Aging Judges

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America's judiciary is aging. The average age of federal judges is sixty-nine years old, older than it has been at any other time in the country's history. The typical reaction to this demographic shift is concern that aging judges will serve past their prime. Scholars have thus offered proposals for mandatory judicial retirement, judicial term limits, and mechanisms for judicial removal. In this Article, I critique such proposals and draw on cognitive neuroscience to argue that rather than forcing their retirement, we should empower aging judges.

The central neuroscientific insight is that individual brains age differently. While at the population level, age generally leads to reductions in information processing speed, and for some, serious deficits in memory and decision-making capacity, there is much individual variation.

Given individual differences in how aging affects cognitive decline, the current system—which mandates intense health scrutiny when a judge is younger, followed by no formal cognitive evaluation for the rest of the judge's career—can be improved. I argue that we can empower judges by providing them opportunities for confidential, accurate, and thorough cognitive assessments at regular intervals throughout their judicial careers.

If carefully developed and implemented so as to avoid politicization and to ensure complete confidentiality of results, individualized judicial

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cognitive health assessments will allow judges to make more informed decisions about when and how to modify their service on the bench. More individualized assessment will allow the legal system to retain the wisdom of experienced judges, while avoiding the injustice that comes with handing over the courtroom to a judge who is no longer capable of running it.

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I. INTRODUCTION

> *The people . . . have a legitimate, indeed compelling, interest in maintaining a judiciary fully capable of performing the demanding tasks that judges must perform. It is an unfortunate fact of life that physical and mental capacity sometimes diminish with age. The people may therefore wish to replace some older judges. Voluntary retirement will not always be sufficient.*
>
> –Justice Sandra Day O'Connor[1]

The average age of America's federal judges is sixty-nine years old—older than it has been at any other time in the country's history.[2] On the United States Supreme Court, in addition to Justice Ginsburg, who is eighty-six years old, Stephen Breyer is eighty-one, and Clarence Thomas is seventy-one.[3] In the lower courts, there are eleven federal judges over the age of ninety who still hear cases.[4] Concerns about aging judges have reignited the long-running interest in implementing term limits, mandatory retirement ages, and forced removal for federal judges.[5]

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[1] Gregory v. Ashcroft, 501 U.S. 452, 472 (1991) (citations omitted).

[2] *See* discussion *infra* Part II.A.

[3] *Current Members*, SUP. CT. U.S., https://www.supremecourt.gov/about/biographies.aspx [https://perma.cc/UK9X-WDJ8].

[4] *Life Tenure for Federal Judges Raises Issues of Senility, Dementia*, PROPUBLICA (Jan. 18, 2011), https://www.propublica.org/article/life-tenure-for-federal-judges-raises-issues-of-senility-dementia [https://perma.cc/7KP8-7WVC] [hereinafter *Life Tenure for Federal Judges*].

[5] *Compare* Daniel Hemel, *What Happens if Ruth Bader Ginsburg Remains Too Sick to Work?*, POLITICO MAG. (Jan. 16, 2019), https://www.politico.com/magazine/story/2019/01/16/ruth-bader-ginsburg-supreme-court-health-224014 [https://perma.cc

In this Article, I critique such proposals and draw on cognitive neuroscience to argue that rather than forcing them to retire, we should empower aging judges. The key innovation I propose is individualized, brain-based assessment of legally relevant cognitive functioning. Drawing on recent advances in the detection of dementia, I propose in this Article a new path forward that mandates (1) the development of a judicial cognitive assessment tool; and (2) confidential, individualized cognitive assessment using the tool for all judges at least every five years. The results of the assessment would remain confidential to the judge, and the proposal would not introduce mandatory retirement, term limits, or new protocols for removing judges. Rather, the system is premised on empowering judges with better data to inform their personal, private decisions about when and how to modify their judicial workloads.

The Article also turns its attention to aging judges in state judiciaries. A majority of states employ a mandatory judicial retirement age, but several states have raised the retirement age in recent years.[6] In upholding state mandatory retirement ages for judges, Justice O'Connor wrote, "It is an unfortunate fact of life that physical and mental capacity *sometimes* diminish with age."[7] At the population level, age generally leads to reductions in information processing speed, and for some, serious deficits in memory and decision-making capacity.[8] But there is much individual variation. While an eighty-year-old judge is at significantly greater risk for dementia than a fifty-year-old judge, it does not follow that all eighty-year-old judges have diminished cognitive capacities, nor that all fifty-year-old judges are free from dementia. Mandatory retirement regimes conflate age with diminished judicial capacity, overlooking the wisdom that comes with experience and the scientific reality that age is a risk factor for, but *not* dispositive of, cognitive decline.

At present, neither the federal nor state judicial systems formally provide judges with regular opportunities to assess their cognitive health. The lack of cognitive health assessments for older judges is striking when contrasted with the data requested of younger judges during the nomination process. The judicial nomination process is the one time in a judge's career when judges are routinely required to undergo a cognitive health examination.

The United States Senate Committee on the Judiciary requires that nominees undergo a medical exam,[9] and the medical form provided to nominees includes several items directly related to brain health. There is a long list of conditions that may be disqualifying, and they include "progressive

/AW88-AUN6] (arguing that allowing justices to serve for life is better than other alternatives), *with* Eric Segall, *Why Professor Hemel Is Wrong About Life Tenure for SCOTUS*, DORF L. (Jan. 16, 2019), http://www.dorfonlaw.org/2019/01/why-professor-hemel-is-wrong-about-life.html [https://perma.cc/P2GD-A2PW] (supporting term limits and mandatory retirement ages).

[6] *See* discussion *infra* Part V.

[7] Gregory v. Ashcroft, 501 U.S. 452, 472 (1991) (emphasis added).

[8] *See* discussion *infra* Part III.A.

[9] U.S. DEP'T OF JUSTICE, PHYSICAL QUALIFICATION—JUDICIARY [on file with author].

neurological disorders," "current emotional or mental instability," and "any other condition that is disabling or potentially disabling in the foreseeable future."[10] Later in the form, the medical provider is instructed to check either "Yes" or "No" in answer to the question: "Do you find any abnormal condition or disease of . . . [the] Brain & Nervous System?"[11]

If the judicial nominee clears the health exam and the broader nomination process, the judge will join the bench, enjoy life tenure, and never again be required to undergo a brain health checkup.[12] The current system—which mandates intense scrutiny when a judge is younger, followed by zero required follow-up as a judge ages—can be improved.

Specifically, I propose a judicial cognitive health assessment program that: (1) mandates and funds the collection of baseline neuroimaging and neuropsychology data at the nomination stage, and follow-up neuroimaging and neuropsychology data in regular five-year intervals thereafter; and (2) requires that the results of the testing remain fully confidential and private, with no exceptions.

While the judge's physician may make recommendations about disclosure, in my proposed system the judge will retain power over their brain data. This is important because it empowers judges, is less likely to become politicized, and can be administered outside of media scrutiny.

As described in Part II, my proposal harnesses the promise, while navigating the perils, of recent advances in dementia biomarkers. In the past two decades, there have been "revolutionary changes in dementia research and practice, with a growing array of imaging and fluid biomarkers taking center stage in diagnostic evaluation and monitoring of progression."[13] Appropriate use of these biomarkers would allow the system to more effectively identify and anticipate judicial cognitive decline.

The Article is organized into seven parts. Part I provides context by discussing the aging of the federal judiciary. Part II reviews the science of age-related cognitive decline. It should be noted at the outset that "dementia" is an umbrella term to capture multiple neurodegenerative diseases, including but not limited to Alzheimer's disease (AD).[14] I primarily focus on AD in this Article

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[10] *Id.*

[11] *Id.*

[12] *See infra* Part II.B.

[13] Bradford C. Dickerson, *Neuroimaging, Cerebrospinal Fluid Markers, and Genetic Testing in Dementia*, *in* DEMENTIA: COMPREHENSIVE PRINCIPLES AND PRACTICE 528, 531 (Bradford C. Dickerson & Alireza Atri eds., 2014); *see also* David S. Knopman et al., *The National Institute on Aging and the Alzheimer's Association Research Framework for Alzheimer's Disease: Perspectives from the Research Roundtable*, 14 ALZHEIMER'S & DEMENTIA 563, 564 (2018) (discussing the development and importance of enhanced biomarkers).

[14] ALZHEIMER'S ASS'N, UNDERSTANDING ALZHEIMER'S AND DEMENTIA 2 (July 2019), https://www.alz.org/media/Documents/understanding-alzheimers-dementia-b.pdf [https://perma.cc/7PXB-QPST] (explaining that primary causes of dementia include Alzheimer's Disease, Vascular Dementia, Dementia with Lewy Bodies, and Frontotemporal Dementia).

for illustrative purposes, but the proposed judicial cognitive health evaluation would screen for many types of dementia.

Part III explores the formal and informal mechanisms by which the federal system identifies and responds to judges experiencing cognitive decline. Formal mechanisms of redress are rarely used, leaving informal mechanisms as the primary strategy for addressing judicial cognitive decline. I argue that the "honor system" has largely worked well but could function even better with the addition of individualized assessment data.

Part IV reviews the states' use of mandatory judicial retirement ages, currently the most widely adopted solution to address the challenge of aging judges. Given individual variation in how brains age, I argue that mandatory retirement is an inefficient and constitutionally suspect response to age-related judicial cognitive decline.

Having described and critiqued the existing federal and state strategies to address judicial cognitive decline, Part V proposes the introduction of individualized judicial cognitive assessments, including baseline and follow-up neurological and neurocognitive testing. In establishing the core cognitive competencies required to carry out judicial duties, the proposal draws on judicial canons of conduct, as well as existing state and federal health questionnaires for judicial nominees. Because my proposed solution involves the collection of baseline and follow-up brain biomarker data, I address concerns specific to brain data. Part VI discusses several possible implications of, and extensions to, the proposed system. I discuss constitutionality, feasibility, and legitimacy. Part VII concludes.

II. AMERICA'S AGING JUDICIARY

This Part briefly explores the reasons why America's judiciary is getting older. Part A utilizes data from the Federal Judicial Center to discuss how the average age of judges in the federal system has increased over time. Part B discusses the availability of "senior status" for federal judges and judges' general hesitance to fully retire. Part C presents the available data on ages of state judges and discusses recent trends to raise the mandatory retirement age in several states.

A. *Federal Judges Are Getting Older*

The ability to extend life has led to a greater number and a greater proportion of older adults in the United States. Based on census data, it is estimated that by "2050, the population aged 65 and over is projected to be 83.7 million, almost double its estimated population of 43.1 million in 2012."[15] The economic,

[15] JENNIFER M. ORTMAN ET AL., U.S. CENSUS BUREAU, AN AGING NATION: THE OLDER POPULATION IN THE UNITED STATES 1 (May 2014), https://www.census.gov/content/dam/Census/library/publications/2014/demo/p25-1140.pdf [https://perma.cc/962U-BL8G].

political, and social implications of these demographic trends have been the subject of much analysis.[16]

In line with these broader demographic trends, the federal judiciary is also getting older. Data from the Federal Judicial Center shows a steady increase in judicial age.[17] Today, the average age of Article III judges is sixty-nine years old, the highest it has ever been.[18]

B. *Life Tenure, Senior Status, and Retirement*

The aging judiciary is, in part, the result of medical advances that allow humans to live longer. But longer lifespans are only an enabling condition; in many sectors, the aging population has not altered the average age of the workers. For instance, in professional football, the average age is falling, as is the average length of an NFL career.[19] This is because NFL football players do not enjoy job security and are readily replaced by younger players.[20]

To take another example from a different industry, there has not been a large increase in the percentage of older truck drivers, even though there are no mandatory retirement ages for truckers.[21] The lack of older truck drivers is not

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[16] *See generally* NAT'L RESEARCH COUNCIL, AGING AND THE MACROECONOMY: LONG-TERM IMPLICATIONS OF AN OLDER POPULATION (2012) (exploring the relationship between economics and an increasing population of aging adults); SUSAN M. HILLIER & GEORGIA M. BARROW, AGING, THE INDIVIDUAL, AND SOCIETY (9th ed. 2011); (explaining many social aspects of the aging process); James M. Poterba, *Retirement Security in an Aging Population*, 104 AM. ECON. REV. 1 (2014) (discussing economics and retirement security for an increasing population of aging adults); GRAYSON K. VINCENT & VICTORIA A. VELKOFF, U.S. CENSUS BUREAU, THE NEXT FOUR DECADES: THE OLDER POPULATION IN THE UNITED STATES: 2010 TO 2050 (May 2010), https://census.gov/content/dam/Census/library/publications/2010/demo/p25-1138.pdf [https://perma.cc/JXE4-TWL7] (predicting shifts in the population and demographics of aging adults).

[17] *Demography of Article III Judges, 1789–2017*, FED. JUD. CTR., https://www.fjc.gov/history/exhibits/graphs-and-maps/age-and-experience-judges [https://perma.cc/9ASS-MRL3]. Over the span of 1790–2017, the average age has risen from forty-nine to sixty-nine. *Id.* As discussed in the text, this increase in average age is also due, in part, to the ability of judges to take senior status while still regularly hearing cases. *Id.*

[18] *Id.* It should be noted that while average age is rising, the age at appointment has slightly decreased over the last half-century. Albert Yoon, *Federal Judicial Tenure*, *in* THE OXFORD HANDBOOK OF U.S. JUDICIAL BEHAVIOR 70, 71 (Lee Epstein & Stefanie A. Lindquist eds., 2017) ("[T]he average age at commission has declined, albeit modestly, from the Truman to Obama administrations.").

[19] Kevin Clark, *The NFL Has an Age Problem*, RINGER (Sept. 7, 2016), https://www.theringer.com/2016/9/7/16077250/the-nfl-has-an-age-problem-7068825845e4 [https://perma.cc/47N3-CTWZ].

[20] *Id.*

[21] Todd Dills, *Shifting Age Demographics Among Truck Drivers Could Exacerbate Driver Shortage over Next 10 Years*, COM. CARRIER J. (Feb. 17, 2015), https://www.ccjdigital.com/shifting-age-demographics-among-truck-drivers-could-exacerbate-driver-shortage-over-next-10-years/ [https://perma.cc/JG6K-6976].

because younger truck drivers are pushing them out,[22] but rather because most older truck drivers follow the pattern of older workers generally—they retire. Although there is variation by education level, the average retirement age for Americans is sixty-four for men and sixty-two for women.[23]

It is worth reflecting on this comparison for a moment. The average retirement age for most Americans is between sixty-two and sixty-four years old. The average age of Article III judges is sixty-nine.[24] Clearly, federal judges prefer to keep working than to retire.[25]

This preference was enabled by the advent of "senior status."[26] In 1919, Congress "created the office of Senior Judge and thus enabled the federal judiciary to continue to benefit from the service of many dedicated and experienced judges."[27] This allows federal judges to take one of four paths:[28]

(1) judges can continue in active service until they die;[29]
(2) judges can take "senior status" at some point before death (provided they continue to provide substantial service to the court), which allows them to continue receiving both a salary and salary increases;[30]
(3) judges can "retire," which means they receive an annual salary without salary increases, but can re-enter private practice;[31] or
(4) judges can "resign," which allows them to enter (lucrative) private practice, but means that all compensation ceases and there are no federal retirement benefits.[32]

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[22] Indeed, there is a shortage of younger long-haul truck drivers. Linda Longton, *The Driver Deficit: Who Will Drive the Future?*, COM. CARRIER J. (May 28, 2018), https://www.ccjdigital.com/the-driver-deficit-who-will-drive-the-future/ [https://perma.cc/GGK5-LVLB].

[23] ALICIA H. MUNNELL, CTR. FOR RET. RESEARCH, THE AVERAGE RETIREMENT AGE – AN UPDATE 1 (Mar. 2015); ALICIA H. MUNNELL, CTR. FOR RET. RESEARCH, WHAT IS THE AVERAGE RETIREMENT AGE? 5 (Aug. 2011).

[24] *Demography of Article III Judges*, *supra* note 17.

[25] *See* Yoon, *supra* note 18, at 70 (discussing why federal judges stay on the bench).

[26] The introduction of senior status has been described as an "ingenious" and "elegant response" to the problem that, absent this senior status option, judges would face strong financial incentives to remain in active status. Betty Binns Fletcher, *A Response to Stras & Scott's* Are Senior Judges Unconstitutional?, 92 CORNELL L. REV. 523, 524 (2007).

[27] Frederic Block, *Senior Status: An "Active" Senior Judge Corrects Some Common Misunderstandings*, 92 CORNELL L. REV. 533, 535 (2007). It is beyond the scope of this article, but worth noting, that there has been academic debate over the constitutionality of the senior status statute. *Compare* David R. Stras & Ryan W. Scott, *Are Senior Judges Unconstitutional?*, 92 CORNELL L. REV. 453, 456 (2007), *with* Fletcher, *supra* note 26, at 524.

[28] Block, *supra* note 27, at 536.

[29] *Id.*

[30] *Id.*

[31] *Id.*

[32] *Id.*

Today, senior status can be claimed by any Article III judge or justice "after meeting the age and service requirements of the 'Rule of Eighty'—your age and years of service must add up to eighty, you must be at least sixty-five years old, and you must have been on the bench for at least ten years."[33] A judge who takes senior status does not fully retire.[34] Rather, "senior judges continue to perform the same judicial duties and receive the same salary as active judges."[35] Senior status is attractive to judges because it allows judges to continue their professional lives[36] and provides them with more control over the cases they hear.[37] Judges' decisions to take senior status are related to the judicial pension system,[38] and the average age at which active judges take senior status has declined over time, likely because of "changing rules for pension qualification from seventy years (and ten years of service) to sixty-five years (and fifteen years of service)."[39]

Data from the Federal Judicial Center makes clear that the vast majority of Article III judges move to senior status, rather than to full retirement. For most professions, one does not die on the job. Not so for federal judges. Federal Judicial Center data shows that nearly 75% of judges leave the bench because they die.[40] As the Federal Judicial Center observes, "In recent decades, many federal judges have assumed senior status even though eligible for full retirement. This trend may help account for the growing proportion of judges whose terms have ended in death rather than resignation or retirement."[41]

Senior judges are presently 40% of the federal judiciary, and this number is likely to grow.[42] Federal Judicial Center data finds that from 1997 to 2015, "senior-status judges presided over between approximately 15 and 25 percent

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[33] *Id.*

[34] Block, *supra* note 27, at 536.

[35] *Id.*

[36] *Id.* at 538. ("There are three principal advantages to taking senior status: (1) it allows the judge to continue with the judge's coveted judicial career, the intellectual stimulation it affords, and the judge's commitment to public service; (2) it gives the judge the opportunity to have more control over the quantity and quality of his or her workload, without loss of pay, provided the judge continues to perform 'substantial service'; and (3) it creates a vacancy, thereby paving the way for additional judicial help for the courts.").

[37] Yoon, *supra* note 18, at 75 ("[Senior status judges] can elect to hear less than a full caseload and request inclusion or exclusion from certain types of cases.").

[38] *Id.* at 76 (observing based on analysis of judicial tenure that "senior status has been inextricably linked to judicial pensions").

[39] *Id.* at 78. Yoon's data suggests that circuit judges tend, on average, to remain on active status longer, while district court judges are more likely to jump to senior status as soon as they are pension eligible. Albert Yoon, *As You Like It: Senior Federal Judges and the Political Economy of Judicial Tenure*, 2 J. EMPIRICAL LEGAL STUD. 495, 533 (2005).

[40] *Demography of Article III Judges*, *supra* note 17.

[41] *Id.*

[42] Yoon, *supra* note 18, at 95 ("[In 2014,] senior judges comprise 40 percent of the total number of judges. As judges live longer and as delays in judicial confirmations continue, the ratio is likely to skew towards more senior judges.").

of all completed district court trials."[43] In some districts, however, that number is greater. In the Eastern District of New York in 2007, for instance, "senior district judges [had] on average higher caseloads than the active judges."[44] Senior judges handle many high-profile cases. For instance, in 2017, eighty-year-old Judge Nathaniel Gorton, of the U.S. District Court for the District of Massachusetts, heard one of the first cases on President Trump's travel ban.[45] The case involved, in the judge's own words, a "flurry of activity,"[46] and the opinion offered on February 3, 2017 came just a week after the Executive Order was issued on January 27, 2017.[47]

C. *State Judges*

States differ from the federal system in how judges are selected, elected, and retained.[48] Without life tenure, in the states "the most common method of retention is some form of election: partisan, nonpartisan, or retention."[49] The prevalence of mandatory retirement ages, the retention machinery of elections, and the political reappointment process mean that older state judges have more difficult barriers to surpass than their federal counterparts if they wish to continue serving. As a result, it stands to reason that the average age of state judges would be lower than in the federal system.

The best available data on the age of state judges comes from law professors Stacey George and Albert Yoon. George and Yoon lead a project called "The Gavel Gap," in which they investigate whether the demographics of state court judges reflect the demographics of citizens in that state.[50] They find a gap, on race and gender dimensions, between citizens and their judges.[51] The study, which was supported by the American Constitution Society, is impressive because it is the first to widely collect comparable judicial demographic data

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[43] *Demography of Article III Judges*, *supra* note 17 (figures from caseload reports of the Administrative Office of the United States Courts).

[44] Block, *supra* note 27, at 540.

[45] Louhghalam v. Trump, 230 F. Supp. 3d 26, 30 (D. Mass. 2017).

[46] *Id.*

[47] Protecting the Nation from Foreign Terrorist Entry Into the United States, 82 Fed. Reg. 8977 (Jan. 27, 2017).

[48] *See generally* HERBERT M. KRITZER, JUSTICES ON THE BALLOT: CONTINUITY AND CHANGE IN STATE SUPREME COURT ELECTIONS (2015); Herbert M. Kritzer, *Impact of Judicial Elections on Judicial Decisions*, 12 ANN. REV. L. & SOC. SCI. 353 (2016) [hereinafter Kritzer, *Impact*].

[49] Kritzer, *Impact*, *supra* note 48, at 356 (discussing how some states utilize reappointment, and how the process may vary by level of the court within the state).

[50] *See* TRACEY E. GEORGE & ALBERT H. YOON, AM. CONSTITUTION SOC'Y FOR LAW AND POLICY, THE GAVEL GAP: WHO SITS IN JUDGMENT ON STATE COURTS? 1 (Dec. 2014); *see also Exposing the Gavel Gap*, WASH. POST, https://www.washingtonpost.com/brand-studio/goliath/exposing-the-gavel-gap/ [https://perma.cc/3TY5-Y3BK].

[51] *See* GEORGE & YOON, *supra* note 50; *Exposing the Gavel Gap*, *supra* note 50.

across the states.[52] Although not the focus of their analysis, they observed birth year data for 5378 state judges (out of 10,295 in their total dataset).[53] Based on this birth year data, they calculate average state judge age to be 59.6, with a median age of sixty (max age of eighty-eight).[54] Twenty-four percent of judges are over age sixty-five, but only 1.4% of judges are over age seventy-five.[55] This final statistic, suggesting that 99% of judges in state courts are age seventy-five or younger, likely reflects the effect of mandatory retirement ages and the more rigorous judicial retention process in the states. Another contributing factor to the differences in ages between state and federal judges is that federal judges often serve as state judges first.

In addition, many states have mechanisms whereby a "retired" judge can be "recalled" into service without violating the mandatory retirement statute. To illustrate: in New Jersey, the state supreme court held that

> . . . the modern State Constitution of 1947 provides for mandatory retirement of judges, but the document is silent on the subject of recall. Nowhere does the plain language of the Constitution forbid recall . . . [or] conflict with temporary recall assignments because the two concepts are distinct. One prevents lifelong tenure; the other affords judges neither tenure nor a seven-year term and does not reverse a judge's retirement.[56]

Even within mandatory retirement regimes, then, older judges may be playing critical roles.

While at present state judges appear to be younger, on average, than their federal counterparts, it is possible that state judges will start to serve longer as mandatory retirement ages are raised. Currently, thirty-two states have mandatory retirement ages for judges.[57] But in several states, there are proposals to raise the mandatory retirement age or to eliminate it altogether.[58]

Proponents of raising or eliminating the retirement age generally argue that "[v]ery competent jurists are being forced to retire in the primes of their careers."[59] Proponents also argue that states have formal processes to remove

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[52] I thank Professors George and Yoon for sharing with me some of their findings on judicial age.

[53] Email correspondence on file with author.

[54] *Id.*

[55] *Id.*

[56] State v. Buckner, 121 A.3d 290, 292 (N.J. 2015).

[57] *See* FRANCIS X. SHEN, APPENDIX: TABLE OF MANDATED JUDICIAL RETIREMENT AGES BY STATE (2020), http://www.fxshen.com/FrancisShen_Appendix_StateJudicialRetirement Ages_FINAL.pdf [on file with the author] [hereinafter SHEN, APPENDIX]; *see also* discussion in Part V.

[58] One reason for resistance to these proposals may be concern about the impact on state pensions. For instance, a judge may be concerned that a legislature would reduce judicial pensions if they were allowed (or expected) to work later into life beyond the mandatory retirement age.

[59] Ashby Jones, *A New Lease for Old Judges*, WALL ST. J. (Mar. 5, 2013), https:// www.wsj.com/articles/SB10001424127887323699704578328214137916682 [https://per

judges on a case-by-case basis for age-related illness or cognitive impairment. In the words of Indiana State Senator Jim Buck, "[W]e can address these situations on a case-by-case basis . . . . We've got lawyers in their 80s whose minds are steel traps. There's no reason to cast aside that kind of legal mind."[60] Developments in the states include:

- Maryland: In February 2018, a bill was proposed in the Maryland House that would give voters an opportunity to vote on a constitutional amendment to raise the mandatory judicial retirement age from seventy to seventy-three.[61]
- Florida: In November 2018, Florida voters approved a state constitutional amendment to raise the mandatory retirement age for Florida Supreme Court justices from seventy to seventy-five years old.[62] The amendment passed with 61.6% in favor and 38.4% opposing.[63]
- Michigan: In 2017, the Michigan House Judiciary Committee re-introduced and passed a measure to repeal the mandatory retirement age of seventy years old for state judges.[64] This measure was first introduced in 2007 and has since been re-introduced three additional times: in 2011, 2013, and 2015.[65] However, this most recent attempt represents the first successful approval from the Michigan House Judiciary Committee.[66]
- Alabama: In 2019, during discussion of an amendment to the State Constitution in the House of Representatives, a proposed amendment to

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ma.cc/8GHS-PYCH] (quoting Pennsylvania State Senator Stewart Greenleaf, who sponsored a bill to eliminate the judicial retirement age).

[60] *Id.*

[61] Diane Rey, *Raising Retirement for Judges from 70 to 73 Gets Another Try*, MARYLANDREPORTER.COM (Feb. 10, 2019), https://marylandreporter.com/2019/02/10/raising-retirement-for-judges-from-70-to-73-gets-another-try/ [https://perma.cc/7LB8-9C4X].

[62] *Florida Amendment 6, Marsy's Law Crime Victims Rights, Judicial Retirement Age, and Judicial Interpretation of Laws and Rules Amendment (2018)*, BALLOTPEDIA, https://ballotpedia.org/Florida_Amendment_6,_Marsy%27s_Law_Crime_Victims_Rights,_Judicial_Retirement_Age,_and_Judicial_Interpretation_of_Laws_and_Rules_Amendment_(2018) [https://perma.cc/EU8Z-D8BZ].

