Aging, Retirement, and High-Skill Work Performance

The Case of State Supreme Court Judges

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Outline

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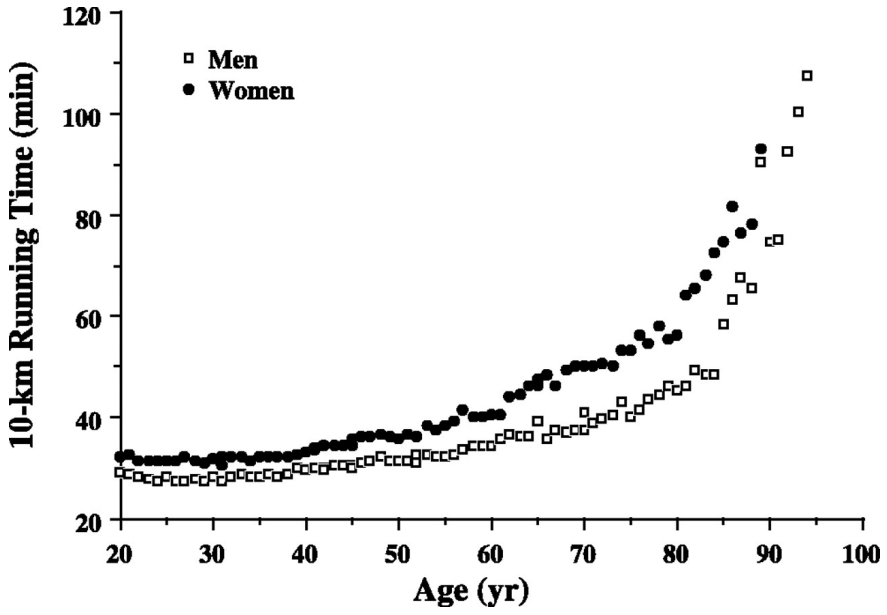
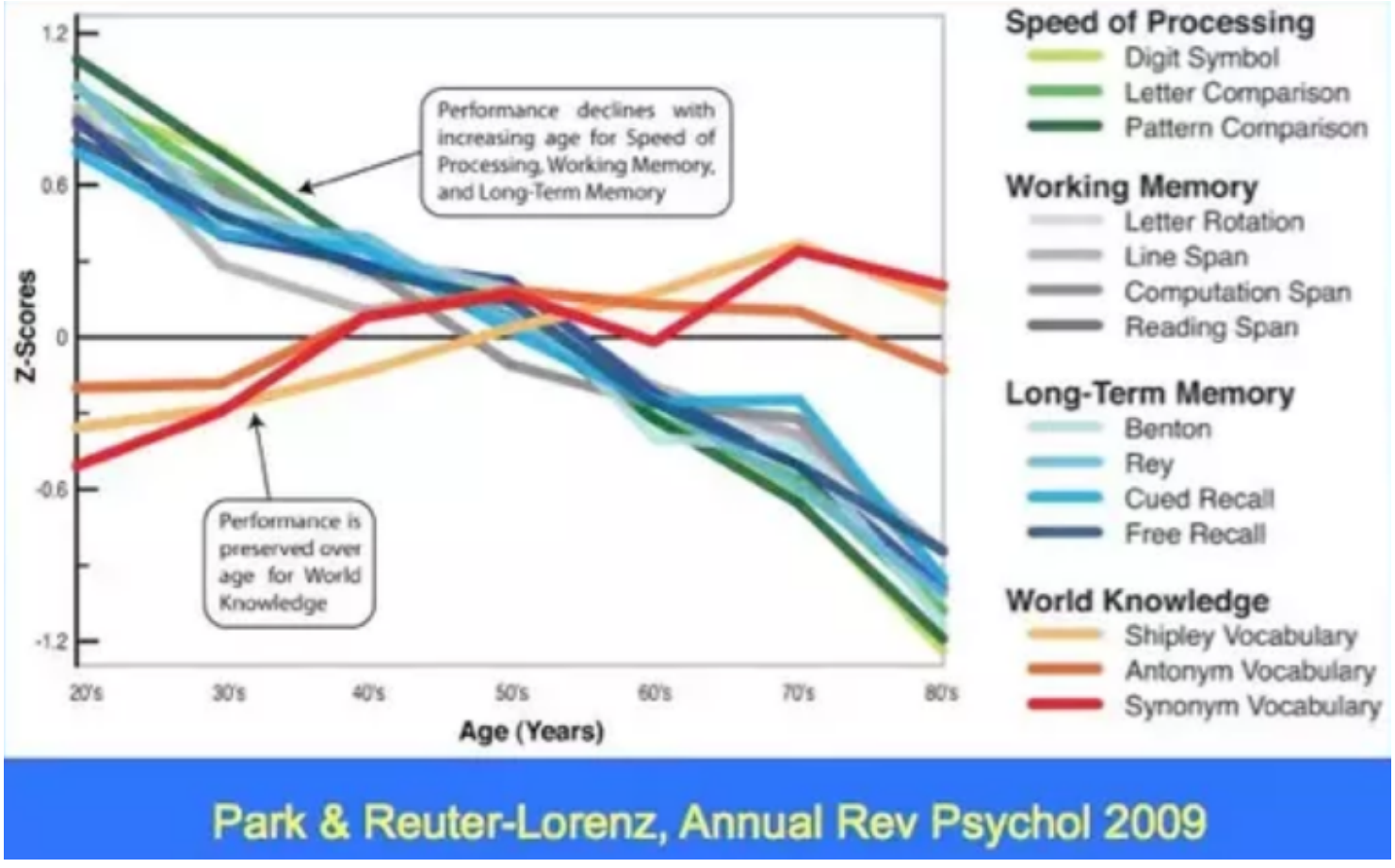
Aging and Physical Performance Decline



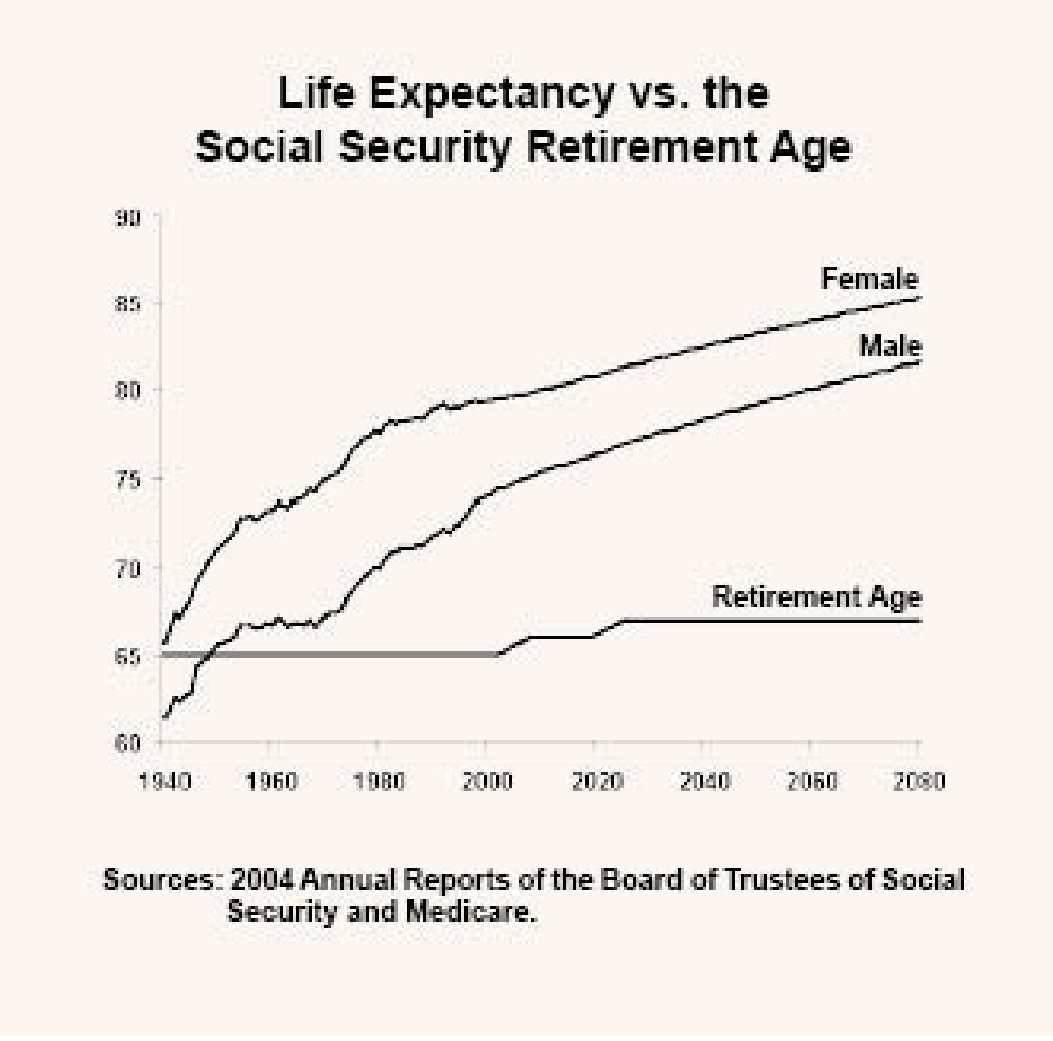
- Large literature in medicine/psychology documenting changes in physical and cognitive ability due to aging (e.g. Desjardins and Warnke 2012).

Aging and Cognitive Decline



Park & Reuter-Lorenz, Annual Rev Psychol 2009

Life Expectancy over Time



- Should a longer life after age 65 be allocated to leisure or to work?

U.S. Age Discrimination in Employment Act of 1967

- The **Congress hereby finds and declares** that
  1. in the face of rising productivity and affluence, **older workers find themselves disadvantaged** in their efforts to retain employment...
  2. **the setting of arbitrary age limits regardless of potential for job performance has become a common practice ...**
  3. ...
  4. ...
  5. **It is therefore the purpose of this chapter to promote employment of older persons based on their ability rather than age**; to prohibit arbitrary age discrimination in employment ...

The Empirical Problem

- The law requires employment to be based upon ability rather than age — the challenge is how to measure ability and performance of professionals:
  - Senior Management
  - University Faculty
  - Physicians
  - Judges (our case)
- In contrast to jobs with clear performance measures, many/most jobs entail some form of subjective evaluation (MacLeod and Parent 1999, MacLeod 2003)
- Performance is correlated with age — the issue is whether or not using a crude rule, such as a mandatory retirement cutoff, is preferred to some formal evaluation process?

Why Judges?

