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Health Economics

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Program Report

Health Economics

Kitt Carpenter

The NBER Health Economics Program has historically studied the determinants and consequences of differences in health outcomes, with a focus on education, health insurance coverage, obesity, and risky behaviors such as smoking and drinking. Since the last program report, in 2015, the program has evolved in several important ways. Most notably, Michael Grossman, distinguished professor emeritus at the City University of New York's Graduate Center, stepped down from directing the program in 2020 after nearly 50 years of impactful leadership.

When I became program director, there was a worldwide COVID-19 pandemic underway, an ongoing domestic opioid crisis, changing regulatory landscapes for marijuana and tobacco, and a renewed focus on the social determinants of health and health equity research. Given space constraints — and the fact that since the last program report nearly 1,300 NBER Health Economics working papers have been released — this report can only describe a small fraction of the interesting research in these key areas.

COVID-19

While the world is still emerging from the deadliest health event since the 1918 flu pandemic, health economists and NBER program members have been documenting the extent of COVID-19 and the impact of associated pharmaceutical and nonpharmaceutical interventions for health and well-being. More than 600 NBER working papers have presented pandemic-related research, much of which cuts across multiple program areas. The effects of COVID-19 on

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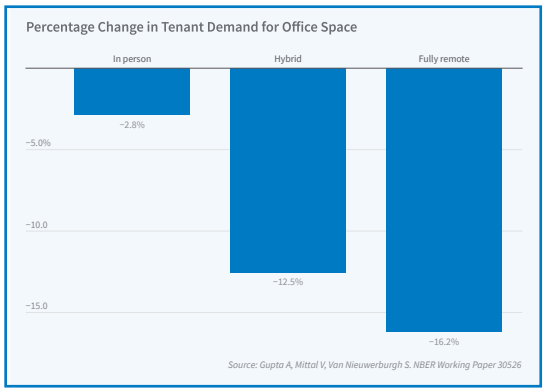

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older Americans were recently summarized in Jonathan Skinner's program report for the Economics of Aging.[1] A first-order issue is correctly documenting the extent and severity of the COVID-19 pandemic on mortality. In the context of the US, Christopher J. Ruhm describes two challenges for correctly accounting for the mortality impact of COVID-19: first, estimating how many deaths would have occurred had the pandemic not occurred; and second, estimating how many deaths that are not coded as COVID-19 deaths were actually indirectly related to COVID-19.[2] Ruhm estimates that there were 646,514 excess deaths in the US from March 2009 to February 2021, with 83.4 percent directly attributable to COVID-19. The pandemic imposed disparate health burdens on different subgroups of the population. For example, Joseph A. Benitez, Charles J. Courtemanche, and Aaron Yelowitz documented racial and ethnic disparities in confirmed COVID-19 cases across six large cities: Atlanta, Baltimore, Chicago, New York, San Diego, and St. Louis.[3] They found that higher percentages of Black and Hispanic residents in a particular ZIP code were associated with more COVID-19 cases per capita, and most of these disparities remain unexplained even after including detailed observable controls. Marcella Alsan, Amitabh Chandra, and Kosali I. Simon document that Hispanic and Black Americans saw 39.5 and 25 percent increases respectively in excess mortality relative to trend, versus less than 15 percent for Whites.[4] They also document within a commercially insured population that Black and Hispanic enrollees were hospitalized due to COVID-19 at higher rates than White enrollees, even after controlling for observable covariates.

Many studies have examined how COVID-19 closure policies affected both COVID-19-related and non-COVID-19-related health outcomes, with studies reaching a range of different conclusions. Early research on this question is reviewed by Sumedha Gupta, Simon, and Coady Wing; they also use event study approaches and conclude from their own studies and the existing literature that "there is fairly consistent evidence that the state social distancing policies have helped improve health outcomes as measured by cases and deaths."[5] Other studies have reached different conclusions, however. Virat

Agrawal, Jonathan H. Cantor, Neeraj Sood, and Christopher M. Whaley use event study methods and data from 43 countries and all US states to show that shelter-in-place (SIP) policies were unrelated to excess deaths.[6] In a related paper, Cantor, Sood, Dena Bravata, Megan Pera, and Whaley show that SIP policies significantly reduced use of preventive and elective care as well as weekly visits to physician offices and hospitals, though they also show that controlling for county-level exposure to COVID-19 weakens this relationship.[7] They argue that this pattern suggests significant reductions in mortality would have occurred even in the absence of the lockdown-related policies.

