Mental Health Care After Clinicians Transition to Self-Pay: Evidence from Medicare*

Marema Gaye †

October 31, 2026

Click here for latest version

Abstract

Clinicians are increasingly leaving health insurance networks and entering self-pay arrangements, but how does this transition impact their patients' insurer-billed health care? I study this question by assessing the effects of mental health clinicians who formally opt out of Medicare on their patients' Medicare-billed mental health care, using a novel dataset of clinician opt-out dates linked to claims from a 20% random sample of fee-for-service Medicare beneficiaries. I compare patients of opt-out clinicians with patients of observably similar clinicians who do not opt out of Medicare using a matched, stacked difference-in-differences design. Following opt-out, treated patients have 0.52 fewer Medicare-billed mental health visits per quarter relative to control patients, a difference equal to 18% of baseline billed visit volume. However, estimated differences in the volume of psychotropic medication fills are not statistically distinguishable from zero. Patients initiate new relationships around the transition with clinicians whose treatment capabilities resemble those of their opt-out clinician, and mental health care within those relationships increases after the clinician opts out. Psychotropic prescribing from previously seen mental health prescribers and established primary care providers also increases. However, increases in visits with other clinicians do not fully offset the decline in billed visits from the opt-out clinician. Acute-care use increases around the opt-out transition, but differential pretreatment movement warrants caution in interpreting those estimates.

*I am grateful to my dissertation committee Ellen Meara, Haiden Huskamp, and David Cutler for their generous support and guidance. This work greatly benefited from feedback from participants of the Harvard Health Policy PhD Seminar, the Harvard Health Economics Seminar, the Harvard Labor and Public Finance Workshop, and the National Bureau of Economic Research T32 Seminar. This research was supported by the National Institute on Aging, grant number T32-AG000186.

†PhD Candidate in Health Policy, Harvard University. Email: mgaye@hsph.harvard.edu.

1 Introduction

Self-pay arrangements, where patients pay for the full cost of care without insurer reimbursement, have historically been used for care not covered by health insurance plans (Tu and May 2007). However, they have been increasingly used for more routine care, such as primary care and mental health care (Benjenk and Chen 2020; Zhu et al. 2025). Under these arrangements, patients do not benefit from insurance coverage, negotiated rates, and limits on patient financial liability.

If a clinician decides to enter a self-pay arrangement with their patients, after previously billing their health insurer, patients may face a price shock to continuing care and could respond to this transition along several margins. Patients may continue seeing the clinician who left their insurance network and pay for care privately, although the potential increase in out-of-pocket costs could make continuation less likely. If self-pay prices are unaffordable or exceed the value of continuing care, patients may try to switch to another in-network clinician, such as a new clinician providing similar services or a clinician with whom they have an established relationship. In anticipation of the transition, patients could seek out alternative sources of care or be referred to other clinicians in advance of the clinician officially leaving an insurance network. Patients may face switching costs and could respond by reducing or discontinuing care altogether, which could lead to downstream acute care use if they forgo needed care. Thus, the overall effect of the transition to self-pay on total insurer-billed care, continuity of care, and downstream utilization is ex-ante ambiguous.

In this paper, I examine the effects of a clinician transitioning to a self-pay arrangement on their patients' health care utilization. I focus on this transition in mental health care because it is a setting where self-pay arrangements are becoming increasingly prevalent (Benjenk and Chen 2020). Because insurance coverage and out-of-pocket costs are among patients' most important considerations when choosing a mental health clinician (Ward-Ciesielski and Rizvi 2021), patients may seek replacement care with costs similar to or lower than those they faced before the self-pay transition. However, qualitative research suggests that continuity of care facilitates trust, shared decision-making, and overall satisfaction with mental health care (Green et al. 2008; Iversen et al. 2025), thus patients may be reluctant to switch clinicians. Additionally, finding and establishing replacement care may impose substantial search costs, especially amidst growing mental health clinician shortages

(National Center for Health Workforce Analysis 2025).

I focus on this transition in Medicare among patients of three groups of mental health clinicians: psychiatrists, clinical psychologists (hereafter CPs), and clinical social workers (hereafter CSWs). Clinicians are allowed to "opt out" of Medicare, which enables them to privately contract with Medicare beneficiaries without being subject to Medicare's reimbursement limits. Therefore, a clinician who opts out of Medicare may remain available to Medicare beneficiaries but potentially at a higher price. I use a novel dataset of all clinicians who have opted out of Medicare, linked to 2008-2022 fee-for-service Medicare claims from a 20% random sample. Importantly, the dataset includes exact opt-out dates, allowing me to separate opt-out behavior from disappearance from claims data, which could signal other clinician behavior such as retirement. I estimate the effects of the transition to self-pay arrangements using a stacked difference-in-differences approach where I compare outcomes of patients of clinicians who opt out of Medicare (i.e. patients of opt-out clinicians) to outcomes of patients of clinicians who do not opt out of Medicare (i.e. patients of non-opt-out clinicians).

I find that a patient's volume of Medicare-billed visits with an opt-out clinician falls to zero by the first calendar quarter the clinician fully opts out of Medicare. Patients of opt-out clinicians have 0.75 fewer billed visits relative to patients of non-opt-out clinicians, a difference that is 46% of the baseline level of office visits. Furthermore, total Medicare-billed mental health visits from any clinician decline by 18% relative to baseline for patients of opt-out clinicians. However, estimated differences in psychotropic medication fills are not statistically distinguishable from zero. Between the quarter before and quarter after opt out, patients of psychiatrists initiate care with other prescribing clinicians, while patients of CPs and CSWs initiate care with other non-prescribing clinicians. Visits with these clinicians also increase after opt out, suggesting that patients switch to Medicare-participating clinicians with treatment capabilities similar to their opt-out clinician, but these visits do not fully offset the decline in Medicare-billed visits resulting from clinician opt out. Patients also receive more psychotropic medication fills from their established primary care provider (hereafter PCP) and previously-seen mental health prescribers. I also find that mental health-related emergency department visits and inpatient hospitalizations increase, though the estimates should be interpreted cautiously due to the presence of pre-period increases in these outcomes.

While I am unable to assess whether patients continue to have self-pay visits with an opt-out clinician, Medicare prescription data include all prescription fills covered by Part D, regardless of the prescriber's participation status. I use the prescription data to examine which patients of opt-out psychiatrists (the only specialty in my clinician sample with prescribing privileges) continue a prescribing relationship after opt out. Compared to patients who do not continue the prescribing relationship, patients who continue the relationship have fewer chronic conditions, are less likely to be dual-eligible for Medicaid, less likely to be non-White, and more likely to reside in an urban zip code. While descriptive, these results suggest that preserving the prescribing relationship is associated with chronic disease burden and patterned by race, socioeconomic characteristics, and geography.

This paper contributes to three strands of literature. The first is literature on clinician participation in insurance networks (Bishop et al. 2014; Yu et al. 2019; Benson et al. 2020; Carlo et al. 2024; Oh et al. 2022; Neprash and Chernew 2025). Many of these studies have documented mental health clinicians' low and declining participation in health insurance networks. This paper extends this literature by studying how clinicians transitioning away from accepting insurance affects their patients. The second strand of literature studies how clinician removal or exit from an insurance network impacts patients' health care (Piwnica-Worms et al. 2021; Rosenthal, Li, and Milstein 2009; Staiger 2022), which contributes to a broader literature studying the effect of disruptions to the patient-clinician relationship due to clinician retirement, relocation, and temporary absence (Agha, Shenhav, and Wagner 2025; Fadlon and Van Parys 2020; Kwok 2019; Ruiz et al. 2023; Sabety, Jena, and Barnett 2021; Sabety 2023; Simonsen et al. 2021; Zhang 2022). I extend this literature by studying the transition from insurer-billed to self-pay care, a setting in which the clinician may remain available to patients but at a potentially higher price, which could lead to disruptions in care. Moreover, whereas much of the existing literature focuses on relationships with primary care clinicians, I examine disruptions involving mental health clinicians. Finally, this paper contributes to research examining how mental health care is allocated across specialty mental health clinicians and primary care settings (Deb and Holmes 1998; Ettner and Hermann 1997; Kyanko et al. 2022; McConnell, Gast, and McFarland 2012; Okunade and Murthy 2008). I show that replacement care following opt-out depends on the treatment capabilities of the departing clinician: patients of psychiatrists shift toward other prescribers, patients of CPs and CSWs shift toward other non-prescribing mental

health clinicians, and established primary care providers assume additional psychotropic prescribing.

The rest of the paper proceeds as follows. Section 2 describes the institutional setting. Section 3 discusses the data and sample construction. Section 4 discusses the empirical strategy. Section 5 presents the study results. Section 6 concludes.

2 Setting: Mental health clinicians in Medicare

Medicare is the federal health insurance program covering adults aged 65 and older and adults younger than 65 living with a disability. Coverage is divided into four parts: Part A covers inpatient care, Part B covers physician and practitioner services (e.g., doctors' visits, preventive services, and laboratory testing), Part C (Medicare Advantage) provides Part A and B coverage through private insurance plans, and Part D covers prescription drugs. Mental health clinicians play a key role in the delivery of Part B-covered behavioral health services[1]. In 2021, nearly 5 million Medicare fee-for-service beneficiaries (16% of the total fee-for-service population) received Part B behavioral health services, with psychiatrists serving the largest number of beneficiaries (2 million), followed by CPs (760,000 beneficiaries) and CSWs (600,000 beneficiaries) (MedPAC 2023). Psychiatrists are physicians trained in psychiatry who can diagnose mental health conditions, prescribe medication, and provide psychotherapy. CPs hold a doctoral degree in clinical or counseling psychology and can diagnose and provide psychotherapy[2]. CSWs hold a master's degree in social work and can diagnose and provide psychotherapy but cannot prescribe medication.

There are three different payment arrangements available to clinicians who deliver Part B-covered services to Medicare beneficiaries. Clinicians who are *participating providers* are paid on a fee-for-service basis according to the Medicare Physician Fee Schedule (PFS) for all Part B services they deliver, i.e., they accept assignment on all Medicare claims. They are also legally prohibited from charging above the Medicare-allowed amount for a particular service. Clinicians who are *non-participating providers* accept assignment on

1. These services include screening (e.g. for depression, alcohol misuse, and substance use disorders), counseling (including psychiatric evaluations, psychotherapy, family counseling, and alcohol counseling), behavioral and physical health integration services, substance use disorder treatment, clinician services during inpatient hospitalization, and clinician-administered prescription drugs.

2. CPs in the following seven states are also authorized to prescribe medications: Colorado, Idaho, Illinois, Iowa, Louisiana, New Mexico, and Utah (Fink and Schwartz 2025). While my data include CPs from these states, there are no Part D medications prescribed by CPs for the beneficiaries in my 20% random sample.

individual claims on a case-by-case basis[3]. For claims they accept assignment on, they are paid an allowed amount that is 5% lower than the PFS for participating providers. For claims for which they do not accept assignment, clinicians are allowed to charge a beneficiary up to 115% of the non-participating allowed amount. In 2024, 99% of practicing physicians nationwide were either participating or non-participating providers and roughly 99.7% of Part B fee-for-service claims were accepted on assignment (Cottrill, Ochieng, and Neumann 2025). Finally, clinicians can *opt out of Medicare entirely* and privately contract with their patients. While participating and non-participating providers are limited in how much they can charge patients, opt-out clinicians are not subject to pricing limits under the PFS.

The ability to opt out of Medicare became available on January 1, 1998 through the 1997 Balanced Budget Act (Buczko 2004). The rules governing Medicare opt-out and private contracting are codified at 42 C.F.R. Part 405, Subpart D. To opt out of Medicare, a clinician must submit an opt-out affidavit to each Medicare Administrative Contractor (MAC) with jurisdiction over claims the clinician would otherwise submit[4]. The clinician must notify and enter a private contract with each Medicare patient to whom they plan to continue providing services, the patient must agree to pay the clinician directly for care without insurer reimbursement, and the first private contract must be entered before submission of the affidavit. Additionally, a clinician's opt-out status applies for two years to all Medicare Part B-covered services[5], including those furnished to Medicare Advantage beneficiaries. Organizations where an opt-out clinician is employed (such as a hospital, clinic, or group practice) are also prohibited from receiving payment for the opt-out clinician's professional services, though the organization is allowed to receive payment for facility or institutional services. Before 2015, clinicians had to actively renew their opt-out status at the end of the two-year period. However, the 2015 Medicare Access and CHIP Reauthorization Act enabled opt outs effective on or after June 16, 2015 to be automatically renewed every two years unless the clinician actively cancels their opt-out status.

3. This option is not available to physician assistants, nurse practitioners, clinical nurse specialists, nurse midwives, certified registered nurse anesthetists, clinical psychologists, clinical social workers, marriage and family therapists, mental health counselors, registered dietitians/nutritionists, or anesthesiologist assistants.

4. A MAC is a regional contractor that processes a clinician's Medicare claims and enrollment records. If a clinician practices in multiple states that have different MACs, they must file an affidavit with each MAC.

5. If the clinician delivers emergency or urgent care to a Medicare beneficiary with whom they do not have a private contract, the clinician is allowed to submit a claim for that care to Medicare.

Most physicians and non-physician practitioners are eligible to opt out of Medicare, while organizations are prohibited from doing so[6]. Additionally, opt-out clinicians may enter private contracts with patients who are dual-eligible for Medicaid. However, services delivered to dual-eligible patients by an opt-out clinician are not eligible for payment from Medicare, therefore billing protections for dual-eligible patients and Medicaid payment of Medicare cost-sharing no longer apply [7]. If the clinician is enrolled in Medicaid, Medicaid billing rules continue to apply for services covered by both Medicare and Medicaid (Center for Medicare and Medicaid Services 2025).

Figure 1a shows trends in the share of total active opt-out affidavits by specialty between 2013-2023. During this time period, a growing share of total opt-out affidavits were for psychiatrists, CPs, and CSWs combined, increasing from 50% of opt-out affidavits in 2013 to 60% of opt-out affidavits in 2023. Primary care physicians, the group with the next largest volume of opt-out affidavits, have accounted for a shrinking share over this time period, decreasing from 26% in 2013 to 18% of affidavits by 2023. Figure 1b shows trends in opt-out rates as a share of the mental health clinician workforce between 2013-2023. Opt-out rates increased across all clinician types, with 9.1% of psychiatrists, 10.1% of CPs, and 1.8% of CSWs having an active opt-out status in 2023. Thus, while mental health services are widely used by Medicare beneficiaries, mental health clinicians account for a large and growing share of Medicare opt-out behavior.

3 Data, Sample Construction, and Outcomes

3.1 Data

Opt-Out Affidavits My primary dataset is a dataset of all opt-out affidavits between January 1, 1998 and December 31, 2023, obtained through a Freedom of Information Act request to the Centers for Medicare and Medicaid Services (CMS). Each affidavit includes clinician-level information as recorded in the Provider Enrollment, Chain, and Ownership System, including the clinician's National Provider Identifier (NPI), primary specialty, mailing and practice address, opt-out start and end dates, and the reason for opt-out expiration (where applicable). In addition to ending through nonrenewal, a clinician's opt-

6. Anesthesiologist assistants, chiropractors, occupational therapists, physical therapists, qualified audiologists, and qualified speech language pathologists are prohibited from opting out of Medicare.

7. Specifically, Qualified Medicare Beneficiaries are legally protected from having to pay for Part A or Part B deductibles, coinsurance, or copayments for Medicare-covered services.

out status may end if the clinician dies or, for a clinician who has not previously opted out, terminates their opt-out status within 90 days of its effective date[8]. If a clinician's affidavit is renewed, the record's expiration date is updated to the new expiration date. New records are only created for the same clinician if there are non-contiguous opt-out periods or if they opt out in more than one state.

The dataset includes 50,056 affidavits. I drop duplicate observations, affidavits with a missing NPI or address, and affidavits where a clinician's practice location is outside of the 50 states and Washington, D.C. I also combine affidavits from the same clinician practicing in the same state with overlapping start and/or end dates. Additionally, if a clinician has multiple non-contiguous affidavits, I keep their first opt-out affidavit. After implementing these changes, there are 44,457 remaining affidavits, with 17,365 (39% of all) affidavits from psychiatrists, CPs, and CSWs. See Table A1 for the full breakdown of dropped affidavits.

Medicare data To assess patient outcomes, I use claims, prescription, and enrollment data from a 20% random sample of fee-for-service Medicare beneficiaries from 2008-2022. My data include Carrier claims to identify Part B services, Outpatient claims to identify facility-based outpatient services, Inpatient claims to identify hospitalizations, and Part D event files to identify prescription fills. Because Medicare claims do not capture self-pay visits following opt-out, the visit outcomes I construct measure changes in Medicare-billed care rather than changes in total mental health treatment. However, Part D prescription fills remain observable regardless of the prescriber's Medicare participation status among patients with Part D enrollment, thus I use this data to assess which patients continue a prescribing relationship with an opt-out psychiatrist.

