting the times at which justices vacate the Court: Except in cases of treason, bribery, or other serious crimes, justices leave office only by death, or when they themselves, alone and individually, resign. Nonetheless, some observers have long asserted – and others have long denied – that the timing of justices’ resignations from the Court, and even the probability that they die in office, reflect a highly politicized process that does, like their nominations, revolve around political compatibility between the individual jurist and the incumbent President of the United States (Ward 2003; Calabresi and Lindgren 2006; Zorn and Van Winkle 2000; Biskupic 2004), as well as personal circumstances of justices, such as vitality (i.e. health, wellness), age, personal finances, and job tenure (i.e. length of service on the Court) (see, e.g., French 2005). We call this assertion the *Politicized Departure Hypothesis*.

The *Politicized Departure Hypothesis* is based on 1) the observation that a justice’s retirement – particularly if it occurs early in a President’s term of office – allows the incumbent President to nominate the replacement for that justice, 2) the belief that justices tend to be loyal to the party of the President who appointed them to the court, and 3) the conjecture that justices tend to display this loyalty by timing their resignations to give a President of that party the opportunity to appoint their judicial successor (see Epstein, Segal, Spaeth, and Walker 1996: 368).<sup>3</sup> Thus, the Politicized Departure Hypothesis is:

1) *Other things equal, if the incumbent President is of the same party as the President who*

*nominated the justice to the Court, and if the incumbent President is in the first two years of a four-year Presidential term, then the justice is more likely to resign from the court than at times when these two conditions are not met.*

By removing live justices from office, accelerated departure reduces their opportunity to die in office. Retarded departure does the opposite. Thus, Hypothesis 1) implies a corollary:

*2) Other things equal, if the incumbent President is of the same party as the President who nominated the justice to the Court, then the justice is less likely to die in office than at times when this condition is not met.*

Informal versions of the Politicized Departure Hypothesis have generated much speculation in popular news media about the timing and determinants of future Supreme Court departures, and opportunities for U.S. Presidents to appoint new justices (e.g. *American Spectator* July 5, 2005; *New York Times*, March 7, 2007; *USA Today*, July 31, 2007). In academic research, Politicized Departure is vigorously debated in more than 70 years of historical and quantitative literatures (described below and in Table 1) that make virtually no connection to broader retirement and labor force exit research. After Fairman (1938), narrative studies tend to focus selectively on specific justices whose Court departures appear politically timed. For example, Goff (1960: 96), argues that a senile Justice William Cushing remained in office until death in 1810, solely to prevent an appointment by a Democratic-Republican President. Van Tassel (1993), Atkinson (1999), Garrow (2000) and Ward (2003) provide historical evidence of politicized departure by particular justices. Farnsworth reports that Justices Rehnquist (2005: 448) and O'Connor (2005: 375) stated preferences that their replacements be nominated by a President of the same party as the President who appointed them. Hutchinson (1998) reports similar statements by Justice White. Justices Black, Douglas, Marshall and Brennan are reported to have delayed departure in unsuccessful attempts to give a Democratic President the opportunity to name their

successors (Oliver 1986: 806-08; Woodward and Armstrong 1979: 161).

Although some narrative historical studies provide evidence that several justices acted as predicted by the Politicized Departure Hypothesis, they leave three concerns. **First**, some narrative studies directly contradict the Politicized Departure Hypothesis (e.g. Brenner 1999 but see Ward 2004). Others cite Justice Warren as evidence that political philosophy, rather than party identification *per se*, affects the timing of some resignations; Warren was appointed by Republican President Eisenhower, but reportedly tried unsuccessfully to time his resignation so a Democrat could nominate his successor (Oliver 1986: 805-06, citing White 1982: 306-08, Schwartz 1983: 680-83, 720-25). **Second**, most of these narrative accounts rely on justices' recollections of thoughts and emotions, explanations of their past behavior, and even predictions of their future behavior. The validity of such reports is dubious (Fazio 1986; Fishbein and Ajzen 1975; Cannell, Miller, and Oksenberg 1981; Eisenhower, Mathiowetz, and Morganstein 1991; Kalton and Schuman 1982; Sudman and Bradburn 1982). **Third**, and perhaps most important, existing historical narrative studies focus disproportionately or exclusively on justices who are believed to have acted as predicted by the Politicized Departure Hypothesis. Selective historical studies provide nuanced understanding of specific cases, and they are a useful basis for formulating the hypotheses, but truncated and highly selected samples are ill-suited to hypothesis testing (Winship and Mare 1992).

Unlike narrative historical research, extant statistical studies consider hypotheses that observable political circumstances have, *on average*, affected the timing of *all* departures from the Court. Statistical analyses of Supreme Court departures vary widely in substantive conclusions and methodology (see below). For example, Yoon (2006), Brenner (1999) and Squire (1988) find no evidence of a pattern of politicized departure of justices, but Hagle (1993) and King (1987) find political effects on annual numbers of departures from the Supreme Court, and Zorn and Van

Winkle (2000) and Box-Steffensmeier and Zorn (1998) report some analyses that are consistent and some that are not consistent with the politicized departure hypothesis.<sup>4</sup> In short, there is much research on the politicized departure hypothesis, and it is inconclusive.

### III. METHODS

We describe key methodological issues, focusing first on matters that have sparked debate in previous studies.

Lumping.<sup>5</sup> King (1987) and Yoon (2006) lump resignations and deaths-in-offices into undifferentiated departures from the Court. Hagle (1993), Spriggs and Wahlbeck (1995, 575), and Nixon and Haskin (2000, 462) complain that lumping confuses interpretation. Further, we observe that lumping resignations and deaths-in-office conflates *opposite* behaviors: Retirement occurs when a live justice resigns from the court, but death-in-office can occur only if a justice *does not resign*.<sup>6</sup> In statistics, lumping is well-known as sometimes disastrous, sometimes benign and best avoided (Ledoux, Rubino, and Sericola 1994; Cotterman and Peracchi 1992). So we distinguish resignations from deaths-in-office.

Aggregation. Some studies aggregate retirements and deaths-in-office of individual justices into annual frequencies of these events for the entire Court (Wallis 1936; Callen and Leidecker 1971; Ulmer 1982; King 1987; Hagle 1993). These uses of annual frequencies to test hypotheses about individual behavior exemplify the “ecological fallacy” (see King 1997; Robinson 1950). Therefore, we examine individual-level data.

Vitality and Health Measurement. It is a commonplace of retirement studies that as workers’ health (i.e. “vitality”) declines, their probability of retirement increases (French 2005; Bound 1991; Dwyer and Mitchell 1999; Parsons 1982). Virtually all previous historical narrative studies of Supreme Court departures consider the retirement effects of vitality, or its sensational opposite, “decrepitude” (Garrow 2000). In quantitative analyses, Squire (1988) includes a measure

of justices' poor health, but Hagle (1993, 35) and Zorn and van Winkle (2000: 162) criticize Squire's measure. Citing Greenhouse (1984), Hagle (1993:46) asserts that Supreme Court Justices fib flagrantly about their health. Zorn and van Winkle (2000) use justices' written opinion production to measure health, but productivity obviously differs from health and is plausibly subject to a wide range of additional causes, including (but not limited to) psychological factors, the productivity of other justices, and Court group dynamics (see Green and Baker 1991). No subsequent quantitative analysis of Supreme Court departures (e.g., Yoon 2006) appears to include a vitality measure.

Ironically, a standard health measure exists for all deceased Supreme Court justices, but has not been used previously. This measure is the justice's future longevity – the number of remaining years of life, measured in each year while still alive. Future longevity is widely used in health and retirement research (e.g. Idler and Kasl 1991; Kaplan 1987; Mossey and Shapiro 1982; Parsons 1982; Bound 1991; Baker, Stabile and Deri 2004; French 2005). Further, future longevity is used as a health indicator for establishing the criterion validity of self-reported, subjective health measures (Davies and Ware 1981; Mossey and Shapiro 1982; Ross and Wu 1995). Han, Phillips, Ferrucci, Bandeen-Roche, Jylha, Kasper, and Guralnik (2005: 216) find significant association between change in mortality and change in subjective *feelings* of vitality, thereby providing evidence that future longevity can serve as an indicator of subjective as well as objective health. As we write, all former justices except Justice O'Connor are dead, permitting calculation of years of remaining life for all but one former justice, in every year of their service on the Court.

Time and Units of Analysis. Justices customarily resign at the end of the Court's annual term, the Court organizes its activities into annual sessions, Presidents are elected for four year terms, and Court pension eligibility rules are based on completed years of service and whole years of age. Consequently, dates and times for Supreme Court careers tend to be rounded to whole years,

multiple resignations in the same year tend to occur simultaneously, and relevant time-varying political circumstances tend to exist for whole years, rather than for shorter intervals. Date rounding, co-occurrence of events, and time-varying independent variables are easily accommodated by discrete time event history methods (Yamaguchi 1991), but not as easily by continuous time methods. So we use discrete time methods here. In our models, the unit of analysis is the justice-year; variable values for each observation indicate the retirement, mortality and other characteristics and behaviors of one particular incumbent justice in one specific year. Our statistical analyses estimate the effects, in each year, of independent variables on probabilities that each incumbent justice retires, dies in office or remains in office at the end of that year. Probabilities are unobservable, so we estimate them statistically from observations of whether each justice retires, dies in office, or does neither, in each year in which the justice serves at least some time on the Court. We test hypotheses with statistical estimates of independent variable effects on these probabilities.