[63] *Id.*

[64] *Michigan: Repeal of Mandatory Judicial Retirement Age Advances out of House Committee; Would Allow Judges Older than 70 to Run for or be Appointed to Judicial Office*, GAVEL TO GAVEL (May 8, 2017), http://gaveltogavel.us/2017/05/08/michigan-repeal-mandatory-judicial-retirement-age-advances-house-committee-allow-judges-older-70-run-appointed-judicial-office/ [https://perma.cc/2HGT-AFMZ].

[65] *Id.*

[66] *Id.*

raise the judicial retirement age to seventy-five from seventy was struck down (18 in favor, 73 against).[67]

- New York: In 2013, the New York Mandatory Judicial Retirement Age Amendment (Proposition 6), which would have raised the mandatory judicial retirement age from seventy years old to eighty years old for Supreme Court justices and Court of Appeals judges, was defeated (39% supporting, 61% opposed).[68] In addition, leaders of the New York Reform Party sued to remove the New York judicial age limit in 2017.[69] Though a filed paper indicates that a trial court in New York accepted the filing,[70] as of 2019, the New York judicial age limit of seventy years has not been removed.[71]
- Oregon: In 2016, the Oregon Elimination of Mandatory Judicial Retirement Age Amendment (Measure 94), a measure that would remove the constitutional amendment requiring mandatory retirement of judges once they turn seventy-five years old and prevent future legislatures from re-establishing a retirement age for judges, was defeated (63% opposed, 37% in favor).[72]
- Pennsylvania: In 2016, a constitutional amendment to raise the mandatory retirement age for Pennsylvania judges from seventy to seventy-five years old was narrowly passed (50.6% in favor, 49.4%

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[67] Brandon Moseley, *House Rejects Effort to Raise the Retirement Age for State Judges to Age 75*, ALA. POL. REP. (May 16, 2019), https://www.alreporter.com/2019/05/16/house-rejects-effort-to-raise-the-retirement-age-for-state-judges-to-age-75/ [https://perma.cc/S9S8-DYU8].

[68] James C. McKinley, Jr., *Plan to Raise Judges' Retirement Age to 80 Is Rejected*, N.Y. TIMES (Nov. 6, 2013), https://www.nytimes.com/2013/11/06/nyregion/plan-to-raise-judges-retirement-age-to-80-is-rejected.html [https://perma.cc/2HP8-6U9E]. Controversy surrounded the proposition because it would have severely curtailed the ability of Governor Andrew Cuomo, a member of the Democratic party, from "shaping the state's highest court," as passage of the measure would have allowed two Republican judges to serve longer terms. *Id.* The governor "quietly opposed the measure in the Legislature and lobbied editorial boards to urge people to vote no." *Id.*

[69] Jon Lentz, *Reform Party Files Suit to Overturn New York's Age Limit on Judges*, CITY & ST. N.Y. (July 3, 2017), https://www.cityandstateny.com/articles/politics/new-york-state-articles/reform-party-sues-to-overturn-new-york-age-limit-on-judges.html [https://perma.cc/N7SY-F5GN].

[70] *See generally* Complaint of Petitioner, Morano v. Bd. of Elections of New York, No. 080055/17 (N.Y. Sup. Ct. June 28, 2017), https://www.scribd.com/document/352773965/Judicial-retirement-age-lawsuit#from_embed [https://perma.cc/N6DE-EXQP].

[71] N.Y. CONST. art. VI, § 25.

[72] *Oregon Elimination of Mandatory Judicial Retirement Age, Measure 94 (2016)*, BALLOTPEDIA, https://ballotpedia.org/Oregon_Elimination_of_Mandatory_Judicial_Retirement_Age,_Measure_94_(2016) [https://perma.cc/KRY5-ZHZS].

opposing), despite controversy over the question's ambiguous wording.[73]

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The federal judiciary is older than ever before. The state judiciary, while younger, still has 25% of its judges at ages between sixty-five and seventy-five. Moreover, there is some momentum in the states to raise age levels for judges. But are these trends toward an older judiciary a problem? To begin answering this question, Part III reviews the science of age-related cognitive decline.

III. AGE, COGNITIVE DECLINE, AND THE EMERGENCE OF BRAIN BIOMARKERS OF DEMENTIA

This Part provides an overview of the known effects of aging on cognitive function, particularly the changes in cognition that may adversely affect a judge's ability to effectively carry out all the duties of the office.[74] Part A examines average population trends in aging and cognition, and Part B explores individual differences in aging trajectories. Part C provides discussion of the brain basis for age-related changes in mental function.

Since ancient times, it has been recognized that with age comes cognitive decline.[75] Virgil, for instance, lamented that, "Time robs us all, even of memory."[76] What is novel about contemporary understanding of age-related mental decline is our increasing ability to pinpoint and even predict that decline in brain circuitry.[77]

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[73] Jan Murphy, *Pennsylvania Voters Approve Raising Judges' Retirement Age*, PENNLIVE (Nov. 9, 2016), https://www.pennlive.com/politics/2016/11/pennsylvania_voters_approve_ra.html [https://perma.cc/BG5C-XD2J] (last updated Jan. 5, 2019). Two former chief justices from the Pennsylvania Supreme Court sued on the grounds that the measure was intentionally "phrased in a deceitful way . . . by the Republican-controlled legislature" in an effort to manipulate the vote. Angela Couloumbis, *Pa. Voters Narrowly Backing Raising Judges' Retirement Age*, PHILA. INQUIRER (Nov. 8, 2016), https://www.inquirer.com/philly/news/politics/20161109_Pa__voters_narrowly_back_raising_judges__retirement _ages.html [https://perma.cc/4U4E-744B].

[74] Aging judges may be problematic for reasons unrelated to cognitive health. My primary focus here, however, is on the potential for cognitive decline.

[75] Denise C. Park & Sara B. Festini, *Theories of Memory and Aging: A Look at the Past and a Glimpse of the Future*, 72 J. GERONTOLOGY: PSYCHOL. SCI. 82, 82 (2017).

[76] KAREN COKAYNE, EXPERIENCING OLD AGE IN ANCIENT ROME 67 (2003).

[77] Denise C. Park & Patricia Reuter-Lorenz, *The Adaptive Brain: Aging and Neurocognitive Scaffolding*, 60 ANN. REV. PSYCHOL. 173, 174 (2009) ("For the past 25 years, our understanding of the behavioral changes that occur in cognition with age has increased tremendously, and in the past 10 years, the advent of neuroimaging tools has ushered a truly stunning increase in what we know about the aging mind.").

The brain is made up of circuits of cells.[78] In the developing brain, even in the womb, cells are forming connections and pathways that may last for much of one's life.[79] But over time these pathways can deteriorate; as brain circuits lose the ability to communicate, some cognitive functioning may become affected.[80] Exactly how these circuits change—and what can be done to reverse or mitigate the effects—is the subject of much research.[81]

In 2018, the National Institutes of Aging and the Alzheimer's Association formally called for a research framework that defines Alzheimer's disease (AD) based on neurobiology instead of symptoms.[82] Part C discusses why brain biomarkers for AD are ushering in a paradigm shift for AD definition and detection.

A. *Group Averaged Cognitive Decline*

Age-related cognitive decline is traditionally thought to begin in the later stages of life, between the ages of fifty and sixty, with exacerbated rates of decline noted for individuals over the age of seventy.[83] Yet recent longitudinal research suggests that cognitive decline can begin as early as age thirty, with different rates of decline noted for different skills like memory, reasoning, spatial visualization, and processing speed.[84]

Age-related trajectories vary according to cognitive domain. One distinction made in the literature, and relevant to judicial function, is the difference between "fluid intelligence" and "crystallized intelligence."[85] Fluid intelligence might be thought of as processing speed and the ability to learn new tasks.[86] Crystallized intelligence is something more akin to wisdom.[87]

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[78] Esteban Real et al., *Neural Circuit Inference from Function to Structure*, 27 CURRENT BIOLOGY 189, 189 (2017) (noting that "neuroscience seeks to explain brain function in terms of the dynamics in circuits of nerve cells").

[79] Moriah E. Thomason, *Structured Spontaneity: Building Circuits in the Human Prenatal Brain*, 41 TRENDS NEUROSCIENCES 1, 1 (2018).

[80] John H. Morrison & Patrick R. Hof, *Life and Death of Neurons in the Aging Brain*, 278 SCIENCE 412, 417 (1997); Rachel D. Samson & Carol A. Barnes, *Impact of Aging Brain Circuits on Cognition*, 37 EUR. J. NEUROSCIENCE 1903, 1909 (2013).

[81] *See, e.g.*, Patrick R. Hof & John H. Morrison, *The Aging Brain: Morphomolecular Senescence of Cortical Circuits*, 27 TRENDS NEUROSCIENCES 607, 607 (2004).

[82] Clifford R. Jack, Jr. et al., *NIA-AA Research Framework: Toward a Biological Definition of Alzheimer's Disease*, 14 ALZHEIMER'S & DEMENTIA 535, 535 (2018).

[83] Timothy A. Salthouse, *When Does Age-Related Cognitive Decline Begin?*, 30 NEUROBIOLOGY AGING 507, 508 (2009).

[84] *Id.* at 511.

[85] John L. Horn & Raymond B. Cattell, *Age Differences in Fluid and Crystallized Intelligence*, 26 ACTA PSYCHOLOGICA 107, 107–11 (1967).

[86] *See* John L. Horn, *The Theory of Fluid and Crystallized Intelligence in Relation to Concepts of Cognitive Psychology and Aging in Adulthood*, *in* 8 ADVANCES IN THE STUDY OF COMMUNICATION AND AFFECT: AGING AND COGNITIVE PROCESSES 237, 240 (F. I. M. Craik & Sandra Trehub eds., 1982).

[87] *Id.*

In an oft-cited study, psychologist Alan Kaufman sampled 1500 men and women to determine how fluid intelligence and crystallized intelligence change over time, from adolescence to late adulthood.[88] Kaufman found that fluid intelligence increases until late adolescence, but then begins to decline in early adulthood, with a faster rate of decline in late adulthood (around fifty-five years of age).[89] In contrast, crystallized intelligence remained stagnant until late adulthood (around sixty years of age), and then begins to slowly decline.[90] Other studies have come to similar findings using various intelligence scales, and some studies suggest that crystallized intelligence may actually continue to increase across the lifespan.[91]

Given these different trajectories of fluid and crystallized intelligence, it is possible that crystallized intelligence might "attenuate the effects" of age-related declines in fluid intelligence, allowing older adults to call upon their extensive life experiences to "offset the declining ability to process and manipulate new information."[92] Whether fluid or crystallized intelligence dominates the decision-making process depends on the nature of the decision itself; some situations rely more heavily on one form of decision-making over the other, and some situations require both types equally.[93]

Of importance to judging, research suggests that "executive function" and, in particular, memory may become impaired in older age.[94] Executive function consists of "control processes responsible for planning, assembling, coordinating, sequencing, and monitoring other cognitive operations," essentially existing as a mediator of brain behavior.[95] With regard to memory, "long-term memory and working memory are commonly impaired while rote retrieval of word meaning (vocabulary) and priming remain relatively intact."[96]

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[88] Alan S. Kaufman & John L. Horn, *Age Changes on Tests of Fluid and Crystallized Ability for Women and Men on the Kaufman Adolescent and Adult Intelligence Test (KAIT) at Ages 17–94 Years*, 11 ARCHIVES CLINICAL NEUROPSYCHOLOGY 97, 97 (1996). Kaufman used the Kaufman Adolescent and Adult Intelligence Test (KAIT), which consists of four tests for each intelligence domain. *Id.*

[89] *Id.* at 106.

[90] *Id.*

[91] Lisa Zaval et al., *Complementary Contributions of Fluid and Crystallized Intelligence to Decision Making Across the Life Span*, *in* AGING AND DECISION MAKING: EMPIRICAL AND APPLIED PERSPECTIVES 149, 150 (Thomas Hess et al. eds., 2015).

[92] *Id.* at 154.

[93] *Id.* at 154–55.

[94] Randy L. Buckner, *Memory and Executive Function in Aging and AD: Multiple Factors that Cause Decline and Reserve Factors that Compensate*, 44 NEURON 195, 196 (2004); Sarah F. MacPherson et al., *Age, Executive Function, and Social Decision Making: A Dorsolateral Prefrontal Theory of Cognitive Aging*, 17 PSYCHOL. & AGING 598, 599 (2002).

[95] Timothy A. Salthouse et al., *Executive Functioning as a Potential Mediator of Age-Related Cognitive Decline in Normal Adults*, 132 J. EXPERIMENTAL PSYCHOL. 566, 566 (2003).

[96] Buckner, *supra* note 94, at 195.

Given the judge's role vis-à-vis litigants and staff in the courtroom, it is also important to note that age-related brain changes affect one's ability to interact socially.[97] Healthy social behavior heavily relies on a capacity often labeled as "theory of mind."[98] Theory of Mind (TOM) is "the capacity to infer the likely thoughts and intentions of others."[99] TOM capacity is involved in everyday social skills, including "detect[ing] . . . deception, faux pas and cheating."[100] Both affective decision-making and TOM may be impaired in individuals with dementia.[101]

B. *Individual Differences in Aging Trajectories*

While, on average, older adults experience impairment in a variety of cognitive functions, there is considerable individual variation in the nature and extent of those changes.[102] In the context of memory ability, for instance, some individuals start forgetting early, but "[s]ome individuals show high functioning into their ninth and tenth decades."[103] Indeed, available data suggests that there are roughly four trajectories of cognition change over time.[104] Compared to baseline performance at thirty-five years old, humans may experience:[105]

- *Super aging*, in which there is little to no cognitive decline, and mental faculties remain highly functioning even in later ages;
- *Normal aging*, in which there is some decline in cognitive performance, but not so much that it affects daily activity;

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[97] Julie D. Henry et al., *A Meta-Analytic Review of Age Differences in Theory of Mind*, 28 PSYCHOL. & AGING 826, 826 (2013).

[98] *See* Joseph M. Moran, *Lifespan Development: The Effects of Typical Aging on Theory of Mind*, 237 BEHAV. BRAIN RES. 32, 33 (2013).

[99] Teresa Torralva et al., *The Relationship Between Affective Decision-Making and Theory of Mind in the Frontal Variant of Fronto-Temporal Dementia*, 45 NEUROPSYCHOLOGIA 342, 342 (2007).

[100] *Id.* (citations omitted).

[101] *Id.* at 347 (finding that the dementia group strategized "disadvantageously" over the course of a gambling task, which resulted in an increase in risky decision-making relative to the age-matched control group).

[102] Naftali Raz et al., *Regional Brain Changes in Aging Healthy Adults: General Trends, Individual Differences and Modifiers*, 15 CEREBRAL CORTEX 1676, 1687 (2005); Robert S. Wilson et al., *Individual Differences in Rates of Change in Cognitive Abilities of Older Persons*, 17 PSYCHOL. & AGING 179, 179 (2002).

[103] Buckner, *supra* note 94, at 195.

[104] Bruce H. Price, Chief, Dep't of Neurology, McLean Hosp., Presentation at the "Our Aging Brains" Conference at the Petrie-Flom Center: Cognitive Performance over the Lifespan (Apr. 27, 2018), https://www.slideshare.net/petrieflom/bruce-price-cognitive-performance-over-the-lifespan [https://perma.cc/YS5Z-ERHH].

[105] Sandra Weintraub, Cognitive Neurology & Alzheimer's Disease Ctr., Northwestern Univ. Feinberg Sch. of Med., Presentation: How Aging Affects the Brain and Memory: From Alzheimer's Disease to SuperAging (on file with *Ohio State Law Journal*).

- *Mild cognitive impairment*, in which there is accelerated cognitive decline, but not rising to the level of significantly affecting daily life; and
- *Pathologic aging* or *dementia*, in which there is accelerated cognitive decline that does impair daily functioning.

Why some individuals follow one path or another remains poorly understood.[106] Super Agers, for instance, retain their intellectual abilities late into their lives, without significant declines in memory, attention, language, or executive function tests.[107] Researchers have begun to identify anatomic and genetic factors that distinguish Super Agers.[108] But the mechanistic causes of these changes, whether they result from a higher baseline intelligence or from a genetic or environmental resistance to age-related decline, remain yet to be determined.[109]

There is strong evidence that diet and exercise are protective factors for avoiding dementia,[110] but researchers and pharmaceutical companies have been attempting to identify other protective factors or mechanisms that slow the rate of impairment or halt its progression altogether.[111] Such factors include: recruitment of a "cognitive reserve," which allows adults to utilize different cognitive skills to accommodate for their diminishing capacity in other skills; mentally stimulating activity; and physical exercise.[112]

The construct of "cognitive reserve" was developed to help explain why "in the face of neurodegenerative changes that are similar in nature and extent,

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[106] Felicia W. Sun et al., *Youthful Brains in Older Adults: Preserved Neuroanatomy in the Default Mode and Salience Networks Contributes to Youthful Memory in Superaging*, 37 J. NEUROSCIENCE 9659, 9666 (2016).

[107] *See* Emily J. Rogalski et al., *Youthful Memory Capacity in Old Brains: Anatomic and Genetic Clues from the Northwestern SuperAging Project*, 25 J. COGNITIVE NEUROSCIENCE 29, 33–34 (2012); Sun et al., *supra* note 106, at 9664–65.

[108] Nicholas T. Bott et al., *Youthful Processing Speed in Older Adults: Genetic, Biological, and Behavioral Predictors of Cognitive Processing Speed Trajectories in Aging*, 9 FRONTIERS AGING NEUROSCIENCE 1, 1 (2017); Nora Dunne, *Unlocking the Secrets to 'SuperAging,'* NW. MED. MAG. (2016), https://magazine.nm.org/fall-2016/features/unlocking-the-secrets-to-superaging/ [https://perma.cc/K7QV-38CS]. Led by Dr. Emily Rogalski, the team's primary focus has been to identify what protective factors Super Agers possess that bar them from typical age-related decline. *Id.*

[109] Rogalski et al., *supra* note 107, at 33–34.

[110] Neal D. Barnard et al., *Dietary and Lifestyle Guidelines for the Prevention of Alzheimer's Disease*, 35 NEUROBIOLOGY AGING S74, S77 (2014); Nikolaos Scarmeas et al., *Physical Activity, Diet, and Risk of Alzheimer Disease*, 302 JAMA 627, 627 (2009).

[111] Claire Mount & Christian Downton, *Alzheimer Disease: Progress or Profit?*, 12 NATURE MED. 780, 784 (2006) (noting that "[a]lthough current treatments for Alzheimer disease have witnessed phenomenal sales growth and will continue to do so, they have provided only modest symptomatic relief, and much of their success appears to be borne of the significant unmet need").

[112] Dennis J. Selkoe, *Preventing Alzheimer's Disease*, 337 SCIENCE 1488, 1491 (2012); *see* Lawrence J. Whalley et al., *Cognitive Reserve and the Neurobiology of Cognitive Aging*, 3 AGEING RES. REVIEWS 369, 375 (2004).

individuals vary considerably in the severity of cognitive aging."[113] The cognitively capable adult brain can withstand age-related decline much better than individuals with less cognitive capabilities.[114]

Because judges are highly educated, it is relevant to note research finding that environmental factors such as higher childhood intelligence and higher educational attainment are protective against later-life cognitive decline.[115] Mentally stimulating activity may also protect against cognitive decline.[116]

C. *The Neurobiology of Aging*

Research has emerged on age-related changes in both the normal and diseased state. In this Section, I first review brain changes in normal aging, and then turn to the pathology of Alzheimer's disease (AD).

1. *The Aging Brain*

Advances in neuroimaging techniques have made it easier to identify age-related structural and functional changes in the brain.[117] Changes over time include:

- A reduction in regional brain volume, with certain areas of the brain appearing to be more susceptible to volume loss, including the frontal and parietal lobes.[118]

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[113] Whalley et al., *supra* note 112, at 369.

[114] *See id.* at 374.

[115] *See id.* at 370, 375; *see also* Michael J. Valenzuela & Perminder Sachdev, *Brain Reserve and Dementia: A Systematic Review*, 36 PSYCHOL. MED. 441, 442 (2005). A physically active lifestyle is also a protective factor, but it is unclear whether judges are disproportionally more physically active than the general public. The Louisiana Judges and Lawyers Assistance Program, for instance, notes that "[o]ften times we [lawyers and judges] give up nutrition, sleep, and physical activity and place our energies on life's demands." *Wellness*, LA. JUDGES & LAWYERS ASSISTANCE PROGRAM, INC., http://louisianajlap.com/issues-concerns/wellness/ [https://perma.cc/T3Z6-VAAZ].

[116] Robert S. Wilson et al., *Cognitive Activity and the Cognitive Morbidity of Alzheimer Disease*, 75 NEUROLOGY 990, 994 (2010) (reporting on a study in which researchers longitudinally analyzed activity patterns and cognitive decline for about six years, finding that mentally stimulating activity in older age significantly slowed the rate of cognitive decline in patients with Alzheimer's disease).

[117] Timothy A. Salthouse, *Neuroanatomical Substrates of Age-Related Cognitive Decline*, 137 PSYCHOL. BULL. 753, 759 (2011).

[118] *Id.* at 761. Reduction in brain volume is likely due to a reduction in the number of connections a neuron has with other neurons through their dendrites (also referred to as dendritic arborization) and loss of synapses between neurons, not through the loss of neurons. *Id.* This measure serves as a "crude" indicator of cognitive performance, and the causal relationship between reduced brain volume and cognitive functioning are not well supported. *Id.*

- Disruptions in brain network connectivity, described as a reduction in white matter integrity, with the largest effects being observed in the frontal regions of the brain, which are important for planning and decision-making.[119]

Some evidence suggests that older adults recruit different brain networks to solve the same problems as younger adults.[120] The aging brain may be organized differently than the younger brain, but it may still be able to accomplish many of the same tasks.[121]

Within the prefrontal cortex, age-related changes to the dorsolateral prefrontal cortex may be of particular importance.[122] This region is primarily thought to be involved in executive function and complex reasoning.[123] By comparison, few age-related changes occur in the ventromedial prefrontal cortex, which is thought to be involved in emotion detection.[124] Age-related impairment in the function of the prefrontal cortex may be mediated through dysfunction of the dopaminergic system in the brain.[125] Dopamine is the primary neurotransmitter in the prefrontal cortex and striatal systems, and disruptions to the dopaminergic system mediate age-related declines in cognition, including executive function, episodic memory, and processing speed.[126]

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[119] M. O'Sullivan et al., *Evidence for Cortical "Disconnection" as a Mechanism of Age-Related Cognitive Decline*, 57 NEUROLOGY 632, 632, 635 (2001); *see also* Carl Engelking, *Brain Area for Decision-Making and Planning Is "Uniquely Human,"* DISCOVER (Jan. 30, 2014), https://www.discovermagazine.com/mind/brain-area-for-decision-making-and-planning-is-uniquely-human [https://perma.cc/UT55-R69J]. Another review conducted by Dr. John Morrison in 2012 further supported the correlation between cognitive impairment and "synaptic alterations" between neurons in certain areas of the brain instead of the outright loss of neurons. John H. Morrison & Mark G. Baxter, *The Ageing Cortical Synapse: Hallmarks and Implications for Cognitive Decline*, 13 NATURE REVIEWS NEUROSCIENCE 240, 240 (2012). Regional connections between brain structures appear to mediate specific cognitive skills, with fractional anisotropy (measure of tract integrity) in the anterior, posterior, and mediotemporal regions associated with speed and working memory, executive function, and memory respectively. *See* O'Sullivan et al., *supra* note 119, at 635. This conclusion supports the cortical disconnection hypothesis, which is a hypothesis that suggests that as humans age, the white matter tracts that connect various regions of the brain degrade, resulting in a "loss of functional integration of neurocognitive networks." *Id.* at 632.

[120] Kirk R. Daffner & Kim C. Willment, *Executive Control, the Regulation of Goal-Directed Behaviors, and the Impact of Dementing Illness*, *in* DEMENTIA: COMPREHENSIVE PRINCIPLES AND PRACTICE, *supra* note 13, at 71, 89–90.

[121] *See* Roser Sala-Llonch et al., *Reorganization of Brain Networks in Aging: A Review of Functional Connectivity Studies*, 6 FRONTIERS PSYCHOL. 1, 5 (2015).

[122] *See* MacPherson et al., *supra* note 94, at 598.

[123] *Id.*

[124] *Id.* at 607.

[125] Lars Bäckman et al., *Linking Cognitive Aging to Alterations in Dopamine Neurotransmitter Functioning: Recent Data and Future Avenues*, 34 NEUROSCIENCE & BIOBEHAVIORAL REVIEWS 670, 675 (2010).

[126] *Id.* at 670, 675.

2. *Neurobiology of Alzheimer's Disease*

In 2010, an estimated 4.7 million Americans aged sixty-five and older suffered from Alzheimer's disease (AD); by 2050, this number is projected to reach 13.8 million.[127] Although there is currently no cure for AD,[128] new neuroimaging techniques are being developed to detect biomarkers for Alzheimer's in its earliest stages.[129] Such biomarkers can identify atrophying neural tissue in people with AD before they manifest observable behavioral changes.[130] In 2004, the Alzheimer's Disease Neuroimaging Initiative (ADNI) was formed to develop a range of biomarkers—including imaging, genetic, and biochemical markers—for the early detection and monitoring of AD.[131] For clinicians, this early detection can help facilitate prevention or help slow the disease's progression.[132]

New diagnostic options for clinical use are emerging.[133] In 2012, the Food and Drug Administration (FDA) approved an imaging technique that uses positron emission tomography (PET) scanning with the radioactive tracing compound Florbetapir F-18 to identify the accumulation of amyloid-β (Aβ) plaques, which are believed to play a central role in AD.[134]

In addition, the National Institute of Aging and the Alzheimer's Association have worked over the past decade to better define and identify the preclinical (i.e., without symptoms) stages of AD.[135] In 2011, the working group "created separate diagnostic recommendations for the preclinical, mild cognitive impairment, and dementia stages of Alzheimer's disease."[136] In 2018, on the

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[127] Liesi E. Hebert et al., *Alzheimer Disease in the United States (2010–2050) Estimated Using the 2010 Census*, 80 NEUROLOGY 1778, 1778 (2013).

[128] *See* John R. Hodges, *A Decade of Discovery and Disappointment in Dementia Research*, 11 NATURE REVIEWS NEUROLOGY 613, 614 (2015).

[129] Simon F. Eskildsen et al., *Structural Imaging Biomarkers of Alzheimer's Disease: Predicting Disease Progression*, 36 NEUROBIOLOGY AGING S23, S23 (2015); Massimo S. Fiandaca et al., *The Critical Need for Defining Preclinical Biomarkers in Alzheimer's Disease*, 10 ALZHEIMER'S & DEMENTIA S196, S200–01 (2014); Shannon L. Risacher & Andrew J. Saykin, *Neuroimaging and Other Biomarkers for Alzheimer's Disease: The Changing Landscape of Early Detection*, 9 ANN. REV. CLINICAL PSYCHOL. 621, 625 (2013).