I use data from the Medicare Beneficiary Summary File to identify patient age, sex, race/ethnicity, reason for enrolling in Medicare, dual-eligible status, and enrollment in Medicare Part B and Part D. I use data from the Medicare Chronic Conditions file to identify a patient's total number of chronic conditions and diagnosis of a serious mental illness (SMI) defined as a diagnosis of bipolar disorder, major depressive disorder, or schizophrenia using the Chronic Conditions Warehouse algorithm (Figueroa et al. 2020). Additionally, I use data from the Medicare Data on Provider Practice and Specialty file to

8. During the COVID-19 Public Health Emergency, CMS also allowed clinicians to cancel their opt-out status regardless of how long it had been in effect; see https://www.cms.gov/files/document/physicians-and-other-clinicians-cms-flexibilities-fight-covid-19.pdf

measure clinician age.

3.2 Clinician Matching and Patient Attribution

I construct the patient study sample by first matching mental health clinicians who opt out of Medicare to observationally similar clinicians who do not opt-out of Medicare. I first match at the clinician-level because of potential selection bias in terms of who decides to opt out of Medicare. I apply several clinician-level restrictions to the sample of opt-out affidavits. First, I exclude opt-outs beginning before 2013 because CMS began systematically tracking opt-out affidavits in April 2012; I therefore use 2013 as the first treatment year. I also exclude opt-outs beginning after 2020 because I cannot observe my preferred two-year post-period for later cohorts. These restrictions yield a mental health clinician opt-out sample of 5,212 clinicians. To construct the comparison group, I use the National Plan and Provider Enumeration System files to identify all active psychiatrists, CPs, and CSWs from 2013 through 2020 with an active NPI who do not appear in the CMS opt-out records at any point from 1998 through 2023. I identify these specialties using taxonomy codes from prior literature and exclude clinicians specializing in child, adolescent, or school-based care (Lombardi, Saxe Zerden, and Fraher 2024; Oh et al. 2022).

I use coarsened exact matching to match opt-out clinicians to comparison clinicians.[9] I match clinicians exactly on primary specialty and the hospital referral region of their practice location, and within coarsened bins of clinician age and baseline Medicare beneficiary caseload. I divide age, measured eight quarters before opt-out, into four bins. I measure baseline caseload as the number of unique Medicare beneficiaries who had an office visit with the clinician during quarters -8 through -5 relative to opt-out. To implement the matching procedure, I divide the sample of opt-out clinicians into cohorts based on the calendar quarter they opt out. For each cohort, I identify a group of potential comparison clinicians who are active during the corresponding cohort calendar year, and measure each potential comparison clinician's age and baseline caseload in the same corresponding calendar periods as the opt-out clinicians[10]. I match clinicians one-to-one without replacement,

9. Prior studies have used this approach to reduce the risk that other matching procedures pair observably dissimilar units; for example, see Sarsons (2017), Sabety (2023), and Agha, Shenhav, and Wagner (2025).

10. For example, if a clinician opts out in the first quarter of 2013, I match them to another comparison clinician who was active in 2013. Then, for clinicians who opt out in the second quarter of 2013, I match them to another comparison clinician who was active in 2013, but has not yet been matched to an opt-out clinician.

so each comparison clinician is matched to no more than one opt-out clinician. Selected comparison clinicians are assigned a "synthetic opt-out date" that matches the opt-out date of their matched opt-out clinician. This procedure yields 4,762 matched pairs, or 9,524 total clinicians comprised of 5,348 psychiatrists, 2,432 CPs, and 1,744 CSWs.

Table 1 compares characteristics between opt-out and comparison clinicians *before* implementing the matching procedure. Compared to comparison clinicians, opt-out clinicians are older, see fewer patients, are less likely to be female, and are more likely to practice in a metropolitan area. Table 2 compares clinicians *after* implementing the matching procedure. Matching helps identify a group of comparison clinicians that are closer in age and gender distribution. However, opt-out clinicians are still more likely to practice in a metropolitan area and have a smaller caseload than comparison clinicians. Figure 2 shows trends in care delivery between opt-out and comparison clinicians in the two years before and after a clinician opts out of Medicare. While comparison clinicians see slightly more beneficiaries, the average volume of quarterly Medicare-billed mental health visits trends similarly until roughly two quarters before opt-out.

I assign patients to clinicians based on office visits during quarters -8 through -5 relative to opt-out. I use this period because it precedes the time period when Medicare-billed visits from opt-out clinicians begin to change. If a patient saw both an opt-out and comparison clinician during this time period, I attribute them to the opt-out clinician. If the patient saw multiple opt-out clinicians, I assign them to the opt-out clinician with the earliest opt-out date. Similarly, if a patient saw multiple comparison clinicians but no opt-out clinicians, I assign them to the comparison clinician from the earliest comparison clinician cohort. Before implementing the patient assignment rules, 1.7% of patients saw more than one opt-out clinician, and 0.7% saw both an opt-out and comparison clinician during the assignment period. Each patient is ultimately assigned to one clinician and appears in one opt-out cohort. Treated patients are assigned to an opt-out clinician and control patients are assigned to a matched, non-opt-out clinician.

Additionally, I require that patients were alive and enrolled in Part B in relative quarter -8 before a clinician's opt-out quarter, to ensure that I can observe them in the Medicare data at least two years before their assigned clinician's opt-out date.

Table 3 reports baseline characteristics of the patient sample. The sample includes 10,194 treated patients assigned to an opt-out clinician, and 12,660 control patients as-

signed to a comparison clinician. Across both samples, roughly 75% of patients were assigned to a psychiatrist, and the remaining patients were assigned to either a CP or CSW. Treated patients are slightly older, more likely to be female, and less likely to be non-White. They are also less likely to be eligible for Medicare due to disability or have dual-eligible status. However, both patient groups have a similar average number of chronic conditions. Each patient in my sample has Part B enrollment, but a slightly larger share of control patients are enrolled in Part D. While average quarterly mental health visits and visits with their assigned clinician are similar across both groups, treated patients have slightly fewer average quarterly psychotropic medication fills. Although the difference-in-differences design accounts for time-invariant differences between treated and control patients, these baseline characteristics help contextualize my findings.

3.3 Outcome Measures

I assess five groups of outcome measures. First, I assess Medicare-billed care from the patient's assigned clinician: an opt-out clinician for treated patients and a non-opt-out clinician for control patients. I measure office visits and prescription fills. Office visits from an assigned clinician are defined as any Carrier claim with a place-of-service in an office-based setting and where the rendering NPI listed on the claim is the same as the assigned clinician's NPI. Importantly, the Carrier claims do not include visits from clinicians once they opt-out of Medicare, thus these visit counts only capture visits billed to Medicare. Prescription fills from the assigned clinician are defined only for patients of psychiatrists as a Part D prescription event where the prescribing NPI is the same as the assigned clinician's NPI. Patients of CPs and CSWs are excluded from this prescription outcome. Notably, the Part D events include all Part D-covered prescription fills regardless of a clinician's participation status, including those written by an opt-out clinician after they opt-out.

Second, I assess Medicare-billed health care. Using the Part B claims, I identify mental health visits as any office-based Carrier claim with a mental health diagnosis in the first or second diagnosis position. I also identify two common mental health visits: (1) psychotherapy visits and (2) established patient evaluation and management (E&M) visits with a mental health diagnosis in the first or second diagnosis position[11]. Finally, I use the Part D event files to identify prescription fills for psychotropic medications based on

11. More than 95% of psychotherapy visits have a mental health diagnosis in the first or second diagnosis position, thus I do not implement diagnosis requirements for psychotherapy visits.

five, mutually exclusive, drug classes: antidepressants, antipsychotics, mood stabilizers, other anxiolytics, and other psychotropic medications (Albrecht et al. 2017). To assess whether opt out impacts overall health care utilization, I also measure overall billed visits and overall prescription fills, regardless of diagnosis or drug class, respectively.

The third group of measures captures whether patients receive mental health care from clinicians they have an established relationship with, specifically a previously-seen mental health clinician or a focal primary care provider. To identify these clinicians, I use quarters -12 through -9 relative to opt-out as the assignment window for these clinicians, so that it precedes the assignment window used for assigning patients to an opt-out or comparison clinician. Approximately 92% of the final patient sample is observable during this window. Among observable patients, those without a qualifying previously seen mental health clinician or focal PCP are assigned a value of zero for the corresponding outcome; patients who are not observable during this window are excluded from these analyses.

I identify previously-seen mental health clinicians as another psychiatrist, CP, or CSW from whom the patient received an office-based mental health visit during quarters -12 through -9 relative to opt-out. I then measure subsequent mental health visits with those clinicians. Among previously-seen mental health clinicians who prescribe, I also measure psychotropic medication fills attributed to those clinicians. As shown in Table 3, 3,011 treated patients (29.5% of treated patients) and 4,418 control patients (35% of control patients) saw a different mental health clinician prior to the study period.

I identify a focal primary care clinician as a clinician specializing in internal medicine, family practice, general practice, or geriatric medicine with whom a patient has the plurality of total office visits during quarters -12 through -9 relative to opt-out. In the case of ties, I extend the lookback period to when the patient is first enrolled in Medicare Part B and assign based on visit volume from the first quarter of enrollment until relative quarter -9. If the tie remains unresolved, I randomly assign patients to one of the PCPs they have had the most office visits with[12]. I measure the volume of office visits and psychotropic medication fills that patients have with their assigned focal PCP. As shown in Table 3, 8,107 treated patients (79.5% of treated patients) and 9,712 control patients (76.7% of control patients) were assigned to a focal PCP.

I also identify office-based mental health visits with another psychiatrist, CP, or CSW

12. Roughly 12% of patients are assigned based on the longer lookback period, and roughly 1% of patients are randomly assigned a PCP.

for which the patient's assigned clinician is listed as the referring provider. This measure provides claims-based evidence of whether the assigned clinician may have facilitated patients' transitions to other Medicare-billing clinicians.

The fourth group of outcomes assesses whether patients established a relationship with a new mental health clinician. I identify a new mental health clinician as a clinician from whom the patient had not received an observed office-based mental health visit during the preceding three years[13]. I define a newly established relationship as an initiation encounter (either a psychiatric diagnostic evaluation or a new patient E&M mental health visit) that was followed by another office-based mental health visit with the same clinician within 90 days. I measure the number of mental health visits, beginning with the initiation encounter, delivered within these newly established relationships. I separately measure initiations of care with a new *prescriber* (i.e., a new psychiatrist, nurse practitioner, clinical nurse specialist, or physician assistant[14]) or with a new *non-prescriber* (i.e., a new CP or CSW) who can be reimbursed by Medicare for delivering covered Part B mental health services to Medicare beneficiaries. I also identify whether patients had a psychiatric diagnostic evaluation with or without a medical assessment. I measure the volume of mental health visits that patients have with both groups of new mental health clinicians, and psychotropic medication fills from new prescribers.

The final group of outcomes captures downstream acute care use and spending. First, I measure whether patients have a mental health-related emergency department (ED) visit, defined using both the Outpatient and Inpatient claims as having an ED visit with a mental health diagnosis in the first diagnosis position or diagnosis of self-injury in any position. I similarly define mental health-related inpatient hospitalizations using the Inpatient claims as a hospitalization with a mental health diagnosis in the first diagnosis position or self-injury in any diagnosis position. I also assess all-cause ED visits and hospitalizations. All ED visit and hospitalization measures are constructed as indicators for having any visit in the quarter. Additionally, I measure total medical spending as the sum of Medicare and patient liability for Medicare-billed medical services (i.e., services billed in the Carrier, Inpatient, or Outpatient claims) and prescription spending as the sum of Medicare and

13. This lookback period aligns with how new versus established patient evaluation and management visits are distinguished.

14. While nurse practitioners, clinical nurse specialists, and physician assistants may provide primary care, they are also eligible to receive reimbursement from Medicare for delivering Part B mental health services. To be included in this outcome, they must have delivered a qualifying mental health initiation encounter.

patient liability for Medicare-billed prescription fills.

For all visit outcomes, I require that patients are enrolled in Part B and each visit outcome is unique at the beneficiary-clinician-day level. For all prescription outcomes, I additionally require that patients are enrolled in Part D. The codes used to identify diagnoses and different office visits are listed in Table B1 and the generic drug names used to identify psychotropic medications are listed in Table B2.

4 Empirical Strategy

My causal estimand of interest is the average effect of a mental health clinician opting out of Medicare on *observed* Medicare-billed health care utilization among the clinician's Medicare fee-for-service patients. Given that a conventional two-way fixed effects model would compare newly-treated patients and already-treated patients, which may produce biased estimates under heterogeneous treatment effects (Goodman-Bacon 2021), and clinicians opt out in different calendar quarters and treatment effects may evolve with time since opt-out, I implement a matched cohort-stacked event-study design introduced by Cengiz et al. (2019) and Deshpande and Li (2019) as my main specification[15]. This specification allows me to compare each opt-out patient cohort only to the control group of patients of matched comparison clinicians.

For each opt-out quarter from the first quarter of 2013 through the fourth quarter of 2020, I define a "subexperiment" consisting of patients of clinicians who opt out in that quarter and patients of matched comparison clinicians assigned the same quarter as a synthetic opt-out date. Clinicians are matched without replacement and beneficiaries are attributed to a single study clinician, therefore each clinician and beneficiary appears in only one subexperiment. This differs from stacked designs that reuse comparison observations across multiple subexperiments. I observe quarterly outcomes from relative quarter -8 through relative quarter $+7$. Beneficiaries who die during the study period contribute observations through the quarter of death.

I use the following event-study specification to assess dynamic treatment effects:

$$Y_{itd} = \sum_{\tau \neq -5} \beta_\tau \left(D_{id} \times \mathbf{1}\{t - d = \tau\} \right) + \alpha_i + \lambda_{td} + \varepsilon_{itd} \tag{1}$$

15. I assess the robustness of my findings using a standard two-way fixed effects model in Section 5.6.

where i indexes beneficiaries, t indexes calendar quarters, and d indexes subexperiments defined by the clinician's opt-out quarter. D_{id} is an indicator for belonging to the treated group in subexperiment d, with $D_{id} = 1$ representing treated patients and $D_{id} = 0$ representing control patients. $\tau = t - d$ denotes event time relative to clinician opt-out, from $-8 \leq \tau \leq 7$. The event-time coefficient β_τ therefore captures the effect of clinician opt-out at relative quarter τ. I set the reference period to relative quarter -5 in order to quantify anticipatory effects. α_i denotes beneficiary fixed effects and absorbs time-invariant differences across patients. λ_{td} denotes subexperiment-by-calendar-quarter fixed effects, allowing for calendar shocks to differ across opt-out cohorts. Standard errors are clustered at the clinician level.

To summarize the dynamic event-study estimates, I additionally estimate the following pooled difference-in-differences model:

$$Y_{itd} = \alpha_i + \beta_1(D_{id} \times Q_A) + \beta_2(D_{id} \times Q_O) + \beta_3(D_{id} \times Q_P) + \lambda_{td} + \varepsilon_{itd} \tag{2}$$

where Q_A, Q_O, and Q_P indicate the anticipatory period, opt-out quarter, and post-period, respectively. β_1 captures the average quarterly effect before a clinician opts out during relative quarters -4 through -1, potentially reflecting anticipatory responses. β_2 captures the effect in the opt-out quarter. β_3 captures the average quarterly effect during relative quarters $+1$ through $+7$. The omitted category in this specification is the pre-anticipation period, spanning relative quarters -8 through -5. Where applicable, I report estimates for the full sample and also separately estimate effects for patients of psychiatrists and patients of CPs or CSWs to assess whether effects differ based on assigned clinician type.

Finally, to assess heterogeneity between patient subgroups, I estimate the following difference-in-differences model with a triple interaction:

$$Y_{itd} = \alpha_i + \sum_{k \in \{A,O,P\}} [\beta_k(D_{id} \times Q_k) + \delta_k(G_i \times Q_k) + \eta_k(D_{id} \times G_i \times Q_k)] + \lambda_{td} + \varepsilon_{itd} \tag{3}$$

where G_i identifies a particular patient subgroup, β_k is the treatment effect for $G_i = 0$, and $\beta_k + \eta_k$ is the effect for $G_i = 1$. η_k represents the difference between the subgroup effects, which I use to infer heterogeneous effects between subgroups.

