Understanding Faculty Retirement: A Longitudinal Analysis using Data from the 1981-2003 Surveys of Doctorate Recipients*

Nicholas H. Wolfinger

University of Utah

Mary Ann Mason
Marc Goulden
Karie Frasch

University of California, Berkeley

ABSTRACT

Retirement is of interest to faculty members and university administrators alike, but almost no studies have explored the predictors of academic retirements using longitudinal data. We respond to this gap in the literature using the nationally representative 1981-2003 Surveys of Doctorate Recipients. Family characteristics have large effects on retirement flows. Individuals at non-research-intensive schools have higher retirement rates, as do whites and Hispanics. Gender has no effect on academic retirements. We conclude with our plans for future research.

Paper prepared for presentation at the 2009 annual meeting of the American Sociological Association

*Correspondence to Wolfinger, Department of Family and Consumer Studies, 225 South 1400 East, AEB 228, University of Utah, Salt Lake City, UT 84112-0080 (e-mail: Nick.Wolfinger@fcs.utah.edu). We thank Alta Williams for research assistance and the Association of Institutional Researchers (#08-216) for its generous support of this project. The use of NSF data does not imply NSF endorsement of research methods or conclusions contained in this paper.

INTRODUCTION

Retirement is a subject of widespread interest in the higher education community. The average American faculty member is 50 years old (Conley 2007) and retirement is on many of their minds: almost half of those aged 55 and up say it is it least somewhat likely that they will retire within three years (Conley 2005). Academic administrators also take an interest in faculty retirement. Older faculty members have higher salaries, so universities can save money by replacing retiring faculty with assistant professors or adjuncts (June, McCormack, and Wheeler 2008).

Despite its apparent importance, there has been relatively little research on faculty retirements. Articles have examined early retirement programs (Seltzer and Karnes 1988), the end of mandated retirement (Ashenfelter and Card 2002; O'Neil 2001), pension preferences (Clark and Pitts 1999), and phased retirement and other incentive programs (June 2008; Keefe 2001), but have said relatively little about the individual factors that affect retirement. Of studies on the decision to retire, three focused on retirement intentions rather than behavior (Anderson 1978; Conley 2005, 2007) while another examined the characteristics of faculty who had already retired (Kaye and Monk 1984). To the best of our knowledge, Ashenfelter and Card (2002) is the only study to examine retirement using longitudinal data on faculty members before and after the transition from teaching. Their study focused on how the abolition of mandatory retirement in 1994 affected retirement flows, not the predictors of academic retirement more generally.

We examine academic retirement using national panel data from the Surveys of Doctorate Recipients collected between 1981 and 2003, inclusive. Our emphasis is the role played by gender and family in the retirement process. Previous research offers inconsistent evidence on this point: although male faculty appear to retire later (Kaye and Monk 1984), they are more likely than women to have plans to retire sooner (Conley 2005). Our study will offer a stronger test of gender differences in the academic retirement process than has been offered by previous research.

Gender, Work-Family Conflict, and the Decision to Retire

Much research suggests that work-family conflict plays a substantial role in explaining gender inequity in the academy. Female Ph.D. recipients take tenure-track jobs at lower rates than do their male counterparts due to the differential effects of family formation (Wolfinger, Mason, and Goulden 2008, 2009). Concerns about blending careers and families appear to dissuade young academic women from going on the job market in the first place (van Anders 2004). More so than men, married women face the "two body problem" when pondering academic careers (Wolf-Wendel, Twombly, and Rice 2003). These concerns continue even for women who successfully enter the professoriate. Many studies have documented work-family conflict among academics (Colbeck and Drago 2005; Comer and Stites-Doe 2006; Gatta and Roos 2002; Jacobs and Winslow 2004; O'Laughlin and Bischoff 2005), with female professors spending more time on domestic chores than their male counterparts (Mason and Goulden 2004; Suitor, Mecom, and Feld 2001). If work-family issues are salient before and during academic careers, they may also be consequential near the end. In particular, Raymo and Sweeney (2006)

recently showed that workers in their fifties evince a stronger preference for early retirement when perceived work-family conflict is high. This could explain why women faculty members might retire earlier than do men.

