Cognitive Function and Retirement Planning and Behavior: Evidence from European Statutory Retirement Age Policies

BACKGROUND
Countries across Europe have raised statutory retirement ages (SRAs) to extend working lives and ensure pension sustainability. These reforms assume individuals can and will adjust their retirement plans. Yet cognitive impairment is prevalent among adults approaching retirement, and individuals with lower cognitive function may lack the capacity to respond to policy changes, potentially claiming pensions early with permanent benefit reductions or exiting the labor force through disability and unemployment pathways. Whether responses to SRA reforms vary systematically with cognitive function has direct implications for pension adequacy and equity.

OBJECTIVE
To examine whether SRA increases lead to updated retirement expectations, and whether responses differ by cognitive function, using pension reforms in Estonia, Spain, and the Netherlands as natural experiments.

DESIGN, SETTING, AND PARTICIPANTS
We use a staggered difference-in-differences design (Callaway & Sant'Anna, 2021) exploiting pension reforms in three European countries: Estonia (enacted 2010, SRA 63→65), Spain (enacted 2011, SRA 65→67), and the Netherlands (enacted 2012, SRA 65→67). All three reforms were phased in by birth cohort, creating variation in both the timing and magnitude of SRA increases. We employ two complementary strategies. Within-country analyses compare birth cohorts facing different SRA increases to not-yet-treated and never-treated cohorts at the same ages. Across-country analyses compare individuals in reform countries to same-cohort individuals in countries with no SRA changes during 2010–2020: Germany, Austria, Belgium, and Sweden, with England included for cohorts 1948–1953. Data are from the Survey of Health, Ageing and Retirement in Europe (SHARE), waves 1–9 (2004–2023), with Estonia restricted to waves 1–7 due to a subsequent 2018 reform. Within-country analyses include birth cohorts 1932–1962, encompassing both treated and never-treated cohorts, first observed between ages 50–65 and active in the labor force at baseline. Across-country analyses restrict to treated cohorts (1948–1962 in Spain and the Netherlands; 1954–1962 in Estonia) and comparable cohorts in control countries.

EXPOSURES
Treatment defined by the interaction of birth cohort and country, with three dose levels by magnitude of SRA increase: small (3–9 months), medium (10–18 months), and large (19–24 months). Cognitive function heterogeneity assessed using pre-reform quartiles of gender-country standardized word recall (immediate and delayed 10-word list), measured prior to enactment to avoid post-treatment bias.

MAIN OUTCOMES AND MEASURES
Expected pension claiming age, accuracy of retirement expectations relative to actual claiming behavior, and actual pension claiming age. We estimate group-time average treatment effects on the treated (ATT), aggregated by age, treatment dose, and birth cohort. All estimates stratified by gender and baseline cognitive function quartile. Estimation uses the Callaway & Sant'Anna (2021) estimator with doubly robust inference, conditioning on education and marital status to account for compositional differences across cohorts that may affect retirement expectation trajectories.

RESULTS
Within-country estimates show that treatment cohorts report higher expected retirement ages than control cohorts at the same age across all three countries, consistent with SRA increases shifting expectations upward. A dose-response pattern emerges: cohorts facing larger SRA increases report correspondingly higher expected retirement ages, particularly in the Netherlands and Estonia. Later-born cohorts exhibit higher cognitive performance at the same age, motivating covariate adjustment in the parallel trends assumption. Formal estimates stratified by cognitive function, along with across-country analyses, are forthcoming.

CONCLUSIONS AND RELEVANCE
This study provides quasi-experimental evidence on whether responses to SRA increases vary systematically with cognitive function across three distinct pension systems: employer-financed defined benefit (Estonia), contributory defined benefit (Spain), and flat-rate universal (the Netherlands), with control countries spanning a similar range of pension designs. Findings will inform whether reforms intended to extend working lives achieve their objectives uniformly or leave cognitively vulnerable populations behind, with implications for pension adequacy, old-age poverty, and long-term care demand.