Health economists have also examined effects of COVID-19 on other important health outcomes. Lindsey Rose Bullinger, Jillian B. Carr, and Analisa Packham study the effects of stay-at-home orders on domestic violence, finding that such orders increased time spent at home and reduced total calls for police service, but increased domestic-violence-related calls for police service, with larger effects in areas with more renters.[8] In a different study using SafeGraph mobility data, Martin Andersen, Sylvia Bryan, and David Slusky find that state bans on elective medical procedures during COVID-19 — which in 13 states included surgical abortions — led to significant reductions in abortion clinic visits, with further reductions for states that imposed stay-at-home orders.[9] Overall, this reduced foot traffic reduced abortions by 7 percent in 2020 relative to 2019.

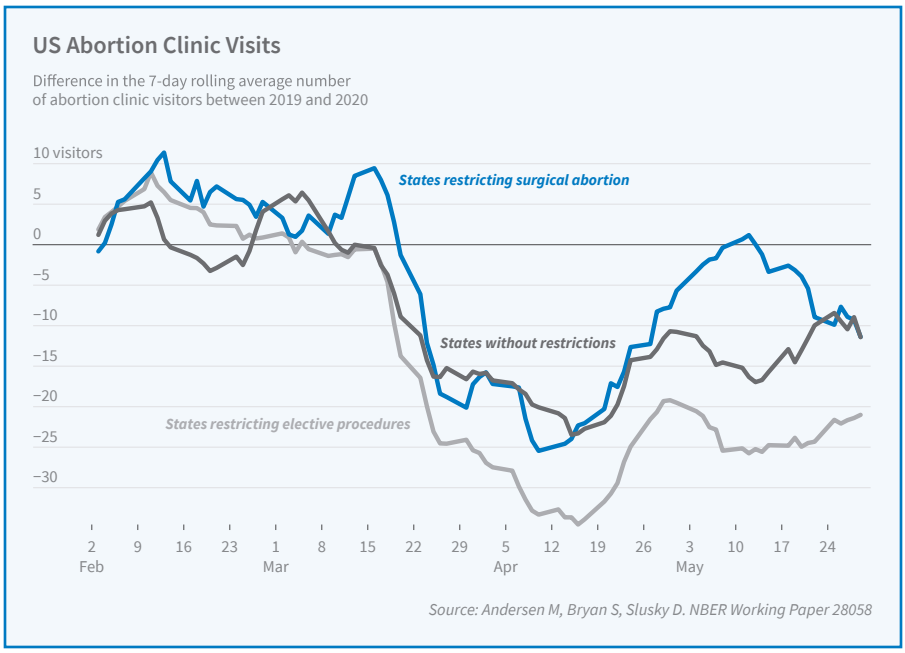

Figure 1

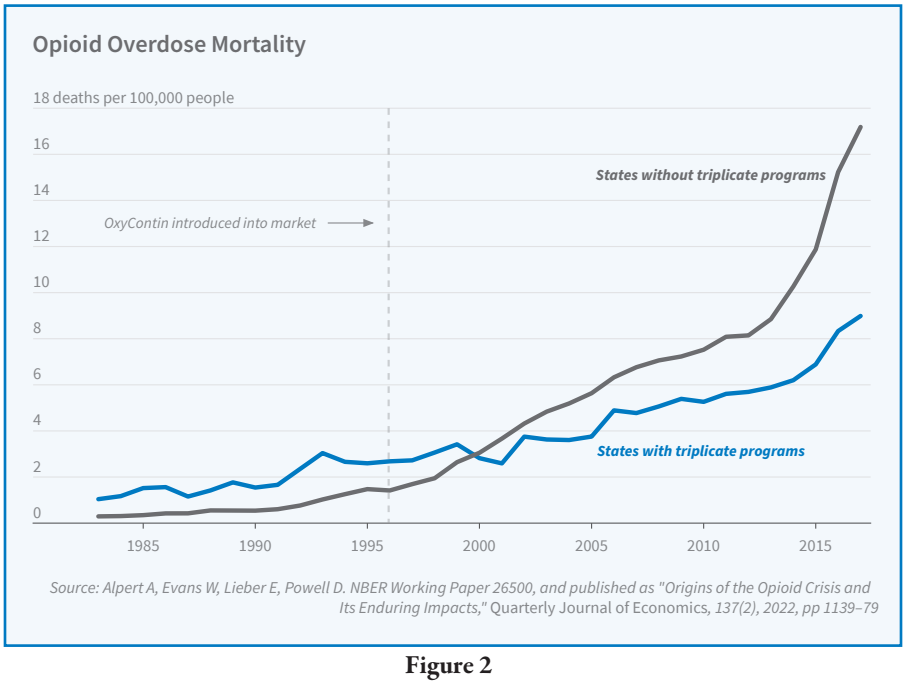

Figure 2

Opioid Crisis

Over the past decade, the central challenge of the opioid crisis changed from addressing lax prescribing and subsequent supply side restrictions to limiting access to lethal synthetic opioids such as fentanyl. Health Economics Program members have contributed significantly to our understanding of these phenomena, with excellent recent reviews by Johanna Catherine Maclean, Justine Mallatt, Ruhm, and Simon.[10]

One particularly novel and high-profile study documented the role of state regulatory stances toward prescribing behavior in driving the long-term path of the opioid epidemic. Abby E. Alpert, William N. Evans, Ethan M. J. Lieber, and David Powell use unsealed documents from Purdue Pharma to show that state-based triplicate prescription programs were seen as barriers to successful marketing of OxyContin, one of the most-prescribed opioids in the late 1990s.