We will also explore the factors that may be driving gender differences in retirement. Female academics have fewer children and are less likely to be married than their male counterparts (Mason and Goulden 2004; Wolfinger, Goulden, and Mason forthcoming); in turn, academics with dependents are far less likely to have plans to retire (Conley 2005). Compared to men, female professors are more likely to hold second tier jobs (Curtis 2004; Wolfinger, Mason, and Goulden 2009) and academics in positions where their primary responsibility is teaching expect to retire earlier than their colleagues at research universities (Conley 2005). We will determine if the relative distribution of men and women in academia—across disciplinary field and job type—can explain any observed sex differentials in retirement rates. Finally, it is possible that salary inequities may affect gender differences in retirement timing. Male academics earn up to 21% more than women (Barbezat 2003; see also Umbach 2008) and lower-paid academics are more likely to have retirement plans (Conley 2005).

METHODS

Data

For more than 50 years all new Ph.D. recipients in the United States have been administered questionnaires, comprising the Survey of Earned Doctorates. Since 1973, approximately 10% of Survey of Earned Doctorates respondents have been selected for ongoing

biennial interviews that continue until age 76 or relocation outside of the United States. Together the repeated interviews of new and former Ph.D. recipients comprise the Survey of Doctorate Recipients (SDR) (National Science Foundation 2003). The result is a large and continually replenished set of panel data on Ph.D.-level careers. We analyze data for respondents queried between 1981 and 2003, inclusive; necessary questions about family formation were not asked in earlier years. Given that our goal is to examine the predictors of retirement we limit our analysis to respondents over age 55. Humanities Ph.D.s. are omitted as they were dropped from the SDR subsequent to 1995 due to budgetary constraints. We also exclude SDR respondents employed in government or the private sector, and those out of the paid labor force. Overall response rates are good: for instance, 87% of respondents completed the survey in 1991 (National Science Foundation 1995). Our final sample size is 9,426.

Analysis employs survey weights that adjust for attrition bias in order to make the data representative. Missing data are relatively few in number and therefore deleted listwise (see Allison 2001 for the advantages of this technique). The exception is race/ethnicity, for which we code an additional dummy variable for cases missing data. More sophisticated means of handling missing data, such as multiple imputation, do not perform appreciably better (Paul et al. 2008).

Variables

Our independent variables measure personal and professional differences between respondents. Personal characteristics include sex, marital status, race/ethnicity, and children. Marital status, a time-varying independent variable, is measured with dummies ascertaining

whether a respondent is in a heterosexual marriage (the SDR does not contain information on same-sex partnerships), separated or divorced, never married, or otherwise single (including widows/widowers and respondents for whom we have no additional information); never married is the reference category. Race/ethnicity is a set of dummy variables measuring whether respondents are Asian or Pacific Islanders, Black, Hispanic, White, or of other or unknown ethnicity; Whites comprise the reference category.

Children are measured with three variables. The first, a time-varying dummy, measures whether respondents have minor children during the years they are at risk of retirement. A second dummy variable measures whether respondents had minor children before age 55 (but not thereafter). The reference category is respondents who have no children in any of the years for which we have data; this includes academics who became SDR respondents when their children are already adults. Our ability to measure the presence of children depends in part upon how many years of SDR data we have for respondents prior to retirement, so this figure is included in our analysis as a continuous variable. Note that this variable accounts for left truncation in our data.

Professional characteristics in our analysis are Ph.D. field, job type, employer type, and calendar year of Ph.D. receipt.[1] Ph.D. field is a set of dummy variables measuring whether respondents received their degrees in the biological sciences (the reference category), engineering or computer science, math or the physical sciences, psychology, or any other social science. Job type is coded as tenure-track professorship, non-tenure-track teaching position, and any other position in a college or university (the reference category). A dummy variable measures whether respondents are employed at Carnegie Research I schools; in recent years, this

[1] In future analysis we will include income as an independent variable.

classification has been renamed "very high research activity" (Carnegie Foundation 2008). Finally, calendar year of Ph.D. receipt is a continuous variable.

