



THE SPILLOVER EFFECTS OF HEALTH CARE INTERVENTIONS IN THE UNITED STATES: EVIDENCE WRAP UP

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OVERVIEW

Health care policies and interventions are often designed with a specific population in mind. However, they can have effects that go beyond the specific target population. These effects are referred to as “spillover effects.” This publication showcases studies conducted by J-PAL affiliated researchers that illustrate that health care interventions can have effects beyond direct recipients and demonstrate the value of randomized evaluations in identifying these spillover effects. This publication defines spillover effects as impacts on populations not directly receiving the intervention; it does not consider secondary evaluations focusing on unintended outcomes for the original participants.

Spillover effects can have important consequences for the overall impact of an intervention. A study that does not measure positive spillovers may underestimate the program’s overall benefits. Alternatively, spillover effects could counteract the benefits shown in a primary study, suggesting the intervention is not as beneficial as originally thought. In this case, evaluations and analyses that fail to investigate spillover effects may overestimate the positive impacts and cost-effectiveness of a program.

Spillovers can be challenging to estimate. In observational studies, evidence of an intervention’s impact on individuals not directly targeted by the policy may look like spurious or misleading results. It could even cast doubt on the credibility of the direct effects on the targeted population. Randomized evaluations are therefore particularly useful when it comes to investigating potential spillover effects.

Randomized evaluations are a type of impact evaluation that use random assignment to allocate resources, implement programs, or apply policies as part of the study design. Well-conducted random assignment ensures that there are, on average, no systematic differences between those assigned to receive an intervention and those who are not, beyond random chance. Random assignment can therefore produce rigorous and credible results about the causal impact of a program or policy.

Results from randomized evaluations on spillover effects sometimes differ from findings from observational studies. These differences can occur because randomized evaluations have the ability to isolate the impact of a program from other confounding factors, making their estimates more likely to be valid for the population under study.

This publication features examples of randomized evaluations from J-PAL-affiliated researchers that have produced clear, credible results on the spillover effects of health care interventions in the United States. The examples look at various types of interventions including those related to payment reform, insurance eligibility, and provider-facing behavioral interventions. This publication is not meant to be exhaustive and will be updated periodically as more evaluations are identified.

SELECTED RCTS

Payment Reform

In an attempt to improve quality and reduce spending, Medicare—the public health insurance program for older adults and many people with disabilities in the United States—is shifting away from the traditional fee-for-service (FFS) payment model, which pays providers for each medical service delivered to patients. One primary alternative payment model for US medical care is bundled payments, where one payment is made for all services related to a specific episode of care. The goal is that by paying providers a fixed amount per patient no matter what services they deliver, providers will have an incentive to reduce unnecessary over-provision of care, thereby reducing costs to Medicare. Payment model reforms also have the potential to affect patients not directly targeted depending on how providers respond to the change in incentives.

Leveraging randomization carried out by the Centers for Medicare & Medicaid Services (CMS), independent researchers studied the [spillover effects](#) of a nationwide Medicare bundled payment reform for hip and knee replacements on privately insured Medicare Advantage (MA) patients who were not targeted by the reform. Researchers found that the bundled payment reform's spillover effect on non-targeted MA patients was similar to the bundled payment reform's direct effect on targeted Traditional Medicare (TM) patients, both in terms of sign and magnitude.

Consistent with previous studies measuring the direct effect of changes in payment policies, the researchers found that bundled payment reform reduced the share of targeted TM patients discharged to institutional post-acute care. For non-targeted MA patients, researchers found that the bundled payment reform also reduced the share of MA patients discharged to institutional post-acute care by a similar magnitude.

The researchers present suggestive evidence that the fixed cost of changing health care provision (e.g., undertaking efforts to overhaul discharge practices at the hospital) is likely an important driver of the spillover effects on non-targeted patients. In particular, they find that hospitals that experience larger direct effects for TM patients also experience larger spillover effects for MA patients, and that hospitals with a higher volume of targeted TM patients experience larger spillover effects.

The study results support the idea that health insurance payment practices for one group of patients may affect the care received by other patients. Given that the US health care system has multiple insurers, this study suggests that in analyses of health care policies for one type of insurer, accounting for spillover effects on non-targeted patients who may be indirectly affected may provide a more accurate estimate of the overall impact of the policy.