I estimate Equation 3 using four groups of patient characteristics, measured at $\tau = -8$. The first is dual-eligible status. Dual-eligible patients are a low-income group likely to

face greater financial barriers to self-pay care, especially if they lose billing protection from seeing an opt-out clinician. The second is rural residence. Compared to urban areas, rural areas have a much lower supply of mental health clinicians (Andrilla et al. 2018), thus the ability to initiate care with another clinician may be more difficult in rural areas. The third stratification is by diagnosis of a serious mental illness, which allows me to assess whether outcomes differ based on clinical need. Finally, I assess whether responses to opt-out differ between non-White and White beneficiaries. For the heterogeneity analysis, I only report coefficients for the opt-out quarter and post-period.

Identification requires that, conditional on the matching and patient-attribution procedure, outcomes among treated and control patients would have trended similarly in absence of opt-out. Importantly, by designating relative quarters -4 through -1 as an "anticipatory period", my empirical specification allows patients and clinicians to respond *before* the formal effective date. The event-study coefficients during quarters -8 through -6 provide partial evidence on whether there are differential pretreatment trends, with quarter -5 serving as the omitted reference period.

5 Results

I begin by examining how a clinician opting out of Medicare impacts care delivered by that clinician to their patients. Then, I assess how opt-out behavior impacts patients' Medicare-billed office visits and prescription fills, whether patients receive Medicare-billed mental health care from other clinicians, and how opt-out behavior impacts acute care and spending.

5.1 Care from opt-out clinician

Figure 3 presents the quarterly means and event-study plots of Medicare-billed office visits and prescription fills from each patient's assigned mental health clinician (an opt-out clinician among treated patients, and a non-opt-out clinician among control patients), and Table 4 presents the pooled difference-in-differences estimates across the full sample and stratified by patients of psychiatrists and patients of CPs or CSWs.

During quarters -8 through -5 relative to opt out, treated and control patients had similar levels of office visits with their assigned clinician, roughly 1.62 visits per quarter

(Figure 3a). During the anticipatory period, treated patients experience a decline in office visits relative to control patients, starting in quarter −2 relative to opt-out (Figure 3c), and Medicare-billed visits with an opt-out clinician fall to zero by the first full calendar quarter after opt-out. Relative to control patients, treated patients have 0.17 fewer billed office visits with their assigned clinician during this period, a difference equal to 10% of the baseline volume (Table 4, Panel A, column 1) and 0.83 fewer billed visits with their assigned clinician once the clinician officially opts out, a difference equal to 51% of the baseline volume. These declines persist in the post-period, with treated patients receiving 0.75 fewer billed visits relative to control patients, a difference equal to 46% of the baseline volume.

Relative to control patients of psychiatrists, treated patients of psychiatrists have 0.076 fewer billed office visits (a difference equal to 6% of the baseline volume of 1.18) in the year before opt out and 0.57 fewer visits (48% of the baseline volume) once a clinician opts out (Table 4, Panel A, column 2). Similarly, relative to control patients of CPs and CSWs, treated patients of CPs and CSWs have 0.45 fewer office visits with their assigned clinician (a difference equal to 16% of the baseline volume of 2.88 visits) in the year before opt out and 1.59 fewer visits (55% of the baseline volume) once the clinician opts out (Table 4, Panel A, column 3). Again, these declines persist into the post-period.

Among patients of psychiatrists, treated and control patients had similar levels of prescriptions attributed to their assigned clinician in the two-year period before opt out, roughly 3.50 prescriptions per quarter (Figure 3b). Prescriptions begin to decline in the quarter the clinician opts out (Figure 3d), with treated patients receiving 0.38 fewer prescriptions (an 11% decline from baseline) in the opt-out quarter, and 0.51 fewer prescriptions (a 15% decline) during the post-period, relative to control patients (Table 4, Panel B, column 2). Notably, prescriptions from the assigned clinician do not decline to zero even after the clinician opts out of Medicare, indicating that some patients continue a prescribing relationship with the opt-out clinician. I examine who these patients are in more depth in Section 5.5.

5.2 Impact of opt-out on Medicare-billed mental health care

Figure 4 shows the event-study plots for the volume of all Medicare-billed mental health visits and psychotropic prescription fills, while Table 5 shows the corresponding pooled

difference-in-differences estimates.

As shown in Figure 4a and Panel A of Table 5, treated patients have 0.52 fewer billed mental health visits after a clinician opts out, an 18% decline relative to a baseline of 2.93 visits per quarter. Treated patients also experience a decline in psychotherapy visits and established patient E&M mental health visits (Figures 4b-4c). Figure 4d shows that differences in psychotropic medication fills are not statistically distinguishable from zero throughout the study period for the full sample.

Estimates for patients of psychiatrists are shown in Panel B of Table 5. Treated patients of psychiatrists had 0.36 fewer billed mental health office visits (a 14% decline relative to a baseline of 2.57 visits per quarter), 0.35 fewer established patient E&M visits (a 30% decline relative to a baseline of 1.18 visits per quarter), and 0.33 fewer psychotherapy visits (a 21% decline relative to a baseline of 1.55 visits per quarter). Additionally, patients of psychiatrists received 0.09 fewer psychotropic medication fills during the anticipatory period, a 2% decline relative to a baseline of 4.72 prescription fills per quarter. While treated patients of psychiatrists experience a modest decline in psychotropic medication fills during the anticipatory period, differences in these fills between treated and control patients are not statistically distinguishable from zero in both the opt-out quarter and post-period.

Estimates for patients of CPs and CSWs are shown in Panel C of Table 5. Treated patients of CPs and CSWs had 0.99 fewer billed mental health visits, a 25% decline relative to a baseline of 3.99 visits. This is largely driven by declines in psychotherapy visits, with patients receiving 1.10 fewer visits, a 32% decline relative to a baseline of 3.41 visits per quarter. They also experience a 14% increase in established patient E&M visits during the post-period, and a modest increase in psychotropic medication fills during the anticipatory period, primarily driven by increases in prescribing of antidepressants and antipsychotics (Table A3).

Table A4 reports estimates of the effect of Medicare opt out on overall billed office visits and overall prescription fills. Similar to patterns observed for billed mental health visits and psychotropic medication fills, treated patients have fewer visits overall when their clinician opts out, though differences in prescription fills are not statistically distinguishable from zero.

5.3 Do patients receive care from other Medicare-participating clinicians?

The previous results show that when a clinician opts out of Medicare, total Medicare-billed mental health visits decline, while total psychotropic medication fills do not significantly change. The decline in billed visits could partly reflect patients continuing to see the opt-out clinician through self-pay, because these visits are not observed in Medicare claims. However, among patients of psychiatrists, prescription fills from the opt-out clinician decline while total psychotropic medication fills do not significantly change, indicating that other clinicians replace some of the opt-out clinician's prescribing. In this section, I assess the extent to which patients seek replacement care for both mental health visits and psychotropic medication fills from clinicians they have an established relationship with (previously-seen mental health clinicians or a focal PCP) or mental health clinicians they initiate a new relationship with.

Care from a clinician with an established relationship Figure 5 shows event-study plots for volume of mental health care with a previously-seen mental health clinician and with a focal primary care provider. Relative to control patients, treated patients receive more psychotropic medication fills from previously-seen mental health clinicians, while billed visits with these clinicians do not significantly change (Figures 5a-5b). Mental health visits with a focal PCP do not differ significantly between treated and control patients after opt out. However, overall office visits with a focal PCP increase temporarily among patients of psychiatrists, and psychotropic medication prescribing from focal PCPs increases after opt out (Figures 5c–5e). Office visits listing the assigned clinician's NPI as the referring provider increase during the anticipatory period (Figure 5f).

Panel A of Table 6 reports the difference-in-differences estimates for these outcomes for patients of psychiatrists. Treated patients of psychiatrists receive 0.06 additional psychotropic medication fills when their clinician opts out, and 0.081 additional fills during the post-period, from a previously-seen mental health clinician. Additionally, overall office visits with a focal PCP increase by 0.032 office visits per quarter in the year before opt out and 0.045 office visits in the quarter of opt out. Treated patients also receive 0.11 additional psychotropic medication fills from their focal PCP during the post-period. Furthermore, visits listing the assigned clinician's NPI as the referring provider increase modestly during the anticipatory period.

Panel B of Table 6 reports the difference-in-differences estimates for these outcomes for patients of CPs and CSWs. Treated patients of CPs and CSWs receive 0.22 additional psychotropic medication fills from a previously seen mental health clinician in the opt-out quarter and 0.23 additional fills per quarter during the post-period. Psychotropic medication fills from their focal PCP also increase by 0.11 fills in the opt-out quarter and by 0.097 fills per quarter during the post-period. Visits listing the assigned clinician as the referring provider do not significantly change.

Taken together, established clinicians primarily provide replacement care through increased psychotropic prescribing rather than additional mental health visits. Among patients of psychiatrists, these increases partially replace prescribing previously provided by the opt-out clinician. Among patients of CPs and CSWs, prescribing by previously seen mental health clinicians and focal PCPs increases as psychotherapy visits decline.

Initiation of care with a new mental health clinician Results for initiation of care with a new clinician are presented in Figure 6 and the difference-in-differences estimates stratified by assigned clinician type are reported in Table 7.

Overall, newly established prescriber relationships increase from the quarter before through the quarter after opt out (Figure 6a), whereas there is no significant change in newly established non-prescriber relationships (Figure 6b). However, these aggregate patterns mask differences by assigned clinician type. Mental health visits with new prescribers increase beginning in the opt-out quarter (Figure 6c), and mental health visits with new non-prescribers increase modestly (Figure 6d). Finally, prescribing by new prescribers increases after clinicians opt out of Medicare (Figure 6e).

The increase in newly established prescriber relationships is largely driven by patients of psychiatrists (Table 7, Panel A). Treated patients of psychiatrists are 0.33 percentage points more likely to initiate care with a new prescriber in an average quarter during the anticipatory period and 1.5 percentage points more likely in the opt-out quarter. Additionally, treated patients of psychiatrists receive 0.066 additional mental health visits with the new prescriber (a 97% increase relative to a baseline of 0.068 visits) and 0.11 additional psychotropic medication fills from a new prescriber (a 120% increase relative to a baseline of 0.091 prescription fills) during the post-period. However, initiation of care and additional mental health visits with new non-prescribers do not differ significantly between treated and control patients of psychiatrists.

Patients of CPs and CSWs experience a small anticipatory increase in initiating care with a new prescriber, but changes in visits with, or prescribing by, new prescribers are not statistically different from zero. However, treated patients of CPs and CSWs are 0.48 percentage points more likely to initiate care with a new non-prescriber in an average quarter during the anticipatory period and 0.82 percentage points more likely in the opt-out quarter (Table 7, Panel B). Furthermore, visits with a new non-prescriber increase starting before a clinician opts out: treated patients have 0.065 additional visits per quarter during the anticipatory period (a 50% increase relative to a baseline of 0.13 quarterly visits), 0.16 additional visits in the quarter of opt out (a 123% increase), and 0.22 additional visits per quarter in the post-period (a 169% increase).

These results show that treated patients initiate care with clinicians whose treatment capabilities resemble those of their assigned opt-out clinician. Patients of psychiatrists shift toward new prescribers, whereas patients of CPs and CSWs shift toward new non-prescribers. Some of this adjustment begins before the effective opt-out date, consistent with patients anticipating the transition and seeking replacement care in advance. However, the additional visits within these new relationships do not fully offset the decline in Medicare-billed visits with the assigned clinician.

5.4 Acute-care utilization and spending

Figure 7 plots event-study estimates for ED visits and hospitalizations, both mental health-related and all-cause, and Table 8 reports the pooled difference-in-differences estimates.

Treated patients' likelihood of having a mental health-related ED visit increases by 0.70 percentage points in the opt-out quarter (a 30% increase relative to a baseline of 2.3 percent), and 0.80 percentage points in the post-period (Panel A of Table 8). Their likelihood of an all-cause ED visit also increases by 1 percentage point in the quarter of opt out (a 6% increase), and by 1.8 percentage points in the post-period (an 11% increase). Additionally, the likelihood of both a mental health hospitalization and all-cause hospitalization increases by 40% and 13%, respectively, during the post-period. These patterns are concentrated among patients of psychiatrists (Panel B of Table 8), while changes in acute care between treated and control patients are not statistically different from zero among patients of CPs and CSWs (Panel C of Table 8). However, increases in

these outcomes also emerge during the anticipatory period, thus the estimates should be interpreted cautiously.

Figure 8 presents event-study estimates for medical and prescription-drug spending, and Table 9 reports the corresponding pooled difference-in-differences estimates. Changes in quarterly medical spending between treated and control patients increase by roughly $194 in the anticipatory period among the full sample, though changes do not differ significantly from zero in the quarter of opt-out or the post-period. Among patients of psychiatrists, quarterly medical spending increases by $251 in the anticipatory period and $229 in the post-period, representing a roughly 7% increase relative to a baseline of $3,424. However, changes in medical spending between treated and control patients of CPs and CSWs do not differ significantly from zero. Additionally, changes in prescription spending between treated and control patients are not statistically distinguishable from zero for any patient group.

5.5 Which patients continue to receive prescriptions from opt-out psychiatrists?

To examine which patients continue receiving prescriptions from opt-out clinicians, I identify all patients of opt-out psychiatrists who received at least one prescription fill from this clinician in the full two-year period before opt-out. Of the 7,583 patients assigned to an opt-out psychiatrist, 4,703 (roughly 62% of the patients of psychiatrists) received a fill from the clinician in the pre-period, of whom 2,069 (44% of all patients of psychiatrists who received a fill in the pre-period) continued receiving prescriptions from this psychiatrist in the post-period.

Table 10 compares characteristics of the 2,069 patients who continue receiving prescriptions to the remaining 2,634 patients who did not continue receiving prescriptions from the opt-out psychiatrist. Patients who continue receiving prescriptions are older, less likely to be non-White, more likely to reside in an urban zip code, and less likely to be eligible for Medicare due to disability or dually-eligible for Medicaid.

Care during the pre-period also differs between both groups. Compared to patients who no longer receive prescriptions from their assigned opt-out psychiatrist, patients who continue the prescribing relationship had 0.4 more visits with their assigned clinician, but 0.2 fewer mental health visits and 0.4 fewer psychotropic medication fills overall. Patients who

continued receiving prescriptions were also less likely to experience a mental health-related ED visit or hospitalization. These patterns hold in the post-period. Additionally, each group of patients has a similar volume of mental health visits with a new non-prescriber (0.2 visits), while discontinued patients have, on average, 0.2 more visits with a new prescriber. Discontinued patients also receive 0.5 more psychotropic medication fills from a new prescriber and 0.2 fills from their focal PCP. These results suggest that patients continuing receipt of prescriptions from opt-out clinicians is associated with both clinical characteristics and socioeconomic status.

5.6 Robustness Checks

One concern with my estimates is that patients may respond in ways that may bias the estimates of the effects of opt-out on health care utilization and clinical outcomes, such as changes in enrollment and death. Table A9 shows the impact of opt-out on Part B and Part D enrollment and death. Part D enrollment increases modestly throughout the study period, specifically for patients of prescribers. I assess whether my outcomes are sensitive to limiting the analysis to individuals with continuous Part B and Part D enrollment (Table A10) and find results similar to that of my main results, with larger effect sizes for prescription outcomes. However, differences in mortality are not statistically distinguishable from zero.

Additionally, I assess whether my results are robust to limiting to a patient sample for whom the study period does not overlap with the COVID-19 pandemic beginning in March 2020, when opt-out policies changed and other changes in the health care system likely impacted mental health care utilization (e.g. the increased use of telemental health services). Therefore, I rerun the main specification on a cohort where I only retain patients whose clinician opted out by the end of the first quarter of 2018. The results from this sample of cohorts are also similar to my main results (Table A11), though the estimates on psychotropic medication prescriptions from new prescribers are no longer statistically significant.

Finally, I assess how my estimates compare to using a standard two-way fixed effects estimator, where I replace the subexperiment-by-quarter fixed effects with simple calendar quarter fixed effects. These results are reported in Table A12, and show that the results are also similar, and there are no longer pre-period trends in acute-care outcomes.

5.7 Heterogeneity

Tables A13-A16 report regression coefficients from the difference-in-differences model with a triple interaction (Equation 3). Each table includes subgroup-specific effects and differences between subgroup-specific estimates. Because I test many outcomes, I consider these results to be exploratory.