- We address these issues by focusing on appellate judges.
- Attractive features of this setting:
  - Judges work in these positions for many years and typically retire from them.
  - The nature of tasks does not vary across the career, and does not vary over a period of decades.
  - There is no performance pay, and minimal rewards based on tenure.
  - Judge output (judicial opinions) consists of published documents, from which we can produce consistent quantitative measures of performance across the lifespan.
  - Variation across states and over time in mandatory retirement rules.

Outline

- Describe Context and the Data: State supreme court decisions, 1947-1994 (previous work is over much short periods of time)
- Descriptive Statistics
- How do we measure performance (number of cases/words and citations)?
- Is there a judge fixed effect (Yes)?
- Does performance vary with age (Yes)?
- Can the effects of aging be mitigated with case assignment (No)?
- Does mandatory retirement improve court performance (Yes)?

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Previous Work on Judge Age, Performance, and Retirement

- Posner (1995): judge opinion quality is maintained into advanced age (cross-section of federal appellate judges,)
  - See also Smyth & Bhattacharya (2003) and Teitelbaum (2006).
- Choi, Gulati, and Posner (JLS 2012) look at federal district judges who were on the bench in 2001-2002, and retire in the period 2001-2010.
  - Financial concerns have a large effect (judges tend to retire after pensions vest)
  - Judges with higher-quality opinions (more citations) tend to work longer.
  - Judges tend to retire while their own party controls the presidency (see also Bustos and Jacobi 2015)

Outline

State Supreme Courts

- State supreme courts operate similarly to U.S. Supreme Court but at state level, reviewing decisions made by lower state courts:
  - After a trial in state court, the losing party can appeal, and eventually his appeal may be accepted for review by the state supreme court.
  - State supreme court judges rehear the case and review submitted briefs. Judges vote whether to affirm or reverse the lower decision.
  - Then one of the majority judges writes an opinion explaining the decision.
    - In some states, the author is randomly assigned (might expect judge variation will be smaller under random assignment, since there is less specialization).

Features of Dataset

- Notable features for studying age/retirement:
  - The job of a supreme court judge does not change much over the course of the career.
  - Variation across states and over time in age-related policies (esp. mandatory retirement age)
- Measures of performance
  - judges do not have much influence over their workload (portfolio of cases)
  - judges are not rewarded directly for performance
- External validity:
  - Setting is comparable to other white-collar office jobs that require subjective decision-making, research, and/or writing (e.g. teachers, doctors, and scientists)

Data Overview

- We analyze a unique data set on state appellate courts.

- Previous data sets:
  - State Court Data Project: 520 judges, four years (1995-1998) https://www.ruf.rice.edu/~pbrace/statecourt/
  - Choi-Gulati-Posner Group: 408 judges, three years (1998-2000)
- Our data set:
  - 1553 judges
  - 48 years (1947-1994)
- 50 states, 52 courts (Oklahoma and Texas each have two high courts each)
- 1,025,461 cases
- 1,126,560 opinions (including discretionary opinions)
- 15,486 judge-years

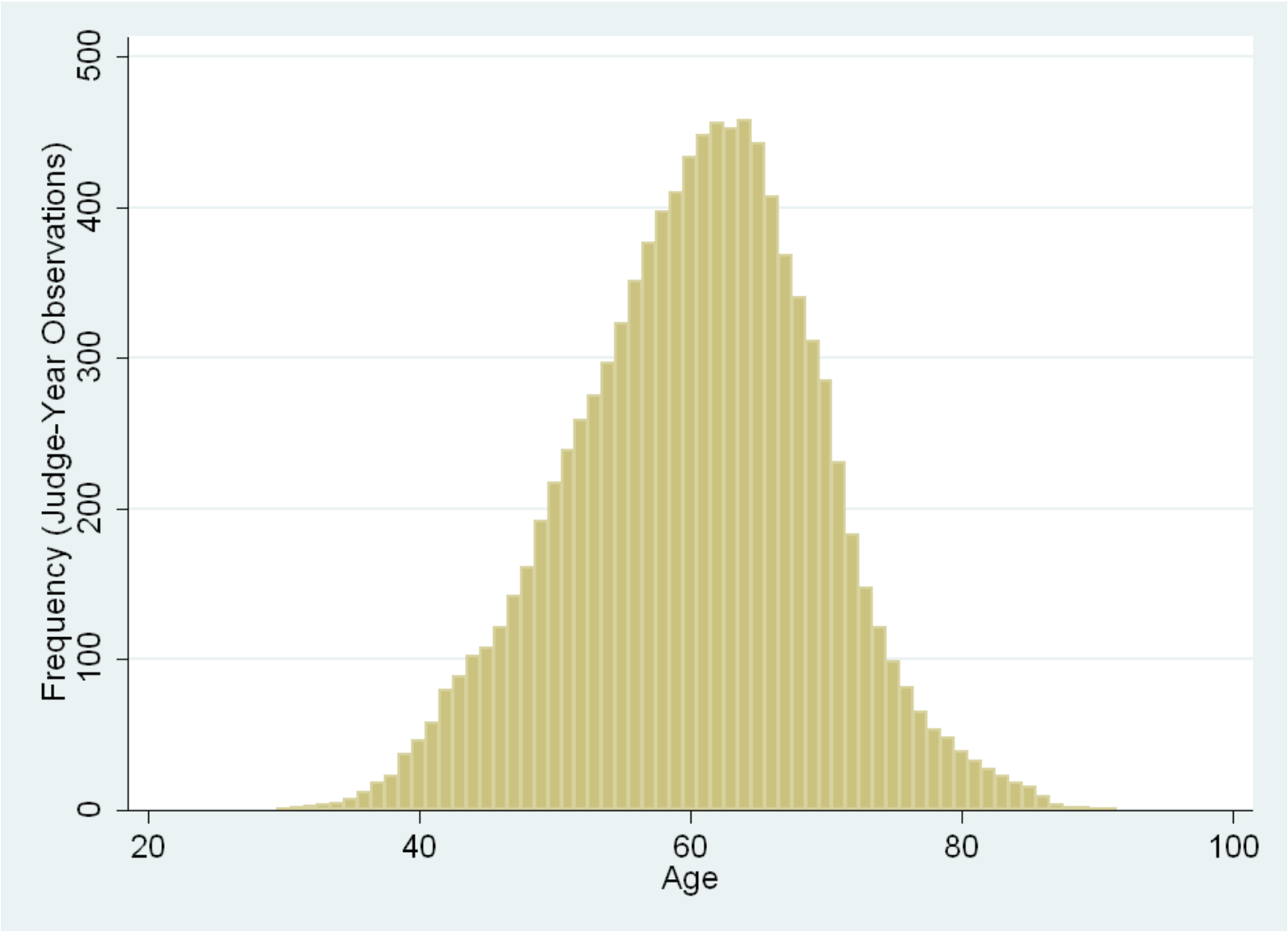
Randomly and Non-Randomly Assigned States

Assignment Rule	List of States
Non-Random (Chief Justice)	KY, KS, CA, DE, OR, CT, HI, IN, PA, AZ, MD, NJ, MA, CO, WY
Random/Rotating	MO, WV, NY, OH, NM, IL, OK, NH, MN, IA, MI, LA, TX, WI, TN, UT, ID, RI, NC, AR, VT, SC, MT, SD, FL, ND, WA, MS, NE, ME, NV, AL, VA, AK, GA,

Judge Biographies

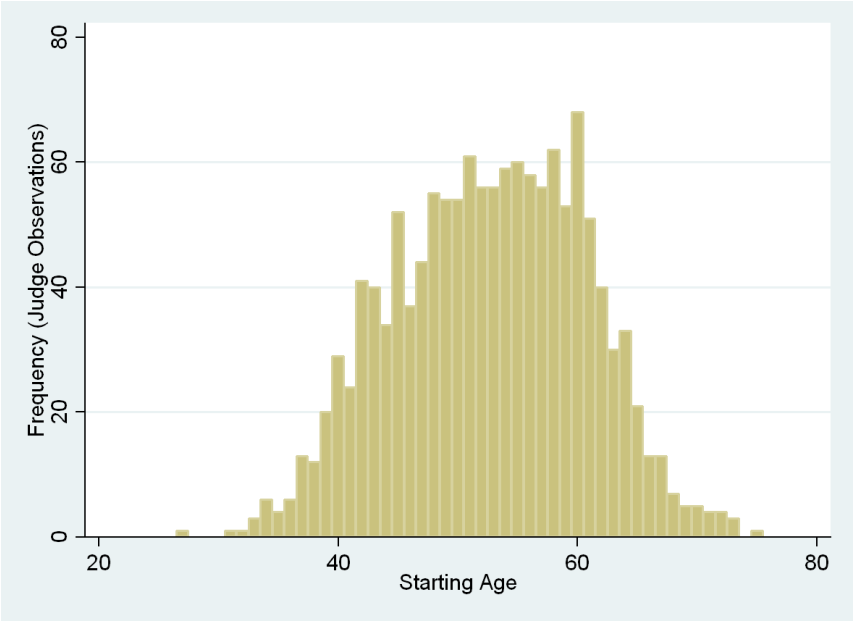
- Judge biographies:
  - Comprehensive data on judge birthdates and deathdates, how judgeships ended, and judge retirement policies.
  - Manually collected by RA's from court web sites, obits, Marquis Who's Who, etc.
- Average career length is 12 years.
- Less than 3% of judges are "promoted," where promotion is defined as becoming governor or joining a federal court.

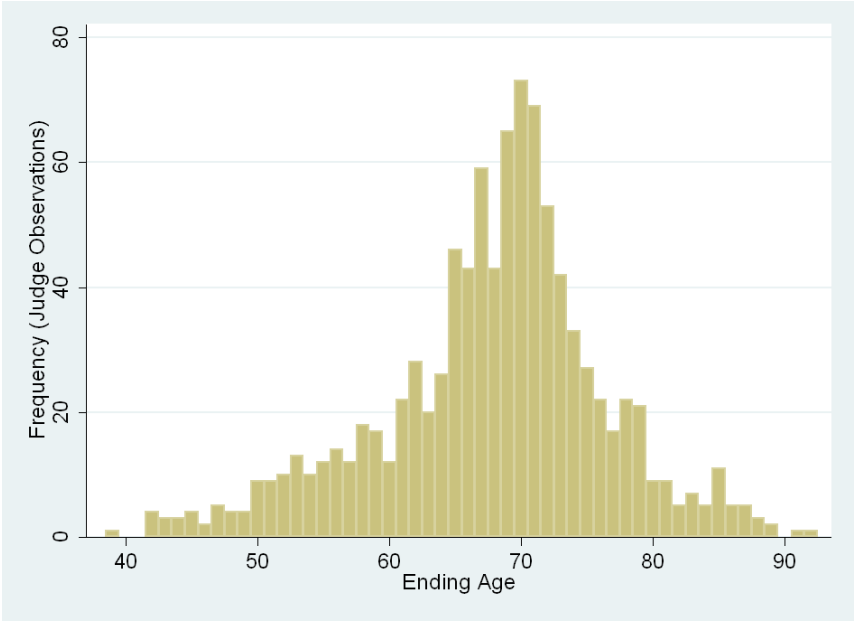
Age Distribution of Working State Supreme Court Judges



Mean: 60.4, Median: 61, S.D.: 9.05; includes only state-years without mandatory retirement.