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Insurance Eligibility

The Affordable Care Act, passed in 2010, greatly increased health insurance coverage in the United States, but many Americans remain uninsured. The gap between increased health insurance eligibility and increased health insurance enrollment is particularly evident in Medicaid, where a significant proportion of adults and children remain uninsured despite being eligible for free or highly subsidized coverage. Understanding the drivers of this gap as well as barriers to enrollment is important for policymakers engaged in debates about the value of expanding health insurance coverage in the United States. In addition, understanding the magnitude and costs of potential spillover effects related to eligibility expansion is crucial.

In 2008, the state of Oregon expanded Medicaid—the public health insurance program in the United States for low-income adults and children—to a limited number of low-income, uninsured adults ages 19-64 years old who were selected from a waitlist by lottery. This expansion provided a rare opportunity for researchers to use the random selection of lottery winners to better examine and understand the effects of extending Medicaid to people who had been previously uninsured. Researchers estimated the effects of expanding Medicaid coverage by comparing the outcomes of those selected by the lottery to those who were not selected using a combination of administrative and survey data. Results showed that Medicaid can increase health care utilization across settings and can have measurable benefits for patients within the first one to two years, including reduced exposure to major financial expenses or medical debts, reduced rates of depression, and improved self-reported health.

Researchers then used the lottery to study the impact of expanded adult Medicaid eligibility on the enrollment of their already eligible children. Researchers found that [expanded adult Medicaid eligibility](#) had a statistically significant impact on child Medicaid enrollment. In particular, three months after the lottery, they found that for every nine adults who enrolled in Medicaid due to winning the lottery, one additional child also enrolled. The cost of covering each child who enrolled due to spillover effects was approximately one-fourth the cost of covering each adult who enrolled.

The effect on child enrollment lessened with time and was statistically insignificant one year after the lottery. There are two potential reasons for these attenuated effects. First, children in households not selected by the lottery may have enrolled in Medicaid later on through different mechanisms. Second, children in households selected by the lottery may have failed to re-enroll. The researchers found that the fade-out was primarily driven by the first reason, children in control families enrolling in Medicaid. This finding suggests that the spillover effects mainly caused earlier enrollment of children who would have enrolled at a later date.

Some states have referenced potential spillover effects found by non-randomized evaluations when explaining their unwillingness to expand Medicaid under the Affordable Care Act since the increased federal subsidies would not apply to already-eligible children. However, this evaluation suggests that the magnitude and cost of spillover effects is much more modest and lessens over time. These results can provide policymakers with a more comprehensive understanding of the costs and benefits of public health insurance expansion in both the short and long term as well as the links between increased eligibility and increased enrollment. In addition, these results highlight the value of conducting secondary analyses of randomized evaluations to credibly estimate spillover effects and answer policy-relevant questions.



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Provider-Facing Behavioral Interventions

Every year, millions of people are prescribed antipsychotic drugs for uses not approved by the United States Food and Drug Administration (FDA), despite evidence suggesting such off-label use is associated with significant harm. In addition to exposing patients to unnecessary health risks, overprescribing also results in unneeded public expenditures. Yet there is limited evidence on meaningfully effective, quickly scalable interventions to curb potentially harmful overprescribing and the possibility of far-reaching effects on physicians not directly targeted.

CMS carried out a randomized evaluation to test the impact of warning letters sent to high-prescribing doctors in Medicare. The letters focused on quetiapine, the most commonly prescribed antipsychotic in the United States.

Academic researchers then studied the [spillover effects](#) of the warning letters on patients covered by private health insurance who were not the focus of the Medicare letter. They found that doctors who received a letter cut back their prescribing of quetiapine for both Medicare and private insurance patients compared to doctors who did not receive a letter. These results suggest that physicians do not necessarily tailor their treatment strategies to each patient's insurance plan. As a result, physicians may not distinguish between different types of insurance when determining care for their patients. Overall, these findings point to the fact that an intervention implemented by one insurer can have far-reaching effects on health care for patients covered by other insurers.

In another [study](#), researchers also assessed whether the warning letters had spillover effects on the prescribing behavior of peer physicians. Peers were identified as other physicians in the original study physicians' practice groups or other physicians who treated eleven or more of the same patients as an original study physician. Physicians with a connection to at least one original study physician were considered the treated group while the remainder were controls.