Table A13 compares outcomes between dual-eligible and non-dual-eligible patients. Compared to non-dual-eligible patients, dual-eligible patients experience a significantly smaller decline in billed mental health visits in the opt-out quarter and during the post-period. Additionally, among patients of psychiatrists, dual-eligible patients receive fewer prescriptions from their opt-out psychiatrist in the quarter of opt-out and post-period. Dual eligible patients experience a higher (though insignificant) likelihood of initiating care with a new prescriber in the opt-out quarter, and have a lower estimated likelihood of initiating care with a new prescriber in the post-period.

Table A14 compares outcomes between rural patients and urban patients. The effects of opt out on billed mental health care do not differ significantly between rural and urban patients. However, while there are no significant differences in initiation of care, rural patients have a smaller growth in visits with a new prescriber, suggesting that capacity constraints in rural areas may impede a patient's ability to translate care initiation into a new clinical relationship.

Table A15 compares outcomes based on diagnosis of a serious mental illness. The effects of opt out on billed mental health care also do not differ significantly based on diagnosis of serious mental illness. However, among patients of psychiatrists, the decline in prescriptions from their opt-out psychiatrist is larger among patients with a serious mental illness. Additionally, patients with a serious mental illness are significantly more likely to have office visits with their PCP, and to receive psychotropic medications from both previously-seen mental health clinicians and new prescribers.

Finally, Table A16 compares outcomes between non-White and White patients. Relative to non-White patients, White beneficiaries receive a significantly greater increase in psychotropic medication fills from their PCP than non-White beneficiaries in the post-period. Estimated differences in all other outcomes are not statistically significant.

Overall, subgroup differences are more apparent in the sources and volume of replacement care than in the initiation of new relationships. Dual-eligible patients experience

smaller declines in total mental health visits but larger declines in prescribing from their assigned psychiatrist. Patients with SMI receive larger increases in psychotropic prescriptions from previously seen and new prescribers, rural patients experience smaller increases in visits with new prescribers, and White patients receive larger increases in prescribing from their PCP. I find no statistically detectable subgroup differences in acute-care outcomes.

6 Discussion

In this paper, I show that when mental health clinicians shift from accepting Medicare reimbursement to self-pay arrangements, their Medicare patients experience a decline in Medicare-billed mental health office visits. In response, patients of psychiatrists establish new relationships with prescribing mental health clinicians, while patients of CPs and CSWs establish new relationships with non-prescribing mental health clinicians, suggesting that patients seek out replacement care from clinicians with similar treatment capabilities. This shift in care occurs even before a clinician's effective opt out date, consistent with patients anticipating a potential gap in care. Estimates for mental health-related emergency department visits and hospitalizations show differential movements before the effective opt-out date and should therefore be interpreted as suggestive rather than causal.

Additionally, differences in psychotropic medication volume are not statistically distinguishable from zero, though this result masks statistically significant changes in who manages the patient's prescriptions. I find that psychotropic medication fills from a patient's assigned clinician fall among the subsample of patients who see an opt-out psychiatrist. I show descriptive evidence that patients with more chronic conditions and greater psychotropic medication use are less likely to continue the prescribing relationship, whereas continuing patients have more visits with their opt-out psychiatrist before opt-out. Additionally, I find that other Medicare-participating mental health clinicians and patients' focal PCP provide medication management after opt out, consistent with patients substituting their medication management to clinicians they have an established relationship with as fills from the opt-out clinician decline. Patients of non-prescribing mental health clinicians also receive additional psychotropic medication fills from their PCP.

An important implication of these results is that PCPs appear to absorb some medi-

cation management following a mental health clinician's opt-out. Across the health care system, a growing share of primary care visits are used to address mental health concerns (Rotenstein, Edwards, and Landon 2023). This may be especially true in Medicare, as prior work has shown that enrollment in Medicare increases the volume of visits in primary care settings while reducing a beneficiary's likelihood of receiving outpatient mental health care (McCormack et al. 2025; Lee and Li 2025) thus Medicare beneficiaries may find their PCP as the most accessible source of replacement mental health care without having to increase visit volume. With increased policy efforts to integrate mental health care into primary care, how this shift impacts primary care delivery is an important area for future research.

Another important implication is the substitutability of medication management compared to the substitutability of psychotherapeutic care. Maintaining an existing medication regimen requires less frequent clinician contact than psychotherapy. Additionally, medication management may also be easier to transfer across different clinicians. In contrast, replacing psychotherapy visits potentially requires additional time to find a good match and build a therapeutic relationship, thus switching costs may be especially high for this modality of care (Sabety 2023). Search frictions may also arise for patients residing in areas with a lower supply of non-prescribing clinicians, such as rural areas, thus patients may resort to pharmacotherapy if replacement therapy is not available (Fortney et al. 2010). Importantly, the fact that estimated differences in prescription fill volume are not statistically significant does not establish that patients receive equivalent clinical monitoring or medication management after switching prescribers, thus future research should assess the implications of switching prescribers on quality of care.

This paper is closest in spirit to Staiger (2022). Studying the effects of primary care providers' exit from Medicaid managed care plans in six states, Staiger (2022) finds that the likelihood of having a primary care visit decreases by 5% in the short-term, and that hospitalizations increase by 50% for patients with chronic conditions. I find larger declines in visits, but a smaller increase in hospitalizations. Additionally, I find evidence of clinician switching. Because Medicare and Medicaid patients differ in their health needs, financial circumstances, and access to usual sources of care, the consequences of transitions to self-pay may differ across insurance populations. Future work should examine these transitions in Medicaid, as well as transitions in private insurance networks.

This study has several limitations. First, because I am unable to assess self-pay visits in the Medicare claims data, I am unable to assess the impact of opt out on *total* mental health care utilization. I also am unable to see Medicaid-covered care for dual-eligible patients. Additionally, opt out decisions are endogenous. While I implement clinician matching and pre-treatment patient attribution and show evidence of parallel trends, there may be other patient or practice-level changes that impact the mental health care utilization, such as changes in illness severity or clinicians moving to private practice. While pre-period trends appear stable for most outcomes, they do not rule out the possibility of other time-varying differences that may drive the results. Furthermore, I focus on care delivered to fee-for-service Medicare patients, thus my results may not generalize to Medicare Advantage, Medicaid, or privately-insured patients.

Clinician exits from insurance networks may contribute to access barriers to mental health care, while also potentially impeding continuity of care for individuals with insurance who face a shift to self-pay care. Therefore, an important consideration for policymakers is the extent to which mental health clinicians participate in insurance networks. Not only are mental health clinicians more likely to not accept insured patients, but they are also increasingly charging self pay prices to their patients (Bishop et al. 2014; Carlo et al. 2024; Benjenk and Chen 2020). Furthermore, as network adequacy requirements become more prevalent, counts of clinicians participating in a network may overstate improved access to care if this trend continues. Therefore, policy to improve provider networks should also consider the potential for transitions between providers within the same network, continuity of care, and referral support, particularly for patients who are less likely to have a primary care clinician or reside in areas with a lower supply of mental health clinicians. Furthermore, as more mental health care is being delivered in primary care settings, efforts should be made to ensure that such clinicians have the capacity to meet the needs of patients seeking mental health care.

References

Agha, Leila, Na'ama Shenhav, and Myles Wagner. 2025. "Social Costs of Work Disruptions: Evidence from Physicians and Their Patients." *NBER Working Paper Series.*

Albrecht, Jennifer S., Daniel C. Mullins, Gordon S. Smith, and Vani Rao. 2017. "Psychotropic Medication Use among Medicare Beneficiaries Following Traumatic Brain Injury." *The American Journal of Geriatric Psychiatry* 25, no. 4 (April): 415–424.

Andrilla, C. Holly A., Davis G. Patterson, Lisa A. Garberson, Cynthia Coulthard, and Eric H. Larson. 2018. "Geographic Variation in the Supply of Selected Behavioral Health Providers." *American Journal of Preventive Medicine* 54, no. 6 (June): S199–S207.

Benjenk, Ivy, and Jie Chen. 2020. "Trends in Self-payment for Outpatient Psychiatrist Visits." *JAMA Psychiatry* 77, no. 12 (December): 1305.

Benson, Nicole M., Catherine Myong, Joseph P. Newhouse, Vicki Fung, and John Hsu. 2020. "Psychiatrist Participation in Private Health Insurance Markets: Paucity in the Land of Plenty." *Psychiatric Services* 71, no. 12 (December): 1232–1238.

Bishop, Tara F., Matthew J. Press, Salomeh Keyhani, and Harold Alan Pincus. 2014. "Acceptance of Insurance by Psychiatrists and the Implications for Access to Mental Health Care." *JAMA Psychiatry* 71, no. 2 (February): 176.

Buczko, William. 2004. "Provider Opt-Out Under Medicare Private Contracting." *Health Care Financing Review* 26 (2).

Busch, Alisa B., Haiden A. Huskamp, Pushpa Raja, Sherri Rose, and Ateev Mehrotra. 2022. "Disruptions in Care for Medicare Beneficiaries With Severe Mental Illness During the COVID-19 Pandemic." *JAMA Network Open* 5, no. 1 (January): e2145677.

Cai, Arno, Ateev Mehrotra, Hayley D. Germack, Alisa B. Busch, Haiden A. Huskamp, and Michael L. Barnett. 2022. "Trends In Mental Health Care Delivery By Psychiatrists And Nurse Practitioners In Medicare, 2011–19." *Health Affairs* 41, no. 9 (September): 1222–1230.

Carlo, Andrew D., Anirban Basu, Jürgen Unützer, and Neil Jordan. 2024. "Acceptance of Insurance by Psychiatrists and Other Physicians, 2007–2016." *Psychiatric Services* 75, no. 1 (January): 25–31.

Cengiz, Doruk, Arindrajit Dube, Attila Lindner, and Ben Zipperer. 2019. "The Effect of Minimum Wages on Low-Wage Jobs*." *The Quarterly Journal of Economics* 134, no. 3 (August): 1405–1454.

Center for Medicare and Medicaid Services. 2025. *Provider Enrollment and Third Party Liability for Items and Services Rendered to Dually Eligible Individuals,* January.

Cottrill, Alex, Nancy Ochieng, and Tricia Neumann. 2025. *How Many Physicians Have Opted Out of the Medicare Program?,* January.

Deb, Partha, and Ann M. Holmes. 1998. "Substitution of physicians and other providers in outpatient mental health care." *Health Economics* 7 (4): 347–361.

Deshpande, Manasi, and Yue Li. 2019. "Who Is Screened Out? Application Costs and the Targeting of Disability Programs." *American Economic Journal: Economic Policy* 11, no. 4 (November): 213–248.

Ettner, Susan L., and Richard C. Hermann. 1997. "Provider Specialty Choice Among Medicare Beneficiaries Treated for Psychiatric Disorders." *Health Care Financing Review* 18 (3): 43–59.

Fadlon, Itzik, and Jessica Van Parys. 2020. "Primary care physician practice styles and patient care: Evidence from physician exits in Medicare." *Journal of Health Economics* 71 (May): 102304.

Figueroa, Jose F., Jessica Phelan, E. John Orav, Vikram Patel, and Ashish K. Jha. 2020. "Association of Mental Health Disorders With Health Care Spending in the Medicare Population." *JAMA Network Open* 3, no. 3 (March): e201210.

Fink, Joseph L., and Mallory P Schwartz. 2025. "States Grant Prescribing Authority to Psychologists." *Pharmacy Times* (April).

Fortney, John C., Jeffrey S. Harman, Stanley Xu, and Fran Dong. 2010. "The Association Between Rural Residence and the Use, Type, and Quality of Depression Care." *The Journal of Rural Health* 26 (3): 205–213.

Goodman-Bacon, Andrew. 2021. "Difference-in-differences with variation in treatment timing." *Journal of Econometrics,* Themed Issue: Treatment Effect 1, 225, no. 2 (December): 254–277.

Green, Carla A., Michael R. Polen, Shannon L. Janoff, David K. Castleton, Jennifer P. Wisdom, Nancy Vuckovic, Nancy A. Perrin, Robert I. Paulson, and Stuart L. Oken. 2008. "Understanding how clinician-patient relationships and relational continuity of care affect recovery from serious mental illness: STARS study results." *Psychiatric Rehabilitation Journal* 32, no. 1 (June): 9–22.

Hedegaard, Holly, Michael Schoenbaum, Cynthia Claassen, Alex Crosby, Kristin Holland, and Scott Proescholdbell. 2018. "Issues in Developing a Surveillance Case Definition for Nonfatal Suicide Attempt and Intentional Self-harm Using International Classification of Diseases, Tenth Revision, Clinical Modification (ICD–10–CM) Coded Data." *National Health Statistics Reports,* no. 108 (February): 1–18.

Iversen, Henrik Wang, Henriette Riley, Marit Råbu, and Geir Fagerjord Lorem. 2025. "Building and sustaining therapeutic relationships across treatment settings: a qualitative study of how patients navigate the group dynamics of mental healthcare." *BMC Psychiatry* 25, no. 1 (April): 424.

Kwok, Jennifer. 2019. "How Do Primary Care Physicians Influence Healthcare? Evidence on Practice Styles and Switching Costs from Medicare." *SSRN Electronic Journal.*

Kyanko, Kelly A., Leslie A. Curry, Danya E. Keene, Ryan Sutherland, Krishna Naik, and Susan H. Busch. 2022. "Does Primary Care Fill the Gap in Access to Specialty Mental Health Care? A Mixed Methods Study." *Journal of General Internal Medicine* 37, no. 7 (May): 1641–1647.

Lee, Donghoon, and Jing Li. 2025. "Medicare Enrollment Increased Visits To Primary Care Providers But Not Mental Health Care Providers, 2014–21." *Health Affairs* 44, no. 1 (January): 23–31.

Lombardi, Brianna M., Lisa de Saxe Zerden, and Erin Fraher. 2024. "Varying Estimates of Social Workers in the United States: Which Data Source to Use?" *Medical Care Research and Review* 81, no. 5 (October): 408–416.

McConnell, K. John, Samuel H. N. Gast, and Bentson H. McFarland. 2012. "The Effect of Comprehensive Behavioral Health Parity on Choice of Provider." Institution: Departments of (*)Emergency Medicine, (+)Public Health & Preventive Medicine, Oregon Health & Science University, Portland, OR, *Medical Care* 50, no. 6 (June): 527–533.

McCormack, Grace, Erin Duffy, Josephine Rohrer, and Adam Biener. 2025. "Enrollment in Medicare is associated with fewer outpatient mental healthcare visits among those with mental health symptoms." *Health Services Research* 60 (S2): e14423.

MedPAC. 2023. *Chapter 6. Congressional request: Behavioral health services in the Medicare program.* Technical report. June.

National Center for Health Workforce Analysis. 2025. "State of the Behavioral Health Workforce, 2025" (December).

Neprash, Hannah T., and Michael E. Chernew. 2025. "Trends in Physician Exit From Fee-for-Service Medicare." *JAMA Health Forum* 6, no. 7 (July): e252267.

Oh, Seokmin, Alex McDowell, Nicole M. Benson, Benjamin Lê Cook, and Vicki Fung. 2022. "Trends in Participation in Medicare Among Psychiatrists and Psychiatric Mental Health Nurse Practitioners, 2013-2019." *JAMA Network Open* 5, no. 7 (July): e2224368.

Okunade, Albert A., and Vasudeva N. R. Murthy. 2008. "Are physician and non-physician providers of outpatient mental healthcare substitutes or complements? a conceptual clarification." *Health Care Management Science* 11, no. 4 (December): 393–398.

Piwnica-Worms, Katherine, Becky Staiger, Joseph S. Ross, Marjorie S. Rosenthal, and Chima D. Ndumele. 2021. "Effects of forced disruption in Medicaid managed care on children with asthma." *Health Services Research* 56 (4): 668–676.

Richard, Jessica V., Haiden A. Huskamp, Michael L. Barnett, Alisa B. Busch, and Ateev Mehrotra. 2022. "A methodology for identifying behavioral health advanced practice registered nurses in administrative claims." *Health Services Research* 57 (4): 973–978.

Rosenthal, Meredith B, Zhonghe Li, and Arnold Milstein. 2009. "Do Patients Continue to See Physicians Who Are Removed From a PPO Network?" *The American Journal of Managed Care* 15 (10).

Rotenstein, Lisa S., Samuel T. Edwards, and Bruce E. Landon. 2023. "Adult Primary Care Physician Visits Increasingly Address Mental Health Concerns." *Health Affairs* 42, no. 2 (February): 163–171.

Ruiz, Stefan Sliwa, Malte Becker, Thomas Hone, and Rudi Rocha. 2023. "Doctor Turnover and Health Outcomes: Evidence from the Exit of Cuban Doctors in Brazil." *IEPS Working Paper,* no. 18 (December).

Sabety, Adrienne. 2023. "The value of relationships in healthcare." *Journal of Public Economics* 225 (September): 104927.