Starting and Ending Age Distributions





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Outline

Performance Data

- Judicial Opinion Data:
  - All authored opinions between 1947 and 1994, collected from Bloomberg Law.
    - Excludes memorandum opinions that do not have a named author
- Performance Outcomes:
  - Output: Number of words written
  - Quality: Positive citations by later judges, per opinion written
    - citations of cases occur over long time period (median ten years delay), so judges don't have much interpersonal influence on citations.
    - same results if we only look at citations from judges in other states.

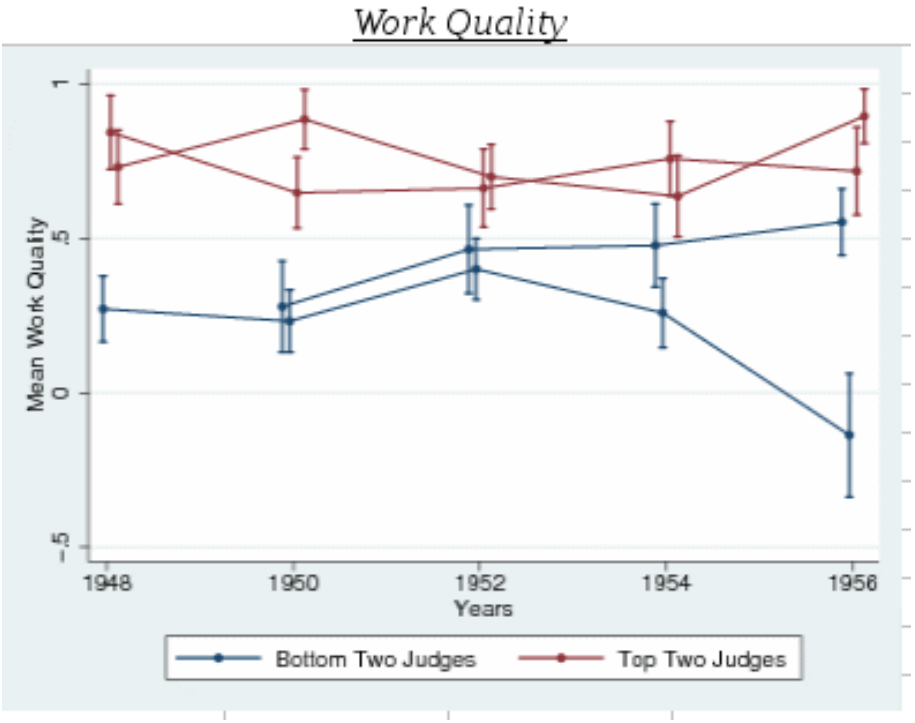
Measuring Decision Quality

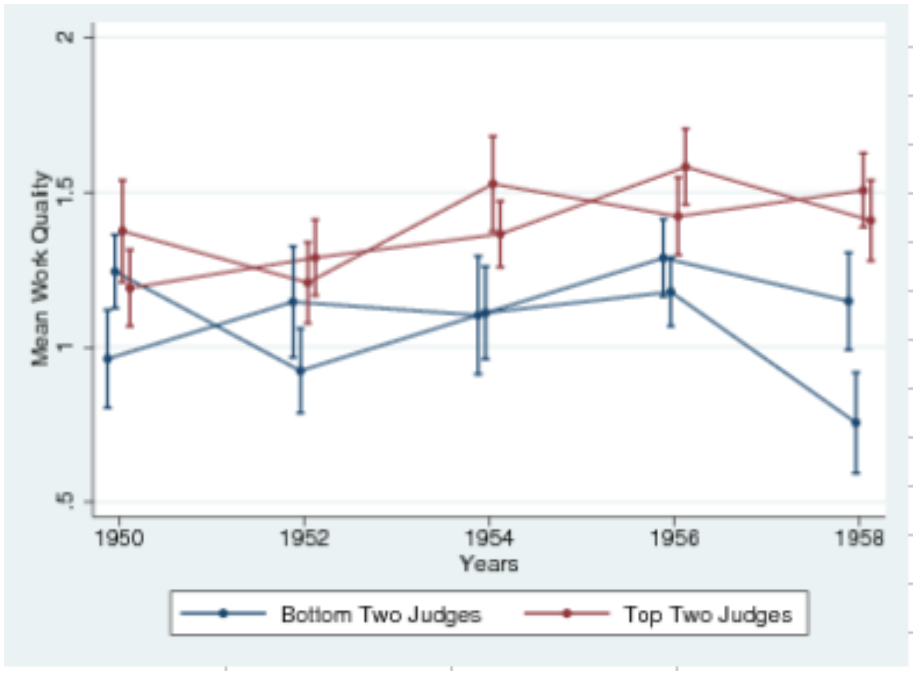
- Our goal is to measure differences in decision quality across judges in the same court at the same time, and within judge over time:
  - condition on co-variates outside a judge's control, such as the legal topic and related industries in case
- Within-court-year normalization:
  - outcome variable has mean = zero and standard deviation = one.
- Percentile normalization:
  - outcome variable uniformly distributed between zero and one based on within-court-year ranking of juges

Previous analysis of these outcomes

- Ash and MacLeod (2015):
  - Judges respond to relaxation of time pressure with higher work quality.
  - Consistent with "intrinsic motivation" or "professionalism"
- Ash and MacLeod (2019):
  - Electoral pressures reduce performance
  - Nonpartisan elections and merit systems select better judges than partisan elections.

Is there a Judge Fixed Effect?





- Massachusetts, 1947-1956, and California, 1949-1958. Normalized within judge.

Case Quality Correlated with Bar Association Evaluations

	Logit Estimate for Effect on "Good Judge" Designation		
	(1)	(2)	(3)
Output	0.154		-0.0771
	(1.046)		(1.100)
Quality		1.059**	1.076**
		(0.363)	(0.112)
State Fixed Effects	X	X	X
Year Fixed Effects	X	X	X

N= 51 judge-bienniums for set of judges in Pennsylvania, Texas, and Washington for the years 1987 through 1994. Outcome is an indicator for being a "good" judge has defined in Lim and Snyder (2015). Standard errors clustered by state in parentheses. + p < .1, * p < .05, ** p < .01.

Estimating Within-Judge Persistence

- Judge i, state s, year t:

$$y_{ist} = \alpha y_{ist-1} + \varepsilon_{ist}$$

- y_{ist}, a judge-level outcome for i during t
  - z-scored within court-year, or within-court-year percentile.
- α captures persistence in judge ranking within the court.
- The errors are correlated, so the preferred specification is Arellano-Bond.

Persistence in Judge Output

	(1)	(2)	(3)	(4)	(5)	(6)
	Effect on Output Percentile					
	Panel OLS				Arellano-Bond	
Lagged Output Percentile	0.469	0.109	0.467	0.0930	0.237	0.446
	(0.015)	(0.014)	(0.016)	(0.016)	(0.019)	(0.033)
Lagged Output Percentile			-0.00883	0.0132		-0.657
$\times$ Age 60-69			(0.011)	(0.015)		(0.032)
Lagged Output Percentile			-0.0362	-0.0154		-0.833
$\times$ Age $\geq$ 70			(0.019)	(0.029)		(0.038)
N	13296	13163	12239	12062	11775	10781
Model	OLS	OLS	OLS	OLS	AB	AB
Year FE's	X	X	X	X		
Judge FE's		X		X		

Observation is a judge working in a year. "Case Output" means total words written per year; "rank" means judges are uniformly distributed between zero and one based on rank within court-year (0 is lowest, 1 is highest). Estimates computed with Panel OLS and Arellano-Bond, as indicated.

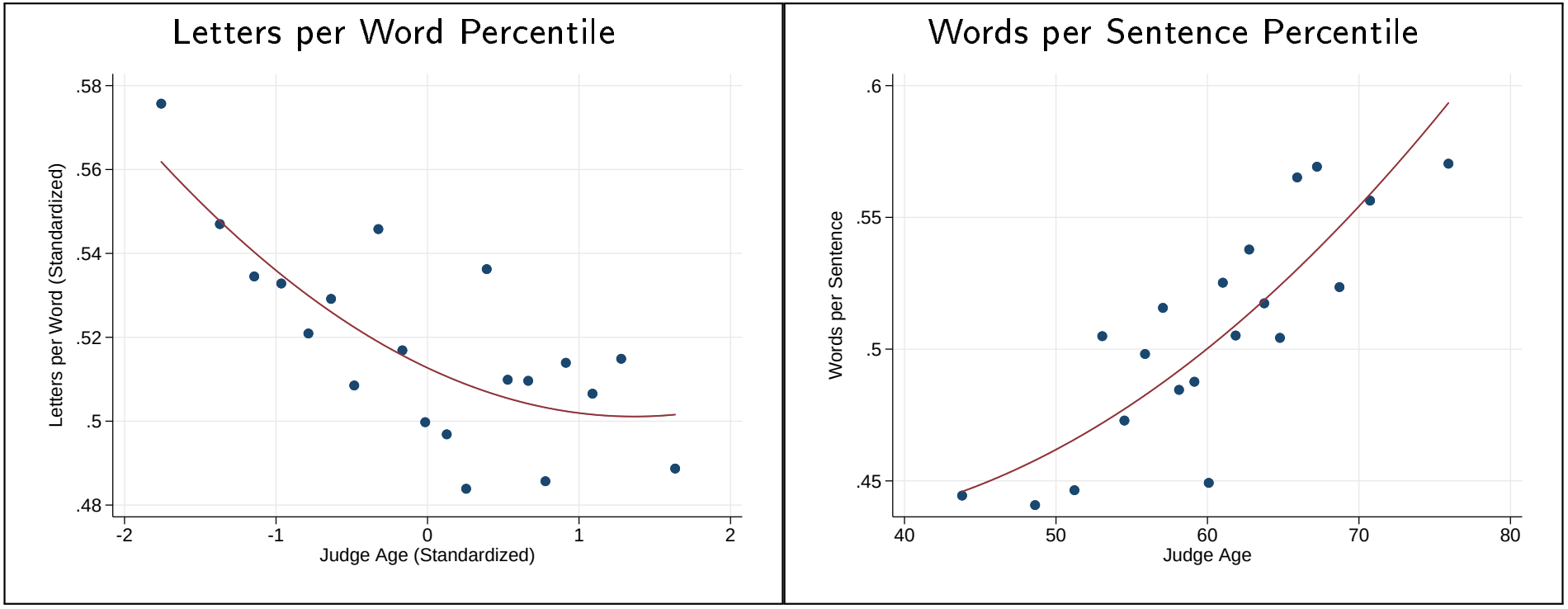
Persistence in Judge Quality

	(1)	(2)	(3)	(4)	(5)	(6)
	Effect on Quality Percentile					
	Panel OLS				Arellano-Bond	
Lagged Quality Percentile	0.358	0.0272	0.393	0.0424	0.132	0.363
	(0.018)	(0.012)	(0.019)	(0.017)	(0.015)	(0.026)
Lagged Quality Percentile			-0.0670	-0.0257		-0.652
$\times$ Age 60-69			(0.011)	(0.013)		(0.026)
Lagged Quality Percentile			-0.121	-0.0454		-0.777
$\times$ Age $\geq$ 70			(0.024)	(0.026)		(0.034)
N	13296	13163	12239	12062	11775	10781
Model	OLS	OLS	OLS	OLS	AB	AB
Year FE's	X	X	X	X		
Judge FE's		X		X		