[11] Although states with triplicate programs had higher overdose death rates than states without such programs prior to the 1996 launch of OxyContin, this relationship reversed sharply after 1996, and the triplicate states had lower opioid-related overdose death rates even two decades after OxyContin's initial launch.

Other research has identified key factors contributing to the opioid epidemic. Powell, Rosalie Liccardo Pacula, and Erin Taylor find that Medicare Part D's drug benefit, which was introduced in 2006, led to larger increases in opioid utilization for individuals under age 65 in states with a larger share of older adults, consistent with a significant diversion.[12] Another study by Alpert, Powell, and Pacula, using variation across states prior to 2010 in the prescription opioid misuse rate, showed that the introduction of abuse-deterrent OxyContin in 2010 contributed to the heroin epidemic.[13] Evans, Lieber, and Patrick Power find a similar result using structural break techniques.[14]

In terms of policies to reduce opioid-related harms, Thomas C. Buchmueller and Colleen Carey use large samples of Medicare beneficiary data and difference-in-differences models to show that state-level "must access" prescription drug monitoring programs (PDMPs) were associated with significant reductions in various measures of opioid misuse, a finding consistent with doctor shopping and related behaviors.[15] Dhaval M. Dave, Anca M. Grecu, and Henry Saffer find a similar result for young adults using data from the Treatment Episode Data Set (TEDS).[16] Other research has examined the public health consequences of PDMPs. For example, Dave, Monica Deza, and Brady P. Horn find that PDMPs reduce both violent and property crime.[17] Engy Ziedan and Robert Kaestner find that when mothers use fewer opioids as a result of state policies such as PDMPs, infant health improves significantly.[18]