Sabety, Adrienne H., Anupam B. Jena, and Michael L. Barnett. 2021. "Changes in Health Care Use and Outcomes After Turnover in Primary Care." *JAMA Internal Medicine* 181, no. 2 (February): 186–194.

Sarsons, Heather. 2017. "Interpreting Signals in the Labor Market: Evidence from Medical Referrals."

Simonsen, Marianne, Lars Skipper, Niels Skipper, and Peter Rønø Thingholm. 2021. "Discontinuity in care: Practice closures among primary care providers and patient health care utilization." *Journal of Health Economics* 80 (December): 102551.

Staiger, Becky. 2022. "Disruptions to the Patient-Provider Relationship and Patient Utilization and Outcomes: Evidence from Medicaid Managed Care." *Journal of Health Economics* 81 (January): 102574.

Tu, Ha T., and Jessica H. May. 2007. "Self-Pay Markets In Health Care: Consumer Nirvana Or Caveat Emptor?" *Health Affairs* 26, no. Suppl2 (January): w217–w226.

Ward-Ciesielski, Erin F., and Shireen L. Rizvi. 2021. "Finding mental health providers in the United States: a national survey and implications for policy and practice." *Journal of Mental Health* 30, no. 5 (September): 578–584.

Yu, Jiani, Anupam B. Jena, Pinar Karaca Mandic, and Ezra Golberstein. 2019. "Factors Associated with Psychiatrist Opt-out from US Medicare: an Observational Study." *Journal of General Internal Medicine* 34, no. 11 (November): 2460–2466.

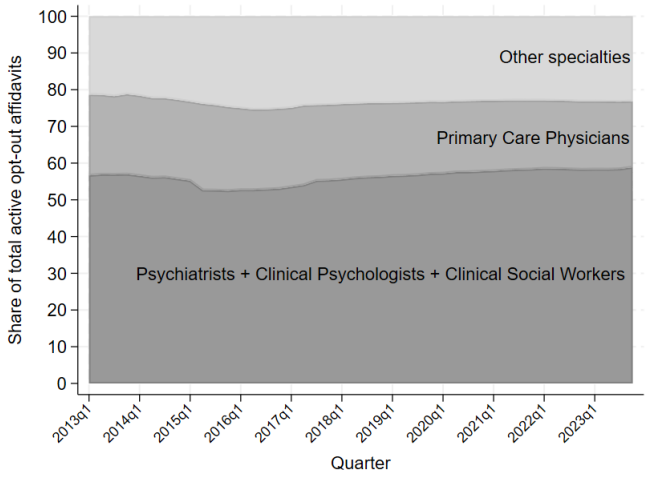
Zhang, Xuan. 2022. "The effects of physician retirement on patient outcomes: Anticipation and disruption." *Journal of Public Economics* 207 (March): 104603.

Zhu, Jane M., Trisha Marsh, Daniel Polsky, Aine Huntington, and Zirui Song. 2025. "Growth In Number Of Practices And Clinicians Participating In Concierge And Direct Primary Care, 2018–23." *Health affairs (Project Hope)* 44, no. 12 (December): 1473–1481.

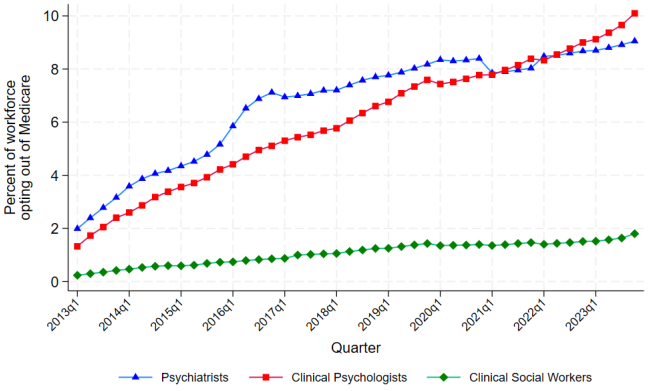
7 Figures

Figure 1: Trends in Medicare opt-out rates, 2013-2023

(a) Share of active opt-out affidavits, by clinician specialty



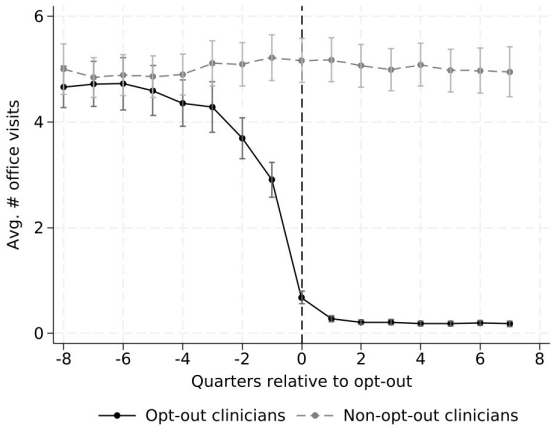
(b) Share of the mental health clinician workforce opting out of Medicare, by specialty



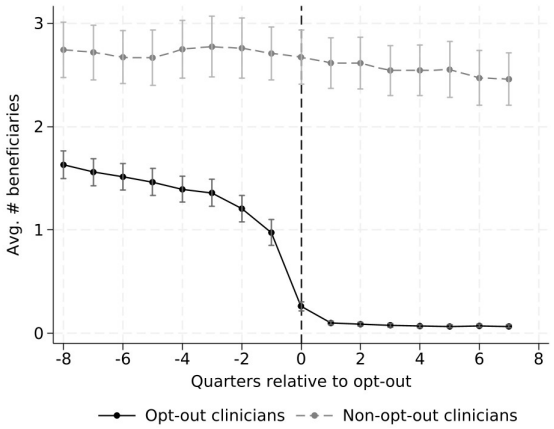
Notes: Data on active opt-out affidavits come from the Opt Out Affidavit Dataset created by CMS. Psychiatrists include clinicians specializing in psychiatry, neuropsychiatry, or geriatric psychiatry. Figure 1a is an affidavit-level figure, thus the same clinician can have multiple observations if they had active affidavits across multiple states at the same point in time. Dentists and oral surgeons are excluded from Figure 1a because their opt-out behavior was largely driven by a proposed policy in the Affordable Care Act requiring prescribers of Part D–covered drugs be either enrolled in Medicare or to have formally opted out in order for their prescriptions to be covered, that was ultimately rescinded in 2018. Figure 1b is a clinician-level figure. The denominator for each line in Figure 1b is the total number of clinicians in that specialty in that quarter whose NPI was not deactivated based on data from the National Plan and Provider Enumeration System files.

Figure 2: Trends in care delivery to Medicare patients, two years before vs. during the post-period

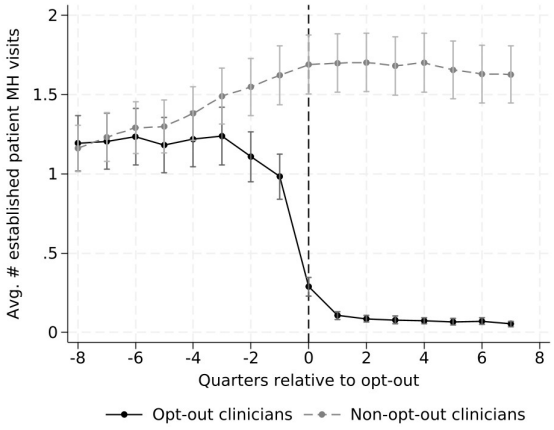
(a) Average number of office visits



(b) Average number of unique beneficiaries



(c) Average number of E&M visits



(d) Average number of psychotherapy visits

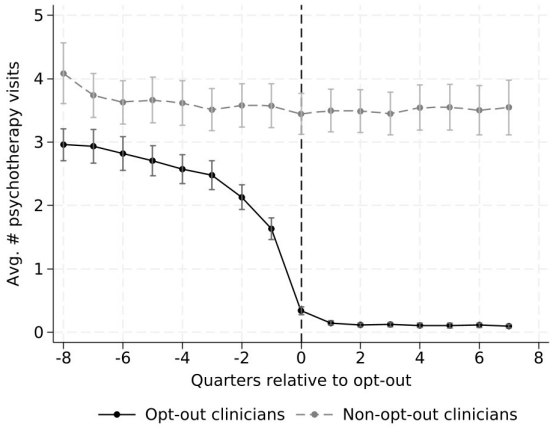
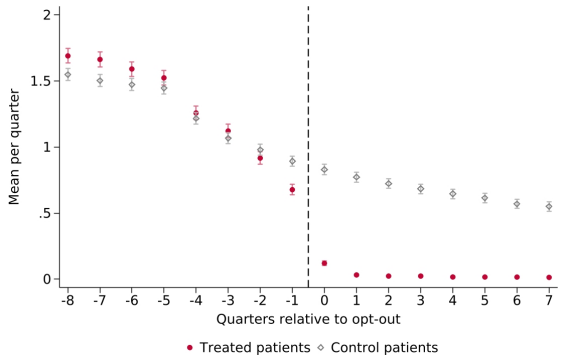
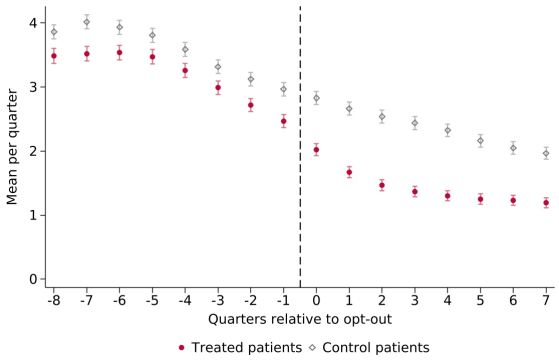


Figure 3: Care from assigned clinician

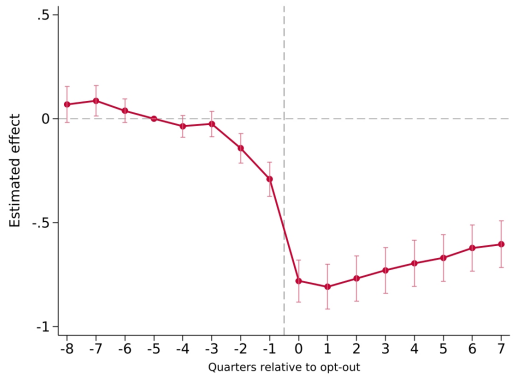
(a) Medicare-billed office visits from assigned clinician



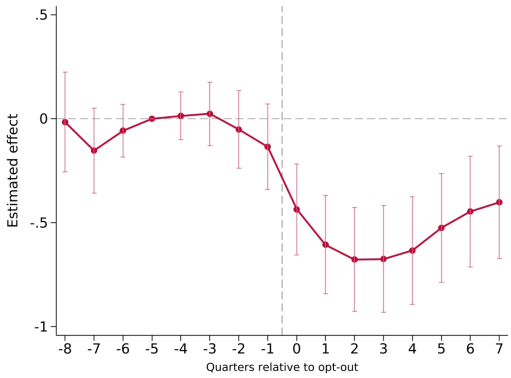
(b) Total prescription fills from assigned clinician



(c) Event-study plot of Medicare-billed office visits from assigned clinician



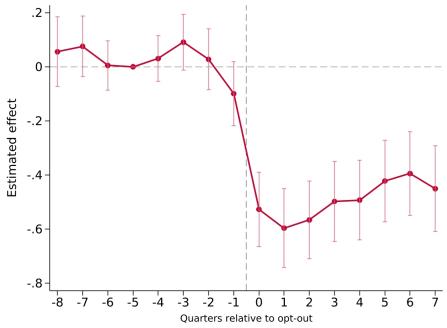
(d) Event-study plot of prescription fills from assigned clinician



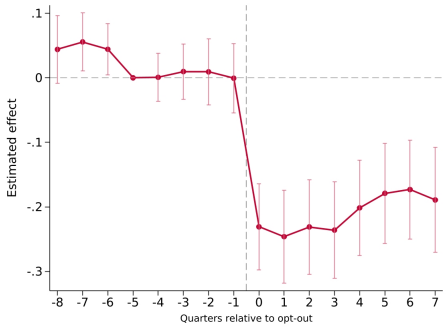
Notes: Figures 3a and 3b present raw quarterly means of total office visits and total prescription fills from a patient's assigned clinician, respectively. Figures 3c and 3d present event-study plots for the same outcomes, estimated using the model specified by Equation 1 where the reference quarter is quarter −5 relative to opt out and 95% confidence intervals for each estimate are represented by the error bars. "Assigned clinician" is the assigned opt-out clinician for treated patients and the matched non-opt-out clinician for control patients. Prescription outcomes additionally require Part D enrollment in the outcome quarter.

Figure 4: Impact of opting out of Medicare on mental health care utilization

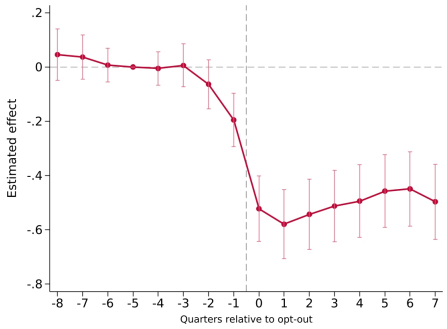
(a) Mental health visits, overall



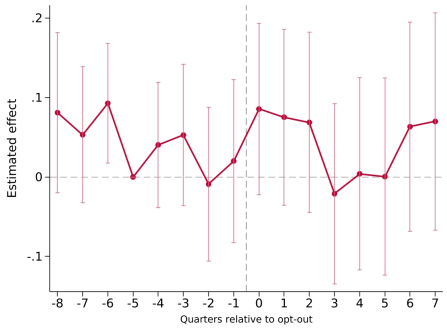
(b) Established patient E&M mental health visits



(c) Psychotherapy visits



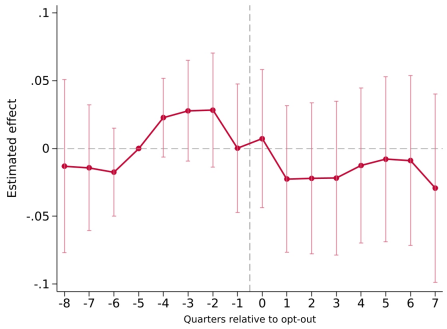
(d) Psychotropic prescription fills



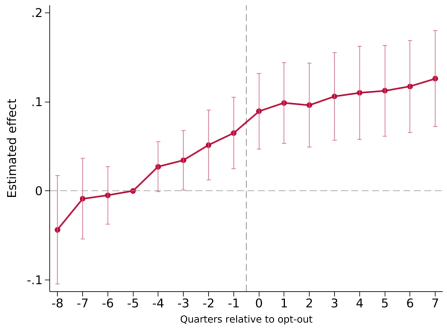
Notes: The figures present event-study plots estimated using the model specified by Equation 1, where the reference quarter is quarter −5 relative to opt out and 95% confidence intervals for each estimate are represented by the error bars. Figure 4d is estimated using a subsample of patients with Part D enrollment in the outcome quarter.