Observation is a judge working in a year. "Case Quality" means citations per opinion in a year; "rank" means judges are uniformly distributed between zero and one based on rank within court-year (0 is lowest, 1 is highest). Estimates computed with Panel OLS and Arellano-Bond, as indicated.

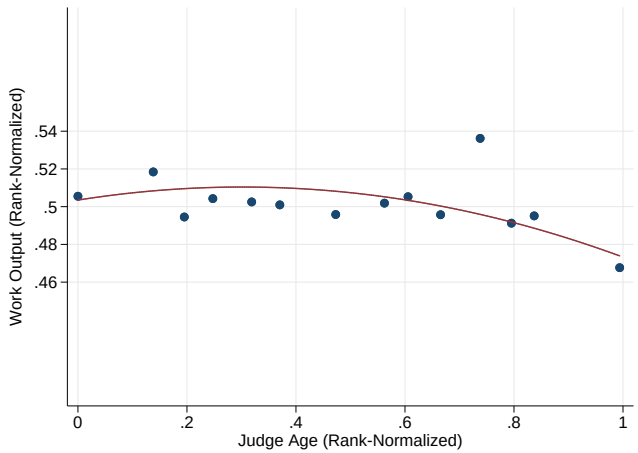
Outline

Older Judges use Shorter Words, Longer Sentences

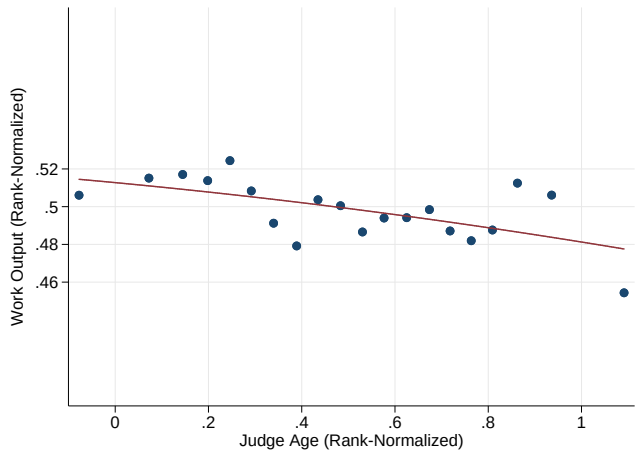


- Note that standard readability scores are the weighted sum of word length and sentence length.

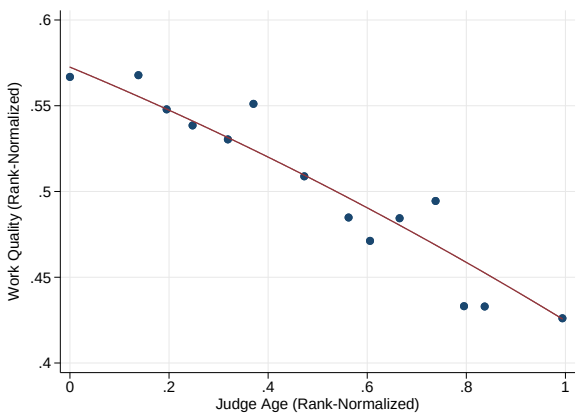
Output Percentile



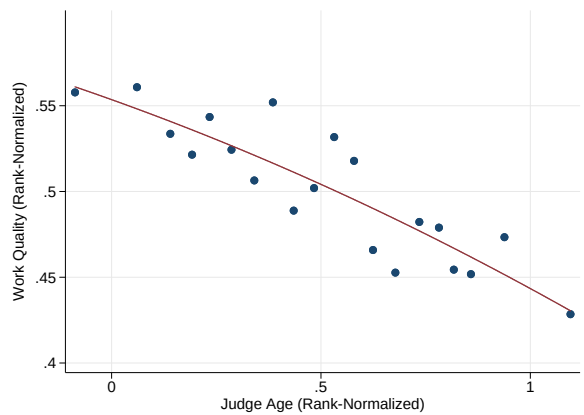
Output Percentile, with Controls



Quality Percentile



Quality Percentile, with Controls



"Output" means total words written; "Quality" means citations per opinion. "With Controls" means court-year FEs, FE for decade that judge started on court, judge starting-year interacted with court FE, and case characteristics. Other Outcomes

Work Output is Unrelated to Judge Age

	(1)	(2)	(3)	(4)	(5)
	Output	Output (Standardized)		Output (Percentile)	
Age (Unadjusted)	-5.877				
	(86.09)				
Age (Standardized)		-0.0160	0.00191		
		(0.0139)	(0.0171)		
Age (Percentile)				-0.0308	-0.00952
				(0.0193)	(0.0233)
Year FE	X	X	X	X	X
Court-Year FE		X	X	X	X
Other controls			X		X
N	13727	13643	13641	13655	13653
R-sq	0.059	0.211	0.485	0.014	0.292

Standard errors clustered by state in parentheses. + p<.0.1, * p<0.05, ** p<0.01.

- Rules out a career concerns / reputational mechanism.

Work Quality decreases with Judge Age

	(1)	(2)	(3)	(4)	(5)
	Quality	Quality (Standardized)		Quality (Percentile)	
Age (Unadjusted)	-0.0605+				
	(0.0329)				
Age (Standardized)		-0.153**	-0.100**		
		(0.0177)	(0.0206)		
Age (Percentile)				-0.148**	-0.102**
				(0.0187)	(0.0222)
Year FE	X	X	X	X	X
Court-Year FE		X	X	X	X
Other Controls			X		X
N	13727	13637	13635	13655	13653
R-sq	0.084	0.058	0.090	0.036	0.071

Standard errors clustered by state in parentheses. + p<.0.1, * p<0.05, ** p<0.01.

No selection into case types by age

	(1)	(2)	(3)	(4)	(5)
			Case Type		
	Crim	Civil	Admin	Con Law	Pred. Cites
Age × Random	0.00427	-0.00435	-0.0164	-0.0196	-0.00127
	(0.00845)	(0.00700)	(0.0115)	(0.0129)	(0.00188)
Age × Not Rand	0.0265	-0.0198	-0.00161	-0.0131	-0.0000133
	(0.0209)	(0.0230)	(0.0176)	(0.0194)	(0.00229)
Court-Year FE	X	X	X	X	X
N	13643	13643	13607	13632	13599
adj. R-sq	0.140	0.209	-0.062	-0.042	0.397

"Random" means random-assignment states, "Not Rand" means discretionary assignment. Age is standardized within court-year. "Crim" means proportion of cases on criminal law in a year (respectively for civil, administrative, and constitutional law). "Pred. Cites" means predicted case quality from OLS regression with case characteristics (legal area and related industries). Standard errors clustered by state in parentheses. + p<.0.1, * p<0.05, ** p<0.01.

Age Effect by Case Allocation Rule

Outline

Why Mandatory Judicial Retirement?

- 1999 Report on Mandatory Retirement:
  - "In upholding mandatory retirement laws, courts routinely cite the difficulty of removing older judges with impaired mental faculties. To be sure, the embarrassing, expensive and protracted process of deciding which judges are senile and which are not is obviated by an objective age demarcation."

When Is a Judge Too Old to Judge?

Out of more than 1,200 active and senior federal judges, 16 percent will be 80 or older by the end of 2017, and 39 will be at least 90.

SHARE TWEET

Aaron Kase
Jul 20 2017, 6:30pm

The Oldest Bench Ever

Extreme aging in the federal judiciary—and the trouble it causes.

By Joseph Goldstein

What Is To Be Done About Super-Old Judges?

When I clerked on the Ninth Circuit years ago, one of the judges on the court at the time was extremely old — and didn't seem very "with it." His law clerks seemed to take on a large amount of responsibility. One of his clerks that year, a law school classmate of mine I'll call [...]

By DAVID LAT

Jan 18, 2011 at 6:43 PM

Why Mandatory Judicial Retirement?

- There could be political reasons if older judges are more liberal or more conservative than voters or the legislature:

Lawmaker To Introduce Bill Setting Mandatory Retirement Age For State Supreme Court Justices

Chief Justice Abrahamson Is 80 Years Old

Monday, December 1, 2014, 7:25am
By Shawn Johnson

...

State Rep. Dean Knudson, R-Hudson, said it's time for the Legislature to act and he favors a mandatory retirement age of 75.

That would force the retirement of Chief Justice Shirley Abrahamson, who at age 80, is considered the leader of the court's liberal judges.

Knudson said his plan isn't aimed at Abrahamson.