Discrete Time Probability Models. Although 44.5 percent of all justices have died in office and 47.3 percent have retired from office, death-in-office occurs in 2.6 percent of justice-years, and retirement in 2.8 percent of justice-years. These proportions of justice-years are small enough to require nonlinear probability models to avoid possible nonsensical predictions of negative probabilities of retirement and death-in-office for some justice-years. Therefore, most of our analyses use logistic regression (logit) analysis, which constrains probability estimates to the interval (0,1). We also use multinomial probit (MNP) analysis, to permit comparisons to previous MNP analyses. Our analyses are estimated over a complete enumeration of each and every year served on the Supreme Court by each and every justice appointed to the Court, through 2006.

Nonlinear Time Effects. Age, job tenure (years on the Court), and calendar year are known to sometimes show nonlinear effects on mortality and retirement hazards. These nonlinearities are

variously described as “compression of morbidity,” the “uneven advance of historical change,” “decreasing (or increasing) marginal effects,” or, in failure-time analysis, the U-shaped “bathtub” distribution. Because many mathematical functions virtually duplicate the same values over a fixed range, it is sufficient to use log-fractional polynomial transformations of these variables to *permit but not require* time variables to have nonlinear effects. Log-fractional polynomial transformations are a simple but rich generalization of common polynomial regression (Royston and Altman 1994; Gilmour and Trinca 2005). For skeptics, we also present analyses with only linear time terms.

Right Censoring. Although probabilities of resignation and death-in-office are positively correlated (both increase over time), actual resignation and actual death are mutually exclusive. Thus, death-in-office right censors subsequent data on retirement, and retirement right censors later data on death-in-office (Allison 1995). Right censoring is easily accommodated in discrete time survival and event-history analysis: we include in our analyses the justice-years of each and every justice for each and every year in which that justice serves any time on the Supreme Court. This method makes full use of all available information on retirement and death-in-office, avoids bias, and produces consistent estimates of model parameters (Allison 1995).

Competing Risks. Zorn and Van Winkle (2000) treat retirement, death-in-office and continued work as “competing risks” for justices. This treatment neglects the Constitutionally mandated, voluntary nature of retirement from the Supreme Court, and the practice of delaying Court retirements to the end of the annual judicial term.<sup>7</sup> Justices can choose to retire as usual at the end of a term if they have not already died in *that term*, but they can die in office only if they have *not* chosen retirement at the end of the *previous* term. Thus, for Supreme Court justices, retirement and death-in-office are sequential risks, rather than the synchronous alternatives imagined by the competing risks formulation, and they are well-accommodated by the allowances

made for right censoring.<sup>8</sup> Nonetheless, for comparison and completeness only, we apply the competing risks model and report its results.

Correlated errors. Stable, unobserved characteristics of justices (e.g. tastes for work, family circumstances) may affect their retirement and death probabilities. Thus, observations pertaining to a particular justice constitute a cluster of correlated observations. To accommodate clustering, we calculate robust standard errors and significance tests, adjusted for sample clustering (Wooldridge 200: 57).

Political Climate Measures. We test hypotheses with statistical estimates of independent variable effects on justices' annual probabilities of retirement and death-in-office. For each justice in each year of service, effects of political climate variables are measured by 1) *SameParty*, a dummy (0,1) indicator of whether or not the incumbent U.S. President is of the same political party as the President who appointed the justice; 2) *Year12*, a dummy (0,1) indicator of whether or not the incumbent U.S. President is in the first two years of his term; 3) the product of *SameParty* and *Year12*. In some models, the following alternative parameterization of political circumstances simplifies interpretation. With no loss of information, we define *NoSameParty* as  $(1 - \textit{SameParty})$ , and *Year34* as  $(1 - \textit{Year12})$ , and we parameterize political circumstances with the variables *SameParty\*Year12*, *SameParty\*Year34* and *NoSameParty\*Year12*.<sup>9</sup> Together, the three variables *SameParty\*Year12*, *SameParty\*Year34* and *NoSameParty\*Year12* indicate all possible combinations of values of *SameParty* and *Year12*.

#### IV. DATA

We examine data on all justices of the United States Supreme Court from 1789 through 2006.<sup>10</sup> Table 2 contains summary statistics. These variables are as follows:

*Retire.* A dummy (0,1) variable equal to 0 for a justice-year unless the corresponding justice retired, resigned or accepted "senior status" during that year, or before starting service the

next year.

*Death-in-office.* A dummy (0,1) variable equal to 0 for a justice-year unless the corresponding justice served on the Court that year, but died without retiring before service the subsequent year.

*Calendar year, Year1788, ln(Year1788).* *Year1788* is the calendar year - 1788.<sup>11</sup> *ln(Year1788)* is the natural logarithm of *Year1788*; the logarithmic transformation improves the fit of some models. We include calendar year to hold constant trends in the probabilities of retirement and death-in-office.

*Age, Age-squared, Age-cubed.* *Age* is the age of the justice in years at the start of the justice-year. Probabilities of death and retirement increase with age. In some analyses, we add *Age-squared* and *Age-cubed* to the analysis, to fit nonlinear age effects.

*Tenure, Tenure-cubed, Tenure-cubed x ln(Tenure).* *Tenure* is years of service on the Court. The annual probability of job quitting in the working population is known to first decline as tenure increases, and then increase with additional tenure (Stolzenberg 1989). *Tenure-cubed* and *Tenure-cubed x ln(Tenure)* prove useful transformations of tenure.

*Pension Eligible.* A dummy variable equal to 0 unless the justice is eligible for a Federal judicial pension in the relevant year.

*Future longevity, Future longevity-squared.* In each justice-year, *Future longevity* indicates remaining years of life. *Future longevity* for each justice-year is the difference between the calendar year of the justice-year and the calendar year in which the justice ultimately dies. *Future longevity-squared* proves to be a useful transformation of future longevity.

## V. RESULTS

*HISTORICAL TRENDS.* For incumbent justices, Figure 1 shows trends in mean age, mean age when swearing oath of office, mean age when eventually leaving the Court, and mean age at

death. In each year, the gap between mean age at oath and mean age of justices indicates justices' average tenure on the Court. At each year, the gap between mean age and mean age at retirement indicates the mean future years of Court service of justices serving in that year.

RETIREMENT ANALYSES. Table 3 presents logit analyses of retirement. Analyses 1, 2, 4 and 5 parameterize President's political party and term year with *SameParty\*Year12*, *SameParty\*Year34* and *NoSameParty\*Year12*. Coefficients of these variables indicate effects of combinations of values of *SameParty* and *Year12*, relative to the condition that both *SameParty* and *Year12* equal zero. Analysis 3 parameterizes Presidential party and term year with dummy variables *SameParty*, *Year12* and *SameParty\*Year12*. To dispel doubts that nonlinear transformations of year and tenure on Political Circumstances variable coefficients, Analysis 1 includes only linear forms of independent variables.

*Retirement and Political Circumstances.* In column 1, Row 10 of Table 3, the coefficient of *SameParty\*Year12* is 0.9850 (significant,  $\alpha \leq 0.02$ , 1-tailed). Thus, other things equal, retirement odds increase by 168 percent ( $=e^{0.9850} - 1$ ) when the incumbent President is from the same political party as the President who nominated the justice, and a Presidential administration is in its first or second year (compared to the odds when the incumbent President is from a different political party and a Presidential administration is in its third or fourth year of a four-year cycle).

To express the coefficient of *SameParty\*Year12* as a probability effect, suppose a hypothetical justice had a retirement probability of 1 percent, the incumbent President was of a party different from the party of the President who nominated the justice, and the President was in the second half of his four-year term (i.e., *SameParty*=0 and *Year12*=0). Changing both *SameParty* and *Year12* to 1 would increase the expected retirement probability by a multiple of more than 2.6, from 1 percent to 2.6 percent. If, in this same example, the justice's initial

retirement probability were 10 percent, then the expected probability after the change of Presidents would increase by a multiple of about 2.3, to 22.9 percent.

In Analysis 2 of Table 3, we add log fractional polynomial transformations of calendar year and tenure. (Curve fitting makes no difference for age, net of calendar year and tenure.) We replace *Year1788* with  $\ln(\text{Year1788})$  and we replace *Tenure* with *Tenure-cubed* and the product of *Tenure-cubed* and  $\ln(\text{Tenure})$ , raising the pseudo- $R^2$  from 0.1254 to 0.1581. In short, effects of political circumstance variables in Analyses 1 and 2 are virtually the same.

Analysis 3 reparameterizes Presidential party and term year, using *SameParty*, *Year12*, and *SameParty\*Year12*. The effect of *SameParty*=1 and *Year12*=1 is the sum of the coefficients for all three dummies, or 0.955, which is identical to the coefficient for *SameParty\*Year12* in analysis 2. All other results for Analysis 3 are identical to Analysis 2.

*Retirement and Pension Benefit Eligibility.* Coefficients of the pension benefits eligibility indicator range from 2.0904 in Analysis 1 to 2.4514 in Analysis 5. The smallest estimate indicates that, other things equal, pension benefit eligibility changes the retirement odds in a justice-year by a multiple of 8.09 ( $=e^{2.0904}$ ). In models 2 and 3, which allow for nonlinearities in tenure and calendar year, the eligibility for pension benefits increases retirement hazard by a multiple of 10.4 ( $=e^{2.34232}$ ). In model 4, the increase is a factor of 10.7 ( $=e^{2.37218}$ ). Expressed as a probability, if a justice without pension benefit eligibility had a retirement probability of 1 percent, then the addition of pension benefits, would increase the expected probability to 7.6 percent according to Model 1, 9.5 percent in Models 2 and 3, and 9.8 percent in Model 4. If that justice had a 5 percent probability of retirement before receiving benefits, adding pension benefits eligibility would increase the probability to 29.9 percent in Model 1, 35.4 percent in Models 2 and 3, and 36.1 percent in Model 4. Effects this large are remarkable in the social sciences.