Changing Regulatory Environments for Substance Use

Research by Health Economics Program members has also advanced understanding of the effects of changing regulatory environments for tobacco and marijuana. For example, D. Mark Anderson and Daniel I. Rees, in a recent review article, summarize what is known about the public health effects of legalizing marijuana.[19] They argue that there is little credible evidence that medical marijuana laws (MMLs) increased youth marijuana use, though Pacula, Powell, Paul Heaton, and Eric L. Sevigny suggest that alternative ways of coding state MMLs — in particular accounting for home cultivation and legal dispensary provisions — do yield evidence that MMLs increase youth marijuana use.[20] Another key question is whether MMLs are associated with changes in opioid use and opioid-related harms. For example, Powell, Pacula, and Mireille Jacobson find that MMLs that permit dispensaries see reductions in opioid addictions and opioid overdose deaths relative to states without MMLs, while a simple MML indicator that does not account for dispensaries does not produce this effect.[21] Neil K. Mathur and Ruhm argue that most existing results in the growing literature on MMLs and opioid deaths are highly sensitive to model specification choices.[22]

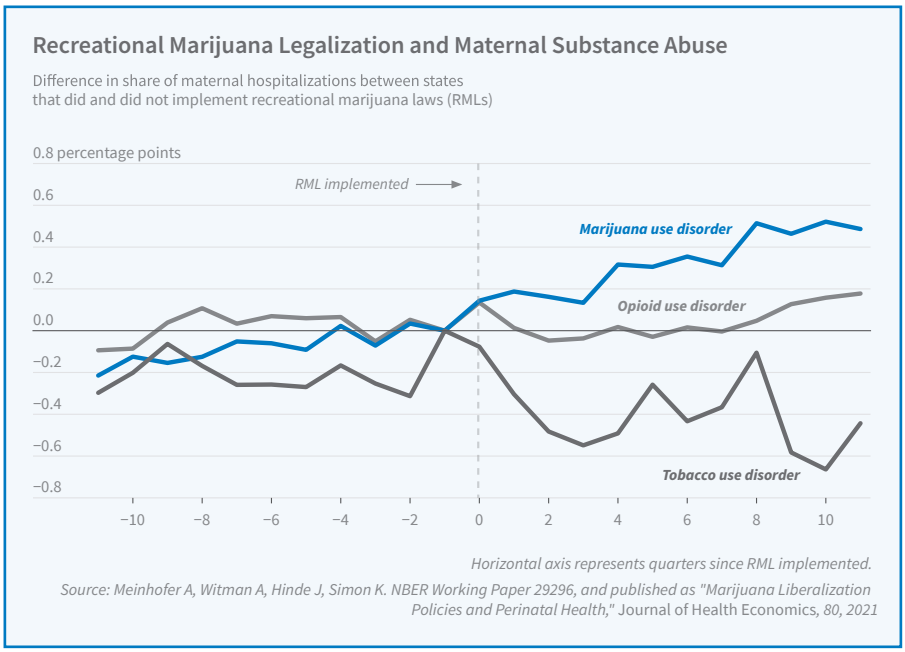

Figure 3

The other major trend in policy stance toward marijuana has been an increase in the number of states that have legalized marijuana for recreational use. Because these policies have been adopted relatively recently — and always following MMLs within states — there has been less research on their effects. Examining use of marijuana and other drugs, Joseph J. Sabia, Dave, Fawaz Alotaibi, and Rees find that while recreational marijuana laws (RMLs) increase adult marijuana use, there is no evidence that they change use of hard drugs.[23] Other studies examine how RMLs affect public health outcomes. Benjamin Hansen, Keaton S. Miller, and Caroline Weber use synthetic control models to study Colorado and Washington State, both of which legalized recreational marijuana in 2014. They find that comparison states saw similar changes in marijuana-related, alcohol-related, and overall traffic fatalities, suggesting that RML policy per se had no causal effect on traffic fatalities.[24] Angélica Meinhofer, Allison E. Witman, Jesse M. Hinde, and Simon estimate how MMLs and RMLs affect perinatal health, finding that although MMLs had no effects on outcomes, RMLs increased the share of maternal hospitalizations with marijuana use disorder and decreased maternal hospitalizations with tobacco use disorder, resulting in no net change in substance use disorder hospitalizations.[25]