Retirement Rules by State in 1947

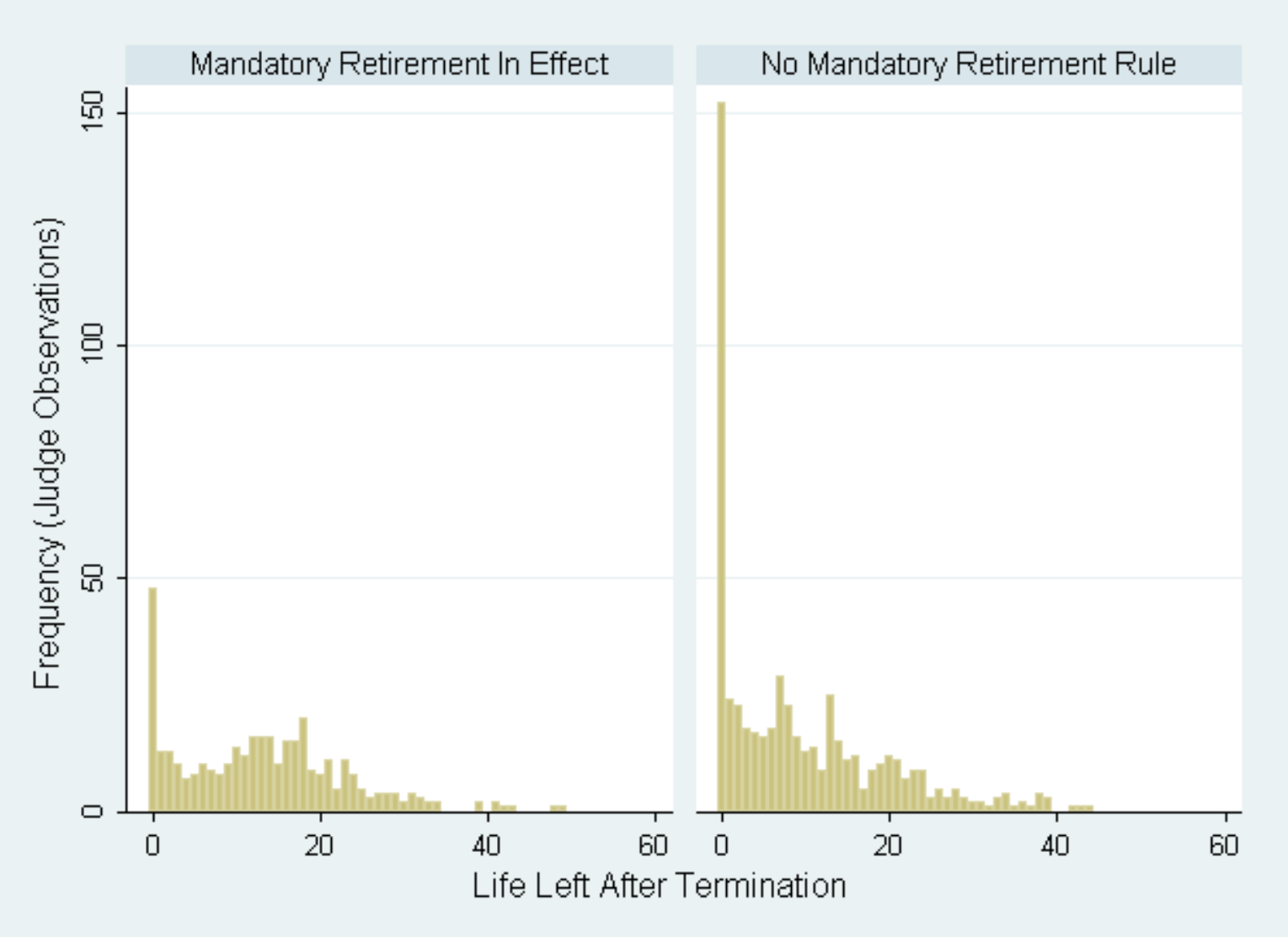
Retirement Rule	List of States
No Mandatory Retirement	AR, CA, DE, GA, ID, KY, ME, MS, MT, ND, NE, NM, NV, OK, RI, TN, WI, WV, VT
Retirement at Age 70	AK, HI, LA, MD, MA, MI,MO, NH, NJ, NY, OH
Retirement at Age 72	NC, SC
Retirement at Age 75	IL, IN, TX, UT

Retirement Rule Changes, 1948-1993

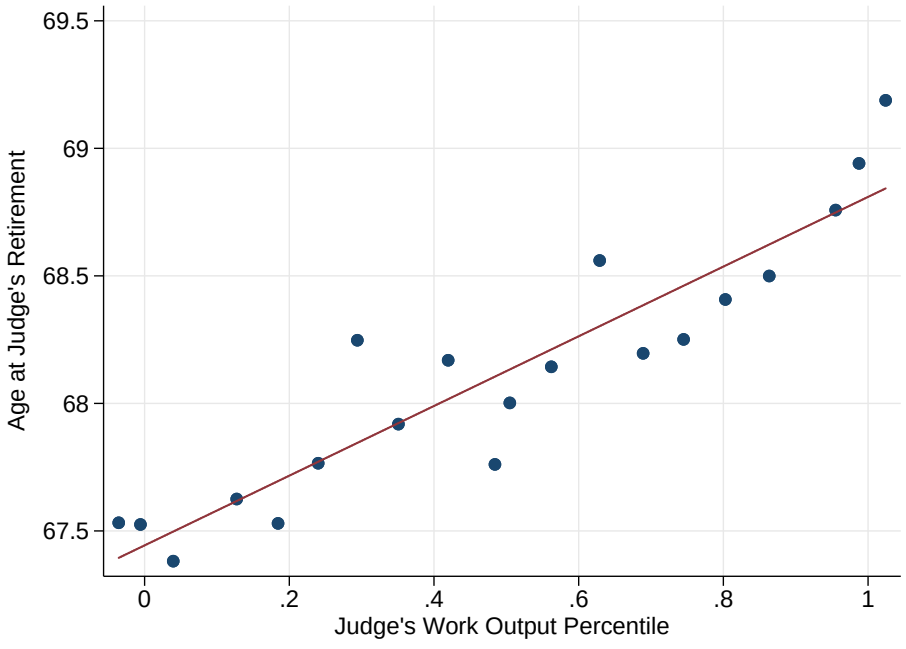
Mandatory Retirement Age		List of States (with Year Enacted)
Before	After	
None	70	AL (1973), AZ (1992), CT (1974), FL (1972), MN (1973), PA (1968), VA (1970), WI (1955), WY (1972)
None	72	CO (1962), IA (1965), WA (1952)
None	75	KS (1993), OR (1960)
70	None	WI (1984)

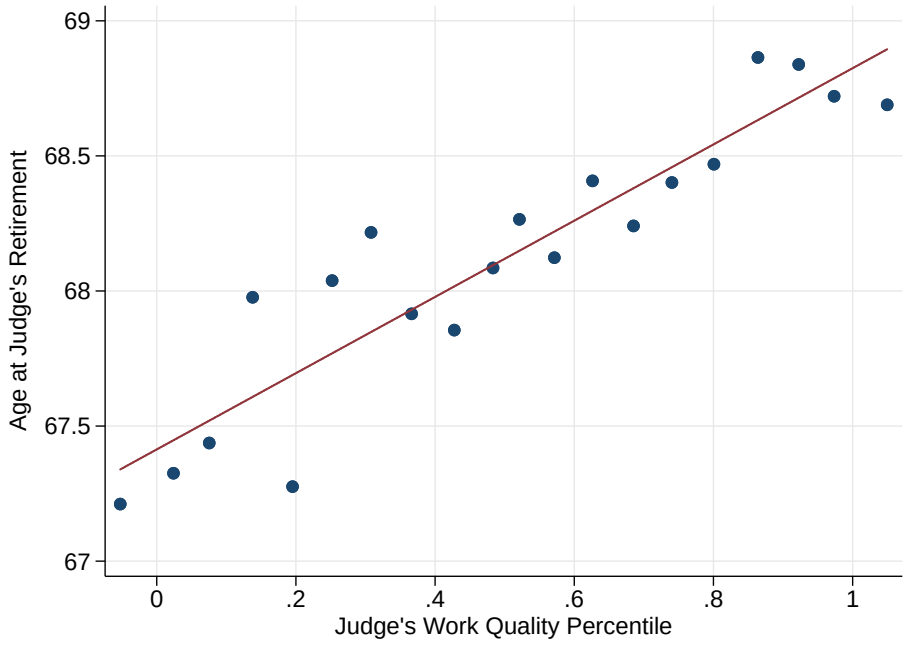
Distribution of Years Between Termination and Death

With and Without Mandatory Retirement



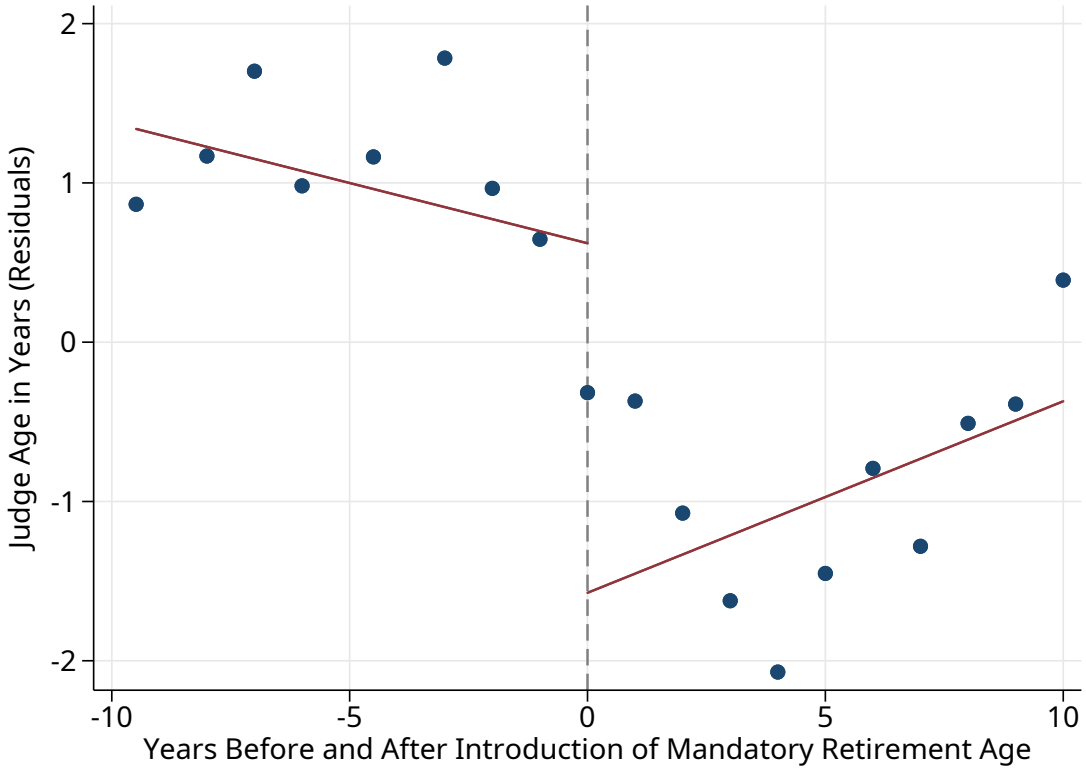
Better Judges tend to Work Longer





Binscatter of judge ending age (y axis) on judge performance percentile (x axis – output on left panel, quality on right panel). State-year fixed effets and age fixed effects absorbed. Voluntary retirement states only.