*Retirement and Tenure.* To interpret coefficients of *Tenure-cubed* and *Tenure-*

*cubed\*ln(Tenure)*, we use them to calculate the effect of an additional year of Supreme Court tenure on expected retirement odds. These effects are stated as proportional changes in odds, calculated from Analysis 4 and graphed in Figure 2(a). Figure 2(a) shows that for those with one year of service on the Supreme Court, the effect of an additional year of tenure on odds of retiring is negative but nearly zero. The effect of an additional year of tenure becomes increasingly negative through the 15<sup>th</sup> year on the Court, when an additional year of tenure decreases expected retirement odds by 12.5 percent. Thereafter, the effect of an added year of tenure decreases annually, until it becomes positive at 25 years. At 28 years of tenure, an additional year increases expected retirement odds by 11.2 percent. At 29 years, the increase is 15.8 percent.

*Retirement and Age.* In Analysis 4 of Table 3, the coefficient of *Age* is .0548 (significant,  $\alpha \leq 0.05$ , 1-tailed). Thus, an additional year of age is associated with a 5.5 percent increase in expected retirement odds. In Analyses 2 and 3, which do not hold constant *Future longevity*, expected odds increase a rate of about 6.5 percent per additional year of age.

*Retirement and Future Longevity.* Analysis 4 of Table 3 adds *Future longevity-squared* and *Future longevity-squared x ln (future longevity)*. Each future longevity term is statistically significant (each  $\alpha \leq 0.01$ , 2-tailed); both terms are jointly significant ( $\chi^2_{(2 \text{ df})} = 7.88$ ,  $\alpha \leq 0.02$ , 2-tailed). The coefficient of *SameParty\*Year12* in Analysis 4 is 0.9706, which is trivially higher than in Analysis 2, trivially lower than the estimate in Analysis 1, and not significantly different from either at any meaningful  $\alpha$  level. Thus, controlling for *Future longevity* does not substantially modify the estimated effect of *SameParty\*Year12* on the probability of retirement.

Because future longevity is unknown for justices who still live as we write, Analysis 4 excludes 161 justice-years pertaining to nine living justices and one living former justice. To consider the hypothesis that results in Analysis 4 are substantially affected by loss of these 161 justice-years, we re-estimate as Analysis 5 the same model that we estimated as Analysis 2, after

excluding the same 161 justice-years excluded from Analysis 4. Analysis 5 coefficients lead to the same conclusions as Analysis 2; coefficients and z-statistics of Political Circumstances Indicators are virtually identical in both analyses.

As time passes, future longevity diminishes. To interpret effects of these reductions in future longevity in Analysis 4, we calculate proportional effects of a one-year *decrease* in future longevity on expected retirement odds. Figure 2(b) shows that for justices with 22 years or less of remaining life, expected retirement odds increase as time left to live diminishes. At 9 years left to live, the retirement effects of diminishing life reach their maximum of about 8 percent per year.

*Retirement and Calendar Year.* Analysis 4 reports a coefficient of  $-.4951$  for  $\ln(\text{Calendar year} - 1788)$ . Thus, expected annual retirement odds of Supreme Court justices change at an elasticity of about one-half percentage point decrease in retirement odds per percentage point increase in the number of calendar years since 1788. Figure 2(c) depicts the impact of 10-year increases in the calendar year. An additional decade would lower expected annual retirement odds by 69.5 percent in 1789, 5.0 percent in 1879, and 2.2 percent in 2005.

*DEATH-IN-OFFICE ANALYSES.* Because death-in-office occurs when a justice both chooses to *not retire* and dies, we expect negative effects on the probability of death-in-office from independent variables that promote retirement, and positive effects from those that mark increased mortality risk. If an independent variable increases the probabilities of both retirement and mortality, then its negative effects (*via* retirement) and its positive effects (*via* mortality) would offset each other to some degree, depending on the strength of each effect and the association between the probabilities of retirement and mortality.

Table 4 presents two logit analyses of the hazard of death-in-office, analogous to retirement analyses in Table 3, with two differences: First, we find no nonlinear transformations of time variables that improve their fit to the hazard of death-in-office. Second, *Future longevity* is

unavailable as a control variable in analyses of death-in-office, because death occurs in the current year if and only if future longevity is zero. Consequently, models of death-in-office are computationally intractable when future longevity is an independent variable.

*Political Circumstances and Death-in-office.* In Table 4, Analysis 1 follows the parameterization of political circumstances used in most of the Table 3 retirement analyses. The coefficient of *SameParty\*Year34* is -1.1026 (significant,  $z = 2.30$ ,  $\alpha < 0.025$ , 1-tailed). Thus, a change in value of *SameParty\*Year34* from 0 to 1 is associated with a *reduction by about two-thirds* ( $2/3 \approx 1 - e^{-1.1026}$ ) of odds of dying in office (compared to the odds if *NoSameParty\*Year34=1*.) Other results are less clear in this parameterization: The coefficient of *SameParty\*Year12* is not significantly different from zero ( $z=1.03$ ), but it is also not significantly different from the coefficient of *SameParty\*Year34* ( $\alpha \leq 0.05$ , 2-tailed).<sup>12</sup>

Analysis 2 clarifies political circumstances effects by reparameterizing. In Analysis 2, the reference category is changed to *SameParty\*Year34 = 1*.<sup>13</sup> In Analysis 2, death-in-office odds are about three times higher when the incumbent President is not of the same party as the President who appointed the justice (compared to when the incumbent President is of the same party),<sup>14</sup> but there is no statistically significant effect of Presidential term year on death-in-office. Stated as probability effects: If a hypothetical justice had a 1 percent probability of dying in office in a given year, then a change of *NoSameParty\*Year12* from 0 to 1 would increase that expected probability to 2.9 percent. If the hypothetical justice had a 10 percent probability of dying in office, then a change of *NoSameParty\*Year12* from 0 to 1 would increase that expected probability to 24.7 percent. Effects would be nearly identical for changes in *NoSameParty\*Year34*.

*Time, Pension Eligibility and Death-in-Office.* Death-in-office odds decline at a rate of 1.17 percent per calendar year, on average, other things equal. Over a decade's time, annual

reductions cumulate to an 11 percent reduction in death-in-office odds. In contrast to retirement results, nonlinear transformations of *Year1788* do not improve its fit to death-in-office data. Thus, secular decline in these odds continues unabated. Each additional year of *Age* increases expected death-in-office odds by about 6.5 percent (the coefficient is 0.0646; significant,  $\alpha < .001$ , 1-tailed), on average and other things equal. However, effects of *Tenure* and *Pension Eligibility* are not significant ( $\alpha < .05$ , 1-tailed).

*Retirement and Death-in-Office.* Above, we argue that hazards of *death-in-office* and *retirement* are positively correlated, but they and the processes that produce them are dissimilar. Our empirical findings are consistent with those arguments in several ways: First, we find that the effects of political circumstances, pension benefit eligibility, tenure and calendar year on retirement hazard are substantially different from effects of those variables on hazard of death-in-office.<sup>15</sup> These differences indicate dissimilarity between the etiology of retirement and death-in-office.

Second, our analyses indicate that the hazard of *retirement* is empirically distinct from the hazard of *death-in-office*. For each justice-year, we use Analyses 3 and 4 from Table 3 to calculate the estimated the hazard of retirement,<sup>16</sup> and we use Analysis 1 from Table 4 to calculate the estimated the hazard of death-in-office. Figure 3(a) plots the logarithms of these hazards against each other and shows the regression of  $\ln(\textit{retirement hazard})$  on  $\ln(\textit{death-in-office hazard})$ :

$$\ln(\textit{retirement hazard}) = -2.7441 + 0.3405 \ln(\textit{death-in-office hazard}) \quad (R^2 = 0.14).$$

The standardized coefficient of  $\ln(\textit{death-in-office hazard})$  is 0.37 (statistically significant,  $\alpha < .001$ , robust  $t=7.70$ , corrected for clustering, 2-tailed). For comparison, in status attainment models, the standardized effect of father's occupational status on son's occupational status is about 0.3 and the standardized effect of son's schooling on his occupational SEI is about 0.4 (Blau and Duncan 1967). Thus, the hazards of retirement and death-in-office are substantially related, as expected,

but they are no more related than father's and son's SEI, or son's education and son's occupational status.

Third, historical trends in the *distribution* of retirement hazard differ from trends in the distribution of death-in-office hazard.<sup>17</sup> Figure 3(b) shows the time trend in the means of these hazards for incumbent justices, smoothed by Cleveland's method of locally-weighted regression (LOWESS). Mean hazards of retirement and death-in-office tend to move in opposite directions. Standard deviations of these distributions also move in opposite directions. In brief, trends in the distributions of retirement and death-in-office hazards are well differentiated.