Figure 5: Impact of opting out of Medicare on receiving mental health care from clinicians with established relationships

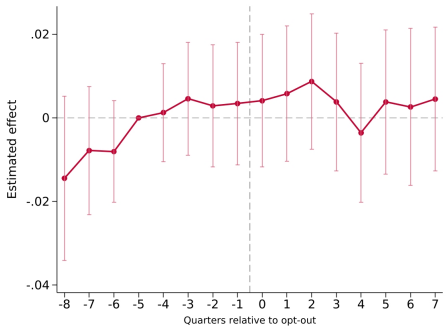
(a) Mental health visits with previously-seen mental health clinician



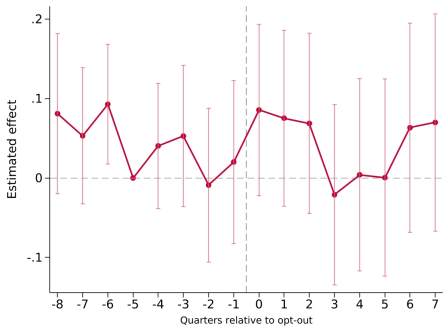
(b) Psychotropic medication fills from previously-seen mental health clinician



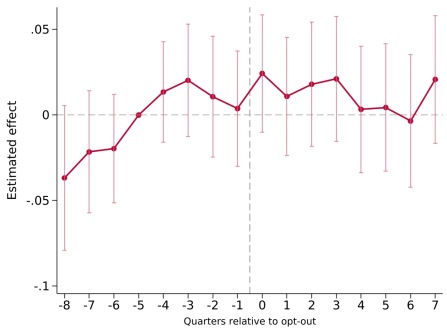
(c) Mental health visits with focal PCP



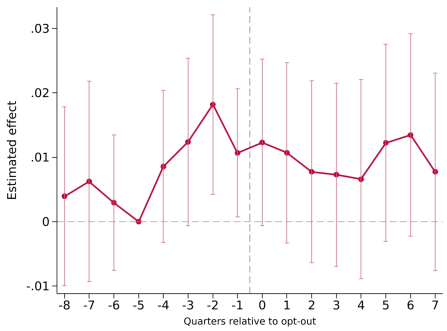
(d) Psychotropic medication fills with focal PCP



(e) Office visits with focal PCP



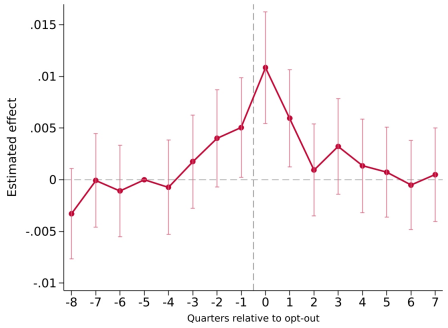
(f) Visits listing assigned clinician as referring provider



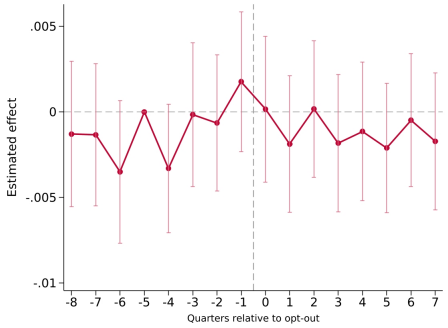
Notes: The figures present event-study plots estimated using the model specified by Equation 1, where the reference quarter is quarter −5 relative to opt out and 95% confidence intervals for each estimate are represented by the error bars. Figures 5b and 5d are estimated using a subsample of patients with Part D enrollment in the outcome quarter.

Figure 6: Impact of opting out of Medicare on newly established mental health clinician relationships

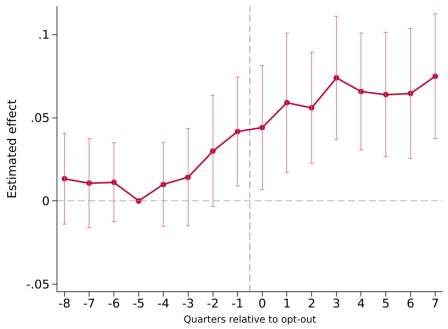
(a) Initiate care with a new prescriber + follow-up visit within 90 days



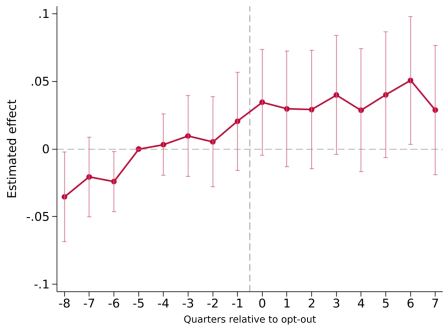
(b) Initiate care with a new non-prescriber + follow-up visit within 90 days



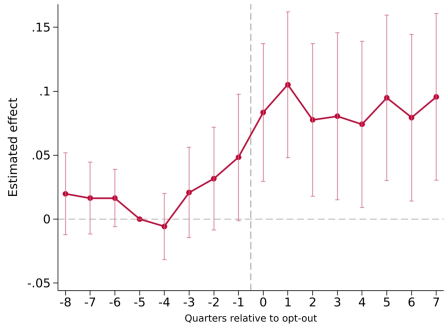
(c) Mental health visits with a new prescriber



(d) Mental health visits with a new non-prescriber



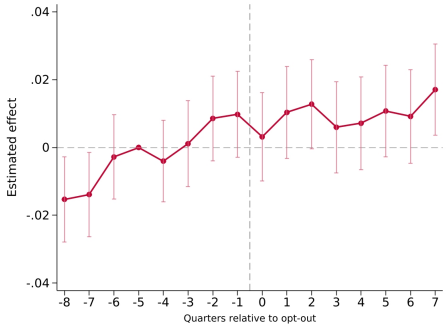
(e) Psychotropic medication fills from a new prescriber



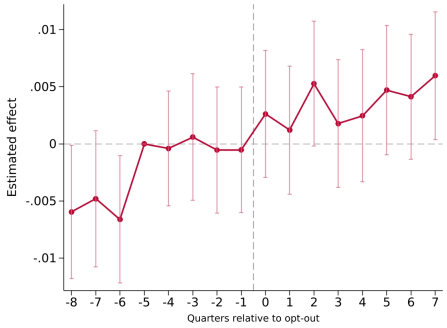
Notes: The figures present event-study plots estimated using the model specified by Equation 1, where the reference quarter is quarter −5 relative to opt out and 95% confidence intervals for each estimate are represented by the error bars. Figure 6e is estimated using a subsample of patients with Part D enrollment in the outcome quarter.

Figure 7: Impact of opting out of Medicare on acute care

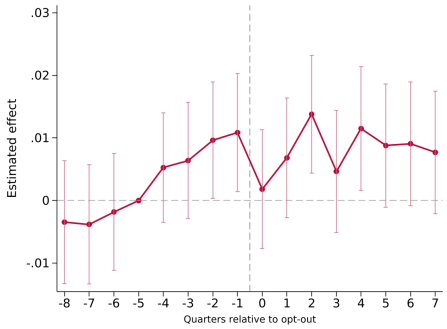
(a) Any mental health ED visit



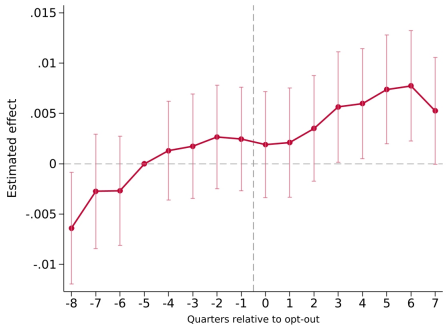
(b) All-cause ED visit



(c) Any mental health hospitalization



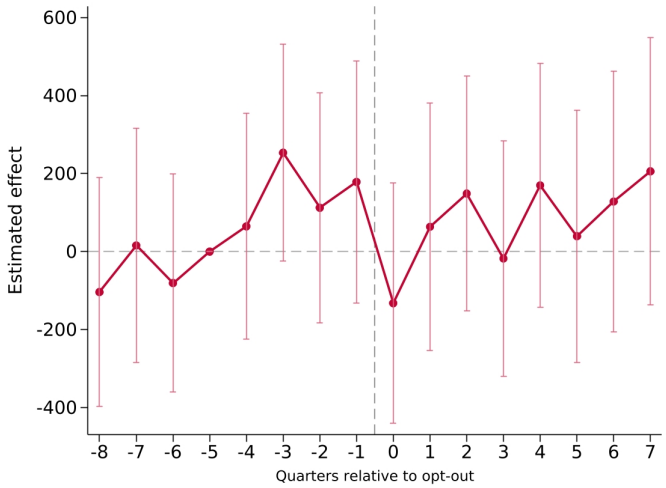
(d) All-cause hospitalization



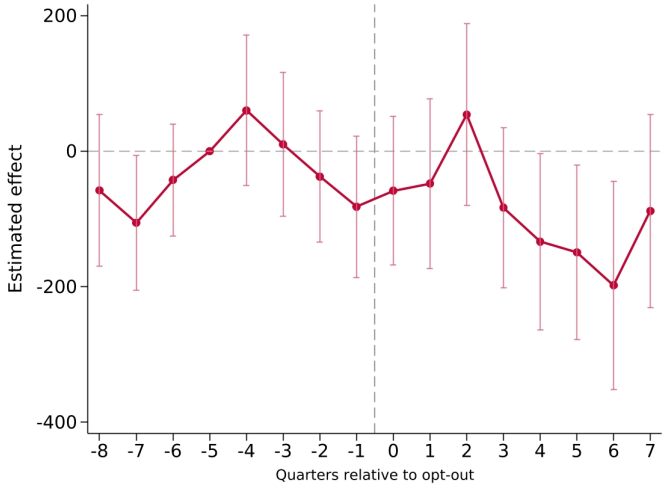
Notes: The figures present event-study plots estimated using the model specified by Equation 1, where the reference quarter is quarter -5 relative to opt out and 95% confidence intervals for each estimate are represented by the error bars.

Figure 8: Impact of opting out of Medicare on spending

(a) Total medical spending



(b) Total prescription drug spending



Notes: The figures present event-study plots estimated using the model specified by Equation 1, where the reference quarter is quarter -5 relative to opt out and 95% confidence intervals for each estimate are represented by the error bars.

8 Tables

Table 1: Clinician characteristics, pre-match

	Opt-out clinicians	Non-opt-out clinicians (Unmatched)	Test
N	4,762 (4.3%)	106,697 (95.7%)	
Age (2 years before opt-out)	57.4 (12.2)	53.1 (12.9)	<0.001
Unique beneficiaries ($-8 \leq \tau \leq -5$)	5.8 (9.4)	6.4 (12.4)	0.019
Frac. female	0.54	0.64	<0.001
Geographic area			
Metropolitan area	4,601 (96.7%)	94,773 (88.9%)	<0.001
Micropolitan area	108 (2.3%)	7,859 (7.4%)	
Small town	41 (0.9%)	2,986 (2.8%)	
Rural area	10 (0.2%)	985 (0.9%)	

Notes: Of the 5,212 mental health clinicians I include in my sample, 450 were unable to be matched with a comparison clinician, and thus are not included in this table or the analysis.

Table 2: Clinician characteristics, post-match

	Opt-out clinicians	Non-opt-out clinicians (Matched)	Test
N	4,762 (50.0%)	4,762 (50.0%)	
Age (2 years before opt-out)	57.4 (12.2)	57.8 (12.3)	0.200
Unique beneficiaries ($-8 \leq \tau \leq -5$)	5.8 (9.4)	7.3 (10.3)	<0.001
Frac. female	0.54	0.54	1.000
Geographic area			
Metropolitan area	4,601 (96.7%)	4,513 (94.8%)	<0.001
Micropolitan area	108 (2.3%)	172 (3.6%)	
Small town	41 (0.9%)	52 (1.1%)	
Rural area	10 (0.2%)	23 (0.5%)	

Notes: Of the 5,212 mental health clinicians I include in my sample, 450 were unable to be matched with a comparison clinician, and thus are not included in this table or the analysis.

Table 3: Patient characteristics, by assigned clinician type.

	Treated patients	Control patients	p-value
N	10,194 (44.6%)	12,660 (55.4%)	
Specialty of assigned clinician			
Psychiatrists	7,583 (74.4%)	9,547 (75.4%)	0.005
CPs	1,713 (16.8%)	1,933 (15.3%)	
CSWs	898 (8.8%)	1,180 (9.3%)	
Patient characteristics			
Age, mean (SD)	65.3 (14.2)	60.3 (15.4)	<0.001
Frac. female	0.64	0.61	<0.001
Frac. non-white	0.14	0.23	<0.001
Frac. in urban zip code	0.90	0.87	<0.001
Frac. eligible due to disability	0.38	0.55	<0.001
Frac. dual eligible	0.25	0.47	<0.001
Chronic conditions, mean (SD)	6.6 (4.5)	6.7 (4.7)	0.085
Frac. with serious mental illness	0.67	0.69	<0.001
Frac. enrolled in Part B	1.00	1.00	.
Frac. enrolled in Part D	0.75	0.81	<0.001
Health care utilization ($-8 \leq \tau \leq -5$)			
Avg. quarterly visits with assigned clinician	1.6 (2.5)	1.5 (2.3)	<0.001
Avg. quarterly office visits	8.3 (6.8)	7.6 (6.5)	<0.001
Avg. quarterly mental health-related visits	2.9 (4.2)	2.9 (3.9)	0.867
Avg. quarterly Rx fills	13.3 (9.9)	15.4 (11.5)	<0.001
Avg. quarterly psychotropic Rx fills	4.2 (3.9)	5.3 (4.7)	<0.001
Other clinician assignment			
Saw different mental health clinician	3,011 (29.5%)	4,418 (35.0%)	
Assigned a focal primary care provider	8,107 (79.5%)	9,712 (76.7%)	

Table 4: Impact of opt-out on care from assigned clinician

	(1) All patients	(2) Patients of psychiatrists	(3) Patients of CPs/CSWs
Panel A: Office visits with assigned clinician			
Anticipatory period	-0.17***	-0.076**	-0.45***
	(0.030)	(0.024)	(0.079)
Opt-out quarter	-0.83***	-0.57***	-1.59***
	(0.050)	(0.041)	(0.12)
Post-period	-0.75***	-0.52***	-1.43***
	(0.053)	(0.046)	(0.13)
Baseline mean	1.62	1.18	2.88
Observations	347,913	259,880	88,033
Panel B: Prescription fills from assigned clinician			
Anticipatory period		0.020	
		(0.099)	
Opt-out quarter		-0.38**	
		(0.12)	
Post-period		-0.51***	
		(0.13)	
Baseline mean		3.50	
Observations		214,697	

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Assigned clinician" is the assigned opt-out clinician for treated patients and the matched non-opt-out clinician for control patients. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. Standard errors are in parentheses and clustered at the clinician level. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 5: Impact of opt-out on mental health care utilization

	(1) Mental health visits	(2) Psychotherapy visits	(3) Established-patient E&M visits	(4) Psychotropic prescription fills
Panel A: All patients				
Anticipatory period	-0.021	-0.086*	-0.031	-0.030
	(0.044)	(0.037)	(0.020)	(0.037)
Opt-out quarter	-0.56***	-0.54***	-0.27***	0.029
	(0.067)	(0.060)	(0.033)	(0.053)
Post-period	-0.52***	-0.53***	-0.24***	-0.019
	(0.069)	(0.064)	(0.036)	(0.051)
Baseline mean	2.93	2.03	1.00	4.21
Observations	347,913	347,913	347,913	284,830
Panel B: Patients of psychiatrists				
Anticipatory period	0.064	0.0023	-0.054*	-0.088*
	(0.046)	(0.034)	(0.025)	(0.044)
Opt-out quarter	-0.35***	-0.29***	-0.38***	-0.025
	(0.068)	(0.057)	(0.041)	(0.064)
Post-period	-0.36***	-0.33***	-0.35***	-0.072
	(0.072)	(0.061)	(0.046)	(0.061)
Baseline mean	2.57	1.55	1.18	4.72
Observations	259,880	259,880	259,880	214,697
Panel C: Patients of CPs/CSWs				
Anticipatory period	-0.25*	-0.33***	0.032	0.12*
	(0.10)	(0.094)	(0.022)	(0.060)
Opt-out quarter	-1.19***	-1.29***	0.062*	0.17
	(0.15)	(0.14)	(0.031)	(0.087)
Post-period	-0.99***	-1.10***	0.068*	0.13
	(0.14)	(0.14)	(0.028)	(0.085)
Baseline mean	3.99	3.41	0.49	2.69
Observations	88,033	88,033	88,033	70,133

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. The baseline means are estimated during relative quarters -8 through -5 before opt out. Standard errors are in parentheses and clustered at the clinician level. Prescription outcomes additionally require Part D enrollment in the outcome quarter. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 6: Impact of opt-out on care from clinicians with established relationships

	Previously seen MH clinician		Focal PCP			Referral measure
	(1) MH visits	(2) Psychotropic Rx fills	(3) MH visits	(4) All office visits	(5) Psychotropic Rx fills	(6) MH visits listing assigned clinician as referring provider
Panel A: Patients of psychiatrists						
Anticipatory period	0.026	0.040	0.010	0.032*	0.042*	0.012*
	(0.026)	(0.023)	(0.0064)	(0.014)	(0.021)	(0.0050)
Opt-out quarter	0.0092	0.060*	0.0084	0.045*	0.10***	0.012
	(0.036)	(0.027)	(0.0088)	(0.018)	(0.026)	(0.0066)
Post-period	-0.019	0.081**	0.013	0.026	0.11***	0.0076
	(0.040)	(0.029)	(0.0089)	(0.017)	(0.029)	(0.0068)
Baseline mean	0.78	0.25	0.10	0.75	0.44	0.016
Observations	238,690	197,459	238,690	238,690	197,459	259,880
Panel B: Patients of CPs/CSWs						
Anticipatory period	0.063	0.10*	0.010	0.028	0.053	0.0020
	(0.040)	(0.047)	(0.011)	(0.023)	(0.038)	(0.0078)
Opt-out quarter	0.062	0.22***	0.021	0.036	0.11*	0.00046
	(0.050)	(0.064)	(0.017)	(0.033)	(0.048)	(0.0054)
Post-period	0.045	0.23***	0.0041	0.039	0.097*	0.00099
	(0.050)	(0.068)	(0.015)	(0.029)	(0.047)	(0.0030)
Baseline mean	0.51	0.67	0.11	0.82	0.57	0.0023
Observations	80,302	64,106	80,302	80,302	64,106	88,033