Researchers did not detect any changes in prescribing behavior among peer physicians due to the letters. These results call into question whether health care interventions that rely on provider-facing behavioral interventions, such as letters, can have spillover effects on peer providers. However, there are limitations of this study, including the fact that peer physicians were identified imperfectly with administrative data. Additionally, there may have been spillover effects that were meaningful but too small to be detected through this analysis. The content of the letter may have also affected people's willingness to share information with their peers. As a result, depending on the content and focus, these results may not be generalizable to all provider-facing behavioral interventions.

CONCLUSIONS

The US health care system faces many issues related to efficiency, effectiveness, and equity. While the United States pays more for health care than any other high-income country, we have [worse health outcomes](#) across a range of measures (e.g., life expectancy and maternal and infant mortality). In addition, there are stark disparities across racial and economic lines. Policymakers and practitioners across the country are implementing innovative programs and policies to address these challenges. However, a lack of rigorous and comprehensive evidence about the effectiveness of interventions makes it difficult to understand which programs and policies should be invested in and scaled. By considering and accounting for spillover effects, policymakers can make more informed decisions, optimize resource allocation, promote equity, mitigate unintended consequences, and ultimately improve the effectiveness and outcomes of their programs. Spillover effects provide insights into the broader systemic impact of programs. They can reveal how interventions interact with existing social, economic, and health systems, offering policymakers a more comprehensive understanding of how programs fit into the larger context. This knowledge is crucial for designing integrated policies that can address complex societal challenges.

Analyses that identify the spillover effects of health care interventions can provide decision-makers with a more comprehensive understanding of a program's effects, not just for those directly targeted, but also for others who may be impacted by a program's far-reaching effects. Randomized evaluations are particularly helpful due to the simplicity, credibility, and transparency of their design. Therefore, when feasible and ethical, it is important to identify opportunities to use randomized evaluations to measure spillover effects so that policymakers and practitioners can use rigorous evidence to design and implement effective and equitable health care interventions.

REFERENCES

Payment Reform

Einav, L., Amy Finkelstein, Yunan Ji, and Neale Mahoney. 2020. "Randomized trial shows healthcare payment reform has equal-sized spillover effects on patients not targeted by reform." *Proceedings of the National Academy of Sciences*, 117(32), 18939-18947. <https://doi.org/10.1073/pnas.2004759117>.

Results from J-PAL North America Supported Randomized Controlled Trials to Improve US Health Care Delivery. Cambridge, MA: Abdul Latif Jameel Poverty Action Lab (J-PAL). Evidence Wrap-up. <https://www.povertyactionlab.org/es/media/8381>.

The Spillover Effects of a Nationwide Medicare Bundled Payment Reform. Cambridge, MA: Abdul Latif Jameel Poverty Action Lab (J-PAL). <https://www.povertyactionlab.org/evaluation/spillover-effects-nationwide-medicare-bundled-payment-reform>.

Insurance Eligibility

Sacarny, Adam, Katherine Baicker, and Amy Finkelstein. 2022. "Out of the Woodwork: Enrollment Spillovers in the Oregon Health Insurance Experiment." *American Economic Journal: Economic Policy*, 14 (3): 273-95. <https://www.aeaweb.org/articles?id=10.1257/pol.20200172>.

Understanding Medicaid Expansion: The Effects of Insuring Low-Income Adults. Cambridge, MA: Abdul Latif Jameel Poverty Action Lab (J-PAL). Briefcase. <https://www.povertyactionlab.org/publication/understanding-medicare-expansion-effects-insuring-low-income-adults>.

Provider-Facing Behavioral Interventions

Barnett, Michael, Andrew Olenski, and Adam Sacarny. 2020. "Common Practice: Spillovers from Medicare on Private Health Care." NBER Working Paper. <https://www.nber.org/papers/w27270>.

Sacarny, Adam, Andre Olenski, and Michael Barnett. 2019. "Association of Quetiapine Overuse Letters With Prescribing by Physician Peers of Targeted Recipients: A Secondary Analysis of a Randomized Clinical Trial." *JAMA Psychiatry*. 2019;76(10):1094–1095. <https://doi.org/10.1001/jamapsychiatry.2019.1418>.

The Effect of Informative Letters on the Prescription and Receipt of Seroquel in the United States. Cambridge, MA: Abdul Latif Jameel Poverty Action Lab (J-PAL). <https://www.povertyactionlab.org/evaluation/effect-informative-letters-prescription-and-receipt-seroquel-united-states>

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