Historical period, the years respondents are at risk of retirement, is coded as a set of dummy variables: before July of 1982, July of 1982 to July of 1994, and July of 1994 to July of 1999 (the reference category). This coding captures the 1994 abolition of mandatory faculty retirement.

Analysis

We conduct a discrete-time event history analysis of faculty retirement, estimated via logistic regression (Allison 1995). Since time-to-event is measured in years, continuous time models would be difficult to estimate. In addition, discrete-time models are appropriate when data are left-truncated (Guo 1993).

Respondents are at risk of retirement each year they remain in our data set. For each such year we construct an additional record. "Failure" occurs when faculty members retire. Duration dependence is measured with a set of dummy variables, one for each year between ages 55 and 76. Respondents who have not retired by age 75, the age at which they cease being SDR respondents, are treated as censored. According to prior research only 8% of faculty have not retired by this time (Conley 2007) (comparable results are not available for non-faculty Ph.D.-level university employees).

RESULTS

Table 1 displays metric coefficients and hazard ratios from our event history analysis. Consistent with expectations, family obligations affect retirement. Married respondents are 25% more likely than their never-married counterparts to retire, a statistically significant difference. Separated, divorced, and otherwise single academics do not have significantly different retirement rates than do their never-married colleagues. The meaning of these results seem clear: unmarried academics work longer because they lack partners to share retirement with. On the other hand, children dramatically reduce retirement rates. Parents of minor children who are over age 55 have 46% lower odds of retirement in comparison to childless respondents (including respondents for whom parenthood cannot be ascertained). Academics who had children prior to 55 are 24% less likely to retire than are their childless counterparts. Our data indicate that 6% of our respondents are parents past age 55 and 44% have ever been parents. The latter figure is almost certainly a low estimate, as previous research based on the SDR indicates that the majority of academics have children at some point in their lives (Mason and Goulden 2004). Children presumably delay retirement because they cost money, so parents work longer in order to support their families. This is presumably why having children after age 55 reduces the odds of retirement more than does having them earlier.

Table 1 Here

Our analysis shows that sex has no effect on retirement rates after controlling for other differences between respondents. The corresponding regression coefficient is small and not statistically significant. We had assumed that female Ph.D. recipients, earning lower wages than their male colleagues and generally occupying lower rungs on the academic latter, would retire earlier. Women also do the lion's share of family care-taking (Mandell 2003) and "kin keeping" (Rossi and Rossi 1990), which we speculated would hasten retirement. But this does not turn out

to be the case. In addition, we experimented with interactions between respondent sex, marriage, and the presence of children, but these were not significant and therefore omitted from the results presented here. Sex does not affect retirement even when all other independent variables are omitted from the analysis (result not shown).

Employees at Carnegie Research I schools have 77% lower odds of retirement than do their colleagues employed at other types of colleges and universities. Ph.D. recipients employed as teachers, whether line faculty or adjuncts, have lower retirement rates than do non-teaching Ph.D. recipients employed at colleges or universities. To our surprise, tenure-track faculty and adjuncts have relatively similar retirement rates. Given the poor working conditions most adjuncts endure (Dubson 2001; Fountain 2005), we expected them to retire earlier than their colleagues on the tenure track. Ph.D.s in math, the physical sciences, psychology, and other social sciences retire later than do people with degrees in other fields. In addition, Asians and Pacific Islanders have lower retirement rates than do members of other population groups.

Contrary to society at large (Gendell 2001; see also Friedberg and Webb 2005), academic retirement rates have not changed over time. Ashenfelter and Card (2002) showed that the abolition of mandatory retirement decreased retirement rates for 70 and 71 year old faculty members by two-thirds. We suspect that this development did not have a substantial effect on overall retirement rates because the majority of faculty has already retired by age 70--previous studies (Berberet et al. 2005; Conley 2007) identify 66 as the mean retirement age for faculty. Ashenfelter and Card's study may have also overestimated the effect of the abolition of mandatory retirement because it included only faculty employed at universities with substantial TIAA-CREF participation; other universities offer defined benefit retirement plans (i.e., pensions) that presumably give older employees less incentive to continue working. It is also

possible that the age composition of higher education employees has changed over time, so accounting for duration dependence eliminated any potential relationship between historical period and retirement rates.