[130] *See* Fiandaca et al., *supra* note 129, at S199; Risacher & Saykin, *supra* note 129, at 637.

[131] Michael W. Weiner et al., *2014 Update of the Alzheimer's Disease Neuroimaging Initiative: A Review of Papers Published Since Its Inception*, 11 ALZHEIMER'S & DEMENTIA e1, e1–e2 (2015).

[132] *See* Fiandaca et al., *supra* note 129, at S197.

[133] *See, e.g.*, Lucie Yang et al., *Brain Amyloid Imaging—FDA Approval of Florbetapir F18 Injection*, 367 NEW ENG. J. MED. 885, 885 (2012).

[134] *Id.*

[135] *See* Reisa A. Sperling et al., *Toward Defining the Preclinical Stages of Alzheimer's Disease: Recommendations from the National Institute on Aging−Alzheimer's Association Workgroups on Diagnostic Guidelines for Alzheimer's Disease*, 7 ALZHEIMER'S & DEMENTIA 280, 280 (2011).

[136] Jack et al., *supra* note 82, at 535.

basis of ongoing neuroscience research, the same working group published a landmark paper in which it proposed a diagnosis of AD that was "*not* based on the clinical consequences of the disease (i.e., symptoms/signs)," but which "shifts the definition of AD in living people from a syndromal to a biological construct."[137] The proposed "research framework focuses on the diagnosis of AD with biomarkers in living persons."[138] Specifically, AD would require a finding of both Aβ plaques and pathologic tau deposits.[139]

More broadly, the framework introduced an "Alzheimer's continuum," which would include both those with Alzheimer's disease (i.e., those with the established biomarkers) *and* those in the category of "Alzheimer's pathologic change," an "early stage of Alzheimer's continuum, defined *in vivo* by an abnormal Aβ biomarker with *normal* pathologic tau biomarker."[140] Notably, and important for the analysis to follow in the judicial context, under this framework an individual (such as a judicial nominee) could be both symptom-free and diagnosed as being on the Alzheimer's continuum.[141]

Under the new framework, for many individuals there will be a lengthy period (fifteen to twenty years) of brain change *without symptoms*.[142] As lead author Clifford Jack observed: "In every other area where biomarkers exist—hypertension, diabetes, cancer—the disease identified in an asymptomatic individual is still the disease. If cancer is detected on a screening colonoscopy, it's still cancer, even if the person doesn't have symptoms."[143]

The transition from symptom-based to biologically based detection of AD offers clinicians an opportunity to intervene earlier in the progression of the disease.[144] The proposed framework would fundamentally change the definition of AD; not surprisingly, it has been heavily debated.[145] Chief amongst the

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[137] *Id.* (emphasis added).

[138] *Id.*

[139] *See id.* at 536.

[140] *Id.* at 539, 541 (emphasis added).

[141] *Id.* at 548.

[142] Nina Silverberg et al., *NIA Commentary on the NIA-AA Research Framework: Towards a Biological Definition of Alzheimer's Disease*, 14 ALZHEIMER'S & DEMENTIA 576, 576 (2018). "Postulated Disease Continuum. The current recognized biomarkers are positive 20−30 years prior to symptoms. Risk factors that can impact symptoms are present throughout the lifecourse. Prospective biomarkers will emerge more closely in time with symptoms." *Id.* at 577.

[143] *New Definition of Alzheimer's Hinges on Biology, Not Symptoms*, ALZFORUM (Apr. 13, 2018), https://www.alzforum.org/news/research-news/new-definition-alzheimers-hinges-biology-not-symptoms [https://perma.cc/3VUU-DRYD].

[144] *See* Sperling et al., *supra* note 135, at 181.

[145] *See generally, e.g.*, Mario D. Garrett & Ramón Valle, *A Methodological Critique of the National Institute of Aging and Alzheimer's Association Guidelines for Alzheimer's Disease, Dementia, and Mild Cognitive Impairments*, 15 DEMENTIA 239 (2016) (questioning the validity of certain biomarkers and their ultimate progression to AD).

critiques is that it is too early to use biomarkers because the "extent and quality of diagnostic biomarker data currently available is still in its infancy."[146]

For purposes of evaluating judicial cognitive function, the availability of new biomarkers—even if they were to be used for assessing risk, not diagnosis—raises both promise and peril. I discuss this further in Part V.

IV. JUDICIAL COGNITIVE IMPAIRMENT: THE SCOPE OF THE PROBLEM

Part II established that America's judiciary is aging.[147] Part III established that, on average, age is associated with cognitive decline in domains of cognitive function that are relevant to judging.[148] But it does not necessarily follow that a sufficiently large number of sitting judges are, or will become, cognitively impaired to the point that they cannot execute their duties. This is because judges may be a subgroup with particularly strong cognitive reserve; because judges may effectively self-police and leave the bench before significant decline; and/or because the existing system adequately intervenes when needed.

Part IV explores these possibilities, in particular whether self-policing and existing policies for addressing judicial cognitive decline are adequate as presently designed. Section A argues that there is reason for concern about age-related cognitive decline in judges. Section B then considers at length whether the current federal system is adequate to address instances of judicial cognitive decline.

A. *Concerns About Judicial Age-Related Cognitive Decline*

Although the thrust of my argument is that we should be empowering aging judges, it is important to clarify that I am *not* arguing there is no cause for concern. Although there is no direct evidence available to estimate the prevalence of cognitive decline in state and federal judges, there is some empirical data suggesting this is the case,[149] and a strong circumstantial case can be made that commentators' concerns are not unreasonable. At the outset, though, because childhood intelligence and education levels are protective factors against dementia,[150] it seems plausible that judges as a group might have lower incidence rates of mild cognitive impairment and Alzheimer's disease.[151]

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[146] *Id.* at 241.

[147] *See supra* Part II.

[148] *See supra* Part III.

[149] *See, e.g.*, David L. Schwartz, *Practice Makes Perfect? An Empirical Study of Claim Construction Reversal Rates in Patent Cases*, 107 MICH. L. REV. 223, 258 (2008). (suggesting in Figure 7 that "there may be a relationship between age of the district court judge and the quality of a district court judge's patent decision-making (as measured by Federal Circuit claim construction reversal)").

[150] Valenzuela & Sachdev, *supra* note 115, at 442.

[151] *See, e.g.*, Xiangfei Meng & Carl D'Arcy, *Education and Dementia in the Context of the Cognitive Reserve Hypothesis: A Systematic Review with Meta-Analyses and Qualitative*

But even if we assume that judges have a lower rate of AD than the general public, it leaves open the question of whether that rate is still high enough to warrant concern, and whether the deficits that attach to normal cognitive aging—which might not affect daily living activities—are of concern when carrying out the judicial function.

Put another way: does the judicial nomination and selection process select only for Super Agers? If all judges were Super Agers, there would be little cause for concern with aging judges from the perspective of mental decline on the bench.

Without direct evidence, it is impossible to rule out the possibility. If 10% of the population are Super Agers, then it is mathematically possible that all of the 30,000 state judges and 1700 Article III judges are Super Agers.[152] However, this seems highly unlikely.

First, despite the fantasy on airport bookshelves that we can "All Become 'Super Agers,'"[153] Super Agers comprise only 10−20% of the population.[154] This does not mean that the other 80–90% of the population will develop a form of dementia, or even mild cognitive impairment, but it does mean that skills such as memory recall almost always decline with age.[155] Second, although possible, it seems implausible that the legal system would be selecting for Super Agers as judges when scientists do not yet know the factors that distinguish those who will age normally versus those who will be high functioning outliers.[156]

In addition, multiple interviews with physicians who diagnose dementia suggest that they are regularly (albeit not frequently) contacted by concerned colleagues and friends of judges.[157] Notably, it is often not the judges themselves who reach out, but someone who is concerned about the judge.[158] While my limited number of interviews does not constitute a representative sample, it is worth noting that these care providers agree with the general

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Analyses, 7 PLOS ONE 1, 1 (2012). However, the relationship between education and age-related cognitive decline is still being debated. *See* Whalley et al., *supra* note 112, at 375.

[152] *See* INST. FOR THE ADVANCEMENT OF THE AM. LEGAL SYS., FAQS: JUDGES IN THE UNITED STATES 3, https://iaals.du.edu/sites/default/files/documents/publications/judge_faq.pdf [on file with *Ohio State Law Journal*] ("There are approximately 30,000 state judges, compared to only 1,700 federal judges.").

[153] Lori Russell-Chapin, *How Can We All Become "Super Agers?,"* PSYCHOL. TODAY (Oct. 22, 2017), https://www.psychologytoday.com/us/blog/brain-waves/201710/how-can-we-all-become-super-agers [https://perma.cc/5MJK-9ZGG] (suggesting that readers can "[p]ractice these simple strategies to keep the brain young").

[154] Price, *supra* note 104.

[155] Rogalski et al., *supra* note 107, at 30.

[156] *Id.* at 35.

[157] Interviews with care providers in psychology, psychiatry, and neurology (Aug.–Nov. 2018) [on file with author].

[158] *Id.* This is consistent with a more general pattern, in which the affected individual is not the one who first sees the symptoms of possible dementia. *See* David Knopman et al., *Patterns of Care in the Early Stages of Alzheimer's Disease: Impediments to Timely Diagnosis*, 48 J. AM. GERIATRICS SOC'Y 300, 302 (2000).

proposition that there is reason to be concerned about undiagnosed cognitive decline on the bench.[159] This is in part, as discussed above, because decline is often subtle and hard to detect.[160]

For these reasons, as well as the extensive record (reviewed below) of documented instances of judicial cognitive decline,[161] I will proceed on what I take to be a reasonable assumption that all judges are not Super Agers, that some judges will experience normal cognitive aging, and that some judges will experience either mild cognitive impairment or some form of more progressive dementia.

B. *Responding to Judicial Cognitive Decline*

Concerns over mentally incompetent judges have been recognized since the time of the country's founding,[162] and a variety of solutions have been implemented to address these concerns.[163] As legal scholar Charles Geyh has observed, "As the sheer number of attempts at legislation imply, judicial disability has posed a chronic problem for Congress."[164]

Public allegations of the mental incompetence of judges are rare,[165] but this "reveal[s] little about the true extent of the problem"[166] because there has traditionally been a taboo on openly discussing the issue of declining capacity

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[159] Interviews with care providers in psychology, psychiatry, and neurology (Aug.–Nov. 2018) [on file with author].

[160] GLENN E. SMITH & MARK W. BONDI, MILD COGNITIVE IMPAIRMENT AND DEMENTIA: DEFINITIONS, DIAGNOSIS, AND TREATMENT 15–16 (2013).

[161] *See infra* Part IV.B.

[162] *See* John S. Goff, *Old Age and the Supreme Court*, *in* SELECTED READINGS: JUDICIAL DISCIPLINE AND REMOVAL 30–31 (Glenn R. Winters ed., 1973). One historical moment of note is a letter by Justice William Johnson (the "First Dissenter") to Thomas Jefferson on Dec. 10, 1822. Mark R. Killenbeck, *No Bed of Roses: William Johnson, Thomas Jefferson and the Supreme Court, 1822−23*, 37 J. SUP. CT. HIST. 95, 95 (2012). The twenty-page letter contained many points, but most relevant for my purposes was his observation that several of his colleagues on the bench were mentally unfit for service: "Cushing was incompetent . . . Patterson was a slow man & willingly declined the trouble . . . ." *Id.* at 104.

[163] *See, e.g.*, Emily Field Van Tassel, *Resignations and Removals: A History of Federal Judicial Service—and Disservice—1789−1992*, 142 U. PA. L. REV. 333, 395 (1993) ("Congress has occasionally acted over the years to deal with these problems by giving aging judges incentives to retire.").

[164] Charles Gardner Geyh, *Informal Methods of Judicial Discipline*, 142 U. PA. L. REV. 243, 275 (1993).

[165] *See* Jackson Hobbs, "*So Delicate a Subject": Maintaining an Independent and Self-Regulated Judiciary in the Face of Judicial Aging and Disability*, 85 UMKC L. REV. 805, 813 (2017) ("The statistics illustrate that of the 5,277 allegations investigated, merely 190, or 3.6%, of the allegations involved mental or physical disability.").

[166] Geyh, *supra* note 164, at 275.

of fellow judges.[167] Indeed, in 1971, the Supreme Court chided a circuit court for broaching "so delicate a subject" when the circuit court raised concerns about the mental competence of a state court judge in a published opinion.[168] However, judges have since noted that "[w]e have come a long way from the day when discussion of a judge's mental state was considered a breach of decorum."[169]

Here, I review several (non-mutually exclusive) avenues by which the challenge of cognitively impaired judges can be addressed within the current system: (1) create incentives for the judge to voluntarily choose retirement, (2) involuntarily remove the judge on the basis of disability pursuant to 28 U.S.C. § 372; (3) file a formal complaint under the Judicial Conduct and Disability Act; (4) pursue post-hoc relief via a due process claim; and (5) apply informal pressures to encourage the judge to retire. The available evidence suggests that the last option, informal mechanisms, remains the primary method by which most issues are resolved.

1. *Creating Incentives for Judicial Retirement*

A straightforward way to address the issue of aging judges is to create stronger incentives for retirement. This was the first response from Congress, in 1869, when it passed a law to allow judges to retire at age seventy and receive the same salary as when active.[170] The Act spurred a number of retirements.[171]

The introduction of senior status in 1919,[172] however, changed the nature of retirement. Judges were now able to continue to serve on a reduced caseload.[173] Emily Field Van Tassel's extensive study on judicial retirement

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[167] *See* United States v. Washington, 98 F.3d 1159, 1166 (9th Cir. 1996) (Kozinski, J., concurring) (referencing an earlier time "when discussion of a judge's mental state was considered a breach of decorum").

[168] Slayton v. Smith, 404 U.S. 53, 53–54 (1971) (per curiam).

[169] *Washington*, 98 F.3d at 1166 (1996) (Kozinski, J., concurring). Indeed, several judges have discussed these concerns at length, but this discussion appears to remain the stuff of concurrences and dissents. *See, e.g.*, Deere v. Cullen, 718 F.3d 1124, 1162–63 (9th Cir. 2013) (Fletcher, J., dissenting) ("[T]his is not a perfect world. Some judges stay on too long. They decide cases when they are no longer competent to do so."); *Washington*, 98 F.3d at 1166 ("With the size of the federal judiciary steadily on the rise, and with advances in medical technology making it possible to survive disabilities that would have been fatal in earlier days, the delicate question of whether a judge has (or in the past had) the mental capacity to sit will become increasingly troublesome.").

[170] Act of Apr. 10, 1869, ch. 22, § 5, Pub. L. No. 41-22, 16 Stat. 44, 45 ("[A]ny judge of any court of the United States, who . . . having attained to the age of seventy years, [shall] resign his office, shall thereafter, during the residue of his natural life, receive the same salary which was by law payable to him at the time of his resignation.").

[171] Van Tassel, *supra* note 163, at 395–97 (noting that before this Act, and "[l]acking any provision for retirement, many judges remained on the bench after becoming incapable of serving adequately").

[172] *See id.* at 397.

[173] *Id.* at 397–98.

finds that senior status, as opposed to full resignation of duties, is by far the more attractive option.[174] Van Tassel finds that "[f]rom 1980 to 1989, at least 197 judges retired from regular active service (took 'senior status')," while only "fourteen 'retired from the office.'"[175] In the period 1990 to 1992, 86% of judges elected senior status over outright retirement.[176]

If moving to senior status required a cognitive assessment, we could have more confidence that there was a correlation between taking senior status and likelihood of remaining mentally sharp. But as present, to move to senior status, a "judge simply writes a letter to the President stating that on a particular date the judge intends to retire from regular active service, having met the requisite age and service requirements, and that the judge intends to continue to render substantial judicial service as a senior judge."[177]

Historically, there has been concern that retirement alone would not be enough to account for disabled judges.[178] In 1809, Congress passed a law "requiring the Supreme Court justice assigned to the circuit in which there was a disabled district judge to issue certiorari to the clerk of the district court to certify all pending matters to the next circuit court."[179] In 1850, further Congressional action required that a district judge from another district be brought in to carry out the work of the disabled judge.[180]

2. *Involuntary Removal for Disability*

In 1919, Congress first gave to the President the power to appoint a new, temporary judge in a district where a disabled judge sits.[181] The current statute reads:

> (b) Whenever any judge of the United States appointed to hold office during good behavior who is eligible to retire under this section does not do so and a certificate of his disability signed by a majority of the members of the Judicial Council of his circuit in the case of a circuit or district judge, or by the Chief Justice of the United States in the case of the Chief Judge of the Court of International Trade, or by the chief judge of his court in the case of a judge of

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[174] *See id.* at 399.

[175] *Id.* at 399.

[176] *Id.* Though Van Tassel notes that the retirements may be a conduit to return to lucrative private practice, Van Tassel cautions that more research is required: "[F]urther study should be done of both senior judges and judges who have retired from the office in the twentieth century." *Id.* at 400; *see also* Mary L. Clark, *Judicial Retirement and Return to Practice*, 60 CATH. U. L. REV. 841, 896 (2011).

[177] Block, *supra* note 27, at 536.

[178] Van Tassel, *supra* note 163, at 400 ("Retirement provisions did not solve all the problems of incapacity on the bench.").

[179] *Id.* at 400–01.

[180] *Id.* at 401.

[181] Act of Feb. 25, 1919, ch. 29, § 6, Pub. L. No. 65-265, 40 Stat. 1156, 1158; *see also* Van Tassel, *supra* note 163, at 397 n.301.

> the Court of International Trade, is presented to the President and the President finds that such judge is unable to discharge efficiently all the duties of his office by reason of permanent mental or physical disability and that the appointment of an additional judge is necessary for the efficient dispatch of business, the President may make such appointment by and with the advice and consent of the Senate.[182]

Under this provision, the President's appointment is temporary,[183] and the disabled judge will be treated as a junior colleague to the temporarily appointed judge.[184]

Although the potential for involuntary removal exists, it has rarely been used.[185] The available historical record suggests that this involuntary disability provision has been invoked six times.[186] It is rarely invoked because, as discussed below, informal application of pressure to retire is the primary mechanism by which the system responds to problem judges.[187]

3. *Due Process Claims on Grounds of Judges' Mental Competence*

The Fifth and Fourteenth Amendments of the U.S. Constitution guarantee that no person shall be deprived of "life, liberty, or property, without due process of law."[188] Courts typically "presume . . . that constitutional due process requires an impartial and mentally competent judicial officer."[189] However, the Supreme Court has never explicitly so held.[190] It has held that, with respect to jurors, "a defendant has a right to 'a tribunal both impartial and mentally

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[182] 28 U.S.C. § 372 (2002).

[183] *Id.* ("Whenever any such additional judge is appointed, the vacancy subsequently caused by the death, resignation, or retirement of the disabled judge shall not be filled.").

[184] *Id.* ("Any judge whose disability causes the appointment of an additional judge shall, for purpose of precedence, service as chief judge, or temporary performance of the duties of that office, be treated as junior in commission to the other judges of the circuit, district, or court.").

[185] *See* Geyh, *supra* note 164, at 275.

[186] *Id.*

[187] *See infra* Part IV.B.4.

[188] U.S. CONST. amend. V; U.S. CONST. amend. XIV.

[189] Petition for Writ of Certiorari at 14, Bisno v. N. Beverly Park Homeowners Ass'n, 552 U.S. 950 (2007) (No. 07-1631), 2007 WL 2261607; *see also* Smith v. Cox, 435 F.2d 453, 460 (4th Cir. 1970) ("We have no doubt that the due process clause of the fourteenth amendment guarantees that the determination of sentence be made by a judicial officer mentally competent to carry out his duties.").

[190] *See* Petition for Writ of Certiorari, *supra* note 189, at 14.

competent to afford a hearing.'"[191] The Court has had the opportunity to extend this holding explicitly to judges but declined to do so.[192]

Regardless of the constitutional status of claims about the mental capacity of a presiding judge, courts may be skeptical of such claims' factual merits.[193] In *Slayton v. Smith*, a per curiam Supreme Court chastised as procedurally irregular the Fourth Circuit's paean to the due process requirement of a mentally competent judiciary where the state judge in question had resigned within nine months of the defendant's conviction allegedly after a complaint to the governor regarding his competence.[194] Moreover, courts have been skeptical of allegations of mental incompetence in judges in other contexts of review.[195]

In *United States v. Washington*,[196] three Indian Tribes sought relief under Federal Rule of Civil Procedure 60(b)(6)[197] after a newspaper article reported that the relevant judge had Alzheimer's disease when he ruled against them.[198] The article was published several years after the judge's death and many years after the proceeding.[199] In rejecting the Tribes' motion for relief, the Ninth Circuit expressed skepticism about the evidence.[200] The court pointed to the high abuse of discretion standard under which it was reviewing the case, as well as the fact that the judge's son said his father had been competent at the time of the ruling,[201] and that the judge was open about his medical problems during the

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[191] Tanner v. United States, 483 U.S. 107, 126 (1987) (quoting Jordan v. Massachusetts, 225 U.S. 167, 176 (1912)). Note that in both *Tanner* and *Jordan* the Supreme Court rejected the challenge to the jurors' competence. *Id.*; *Jordan*, 225 U.S. at 177.

[192] *See, e.g.*, N. Beverly Park Homeowners Ass'n v. Bisno, 54 Cal. Rptr. 3d 644 (2007), *cert. denied*, 552 U.S. 950 (2007). It is, of course, entirely possible that, given the highly contested factual records in these kinds of cases, the Court is either (1) skeptical of the factual merits in the cases that it has been presented with thus far, or (2) waiting for an adequately clear factual record to avoid ruling on facts, or both.

[193] *See, e.g.*, Slayton v. Smith, 404 U.S. 53, 54 (1971) (per curiam).

[194] *See id.*; *see also Cox*, 435 F.2d at 459.

[195] *See, e.g.*, Deere v. Cullen, 718 F.3d 1124 (9th Cir. 2013) (federal habeas relief); United States v. Washington, 98 F.3d 1159 (9th Cir. 1996) (review under Federal Rule of Civil Procedure 60(b)(6)).

[196] *See generally Washington*, 98 F.3d 1159.

[197] FED. R. CIV. P. 60(b)(6) ("On motion and just terms, the court may relieve a party or its legal representative from a final judgment, order, or proceeding for . . . any other reason that justifies relief.").

[198] *See Washington*, 98 F.3d at 1162.

[199] *See id.*

[200] *See id.* at 1163 ("This is not one of those rare cases where 'extraordinary circumstances' warrant vacating an 'erroneous judgment.' The Three Tribes offer *only* Judge Boldt's death certificate and the *Seattle Post-Intelligencer* Article to support their contention that Judge Boldt may have suffered some mental impairment in 1979." (emphasis added)).

[201] *See id.* at 1162–63 ("Judge Boldt's son also stated in the article that he believed his father to have been mentally competent when he ruled against the tribes in 1979: 'He loved the law.' 'He would not do anything to violate his duties as a judge.'").

proceedings and the appellate court had affirmed his ruling on the merits.[202] Judge Kozinski filed an energetic concurrence in which he argued that the tribes' evidence would have been sufficient, but that Rule 60(b)(6) does not permit relief on grounds of the judge's mental incompetence.[203]

Also illustrative is *Deere v. Cullen*.[204] Judge Fred Metheny was appointed to California's Riverside County Superior Court in 1971.[205] In 1986, at age 64, he sentenced convicted murderer Ronald Deere to death.[206] In 1993, Deere filed a federal habeas corpus petition to challenge his death sentence.[207] While Deere sought federal habeas relief for traditional claims, such as whether he was competent to plead guilty,[208] he also argued that Judge Metheny was mentally incompetent due to dementia at the time of the sentencing.[209]

To support his claim, Deere offered four affidavits from attorneys.[210] These attorneys observed, amongst other things, that there were rumors that Judge Metheny was suffering from Alzheimer's at the time;[211] that Judge Metheny's "faculties seemed to have deteriorated over the years;"[212] and that he made "strange rulings and off-hand remarks."[213] When Deere's attorney attempted to contact Judge Metheny in 1993, Judge Metheny's wife told her that he was ill, could not remember his cases, and had an "Alzheimer's-type condition."[214]

In light of this, Deere requested additional discovery and an evidentiary hearing on Judge Metheny's mental competence at the time of sentencing.[215] A Ninth Circuit Court of Appeals panel, however, upheld the district court's decision to deny Deere's request.[216] In the Ninth Circuit's analysis, the central consideration was that Deere's evidence consisted primarily of anecdotes that, in the Court's view, "reveal[ed] no more than eccentricity as distinguished from dementia."[217] Moreover, the opinion emphasized that Deere "furnished

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[202] *See id.* at 1161–62 ("This court affirmed Judge Boldt because 'the district court correctly resolved this question despite its failure to apply the proper standard.'").

[203] *See id.* at 1164 (Kozinski, J., concurring).

[204] Deere v. Cullen, 718 F.3d 1124 (9th Cir. 2013).

[205] *Fred Ray Metheny; Riverside County Judge, War Hero*, L.A. TIMES (June 27, 1996), https://www.latimes.com/archives/la-xpm-1996-06-27-mn-19045-story.html [https://perma.cc/K6RK-7SYD].

[206] *Deere*, 718 F.3d at 1152.

[207] *Id.* at 1139.

[208] *Id.*

[209] *Id.* at 1140, 1148.

[210] *Id.* at 1148.

[211] *Id.* at 1149.

[212] *Deere*, 718 F.3d at 1149.

[213] *Id.*

[214] *Id.*

[215] *Id.* at 1140.

[216] *Id.* at 1152.

[217] *Id.* at 1127 (alteration added).

nothing—zero—from any mental health professional opining that any of the stories about Judge Metheny might be indicative of mental impairment."[218]

In a lengthy dissent, Judge William Fletcher challenged the majority: "The majority holds that a judge suffering from dementia may sentence a man to death. I disagree."[219] Fletcher provided a detailed review of the record, which suggested many instances of concerning behavior from Judge Metheny around the time of sentencing. For instance, in a local newspaper story in 1987, one anonymous attorney noted that Judge Metheny "appear[ed] to have little grasp of what's going on."[220]

Looking backward, we will never know whether Judge Metheny was or was not mentally competent when he sentenced Ronald Deere to death. But looking forward, I argue in this Article that by expanding the use of cognitive health assessment tools in the judicial system, the system and the judges themselves will have more than speculation and anecdotes on which to base their decisions about judicial competence.

4. *The Judicial Conduct and Disability Act of 1980*

A formal option to address judicial mental incapacity is the Judicial Councils Reform and Judicial Conduct and Disability Act of 1980 ("the 1980 Act").[221] Before the 1980 Act, Congressional debate centered around two primary modes of promoting judicial accountability: "[T]he primary alternatives considered by Congress were (1) establishing a central body of judges with broad powers to discipline and even remove federal judges and (2) formalizing or augmenting the system of decentralized self-regulation already in place by virtue of the general powers of the judicial councils of the respective circuits."[222] During these debates, the Judicial Conference advocated for the decentralized system and argued that its informal mechanisms were already effective.[223] Ultimately, the 1980 Act retained the decentralized self-regulation structure, but provided new procedural avenues for complaints.[224]

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[218] *Deere*, 718 F.3d at 1127.