Effect of 70/72 Retirement Reform on Court Age

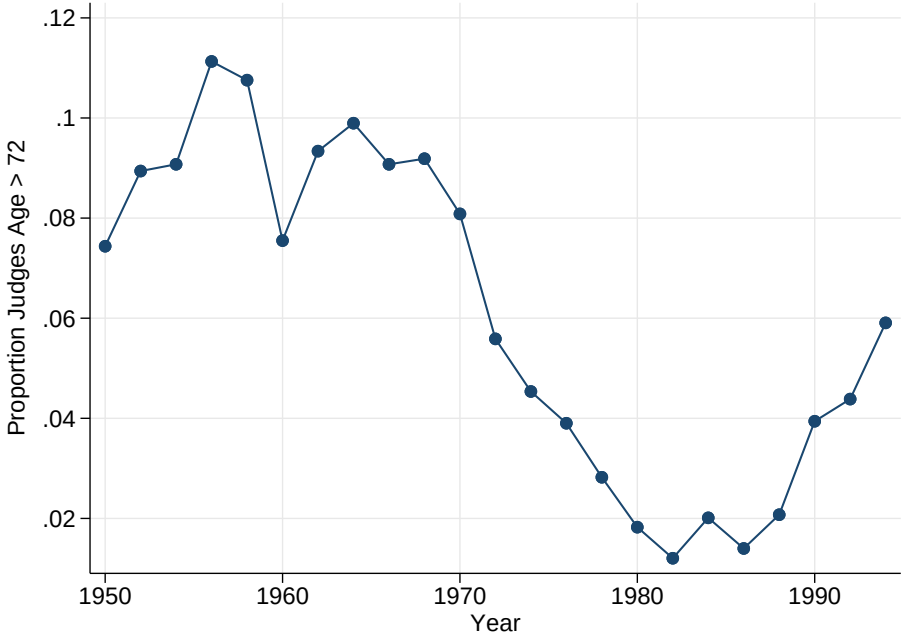


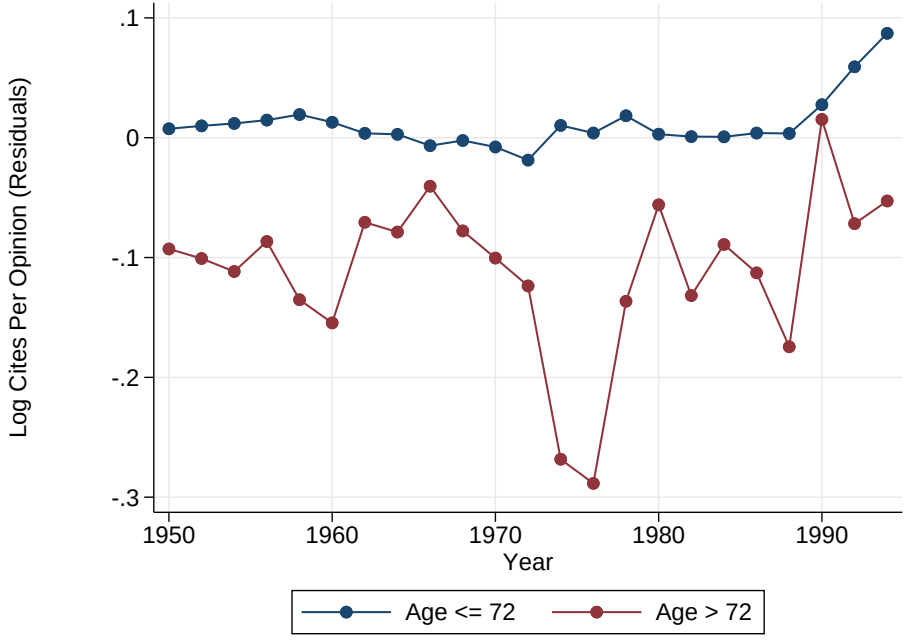
Event study effect of average judge age, before and after rules implementing mandatory retirement at age 70 or 72. Outcome is residualized on court and year fixed effects, court-specific windows and trends, court rule covariates, and time-served controls. Binscatter diagram with lfit.

- Mandatory retirement at 75 has no effect on average retirement age

Logit Model for Retirement Choice

Relevance of 70/72 Age Cap





Proportion of judges above age 72 over time (left panel). Judge work quality, above/below age 72, over time (right panel). Voluntary retirement states only.

Effect of Retirement Reform on Performance, Event Study

Effect on Positive Citations

Effect on Out-of-State Citations

Court Effects

- State s, year t:

$$y_{st} = \text{TIME}_t + \text{STATE}_s + \text{STATE}_s \times t + Z'_{ist}\rho + X'_{st}\beta + \varepsilon_{ist}$$

- y_{st}, performance for i during t
- TIME_t, year fixed effect (allows for arbitrary nationwide trends in the performance variable)
- STATE_i, state fixed effect (controls for time-invariant state-level characteristics)
- $\text{STATE}_s \times t$, state-level time trends (allows for cross-state growth variations)
- Z_{ist}, treatment variable equalling one for years after implementation of mandatory retirement
- X_{st}, controls.
- ε_{ist}: Robust standard errors clustered by state and year

Effect of Mandatory Retirement Reform on Log Citations

	(1)	(2)	(3)	(4)
	Log Positive Citations to Judge			
70/72 Retirement Reform	0.249*	0.283**	0.245**	0.170*
	(0.0969)	(0.105)	(0.0890)	(0.0800)
Year FE, Court FE	X	X	X	X
Court Treat Windows		X	X	X
Court Trends		X	X	X
Rule Controls			X	X
Time-Served Controls			X	X
Case Controls				X
N	14860	14860	13782	13782
R-sq	0.461	0.529	0.528	0.643

Observation is a judge working in a year. "70/72 Retirement Reform" is an indicator for the ten yeras after the introduction of mandatory retirment at ages 70 or 72. "# of Opinions" is the number of majority opinions written by a judge in a year. "Work Output" is log number of words writen in a year. "Work Quality" is number of citations per published opinion. "Total Out-of-State Cites" is Court Treat Windows means court-specific treatment windows (ten years before and after reform). Rule controls include dummies for changes to the electoral system, number of judges,

Outline

Conclusions

- Appellate courts provide an attractive setting for empirical work on the aging and productivity upon professionals.
- Physical aging is associated with a reduction in quality over the lifespan, particularly the last few years.
- There is evidence of judge specific performance differences, so even if quality is declining, in theory the optimal retirement age should be age specific.
- Within court-year older judges are less productive and have lower quality.
- The introduction of an age 70 or 72 retirement age results on average in more, but shorter decisions. Citations per case falls, but citations per judge-year rise.

Policy Implications

- We cannot conclude from this study that mandatory policy is an optimal response.
- We can conclude that there is an age effect, and that there is evidence of mitigation when we compare the states that do random assignment of cases with those that do not.
- Recent work by MacLeod, Valle and Zehnder (2019) finds that providing rewards when evaluations are subjective is difficult and can lead to conflict - it is an open question on how best to manage an aging workforce.

Outline

Learning the Text Features Underlying Case Quality

- We model judge quality (citations by future judges) as a function of writing style

$$q_{jct} = \alpha_{ct} + X'_{jct}\beta + l_{jct} + \varepsilon_{jct} \tag{1}$$

  - α_{ct}, state-year interacted fixed effects
  - X_{jct}, text features of a judge's case portfolio:
  - l_{jct}, unobserved judge characteristics.
  - $\hat{\beta}$, coefficients relating text features to quality

Text Features

- We compute text features for each case x_i, and aggregate X_{jct} as the average across a judge's case portfolio.
  - Divide each feature by number of words, so unrelated to document length.
- Counts:
  - characters, sentences, paragraphs
- Parts of speech:
  - 36 Penn TreeBank tags: nouns, verbs, adjectives, etc.
- Function words:
  - a standard list of 277 function words known to discriminate writing style (including for judges)
- 312 total features

What Features Are Associated with Quality?

Figure: Style: Words Per Opinion

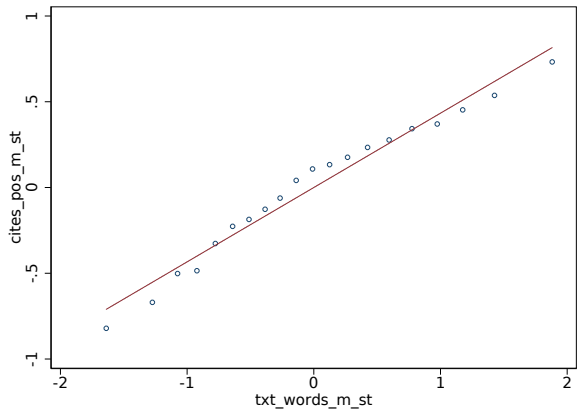


Figure: Style: Word Length

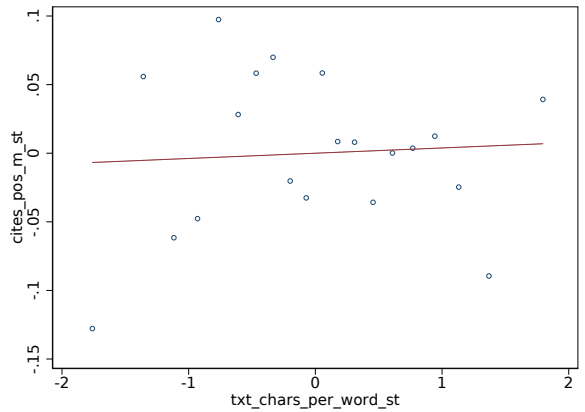


Figure: Style: Sentence Length

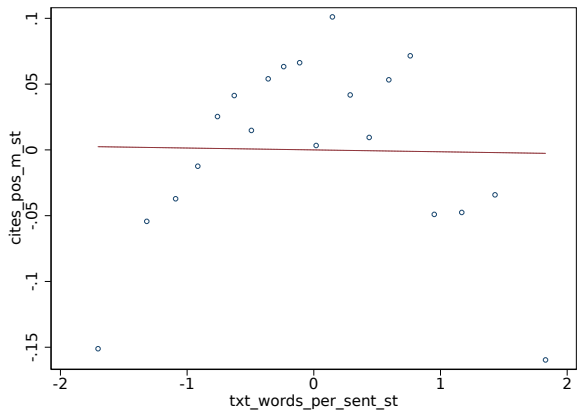
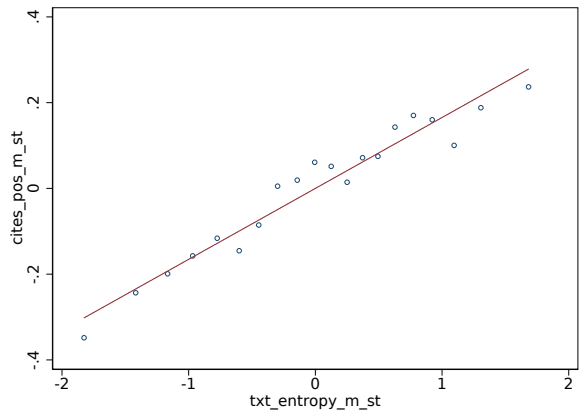