How do the odds of retirement vary with age? Figure 1 shows the hazard function for retirement; in other words, the age-specific probabilities of retirement. Retirement rates increase monotonically and linearly from ages 55 to 73. At age 70, for instance, there is a 20% chance of retiring that year. Past 73, retirement rates shoot up dramatically. The hazard rate at age 74 is .44; by age 75, the last year of data in our event histories, the hazard is .84.

Figure 1 Here

CONCLUSION

As we anticipated, family characteristics have large effects on retirement flows among Ph.D. holders employed in America's colleges and universities. Married people have higher retirement rates, while parents have lower rates. Apparently the need to support children (and perhaps grandchildren) offsets the desire to spend more time with one's family. On the other hand, single people presumably keep working because they lack the incentive to retire that might otherwise be provided by a spouse.

Job characteristics have various effects on academic retirement. Employees at Carnegie Research I schools are much less likely to retire early than are people working at other kinds of institutions. Presumably employees at R1 schools enjoy better working conditions, most notably lighter teaching loads. Also, teachers retire later than do non-teaching Ph.D.-level university employees. Somewhat surprisingly, adjunct faculty do not retire substantially sooner than do

their tenure-track colleagues. Perhaps financial need outweighs the desire to retire for some adjuncts, given that they are paid 26% less than their counterparts on the tenure track (Monks 2004).

This paper is a work in progress. We will add income data from the SDR as an independent variable. In addition, we will conduct analysis with various contextual variables measured at the institutional level. Data from the National Center for Educational Statistics will enable us to measure college- and university-level characteristics such as average income and gender composition.

REFERENCES

Allison, Paul D. 1995. *Survival Analysis using the SAS System: A Practical Guide*. Cary, NC: SAS Institute, Inc.

_____. 2001. *Missing Data*. Sage University Papers Series on Quantitative Applications in the Social Sciences, 07-136. Thousand Oaks, CA: Sage.

Anderson, Kim. 1978. "Differences in Attitudes Toward Retirement Among Male and Female Faculty and Other University Professionals." Paper presented at the annual meeting of the Gerontological Society of America.

Ashenfelter, Orley, and David Card. 2002. "Did the Elimination of Mandatory Retirement Affect Faculty Retirement?" *The American Economic Review* 92:957-980.

Barbazet, Debra. 2003. "History of Pay Equity Studies." Pp. 69-96 in *Conducting Salary-Equity Studies: Alternative Approaches to Research. New Directions for Institutional Research* (Number 115), edited by R. K. Toutkoushian. San Francisco, CA: Jossey-Bass.

Berberet, Jerry, Betsy E. Brown, Carol J. Bland, Kelly R. Risbey, and Carroll-Ann Trotman. 2005. "Planning for the Generational Turnover of the Faculty: Faculty Perceptions and Institutional Practices." Pp. 80-100 in *Recruitment, Retention, and Retirement in Higher Education*, edited by Robert L. Clark and Jennifer Ma. Northampton, MA: Edward Elgar.

Carnegie Foundation for the Advancement of Teaching. 2008. Carnegie Classifications Data File, June 11, 2008.

Clark, Robert L., and M. Melinda Pitts. 1999. "Faculty Choice of a Pension Plan: Defined Benefit versus Defined Contribution." *Industrial Relations* 38:18-45.

Colbeck, Carol L. and Robert Drago. 2005. "Accept, Avoid, Resist: How Faculty Members Respond to Bias Against Caregiving. . . and How Departments Can Help." *Change: The Magazine of Higher Learning* 37:10-17.

