Research Statement

Haiming (Richard) Li · Lehigh University · haimingli.com

I am a health economist, and most of my work asks who bears the cost when a health policy changes. A state legalizes cannabis, and hospitals in the next state admit more psychiatric patients. A state closes its psychiatric hospitals, and community hospitals keep long-stay patients for months. Medicare leaves out dental care, and I ask whether older adults with poor oral health then pay more for heart disease. Standard evaluations of these policies count effects inside the adopting state or program. I study these effects with quasi-experimental designs and large administrative and survey data, including restricted all-payer hospital records, and I also work on how to test these designs when states adopt several policies at different times.

Job market paper: cross-border spillovers of cannabis legalization. Cannabis policy is set by the states, and residents of a state that prohibits recreational sales often live a short drive from one that allows them. My job market paper asks whether New Jersey's 2021 legalization of recreational cannabis affected mental health in neighboring Pennsylvania, which allows only medical use. Adult-use sales began at New Jersey's licensed dispensaries in April 2022, several of them near the Pennsylvania line, including one in Phillipsburg across the Delaware River from Easton, and buyers do not need to be New Jersey residents. I combine ZIP code-by-quarter inpatient discharge records for 2018–2022 with driving times from each Pennsylvania ZIP code to the nearest New Jersey dispensaries. A difference-in-differences design compares ZIP codes in counties within two hours of a dispensary with matched ZIP codes in counties more than three hours away, and a second specification traces the response along the distance gradient.

After legalization, psychiatric hospitalizations near the border rose by 0.83 per 1,000 residents per quarter, or 6.8 percent, relative to the matched comparison areas. Depression accounts for the largest share, with admissions up 13.9 percent, followed by alcohol- and tobacco-related disorders, anxiety, dementia and other organic disorders, and psychosis. The estimates for all mental disorders, depression, and psychosis hold under alternative distance cutoffs, an alternative control group, the exclusion of pandemic quarters, and placebo policy dates. Hospitalizations coded to cannabis use itself do not change, and the diagnostic pattern points to mood disorders, co-use with alcohol and tobacco, and psychotic disorders. Earlier work evaluates recreational cannabis laws inside the states that adopt them, and studies of cross-border effects focus on sales, self-reported use, and crime. This paper measures a health cost that falls on a state that did not legalize, and it suggests that cost–benefit assessments of legalization, and interstate coordination of cannabis policy, should account for it.

Psychiatric capacity: where long-stay care goes when state hospitals close. In my second paper, I study four closures of Pennsylvania state psychiatric hospitals between 2006 and 2019, using all inpatient discharge records in the state for 2000–2022. Each state hospital served a fixed list of counties named in state documents, so I know which counties lost a hospital without inferring it from patient flows, and the state moved each closed hospital's budget to those counties. I estimate each closure separately against comparison counties chosen by explicit rules, with permutation inference because each closure has only two to five treated counties. After the Harrisburg hospital closed in 2006, inpatient days per patient with a psychotic disorder in its five counties rose by 8.8 per year relative to comparison counties, half the pre-closure level; after the Allentown hospital closed in 2010, they rose by a smaller and less precisely estimated 4.3. Admissions and readmissions did not change; days per admission rose by 5.5 at Harrisburg, and four fifths of that rise came from stays longer than 90 days, almost all at two hospitals whose long-stay units the counties funded with the transferred budget. The added days equal about a tenth of the state hospital capacity the counties lost, and nine tenths of the added Harrisburg days were billed to Medicaid

and Medicare. Medicaid does not pay for working-age adults in a state psychiatric hospital but does pay for them in a general hospital, so the closure moved long-stay care, and part of its cost, from the state budget to programs the federal government pays for or shares. The Mayview and Norristown closures show no detectable change: Mayview's residents and funding went to Allegheny County, which the service-area rules exclude, and Norristown's civil census had fallen from 264 to 31 before its closure. I have a complete draft. Next, I plan to link the same counties to jail bookings, residential licensing, and homeless services records to find where the rest of the closed capacity went.

Oral health and the cost of heart disease. With Chad Meyerhoefer and a team of genetic and dental researchers on an NIH-funded project, I estimate the effect of tooth loss on heart disease among older adults in the Health and Retirement Study. Because poor oral health and heart disease share many causes, we instrument tooth loss with a polygenic score for poor oral health, measured by dental caries, from a GWAS-by-subtraction procedure that removes genetic variants with direct effects on heart disease. Tooth loss raises the probability of a heart disease diagnosis by 48 percentage points, so projections of the cost of a Medicare dental benefit that leave out cardiac care may overstate its net cost; we are preparing that paper for submission. A companion paper with Meyerhoefer uses the same instrument to ask what older adults pay out of pocket for heart disease care. Losing all of one's teeth raises the probability of any out-of-pocket spending on heart disease by about 39 percentage points, close to its effect on the diagnosis itself, but we find no detectable rise in spending above 10, 20, or 40 percent of household income. The survey records spending by type of service and never by condition, so the dollar effect depends on how spending is attributed to heart disease; with an incremental-cost measure, it is about $500 per two-year survey period.

Other work. With Yizhao Wang, I study how the 2011 fuel-economy reform reduced labor force participation among rural workers who depend on a car; that paper has received a revise-and-resubmit. We also study how e-cigarette regulation and cannabis legalization interact. A short paper from that project shows that the fake-timing placebo often used to test whether the order of two staggered policies matters is off center by construction, because reshuffling one policy's dates leaves many states' order unchanged. Recentering the test restores its power, and in our application an apparent ordering effect on adult vaping passes the recentered test but fails pre-trend and leave-one-out checks. Our other projects ask whether China's fentanyl controls reduced overdose deaths in the United States and how e-cigarette regulation and recreational cannabis legalization in New York State affected college outcomes.

Future agenda. First, I will study cross-border spillovers of state substance policy more broadly, using other borders where recreational and medical-only states meet and outcomes beyond hospital care, such as emergency visits and overdoses, to ask what interstate coordination of cannabis and tobacco policy would gain. Second, I will continue the study of psychiatric capacity, measuring how state hospital closures and crisis services shift costs among hospitals, jails, and housing programs. Third, I will use the oral health project to estimate the medical cost offsets of dental coverage in Medicare and Medicaid. Each of these projects relies on public or administrative data that students can learn to use, and I plan to involve undergraduate and master's students as research assistants and to seek external funding, including early-career NIH support, as the projects develop.