ANALYSES OF DEPARTURE BY ANY MEANS. Notwithstanding our stated objections to lumping Retirement with Death-in-office, we seek to compare our analyses of retirement and death-in-office to analyses of departure from the Court by any means. Analyses in Table 5 examine the determinants of *Departure by any means* with methods, procedures, data and independent variables that are comparable to those applied in our analyses of *retirement* and *death-in-office*. As in Table 4 analyses, *Future Longevity* is not included, as it is confounded with death-in-office, a component of *Departure*.

*Political Circumstances and Departure.* If the incumbent President is of the same party as the President who appointed a justice, then the Politicized Departure Hypothesis predicts both increased probability of departure *by resignation* in Presidential term years 1 and 2, and consequent decreased probability of departure *by death-in-office* in term years 3 and 4.

In Analysis 1, coefficients for *SameParty*, *Year34* and *SameParty\*Year34* are all negative, but none is by itself statistically significant. However, if the political party of the current U.S. President were the same as the political party of the President who appointed the justice, and if the current President were in his third or fourth term year of a Presidential term, then each of these dummy variables would equal one, and their combined effect would be the sum of their

coefficients, -0.7142, which is statistically significant ( $Z=2.44$ ,  $\alpha \leq 0.01$ , 1-tailed) and indicates a 51 percent reduction in annual odds of vacating office. Although parameterized differently, Analysis 2 yields identical, but more directly visible results: the coefficient for *SameParty\*Year34* is -0.7142 ( $Z=2.44$ ). In Analysis 2, the coefficient for *SameParty\*Year12* is -.165, but a 95 percent confidence band around this estimate includes larger negative values, zero and positive values. In sum, both parameterizations of political circumstances show results consistent with part of the Politicized Departure Hypothesis, not inconsistent with the rest of it, and reflective of the ambiguity that comes from lumping retirement and death-in-office.

Table 5 shows effects of three time-related variables: First, the coefficient of *Year1788* is -.01020, indicating that odds of vacating decline by about one percent with each additional calendar year. Second, *Tenure* shows nonlinear effects. For justices with one year of *Tenure* on the Supreme Court, an additional year of *Tenure* reduces by 10.0 percent the odds of *Departure*. Thereafter, the effect of additional *Tenure* grows less negative. After 17 years of *Tenure*, the effect of additional *Tenure* becomes positive, and after 35 years, an additional year of *Tenure* increases odds of *Departure* by 14.2 percent. Third, effects of Justice's *Age* are nonlinear and fitted with *1/Age-squared* and *Age-cubed*. As shown in Figure 2 (d) below, the effect of an additional year of *Age* on odds of *Departure* is highest at the youngest ages (14.7 percent at age 35), declines to its minimum of 6.8 percent at age 59, and rises thereafter, reaching 8.7 percent at age 80.

COMPETING RISKS ANALYSES. Having stated above some limitations of the competing risks approach to Court departures, we apply it nonetheless, to permit comparison to our own results in Tables 3 and 4. We follow Box-Steffensmeier and Jones' (1997: 1450) preference for the MNP rather than MNL. Table 6 presents results of a multinomial probit analysis of the probability that in a given year a justice dies in office, remains in office, or retires from the Supreme Court. Again, the unit of analysis is the justice-year. The multinomial probit yields two equations, one

estimating the probit of the hazard of *Death-in-office*, the other estimating the probit of the hazard of *Retirement*. The omitted reference category is *Continuation-in-office*. MNP requires same independent variables in equations for all outcomes, so we must omit *Future Longevity* to avoid tautological prediction of death-in-office. We also add nonlinear transformations of control variables.

Results of the Competing Risks model (Table 6) are similar to the single-equation results reported in Tables 3 and 4. The Table 6 retirement analysis finds a positive, statistically significant probit coefficient of 0.5383 (significant,  $\alpha \leq 0.03$ , 1-tailed) for *SameParty\*Year12*. To compare this probit coefficient to the logit coefficient for the same variable in Table 3, we evaluate both as probability effects: Suppose a hypothetical justice had a 5 percent probability of retirement, and the President was in the last two years of his term (*Year12* = 0) and of a different party than the President who appointed the justice (*SameParty* = 0). If *Year12* and *SameParty* were both changed to 1, then the expected retirement probability would rise from 5 to 13.4 percent. In the logit analysis of *Retirement* in Column 2 of Table 3, the same hypothetical scenario indicates a probability increase to 12.0 percent. Thus, the two retirement analyses estimate political climate effects that are both statistically significant, of identical direction and similar magnitude.

MNP analyses of *death-in-office* yield much the same conclusion: In Table 6, the probit coefficient of *SameParty\*Year34* is -.6053 (significant,  $\alpha \leq 0.03$ , 1-tailed). If a hypothetical justice has a five percent probability of *Death-in-office* in the current year, and *SameParty*=0 and *Year34* = 0, then changing *SameParty* to 1 and *Year34* to 1 would reduce the expected probability of *Death-in-office* from 5 percent to 1.22 percent. In Analysis 1 of Table 4, the hypothetical scenario just described would reduce the expected probability of dying in office to 1.72 percent. Again, despite our objections to the competing risks approach, it yields similar conclusions about political climate as separate censored logit analyses of retirement and death-in-office.

## VII. DISCUSSION

Supreme Court justices constitute an “elderly leadership group” (Preston 1977) that has escaped previous demographic analysis, even as it has gained demographic notice for its enormous power, distinctive age distribution, unusual retirement patterns and high frequency of death-in-office. Political commentators and historical, legal and political researchers argue that justices cling to office with apparent disregard for their own antiquity, physical infirmity, employment immobility and pension-based economic security (equal to their full salary). However, even if justices are unusually long-lived and long-worked, our analyses suggest that *on average, retirement decisions of Supreme Court justices are responsive to age, health, tenure, and pension benefits, all in a manner generally consistent with contemporary demographic, sociological, and economic views of rational retirement decision-making.* In particular,

(1) **Pension eligibility** raises the annual odds of retirement by an order of magnitude – a huge effect by social science and employment research standards.

(2) Retirement hazard rises sharply as **health** (measured by years left to live) fades. Contrary to prior speculation and argument, inclusion of a generally-accepted health measure does not substantially alter other findings.

(3) **Tenure** effects on retirement follow the “bathtub distribution” typical of orderly failure time processes. Justices start their service with elevated risk that removes individuals unsuited for the position (called “manufacturing defects” in failure time studies), followed by a long period of low retirement rates (“regular service”), after which failure rates rise sharply (“end of service life”).

Other things equal, the average service period for justices is about 25 years.

(4) **Age** raises expected annual odds of retirement about 6 percent per additional year, other things equal.

Although age, health, tenure and pension-related findings are consistent with current

conceptions of rational retirement decisions, we also find that **political climate effects on retirement are consistent with the Politicized Departure Hypothesis**. If the incumbent President is of the same party as the President who nominated the justice to the Court, and if the incumbent President is in the first two years of a four-year Presidential term, then the justice has odds of resignation that are about 2.6 times higher than when these two conditions are not met.

In addition, **political climate effects on death-in-office are consistent with the Politicized Departure Hypothesis**. When the incumbent President is of a different party than the President who appointed the justice, then the justice's death-in-office odds are about tripled, compared to when the appointing President and the incumbent President are members of the same party.

Previous Supreme Court retirement analyses are methodologically disputatious. We reconsider all such disputes of which we are aware. We conclude that multinomial ("competing risks") methods are conceptually inappropriate for testing Politicized Departure, as is lumping retirements and deaths-in-office into departures-by-any means. In addition, we find that hazards of retirement and death-in-office are empirically distinct, and therefore inappropriate for lumping together. Nonetheless, we perform multinomial and lumped analyses for comparison purposes, and results do not contradict our findings based on more-defensible methods.

Although departure from the Supreme Court is important in its own right, our analyses shed light on three aspects of more general retirement processes. **First**, unlike nearly every other source of data on retirement, Supreme Court data permits us to distinguish between job departure by willful resignation from job departure by firing or induced retirement. Justices cannot be fired, and they have neither financial inducements nor pressure to leave office, as their retirement benefits and pay are fixed by law, working conditions are not subject to employer manipulation, and strong ethical rules prevent their receipt of gifts or payments in exchange for departure from the Court. Thus, there is no chance that our analyses reify as workers' own retirement decisions their

employers' decisions to fire them or induce them to quit. In these unusually unambiguous data, our findings are consistent with the general predictions of contemporary social science thinking about the effects of age, tenure, health and personal finances on retirement decisions.

**Second**, our analyses suggest the *relevance of the employer organizational environment conditions to individual retirement behavior, even when those conditions do not affect the pay, pension, benefits, and working conditions of workers*. Because the Supreme Court is a political institution whose members are appointed by the President, the President's political party affiliation is an important part of the organizational environment of the Court. Thus, the Politicized Departure Hypothesis is an assertion that organizational conditions influence the individual retirement decisions of employees, even as those decisions are the Constitutionally protected, sole domain of the individual employee. As Sørensen and Sorenson (2008) recently demonstrate in a different context, organization environments can indeed affect individuals' employment outcomes, and have been observed to do so since the heyday of the so-called "New Structuralism" in employment research (Stolzenberg 1975; Bibb and Form 1977; Hodson and Kaufman 1982). Our findings are, we think, the first unambiguous demonstration of those effects on retirement decisions. We think there is considerable promise in further consideration of employer environment effects on retirement and voluntary job termination.