Comer, Debra R. and Susan Stites-Doe. 2006. "Antecedents and Consequences of Faculty Women's Academic-Parental Role Balancing." *Journal of Family and Economic Issues* 27:495-512.

Conley, Varerie M. 2005. "Demographics and Motives Affecting Faculty Retirement." *New Directions for Higher Education*, Winter 2005, Issue 132, 9-30.

_____. 2007. "Retirement and Benefits: Expectations and Realities." Pp. 89-96 in *Almanac of Higher Education*. Washington, DC: National Education Association.

Curtis, John W. 2004. "Faculty Salary and Faculty Distribution Fact Sheet 2003-04." American Association of University Professors.

Dubson, Michael, ed. 2001. *Ghosts in the Classroom: Stories of College Adjunct Faculty--and the Price We All Pay*. Quincy, MA: Camel's Back Books.

Fountain, Wendell V. 2005. *Academic Sharecroppers: Exploitation of Adjunct Faculty and the Higher Education System*. Bloomington, IN: Authorhouse.

Friedberg, Leora and Anthony Webb. 2005. "Retirement and the Evolution of Pension Structure*." The Journal of Human Resources* 40:281-308.

Gatta, Mary L. and Patricia A. Roos. 2002. "Balancing without a Net in Academia: Integrating Family and Work Lives." Unpublished paper, Center for Women and Work, Rutgers University.

Gendell, Murray. 2001. "Retirement Age Declines Again in 1990s." *Monthly Labor Review*, October 2001, pp. 12-21.

Guo, Guang. 1993. "Event-History Analysis for Left-Truncated Data." *Sociological Methodology* 23:217-243.

Jacobs, Jerry A. and Sarah E. Winslow. 2004. "Overworked Faculty: Job Stresses and Family Demands." *The Annals of the American Academy of Political and Social Science* 596:104-129.

June, Audrey Williams. 2008. "U. of North Carolina Lets Professor Ease Their Way into Retirement." *Chronicle of Higher Education*, June 13.

June, Audrey Williams, Eugene McCormack, and David L. Wheeler. 2008. "Colleges Explore New Ways to Manage Retirements." *Chronicle of Higher Education*, June 13.

Kaye, Lenard W. and Abraham Monk. 1984. "Sex Role Traditions and Retirement from Academe." *The Gerontologist* 24:420-426.

Keefe, John. 2001. "Survey of Early Retirement Practices in Higher Education." Pp. 65-80 in *To Retire or Not? Retirement Policy and Practice in Higher Education*, edited by Robert L. Clark and P. Brett Hammond. Philadelphia, PA: University of Pennsylvania Press.

Mandell, Betty Reid. 2003. "The Future of Caretaking." *New Politics* 9(2), Issue 34, Winter 2003. http://www.wpunj.edu/~newpol/issue34/mandel34.htm.

Mason, Mary Ann and Marc Goulden. 2004. "Marriage and Baby Blues: Redefining Gender Equity in the Academy." *The Annals of the American Academy of Political and Social Science* 596, November: 86-103.

Monahan, D. J. and V. L. Greene. 1987. "Predictors of Early Retirement among University Faculty." *Gerontologist* 27:46-52.

Monks, James. 2004. "Public versus Private University Presidents Pay Levels and Structure." Cornell Higher Education Research Institute, Working Paper No. 58.

National Science Foundation. 1995. “Changes to the Survey of Doctorate Recipients in 1991 and 1993: Implications for Data Users.”

_____. 2003. “Survey of Doctorate Recipients.” < http://www.nsf.gov/statistics/srvydoctoratework/ >

O'Laughlin, Elizabeth M. and Lisa G. Bischoff. 2005. “Balancing Parenthood and Academia: Work/family Stress as Influenced by Gender and Tenure Status.” *Journal of Family Issues* 26:79-106.

O’Neil, Robert M. 2001. “Ending Mandatory Retirement in Two State Universities.” Pp. 122-127 in *To Retire or Not? Retirement Policy and Practice in Higher Education*, edited by Robert L. Clark and P. Brett Hammond. Philadelphia, PA: University of Pennsylvania Press.