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. The baseline means are estimated during relative quarters -8 through -5 before opt out. Standard errors are in parentheses and clustered at the clinician level. Outcomes involving previously seen mental health clinicians and focal PCPs are restricted to beneficiaries whose claims history is observable during quarters -12 through -9. Prescription outcomes additionally require Part D enrollment in the outcome quarter. Among beneficiaries with an observable relationship-identification period, those without a qualifying previously seen clinician or focal PCP are assigned a value of zero for the corresponding outcome. The referral outcome does not require observability during quarters -12 through -9. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 7: Impact of opt-out on care from newly established mental health clinicians

	New prescriber			New non-prescriber	
	(1) Relationship established	(2) Mental health visits	(3) Psychotropic Rx fills	(4) Relationship established	(5) Mental health visits
Panel A: Patients of psychiatrists					
Anticipatory period	0.0033*	0.017	0.023	-0.00047	0.016
	(0.0015)	(0.013)	(0.020)	(0.0012)	(0.015)
Opt-out quarter	0.015***	0.042*	0.10**	-0.00091	0.013
	(0.0029)	(0.021)	(0.033)	(0.0017)	(0.020)
Post-period	0.0024	0.066***	0.11**	-0.00085	-0.0025
	(0.0013)	(0.016)	(0.036)	(0.0011)	(0.019)
Baseline mean	0.012	0.068	0.091	0.014	0.13
Observations	259,880	259,880	214,697	259,880	259,880
Panel B: Patients of CPs/CSWs					
Anticipatory period	0.0050*	0.012	-0.024	0.0048*	0.065*
	(0.0024)	(0.018)	(0.033)	(0.0022)	(0.031)
Opt-out quarter	0.0020	0.015	-0.033	0.0082*	0.16***
	(0.0035)	(0.025)	(0.045)	(0.0039)	(0.047)
Post-period	0.0045	0.031	-0.026	0.0036	0.22***
	(0.0024)	(0.021)	(0.042)	(0.0019)	(0.047)
Baseline mean	0.017	0.10	0.18	0.012	0.13
Observations	88,033	88,033	70,133	88,033	88,033

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. The baseline means are estimated during relative quarters -8 through -5 before opt out. Standard errors are in parentheses and clustered at the clinician level. A newly established relationship is defined as an initiation encounter followed by another mental health visit with the same clinician within 90 days. Prescription outcomes additionally require Part D enrollment in the outcome quarter. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 8: Impact of Medicare opt-out on acute-care utilization

	(1) Mental health ED visit	(2) All-cause ED visit	(3) Mental health hospitalization	(4) All-cause hospitalization
Panel A: All patients				
Anticipatory period	0.0041^{*}	0.012^{***}	0.0050^{**}	0.010^{***}
	(0.0017)	(0.0036)	(0.0016)	(0.0026)
Opt-out quarter	0.0070^{**}	0.011^{*}	0.0049^{*}	0.0041
	(0.0022)	(0.0053)	(0.0022)	(0.0040)
Post-period	0.0080^{***}	0.018^{***}	0.0083^{***}	0.011^{***}
	(0.0018)	(0.0039)	(0.0018)	(0.0029)
Baseline mean	0.023	0.17	0.021	0.082
Observations	347,913	347,913	347,913	347,913
Panel B: Patients of psychiatrists				
Anticipatory period	0.0069^{***}	0.015^{***}	0.0071^{***}	0.013^{***}
	(0.0021)	(0.0043)	(0.0019)	(0.0030)
Opt-out quarter	0.0089^{**}	0.012	0.0069^{*}	0.0047
	(0.0028)	(0.0063)	(0.0027)	(0.0048)
Post-period	0.010^{***}	0.021^{***}	0.010^{***}	0.015^{***}
	(0.0023)	(0.0048)	(0.0023)	(0.0034)
Baseline mean	0.026	0.18	0.024	0.086
Observations	259,880	259,880	259,880	259,880
Panel C: Patients of CPs/CSWs				
Anticipatory period	-0.0038	0.0026	-0.0012	0.0021
	(0.0024)	(0.0063)	(0.0021)	(0.0048)
Opt-out quarter	0.00082	0.0092	-0.0015	0.0025
	(0.0034)	(0.0100)	(0.0029)	(0.0069)
Post-period	0.0010	0.011	0.0028	0.0016
	(0.0025)	(0.0063)	(0.0024)	(0.0049)
Baseline mean	0.016	0.15	0.013	0.072
Observations	88,033	88,033	88,033	88,033

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. Standard errors are in parentheses and clustered at the clinician level. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 9: Impact of opt-out on spending

	(1) Medical spending	(2) Prescription-drug spending
Panel A: All patients		
Anticipatory period	194.2*	39.1
	(85.9)	(37.7)
Opt-out quarter	-90.1	-6.65
	(135.9)	(50.8)
Post-period	146.8	-39.4
	(93.2)	(48.6)
Baseline mean	3469.1	1444.0
Observations	347,913	285,326
Panel B: Patients of psychiatrists		
Anticipatory period	251.0*	50.3
	(99.9)	(44.5)
Opt-out quarter	-92.4	-13.0
	(157.9)	(52.4)
Post-period	229.3*	-34.1
	(108.2)	(57.4)
Baseline mean	3424.8	1532.4
Observations	259,880	215,098
Panel C: Patients of CPs/CSWs		
Anticipatory period	53.8	-6.87
	(169.8)	(63.9)
Opt-out quarter	-79.1	-21.5
	(271.6)	(124.4)
Post-period	-99.3	-63.8
	(184.5)	(91.4)
Baseline mean	3597.5	1183.3
Observations	88,033	70,228

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. The baseline means are estimated during relative quarters -8 through -5 before opt out. Standard errors are in parentheses and clustered at the clinician level. Prescription outcomes additionally require Part D enrollment in the outcome quarter. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 10: Characteristics of patients by receipt of prescriptions from their opt-out clinician after opt-out

	Continued	Did not continue	p-value
N	2,069 (44.0%)	2,634 (56.0%)	
Patient characteristics ($-8 \leq \tau \leq -5$)			
Age	64.6 (13.5)	61.7 (15.1)	<0.001
Frac. female	0.64	0.63	0.556
Frac. non-white	0.12	0.19	<0.001
Frac. in urban zip code	0.93	0.87	<0.001
Frac. eligible due to disability	0.37	0.51	<0.001
Frac. dual eligible	0.25	0.46	<0.001
Chronic conditions	6.4 (4.0)	7.1 (4.5)	<0.001
Frac. with serious mental illness	0.79	0.80	0.423
Pre-period ($-8 \leq \tau \leq -1$) utilization			
Visits with assigned clinician	1.5 (2.4)	1.1 (1.2)	<0.001
Mental health visits	2.6 (3.8)	2.7 (3.9)	0.189
Psychotropic prescription fills	4.7 (3.6)	5.0 (4.0)	<0.001
MH ED visit	0.01	0.03	<0.001
MH hospitalization	0.01	0.03	<0.001
Post-period ($1 \leq \tau \leq 7$) utilization			
Mental health visits	1.2 (3.2)	1.6 (3.3)	<0.001
MH visits with previously-seen clinician	0.4 (2.0)	0.3 (1.9)	0.459
MH visits with new prescriber	0.1 (0.7)	0.3 (1.0)	<0.001
MH visits with new non-prescriber	0.2 (1.6)	0.2 (1.1)	0.673
MH visits with focal PCP	0.0 (0.3)	0.1 (1.0)	0.283
Psychotropic prescription fills	4.2 (3.5)	4.6 (4.2)	<0.001
Psychotropic Rx from previously-seen prescriber	0.0 (0.4)	0.1 (0.6)	0.003
Psychotropic Rx from new prescriber	0.2 (1.2)	0.6 (1.9)	<0.001
Psychotropic Rx from focal PCP	0.3 (0.9)	0.5 (1.3)	<0.001
MH ED visit	0.01	0.02	<0.001
MH hospitalization	0.01	0.02	0.002

Notes: Patient characteristics are measured during the pre-anticipation period ($-8 \leq \tau \leq -5$).

Appendix A: Additional Tables

Table A1: Cohort exclusion diagram for opt-out clinician sample

	Dropped observations	Remaining observations
Initial sample of opt-out affidavits, 1998-2023	—	50,056
Exclusion criteria, affidavit-level:		
Duplicate records, January 2024 opt-outs and affidavits with missing NPI	−3,965	46,091
Practicing outside of mainland US or has missing address	−64	46,027
Early terminations (<90 days)	−387	46,640
Combined overlapping opt-out periods	−4	45,636
Opt-outs following a clinician's first opt-out period	−1,179	44,457
Exclusion criteria, clinician-level:		
Specialty other then psychiatrist, CP, or CSW	−26,822	17,365
Opt-outs beginning before 2013 or after 2020	−5,303	12,332
Does not have ≥ 2 years of FFS claims before opt-out	−7,120	5,212
Unmatched clinicians	−450	4,762
Final clinician sample		**4,762**

Notes: NPI = "national provider identifier", CP = "clinical psychologist", CSW = "clinical social worker", FFS = "fee-for-service"

Table A2: Treated patients, stratified by specialty of assigned opt-out clinician

	Psychiatrist treated patients	CP/CSW treated patients	p-value
N	7,583 (74.4%)	2,611 (25.6%)	
Patient characteristics			
Age, mean (SD)	64.4 (14.6)	67.9 (12.8)	<0.001
Frac. female	0.64	0.67	0.001
Frac. non-white	0.15	0.10	<0.001
Frac. in urban zip code	0.90	0.92	0.002
Frac. eligible due to disability	0.41	0.26	<0.001
Frac. dual eligible	0.29	0.16	<0.001
Chronic conditions, mean (SD)	6.7 (4.5)	6.3 (4.3)	<0.001
Frac. with serious mental illness	0.71	0.54	<0.001
Frac. enrolled in Part B	1.00	1.00	.
Frac. enrolled in Part D	0.75	0.74	0.284
Health care utilization ($-8 \leq \tau \leq -5$)			
Avg. quarterly visits with assigned clinician	1.2 (1.9)	2.9 (3.5)	<0.001
Avg. quarterly office visits	7.6 (6.6)	10.1 (6.9)	<0.001
Avg. quarterly mental health-related visits	2.6 (4.0)	4.0 (4.5)	<0.001
Avg. quarterly Rx fills	14.2 (10.1)	10.9 (8.9)	<0.001
Avg. quarterly psychotropic Rx fills	4.7 (3.9)	2.7 (3.3)	<0.001

Table A3: Impact of opt-out on prescription fills, by drug class

	(1) Antidepressants	(2) Antipsychotics	(3) Mood stabilizers	(4) Other anxiolytics	(5) Other psychotropics
Panel A: Patients of psychiatrists					
Anticipatory period	-0.039	-0.0094	-0.015	-0.0051	-0.020
	(0.024)	(0.020)	(0.016)	(0.0062)	(0.010)
Opt-out quarter	-0.00074	0.014	-0.0037	-0.0043	-0.030*
	(0.033)	(0.029)	(0.023)	(0.0094)	(0.015)
Post-period	-0.020	-0.000089	-0.033	0.0028	-0.023
	(0.031)	(0.028)	(0.023)	(0.0095)	(0.015)
Baseline mean	2.10	1.16	1.00	0.11	0.34
Observations	214,697	214,697	214,697	214,697	214,697
Panel B: Patients of CPs/CSWs					
Anticipatory period	0.040	0.049*	0.022	-0.0039	0.017
	(0.034)	(0.022)	(0.025)	(0.010)	(0.014)
Opt-out quarter	0.092	0.093**	-0.013	-0.012	0.0097
	(0.048)	(0.033)	(0.035)	(0.015)	(0.021)
Post-period	0.096*	0.045	-0.0093	-0.013	0.012
	(0.046)	(0.030)	(0.035)	(0.014)	(0.021)
Baseline mean	1.37	0.39	0.60	0.074	0.26
Observations	70,133	70,133	70,133	70,133	70,133

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. The baseline means are estimated during relative quarters -8 through -5 before opt out. Standard errors are in parentheses and clustered at the clinician level. Prescription outcomes additionally require Part D enrollment in the outcome quarter. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table A4: Impact of opt-out on overall volume of office visits and prescription fills

	(1) All office visits	(2) All Rx fills
Panel A: All patients		
Anticipatory period	-0.0012	-0.032
	(0.067)	(0.081)
Opt-out quarter	-0.51***	0.065
	(0.10)	(0.12)
Post-period	-0.48***	-0.096
	(0.092)	(0.12)
Baseline mean	8.29	13.4
Observations	347,913	284,830
Panel B: Patients of psychiatrists		
Anticipatory period	0.086	-0.068
	(0.074)	(0.096)
Opt-out quarter	-0.33**	0.038
	(0.11)	(0.14)
Post-period	-0.36***	-0.13
	(0.099)	(0.14)
Baseline mean	7.65	14.3
Observations	259,880	214,697
Panel C: Patients of CPs/CSWs		
Anticipatory period	-0.22	0.045
	(0.15)	(0.14)
Opt-out quarter	-1.08***	0.11
	(0.21)	(0.21)
Post-period	-0.79***	-0.041
	(0.19)	(0.20)
Baseline mean	10.1	11.0
Observations	88,033	70,133

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. The baseline means are estimated during relative quarters -8 through -5 before opt out. Standard errors are in parentheses and clustered at the clinician level. Prescription outcomes additionally require Part D enrollment in the outcome quarter. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table A5: Impact of opt-out on psychotropic medication fills from previously-seen mental health prescriber, by drug type

	(1) Antidepressants	(2) Antipsychotics	(3) Mood stabilizers	(4) Other anxiolytics	(5) Other psychotropics
Panel A: Patients of psychiatrists					
Anticipatory period	0.015	0.0086	0.0097	0.0025	0.0042
	(0.0098)	(0.011)	(0.0056)	(0.0020)	(0.0031)
Opt-out quarter	0.024	0.020	0.012	0.0019	0.0032
	(0.012)	(0.013)	(0.0061)	(0.0022)	(0.0036)
Post-period	0.033**	0.026	0.014*	0.0022	0.0060
	(0.012)	(0.014)	(0.0068)	(0.0022)	(0.0037)
Baseline mean	0.093	0.099	0.042	0.0057	0.014
Observations	197,459	197,459	197,459	197,459	197,459
Panel B: Patients of CPs/CSWs					
Anticipatory period	0.023	0.049*	0.018	-0.0048	0.019*
	(0.024)	(0.019)	(0.013)	(0.0067)	(0.0085)
Opt-out quarter	0.085**	0.081**	0.034	-0.0023	0.024*
	(0.032)	(0.026)	(0.018)	(0.0085)	(0.011)
Post-period	0.080*	0.081**	0.041*	-0.0021	0.032**
	(0.034)	(0.026)	(0.018)	(0.0081)	(0.011)
Baseline mean	0.34	0.15	0.11	0.028	0.044
Observations	64,106	64,106	64,106	64,106	64,106

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. The baseline means are estimated during relative quarters -8 through -5 before opt out. Standard errors are in parentheses and clustered at the clinician level. Prescription outcomes additionally require Part D enrollment in the outcome quarter. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table A6: Impact of opt-out on psychotropic medication fills from focal PCP, by drug type

	(1) Antidepressants	(2) Antipsychotics	(3) Mood stabilizers	(4) Other anxiolytics	(5) Other psychotropics
Panel A: Patients of psychiatrists					
Anticipatory period	0.0080	0.011	0.018**	0.0024	0.0021
	(0.011)	(0.0075)	(0.0070)	(0.0020)	(0.0042)
Opt-out quarter	0.036**	0.025**	0.036***	0.0069*	0.000067
	(0.014)	(0.0093)	(0.0093)	(0.0032)	(0.0058)
Post-period	0.045**	0.027*	0.032**	0.0085**	0.00096
	(0.014)	(0.011)	(0.0098)	(0.0033)	(0.0053)
Baseline mean	0.20	0.078	0.11	0.0093	0.050
Observations	197,459	197,459	197,459	197,459	197,459
Panel B: Patients of CPs/CSWs					
Anticipatory period	0.026	0.013	0.0030	0.0025	0.0082
	(0.023)	(0.011)	(0.014)	(0.0044)	(0.0087)
Opt-out quarter	0.037	0.034*	0.010	0.012	0.016
	(0.029)	(0.015)	(0.017)	(0.0061)	(0.011)
Post-period	0.040	0.028	0.0087	0.0100	0.010
	(0.029)	(0.015)	(0.015)	(0.0057)	(0.011)
Baseline mean	0.35	0.043	0.100	0.013	0.068
Observations	64,106	64,106	64,106	64,106	64,106