[219] *Id.* at 1152.

[220] *Id.* at 1156.

[221] Judicial Council Reform and Judicial Conduct and Disability Act of 1980, Pub. L. No. 96-458, 94 Stat. 2035.

[222] Jeffrey N. Barr & Thomas E. Willging, *Decentralized Self-Regulation, Accountability, and Judicial Independence under the Federal Judicial Conduct and Disability Act of 1980*, 142 U. PA. L. REV. 25, 29 (1993) (citations omitted).

[223] *In re* Complaint of Judicial Misconduct, 570 F.3d 1144, 1148 (9th Cir. 2009), *as corrected* (June 26, 2009).

[224] *See id.* at 1153. The Council "pointed out to Congress that the circuit council, acting solely under the administrative authority conferred upon them by section 332, and without outside intervention, had established administrative procedures for handling complaints of judicial misconduct, and had for many years dealt quietly, informally, and effectively with 'problem judges'—disabled judges, alcoholic judges, senile judges, procrastinators." *Id.* at 1148.

The 1980 Act established an administrative procedure to handle complaints against federal judges for mental disability.[225] Under the procedure, any person can file a complaint "alleging that a judge has engaged in conduct prejudicial to the effective and expeditious administration of the business of the courts, or alleging that such judge is unable to discharge all the duties of office by reason of mental or physical disability."[226]

When the chief judge receives a complaint, he or she determines whether the facts warrant forming an investigatory committee and may conduct a limited inquiry to do so.[227] If the chief judge believes there are sufficient grounds, he or she forms a special committee including themselves and equal numbers of circuit and district judges of the circuit.[228] This special committee conducts an investigation and files a comprehensive written report with the circuit council, with recommendations for action.[229] The council can either dismiss the complaint or take a range of actions including: (1) temporary halting case assignments; (2) private or public censure; (3) certifying the judge's disability pursuant to 28 U.S.C. § 372(b); (4) requesting such judge's voluntary retirement; or (5) ordering the removal from office of term-limited judges.[230] The council may also petition the Judicial Conference to take action, including advising the House of Representatives that impeachment may be warranted.[231]

The complaint to the judicial council is not a request for judicial recusal, but rather "a separate action from the court case itself."[232] This means that the original proceeding can continue, and indeed could be resolved before the judicial council reaches the complaint.[233] One open question in applying the Judicial Conduct and Disability Act is whether normal, age-related cognitive decline would constitute either a physical or mental "disability."[234] However defined, since the Act's enactment, there have been few instances of formal complaints based on judicial disability.[235]

The most extensive study of the Judicial Conduct and Disability Act of 1980 was carried out by a study committee led by Associate Justice Stephen

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[225] *See* 28 U.S.C. §§ 351–64 (2012); *see also* Hobbs, *supra* note 165, at 811–13 (discussing the Judicial Conduct and Disability Act of 1980).

[226] 28 U.S.C. § 351(a).

[227] *Id.* §§ 352, 353(a).

[228] *Id.* § 353(a).

[229] *Id.* § 353(c).

[230] *Id.* § 354(a)(2)–(3).

[231] 28 U.S.C. § 355 (2012).

[232] Hobbs, *supra* note 165, at 810.

[233] *Id.*

[234] *Id.* at 816–17 ("Neither the Breyer Report nor the Amended Guide to Judiciary Policy make a distinction between mental disability and age related cognitive decline.").

[235] Geyh, *supra* note 164, at 276 (finding that the data "does not translate into an excessive number of disabled judges active in the judiciary").

Breyer.[236] Published in 2006, the major conclusion of the report was that the Act was being properly implemented.[237] Notably for the analysis in this Article, "[a]lmost all complaints allege misconduct rather than disability."[238]

Consistent with the intent of the Act's sponsors, "informal efforts to resolve problems remain . . . the principal means by which the judicial branch deals with problems of judicial misconduct and disability."[239] Informal efforts are primarily directed at resolving issues of decisional delay, mental and physical disability, and complaints about the judge's temperament.[240] I turn now to an examination of those informal mechanisms.

5. *Informal Mechanisms*

Although the formal mechanisms discussed above are available, in practice it is informal approaches by which most judicial disability issues are addressed.[241] This use of informal mechanisms is grounded in historical practice.[242] As described in one study, these informal methods can require significant effort:

> Chief Judge Charles Clark [on the Fifth Circuit] used an assortment of techniques to induce three chief district judges then in their mid-80s to step down from their administrative posts. He applied pressure on one judge's secretary, while in another case he made "use of a sort of high-grade blackmail," by threatening "that the Bar Association was going to take the matter to the newspapers." The entire proceeding is tortuous. One chief judge recalled it as being "rather unpleasant, both for the person who goes to see the aged judge and . . . for the aged judge himself." So the Sixth Circuit Council had discovered in the Underwood affair. But, the chief judge declared: "We kept after him, and the largest newspaper in Ohio with statewide circulation published some accounts concerning the way he was handling his work, and

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[236] THE JUDICIAL CONDUCT & DISABILITY ACT STUDY COMM., IMPLEMENTATION OF THE JUDICIAL CONDUCT AND DISABILITY ACT OF 1980: A REPORT TO THE CHIEF JUSTICE (Sept. 2006), *reprinted in* 239 F.R.D. 116 (2006) [hereinafter JUDICIAL CONDUCT DISABILITY].

[237] *Id.* at 5 ("[T]he chief circuit judges and judicial councils have properly implemented the Act in respect to the vast majority of the complaints filed . . . .").

[238] *Id.* at 6. Only 3.6% of the complaints were for physical or mental disability. *Id.* at 25.

[239] *Id.* at 7.

[240] *Id.* at 101. "Barr and Willging's 1991–1992 study for the National Commission pointed to three examples of problems dealt with by informal actions. Disability allegations were the most frequent—'a host of physical and mental symptoms ranging from a memory afflicted by Alzheimer's disease to an inability to speak as a result of a stroke.'" *Id.* (quoting Barr & Willging, *supra* note 222, at 139–40).

[241] Geyh, *supra* note 164, at 276 (finding that "informal actions by the chief circuit and district judges appear to be used with the most frequency and to the greatest effect" when handling cases of disabled judges).

[242] *Id.* at 279 ("[D]erivation of informal action by chief circuit judges in response to episodes of judicial misbehavior may be more firmly rooted in tradition than a formal grant of statutory authority.").

> he finally called me up and said his name had been 'dragged down in the mud far enough,' and that he would retire, and he did retire."[243]

There is a legitimate debate about the effectiveness of these informal mechanisms. For instance, when the issue of mandatory retirement ages for federal judges was debated several decades ago, Judge Irving Kaufman wrote in the *Yale Law Journal* that the problem of failing judicial health "can almost always be managed effectively in a personal and informal manner. On occasion, close colleagues of an afflicted judge suggest that he retire. If necessary, other judges, attorneys, and even family members may approach the ailing jurist. Almost invariably he will acquiesce."[244]

My review that follows is not meant to evaluate the effectiveness of these informal policing methods as compared to the formal methods, but rather to evaluate whether the existing, informal system can be further improved. The informal policing system relies on individual judges to (1) recognize their own impairments and (2) take appropriate steps to leave the bench.[245] But in the general population, individuals often underestimate their cognitive decline, and this happens to judges as well.[246] Absent concrete evidence clearly showing the decline, the chief judge, family, and friends must often rely on arm-twisting.[247]

a. *How Informal Persuasion Works in Practice*

Concerns about mental decline on the Supreme Court are longstanding.[248] Historically, this challenge has been handled collegially.[249] As political scientist David Atkinson observes, "The chief justices have traditionally borne the principal burden of dealing with incapacitated colleagues, which has all too frequently proved to be trying."[250]

A complicating factor for Supreme Court retirements is politics.[251] Even when a judge recognizes his/her cognitive impairment, political commitments may motivate him/her.[252] Justice William O. Douglas, for instance, once told a former law clerk, "'Even if I'm only half alive . . . I can still cast a liberal

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[243] *Id.* at 284 (alteration added) (quoting PETER GRAHAM FISH, THE POLITICS OF FEDERAL JUDICIAL ADMINISTRATION 416 (1973)).

[244] Irving R. Kaufman, *Chilling Judicial Independence*, 88 YALE L.J. 681, 709 (1979).

[245] David J. Garrow, *Mental Decrepitude on the U.S. Supreme Court: The Historical Case for a 28th Amendment*, 67 U. CHI. L. REV. 995, 998 (2000) ("Questions of mental incompetency have confronted the United States Supreme Court as far back as its very first decade of existence.").

[246] *See* DAVID N. ATKINSON, LEAVING THE BENCH: SUPREME COURT JUSTICES AT THE END 3 (1999).

[247] *See, e.g.*, Geyh, *supra* note 164, at 304.

[248] *See* Garrow, *supra* note 245, at 995.

[249] *See* ATKINSON, *supra* note 246, at 3.

[250] *Id.*

[251] *See, e.g.*, *id.* at 8.

[252] *See, e.g.*, *id.*

vote.'"[253] Chief Justice William Howard Taft expressed a similar sentiment in 1929 in a letter to his brother:

> I am older and slower and less acute and more confused. However . . . I must stay on the court in order to prevent the Bolsheviki from getting control . . . the only hope we have of keeping a consistent declaration of constitutional law is for us to live as long as we can.[254]

Whether it is because the judge doesn't recognize his/her own decline, because he/she wishes to stay despite the impairments, or for some other reason, there are examples of judges who continued to serve even though their cognition had significantly declined.[255] The most extensive evidence comes from David Garrow's treatment, in which he concludes that "the history of the Court is replete with repeated instances of justices casting decisive votes or otherwise participating actively in the Court's work when their colleagues and/or families had serious doubts about their mental capacities."[256] Episodes of note include the following:

- Justice Nathan Clifford (1858–1881) suffered from mental illness at the end of his tenure but could not be persuaded to resign in part because of his political commitments.[257]
- Justice Stephen Field's (1863−1897) "mental condition was in noticeable decline . . . [and] the other justices decided Field should be urged to resign."[258] But even with the urging of Justice John Marshall Harlan, Justice Field refused to resign until 1897.[259]
- Justice Joseph McKenna's (1898−1925) "mental alertness began to decline," but he did not resign.[260] As a result, in 1924, the remaining members of the Court decided "that no case would be decided because of McKenna's vote."[261]
- Justice Oliver Wendell Holmes retired only after Justice Hughes brought to his attention that his colleagues thought it best that he retire.[262] David Garrow rightly observes that "even what may have been the single most distinguished career in the entire history of the United

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[253] *Id.*
[254] *Id.* at 96.
[255] For more extensive discussion, see Garrow, *supra* note 245, at 1011–12.
[256] *Id.* at 995.
[257] ATKINSON, *supra* note 246, at 59–60.
[258] *Id.* at 69, 71.
[259] *Id.*; Garrow, *supra* note 245, at 1009. Garrow observes that "little doubt exists that Justice Field remained on the Court for at least two years beyond when his mental incapacity should have prompted his retirement." *Id.* at 1011.
[260] ATKINSON, *supra* note 246, at 93.
[261] *Id.* at 94.
[262] Garrow, *supra* note 245, at 1018.

States Supreme Court ended in an explicitly requested retirement because of increasing mental decrepitude."[263]

- Justice Marshall's final years included embarrassing mistakes during an oral argument that gained national attention.[264]
- Justice William O. Douglas experienced a stroke on December 31, 1974 and did not fully recover.[265] Douglas "repeatedly addressed people at the Court by their wrong names, often uttered nonsequiturs [sic] in conversation or simply stopped speaking altogether."[266] But rather than leave the Court, he stayed, and the rest of the Court (with the exception of Byron White) agreed that they would not allow Douglas to render votes.[267]

Examples such as these have led some commentators to call for reform in judicial terms and retirement.[268] In their argument in favor of introducing Supreme Court term limits, Steven Calabresi and James Lindgren observed:

> Of the twenty-three Justices who served longer than eighteen years and who retired since 1897, fully eight (35%) were mentally or seriously physically decrepit. Perhaps most stark is that nearly half of the last eleven Justices to

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[263] *Id.*

[264] *See* Tony Mauro, *Rehnquist Rumbles as Marshall Stumbles*, LEGAL TIMES (Nov. 6, 1989).

[265] Garrow, *supra* note 245, at 1052.

[266] *Id.* at 1053.

[267] *Id.* at 1054. Chief Justice Burger "was able to secure agreement to suspend the usual certiorari procedure, which requires four votes to hear a case, when the fourth vote cast was by Justice Douglas. Also, Justice Douglas's vote was not allowed be decisive on any important issue." ATKINSON, *supra* note 246, at 174. Garrow further notes Justice White's displeasure with the decision of his colleagues to essentially (if informally) remove Douglas from the court:

> Justice White conspicuously declared that "I am convinced that it would have been better had retirement been required at a specified age" by the Constitution and he volunteered that "a constitutional amendment to that effect should be proposed and adopted." But in the absence of any such provision, White believed that
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> "[i]f the Court is convinced that Justice Douglas should not continue to function as a Justice, the Court should say so publicly and invite Congress to take appropriate action. If it is an impeachable offense for an incompetent Justice to purport to sit as a judge, is it not the task of Congress, rather than of this Court, to undertake proceedings to determine the issue of competence? If it is not an impeachable offense, may the Court nevertheless conclude that a Justice is incompetent and forbid him to perform his duties?"

Garrow, *supra* note 245, at 1055–56 (alteration in original) (quoting Letter from Byron R. White, Justice, to Warren E. Burger, Justice (Oct. 20, 1975) 1, in THE LEWIS F. POWELL, JR. PAPERS (on file with the Washington & Lee University School of Law Library)).

[268] Steven G. Calabresi & James Lindgren, *Term Limits for the Supreme Court: Life Tenure Reconsidered*, 29 HARV. J.L. & PUB. POL'Y 769, 772 (2006).

> leave office (45%) were mentally decrepit and half of the last six Justices to leave office were mentally decrepit in their last years on the Court.[269]

Moreover, Garrow found that "a thorough survey of Supreme Court historiography reveals that mental decrepitude has been an even more frequent problem on the twentieth-century Court than it was during the nineteenth."[270]

One of the additional enabling factors in the modern era is the advent of more law clerks for federal judges.[271] These clerks may be taking on duties that their old, ailing judge should be. David Lat, writing for *Above the Law*, recounts just such an experience he observed with a fellow clerk:

> 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 "Mary," would negotiate over the phone with *Ninth Circuit judges* over how particular cases should come out—a responsibility well beyond the legal research and opinion drafting done by most clerks.
>
> On one occasion, a vote on whether to rehear a case en banc emanated not from the judge's chambers account, but from Mary's personal email account. Even more embarrassingly, it was written not on behalf of the judge or the chambers, but in the first person: "I vote YES to rehearing en banc." A law school classmate of mine who was also clerking for the Ninth that year remarked, "I thought only judges did that. When did Mary get her presidential commission?"[272]

To function, the modern system of informal checks requires a referee such as Chief Judge Frank Easterbrook (7th Cir.), who has taken the lead in asking colleagues to see neurologists when they show symptoms of memory loss.[273] But such safeguards can fail. For example, a joint *Slate*/*ProPublica* investigation found that Judge John Shabaz (Madison, WI) "had trouble reading things out loud, such as plea agreements," and that "[i]n August 2006, before announcing a 20-year sentence, Shabaz forgot to offer a convicted drug dealer

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[269] *Id.* at 817.

[270] Garrow, *supra* note 245, at 995.

[271] *See* Trenton H. Norris, *The Judicial Clerkship Selection Process: An Applicant'sPerspective on Bad Apples, Sour Grapes, and Fruitful Reform*, 81 CALIF. L. REV. 765, 768 (1993) ("Since . . . the first law clerk was hired . . . clerking has grown to the status of an institution. As the practice has gradually gained approval among federal judges, . . . clerks have assumed increasingly influential roles.").

[272] David Lat, *What Is to Be Done About Super-Old Judges?*, ABOVE L. (Jan. 18, 2011), https://abovethelaw.com/2011/01/what-is-to-be-done-about-super-old-judges/ [https://perma.cc/5BBN-2NK6].

[273] *Life Tenure for Federal Judges*, *supra* note 4.

the chance to ask for mercy."[274] The appellate court described this mistake as "the kind of error that undermines the fairness of the judicial process."[275]

These instances are of the sort that draw attention: memory loss, difficulty speaking, noticeable lapse in concentration. But some symptoms of cognitive decline are subtler and perhaps more pernicious.[276] For instance, trial judges must make hundreds of quick decisions about evidentiary objections, motions, and courtroom order.[277] At the trial court level, where a number of discretionary decisions are made and never reviewed, it would be problematic if judges are not as sharp as we want them to be.[278]

Yet systemic data about judicial cognitive decline does not exist, and there are many examples where informal policing of judicial decline works.[279] The Breyer report noted the following report from a chief judge:

> I did face problems of the aging process, that's the most difficult by far to deal with . . . . In most cases, the judge recognized it and got off the bench. But not in all cases. I talked to family members. I got them to approach the judge. You can't slap a formal complaint at the end of his career on an 83-year old judge who has rendered distinguished service . . . . I tried to approach that with great delicacy, through family members.[280]

The anecdotal evidence suggests that informal methods can work, but not always, and that there is much variation from judge to judge.[281] It seems likely that informal conversations are often hampered by a lack of objective data with which to present to the allegedly incompetent judge.

b. *Judicial Wellness*

Some courts have recently begun to promote judicial wellness and make readily available to judges resources for brain health.[282] The Ninth Circuit was the first to establish procedures for providing education and counseling to judges

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[274] *Id.*

[275] United States v. Luepke, 495 F.3d 443, 451 (7th Cir. 2007).

[276] *See* Daniel L. Murman, *The Impact of Age on Cognition*, 36 SEMINARS HEARING 111, 117 (2015) ("The onset of cognitive decline is subtle and hard to determine.").

[277] *See* Pauline T. Kim et al., *How Should We Study District Judge Decision-Making?*, 29 WASH. U. J.L. & POL'Y 83, 92 (2009).

[278] *Id.*

[279] *See, e.g.*, JUDICIAL CONDUCT DISABILITY, *supra* note 236, at 102. On the other hand, another said, "If using the family is a possibility, then you want to try that, but that's a mixed bag." *Id.*

[280] *Id.*

[281] *See id.*

[282] *See* FIX THE COURT, JUDICIAL WELLNESS AND BROADCAST MEDIA POLICIES IN FEDERAL APPEALS COURTS (Feb. 2018) [hereinafter JUDICIAL WELLNESS].

on the possibility of mental decline and other matters.[283] Similar Wellness Committees have now been established in the First, Third, Fifth, and Tenth Circuits.[284] In response to inquiries from the non-profit advocacy organization, Fix the Court, many of these circuits noted that they are specifically focused on issues related to aging judges.[285]

In describing the rationale for the Wellness Committee, Ninth Circuit Chief Judge Phyllis Hamilton observed: "'We're an organization that is required to police ourselves . . . If we wish to retain the goodwill and confidence of the public in our ability to render justice by judges who are unimpaired . . . we have to take steps.'"[286]

The Wellness Committee provides assistance and resources to struggling jurists.[287] The Wellness Committee has also made a Wellness Guide, now in its fourth edition, accessible to the entire federal judiciary.[288] The Wellness Guide has a recommended list of steps for jurists to take when they begin to suspect potential issues in a colleague's ability to perform his/her duties due to mental and/or physical impairment.[289] These steps, broadly, are divided into Recognition, Evaluation, Response, Case Management, and Communications and Public Relations.[290] The guide also provides a dedicated section on aging and problems associated with it (e.g., Alzheimer's), as well as articles and resources on aging.[291]

There is limited evidence to suggest that judges have used Wellness Committee resources.[292] Calls to the Ninth Circuit's judicial counseling hotline were reported to fall into three categories:

> Most are from chief judges seeking advice on how to deal with a judge or staff member whose behavior has been problematic or whose health threatens

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[283] *See* Hobbs, *supra* note 165, at 823 (describing the Ninth Circuit's "regular seminars teaching the judges to recognize symptoms of cognitive decline" and "PALS," its telephone counseling service for judges and their family members).

[284] *See* JUDICIAL WELLNESS, *supra* note 282.

[285] *See id.*

[286] Sudhin Thanawala, *9th Circuit Addresses Senility Among Federal Judges Head On*, MORNING J. (Nov. 7, 2015), https://www.morningjournal.com/news/th-circuit-addresses-senility-among-federal-judges-head-on/article_7a34bb87-67d8-5bdb-a4c7-5d01aac9eb0e.html [https://perma.cc/38EL-H56D].

[287] Gabe Roth, *How to Ensure Aging Federal Judges Remain Sharp*, HILL (Jan. 20, 2018), https://thehill.com/opinion/judiciary/369781-we-must-ensure-that-the-aging-federal-judiciary-remains-unimpaired [https://perma.cc/S8RG-F8WP].

[288] WELLNESS COMM., NINTH CIRCUIT, A WELLNESS GUIDE FOR JUDGES OF THE NINTH CIRCUIT COURTS (rev. July 2015), https://judicialstudies.duke.edu/wp-content/uploads/2019/02/A-Wellness-Guide-for-Judges-of-the-Ninth-Circuit-Courts-Ninth-Circuit-Wellness-Committee-2015.pdf [https://perma.cc/997A-CLDM].

[289] *Id.* at 2–15.

[290] *Id.*

[291] *Id.* at 15–16.

[292] *See* JUDICIAL CONDUCT DISABILITY, *supra* note 236, at 105 (discussing the common reasons why judges participate in counseling programs).

> performance. A second group of calls are from senior judges or their families, seeking either information on dealing with chronic illness or, as to judges still able to perform useful judicial work, on alternative living arrangements because they can no longer live in their homes without assistance. A third group of calls come from judges seeking some sort of treatment program to help deal with a family or personal problem, such as marital conflict.[293]

In sum, Wellness Committees could be a useful advance in addressing judicial cognitive health.[294] But, like other informal mechanisms, they ultimately rely upon the judge's own initiative and self-awareness to be effective. As Atkinson observes based on his historical survey, "there is really nothing the Court collectively can do to remove a colleague who is not amenable to peer group pressure."[295]

* * *

The federal judiciary has put in place several formal mechanisms to address the issue of judicial cognitive decline.[296] But the system still primarily relies on informal mechanisms, now bolstered by wellness committees in many circuits.[297] The available evidence is incomplete, but it suggests that informal approaches are not always successful in effectively identifying and removing judges whose mental faculties are declining.[298] This raises the question of whether another system would be better in its place. The alternative often suggested by commentators, and adopted by a majority of the states, is to implement a mandatory judicial retirement age.[299] In the next Part, I argue that the mandatory retirement age is an inefficient and inequitable solution.

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[293] *Id.*

[294] *See id.*

[295] ATKINSON, *supra* note 246, at 72.

[296] *See* JUDICIAL CONDUCT DISABILITY, *supra* note 236, at 6 (discussing the typical process by which courts process formal complaints).

[297] *See id.* at 7 (noting that informal efforts are the "principal means by which the judicial branch deals with difficult problems of judicial misconduct and disability").

[298] *See* ATKINSON, *supra* note 246, at 72 (noting that "there is really nothing the Court collectively can do to remove a colleague who is not amenable to peer group pressure").

[299] *See* William E. Raftery, *Increasing or Repealing Mandatory Judicial Retirement Ages*, NAT'L CTR. FOR ST. CTS. (2016), https://www.ncsc.org/sitecore/content/microsites/trends/home/monthly-trends-articles/2016/increasing-or-repealing-mandatory-judicial-retirement-ages.aspx [https://perma.cc/P9MX-ZG2E] (noting that thirty-two states and the District of Columbia have a mandatory retirement age for appellate or general jurisdiction courts).

V. MANDATORY RETIREMENT AGES FOR JUDGES AS AN INEFFICIENT SOLUTION TO JUDICIAL COGNITIVE DECLINE

Longstanding debates continue about the value of mandatory judicial retirement, at both the federal and state levels.[300] Many of the critiques and justifications are not directly related to the cognitive ability of the judges.[301] Older judges are different from younger judges in many ways other than cognitive ability.[302] For instance: older judges grew up in a different culture, and may judge with different cultural sensitivities than younger judges; older judges are more distant in age from more youthful parties appearing in court; and older judges, as a cohort, are less diverse along a variety of dimensions than cohorts of younger judges.[303] Here, I set aside those justifications for mandatory retirement and focus narrowly on evaluating mandatory retirement ages with respect to ensuring brain health in the judiciary.

Thirty-two states and the District of Columbia have implemented mandatory retirement ages for their judges,[304] with eighteen states lacking mandatory retirement ages.[305] Appendix Table A1 provides a state-by-state listing of the mandated judicial retirement age.[306] Mandatory retirement ages generally range from 70 to 75 years of age.[307]

Part A briefly summarizes the Age Discrimination in Employment Act and constitutional challenges to state judicial mandatory retirement provisions. Part B describes efforts to introduce mandatory retirement ages at the federal level.

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[300] *See, e.g.*, *id.* (summarizing both sides of the debate on mandatory judicial retirement). These debates often overlap with debates over judicial term limits. *See, e.g.*, Judith Resnick, *Judicial Selection and Democratic Theory: Demand, Supply, and Life Tenure*, 26 CARDOZO L. REV. 579, 580 (2005).

[301] *See, e.g.*, Christopher R. McFadden, *Judicial Independence, Age-Based BFOQs, and the Perils of Mandatory Retirement Policies for Appointed State Judges*, 52 S.C. L. REV. 81, 111 (2000) (noting that many support mandatory retirement because it might make the bench younger and more diverse).

[302] *See id.* (arguing that removing elderly judges could result in less ideological diversity on the bench).

[303] *See* Theresa M. Beiner, *The Elusive (but Worthwhile) Quest for a Diverse Bench in the New Millennium*, 36 U.C. DAVIS L. REV. 597, 598–99 (2002) (arguing that racial and gender diversity on the bench helps to challenge the status quo); McFadden, *supra* note 301, at 111–12 (noting that census data suggests "that mandatory retirement ages will likely remove seasoned minority and women judges from the bench prematurely"); Malia Reddick et al., *Racial and Gender Diversity on State Courts: An AJS Study*, 48 JUDGES' J. 28, 29 (2009) (arguing that mandatory retirement ages disadvantage female and minority judges).

[304] Raftery, *supra* note 299.

[305] *Most States Require Judges to Step Down After 70*, NAT'L CTR. FOR ST. CTS., https://www.ncsc.org/Newsroom/Backgrounder/2010/Mandatory-Retirement.aspx [https://perma.cc/8XQ3-93NB]. These states are Arkansas, California, Delaware, Georgia, Idaho, Illinois, Kentucky, Maine, Mississippi, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Rhode Island, Tennessee, and West Virginia. *Id.*

[306] *See* SHEN, APPENDIX, *supra* note 57.

[307] *Id.*

Part C critiques mandatory judicial retirement ages as out of step with current scientific understanding of the aging brain.