Paul, Christopher, William M. Mason, Daniel McCaffrey, and Sarah A. Fox. 2008. “A Cautionary Case Study of Approaches to the Treatment of Missing Data.” *Statistical Methods and Applications* 17:351-372.

Rossi, Alice and Peter Rossi. 1990. *Of Human Bonding: Parent-Child Relations across the Life Course*. New York: Aldine de Gruyter.

Seltzer, Mildred M., and Jane Karnes. 1988. “An Early Retirement Incentive Program.” *Research on Aging* 10:342-357.

Suitor, J. Jill, Dorothy Mecom, and Ilana S. Feld. 2001. “Gender, Household Labor, and Scholarly Productivity Among University Professors.” *Gender Issues* 19:50-67.

Switkes, Ellen. 2001. “The University of California Voluntary Early Retirement Incentive Program.” Pp. 106-121 in *To Retire or Not? Retirement Policy and Practice in Higher*

Education, edited by Robert L. Clark and P. Brett Hammond. Philadelphia, PA: University of Pennsylvania Press.

Umbach, Paul D. 2008. " Gender Equity in College Faculty Pay: A Cross-Classified Random Effects Model Examining the Impact of Human Capital, Academic Disciplines, and Institutions." Paper presented at the 2008 Annual Meeting of the American Educational Research Association, New York, NY, March 24-28.

United States Department of Health and Human Services. 2008. "Hispanic Healthy Marriage Initiative: Literature Review on Hispanic Families." <http://www.acf.hhs.gov/healthymarriage/about/forum.html#_Toc84805708>

Wolf-Wendel, Lisa, Susan B. Twombly, and Suzanne Rice. 2003. *The Two-Body Problem: Dual-Career-Couple Hiring Practices in Higher Education*. Baltimore, MD: The Johns Hopkins University Press.

Wolfinger, Nicholas H., Marc Goulden, and Mary Ann Mason. Forthcoming. "Alone in the Ivory Tower: How Birth Events Vary among Fast-Track Professionals." *Journal of Family Issues*.

Wolfinger, Nicholas H., Mary Ann Mason, and Marc Goulden. 2008. "Problems in the Pipeline: Gender, Marriage, and Fertility in the Ivory Tower." *The Journal of Higher Education* 79 (4):388-405.

_____. 2009. "'Stay in the Game': Gender, Family Formation, and Alternative Trajectories in the Academic Life Course." *Social Forces* 87:1591-1621.

Figure 1. Hazard Rates for Academic Retirement.