In addition to investigating marijuana's impacts, health economists have also made important contributions to an understanding of the determinants of

combustible and e-cigarette use. Much of this work is summarized in a recent review by Philip DeCicca, Donald S. Kenkel, and Michael F. Lovenheim.[26] Regarding combustible cigarette smoking, scholars have studied the effects of state laws to set the minimum cigarette purchase age at 21, so-called T-21 laws. Calvin Bryan, Hansen, Drew McNichols, and Sabia find that state T-21 laws significantly reduce smoking participation among 18-to-20-year-olds and may also reduce e-cigarette use among some high school students.[27] Other research has examined the role of regulating flavors of combustible cigarettes. Hai V. Nguyen and I studied the experiences of Canadian provinces with banning menthol cigarette sales, showing that those policies reduced menthol cigarette smoking but increased nonmenthol cigarette smoking among youths. They also saw more adults buying menthols on First Nations reserves, where menthol bans are nonbinding.[28]

Much of the focus of recent smoking-related research has been on the role of electronic nicotine delivery systems (ENDS). There has been an active debate about whether and for whom ENDS are complements to or substitutes for combustible cigarettes. Studies often use variation in the effective price of ENDS induced by minimum legal sale ages, ENDS-specific taxes, or other vaping-related regulations. Rahi Abouk, Courtemanche, Dave, Bo Feng, Abigail S. Friedman, Maclean, Michael F. Pesko, Sabia, and Samuel Safford analyze large surveys of youths from the Monitoring the Future study and the Youth Risk Behavior Surveillance System and find that ENDS taxes reduce youth ENDS consumption but also significantly increase youth combustible cigarette smoking, suggesting economic substitution.[29] Similar patterns of results are obtained in NielsenIQ Retail Scanner data by Chad D. Cotti, Courtemanche, Maclean, Erik T. Nesson, Pesko, and Nathan Tefft.[30] In addition to ENDS taxes, other ENDS-related policies have also been studied. Jeffrey S. DeSimone, Daniel S. Grossman, and Nicolas R. Ziebarth examine the effects of the minimum age for legal e-cigarette purchase using regression discontinuity methods and find that federal and state setting of 18 as the minimum age reduced e-cigarette use by 15–20 percent.[31] Other ENDS-related research has focused on adults. Dave, Daniel Dench, Michael Grossman, Kenkel, and Saffer study the role of e-cigarette advertising using a variety of fixed-effects approaches that exploit arguably exogenous variation in advertisement placement for people who otherwise watch the same television shows or read the same magazines.[32] They find that e-cigarette advertising on television is associated with reductions in adult combustible cigarette smoking, with no such effect of e-cigarette advertising in magazines.

Social Determinants of Health and Health Equity

In addition to the numerous substantive and policy debates that have attracted the attention of health economists, there has been a noticeable shift to investigating social determinants of health and health equity topics. This includes research on key subpopulations, such as racial and ethnic minorities, LGBTQ+ people, and immigrants, as well as on the role of policy in contributing to differences in health outcomes across these groups. For example, Manasvini Singh and Atheendar Venkataramani try to understand racial disparities in hospital mortality. Using time-stamped electronic health record data from two large hospitals, they point to the role of capacity strain: when hospitals approach capacity, there is more in-hospital mortality of Black patients than of White patients, possibly attributable to biases in provider behavior and hospital processes.[33] Other studies have examined health economics topics relevant to other vulnerable populations such as LGBTQ+ people. For example, Dario Sansone and I examined the effects of cigarette taxes on smoking among sexual-minority adults, finding that higher cigarette taxes significantly reduced smoking for men and women in same-sex households, a substantial share of whom are sexual minorities in romantic relationships.[34] And in a separate study, Gilbert Gonzales Jr., Tara McKay, Sansone, and I studied how the 2010 Affordable Care Act's dependent coverage mandate affected health insurance coverage among young adults in same-sex couples. We found that age-eligible men in same-sex couples were significantly more likely to be covered by health insurance after 2010 relative to their slightly older age-ineligible counterparts.[35] Finally, while not directly studying LGBTQ+ people, Marcus Dillender documents the longer-term effects of arbitrary policy features that resulted in large funding differences across cities that were originally on parallel HIV/AIDS paths. He finds that policy-induced differences in funding per case contributed to uneven progress in combating the HIV/AIDS epidemic, which has disproportionately affected vulnerable communities.[36]

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