**Third**, our analyses suggest an expanded conception of rationality in retirement decisions. In contemporary economics, behavior is considered "economically rational" if it is intended to produce instrumental benefit *for the actor* (Vriend 1996: 264). Retirement effects of age, health, tenure and pension eligibility are usually understood to be instrumentally (i.e. economically) rational responses to the exigencies of time and treasure (Hayward, Grady, Hardy and Sommers 1989; Moen, Kim and Hofmeister 2001; Lumsdaine 1995). However, we know of no assertion anywhere that Politicized Departure offers any instrumental benefit to justices. Indeed politicized

departure is a tendency toward continued service by justices who would otherwise tend to resign from the Court, or accelerated departure by justices who would otherwise tend to remain on the Court. The rational basis for Politicized Departure appears to be service to a value, perhaps the norm of reciprocity (Blau 1986). In short, Politicized Departure is an example of Weberian value rationality, rather than instrumental rationality. And though we know of no other retirement analysis that explicitly recognizes value rationality in retirement decisions, we suspect that value rationality may not be an aberration peculiar to justices of the Supreme Court. For example, Mace's (1986) consideration of corporate boards of directors describes behavior much like that predicted by the Politicized Departure Hypothesis. We think there is considerable promise in further consideration of value rationality effects on retirement and voluntary job termination.

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### Appendix: Effect Measures for Logistic Regression

Effects of variables follow from the logistic regression model. For brevity, we state that model for retirement only. Let  $Y_{ij}$  equal 1 if the  $i^{\text{th}}$  justice retires in the  $j^{\text{th}}$  year, and let  $Y_{ij} = 0$  if he or she does not retire in that year. Let  $P_{ij}$  equal the probability that  $Y_{ij}$  equals 1. Let  $O_{ij} = P_{ij}/(1-P_{ij})$  be the odds that  $Y_{ij}$  equals 1. Let  $\mathbf{X}_{ij}$  be a vector of independent variables,  $\mathbf{X}_{ij} = (x_{ij1}, x_{ij2}, \dots, x_{ijk})$ , measuring hypothesized causes and control variables for the  $i^{\text{th}}$  justice in the  $j^{\text{th}}$  year.  $\epsilon_{ij}$  is the error.  $\hat{\cdot}$  indicates an estimate. The logistic regression model is:

$$(1) \quad \text{Ln}(P_{ij}/(1-P_{ij})) = \text{Ln}(O_{ij}) = \mathbf{X}_{ij}\beta + \epsilon_{ij}$$

Exponentiating equation (1) transforms the left side from the logit to the odds,  $\hat{O}_{ij}$ , which

has greater intuitive appeal:

$$(2) \quad \hat{P}_{ij}/(1-\hat{P}_{ij}) = \hat{O}_{ij} = e^{\mathbf{X}_{ij}\beta}$$

For more intuitive appeal, we solve (2) for the probability, as follows:

$$(3) \quad \hat{P}_{ij} = \hat{O}_{ij}/(1+\hat{O}_{ij}) = e^{\mathbf{X}_{ij}\beta} / (1+ e^{\mathbf{X}_{ij}\beta})$$

The *effect* of  $X_k$  on  $\hat{P}_{ij}$ , is the difference in the probability that  $Y=1$  that is associated with some convenient difference in  $X_k$ , on average and other things equal. If convenient differences in  $X_k$  are minutely small, and the effect is expressed as a rate of change in probability per unit change  $X_k$ , then the effect measure is the partial derivative of the probability with respect to  $X_k$   $\partial \hat{P}_{ij} / \partial X_k$ .

These partial derivatives (or marginal effects) obtain as follows: Differentiating (3) with respect to  $X_k$  indicates that the marginal effect of any particular  $X_k$  *on the odds* is a constant proportion of the odds:

$$(4) \quad \frac{\partial \hat{O}_{ij}}{\partial X_{..k}} = \beta_k \hat{O}_{ij}$$

And, dividing both sides of (5) by  $\hat{O}_{ij}$  yields:

$$(5) \quad \frac{\partial \hat{P}_{ij}}{\partial X_{..k}} =$$

Differentiating (4) yields the marginal effect of any particular  $x_{.k}$  *on the probability* that  $Y_{ij}=1$ :

$$(6) \quad \frac{\partial \hat{P}_{ij}}{\partial X_k} = \beta_k \hat{P}_{ij} (1-\hat{P}_{ij})$$

If a “convenient difference” in  $X_k$  is not minutely small, then it is necessary to calculate the change in  $P_{ij}$  associated with that difference in  $X_k$ .

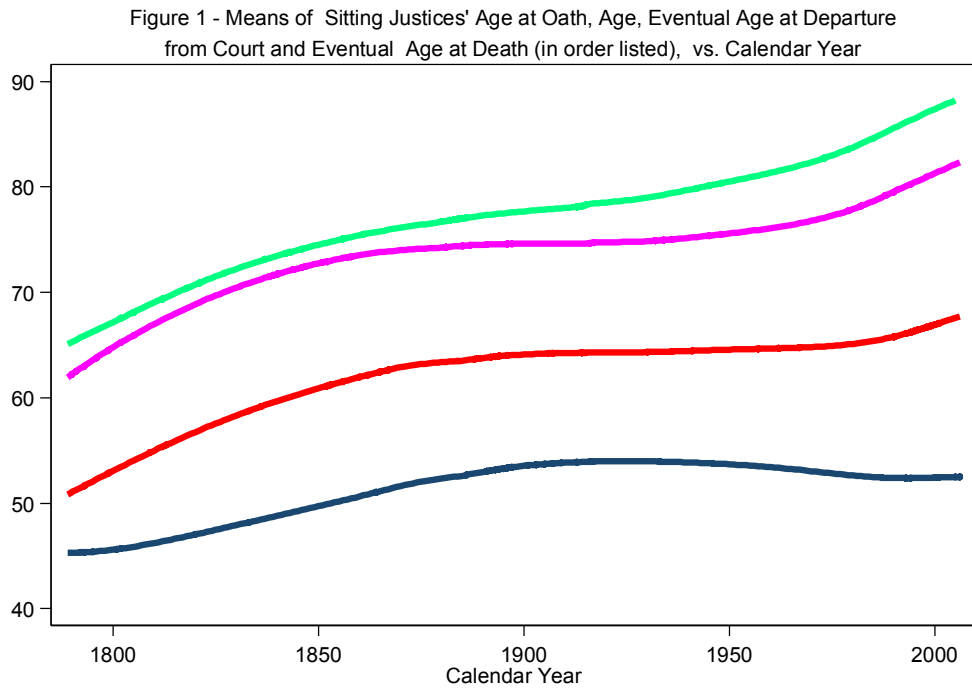


Figure 2 – Curvilinear Effects of Time Variables

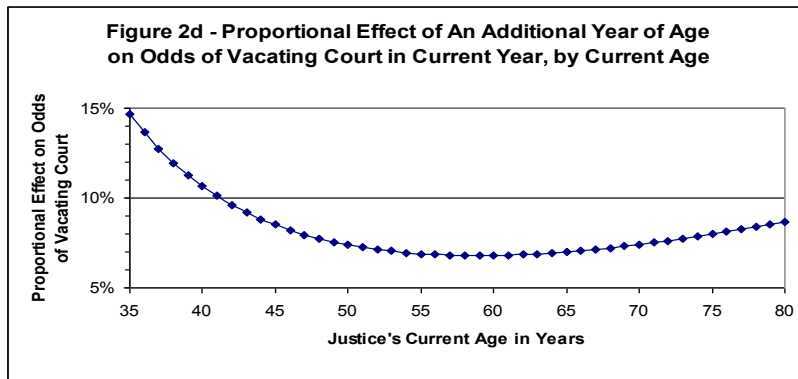
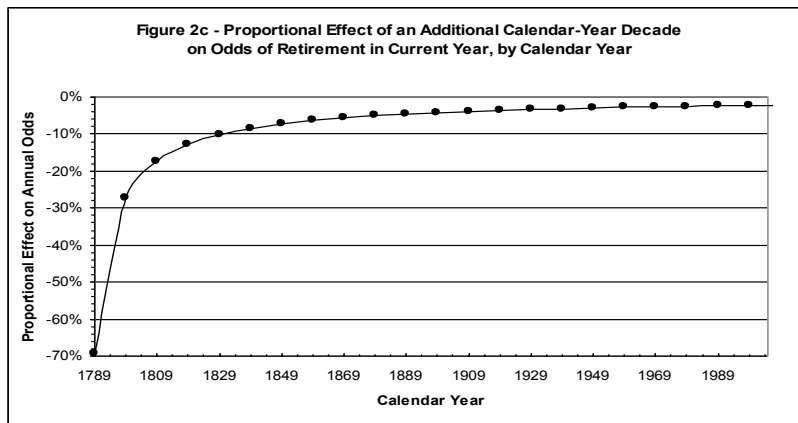
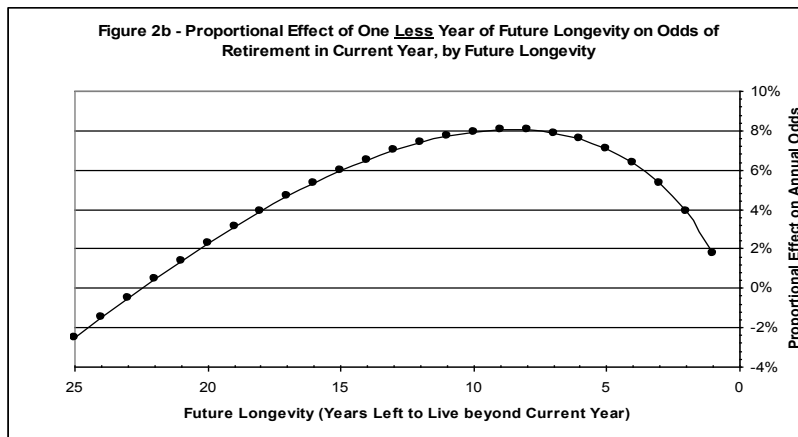
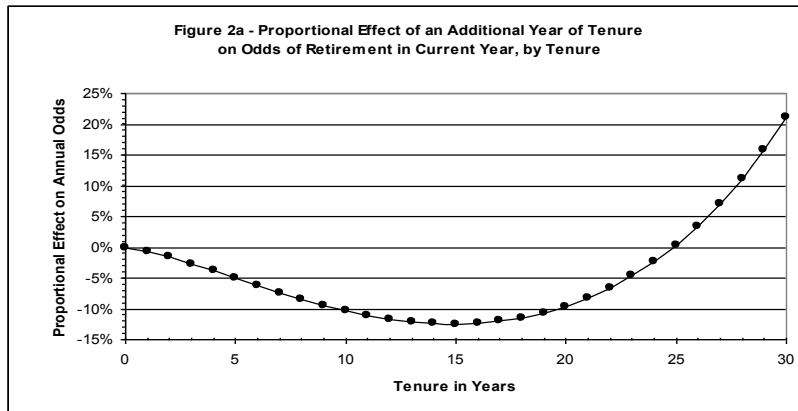