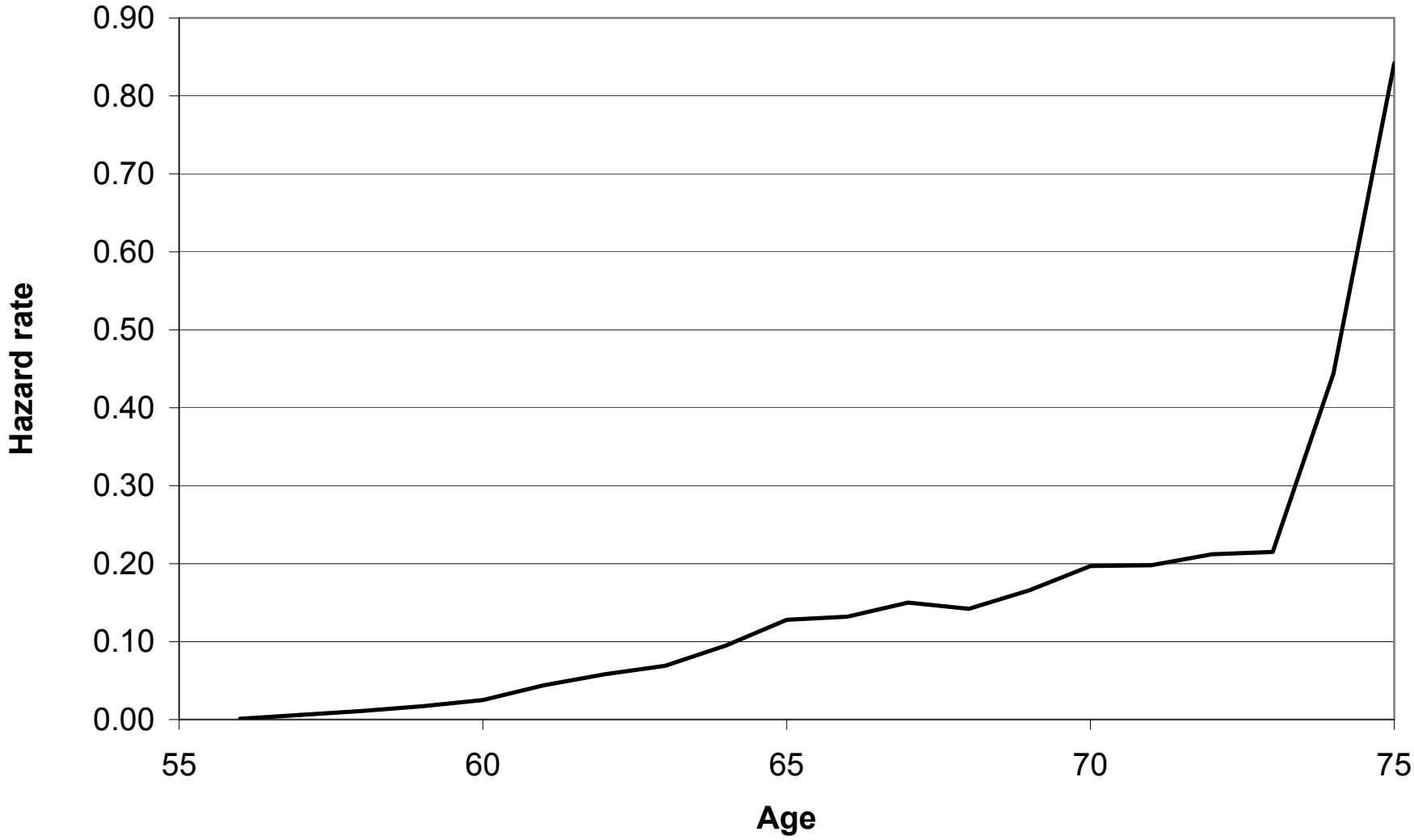

Table 1. Discrete-Time Event History Analysis of Faculty Retirement, 1981-2003.

	Coefficient	Hazard ratio
Ph.D. Field		
Biological sciences	--	--
Engineering or computer science	-0.10	0.90
Physical sciences or math	-0.25 ***	0.78
Psychology	-0.34 ***	0.71
Other social sciences	-0.12 +	0.89
Race/ethnicity		
White	--	--
Asian or Pacific Islander	-1.07 **	0.34
African-American	-0.41	0.66
Latino	0.75	2.12
Unknown/refused	0.11	1.12
Job Type		
Non-teaching academic	--	--
Tenure-track position	-0.45 ***	0.64
Adjunct professorship	-0.27 ***	0.76
Employer Type		
Not Carnegie R1	--	--
Carnegie R1	-1.46 ***	0.23
Sex		
Male	--	--
Female	-0.04	0.96
Marital Status		
Never married	--	--
Separated or divorced	0.07	1.07
Married	0.22 *	1.25
Single (unspecified)	0.08	1.08
Children		
No children/children not observed	--	--
Child after age 54	-0.61 ***	0.54
Child prior to age 55	-0.27 ***	0.76
Risk period		
July 1994 - July 2003	--	--
June 1982 - December 1993	-0.08	0.92
Before July 1982	-0.05	0.95
Years of data	0.06 ***	1.06
Calendar year of Ph.D. receipt	0.001	1.00
Intercept	-3.30	0.04
Log likelihood	-7909.23	

Source: Survey of Doctorate Recipients, 1981-2003

Notes: Analyses are weighted. **N** = 9,426, 43,216 person years.
Duration dependence terms omitted from table.

$^{+}p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$