A. *Legal Challenges to State Mandated Judicial Retirement Age*

Mandatory retirement became prominent in American society in late nineteenth and early twentieth centuries.[308] The question of mandatory retirement in the United States continued to be debated in the 1950s,[309] but by the 1960s and 1970s, many older adults worked in industries with mandatory retirement ages.[310]

In response, Congress, through the Civil Rights Act of 1964, directed the Secretary of Labor to "make a full and complete study of the factors which might tend to result in discrimination in employment because of age and of the consequences of such discrimination on the economy and the individuals affected."[311] In 1967, Congress passed the Age Discrimination in Employment Act, in which "individuals who [were] between 40 and 65 years of age [were to be protected] from discrimination in employment."[312] By 1978, Congress had "outlawed mandatory retirement before the age of 70" through the Age Discrimination in Employment Act Amendments of 1978 (ADEA).[313] Through the ADEA, Congress also "rais[ed] the private-sector age of coverage from 65 to 70 and remove[d] the age cap for federal employees to cover individuals age 40 and older."[314] Eventually, the age of coverage cap at 70 was also removed with the Age Discrimination in Employment Amendments of 1986,[315] "abolish[ing] [mandatory retirement] altogether."[316]

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[308] Carole Haber, *Mandatory Retirement in Nineteenth-Century America: The Conceptual Basis for a New Work Cycle*, 12 J. SOC. HIST. 77, 81 (1978). According to historian Carole Haber, "retirement is a relatively new development in American society," with the period of the late nineteenth century to the mid-twentieth century representing a turning point in the "prescribed roles for the old." *Id.* at 77.

[309] *See generally* Stanley C. Hope, *Should There Be a Fixed Retirement Age? Some Managements Say Yes*, 279 ANNALS AM. ACAD. POL. & SOC. SCI. 72 (1952) (listing the advantages of mandatory retirement from the perspective of employees, management, and other 1950s stakeholders).

[310] *See* Till Von Wachter, *The End of Mandatory Retirement in the US: Effects on Retirement and Implicit Contracts* 1 (Univ. of Cal., Berkeley Ctr. for Labor Econs., Working Paper No. 49, 2002) (noting that in the 1960s and 1970s, 40% to 50% of the population worked in industries with mandatory retirement ages).

[311] *ADEA and Amendments*, U.S. EQUAL EMP. OPPORTUNITY COMMISSION, https://www.eeoc.gov/eeoc/history/adea50th/adea.cfm [https://perma.cc/YQ7W-YMEL] (quoting Civil Rights Act of 1964, § 715, Pub. L. No. 88-352, 78 Stat. 241, 265 (July 2, 1964)).

[312] *Id.* (alteration added).

[313] Von Wachter, *supra* note 310, at 1.

[314] *ADEA and Amendments*, *supra* note 311 (alterations added).

[315] *Id.*

[316] Von Wachter, *supra* note 310, at 1. The 1986 ADEA "provide[d] an exemption through 1993 for state and local governments using maximum hiring or mandatory

Until the Supreme Court ruled on the issue in 1991, there was considerable debate about whether a state's imposition of a mandatory retirement age for judges violated the ADEA.[317] But in *Gregory v. Ashcroft*, the U.S. Supreme Court held that Missouri's mandatory judicial retirement age of 70 violated neither the ADEA nor the Equal Protection Clause of the Fourteenth Amendment.[318]

In *Gregory*, Justice O'Connor recognized the "authority of the people of the States to determine the qualifications of their most important government officials."[319] Since older adults are not a "suspect class" of individuals, the heightened standard of "strict scrutiny" was not required.[320]

Since *Gregory v. Ashcroft*, there have been periodic calls for raising the mandatory retirement age for judges,[321] and in recent years, some states have explored raising the age.[322] There have also been renewed attempts to challenge state mandatory retirement laws. In 2016, Minnesota Judge Galen Vaa challenged the constitutionality of Minnesota's mandatory judicial retirement

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retirement ages for firefighters or law enforcement officials." *ADEA and Amendments*, *supra* note 311 (also providing an exemption for colleges and universities "who may involuntarily retire professors at age 70, if the professor is serving under a contract of unlimited tenure"). Over a decade later, the Higher Education Amendments of 1998 amended Section 4 of the Age Discrimination in Employment Act in order to "permit colleges and universities to offer special age-based retirement incentives for tenured faculty members at institutions of higher education." *Id.*

[317] *See, e.g.*, Alan L. Bushlow, Note, *Mandatory Retirement of State-Appointed Judges under the Age Discrimination in Employment Act*, 76 CORNELL L. REV. 476, 478 (1991); Thomas Alden Hauser, Note, *Mandatory Retirement of State Judges and the Age Discrimination in Employment Act*, 51 U. PITT. L. REV. 973, 994 (1990); McFadden, *supra* note 301, at 134; Laura A. Popovitch, Comment, EEOC v. State of Vermont*: Are Appointed State Judges "Employees" under the ADEA?*, 20 MEM. ST. U. L. REV. 697, 698 (1990); Tina E. Sciocchetti, Comment, *Mandatory Retirement of Appointed State Judges—Age Discrimination?*, 85 NW. U. L. REV. 866, 869 (1991); Darlene M. Severson, Note, *Mandatory Retirement of Judges: Law and Policy*—Gregory v. Ashcroft, 17 WM. MITCHELL L. REV. 858, 859 (1991); Lawrence A. Walke, Comment, *Extending Protection under the Age Discrimination in Employment Act to Appointed State Judges*, EEOC v. State of Vermont, 904 F.2d 794 (2d Cir. 1990), 69 WASH. U. L.Q. 359, 359 (1991).

[318] Gregory v. Ashcroft, 501 U.S. 452, 473 (1991).

[319] *Id.* at 463, 472 ("The people of Missouri have a legitimate, indeed compelling, interest in maintaining a judiciary fully capable of performing the demanding tasks that judges must perform. It is an unfortunate fact of life that physical and mental capacity sometimes diminish with age. The people may therefore wish to replace some older judges. Voluntary retirement will not always be sufficient. Nor may impeachment—with its public humiliation and elaborate procedural machinery—serve acceptably the goal of a fully functioning judiciary.").

[320] *Id.* at 470.

[321] *See, e.g.*, Scott Makar, *In Praise of Older Judges: Raise the Mandatory Retirement Age?*, 71 FLA. B.J. 48, 48 (1997).

[322] *See, e.g.*, Gen. Assemb. Con. Res. No. 122, 218th Leg. (N.J. 2018).

age of 70,[323] but the State's motion to dismiss was granted and his appeal denied.[324]

In 2018, Michigan Judge Michael Theile argued that Michigan's constitutional requirement that judges not be elected after age 70 violated the Equal Protection Clause of the United States Constitution.[325]

The district court, despite finding against him, was sympathetic: "In his complaint and in the brief filed in support of his motion for summary judgment, plaintiff argues eloquently that age-based classifications such as this are irrational."[326] A three-judge panel on the Sixth Circuit was also sympathetic to Theile's argument, stating: "One may well sympathize with Theile's assertions that the age 70 limit is 'archaic,' and that 'it is wrong indiscriminately to put people to pasture.'"[327] But the court went on to note that "[r]ational basis review does not assess the wisdom of the challenged regulation."[328] A Sixth Circuit decision eighteen years earlier had previously found Michigan's judicial age limit rationally related to many purposes, including "preserving the competency of the judiciary" and "promoting judicial efficiency and reducing partisan appointments of judges."[329] The Sixth Circuit did not agree with Theile's argument that "the laws and facts have changed so significantly in the decades since" that the previous reasoning was now unsound.[330]

B. *Efforts to Implement a Mandatory Retirement Age for Federal Judges*

Although unsuccessful, there have been multiple attempts to legislate mandatory retirement ages for federal judges.[331] As former Chief Justice of

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[323] Vaa v. State, No. A17-0489, 2017 WL 3974321, at *1 (Minn. Ct. App. Sept. 11, 2017).

[324] *Id.* at *4.

[325] Theile v. Michigan, 891 F.3d 240, 242 (6th Cir. 2018) (citing Breck v. Michigan, 203 F.3d 392, 395 (6th Cir. 2000)).

[326] Theile v. Michigan, No. 17-CV-12066, 2017 WL 6504009, at *1 (E.D. Mich. Oct. 4, 2017), *aff'd*, 891 F.3d 240 (6th Cir. 2018).

[327] *Theile*, 891 F.3d at 244.

[328] *Id.* (quoting *Breck*, 203 F.3d at 395).

[329] *Breck*, 203 F.3d at 397.

[330] *Theile*, 891 F.3d at 245.

[331] *See* Garrow, *supra* note 245, at 996 (noting that there have been "three different occasions over the past sixty-five years" on which members of Congress have attempted to institute mandatory judicial retirement ages); *see also* Robert Kramer & Jerome A. Barron, *The Constitutionality of Removal and Mandatory Retirement Procedures for the Federal Judiciary: The Meaning of "During Good Behavior,"* 35 GEO. WASH. L. REV. 455, 467–71 (1967) (discussing the constitutionality of mandatory retirement for federal judges). Many have also proposed reforms that would eliminate life tenure and replace it with term limits. *See, e.g.*, Paul D. Carrington & Roger C. Cramton, *Reforming the Supreme Court: An Introduction*, *in* REFORMING THE COURT: TERM LIMITS FOR SUPREME COURT JUSTICES 11 (Roger C. Cramton & Paul D. Carrington eds., 2006) (providing an overview of various arguments); *see also* Calabresi & Lindgren, *supra* note 268, at 772 (proposing an eighteen-

Texas Robert W. Calvert once noted, "[T]here is no sound basis for concluding that state judges age, become tired and grow out-of-touch, but that federal judges do not."[332] David Garrow provides a detailed history of these efforts at imposing a federal mandatory retirement age, noting that "on three different occasions over the past sixty-five years, members of Congress have surmounted conventional wisdom and confronted the danger of mental decrepitude[.]"[333] I mention here only some of the key moments.

In the late 1940s, the American Bar Association (ABA) led an effort to galvanize support for mandatory judicial retirement at age 75.[334] In 1954, through the sponsorship of Maryland Senator John Marshall Butler, the issue was debated on the Senate Floor.[335] "Butler explained that '[i]t is the consensus of authoritative opinion that some limit should be placed on service and that the age of 75 strikes the happy medium between experience and senility.'"[336] The amendment passed the Senate but died in the House Judiciary Committee.[337]

In 1965, the ABA again offered recommendations to explore "compulsory retirement of judges with permanent physical or mental disabilities."[338] The ABA worked with Maryland Democratic Senator Joseph D. Tydings in 1968 and 1969 to advance legislation.[339] The issue arose again in the mid-1970s when Georgia Senator Sam Nunn took up the mantle and proposed legislation that would have provided mandatory retirement ages for all federal judges, including the Supreme Court.[340] Notably:

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year term limit on Supreme Court justices); James E. DiTullio & John B. Schochet, *Saving this Honorable Court: A Proposal to Replace Life Tenure on the Supreme Court with Staggered, Nonrenewable Eighteen-Year Terms*, 90 VA. L. REV. 1093, 1096–97 (2004) (arguing that eighteen-year term limits on Supreme Court justices would limit the politicization of the Court while preserving judicial independence).

[332] Garrow, *supra* note 245, at 1058.

[333] *Id.* at 996.

[334] *Id.* at 1031–32 ("The measure's proponents were undaunted, and in mid-December the New York City Bar committee sponsored a speech endorsing its proposals by retired Supreme Court Justice Owen J. Roberts. Justice Roberts's speech was published as the lead article in the very next month's *American Bar Association Journal*, and thereby gave the proposals far and away the widest publicity they had yet received. Regarding mandatory retirement at age seventy-five, Roberts called it 'a wise provision. First of all, it will forestall the basis of the last attack on the Court, the extreme age of the justices, and the fact that superannuated old gentlemen hung on there long after their usefulness had ceased.'").

[335] *Id.* at 1034, 1037.

[336] *Id.* at 1040.

[337] *Id.* at 1041.

[338] *Report of the Standing Committee on Judicial Selection, Tenure and Compensation*, 90 ANN. REP. A.B.A. 446, 446–47 (1966); *Report of the Section of Judicial Administration*, 90 ANN. REP. A.B.A. 587, 587–88 (1966).

[339] Garrow, *supra* note 245, at 1057.

[340] *Id.* at 1059 ("[I]n October 1974 . . . Georgia Democratic Senator Sam Nunn introduced a bill that expanded upon Tydings's 1969 measure to include Supreme Court justices as well. Nunn reintroduced his bill as S 1110 in the new Congress in March 1975, and the very next day Chief Justice Warren E. Burger and the United States Judicial

> Nunn's bill specifically proposed that for any federal judge or justice who was eligible for retirement . . . if a majority of the Judicial Conference found "that such Justice or judge is unable to discharge efficiently one or more of the critical duties of his office by reason of a permanent mental or physical disability, the Conference shall certify the disability of such Justice or judge and issue an order removing such Justice or judge from active service . . . . Such Justice or judge shall then be involuntarily retired from regular active service."[341]

But Senator Nunn's efforts ultimately failed as well.[342]

C. *Mandatory Judicial Retirement Ages and Cognitive Decline*

With regard to cognitive decline, the fundamental arguments against mandatory judicial retirement ages, both of which were made by Judge Theile in his 2018 Michigan challenge, are that (1) some of the judges younger than the retirement age may be in decline, and there is little protection against cognitive decline prior to the retirement age; and (2) some of the judges older than the retirement age are not experiencing cognitive decline and have no opportunity to rebut the presumption that they are mentally unfit to serve.[343] There is no access to systematic judicial health data, so analysis remains necessarily speculative.

It is also important to note that there is some evidence suggesting that experience on the bench improves judging outcomes,[344] and that "judges who last longer on the job tend to be better than those who retire earlier."[345]

Conference announced their support for a somewhat narrower approach that would police 'mental disability' and other shortcomings among lower federal court judges but would not cover justices of the Supreme Court.") (footnotes omitted).

[341] *Id.* at 1059–60 (quoting 121 CONG. REC. 5609, 5721 (1975)).

[342] *Id.* at 1065 ("From the perspective of the Supreme Court's extensive history with mentally decrepit justices, Senator Nunn's well intentioned but constitutionally questionable initiative in the end brought forth no reform or protection whatsoever.").

[343] *See* "Corrected" Brief of Plaintiff-Appellant at *23–28, Theile v. Michigan, 891 F.3d 240 (6th Cir. 2018) (No. 17-2275), 2017 WL 6210343. Theile phrased his argument as follows:

> The current laws are capricious, unjustified and irrational for these indisputable material facts . . . . For every judge who should be removed due to some age-related disability or problem, there are many qualified judges who should not be removed. . . . These arguments for mandatory retirement fail to consider the value of a judge's accumulated wisdom and experience on the bench, and that each person ages differently.

Id.

[344] *See* Benjamin Iverson et al., Learning by Doing: Judge Experience and Bankruptcy Outcomes 7 (Nov. 14, 2018) (unpublished manuscript) (on file with author) (noting that judicial experience "play[s] an important role in determining large Chapter 11 [bankruptcy] outcomes").

[345] Elliott Ash & Bentley MacLeod, Aging, Retirement, and High-Skill Work Performance: The Case of State Supreme Court Judges 41 (Dec. 18, 2017) (unpublished

To start, there is no published neuroscientific research suggesting that a particular age (sixty, sixty-five, seventy-five, and so on) should serve as the bright line cutoff for cognitive decline.[346] In fact, the literature is clear that at older ages there is *wider* individual variation in cognitive abilities.[347] Notably, there are some fifty-year-olds who perform worse than some eighty-year-olds (and vice versa).[348] Bright line age rules are not sensitive to such variation.

An additional concern is that the correlation between age and the judicial functional capacity is not clear, even at a group average level.[349] Atkinson is right that "whether a justice should retire at age sixty-five or seventy or seventy-five does not satisfactorily resolve the basic issue of competence."[350] Certainly, as I discussed above, there are many anecdotes of older judges displaying worrisome cognitive decline.[351] But we could also fill pages with anecdotes of older judges performing their duties wonderfully.[352]

One example is legendary U.S. District Judge Jack Weinstein.[353] At age ninety-six, Judge Weinstein is still productive and writing notable opinions.[354] He annually undergoes a neurological evaluation,[355] and observes that "[m]y memory is not as acute as it was, [but] principles, I know, and my judgment is the same—it may be better."[356] A bright line rule of mandatory retirement at age seventy-five would have deprived the country of the past twenty years of Judge Weinstein's opinions.

Another way in which mandatory retirement ages are at odds with neuroscience research is the gender-uniformity of the age cut-offs. There is

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manuscript) (on file with author). However, it is unclear how the quality of opinions varies with age, as different outcome measures produce different results. *See id.* at 3–4 (noting that quantifiable judicial outputs are affected by "many factors external to the judge").

346 *See* Rogalski et al., *supra* note 107, at 30 (noting that many individuals over the age of eighty retain cognitive abilities comparable to individuals in their fifties or sixties).

347 *Id.*

348 *Id.* ("Increase in the magnitude of interindividual variation in memory performance over the life span. Gray shading reflects ±1SD from the mean and demonstrates the widening of the standard deviation over the life span due to higher interindividual variation in aging. Triangles represent elite performers who may be immune to the common age related declines in episodic memory. Circles represent individual data. Lines represent averages for 35–49, 50–59, 60–69, and 70–85 from left to right, respectively.").

349 *See* Ash & MacLeod, *supra* note 345, at 4 (noting that older judges typically write higher quality opinions at a similar volume than their younger colleagues).

350 ATKINSON, *supra* note 246, at 168.

351 *See supra* Part IV.B.

352 *See, e.g.*, Alan Feuer, *The 96-Year-Old Brooklyn Judge Standing Up to the Supreme Court*, N.Y. TIMES (June 14, 2018), https://www.nytimes.com/2018/06/14/nyregion/the-96-year-old-brooklyn-judge-standing-up-to-the-supreme-court.html [https://perma.cc/CSP4-JDZE].

353 *Id.*

354 *Id.*

355 *Life Tenure for Federal Judges*, *supra* note 4 ("Judge Weinstein of Brooklyn gets an annual neurological checkup, including a CAT scan.").

356 *Id.* (alterations in original).

growing evidence that female brains age at a different rate than male brains.[357] Although it is not yet entirely clear what explains these differences, the evidence suggest that "throughout the adult life span the typical female brain is more youthful."[358] Mandatory retirement is perhaps not only ageist, but also sexist in its lack of recognition that older female judges may, on average, have more youthful brains than their male colleagues.[359]

Finally, in addition to concerns that a bright-line rule excludes older judges who would still perform very well on the bench, there is a parallel concern that the bright-line approach doesn't solve the issue of cognitive decline before the mandatory retirement age. Consider the following anecdote.

In Chicago in 2016, fifty-nine-year-old Cook County Judge Valarie Turner made local headlines for erratic behavior in her courtroom.[360] Judge Turner had a tremendous legal pedigree: she was a graduate of the University of Chicago and worked at Kirkland & Ellis before joining the bench in 2002.[361] But in the summer of 2016, she exhibited erratic behavior in chambers.[362] Most notably, she allowed an attorney to wear the judicial robe and preside over cases.[363] Immediately after this incident, the chief judge in the county removed her from the bench.[364] She subsequently underwent medical evaluations, and was diagnosed with Alzheimer's disease.[365] Mandatory retirement ages do little to address situations such as Judge Turner's, when cognitive decline happens before the mandatory retirement age.

Moreover, this case raises an important point about the need for dignified procedures. The Illinois Judicial Inquiry Board found Judge Turner "mentally unable" to do her work, and when the Board filed a formal complaint to the Illinois Courts Commission, her attorney was critical.[366] In the attorney's view:

> Ms. Turner is charged with no misconduct. She therefore has done nothing that would justify any sanction that could be imposed by the commission. In

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[357] *See* Manu S. Goyal et al., *Persistent Metabolic Youth in the Aging Female Brain*, 116 PROC. NAT'L ACAD. SCI. U.S. 3251, 3251 (2019) ("Prior work has identified many sex differences in the brain, including during brain aging and in neurodegenerative diseases.").

[358] *Id.* at 3253.

[359] *See id.* at 3251 (noting that "in terms of brain metabolism, the adult female brain is on average a few years younger than the male brain").

[360] *See* Steve Mills & Todd Lighty, *Cook County Judge Who Let Clerk Hear Cases Is Deemed 'Mentally Unable' to Do Job*, CHI. TRIB. (Dec. 2, 2016), https://www.chicagotribune.com/news/breaking/ct-cook-county-judge-mentally-unfit-memory-loss-20161202-story.html [https://perma.cc/29NM-VEHM].

[361] *Id.*

[362] *Id.*

[363] Steve Mills & Todd Lighty, *Judge Removed After Allegedly Allowing Lawyer to Hear Cases, Wear Robe*, CHI. TRIB. (Aug. 17, 2016), https://www.chicagotribune.com/news/breaking/ct-judge-lawyer-substitute-met-20160817-story.html [https://perma.cc/H8FY-DFGK].

[364] *Id.*

[365] Mills & Lighty, *supra* note 360.

[366] *Id.*

> essence, the Judicial Inquiry Board has charged her only with having Alzheimer's disease. This sets a terrible precedent for any judge who, like Ms. Turner, has an illness that she did not cause and cannot control.[367]

The attorney's critique highlights the lack of support structures and procedures for handling cognitive decline and raises fundamental questions about the fairness of using judicial misconduct mechanisms to address age-related cognitive decline in judges.

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Mandatory retirement ages for judges may serve other useful purposes, but they are a suboptimal solution for responding to age-related cognitive decline. The nature and rate of change in cognitive abilities vary significantly across individuals, and this variation is not accounted for in systems that rely entirely on mandatory retirement ages as the bulwark against dementia on the bench. As I will discuss in the next Part, the introduction of individualized cognitive assessment offers a more promising alternative.

VI. A PATH FORWARD: TOWARD INDIVIDUALIZED ASSESSMENT OF JUDICIAL COGNITIVE CAPACITY

This Part lays out a vision for the development of a judicial cognitive assessment toolbox for judges. Before making my affirmative proposal, I emphasize three things that I am *not* proposing.

First, I am not arguing that the federal system should adopt the proposed cognitive assessment as a screening device. Indeed, I emphasize that the results of the assessment should not be shared with anyone other than the judge. My proposal is that the cognitive assessment be integrated into the existing federal system. Second, and relatedly, I am not arguing that a single brain scan should be dispositive of a judge's future on the bench. Neuroimaging should be included in the toolbox of assessment tools, but the translation of biomarkers into judicial functional capacity requires careful consideration of many behavioral data points in addition to the brain imaging. Third, I am not suggesting that implementation of these tools should happen immediately. I suggest instead that the development of a judicial capacity evaluation system must be carried out with great care. The most immediate next step should be the development of an interdisciplinary research group to produce a consensus report on best practices and best tools to employ for assessing judicial cognitive health.

Part A frames the discussion by gleaning lessons from the development of regulations for cognitive testing for commercial airline pilots and for aging physicians. Part B then transitions to law, laying out some basic principles that the testing should accomplish. Part C reviews a variety of neuropsychological

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[367] *Id.*

tests that may be of use. Part D discusses emerging neuroscientific biomarkers for Alzheimer's. Part E presents a plan for development and implementation of a judicial capacity toolbox. I emphasize the need for input across disciplines and stakeholders in developing this toolbox.

A. *Learning from Similar Contexts in Other Professions*

Judges are not the only professionals who are aging and confronting the possibility of cognitive testing. In crafting a solution for judges, I start by reviewing what can be learned from the experiences of airline pilots and physicians. What can be seen in both instances is that resistance to an individualized testing regime is rooted in a concern that the proper testing tool/technology for individualized assessment does not exist.

1. *Aging Airline Pilots*

My proposed solution below draws upon wisdom generated by the airline pilot screening program implemented via federal law. In 1958, Congress passed the "Federal Aviation Act," directing the Federal Aviation Administration (FAA) to (amongst other things) consider "the duty of an air carrier to provide service with the highest possible degree of safety" when issuing an airman certificate, air carrier certificate, or other certificate.[368] In 1959, the FAA subsequently set the "Age 60 Rule,"[369] which stated that "an airline pilot, at the age of 60, must discontinue flying aircraft used to carry passengers in airline operations."[370] This meant that "an airline pilot who reaches the age of 60 must retire without regard to his or her excellent health and continued ability to fly."[371] In generating the rule, the FAA noted that "available medical studies show that sudden incapacitation due to heart attacks or strokes becomes more frequent as men approach age sixty and present medical knowledge is such that it is impossible to predict with accuracy those individuals most likely to suffer attacks."[372] The age restriction was quickly challenged, with the plaintiff pilots arguing that "the age sixty limitation is arbitrary and discriminatory and without relation to any requirements of safety."[373] But the Second Circuit found that the age of 60 was reasonable, given the available evidence.[374]

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[368] 49 U.S.C. § 44701(d) (2018).

[369] Fred Tilton, *Should the FAA Change Its Age-60 Rule?*, 44 FED. AIR SURGEON'S MED. BULL. 2 (2006).

[370] Michael R. Kasperzak, *Mandatory Retirement of Airline Pilots: An Analysis of the FAA's Age 60 Retirement Rule*, 33 HASTINGS L.J. 241, 241 (1981).

[371] *Id.*

[372] Air Line Pilots Ass'n, Int'l v. Quesada, 276 F.2d 892, 898 (2d Cir. 1960).

[373] *Id.*

[374] *Id.*

The Age 60 Rule has been challenged on other occasions.[375] In 1970, the Air Line Pilots Association (ALPA) requested that the FAA revoke the Age 60 Rule, and instead replace it with individualized tests of performance.[376] The FAA decided to retain the Age 60 Rule, and again a court challenge failed because the FAA's rulemaking was deemed reasonable given the available evidence.[377]

There were two justifications for the Age 60 Rule. The first was that pilots might be more likely to die suddenly while controlling the plane in flight.[378] That is not relevant to the judiciary concern—a judge who dies in the middle of a trial may cause trauma to those who witness it, but the legal machinery is in place to readily keep proceedings moving at a future date.[379] The second concern for pilots, however, is closely tied to the judicial concern: through an "increased probability of subtle incapacitation that would lead to errors or slowing in perceptual, cognitive, and psychomotor function, and thus compromise safe pilot performance."[380]

The Age 60 Rule was again scrutinized in 1979, when Congress directed the National Institutes of Health (NIH), and in turn the National Academies, to examine whether age 60 was an appropriate cut-off age.[381] I offer a close examination of this National Academies Report because it serves as a useful model for the careful, interdisciplinary research required to develop a new toolbox on judicial cognitive aging. The preface to the National Academies Report frames the issue well:

> In the 21 years since the regulation was adopted, it has been repeatedly challenged as unjustified. Those in favor of the rule, however, contend that persons whose jobs directly involve the public safety, such as airline pilots, bus drivers, firemen, and air traffic controllers bear the burden of proving that increasing their retirement age will not jeopardize the public safety.[382]

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[375] *See* Geneve DuBois, *The Age 60 Rule–It Is Time to Defeat It!*, 70 J. AIR L. & COM. 319, 321 (2005) (discussing attempts to challenge the Age 60 Rule in court or remove it through legislation).