Figure: Style: Text Entropy

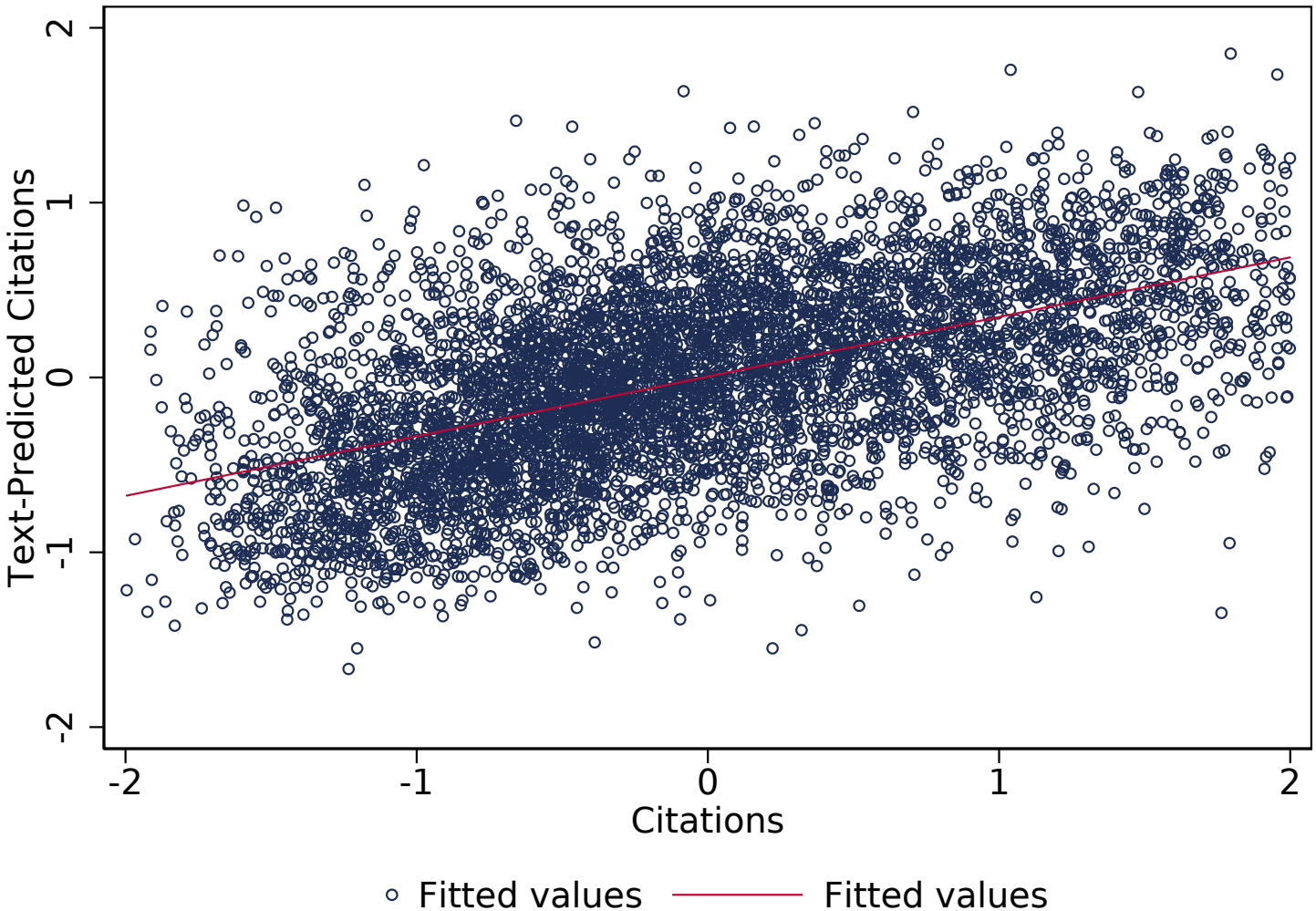


Prediction

- We use regularized regression to exclude weak predictors and improve prediction of quality
  - Elastic net with five-fold cross-validation selects weight on ℓ_2 penalty (lasso) is 0 and weight on ℓ_1 penalty (ridge regression) is 0.00035
  - model produces $R^2 = .276$ (correlation of .53 between truth and prediction) in held-out test sample)
- Most predictive features, with standardized coefficients:

Positive Features		Negative Features	
Nouns	0.121	Paragraphs	-0.18
Adjectives	0.094	"The"	-0.09
Prepositions	0.077	Past-Tense Verbs	-0.09
Sentences	0.069	"Shall"	-0.07
Adverbs	0.067	"This"	-0.06

Judge-Year-Level Prediction



Scatter plot of predicted citations against actual citations in held-out test sample. Shrinkage toward zero – text variables only explain part of the variance in citations.

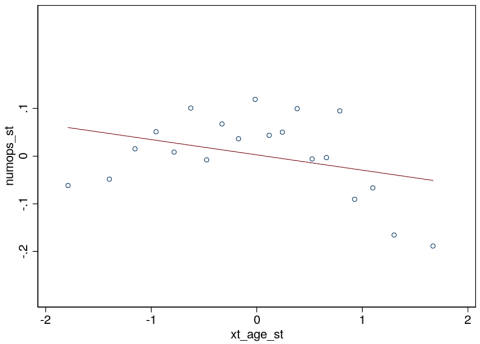
Implications

- These description results show that text features have out of sample predictive power regarding citations.
- Since Judges manage the text production process, these results show that, potentially, they can control the impact of their decision via the way it is written.
- Another way to see this is to see if the quality of a judge relative to others on the same court is correlated over time.
- In these regressions we use courts that randomly allocate judges to cases.

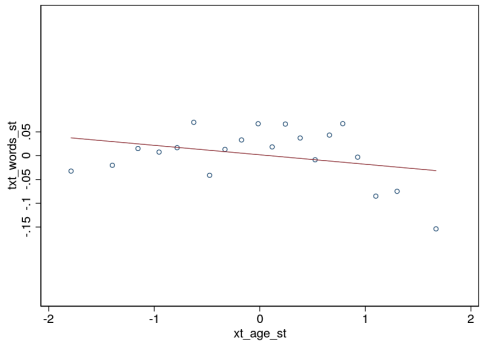
Back

Age and Output - 1

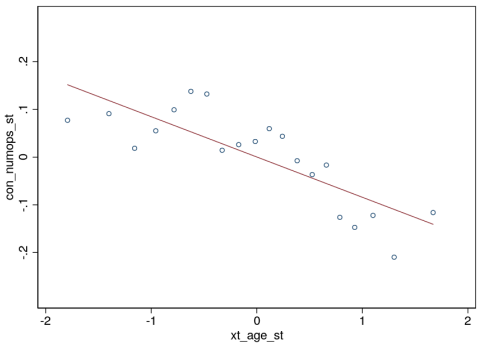
Opinions Written



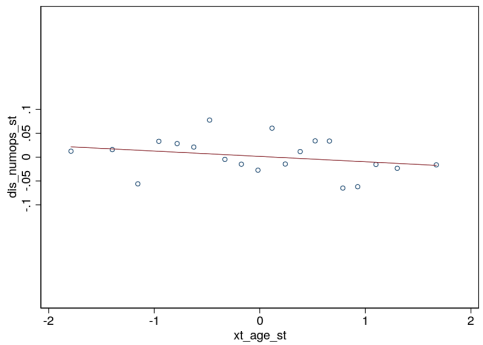
Work Output



Concurrences Written



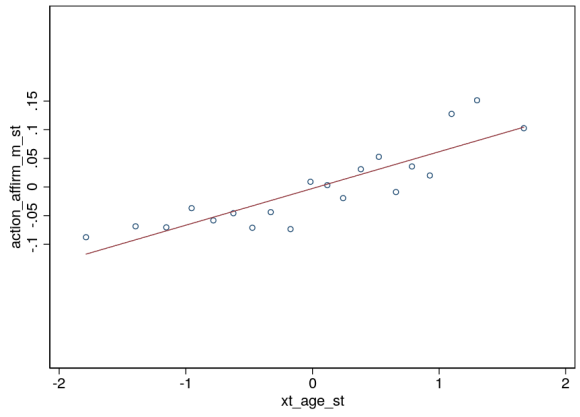
Dissents Written



State-year interacted fixed effects absorbed.