Figure 3 – Estimated Hazards of Court Departure by Death and Retirement



Figure 3b - Smoothed Mean Hazard of Leaving Supreme Court in Current Year, by Year, by Any Means -, by Retirement ... , or by Death - - -

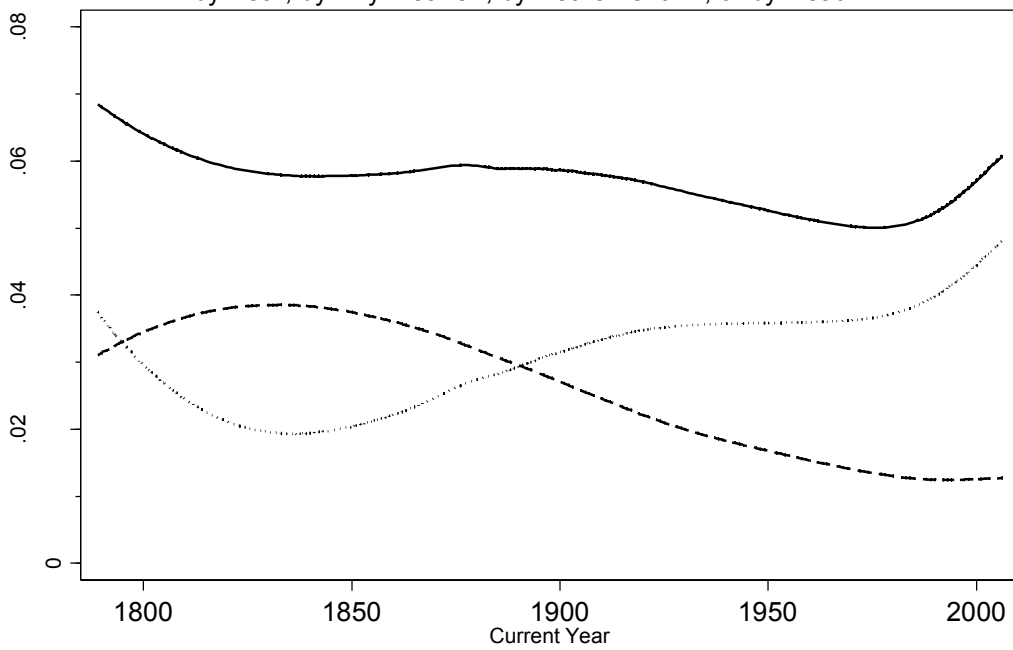


Table 1 -- Selected Research on U.S. Supreme Court Departures

<b>Author</b>	<b>Main Method</b>	<b>Unit of Analysis</b>	<b>Relevant Conclusions</b>
Wallis (1936)	Goodness of Fit	Sup.Ct. departures per year 1837-1932	Number of departures per year follows Poisson distribution.
Fairman (1938)	Tabulation and Narrative History	Justices 1789-1937	Age and infirmity effects on retirement vary. Political influences rarely mentioned. Age limits proposed.
Goff (1960)	Narrative History	Justices 1789-1959	Age and infirmity effects on retirement vary. Political influences sometimes mentioned.
Schmidhauser (1962)	Narrative History	Justices 1789-1961	Age effects on retirement are weaker for judicial activists than for non-activists
Callen and Leidecker (1971)	Goodness of Fit	Sup.Ct. departures per year 1837-1970	Number of departures per year follows Poisson distribution.
Ulmer (1982)	Goodness of Fit	Sup. Ct. departures per year 1790-1980	Number of departures per year follows Poisson distribution. No effect of Court size. "Minimal" interdependence of departures.
King (1987)	Poisson Regression	Sup.Ct. departures per year 1790-1984	New appointments to Court temporarily lower rate of departures from Court; Congressional turnover and major wars temporarily raise rate of departure.
Squire (1988)	Discrete Time Event History (with Probit)	Justices 1789-1980	Infirmity, pension eligibility and low volume of written opinions raise individual retirement hazard. No effects of justice's prior election to public office or congruence of current President's party with party of President who appointed justice.
Hagle (1993)	Poisson Regression	Sup.Ct. departures per year 1790-1991	Fewer departures when more Justices are former elected officials and when majority of justices are same party as Senate majority. More departures early in 2nd presidential terms.
Van Tassel (1993)	Tabulation and Narrative History	190 Fed. judges retired not for age or health 1789-1993	Describes and tabulates reasons for resignation or retirement (excluding age, health, and senior status). Describes political reasons, e.g. investigations and outside pressures.
Box-Steffensmeier and Zorn (1998)	Weibull and Cox Failure Time Analyses	Justices 1789-1993	No effect of partisan agreement between Justice and President who <i>appointed</i> . Some findings that retirement hazard lower for justices who were Republicans or "critical nominations."
Yalof (1999)	Narrative History	Justices 1789-1998	Describes political factors in the appointment process, esp. departing Justice's characteristics and time of departure.
Abraham (1999)	Narrative History	Justices 1789-1998	Describes effects of infirmity and politics on retirement.
Brenner (1999)	Tabulation and Narrative History	Justices 1937-1991	At most, 2 of 33 Justices timed retirement for political reasons.
Atkinson (1999)	Narrative History	Justices 1789-1998	Recent justices all left Court before becoming mentally decrepit.
Zorn and Van Winkle (2000)	Weibull and Cox Failure Time Analyses	Justices 1789-1992	Frequency of opinion writing negatively associated with retirement and death hazards. Age, pension eligibility and President's 2nd term raises retirement hazard. In Cox models only, death in office hazard lower when Justice's party same as party of President or Senate majority.
Garrow (2000)	Narrative History	Justices 1789-1999	Finds evidence of mental decrepitude before retirement, especially in 20th century. Age limit proposed.
Ward (2004)	Narrative History	Justices 1789-2003	Describes effects of politics and infirmity on retirement.
Yoon (2006)	Discrete Time Event History (with Probit)	Fed. Judges 1869-2002	For Sup. Ct.: No effects for pension eligibility and judicial tenure. 7 of 8 political variables not significant. When Justice, President, and Senate all share the same party, a Justice is <i>less</i> likely to retire, controlling for other party combinations.
Calabresi and Lindgren (2006)	Odds Ratios, Polynomial Regression	Justices 1789-2006	Find higher relative odds of retiring v. dying in office based on whether the current and appointing presidents are of the same party. Graph trends in age and service. Increases in judicial tenure over time fitted by cubic regression.
Walker Segal Spaeth Epstein (3d ed. 2006)	Tabulation	Justices 1789-2006	Describes retirement reasons.

Table 2 -- Descriptive Statistics for Independent Variables in Event Analyses, for Justice-years

<b>Variable Name and Brief Description</b>	<b>Statistic</b>	<b>All Justices</b>	<b>Died in Office</b>	<b>Retired or Still in Office</b>
<b>n</b> for all variables except Future Longevity	n	1895	866	1029
<b>Year</b> (Calendar Year)	Mean	1903.8	1867.2	1934.7
	S.D.	60.49	48.63	51.65
	Min	1789	1789	1789
	Max	2006	2005	2006
<b>Age</b> (Justice's Age in Years)	Mean	62.81	60.92	64.40
	S.D.	9.566	9.455	9.371
	Min	33	33	41
	Max	91	87	91
<b>Tenure</b> (Justice's years of service on the Supreme Court)	Mean	10.83	11.02	10.68
	S.D.	8.329	8.460	8.218
	Min	0	0	0
	Max	36	34	36
<b>Pension Eligible</b> (Justice qualified for pension; dummy)	Mean	0.2248	0.1074	0.3236
	S.D.	0.4176	0.3098	0.4681
<b>Future Longevity</b> (Years between current year and year of Justice's death; n/a for current justices; available for all but one former justice)	n	1734	866	868
	Mean	14.13	11.02	17.24
	S.D.	9.389	8.460	9.243
	Min	0	0	0
	Max	42	34	42
<b>SameParty*Year12</b> (President & Justice same party & Presidential term year 1 or 2; dummy)	Mean	0.3055	0.2910	0.3178
	S.D.	0.4608	0.4545	0.4658
<b>SameParty*Year34</b> (President & Justice same party & Presidential term year 3 or 4; dummy)	Mean	0.3198	0.3187	0.3207
	S.D.	0.4665	0.4662	0.4670
<b>NoSameParty*Year12</b> (President & Justice not same party & Presidential term year 1 or 2; dummy)	Mean	0.2016	0.2113	0.1934
	S.D.	0.4013	0.4085	0.3951
<b>NoSameParty*Year34</b> (President & Justice not same party & Presidential term year 1 or 2; dummy)	Mean	0.1731	0.1790	0.1681
	S.D.	0.3784	0.3836	0.3742