[376] *See* O'Donnell v. Shaffer, 491 F.2d 59, 60–61 (D.C. Cir. 1974).

[377] *Id.* at 60.

[378] DIV. OF HEALTH SCI. POLICY, INST. OF MED., AIRLINE PILOT AGE, HEALTH, AND PERFORMANCE: SCIENTIFIC AND MEDICAL CONSIDERATIONS 128 (1981).

[379] *See* Neil Stern, *Death or Disability of Judges in Civil Litigation—Substitution under Federal Rule 63*, 44 OHIO ST. L.J. 1125, 1125 (1983) (noting that Federal Rule of Civil Procedure 63 provides for the discretionary substitution of judges in the event of their death or disability).

[380] DIV. OF HEALTH SCI. POLICY, *supra* note 378, at 128.

[381] *Id.* at 2 ("The NIH, through the National Institute on Aging, requested that the National Academy of Sciences/Institute of Medicine establish a committee to provide an objective examination, summary, and assessment of scientific knowledge on medical and behavioral aspects of aging and pilot performance and to indicate the extent to which valid conclusions can be reached for the questions of PL 96-171.").

[382] *Id.* at xiii.

The National Academies report found that "[f]or significant acute events (such as cardiovascular events and stroke), age 60 does *not* mark the beginning of a special risk or a special increase in risk,"[383] but also that "[a]vailable evidence suggests that on the average at least some of the skills necessary for the highest level of safety deteriorate with age" and that "there is great variation among individuals in any age group."[384]

In the end, the National Academies took a middle position. On one hand, it was clear that "[i]n its assessment of relevant biomedical and behavioral research, the committee found that variability within an age group is often nearly as great as variability among age groups, and that *usually no single age emerges as a point of sharp decline in function*."[385] On the other hand, however, it recognized that individual tests to determine functional capacity were not readily available.[386] Ultimately the report concluded that a new test was needed, and that an optimal test would examine *functional* capacity, in order to "detect changes in performance that are *operationally significant* and may be more likely to occur among older pilots[.]"[387]

The issue of individualized testing arose again in the early 1980s.[388] At that time, the FAA considered a temporary modification to the Rule, in which pilots over age sixty would be allowed to fly in order that the FAA could collect data on this new cohort—and thus determine if risks increased after age sixty.[389] The FAA decided not to pursue this modified rule, however, largely based on the perceived inability to conduct accurate individual-level assessment of functional capacity.[390] The FAA wrote that:

> There simply are insufficient means of accurately testing whether individual pilots will become incapacitated to gather data sufficient to support a determination on the age 60 rule. As the Medical Director of a large aerospace firm states: "Until more precise methods of detecting physiological changes brought on by aging are developed, no program of data gathering or physical examination will provide meaningful information."[391]

In the early 1990s, the same cycle repeated itself. This time, a new study found that there was "no hint of an increase in the accident rate for pilots of

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[383] *Id.* at 3 (emphasis added).

[384] *Id.* at 4. The report also concluded that "[a]ttention, memory, and ability to solve problems and make decisions alter with age. There may be changes in speed, capacity, or accuracy. However, variations among individuals are great, and performance decrements are not readily apparent for well-practiced skills." *Id.* at 9.

[385] *Id.* at 128 (emphasis added).

[386] DIV. OF HEALTH SCI. POLICY, *supra* note 378, at 135.

[387] *Id.* at 9 (emphasis added).

[388] *See generally* Flight Crewmembers; Limitations on Use of Services, 49 Fed. Reg. 14,692, 14,692–93 (Apr. 12, 1984) (to be codified at 14 C.F.R. pt. 121).

[389] *Id.* at 14,693.

[390] *Id.*

[391] *Id.*

scheduled air carriers as they near their 60th birthday."[392] The FAA held public hearings, but in 1995 decided to stick with the Age 60 Rule, concluding that "[a]fter considering all comments and known studies, FAA concludes that concerns regarding aging pilots and underlying the original rule have not been shown to be invalid or misplaced."[393] Subsequent further legal challenges, on the basis of the Age Discrimination in Employment Act (ADEA) and the Administrative Procedure Act (APA) also failed.[394]

Failing to generate change via agency rulemaking and the courts, lobbyists and interest groups turned their attention to Congress. In 2007, Congress passed the Fair Treatment for Experienced Pilots Act, which stated that "a pilot may serve in multicrew covered operations until attaining *65* years of age."[395] While advocates applauded the change, it didn't address the lingering question of individual capacity.[396] As one commenter on the Act remarked, a retirement age of sixty-five is "just as arbitrary as age sixty."[397] Thus, although the age was raised for airline pilots, the idea of assessing functional capacity on an individual level was tabled.

2. *Aging Physicians*

Similar to judges, doctors in America are getting older, and many are no longer retiring at the traditional age of sixty-five.[398] There is also evidence

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[392] The Age 60 Rule, 58 Fed. Reg. 21,336, 21,336 (Apr. 20, 1993) (to be codified at 14 C.F.R. pt. 121).

[393] The Age 60 Rule, 60 Fed. Reg. 65,977, 65,980 (Dec. 20, 1995) (to be codified at 14 C.F.R. pt. 121).

[394] Prof'l Pilots Fed'n v. FAA, 118 F.3d 758, 760 (D.C. Cir. 1997).

[395] 49 U.S.C. § 44729 (2012) (emphasis added). For discussion of the policy process leading to this legislation, which followed a policy change enacted by the International Civil Aviation Organization (ICAO), see Nicholas D. O'Conner, *Too Experienced for the Flight Deck? Why the Age 65 Rule Is Not Enough*, 17 ELDER L.J. 375, 385–88 (2009).

[396] *See* O'Conner, *supra* note 395, at 375. Moreover, the National Academies also emphasized the need to improve cognitive testing in the FAA program, reporting that "[t]esting of cognitive function (information processing and intellectual functioning) does not fall within the domain of the aviation medical examiner, but it should be addressed in the determination of whether the FAA-mandated examination is adequate to detect decrements in functioning past age 60." DIV. OF HEALTH SCI. POLICY, *supra* note 378, at 134. However, psychological evaluations are not mandatory for airline pilots. Paul Hoversten, *How Are Airline Pilots Tested for Mental Health?*, AIR & SPACE MAG. (Mar. 27, 2012), https://www.airspacemag.com/need-to-know/how-are-airline-pilots-tested-for-mental-health-167046164/ [https://perma.cc/CRK5-T53E].

[397] Jeff Orkin, *Fair Treatment for Experienced Pilots Act—All Good Things Really Do Come to an End!*, 73 J. AIR L. & COM. 579, 599 (2008).

[398] Krista L. Kaups, *Competence Not Age Determines Ability to Practice: Ethical Considerations about Sensorimotor Agility, Dexterity, and Cognitive Capacity*, 18 AMA J. ETHICS 1017, 1017 (2016).

suggesting that cognitive impairment is likely for some older physicians.[399] Thus, physicians find themselves in a similar situation as judges; no mandatory retirement for a growing number of older physicians[400]—some of whom very likely are experiencing cognitive decline that may affect their performance.

The medical community is actively debating whether informal mechanisms of policing are sufficient.[401] It has been found that "adaptive thinking and critical reasoning," "processing speed," "episodic memory," "hearing, visual acuity, depth perception, colour discrimination and manual dexterity" are all "age-related sensory and cognitive changes" that affect the aging process, and work, of doctors.[402] "Skill, ability to discern and memory" are crucial tools for surgeons throughout their careers, but they all tend to deteriorate with age.[403] One of the concerns is that the evidence suggests that physicians' self-evaluations of their skills may overestimate their competence as compared to objective testing.[404]

In June 2018, a group of physicians published an article that drew considerable attention: *Cognitively Impaired Physicians: How Do We Detect Them? How Do We Assist Them?*[405] The authors made a series of observations similar to those made about judges:

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[399] Richard Hyer, *Cognitive Impairment in Older Physicians May Be Widespread*, MEDSCAPE (May 9, 2006), https://www.medscape.com/viewarticle/532007 [https://perma.cc/L8M8-HMQ3].

[400] Ralph B. Blasier, *The Problem of the Aging Surgeon: When Surgeon Age Becomes a Surgical Risk Factor*, 467 CLINICAL ORTHOPAEDICS & RELATED RES. 402, 402 (2009).

[401] *See, e.g.*, N.R. Bhatt et al., *When Should Surgeons Retire?*, 103 BRIT. J. SURGERY 35, 35 (2015) (exploring "the effects of ageing on surgeons' performance, and [identifying] current practical methods for transitioning surgeons out of practice at the appropriate time and age"); Kevin W. Eva, *The Aging Physician: Changes in Cognitive Processing and Their Impact on Medical Practice*, 77 ACAD. MED. S1 (2002) (examining how diagnosticians approach clinical cases like physician review programs); Kaups, *supra* note 398, at 1019–21 (describing formal mechanisms for regulation, such as licensing, certification, and credentialing); Robert T. Sataloff et al., *The Aging Physician and Surgeon*, 95 EAR NOSE & THROAT J. 129 (2016) (reviewing approaches to assessing physicians' cognitive functions and noting that no evaluation system has been standardized); Ronnie Cohen, *Should Older Doctors Be Examined, Tested or Forced to Retire?*, REUTERS HEALTH NEWS (Aug. 11, 2017), https://www.reuters.com/article/us-healthcare-physician-retirement/should-older-doctors-be-examined-tested-or-forced-to-retire-idUSKBN1AR22K [https://perma.cc/2L6E-KGTS] ("The report in JAMA Surgery recommends that healthcare organizations develop protocols for testing doctors of a certain—though undetermined—age for health and competence.").

[402] George A. Skowronski & Carmelle Peisah, *The Greying Intensivist: Ageing and Medical Practice—Everyone's Problem*, 196 MED. J. AUSTL. 505, 505–06 (2012).

[403] Bhatt et al., *supra* note 401, at 35.

[404] David A. Davis et al., *Accuracy of Physician Self-Assessment Compared with Observed Measures of Competence: A Systematic Review*, 296 JAMA 1094, 1100 (2006).

[405] Anothai Soonsawat et al., *Cognitively Impaired Physicians: How Do We Detect Them? How Do We Assist Them?*, 26 AM. J. GERIATRIC PSYCHIATRY 631, 631 (2018).

- There are more older physicians: "Many physicians continue to practice into their 70s and 80s as a consequence of professional satisfaction, increased life expectancy, concerns regarding financial security, and reluctance to retire."[406]
- There are benefits from experience: "[A] physician's effectiveness can be enhanced through acquisition and refinement of experience, knowledge, patient management skills, and clinical judgment."[407]
- There are also, on average, age-related deficits: "In physicians as in all adults, cognitive decline is acknowledged to be a consequence of aging. Extensive evidence documents age-associated neuropathologic brain changes that are manifested in cognitive changes . . . Aging affects multiple domains of cognitive functioning relevant to physicians' professional performance."[408]

Faced with this new landscape, a number of physicians are now advocating for more regular competence testing.[409] The American College of Emergency Physicians (ACEP) has pursued the "concept of senior career development."[410] In 2009, the ACEP Board of Directors approved a set of guidelines that were developed to "enhance and prolong the careers of emergency physicians in the latter stages of their professional lives, to ensure patient safety, to promote continued membership and participation in the College, and to facilitate the transition of emergency physicians from active practice to semi- or full retirement."[411]

The American College of Surgeons in 2016 issued a "Statement on the Aging Surgeon," and in that statement "recommended that, starting at age 65 to 70, surgeons undergo voluntary and confidential baseline physical examination and visual testing by their personal physician for overall health assessment."[412]

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[406] *Id.* at 632.

[407] *Id.*

[408] *Id.*

[409] John K. Iglehart & Robert B. Baron, *Ensuring Physicians' Competence—Is Maintenance of Certification the Answer?*, 367 NEW ENG. J. MED. 2543, 2543 (2012); Associated Press, *Aging MDs Prompt Call for Competency Tests at AMA Meeting*, MOD. HEALTHCARE (June 8, 2015), https://www.modernhealthcare.com/article/20150608/NEWS/306089975/aging-mds-prompt-call-for-competency-tests-at-ama-meeting [https://perma.cc/B5B7-DCWC].

[410] Skowronski & Peisah, *supra* note 402, at 505, 507 n.5.

[411] AM. COLL. OF EMERGENCY PHYSICIANS, CONSIDERATIONS FOR EMERGENCY PHYSICIANS IN PRE-RETIREMENT YEARS (June 2015), https://www.acep.org/globalassets/new-pdfs/policy-statements/considerations-for-emergency-physicians-in-pre-retirement-years.pdf [on file with *Ohio State Law Journal*].

[412] Press Release, Am. Coll. of Surgeons, Statement on the Aging Surgeon (Jan. 1, 2016), https://www.facs.org/about-acs/statements/80-aging-surgeon [https://perma.cc/NZ6T-NA3E].

Some hospital systems have even implemented such testing for the physicians within their system.[413] In 2012, Stanford University Medical Center rolled out a "compulsory . . . physical examination [every two years], cognitive screening and peer assessment of clinical performance for all physicians aged 75 years."[414] The inclusion of the peer assessment component in the examination is significant for the cultural and professional precedents it was based on; peer assessments have been common in medicine since the second half of the twentieth century, with proven feasibility and efficacy.[415] As physicians' and surgeons' colleagues are those who understand the nature of their work best, their opinions on the quality of other doctors' work, while subjective, is an important factor to include in a cognitive assessment. Similarly, the University of Virginia has "intermittent assessments of doctors after 70 years of age."[416] Beginning in 2014, the Sinai Hospital of Baltimore introduced a program to more closely align cognitive evaluations with a discussion on retirement; this plan, known as the "Aging Surgeon Program," is a "2-day confidential evaluation of physical and cognitive function for surgeons" which can be administered to surgeons other than Sinai Hospital employees, as well.[417] Performing poorly on the program's evaluations does not lead to mandatory retirement, however; it leads to a discussion between the surgeon and their hospital, "at which stage the decision to retire would still be with the surgeon, unless there has been gross negligence."[418]

It remains to be seen how the regulation of older physicians will develop, but the trend is clear: many physicians and the institutions they serve recognize that relying upon individual doctors—even with the nudging of their colleagues and friends—may not be sufficient. The same can also be said for aging judges.

B. *Judicial Functional Capacity—What's Required?*

What cognitive abilities are required to discharge efficiently all the duties of a judicial office? The answer to this question requires a sustained conversation amongst legal stakeholders and experts in science and medicine.

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[413] John Sanford, *New Policy to Require Evaluations for Late-Career Practitioners*, STAN. MED. NEWS CTR. (July 16, 2012), http://med.stanford.edu/news/all-news/2012/07/new-policy-to-require-evaluations-for-late-career-practitioners.html [https://perma.cc/49TQ-KWKZ] ("[P]hysicians age 75 or older who practice at Stanford Hospital & Clinics or Lucile Packard Children's Hospital will be required to undergo a series of evaluations to confirm that they are able to continue performing their clinical responsibilities effectively.").

[414] Bhatt et al., *supra* note 401, at 40.

[415] Ronald G. McAuley et al., *Five-Year Results of the Peer Assessment Program of the College of Physicians and Surgeons of Ontario*, 143 CAN. MED. ASS'N J. 1193, 1193 (1990) (demonstrating "the need, feasibility and acceptance" of peer assessment).

[416] Bhatt et al., *supra* note 401, at 40.

[417] *Id.*

[418] *Id.*

Such a working group would need to acknowledge at the outset that this is a difficult problem.

As Charles Geyh has observed from his historical treatment of the topic:

> What to do with an allegedly senile, mentally ill, or otherwise disabled judge is an understandably difficult issue that requires . . . [us] to balance the conflicting interests of protecting the judicial system from the disabled judge, insulating the nondisabled judge from politically motivated efforts at neutralization, and preserving the dignity of the now-disabled judge who may have served the judiciary long and well.[419]

At the heart of the challenge is the translation of a medical diagnosis to a legal function. Other areas of policymaking around dementia illustrate how difficult this translation can be. For instance, should a diagnosis of early-onset Alzheimer's result in immediate revocation of one's driver's license?[420]

We know that a disability in and of itself is not disqualifying. There are, for instance, judges who are legally blind. In 2014, blind Judge Richard Bernstein joined the Michigan Supreme Court.[421] Judge David Tatel, on the U.S. Court of Appeals for the District of Columbia, is also blind.[422] Just as blind justices can, with accommodations, execute their duties faithfully, we need to think carefully about how judges exhibiting cognitive decline might still be able to serve on the bench.

To develop an effective tool for assessing capacity in the judicial brain, we need to first wrestle with the question: Capacity to do what? It is not enough to say that the system cares about something vague such as "how well the judge's brain processes information." This is because on one hand, older judicial brains may process some information less well due to age-related cognitive decline (a loss in fluid intelligence).[423] But on the other hand, older judicial brains may process some information better due to accumulated legal wisdom (a gain in crystallized intelligence).[424]

Second, the toolbox should allow stakeholders to be proactive and not simply reactive. Both the formal and informal mechanisms currently in use rely upon the development of symptoms so significant that others in the courthouse

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[419] Geyh, *supra* note 164, at 271–72.

[420] When I ask my students this in my law and neuroscience course, the class is almost always split in their response. For a challenging case, see generally R. C. Hamdy, *Driving and Patients with Dementia*, 4 GERONTOLOGY & GERIATRIC MED. 1 (2018).

[421] *Blind Judge Makes History, Joins Michigan's Supreme Court*, HUFFPOST (Dec. 28, 2014), https://www.huffpost.com/entry/blind-judge-michigan_n_6386856 [https://perma.cc/48MG-BXQF].

[422] Barbara Slavin, *A Judge of Character: Although He's Blind, David Tatel Skis, Runs and Climbs Mountains. By Summer's End, He May Be a Top Jurist Too.*, L.A. TIMES (July 28, 1994), https://www.latimes.com/archives/la-xpm-1994-07-28-ls-21024-story.html [https://perma.cc/PDA7-S7TP].

[423] *See supra* text accompanying notes 85–92.

[424] *Id.*

notice them.[425] The use of sensitive neuropsychological tests and brain biomarkers offers the system an opportunity to identify risks in advance.[426]

Third, a corollary of an emphasis on prevention is that implementation of the system must ensure privacy and dignity for all judges. One way to accomplish this is to move away from an all-or-nothing (retire or not) approach, in which a judge's duties can be aligned with their cognitive abilities. For instance, a judge might continue to be an excellent resource for certain types of cases, but no longer effective as a trial judge.

With those guiding principles established, we can turn to the specific health information and cognitive functions to test. A useful place to start is to ask: What health information is *already requested* from judges, at the nomination stage?

In the federal system, the form provided to judicial nominees begins with the introductory text: "The physical and mental requirements for Judiciary appointments are in principle that the appointee is currently capable, and for the foreseeable future will be capable of efficient service without evidence of mental or emotional instability."[427]

The form later asks the nominee about "progressive neurological disorders," "current emotional or mental instability," and "any other condition that is disabling or potentially disabling in the foreseeable future."[428] Later in the form, the medical provider is instructed to check either "Yes" or "No" in answer to the question: "Do you find any abnormal condition or disease of . . . [the] brain & nervous system?"[429] This information is important at the nomination stage because it is reasonable to assume that legislators would be hesitant about nominating a judge whose cognitive machinery is potentially faulty. If this information is relevant at the start of a judge's career, surely it remains relevant later.

At the state level, judicial nominee questionnaires suggest that health information is of paramount importance. Of the twenty-five states who had judicial nominee questionnaires available online, eighty percent required some form of health or capacity information.[430] Most states ask a version of this question: "Are you physically and mentally able to perform the essential duties of a judge in the court for which you are applying?"[431] Some states, such as Delaware, ask more probing questions. Delaware's text reads:

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[425] *See supra* Part III (exploring the formal and informal mechanisms by which the federal system identifies and responds to judges experiencing cognitive decline).

[426] *See supra* note 13.

[427] U.S. DEP'T OF JUSTICE, *supra* note 9.

[428] *Id.*

[429] *Id.*

[430] Memorandum from Sydney Diekmann to Shen Neurolaw Lab on Judge Nomination Committee Health-Related Questions (Nov. 13, 2018) (on file with *Ohio State Law Journal*).

[431] This is the formulation as used in Arizona. OFFICE OF THE GOVERNOR, ARIZ., APPLICATION FOR SELECTION TO SUPERIOR COURT JUDGE, https://bc.azgovernor.gov/file/2104/download?token=PdqxhWg_ [on file with *Ohio State Law Journal*].

> Ability to perform the essential functions of a judge means:
>
> (i) The ability to analyze legal issues to reach reasoned legal judgments;
> (ii) The ability to evaluate the credibility of witnesses;
> (iii) The ability to make factual determinations from competing presentations;
> (iv) The ability to make decisions in a timely fashion;
> (v) The ability to serve in a fair, impartial, and unbiased manner;
> (vi) The ability to communicate orally and in writing, in an articulate and logical manner;
> (vii) The ability to demonstrate honesty, integrity, patience, open-mindedness, courtesy, tact, compassion, and humility in performing judicial functions;
> (viii) The ability to exercise control over court proceedings; and
> (ix) The ability to perform the above functions for a minimum of eight hours per day, five days per week (or such other times as Court may be in session), on a consistent basis . . . .
>
> . . . Do you currently possess the physical and mental ability to perform the essential functions of a judge, with or without a reasonable accommodation? . . .
>
> . . . Are you currently using illegal drugs, or do you habitually use illegal drugs on a recreational basis or otherwise? . . .
>
> . . . Do you frequently fail to take any lawful medications which enable you to perform the essential functions of a judge? . . .
>
> . . . Do you typically consume alcoholic beverages to such an extent that your ability to perform the essential functions of a judge is impaired? . . .
>
> . . . Are you a compulsive gambler, or have you ever been diagnosed or received treatment, therapy, or counseling for compulsive gambling?[432]

Just as the Delaware questions are grounded in the essential functions of the judiciary, so too should the proposed cognitive testing system align with judicial function.

One way to identify the core judicial functions is to examine the jurisdiction's judicial code of conduct.[433] Codes of conduct form the basis of our expectations for ethical and effective judicial behavior.[434] The ABA

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[432] DEL. COURTS, QUESTIONNAIRE FOR NOMINEES FOR JUDICIAL OFFICE, https://courts.delaware.gov/forms/download.aspx?id=32018 [on file with *Ohio State Law Journal*].

[433] In this Section, I make reference only to the federal Code of Conduct for United States Judges, but state codes of judicial conduct are roughly equivalent for purposes of the points I am making. *See* SHEN, APPENDIX, *supra* note 57.

[434] *See* Cynthia Gray, *Avoiding the Appearance of Impropriety: With Great Power Comes Great Responsibility*, 28 U. ARK. LITTLE ROCK L. REV. 63, 64 (2005) ("To hold judges to the highest standards of ethical conduct, a code of judicial conduct must cover not just the clear and obvious improprieties but indirect, disguised, or careless conduct that looks like an impropriety to an observer who is informed and thoughtful . . . .").

produced a canon of ethics in 1924,[435] and, in the federal system, relevant canons from the Code of Conduct for United States Judges include:

- Canon 1: "A judge should *maintain and enforce high standards of conduct and should personally observe those standards*, so that the integrity and independence of the judiciary may be preserved."[436]
- Canon 2: "A judge should respect and comply with the law and should *act at all times in a manner that promotes public confidence in the integrity and impartiality of the judiciary*. . . . A judge should not allow family, social, political, financial, or other relationships to influence judicial conduct or judgment."[437]
- Canon 3(A)(1): "A judge should be faithful to, and *maintain professional competence in, the law* and should not be swayed by partisan interests, public clamor, or fear of criticism."[438]
- Canon 3(A)(3): "A judge should *be patient, dignified, respectful, and courteous* to litigants, jurors, witnesses, lawyers, and others with whom the judge deals in an official capacity."[439]

In sum, these codes and our own intuition tell us that a judge must think and feel with great integrity, competence, and sensitivity. These abilities—to think, to feel, and to interact socially with others—are all a part of what the mind sciences refer to as "cognition."[440]

How a judge interprets these canons, of course, is open to much flexibility. Temperament varies. Some judges are quieter, some louder, some harsher, some more lenient. These and many other variations in judicial temperament are typically deemed acceptable. For instance, as Terry Maroney has argued, we are often split as to whether we want "angry judges" on the bench.[441] While the legal community is willing to accept variation in judicial personality,[442] there are limits to acceptable variation in cognitive ability. The toolbox then must be flexible enough to allow for acceptable variation in temperament and intellect.

In developing the toolbox, the following non-exhaustive list of considerations are of import:

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[435] CANONS OF JUDICIAL ETHICS (AM. BAR ASS'N 1924).

[436] CODE OF CONDUCT FOR U.S. JUDGES Canon 1 (JUD. CONF. U.S. 2019) (emphasis added).

[437] *Id.* at Canon 2 (emphasis added).

[438] *Id.* at Canon 3(A)(1) (emphasis added).

[439] *Id.* at Canon 3(A)(3) (emphasis added).

[440] *See generally* MICHAEL GAZZANIGA ET AL., COGNITIVE NEUROSCIENCE: THE BIOLOGY OF THE MIND (3rd ed. 2008).

[441] *See* Terry A. Maroney, *Angry Judges*, 65 VAND. L. REV. 1207, 1208–09 (2012) (introducing "[l]aw's split attitude on judicial anger").

[442] *See generally* Maxine Goodman, *Three Likely Causes of Judicial Misbehavior and How These Causes Should Inform Judicial Discipline*, 41 CAP. U. L. REV. 949 (2013) (providing several illustrations of "judicial misbehavior" across courts).

- What areas of cognition should be the focus of the exam? Existing tools are well equipped to be adapted to the legal context, and to explore several relevant cognitive areas, including the following:
  - *Executive functioning:* Judges need to use their executive function capabilities extensively, and assessment of executive function must thus be a central component of the toolbox.[443]
  - *Memory:* Judges need to remember significant amounts of information and need to be able to access that information regularly.
  - *Emotional Regulation:* Judges need to engage with litigants and courtroom staff in a professional, respectful manner. To the extent that aging affects this ability, emotional capacity should be explored.
- How will we know if a judge has sufficient capacity on selected cognitive dimensions? Even if we were to agree on the areas of cognition, the system would need to develop thresholds to determine judicial capacity. For instance, does a slight decrease in working memory speed mean that the chief judge must be alerted?[444] These line-drawing questions will no doubt be thorny. But it is not impossible to arrive at a reasonable, widely accepted solution. As discussed above, health care systems are already solving this problem in the context of aging physicians.[445]
- What is the menu of options available for declining judges? Much of the literature on judicial retirement has framed the discussion as offering a dichotomy: serve on the bench or retire.[446] However, there are a range of services that judges can provide, and the cognitive skill sets required for these services vary across these judges. The system should consider, as is being done in the physician context, how skill sets (even if in decline) can be matched to meaningful work.
- Who will administer the system?
  - While the Judicial Conference seems a natural home for the administration of this testing regime,[447] it would have to coordinate with regional health care providers to implement the assessments.
  - To what extent will other agencies be involved in the funding and/or administration of the system?
  - Questions of regulatory oversight, agency independence, appeals processes, and the like would need to be considered.
- How can the system ensure privacy and dignity for judges?