Age and Output - 2

Affirm Rate



Publication Delay

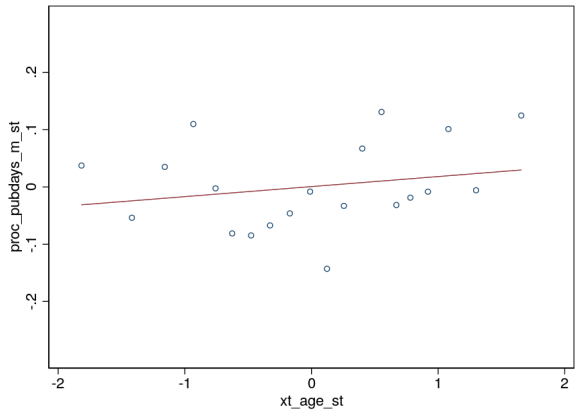
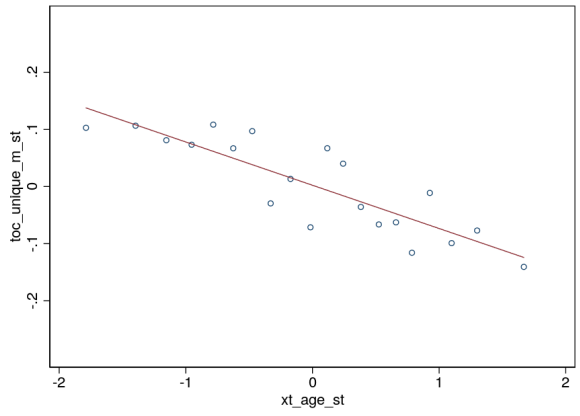
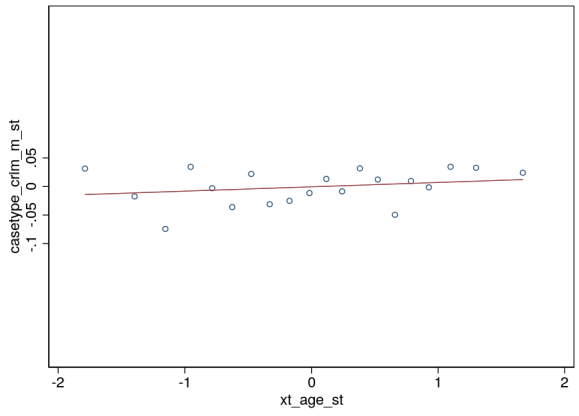


Table of Cases Length



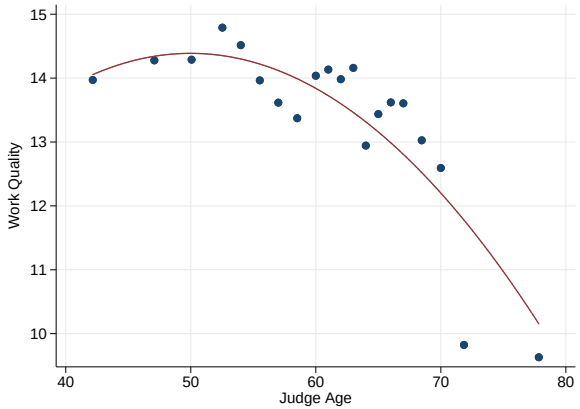
Criminal Case Proportion



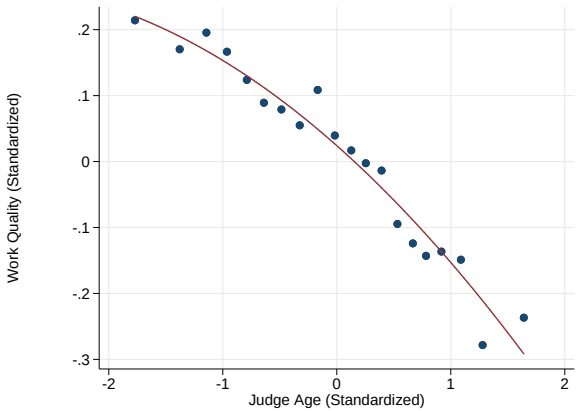
State-year interacted fixed effects absorbed.

Age and Quality -1

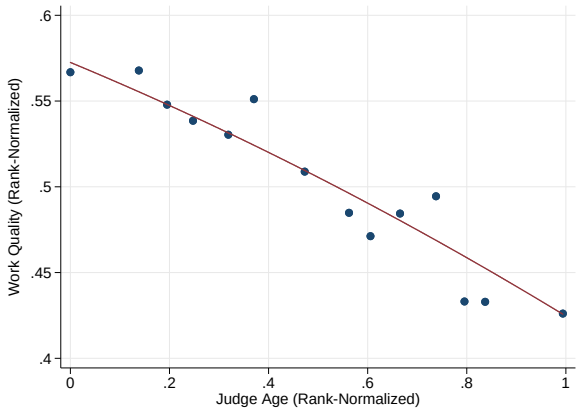
Raw Data



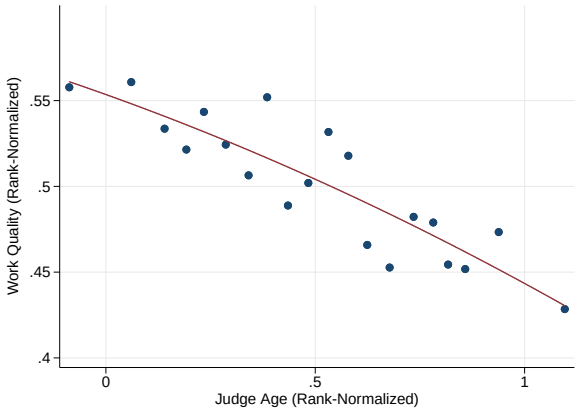
Standardized within Court-Year



Percentile within Court-Year

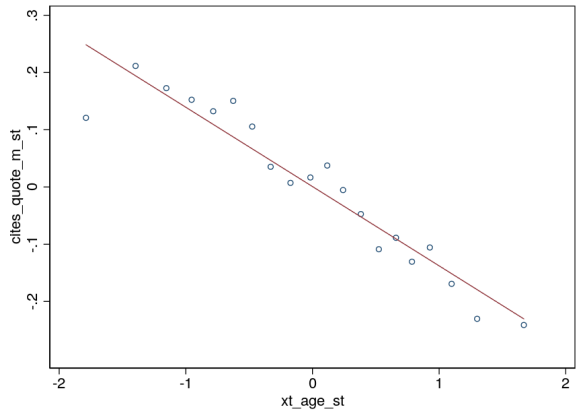


Percentile, With Controls

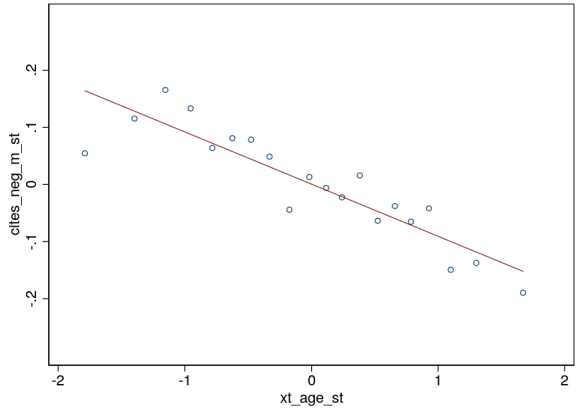


Age and Quality - 2

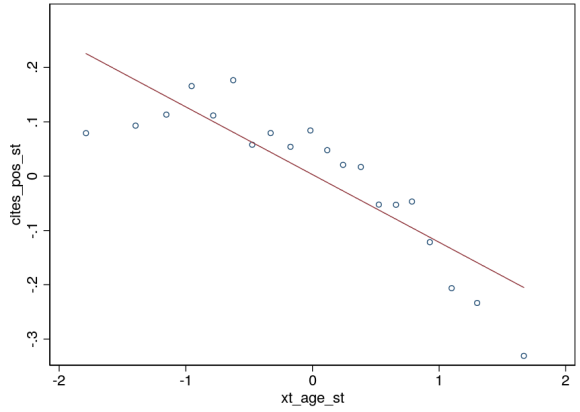
Quoted-By Citations Per Opinion



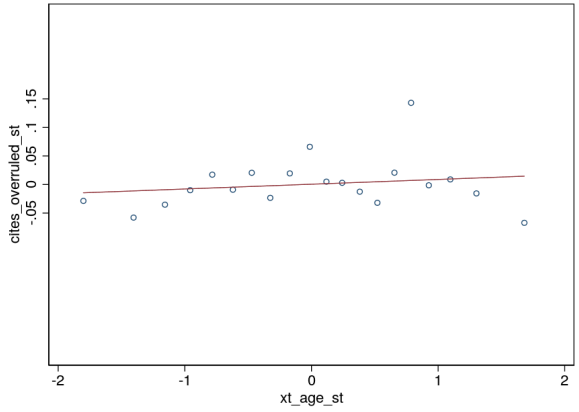
Negative Citations Per Opinion



Total Citations



Rate Overruled



Strong negative relationship between age and quality of published decisions.

Back

Judge Age and Work Quality, By Case Allocation Rule

	(1)	(2)	(3)	(4)
	Quality (Standardized)		Quality (Percentile)	
Age (Standardized)	-0.175**	-0.159**		
	(0.0307)	(0.0324)		
× Random	0.0301	0.0788+		
	(0.0373)	(0.0405)		
Age (Percentile)			-0.171**	-0.164**
			(0.0341)	(0.0382)
× Random			0.0314	0.0797+
			(0.0407)	(0.0458)
Court-Year FE	X	X	X	X
Other Controls		X		X
N	13637	13635	13655	13655
R-sq	0.059	0.091	0.036	0.068

Standard errors clustered by state in parentheses. + p<.0.1, * p<0.05, ** p<0.01.

Back

Understanding Judge Retirement Choice

- Logit Model:
  - Outcome classes: retire before 69, retire 70-74, retire 75+
  - retirement rule dummies: 70, 72, 75, and NA
  - quality, text features, averaged from 60-64.
  - year fixed effects
- Do the above with and without state fixed effects and trends

Effect of Introducing Mandatory Retirement Age

Table: Multinomial Logit Regression of Judge Retirement

	1	2	3	4
Retirement Rule = 70 or 72	-0.739**	-1.539***	-2.097***	-1.214**
	(0.243)	(0.298)	(0.477)	(0.394)
Retirement Rule = 75	-1.227***	0.150	0.805	-0.614
	(0.290)	(0.534)	(0.729)	(0.798)
Court Fixed Effects	No	Yes	Yes	Yes
Log-Likelihood	-367.2	-344.8	-139.5	-198.9
McFadden's R^2	0.0250	0.0846	0.1402	0.0585

Regression 1 and 2 are all states, 3 is Non-Random states, 4 is Random states Back

Effect of Mandatory Retirement Reform, Other Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	# of Opinions		Work Output		Work Quality		Out-of-State Cites	
70/72 Retire Reform	0.136*	0.112+	0.0751	0.0775	0.0855+	0.0926*	0.173	0.191+
	(0.0538)	(0.0574)	(0.0695)	(0.0656)	(0.0484)	(0.0439)	(0.117)	(0.0978)
Year FE	X	X	X	X	X	X	X	X
Court FE	X	X	X	X	X	X	X	X
Court Treat Windows		X		X		X		X
Court Trends		X		X		X		X
Rule Controls		X		X		X		X
N	15010	13863	15010	13863	15010	13863	15010	13863
R-sq	0.325	0.512	0.266	0.386	0.649	0.718	0.471	0.521

Observation is a judge working in a year. "70/72 Retirement Reform" is an indicator for the ten yeras after the introduction of mandatory retirment at ages 70 or 72. "# of Opinions" is the number of majority opinions written by a judge in a year. "Work Output" is log number of words writen in a year. "Work Quality" is number of citations per published opinion. "Total Out-of-State Cites" is Court Treat Windows means court-specific treatment windows (ten years before and after reform). Rule controls include dummies for changes to the electoral system, number of judges,