Table 3 -- Coefficients and Absolute Values of Z-Statistics, from Logistic Regression Analyses of Annual Probability of Retirement (versus non-retirement) from U.S. Supreme Court, 1789 - 2006

Independent Variable Name and Brief Definition	Analysis Number				
	1	2	3	4	5
<u>Calendar Year</u>					
1 Year1788 (Calendar Year - 1788)	-0.0064 1.85 *				
2 ln(Year1788)		-0.6887 3.25 ***	-0.6887 3.25 ***	-0.4951 2.31 **	-0.6110 2.68 ***
<u>Justice's Years of Age</u>					
3 Age	0.0470 1.89 *	0.0655 2.50 ***	0.0655 2.50 ***	0.0548 1.76 *	0.0583 2.15 **
<u>Justice's Years of Supreme Court Tenure</u>					
4 Tenure	-0.0260 1.19				
5 Tenure-cubed		-0.0012 3.16 ***	-0.0012 3.16 ***	-0.0013 3.5 ***	-0.0012 3.22 ***
6 Tenure-cubed x ln(Tenure) (x 1000)		0.3347 3.23 ***	0.3347 3.23 ***	0.3754 3.54 ***	0.3463 3.28 ***
<u>Justice's Pension Eligibility Indicator</u>					
7 Pension Eligible	2.0904 4.37 ***	2.3423 5.06 ***	2.3423 5.06 ***	2.3722 4.92 ***	2.4514 5.06 ***
<u>Justice's Remaining Years of Life</u>					
8 Future longevity-squared				-0.0172 2.66 ***	
9 Future longevity-squared x ln(Future longevity)				0.0048 2.72 ***	
<u>Political Circumstances Indicators</u>					
10 SameParty*Year12	0.9850 2.09 **	0.9555 2.08 **	-0.3495 0.56	0.9706 2.07 **	0.9563 2.06 **
11 SameParty*Year34	0.5789 1.16	0.5651 1.18		0.6120 1.24	0.5804 1.2
12 NoSameParty*Year12	0.7087 1.46	0.7399 1.51		0.7419 1.50	0.7423 1.50
13 Year12			0.7399 1.51		
14 SameParty			0.5651 1.18		
15 Constant	-7.0901 4.28 ***	-5.8837 3.71 ***	-5.8837 3.71 ***	-5.3241 2.75 ***	-5.7000 3.56 ***
<u>Estimation Details</u>					
16 n justice-years	1895	1895	1895	1734	1734
17 Number of justices (4)	110	110	110	100	100
18 Pseudo Log Likelihood	-214.579	-206.572	-206.57	-196.07	-199.2
19 Pseudo R-squared	0.1254	0.1581	0.1581	0.1728	0.1596

Notes: 1. Robust Z statistics, corrected for clustering, are below corresponding coefficients. 2. The unit of analysis for results reported here is one Supreme Court Justice in one year (one justice-year). 3. See text for discussion of the equivalence of the analyses reported in columns 2 and 3. In the analysis reported in column 3, the sum of coefficients in rows 10, 13 and 14 is 0.9555, with a standard error of 0.4602 and a z-statistic of 2.08. Note the correspondence of that result to row 10 of column 2, and the correspondence of rows 13 and 14 of column 3 to rows 12 and 11 in column 2, respectively. 4. Number of justices presented for interest only: 110 individuals who were appointed a total of 112 times to the Supreme Court.

Table 4 -- Coefficients and Absolute Values of Z-Statistics, from Logistic Regression Analyses of Annual Probability of Death while Serving on the U.S. Supreme Court (versus continued service or retirement), 1789 - 200

Independent Variable Name and Brief Definition	Analysis Number	
	1	2
<small>Run at 18:44:11, 10 Jun 2006 Using data from usscMay152006.dta May272006A_DO</small>		
<u>Calendar Year</u>		
<b>1</b> Year1788 (Calendar Year - 1788)	<b>-0.0117</b> 3.29 ***	<b>-0.0117</b> 3.29 ***
<u>Justice's Years of Age</u>		
<b>2</b> Age	<b>0.0646</b> 3.18 ***	<b>0.0646</b> 3.18 ***
<u>Justice's Years of Supreme Court Tenure</u>		
<b>3</b> Tenure	<b>0.0306</b> 1.44	<b>0.0306</b> 1.44
<u>Justice's Pension Eligibility Indicator</u>		
<b>4</b> Pension Eligible	<b>0.0948</b> 0.21	<b>0.0948</b> 0.21
<u>Political Circumstances Indicators</u>		
<b>5</b> SameParty*Year12	<b>-0.4229</b> 1.03	<b>0.6797</b> 1.43
<b>6</b> SameParty*Year34	<b>-1.1026</b> 2.30 **	
<b>7</b> NoSameParty*Year12	<b>-0.0202</b> 0.05	<b>1.0824</b> 2.35 ***
<b>8</b> NoSameParty*Year34		<b>1.1025</b> 2.30 **
<b>9</b> Constant	<b>-6.725</b> 5.47 ***	<b>-7.828</b> 6.17 ***
<u>Estimation Details</u>		
<b>10</b> n justice-years	<b>1895</b>	<b>1895</b>
<b>11</b> Number of justices (3)	<b>110</b>	<b>110</b>
<b>12</b> Pseudo Log Likelihood	<b>-202.477</b>	<b>-202.477</b>
<b>13</b> Pseudo R-squared	<b>0.1098</b>	<b>0.1098</b>

Notes: 1. Robust Z statistics, corrected for clustering, are below corresponding coefficients. 2. The unit of analysis for results reported here is one Supreme Court Justice in one year (one justice-year). 3. Number of justices presented for interest only: 110 individuals who were appointed a total of 112 times to the Supreme Court.

Table 5 -- Coefficients and Absolute Values of Z-Statistics, from Logistic Regression Analyses of Annual Probability of Vacating the U.S. Supreme Court by Death or Retirement (versus Not Vacating), 1789 - 2006

	Independent Variable Name and Brief Definition	Analysis Number	
		1	2
Run at 18:46:05, 10 Jun 2006 Using data from usscMay152006.dta May272006A_DO May272006A_DO10Jun2006184302			
<u>Calendar Year</u>			
1	<b>Year1788 (Calendar Year - 1788) / 100</b>	<b>-1.020</b> 4.09 ***	<b>-1.020</b> 4.09 ***
<u>Justice's Years of Age</u>			
2	<b>1 / (Age-squared)</b>	<b>-2749</b> 1.11	<b>-2749</b> 1.11
3	<b>Age-cubed /1000000</b>	<b>3.738</b> 2.00 **	<b>3.738</b> 2.00 **
<u>Justice's Years of Tenure to Date on Supreme Court</u>			
4	<b>Tenure</b>	<b>-0.1164</b> 2.60 ***	<b>-0.1164</b> 2.60 ***
5	<b>Tenure-squared /1000</b>	<b>3.505</b> 2.99 ***	<b>3.505</b> 2.99 ***
<u>Justice's Pension Eligibility Indicator</u>			
6	<b>Pension Eligible</b>	<b>1.197</b> 3.60 ***	<b>1.197</b> 3.60 ***
<u>Political Circumstances Indicators</u>			
7	<b>SameParty*Year12</b>		<b>-0.165</b> 0.60
8	<b>SameParty*Year34</b>	<b>-0.2906</b> -0.67	<b>-0.714</b> 2.44 ***
10	<b>NoSameParty*Year34</b>		<b>-0.259</b> 0.82
11	<b>SameParty</b>	<b>-0.1649</b> -0.60	
12	<b>Year34</b>	<b>-0.259</b> -0.82	
13	<b>Constant</b>	<b>-1.935</b> 1.58	<b>-1.6759</b> -1.39
<u>Estimation Details</u>			
14	<b>n justice-years</b>	<b>1895</b>	<b>1895</b>
15	<b>Number of justices</b>	<b>110</b>	<b>110</b>
16	<b>Pseudo Log Likelihood</b>	<b>-354.311</b>	<b>-354.311</b>
17	<b>Pseudo R-squared</b>	<b>0.1145</b>	<b>0.1145</b>

Notes: 1. Robust Z statistics, corrected for clustering, are below corresponding coefficients. 2. The unit of analysis for results reported here is one Supreme Court Justice in one year (one justice-year). 3. In Analysis 1, the sum of coefficients for *SameParty*, *Year34*, and *SameParty\*Year34* is -0.714 with a Z-statistic of 2.44. This sum (and Z statistic) is identical to the coefficient for *SameParty\*Year34* in Analysis 2. The condition that would make the values of *SameParty*, *Year34* and *SameParty\*Year34* all equal to 1 are exactly the conditions that would make the value of *SameParty\*Year34* equal to 1.