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[443] *See supra* text accompanying note 95.

[444] *See supra* text accompanying note 96.

[445] *See supra* Part VI.A.2.

[446] *Compare, e.g.*, Hemel, *supra* note 5, *with* Segall, *supra* note 5.

[447] This is because the Judicial Conference is the "national policy-making body for the federal courts." *Governance and the Judicial Conference*, U.S. CTS., http://www.uscourts.gov/about-federal-courts/governance-judicial-conference [https://perma.cc/9QED-ARPA].

  - Mandatory assessment of judges introduces many questions of information privacy and compliance with relevant privacy laws.
  - In addition, a dignified pathway to retirement must be ensured. For instance, judges could be phased out in ways that would allow them to keep their health record private.
- Which stakeholders should play a role in the design of this system? Stakeholders whose voices should be heard include:
  - Judges and their families, in both state and federal judiciary systems
  - Judicial Council and state equivalents
  - Litigants
  - Professional associations, e.g., American Bar Association
  - Citizens
- How often should the assessment be administered? There are a variety of options for the timing of the assessment, and discussion can draw on relevant medical research related to optimal screening intervals by age.

These design features would, of course, need to be further worked out. Likewise, funding for the program would need to be obtained. But because at least some of the costs would be covered by the existing health care plan, cost should not be a major stumbling block. Once developed, the system would consist of the following components:

- Specific examination protocols for the initial baseline assessment during the nomination process, with clearly established processes for communicating incidental findings and possible identification of neuropathology to the candidate;
- Specific examination protocols for follow-up visits (which may vary by age and availability of experts);
- Specific protocols for maintaining privacy of health data;
- Educational programs, similar to the wellness committees, in each jurisdiction to explain the nature and importance of the brain health assessment; and
- System-wide administration to ensure communication and compliance with the cognitive health assessment requirement.

These components can be compiled into a uniform judicial cognitive health assessment program that (1) collects baseline neuroimaging and neuropsychology data at the nomination stage, and follow-up neuroimaging and neuropsychology data in regular five-year intervals thereafter; and (2) requires that the results of the testing remain private, with no exceptions unless expressly authorized by the judge evaluated.

Designed this way, the system is more about judicial empowerment than it is about judicial reprimand. It mandates the testing, but also mandates the privacy of that testing data. The requirements to operate the system are attainable: access to experts in relevant fields, and a central administrative office to ensure that judges do follow-up testing at the appropriate times and with the

appropriate specialists. The toolbox could be readily added to both the federal and state systems.

C. *Existing Assessment Tools*

It is premature to select the specific tools that would be used for judicial cognitive assessment, but I review a number of potential options in this Section.

Cognitive testing and screening for dementia are conducted regularly in a variety of contexts.[448] To facilitate this screening, there are a number of cognitive tests for older adults.[449] A public health challenge is implementing the proper screening tools, and these challenges might similarly arise in the judicial screening context. For the public, a fear of stigmatization, a lack of awareness of dementia, and a lack of resources (such as cost and time) hinder the widespread acceptance of population screening for dementia.[450] Another hindrance to screening is the lack of a standardized assessment tool to assess cognitive functioning and impairment, or the inaccuracy of currently available screening tools.[451]

Currently, practice guidelines published by the American Academy of Neurology (AAN) in 2001 recommend that cognitive impairment be assessed using screening instruments and neuropsychology testing batteries, and that such assessments may be supplemented with specific cognitive instruments that "focus on limited aspects of cognitive function" (such as executive function) and informant interviews with individuals close to the patient.[452] While the AAN mentions specific tools that may be used for screening purposes, such as

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[448] *See* Henry Brodaty et al., *What Is the Best Dementia Screening Instrument for General Practitioners to Use?*, 14 AM. J. GERIATRIC PSYCHIATRY 391, 391 (2006) ("The detection and early diagnosis of dementia are becoming increasingly important as our population ages. . . . Early diagnosis may enable patients to plan for the future while still competent, initiate enduring power of attorney and guardianship, address safety concerns such as driving ability, and enable caregivers to seek education sooner."); Jennifer R. Harvan & Valerie T. Cotter, *An Evaluation of Dementia Screening in the Primary Care Setting*, 18 J. AM. ACAD. NURSE PRACTITIONERS 351, 351–52 (2006) (describing the need for routine screening for dementia in elderly populations).

[449] *See generally* Stelios Zygouris & Magda Tsolaki, *Computerized Cognitive Testing for Older Adults: A Review*, 30 AM. J. ALZHEIMER'S DISEASE & OTHER DEMENTIAS 13 (2015) (analyzing the merits and weaknesses of the different cognitive assessments for elderly populations).

[450] *See* Steven Martin et al., *Attitudes and Preferences Towards Screening for Dementia: A Systematic Review of the Literature*, 15 BMC GERIATRICS 1, 10 (2015) ("Attitudes and preferences [toward wide-spread dementia screening] are complex and multi-factorial and our findings suggest that population screening for dementia may be acceptable neither to the general public nor to health care professionals.").

[451] *Id.* at 8.

[452] R.C. Petersen et al., *Practice Parameter: Early Detection of Dementia: Mild Cognitive Impairment (an Evidence-Based Review): Report of the Quality Standards Subcommittee of the American Academy of Neurology*, 56 NEUROLOGY 1133, 1139–40 (2001).

the Mini-Mental State Examination (MMSE),[453] a multitude of screening tools are being used and developed.

After its initial development and introduction in 1975, the MMSE has become one of the most frequently used cognitive tests for assessing cognitive impairment across the world.[454] The instrument has been translated and empirically validated for use in many different languages and countries,[455] and certain versions have even been made available for those with disabilities, including impaired vision.[456] The MMSE consists of "19 individual tests of 11 domains covering orientation, registration, attention or calculation (serial sevens or spelling), recall, naming, repetition, comprehension (verbal and written), writing, and construction."[457] The MMSE has historically been used to detect whether or not patients have dementia, although in recent years, the test has been applied to identify patients with mild cognitive impairment (MCI) as well.[458]

Many attempts have been made to empirically validate the diagnostic sensitivity (the ability of the instrument to diagnose those with dementia as having dementia) and specificity (the ability of the instrument to diagnose those without dementia as *not* having dementia) of the MMSE.[459]

One reason why the MMSE may be so widely used is because the score results are relatively easy for healthcare professionals to interpret.[460] The MMSE is championed as the user-friendly test for patients, administrators, and evaluators.[461] Cut-off scores (or "thresholds") exist that denote boundaries between "normal" cognition and impaired cognition.[462] The MMSE is

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[453] *Id.* at 1138.

[454] *See* Alex J. Mitchell, *A Meta-Analysis of the Accuracy of the Mini-Mental State Examination in the Detection of Dementia and Mild Cognitive Impairment*, 43 J. PSYCHIATRIC RES. 411, 411 (2009) ("Since [1975 the MMSE] has become widely used and highly cited.").

[455] *See* J. Olazarán Rodríguez & F. Bermejo Pareja, *There Is No Scientific Basis for Retiring the MMSE*, 30 NEUROLOGÍA 589, 590 (2015) (noting that the MMSE's availability in "so many languages and countries" is a reason for its widespread popularity).

[456] *See generally* Anja Busse et al., *Adaptation of Dementia Screening for Vision-Impaired Older Persons: Administration of the Mini-Mental State Examination (MMSE)*, 55 J. CLINICAL EPIDEMIOLOGY 909 (2002) (analyzing the adaption of the MMSE to visually impaired individuals).

[457] Mitchell, *supra* note 454, at 411.

[458] *Id.* at 412.

[459] *See generally* Alex J. Mitchell et al., *The Mini-Mental State Examination as a Diagnostic and Screening Test for Delirium: Systematic Review and Meta-Analysis*, 36 GEN. HOSP. PSYCHIATRY 627 (2014) (compiling MMSE sensitivity and specificity data).

[460] Mitchell, *supra* note 454, at 412 (describing MMSE scores as "fairly well understood by health professionals").

[461] *See* C. Carnero-Pardo, *Should the Mini-Mental State Examination Be Retired?*, 29 NEUROLOGÍA 473, 475 (2014) (touting the MMSE as a "user-friendly instrument that can be administered and evaluated by non-qualified personnel").

[462] Generally, the most accepted cut-off score is around 24. *See* Patrizio Pezotti et al., *The Accuracy of the MMSE in Detecting Cognitive Impairment when Administered by General Practitioners: A Prospective Observational Study*, 9 BMC FAM. PRAC. 1, 3 (2008)

deceptively simple, however, because the cut-off thresholds are not necessarily clinically significant.[463] These and other limitations have resulted in some experts calling for the retirement of the MMSE in place of more freely available and effective screening tools,[464] while other experts argue that it would be more efficient to improve the existing scale.[465] Support for the use of the MMSE as the sole diagnostic criterion is weak.[466] In the context of judicial cognitive screening, it would be a mistake to simplify a judge's entire mental capacity into a single number or even a single test.

Developed after the MMSE, the Montreal Cognitive Assessment (MoCA) is a ten-minute cognitive test that consists of eleven tasks designed to address the major efficacy limitations of the MMSE.[467] Completion of these tasks awards the participants points, which are aggregated to produce a score on a thirty-point scale.[468] A score of at least twenty-six points indicates normal cognitive functioning; likewise, a score below twenty-six points indicates some degree of cognitive impairment, with lower scores indicating more severe impairment.[469]

While the MoCA takes slightly longer to administer than the MMSE, the MoCA covers more cognitive domains, including additional items that measure executive and visuospatial function.[470] As such, the MoCA can identify changes that are typically not identified by the MMSE.[471] For example, the MoCA is significantly better at distinguishing MCI from normal age-related decline.[472]

("The total score for the MMSE ranges from 0 to 30; scores > 24 indicate basically no cognitive impairment; scores < 18 indicate severe cognitive impairment."); Kelvin K. F. Tsoi et al., *Cognitive Tests to Detect Dementia: A Systematic Review and Meta-Analysis*, 175 JAMA INTERNAL MED. 1450, 1456–57 (2015) ("[T]he most common cutoff scores for the MMSE for dementia were 23 and 24 . . . .").

[463] *See* Tsoi et al., *supra* note 462, at 1456–57 (noting "considerable variation on the definitions of cutoff thresholds" among the MMSE and other cognitive exams).

[464] *See, e.g.*, *id.* at 1457 ("Although the MMSE is a proprietary instrument for dementia screening, the other screening tests are comparably effective but easier to perform and freely available.").

[465] *See* Rodríguez & Pareja, *supra* note 455, at 590 (advocating for changes to the existing MMSE in lieu of its retirement).

[466] *Id.*

[467] *See* Ziad S. Nasreddine et al., *The Montreal Cognitive Assessment, MoCA: A Brief Screening Tool for Mild Cognitive Impairment*, 53 J. AM. GERIATRIC SOC'Y 695, 697 (2005) (detailing the items involved in the MoCA); David R. Roalf et al., *Bridging Cognitive Screening Tests in Neurologic Disorders: A Crosswalk Between the Short Montreal Cognitive Assessment and Mini-Mental State Examination*, 13 ALZHEIMER'S & DEMENTIA 947, 948 (2017) ("The MoCA overcomes some, but not all, of the limitations of the MMSE . . . .").

[468] Nasreddine et al., *supra* note 467, at 697.

[469] *See id.* at 698 (describing the cut-off score of twenty-six for the MoCA as yielding the best balance between sensitivity and specificity).

[470] Roalf et al., *supra* note 467, at 948.

[471] *See id.* at 948.

[472] *Id.*

Moreover, MoCA and MMSE scores are highly correlated, which allows the conversion of one score into the other to allow for direct comparison of cognitive performance through different screening tools.[473] The usefulness of each tool relative to each other depends on the nature of the brain disturbance.[474]

The MMSE and MoCA are not the only dementia screening tools available.[475] A systematic review and meta-analysis of 149 studies that covered eleven different screening tests, including the MMSE and MoCA, found that many other tools, including the Mini-Cog test and the Addenbrooke's Cognitive Examination-Revised, exhibit similar (sometimes better) rates of diagnostic accuracy for dementia than the MMSE.[476] Furthermore, using multiple screening methods instead of just one is likely to significantly improve diagnostic accuracy.[477] As such, researchers have been attempting to determine if certain *combinations* of assessment tools yield higher sensitivity and specificity.[478]

The legal system is not unfamiliar with utilizing a battery of neuropsychological tests, as a number of different tests are being used together to determine cognitive faculties in former NFL players under the terms of the NFL Concussion Settlement.[479]

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[473] *Id.* at 949.

[474] *See* Arun Aggarwal & Emma Kean, *Comparison of the Folstein Mini Mental State Examination (MMSE) to the Montreal Cognitive Assessment (MoCA) as a Cognitive Screening Tool in an Inpatient Rehabilitation Setting*, 1 NEUROSCIENCE & MED. 39, 41 (2010) ("[Compared to the MoCA,] the MMSE does not perform well as a screening instrument for [MCI] . . . ."); YanHong Dong et al., *The Montreal Cognitive Assessment (MoCA) Is Superior to the Mini-Mental State Examination (MMSE) for the Detection of Vascular Cognitive Impairment After Acute Stroke*, 299 J. NEUROLOGICAL SCI. 15, 17 (2010) (discussing the "poorer performance of the MMSE at detecting [vascular cognitive impairment]"); Alex J. Mitchell & Srinivasa Malladi, *Screening and Case Finding Tools for the Detection of Dementia. Part I: Evidence-Based Meta-Analysis of Multidomain Tests*, 18 AM. J. GERIATRIC PSYCHIATRY 759, 760 (2010) ("[T]he MMSE seems to be a reasonably accurate method of detecting dementia . . . ."); Emad Salib & Justin McCarthy, *Mental Alternation Test (MAT): A Rapid and Valid Screening Tool for Dementia in Primary Care*, 17 INT'L J. GERIATRIC PSYCHIATRY 1157, 1160 (2002) (noting the difficulties in administrating the MMSE to visually impaired, deaf, or otherwise physically disabled individuals).

[475] *See* Carnero-Pardo, *supra* note 461, at 477–78 (listing the basic characteristics of other "short cognitive tests" in addition to the MMSE and MoCA). For example, other short cognitive tests include the Addenbrooke's Cognitive Examination (ACE), the Memory Impairment Screen (MIS), and the Seven Minute Screen (7MT). *Id.* at 478.

[476] *See* Tsoi et al., *supra* note 462, at 1452, 1455 (finding similar or better specificity and sensitivity for both the ACE-R and Mini-Cog over the MMSE).

[477] *See* Nasreddine et al., *supra* note 467, at 698 (suggesting a patient to first undergo the MoCA if they complain of cognitive impairment but show no functional impairment).

[478] *See, e.g.*, Harvan & Cotter, *supra* note 448, at 355 (noting higher sensitivities and specificities when the MMSE is combined with the Clock Drawing Test). Such attempts have produced mixed results.

[479] *See* Amended Class Action Settlement Agreement, Exhibit A-2, *In re* Nat'l Football League Players' Concussion Injury Litig., No. 14-cv-0029 (E.D. Penn. Feb. 13, 2015)

Additional tests that may be of potential use for judicial assessment include the following:[480]

- **Test of Premorbid Functioning (TOPF):** The TOPF is a brief test estimating premorbid (i.e., before symptoms from the disease or disorder arise) cognitive and memory function.[481] Participants are asked to pronounce phonetically irregular words, a process generally resistant to neurological decline.[482]
- **Wechsler Adult Intelligence Scale IV (WAIS IV):** The WAIS IV measures overall intellectual ability, assessing cognitive performance across four domains: verbal comprehension (verbal reasoning and communication); perceptual reasoning (fluid reasoning and perceptual organization); working memory (attention, concentration, and working memory), and processing speed (mental processing and efficient use of other cognitive abilities).[483] Each domain is assessed using multiple subtests that measure additional processes, such as crystallized intelligence and cognitive flexibility.[484]
- **Wechsler Memory Scale IV (WMS IV):** The WMS IV measures memory function using subtests assessing auditory memory, visual memory, and visual working memory.[485] Each of these components of memory are assessed in immediate and delayed conditions.[486]

(setting forth the "Baseline Neuropsychological Test Battery" to which each qualified former NFL player is entitled).

[480] This list is meant to be illustrative, not exhaustive. Additional tests to rule out response bias or poor effort might include the California Verbal Learning Test or the Validity Indicator Profile. *See* Sun et al., *supra* note 106.

[481] PEARSON, TEST OF PREMORBID FUNCTIONING (TOPF) (2009), https://www.pearsonclinical.com.au/products/view/596 [https://perma.cc/57BU-5DZC].

[482] James A. Holdnack et al., *Predicting Premorbid Ability for WAIS–IV, WMS–IV and WASI–II*, *in* WAIS-IV, WMS-IV, AND ACS: ADVANCED CLINICAL INTERPRETATION 217, 226 (James A. Holdnack et al. eds., 2013). Performance on the reading task can be combined with various demographic factors (e.g., sex, race/ethnicity, education, developmental factors) to estimate premorbid intellectual function. Lisa Whipple Drozdick et al., *Overview of the WAIS–IV/WMS–IV/ACS*, *in* WAIS-IV, WMS-IV, AND ACS: ADVANCED CLINICAL INTERPRETATION, *supra* note 482, at 1, 55. Using the TOPF scores, clinicians can estimate expected performance on the WAIS IV and WMS IV to determine if the participant has experienced a decline. *Id.*

[483] Drozdick et al., *supra* note 482, at 2.

[484] Diane L. Coalson et al., *WAIS-IV: Advances in the Assessment of Intelligence*, *in* WAIS-IV CLINICAL USE AND INTERPRETATION 3, 7–8 (Lawrence G. Weiss et al. eds., 2010). For example, a subtest assessing working memory asks participants to recall a list of numbers, and a subtest assessing verbal comprehension provides participants with two concepts and asks them to describe how they are similar. *Id.* at 8.

[485] James A. Holdnack & Lisa W. Drozdick, *Using WAIS-IV with WMS-IV*, *in* WAIS-IV CLINICAL USE AND INTERPRETATION, *supra* note 484, at 237, 238.

[486] Drozdick et al., *supra* note 482, at 20. This means that participants are presented with information or stimuli that they must reproduce immediately and then after a delay. *Id.* at 11.

- **Delis-Kaplan Executive Function System (D-KEFS):** The D-KEFS measures executive functioning: the cognitive processes required to mentally assess ideas, resist temptations, and remain focused.[487] The D-KEFS subtests are standalone measures tapping into various facets of executive functioning, such as self-control, working memory, and cognitive flexibility.[488]
  - The *Trail Making Test* measures flexibility of thinking. Participants must draw a trail through letters and numbers.[489]
  - The *Verbal Fluency Test* measures fluency by asking participants to generate lists of words based on characteristics such as first letter ("F") or category ("animals").[490]
  - The *Design Fluency Test* measures problem-solving behavior, nonverbal productive and creativity, rule following, and visual-perceptual speed.[491] Participants draw novel patterns while abiding by specific rules.[492]
  - The *Color-Word Interference Test* measures inhibition.[493] Participants report the color of color words (e.g., "green") written in another color (e.g., red ink).[494]
  - The *Tower Test* measures spatial planning, rule learning, and inhibition.[495] Participants must, in the fewest possible moves, manipulate variably sized discs across pegs to an end spot designated by the examiner.[496]
- **Wisconsin Card Sorting Task:** The Wisconsin Card Sorting Task is a measure of cognitive flexibility, a component of executive function.[497]

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[487] Adele Diamond, *Executive Functions*, 64 ANN. REV. PSYCHOL. 135, 155 (2013).

[488] *Id.* at 136.

[489] Christopher R. Bowie & Philip D. Harvey, *Administration and Interpretation of the Trail Making Test*, 1 NATURE PROTOCOLS 2277, 2277 (2006).

[490] *See* Susan Homack et al., *Test Review: Delis-Kaplan Executive Function System*, 27 J. CLINICAL & EXPERIMENTAL NEUROPSYCHOLOGY 599, 599–600 (2005).

[491] *See* John L. Woodard et al., *Interrater Reliability of Scoring Parameters for the Design Fluency Test*, 6 NEUROPSYCHOLOGY 173, 173–74 (1992).

[492] *Id.*

[493] Arthur R. Jensen & William D. Rowher, Jr., *The Stroop Color-Word Test: A Review*, 25 ACTA PSYCHOLOGICA 36, 36–38 (1966).

[494] Diamond, *supra* note 487, at 139.

[495] In this context, the "Tower Test" refers to the Delis-Kaplan Executive Function System (D-KEFS), a test of executive functioning. *See* Anne-Claire Larochette et al., *Executive Functioning: A Comparison of the Tower of London*^{DX} *and the D-KEFS Tower Test*, 16 APPLIED NEUROPSYCHOLOGY 275, 275–76 (2009) ("[Executive functioning] includes five general domains of functioning: fluency, planning, working memory, inhibition, and set shifting . . . . One of the most widely used tests of [executive functioning] is the Tower of London . . . . Recently, a new battery of tests called the [D-KEFS] was introduced, which included a new version of the tower test." (citations omitted)).

[496] *Id.* at 276.

[497] *See* Diamond, *supra* note 487, at 149 ("Cognitive flexibility is often investigated using any of a wide array of task-switching and set-shifting tasks. The oldest of these is

Participants must deduce the correct sorting criteria for a deck of cards based solely on feedback of correct or incorrect from the examiner, switching their rules when the examiner indicates the criteria has changed.[498]

- **Booklet Category Test:** The Booklet Category Test measures concept formation and abstraction.[499] Participants must match various stimuli, such as letters, numbers or shapes, to possible responses during seven subtests.[500] Participants are only provided with feedback of correct and incorrect.[501] During each subtest, the rule is different, and participants must abstract each of the seven rules or concepts.[502]
- **California Verbal Learning Test (CVLT):** The CVLT assesses verbal learning and memory.[503] The examiner reads a list of nouns aloud, and participants must recall them immediately and then after a delay.[504] There is also an additional recognition phase available, which can be used as a test of the participant's effort.[505]
- **Validity Indicator Profile:** The Validity Indicator Profile was designed to detect malingered cognitive impairment.[506] Participants must select one of two choices, with difficulty increasing throughout the test.[507] Participants providing good effort would demonstrate decreasing performance over the test, while those providing variable

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probably the Wisconsin Card Sorting Task, one of the classic tests of prefrontal cortex function." (citations omitted)).

[498] *Id.*

[499] Stanley R. Steindl & Gregory J. Boyle, *Use of the Booklet Category Test to Assess Abstract Concept Formation in Schizophrenic Disorders*, 10 CLINICAL NEUROPSYCHOLOGY 205, 206 (1995) (citing Nick A. DeFilippis et al., *Brief Report Development of a Booklet Form of the Category Test: Normative and Validity Data*, 1 J. CLINICAL & EXPERIMENTAL NEUROPSYCHOLOGY 339 (1979)).

[500] DeFilippis et al., *supra* note 499, at 399.

[501] *Id.* at 340.

[502] *Id.*

[503] *See* Richard W. Elwood, *The California Verbal Learning Test: Psychometric Characteristics and Clinical Application*, 5 NEUROPSYCHOLOGY REV. 173, 173 (1995) ("[This review] concludes that if the limitations of the CVLT are recognized, it can still make a useful contribution to the clinical assessment of verbal learning and memory.").

[504] *Id.* at 174.

[505] *See* James C. Root et al., *Detection of Inadequate Effort on the California Verbal Learning Test-Second Edition: Forced Choice Recognition and Critical Item Analysis*, 12 J. INT'L NEUROPSYCHOLOGICAL SOC'Y 688, 695 (2006) ("[Two measurement] indices, developed within the CVLT-II as brief screens of effort, exhibit strong predictive value in positive findings of inadequate effort.").

[506] Richard I. Frederick & Ross D. Crosby, *Development and Validation of the Validity Indicator Profile*, 24 L. & HUM. BEHAV. 59, 61 (2000).

[507] *Id.*

> effort or malingering would not demonstrate a pattern of decreasing performance.[508]

The bottom line for judicial screening is that no single tool will provide accurate assessment of judicial capacity, but also that the development of a judicial assessment tool should build on the extensive work in these areas.

D. *Emerging Neuroscientific Technologies*

The future of psychiatric medicine is increasingly moving toward the integration of biomarkers in diagnosis and treatment.[509] In the area of dementia, new neuroimaging techniques are being developed to detect biomarkers for Alzheimer's disease (AD) in its earliest stages.[510] Such biomarkers can identify atrophying neural tissue in people with AD before they manifest observable behavioral changes.[511] Because early detection is seen as so important, in 2004 the Alzheimer's Disease Neuroimaging Initiative (ADNI) was formed to develop a range of biomarkers—including imaging, genetic, and biochemical—for the early detection and monitoring of AD.[512] Moreover, these developments

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[508] *Id.*

[509] *See* Francis X. Shen, *Law and Neuroscience 2.0*, 48 ARIZ. ST. L.J. 1043, 1063 (2016) ("Psychiatrist Matthew Baum's recent book on the neuroethics of biomarkers is an important contribution to this dialogue. Baum points out that 'biomarker discovery and assembly into bio-actuarial tools are poised to proceed at an unprecedented pace.'").

[510] *See* STEVEN D. PEARSON ET AL., INST. FOR CLINICAL & ECON. REVIEW, DIAGNOSTIC TESTS FOR ALZHEIMER'S DISEASE: GENERATING AND EVALUATING EVIDENCE TO INFORM INSURANCE COVERAGE POLICY 43 (2012) ("[P]rospective cohort studies (e.g., Alzheimer's Disease Neuroimaging Initiative) that have recruited convenience samples of patients are ongoing to evaluate the performance of multiple biomarkers . . . ."); Fiandaca et al., *supra* note 129, at 201 ("The capability of the neuroimaging modalities continues to improve, and their role in defining the preclinical state of AD is evolving."); Risacher & Saykin, *supra* note 129, at 625 (describing neuroimaging as an "excellent noninvasive set of methods" for measuring AD progression).

[511] Risacher & Saykin, *supra* note 129, at 625–26 ("Sensitive and specific biomarkers of AD are needed to detect patients in the early and preclinical stages of AD, to effectively monitor and predict disease progression, and to provide differential diagnostic information for an accurate diagnosis. . . . Neuroimaging [can] . . . measur[e] in vivo AD pathophysiology and brain atrophy associated with MCI and AD, as well as for predicting disease progression, even in patients with relatively minor or no cognitive impairments." (citations omitted)).