Table 6 -- Coefficients and Absolute Values of Z-Statistics, from Multinomial Probit Analysis of Death in Office versus Retirement from Office versus Remaining in Office by U.S. Supreme Court Justices, 1789 - 2006

<b>Independent Variable Name and Brief Definition</b>		<b>Outcome</b>	
		<b>Death in Office</b>	<b>Retirement</b>
Run at 20:47:35, 16 Jul 2006 Using data from usscMay152006.dta May272006b_DO			
<u>Calendar Year</u>			
<b>1</b>	<b>Year1788 (Calendar Year - 1788)</b>	<b>-0.0083</b> 4.03 ***	<b>-0.0051</b> 2.47 ***
<u>Justice's Years of Age</u>			
<b>2</b>	<b>Age</b>	<b>0.0478</b> 3.51 ***	<b>0.0349</b> 2.22 **
<u>Justice's Years of Tenure to Date on Supreme Court</u>			
<b>3</b>	<b>Tenure</b>	<b>0.0877</b> 1.73 *	<b>-0.0176</b> 0.33
<b>4</b>	<b>Tenure-cubed / 100</b>	<b>-0.12892</b> 2.61	<b>-0.0751</b> 1.50
<b>5</b>	<b>Tenure-cubed*ln(Tenure) / 1000</b>	<b>0.3546</b> 2.7	<b>0.2189</b> 1.67
<u>Justice's Pension Eligibility Indicator</u>			
<b>6</b>	<b>Pension Eligible</b>	<b>0.2588</b> 0.92	<b>1.487</b> 4.87 ***
<u>Political Circumstances Indicators</u>			
<b>7</b>	<b>SameParty*Year12</b>	<b>-0.1606</b> 0.62	<b>0.5383</b> 1.90 *
<b>8</b>	<b>SameParty*Year34</b>	<b>-0.6053</b> 2.14 **	<b>0.2545</b> 0.86
<b>9</b>	<b>NoSameParty*Year12</b>	<b>0.0659</b> 0.26	<b>0.4642</b> 1.55
<b>10</b>	<b>Constant</b>	<b>-5.167</b> 6.44 ***	<b>-4.811</b> 5.02 ***
<u>Estimation Details</u>			
<b>9</b>	<b>n justice-years</b>	<b>1895</b>	
<b>10</b>	<b>Number of justices</b>	<b>110</b>	
<b>11</b>	<b>Pseudo Log Likelihood</b>	<b>-405.472</b>	

Notes: 1. Robust Z statistics, corrected for clustering, are below corresponding coefficients. 2. The unit of analysis for results reported here is one Supreme Court Justice in one year (one justice-year). 3. Pseudo R-squared statistics not available.

<sup>1</sup> See also Preston's (1977: 171) call for demographic analysis of labor force exit-by-death by Supreme Court justices and other "elderly leadership groups."

<sup>2</sup> Although justices can be removed from office for treason, bribery, or other serious crimes, none have been so removed.

<sup>3</sup> Political party identification is a meaningful but crude dimension of political orientation. Obviously, justices and political parties may change their political orientations over time. Further, political views vary among supporters of the same political party. Nonetheless, political party identification as described here is a meaningful indicator of political orientation to researchers who have investigated the Politicized Departure Hypothesis, beginning at least with Fairman (1938) and continuing as recently as Yoon (2006).

<sup>4</sup> In related analyses, Nixon and Haskin (2000); Barrow, Gryski, and Zuk (1996); Spriggs and Wahlbeck (1995); Barrow and Zuk (1990) and others examine departures from Federal district and appellate courts.

<sup>5</sup> A discussant objected to the apparent novelty of the term "lumpability." In fact, the term has been in regular use in probability and statistics for half a century, appearing in Kemeny and Snell's well-known textbook (1960) and continuing through to the present (Cobb and Chin 2003).

<sup>6</sup> Suicide appears to be unprecedented among Supreme Court justices.

<sup>7</sup> The competing risks model is appropriate for analysis of labor force exit by death and retirement in the general working population (Blau and Gilleskie 2001; Cahill, Giandrea and Quinn 2006). In the general population, retirement and unemployment (which tends to be reported as retirement, or which can precipitate a worker's decision to retire) are often mandated by employer policy, forced by employer decision, required by law, necessitated by poor health, or simply used as a euphemism for involuntary underemployment or unemployment. Thus, in the general population, labor force exit by reported retirement and by death are the synchronous alternatives of the competing risks formulation.

<sup>8</sup> Further, and more substantively, when applied to the Supreme Court, the competing risks formulation gives dubious equivalent treatment to an involuntary biological event (death) and a voluntary rational social action (job resignation).

<sup>9</sup> Other variables in the second parameterization are linear transformations of variables in the first parameterization, as follows:

$$\text{SameParty*Year34} = \text{SameParty} - \text{SameParty*Year12}$$

$$\text{NoSameParty*Year12} = \text{Year12} - \text{SameParty*Year12}$$

Thus, it makes no difference which parameterization is used. In any particular analysis, we report results with the parameterization that simplifies the calculation and presentation of effects and significance tests. For the unconvinced, Table 3 includes two renditions of the same analysis, each done with a different parameterization; all results are absolutely identical. A footnote to that table shows how the results of either analysis can be translated algebraically to the results of the other.

<sup>10</sup> We started with database kindly supplied by Professor Albert Yoon (see Yoon 2006), based on information he obtained from the Administrative Office of the U.S. Courts (Federal Judicial Center 2006). We checked some of those data against various sources, corrected errors and added more data from the Federal Judicial Center (2006) and the U.S. Supreme Court (2006) for the 1789-1868 and the 2003- 2006 periods.

<sup>11</sup> Subtracting 1788 from calendar year preserves all information and avoids rounding problems that occurred in initial analyses with STATA version 8 that used calendar year.

<sup>12</sup> Because we examine data on the entire universe of Supreme Court justices, it is at least arguable that significance tests can be ignored in these analyses. If coefficients are interpreted *without significance tests*, then Analysis 1 leads to the following conclusion: Other things equal, the coefficient of -.4229 for *SameParty\*Year12* indicates that death-in-office odds for a justice in a year are reduced by about one-third ( $.34=1- e^{-0.4229}$ ) if the incumbent President is of the same party as the President who first nominated the justice to the Court, and the incumbent President is in the first two years of his term. The coefficient of -

1.1026 for *SameParty\*Year34* indicates that if the incumbent President is instead in the third or fourth year of his term, then this reduction in death-in-office odds doubles. But, by itself, the number of years left in the incumbent President's term has virtually no effect on the probability of death-in-office.

<sup>13</sup> The coefficient of *NoSameParty\*Year12* is 1.0824 (significant,  $\alpha < 0.01$ , 1-tailed). The coefficient for *NoSameParty\*Year34* is 1.1025, significant ( $\alpha < 0.015$ , 1-tailed), almost identical to the coefficient of *NoSameParty\*Year12* and not significantly different from it (at any meaningful significance level,  $\chi^2 < .01$ , 1 df). We must reject the null hypothesis that both of these coefficients are zero ( $\chi^2 = 6.57$ , 2 df,  $\alpha \leq 0.05$ , 2-tailed).

<sup>14</sup> Change in value of either *NoSameParty\*Year12* or *NoSameParty\*Year34* from 0 to 1 approximately triples odds of dying in office ( $3 \approx 2.95 = e^{1.0824}$ ,  $3 \approx 3.01 = e^{1.1025}$ ), other things equal.

<sup>15</sup> First, *SameParty* reduces the hazard of *death-in-office*, but increases the hazard of *retirement*. *SameParty* shows interaction effects with the effects of the President's year in office, but, again, differently for retirement and death-in-office: If *Year12* = 1, then the absolute size of the effect of *SameParty* on *Retirement* hazard increases; if *Year12* = 0 (that is, *Year34*=1), then the absolute size of the effect of *SameParty* on the *death-in-office* hazard increases. Second, *Pension benefit eligibility* greatly increases expected retirement hazard, but its effect on death-in-office hazard is not statistically significant. Third, other things equal, calendar year effects would cause *death-in-office* hazards to decline steadily since 1789, and would cause retirement hazards to decline very rapidly in the 18<sup>th</sup> Century, taper off quickly, and now recede at a small annual rate. And, fourth, *tenure* shows no effect on expected odds of death-in-office, but *tenure* shows negative effects on expected retirement odds for justices with less than 25 years of experience on the Court, and increasing, positive effects thereafter.

<sup>16</sup> Because retirement and death-in-office are disjoint events, the hazard that a justice retires or dies-in-office is the sum of the hazards of death-in-office and retirement. To some extent, these differences in predicted hazards are a consequence of the different coefficients just discussed. However, those coefficients are not sufficiently identified to permit comparisons between different equations. However, probabilities and odds that are estimated from different equations are identified and can be compared. Finally, comparisons of individual coefficients leaves open the possibility that the effect of one independent variable offsets the effect of another; unless otherwise indicated, the estimated probabilities and odds reported here include effects of all independent variables at once.

<sup>17</sup> Descriptive statistics for the annual estimated hazards of retirement, death-in-office, and either outcome, 1789-2006 are:

	<i>Hazard of Retirement</i>	<i>Hazard of Death-in-Office</i>	<i>Hazard of Either</i>
Mean	0.0303	0.0259	0.0562
Standard Deviation	0.0468	0.0306	0.0615
Minimum	0.0007	0.0006	0.0028
Maximum	0.4743	0.2553	0.5873
n (justice-years)	1895	1895	1895