[512] Susanne G. Mueller et al., *Ways Toward an Early Diagnosis in Alzheimer's Disease: The Alzheimer's Disease Neuroimaging Initiative (ADNI)*, 1 ALZHEIMER'S & DEMENTIA 55, 55 (2005); Michael W. Weiner et al., *The Alzheimer's Disease Neuroimaging Initiative: A Review of Papers Published Since Its Inception*, 8 ALZHEIMER'S & DEMENTIA 1, 2 (2012).

are no longer confined to research labs.[513] In 2018, the Alzheimer's Association called for the redefinition of AD based on biomarkers.[514]

There are many legal and ethical questions that follow from the introduction of biomarkers.[515] At present, brain biomarkers are not routinely used to diagnose psychiatric disorders.[516] But some are optimistic about both present and near-future abilities.[517] Psychiatrist Matthew Baum similarly observes that "biomarker discovery and assembly into bio-actuarial tools are poised to proceed at an unprecedented pace."[518]

The implication of these trends for judicial screening is that the screening is likely to include neuroimaging. The screening tool should harness the potentially powerful information that brain data can provide but must also be carefully crafted to guard against inappropriate uses.[519] Particularly challenging will be the cases where the neuroimaging diverges from the judge's behavior. As my lab has explored elsewhere: "Is a neurological indicator of increased risk for [cognitive decline] a legally relevant brain state before there are outward behavioral manifestations [of that decline?]"[520]

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[513] *See Alzheimer's Disease Redefined: New Research Framework Defines Alzheimer's by Brain Changes, Not Symptoms*, ALZHEIMER'S ASS'N (Apr. 10, 2017), https://www.alz.org/news/2018/alzheimer_s_disease_redefined_new_reseearch_frame [https://perma.cc/2L4J-N9JE] (summarizing a recent publication in its official research journal advocating for a redefinition of AD based on biomarkers).

[514] *Id.*

[515] *See* Ilina Singh & Walter P. Sinnott-Armstrong, *Introduction: Deviance, Classification, and Bioprediction*, *in* BIOPREDICTION, BIOMARKERS, AND BAD BEHAVIOR 10, 11 (Ilina Singh et al. eds., 2013). ("Much scientific work remains to be done in the area of predictive biomarkers, but this is not a reason to be complacent about its impact on and translation into the public domain.").

[516] Steven E. Hyman, *Can Neuroscience Be Integrated into the DSM-V?*, NATURE REV. NEUROSCIENCE 725, 725 (2007).

[517] *See* Alex Fornito & Edward T. Bullmore, *Does fMRI Have a Role in Personalized Health Care for Psychiatric Patients?*, *in* INTEGRATIVE NEUROSCIENCE AND PERSONALIZED MEDICINE 55, 55 (Evian Gordon & Stephen H. Koslow eds., 2011) ("[R]ecent conceptual and methodological advances provide a sufficient basis for cautious optimism concerning the future clinical applicability of fMRI [a biomarker imaging technique] . . . in three key clinical domains: clinical diagnosis, prediction of illness, and treatment monitoring.").

[518] Matthew L. Baum, *The Neuroethics of Biomarkers: What the Development of Bioprediction Means for Moral Responsibility, Justice, and the Nature of Mental Disorder*, *in* OXFORD SERIES IN NEUROSCIENCE, LAW, & PHILOSOPHY 1, 10–11 (Lynn Nadel et al. eds., 2014).

[519] For a discussion of possible inappropriate uses, see Owen D. Jones et al., *Law and Neuroscience*, 33 J. NEUROSCIENCE 17,624, 17,628–29 (2014) (raising the ethical issues of new techniques in neuroscience as they may be applied in legal settings).

[520] Joshua Preston et al., *The Legal Implications of Detecting Alzheimer's Disease Earlier*, 18 AMA J. ETHICS 1207, 1208 (2016).

E. *The Neuroethics of Detecting Probabilistic Biomarkers in Judges*

The legal implications of using biomarkers to detect Alzheimer's and other forms of dementia remain relatively unknown.[521] It is therefore of paramount importance to map out the ethical, legal, and social implications of collecting brain data from judges. Most bodies of law—including tort, contracts, and criminal law—have traditionally demanded outwardly manifested behavior as a prerequisite for legal recognition of physical injury.[522] The advent of AD biomarkers thus poses a conundrum: How should the law treat a person who does not exhibit behavioral symptoms but whose brain is documented to have already changed in such a way as to suggest a higher likelihood of AD? In the language of the National Institutes of Aging research framework, how will we treat someone who is in the pre-symptomatic phase, wherein they are on the Alzheimer's continuum but still symptom free?[523] The question might be particularly difficult at the time of judicial confirmation.

While the full legal implications of AD biomarkers are under-explored in the literature, what is clear is that they pose unique ethical issues for clinicians and researchers. The current nondiscrimination legal landscape does not accommodate individuals with these biomarkers.[524]

Historically, the disclosure of a patient's AD diagnosis has posed a pervasive ethical challenge for clinicians.[525] The asymptomatic and non-treatable nature of AD biomarkers complicates this further, and clinicians need to consider the benefits, risks, and limitations of disclosing amyloid neuroimaging results to the judicial nominee (and to the judicial nominating committee) when the nominee is otherwise cognitively normal.[526] This will not

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[521] *See id.* at 1207 (noting that there is little research on the legal issues surrounding the use of biomarkers as a detection method for AD).

[522] *See* Francis X. Shen, *Mind, Body, and the Criminal Law*, 97 MINN. L. REV. 2036, 2044 (2013) ("In a variety of criminal and quasi-criminal contexts, . . . legislative line drawing between criminal and non-criminal behavior invokes the concept of 'bodily' (or 'physical') injury.").

[523] Clifford R. Jack, Jr. et al., *Hypothetical Model of Dynamic Biomarkers of the Alzheimer's Pathological Cascade*, 9 LANCET NEUROLOGY 119 (2010) ("The clinical disease stages of AD have been divided into three phases. First is a pre-symptomatic phase in which individuals are cognitively normal but some have AD pathological changes.").

[524] Jalayne J. Arias et al., *The Proactive Patient: Long-Term Care Insurance Discrimination Risks of Alzheimer's Disease Biomarkers*, 46 J.L. MED. & ETHICS 485, 485 (2018).

[525] *See generally* S. Gauthier et al., *Diagnosis and Management of Alzheimer's Disease: Past, Present and Future Ethical Issues*, 110 PROGRESS NEUROBIOLOGY 102 (2013).

[526] J. Scott Roberts et al., Presentation on Assessing the Impact of Disclosing Amyloid Imaging Results to Cognitively Normal Older Adults: The Reveal-Scan Study (July 19, 2017) (on file with *Ohio State Law Journal*) (assessing ethical issues in revealing Alzheimer's disease biomarkers to asymptomatic adults); *see also* Howard M. Fillit, *We Need New Biomarkers for Alzheimer's Disease*, SCI. AM. (Sept. 21, 2018), https://blogs.scientificamerican.com/observations/we-need-new-biomarkers-for-alzheimers-disease/ [https://perma.cc/9PQE-MZ6S] (stating that Alzheimer's disease is currently untreatable).

only require clinicians to prepare new counseling aids but also to reconsider the risks subjects face in neuroimaging research and how they seek informed consent.[527] States and the federal government will also have to revisit the medical disclosure waivers they require nominees to sign.[528]

Additional consideration needs to be placed on the impact this information can have on judges and their family members.[529] Despite the lack of treatment options, stakeholders report the benefit of clinical management of the disease, making lifestyle changes, and preparing for eventual cognitive impairment.[530] Even so, studies report fears of social harm, such as stigmatization, adverse life decisions, and psychological harm.[531]

Despite the presence of nondiscrimination laws like the Americans with Disabilities Act (ADA), the Genetic Information Nondiscrimination Act (GINA), and others, these legal frameworks do not address asymptomatic health information like AD biomarkers.[532] One fifty-state survey of nondiscrimination laws found that many emphasized "genetic information," which by definition amyloid and tau biomarkers are not.[533] Another fifty-state survey found that only half of all states have long-term care insurance regulations that prohibit discrimination based on pre-existing conditions.[534] Forty-three states do not prohibit long-term care insurers from using health information in their underwriting decisions, which makes these laws inadequate in "protect[ing] individuals from discrimination based on biomarker status in the context of [long-term care] insurance."[535] Such a "failure to address and mitigate discrimination risks will prevent individuals who are biomarker positive from accessing critical resources to prepare for financial burden of [long-term service and support] costs."[536]

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[527] *See* Roberts et al., *supra* note 526; *see also* Julio C. Rojas et al., Presentation on Uncertainties and Ethical Considerations for Decision-Making Regarding Amyloid-Related Imaging Abnormalities in Clinical Trials for Alzheimer's Disease (July 19, 2017) (on file with *Ohio State Law Journal*) (noting that in research involving amyloid-related imaging abnormalities (ARIA), the likelihood of identifying biomarkers with probabilistic risk requires informed consent that should "emphasize acknowledgment and communication of the limitations of data availability").

[528] *See, e.g.*, DEL. COURTS, *supra* note 432.

[529] Jalayne J. Arias et al., *Stakeholders' Perspectives on Preclinical Testing for Alzheimer's Disease*, 26 J. CLINICAL ETHICS 297, 301–02 (2015).

[530] *Id.* at 300.

[531] *See id.* at 301 (noting reported adverse life decisions and psychological harm from testing); Jalayne J. Arias, Presentation on Distinguishing Legal Consequences in At-Risk Testing for Alzheimer's Disease: Genetics Versus Non-Genetic Biomarkers (July 19, 2017) (on file with *Ohio State Law Journal*) (stating that stigma can result from disclosure of biomarkers for Alzheimer's).

[532] Arias et al., *supra* note 524, at 485.

[533] *See* Arias, *supra* note 531.

[534] *See* Arias et al., *supra* note 524, at 495.

[535] *Id.*

[536] *Id.*

If the legal system were to introduce a system in which judges were required to obtain brain scans, it could place the judge in an ethical quandary: If she has no symptoms, but the brain scan reveals the progression of neuropathology, must she report it to the chief judge?[537] To the insurance company?[538] How will return of results be developed?[539]

Moreover, careful attention must be paid to diseases other than AD. While much of the literature focuses on AD,[540] it is only one of many forms of dementia, including dementia with Lewy bodies, vascular dementia, and frontotemporal dementia.[541] There are considerable—and under-explored—implications of early AD detection for estate law, end-of-life care, and family law.[542] This Article has focused primarily on the implications of judicial brain health for the legal system. But the judge must also be recognized as a patient.

VII. DISCUSSION

This Part discusses several possible implications of, and extensions to, the system proposed in Part V. I discuss (A) constitutionality, (B) feasibility, and (C) legitimacy.

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[537] *See FAQs: Filing a Judicial Complaint or Disability Complaint Against a Federal Judge*, U.S. CTS. (June 2016), https://www.uscourts.gov/judges-judgeships/judicial-conduct-disability/faqs-filing-judicial-conduct-or-disability-complaint#faq-How-will-the-circuit-chief-judge-consider-my-complaint? [https://perma.cc/WXC6-J5WR] (describing review processes for judicial conduct by chief judge).

[538] *See generally* David R. Cohen, *Judicial Malpractice Insurance—The Judiciary Responds to the Loss of Absolute Immunity?*, 41 CASE W. RES. L. REV. 267 (1990) (describing rise of malpractice insurance for the judiciary).

[539] *See generally* Jalayne J. Arias & Jason Karlawish, *Confidentiality in Preclinical Alzheimer Disease Studies: When Research and Medical Records Meet*, 82 NEUROLOGY 725 (2014) (describing the shortcomings in regulation and possible adverse consequences of the loss of confidentiality for those with test results indicative of Alzheimer's disease pathology).

[540] *See* Craig W. Ritchie et al., *Dementia Trials and Dementia Tribulations: Methodological and Analytical Challenges in Dementia Research*, 7 ALZHEIMER'S RES. & THERAPY 1, 2 (2015) ("The commonest cause of dementia in community dwelling older adults is Alzheimer's disease (AD). AD research has accordingly tended to dominate the dementia landscape.").

[541] *Other Dementias*, ALZHEIMER SOC'Y CAN., https://alzheimer.ca/en/Home/About-dementia/Dementias?gclid=Cj0KCQiA04XxBRD5ARIsAGFygj8x06t70alM-Iotxaxcagwsf_Oa97p8-y7wpXvpWFB67HZchHcqdzQaAp28EALw_wcB [https://perma.cc/C54L-YBDD] (last updated Nov. 8, 2017).

[542] For example, the possibility that an individual may have a probabilistic risk for developing a disease may even force broader reconsiderations of competency determinations. *See generally* Jalayne J. Arias, *A Time to Step In: Legal Mechanisms for Protecting Those with Declining Capacity*, 39 AM. J.L. & MED. 134 (2013) (presenting a comprehensive overview of competency and clinical capacity determination procedures while highlighting the gap of legal protections for those within the competency-incompetency gap).

A. *Constitutional Implications*

Debates over the proper balance of congressional oversight and judicial independence with regard to removal of judges are extensive.[543] There is scholarly debate about the extent to which the Constitution permits anything other than impeachment as a permissible means of judicial discipline.[544] Further analysis beyond the discussion here is warranted, but to guide that analysis, I offer the following observations.

In relevant part, the Constitution reads:

> The judicial Power of the United States, shall be vested in one Supreme Court, and in such inferior Courts as the Congress may from time to time ordain and establish. The Judges, both of the supreme and inferior Courts, shall hold their Offices during good Behaviour, and shall, at stated Times, receive for their Services, a Compensation, which shall not be diminished during their Continuance in Office.[545]

As others have observed, "the Constitution contains few requirements regarding the structure of the federal courts," and "[a]lthough Article III provides for a Supreme Court headed by the Chief Justice of the United States, nothing else about its structure and its operation is specified, so the size and composition of the Court is left to Congress."[546]

The constitutionality of my proposal depends on where it falls along two dimensions: (1) Is it required or just recommended? and (2) Will the data collected remain purely private, or will the data be discoverable and actionable?

Under my proposal, the judge would *not* have to share their data with anyone. They might be strongly encouraged to share their data with the Chief Judge under certain conditions, but they could not be compelled to do so. This is not to say that there are not constitutional concerns that need further attention—it is simply to point out that the system can be designed in ways that are less (or more) offensive to judicial independence.

There is also a state-level constitutional question of a different sort: Would the introduction of individual-level judicial cognitive assessment tools lead to

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[543] Michael D. Gilbert, *Judicial Independence and Social Welfare*, 112 MICH. L. REV. 575, 577 (2014) ("Judicial independence is a cornerstone of American constitutionalism, and it has long been a source of controversy."). For a bibliography on point, see Amy B. Atchison et al., *Judicial Independence and Judicial Accountability: A Selected Bibliography*, 72 S. CAL. L. REV. 723, 750–62 (1999).

[544] Peter M. Shane, *Who May Discipline or Remove Federal Judges? A Constitutional Analysis*, 142 U. PA. L. REV. 209, 223 (1993) ("A number of commentators assert that the arguments demonstrating the exclusivity of impeachment as a political device for judicial discipline exclude any possibility of judicial discipline through judiciary-dependent devices such as prosecution or judicial self-regulation.").

[545] U.S. CONST. art. III, § 1.

[546] ELIZABETH B. BAZAN ET AL., CONG. RESEARCH SERV., RL31340, CONGRESSIONAL AUTHORITY OVER THE FEDERAL COURTS 2 (2005).

the conclusion that, even under a rational basis test, state mandatory judicial retirement ages are a violation of the Equal Protection Clause?[547]

Additional analysis would be required, but in brief, it is interesting to consider that Judge Theile (the Michigan judge who in 2018 challenged the Michigan judicial retirement age statute on Equal Protection grounds) argued that the law should not survive a rational basis test because rational, nondiscriminatory options are available: "Legislature, judicial tenure commission and/or the Michigan Supreme Court can make laws, rules or administrative orders requiring judges and judicial candidates to pass certain mental and physical capability tests. The Michigan State Court Administrator could develop performance evaluations similar to those in the private sector."[548] Theile's excellent argument anticipated the proposal made in this Article.

B. *Feasibility*

A judicial capacity screening tool sounds appealing in theory. But to move from theory to an actual toolbox requires a lot of work and the resolution of many difficult challenges. Beyond the scope of the Article, but necessary too, would be consideration of the layers of politics surrounding judicial regulation. The politics are so problematic that one scholar of judicial mandatory retirement is resigned to the fact that no reform will ever happen:

> [T]he . . . likely course is that five decades hence, some future scholar will [add] . . . another half-dozen mentally decrepit justices to the sad and poignant roster our history already offers of jurists who harmed their Court and hurt their own reputations by remaining on the bench too long.[549]

Must we resign ourselves to such a dismal future?

The political feasibility rests on a decoupling of assessments of cognitive capacity from political impetus to shape the courts based on ideology. Such decoupling should happen under my proposal, given the emphasis on complete privacy for the medical records. Moreover, the mandated assessments could be implemented only for new judges with current judges having the option to opt in or not. This would alleviate the concern that whichever political party has power when the program is implemented would gain a large number of new judgeships.

To be sure, ensuring complete privacy—without even judicial councils or chief judges aware of individual judge capacity assessments—ultimately relies upon the judge themselves to make an appropriate decision about when to

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[547] *See generally* Nina A. Kohn, *Rethinking the Constitutionality of Age Discrimination: A Challenge to a Decades-Old Consensus*, 44 U.C. DAVIS L. REV. 213 (2010) (detailing debates among courts regarding whether age discrimination is covered under rational basis review).

[548] "Corrected" Brief of Plaintiff-Appellant, *supra* note 343, at *28–29.

[549] Garrow, *supra* note 245, at 1087.

retire.[550] That is, under my proposed system, even if a doctor recommends that a judge retire due to cognitive impairment, the judge could ignore that advice. It is an untested assumption, but I believe a plausible one, that judges will do the right thing *if* those judges are provided regular cognitive assessment data.

I am optimistic that, despite the many acknowledged challenges, there is a path forward for the successful development of a judicial capacity assessment toolbox. It would surely require a working group to carefully review relevant findings in law, medicine, and science. But such committees are organized regularly, and funding might be available from a variety of sources.[551]

There is already momentum in the policy sphere. In September 2018, Representative Darrell Issa (R-OH) proposed the Judiciary Reforms, Organization and Operational Modernization Act of 2018.[552] In the Act, Rep. Issa proposed regular medical exams for all federal judges:

> **SEC. 203. MEDICAL EXAMINATIONS FOR FEDERAL JUDGES.**
>
> (a) IN GENERAL. Chapter 21 of title 28, United States Code, is amended by adding at the end the following:
>
> **§ 464. Medical examinations for justices and judges**
>
> (a) IN GENERAL.—Each justice or judge of the United States shall, at no expense to the judge or justice, undergo a medical examination by a physician—
>
> (1) in the case of a judge or justice who is 70 years of age or younger, every 5 years;
>
> (2) in the case of a judge or justice who is older than 70 years of age and younger than 81 years of age, every 2 years; and
>
> (3) in the case of a judge or justice who is 81 years of age or older, every year.
>
> (b) CONFIDENTIALITY.—Except as provided in subsection (c), the results of a medical examination described in subsection (a) shall be confidential.
>
> (c) EXCEPTION.—Notwithstanding any other provision of law, in the case that a physician conducting a medical examination described in subsection (a) identifies a condition that may impact the ability of the judge or justice to carry out the duties of judge or justice's position, the physician shall submit such finding to the appropriate chief judge or justice. In the case that the condition described in the previous sentence relates to a chief

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[550] *See* Mark Sherman, *Federal Judges Have a Way to Make Investigations Disappear*, ASSOCIATED PRESS (May 10, 2019), https://apnews.com/c593d922bf264cb683ff89a87aad5a14 [https://perma.cc/9QU7-YVZV] (highlighting that investigations into judicial conduct disappear with retirement).

[551] *E.g.*, James C. Duff, *The Federal Judiciary Workplace Conduct Working Group*, AM. B. ASS'N (Nov. 1, 2018), https://www.americanbar.org/groups/judicial/publications/judges_journal/2018/fall/the-federal-judiciary-workplace-conduct-working-group/ [https://perma.cc/PV3W-QEGV] (providing an example of a judicial working group).

[552] H.R. 6755, 115th Cong. (2018).

> judge, the physician shall submit the finding to the chief judge of the court with appellate jurisdiction over the court on which the judge sits.[553]

Rep. Issa's bill, although it did not advance out of the Committee on the Judiciary,[554] is indicative of congressional interest in pursuing new solutions for screening older judges. My primary critiques of the bill are that it provides no definition of "medical examination," does not collect baseline data at nomination, and is too vague in section 3(c) as to when a physician must submit his health findings.[555] The ambiguity is in the phrase "a condition that *may* impact the ability of the judge."[556] There is no timeline suggested, e.g., may impact ability in the next month, the next five years, etc.[557] But, critiques aside, the fact that congressional time is already being spent on this issue speaks to its importance.

At the state level, there is activity of a different sort suggesting there would be interest in this toolbox. Many states already offer Lawyer and Judge Assistance Programs through their state bar associations.[558] These programs often offer confidential support regarding personal problems like substance abuse and/or mental health.[559] Such programs are in place in Arizona,[560] Hawaii,[561] Indiana,[562] Louisiana,[563] Michigan,[564] Mississippi,[565] New

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[553] *Id.* § 203 (emphasis in original).

[554] *See Bills in the 115th Congress: H.R. 6755*, C-SPAN, https://www.c-span.org/congress/bills/bill/?115/hr6755 [https://perma.cc/9S47-T9GB].

[555] H.R. 6755 § 203.

[556] *Id.*

[557] *See id.*

[558] *See infra* notes 559–78.

[559] *Id.*

[560] *Member Assistance Program*, ST. B. ARIZ., https://www.azbar.org/professionaldevelopment/map/ [https://perma.cc/8V5P-BXJQ].

[561] *The Attorneys and Judges Assistance Program*, HAW. ATT'Y ASSISTANCE PROGRAM, https://hawaiiaap.com/ [https://perma.cc/9JX2-MVRC].

[562] *Indiana Judges and Lawyer Assistance Program*, IND. LAW., https://www.theindianalawyer.com/topics/2339-judges-lawyers-assistance-program [https://perma.cc/23Q4-5RHK].

[563] *How Can the Judges and Lawyers Assistance Program Help You?,* LA. JUDGES & LAW. ASSISTANCE PROGRAM, INC., http://louisianajlap.com/ [https://perma.cc/RQ6G-RXNR].

[564] *Lawyers and Judges Assistance Program*, ST. B. MICH., https://www.michbar.org/generalinfo/ljap/home [https://perma.cc/TWB9-7XJJ].

[565] *Lawyers & Judges Assistance Program*, MISS. B., https://www.msbar.org/programs-affiliates/lawyers-judges-assistance-program.aspx [https://perma.cc/VA7Y-V3QE].

Jersey,[566] New Mexico,[567] New York,[568] and Pennsylvania.[569] Notably, the Louisiana Judges and Lawyers Assistance Program specifically mentions aging and age-related dementia as an impairment that judges and lawyers should consider.[570] The Program aims to "reach the aging lawyer before their condition becomes a discipline issue[.]"[571] The State Bar of Michigan also provides resources related to aging on their website,[572] as does Indiana[573] and Arkansas.[574] Although most of these programs focus at present only on aging lawyers, they provide a foundation on which to reach out to judges as well.[575]

One Pennsylvania program, a judge-specific subset of Lawyers Concerned for Lawyers (aptly called Judges Concerned for Judges, JCJ), provides confidential support and resources for judges struggling with a variety of ailments, but mostly focuses on mental disorders (anxiety, bipolar disorder, depression, eating disorders) and addiction (drugs, alcohol, gambling).[576] JCJ offers a "peer assistance program" to "restore the health and professional competence" of judges through "confidential helpline services, volunteer support and education."[577] JCJ offers education, referral to a medical provider for a consultation, personalized treatment plans, and peer support for judges who seek their assistance.[578] A legal culture that already recognizes the need for improved mental health should be open to a conversation about the toolbox I propose in this Article.

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[566] N.J. JUDGE ASSISTANCE PROGRAM, http://judgesassistance.org/ [https://perma.cc/4J5N-BUXK].

[567] *New Mexico Lawyers and Judges Assistance Program*, ST. B. N.M., https://www.nmbar.org/Nmstatebar/For_Members/Lawyers_Judges_Assistance/Lawyers_Judges_Assistance.aspx [https://perma.cc/93YA-N7U8].

[568] Gerald Lebovits, *Judicial Wellness: The Ups and Downs of Sitting New York Judges*, 89 N.Y. ST. B. ASS'N J. 10, 19 (2017).

[569] *Help for a Judge*, LAW. CONCERNED FOR LAW. PA., https://www.lclpa.org/services/help-for-a-judge/ [https://perma.cc/2SAZ-YVL7].

[570] *Aging in the Legal Profession*, LA. JUDGES & LAW. ASSISTANCE PROGRAM, http://louisianajlap.com/issues-concerns/aging/ [https://perma.cc/5RVX-UQEN].

[571] *Id.*

[572] *Lawyers & Judges Assistance Program Resources*, ST. B. MICH., https://www.michbar.org/generalinfo/ljap/resources [https://perma.cc/MR7Z-R87N].

[573] *About JLAP*, IND. JUD. BRANCH, https://www.in.gov/judiciary/ijlap/2361.htm [https://perma.cc/E4UM-C6LF].

[574] *Aging Issues*, ARK. JUDGES & LAW. ASSISTANCE PROGRAM, https://arjlap.org/aging-issues/ [https://perma.cc/KPS3-YD35].

[575] *See, e.g.*, *Aging Lawyers/Lawyers in Transition*, ST. B. GA., https://www.gabar.org/wellness/mental/aging_lawyers.cfm [https://perma.cc/KB3Z-42NP].

[576] *Confidential Services, Support & Information*, JUDGES CONCERNED FOR JUDGES PA., https://www.jcjpa.org/ [https://perma.cc/55E7-2QLW].

[577] *About Us*, JUDGES CONCERNED FOR JUDGES PA., https://www.jcjpa.org/about/ [https://perma.cc/DTD4-DK3C].

[578] *Services,* JUDGES CONCERNED FOR JUDGES PA., https://www.jcjpa.org/services/ [https://perma.cc/D5BJ-2GTB].

C. *Legitimacy*

A system of aging judges raises not only substantive concerns but concerns about perception as well. Amidst concerns about judges' brain health, it could be the case that the public will be reassured knowing that judges undergo regular brain health checkups. In a separate set of studies, I have started to pilot some empirical work to test this proposition.[579]

I ran experiments looking at public confidence in the functional capacity of (1) a judge and (2) a law professor at ages fifty-two, sixty-two, seventy-two, eighty-two, ninety-two, and one-hundred and two. I also examined how the introduction of cognitive health data affects subjects' legitimacy ratings. The bottom line of the results are: (1) the public is slightly more confident in older academics than they are in older judges, but; (2) even at baseline for judges there is great confidence in seventy-five-year-old judges, and; (3) for judges and academics, healthy cognitive testing leads to high levels of confidence regardless of age.

VII. CONCLUSION

America is getting older, and so too are its judges. At present, most commentators on the topic of aging judges have expressed concern and made proposals for mandatory retirement or term limits. This Article has advocated for a different approach: empowering aging judges through the implementation of private, individual cognitive health assessments. If carefully developed through interdisciplinary collaboration, advances in the neuroscience of aging and dementia can provide to our nation's judges actionable information about their brain health. System-wide data collection as proposed here will require careful study and design before implementation, but it has the transformative potential to improve the efficiency and legitimacy of the judicial branch.

[579] Data and preliminary studies on file with author.