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. The baseline means are estimated during relative quarters -8 through -5 before opt out. Standard errors are in parentheses and clustered at the clinician level. Prescription outcomes additionally require Part D enrollment in the outcome quarter. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table A7: Impact of opt-out on psychotropic medication fills from new prescribers, by drug type

	(1) Antidepressants	(2) Antipsychotics	(3) Mood stabilizers	(4) Other anxiolytics	(5) Other psychotropics
Panel A: Patients of psychiatrists					
Anticipatory period	0.015	0.00032	0.0022	0.0035	0.0021
	(0.0092)	(0.0078)	(0.0052)	(0.0022)	(0.0024)
Opt-out quarter	0.041**	0.027*	0.025**	0.0060	0.0059
	(0.015)	(0.013)	(0.0084)	(0.0035)	(0.0041)
Post-period	0.058***	0.022	0.020*	0.0035	0.0069
	(0.016)	(0.013)	(0.0093)	(0.0032)	(0.0041)
Baseline mean	0.040	0.027	0.017	0.0027	0.0052
Observations	214,697	214,697	214,697	214,697	214,697
Panel B: Patients of CPs/CSWs					
Anticipatory period	-0.010	-0.0078	-0.0078	-0.0013	0.0033
	(0.017)	(0.012)	(0.0097)	(0.0045)	(0.0055)
Opt-out quarter	-0.023	-0.014	-0.0021	-0.0035	0.0095
	(0.022)	(0.016)	(0.013)	(0.0067)	(0.0071)
Post-period	0.0053	-0.023	-0.0087	-0.0023	0.0037
	(0.021)	(0.016)	(0.011)	(0.0049)	(0.0057)
Baseline mean	0.091	0.044	0.024	0.0078	0.011
Observations	70,133	70,133	70,133	70,133	70,133

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. The baseline means are estimated during relative quarters -8 through -5 before opt out. Standard errors are in parentheses and clustered at the clinician level. Prescription outcomes additionally require Part D enrollment in the outcome quarter. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table A8: Impact of opt-out on psychiatric evaluations, by type

	(1) Diagnostic evaluation without medical services	(2) Diagnostic evaluation with medical services
Panel A: Patients of psychiatrists		
Anticipatory period	0.00044	0.0045*
	(0.0021)	(0.0019)
Opt-out quarter	0.0020	0.016***
	(0.0030)	(0.0040)
Post-period	-0.0021	0.0016
	(0.0020)	(0.0016)
Baseline mean	0.025	0.013
Observations	181,496	181,496
Panel B: Patients of CPs/CSWs		
Anticipatory period	0.0077*	0.0046
	(0.0031)	(0.0028)
Opt-out quarter	0.0063	-0.0017
	(0.0051)	(0.0039)
Post-period	0.0069**	0.0034
	(0.0026)	(0.0027)
Baseline mean	0.018	0.015
Observations	69,873	69,873

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. The HCPCS codes defining types of psychiatric diagnostic evaluations (90791 and 90792) were introduced in 2013, therefore, these results are estimated on a subsample of patients whose assigned clinician has an opt-out date (or synthetic opt-out date for the control group) beginning in the first quarter of 2015 onwards. Standard errors are in parentheses and clustered at the clinician level. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table A9: Impact of opt-out on enrollment and death

	(1) Part B enrollment	(2) Part D enrollment	(3) Death
Panel A: All patients			
Anticipatory period	0.00040	0.0051*	-0.00073
	(0.00053)	(0.0025)	(0.00078)
Opt-out quarter	-0.00015	0.0088*	-0.00040
	(0.00087)	(0.0036)	(0.0014)
Post-period	0.00080	0.012**	0.00075
	(0.00086)	(0.0039)	(0.00092)
Baseline mean	1.00	0.76	0.0039
Observations	349,240	349,240	349,969
Panel B: Patients of psychiatrists			
Anticipatory period	0.00031	0.0042	-0.0012
	(0.00064)	(0.0029)	(0.00091)
Opt-out quarter	0.0000029	0.011*	-0.00039
	(0.0010)	(0.0042)	(0.0016)
Post-period	0.0016	0.015**	0.00066
	(0.0010)	(0.0046)	(0.0011)
Baseline mean	1.00	0.76	0.0041
Observations	260,956	260,956	261,603
Panel C: Patients of CPs/CSWs			
Anticipatory period	0.00070	0.0068	0.00076
	(0.00091)	(0.0047)	(0.0014)
Opt-out quarter	-0.00072	0.0024	0.000074
	(0.0016)	(0.0067)	(0.0023)
Post-period	-0.0015	0.0050	0.00069
	(0.0016)	(0.0071)	(0.0018)
Baseline mean	1.00	0.75	0.0034
Observations	88,284	88,284	88,366

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. Standard errors are in parentheses and clustered at the clinician level. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table A10: Impact of opt-out on mental health care and clinical outcomes using a panel with continuous Part B and Part D enrollment

	Overall MH treatment		Replacement visits				Replacement prescribing			Acute-care outcomes	
	(1) MH visits	(2) Psychotropic Rx fills	(3) MH visits with established clinician	(4) MH visits with new prescribers	(5) MH visits with new non-prescribers	(6) MH visits with focal PCP	(7) Psychotropic Rx from established prescribers	(8) Psychotropic Rx from new prescribers	(9) Psychotropic Rx from focal PCP	(10) MH ED visit	(11) MH hospitalization
Anticipatory period	-0.047	-0.047	0.020	0.021	0.035*	0.014*	0.055*	0.019	0.052**	0.0029	0.0039*
	(0.053)	(0.038)	(0.028)	(0.014)	(0.017)	(0.0068)	(0.023)	(0.019)	(0.019)	(0.0020)	(0.0019)
Opt-out quarter	-0.60***	0.011	0.011	0.046*	0.057*	0.014	0.10***	0.083**	0.12***	0.0070*	0.0046
	(0.075)	(0.055)	(0.037)	(0.021)	(0.024)	(0.0099)	(0.029)	(0.030)	(0.025)	(0.0027)	(0.0026)
Post-period	-0.55***	-0.043	-0.029	0.066***	0.070**	0.013	0.12***	0.084**	0.12***	0.0071***	0.0082***
	(0.078)	(0.053)	(0.041)	(0.016)	(0.024)	(0.0095)	(0.030)	(0.030)	(0.026)	(0.0021)	(0.0021)
Baseline mean	3.17	4.24	0.83	0.087	0.14	0.11	0.38	0.12	0.47	0.026	0.023
Observations	247,200	247,200	228,256	247,200	247,200	228,256	228,256	247,200	228,256	247,200	247,200

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. Standard errors are in parentheses and clustered at the clinician level. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table A11: Impact of opt-out on mental health care and clinical outcomes using a non-COVID sample

	Overall MH treatment		Replacement visits				Replacement prescribing			Acute-care outcomes	
	(1) MH visits	(2) Psychotropic Rx fills	(3) MH visits with established clinician	(4) MH visits with new prescribers	(5) MH visits with new non-prescribers	(6) MH visits with focal PCP	(7) Psychotropic Rx from established prescribers	(8) Psychotropic Rx from new prescribers	(9) Psychotropic Rx from focal PCP	(10) MH ED visit	(11) MH hospitalization
Anticipatory period	-0.024	-0.029	0.029	0.0054	0.020	0.0082	0.041	-0.011	0.051*	0.0047*	0.0052**
	(0.051)	(0.042)	(0.025)	(0.013)	(0.015)	(0.0068)	(0.026)	(0.021)	(0.021)	(0.0019)	(0.0019)
Opt-out quarter	-0.58***	0.026	0.011	0.031	0.054*	0.00080	0.080*	0.045	0.092**	0.0073**	0.0043
	(0.074)	(0.060)	(0.033)	(0.018)	(0.022)	(0.0095)	(0.033)	(0.035)	(0.028)	(0.0026)	(0.0027)
Post-period	-0.52***	-0.029	-0.017	0.055***	0.076***	0.0066	0.11**	0.036	0.099**	0.0077***	0.0088***
	(0.074)	(0.059)	(0.036)	(0.016)	(0.023)	(0.0093)	(0.036)	(0.036)	(0.031)	(0.0021)	(0.0021)
Baseline mean	2.78	4.30	0.66	0.071	0.11	0.10	0.38	0.11	0.49	0.022	0.020
Observations	244,462	197,709	223,484	244,462	244,462	223,484	181,134	197,709	181,134	244,462	244,462

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using a difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. Standard errors are in parentheses and clustered at the clinician level. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table A12: Impact of opt-out on mental health care and clinical outcomes using a calendar quarter FE

	Overall MH treatment		Replacement visits				Replacement prescribing			Acute-care outcomes	
	(1) MH visits	(2) Psychotropic Rx fills	(3) MH visits with established clinician	(4) MH visits with new prescribers	(5) MH visits with new non-prescribers	(6) MH visits with focal PCP	(7) Psychotropic Rx from established prescribers	(8) Psychotropic Rx from new prescribers	(9) Psychotropic Rx from focal PCP	(10) MH ED visit	(11) MH hospitalization
Anticipatory period	-0.23***	-0.026	-0.080***	0.031***	0.055***	-0.0100*	-0.021	0.041**	0.00080	-0.00083	-0.0011
	(0.037)	(0.028)	(0.019)	(0.0081)	(0.013)	(0.0046)	(0.016)	(0.014)	(0.013)	(0.0012)	(0.0011)
Opt-out quarter	-0.79***	-0.031	-0.079**	0.064***	0.071***	-0.0028	0.027	0.094***	0.061**	0.0021	0.00043
	(0.061)	(0.044)	(0.026)	(0.012)	(0.017)	(0.0068)	(0.021)	(0.023)	(0.019)	(0.0017)	(0.0016)
Post-period	-0.64***	-0.052	-0.038	0.064***	0.060***	0.0045	0.088***	0.090**	0.094***	0.0057***	0.0055***
	(0.065)	(0.049)	(0.031)	(0.012)	(0.018)	(0.0072)	(0.025)	(0.027)	(0.023)	(0.0016)	(0.0016)
Baseline mean	2.93	4.21	0.71	0.077	0.13	0.11	0.36	0.11	0.48	0.023	0.021
Observations	347,913	284,830	318,992	347,913	347,913	318,992	261,565	284,830	261,565	347,913	347,913

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using the difference-in-differences model specified by Equation 2. "Anticipatory period" is the effect during relative quarters -4 through -1 and "post-period" is the effect during relative quarters $+1$ through $+7$, with the omitted category being relative quarters -8 through -5. Standard errors are in parentheses and clustered at the clinician level. $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table A13: Heterogeneity analysis by dual-eligible status

	Opt-out quarter			Post-period		
Outcome	Dual-eligible	Non-dual-eligible	**Diff.**	Dual-eligible	Non-dual-eligible	**Diff.**
Overall mental health care						
Mental health visits	-0.306	-0.660	**0.354*** **	-0.302	-0.601	**0.298** **
	(0.101)	(0.081)	**(0.121)**	(0.113)	(0.080)	**(0.129)**
Psychotropic Rx fills	-0.043	0.004	**-0.047**	-0.054	-0.077	**0.023**
	(0.094)	(0.059)	**(0.109)**	(0.088)	(0.056)	**(0.101)**
Continuity with assigned psychiatrist						
Prescription fills from assigned psychiatrist	-0.831	-0.297	**-0.534*** **	-1.015	-0.493	**-0.522** **
	(0.196)	(0.102)	**(0.194)**	(0.212)	(0.105)	**(0.208)**
Care from focal PCP						
Office visits	0.012	0.062	**-0.050**	0.000	0.044	**-0.044**
	(0.026)	(0.020)	**(0.032)**	(0.026)	(0.018)	**(0.031)**
Psychotropic Rx fills	0.102	0.062	**0.039**	0.059	0.090	**-0.031**
	(0.043)	(0.025)	**(0.050)**	(0.045)	(0.025)	**(0.050)**
Care from previously-seen mental health clinician						
Office visits	-0.072	0.018	**-0.090**	-0.126	-0.005	**-0.121**
	(0.063)	(0.033)	**(0.071)**	(0.075)	(0.034)	**(0.082)**
Psychotropic Rx fills	0.032	0.092	**-0.061**	0.076	0.080	**-0.004**
	(0.049)	(0.025)	**(0.053)**	(0.051)	(0.025)	**(0.054)**
Care from new prescribers						
Initiated care + follow-up	0.023	0.015	**0.009**	0.001	0.006	**-0.005***
	(0.006)	(0.003)	**(0.006)**	(0.003)	(0.002)	**(0.003)**
Mental health visits	0.057	0.014	**0.043**	0.049	0.057	**-0.007**
	(0.026)	(0.023)	**(0.033)**	(0.023)	(0.016)	**(0.027)**
Psychotropic Rx fills	0.116	0.054	**0.062**	0.100	0.083	**0.017**
	(0.054)	(0.027)	**(0.059)**	(0.054)	(0.028)	**(0.059)**
Care from new non-prescribers						
Initiated care + follow-up	0.004	0.002	**0.003**	-0.002	0.001	**-0.003**
	(0.004)	(0.003)	**(0.004)**	(0.002)	(0.002)	**(0.003)**
Mental health visits	0.064	0.032	**0.033**	0.060	0.033	**0.027**
	(0.031)	(0.026)	**(0.040)**	(0.028)	(0.026)	**(0.037)**
Acute-care utilization						
Any mental health ED visit	0.006	0.005	**0.001**	0.005	0.006	**-0.001**
	(0.005)	(0.002)	**(0.006)**	(0.004)	(0.002)	**(0.004)**
Any mental health hospitalization	-0.001	0.004	**-0.005**	0.003	0.007	**-0.004**
	(0.005)	(0.002)	**(0.005)**	(0.004)	(0.002)	**(0.004)**

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using the difference-in-differences model specified by Equation 3, where the interaction term is an indicator for being dual eligible in quarter -8 relative to opt out. "Post-period" is the effect during relative quarters $+1$ through $+7$. Standard errors are in parentheses and clustered at the clinician level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A14: Heterogeneity analysis by rural vs. urban residence

	Opt-out quarter			Post-period		
Outcome	Rural	Urban	**Diff.**	Rural	Urban	**Diff.**
Overall mental health care						
Mental health visits	-0.372	-0.576	**0.204**	-0.431	-0.526	**0.095**
	(0.144)	(0.071)	**(0.156)**	(0.140)	(0.073)	**(0.152)**
Psychotropic Rx fills	-0.037	0.043	**-0.080**	-0.057	-0.009	**-0.048**
	(0.174)	(0.055)	**(0.180)**	(0.175)	(0.052)	**(0.181)**
Continuity with assigned psychiatrist						
Prescription fills from assigned psychiatrist	-0.821	-0.323	**-0.498**	-0.816	-0.476	**-0.340**
	(0.342)	(0.128)	**(0.358)**	(0.396)	(0.134)	**(0.407)**
Care from focal PCP						
Office visits	-0.033	0.053	**-0.086***	-0.032	0.037	**-0.069**
	(0.044)	(0.017)	**(0.047)**	(0.044)	(0.016)	**(0.047)**
Psychotropic Rx fills	0.018	0.115	**-0.097**	0.072	0.112	**-0.040**
	(0.084)	(0.024)	**(0.087)**	(0.094)	(0.025)	**(0.097)**
Care from previously-seen mental health clinician						
Office visits	-0.024	0.026	**-0.050**	-0.029	-0.001	**-0.028**
	(0.068)	(0.032)	**(0.074)**	(0.074)	(0.035)	**(0.081)**
Psychotropic Rx fills	0.103	0.104	**-0.001**	0.139	0.122	**0.017**
	(0.072)	(0.028)	**(0.076)**	(0.076)	(0.030)	**(0.081)**
Care from new prescribers						
Initiated care + follow-up	0.019	0.017	**0.002**	0.003	0.005	**-0.002**
	(0.009)	(0.003)	**(0.009)**	(0.004)	(0.002)	**(0.004)**
Mental health visits	0.052	0.033	**0.020**	0.002	0.062	**-0.060****
	(0.039)	(0.018)	**(0.042)**	(0.026)	(0.015)	**(0.030)**
Psychotropic Rx fills	0.122	0.062	**0.060**	0.135	0.064	**0.070**
	(0.080)	(0.029)	**(0.085)**	(0.092)	(0.030)	**(0.096)**
Care from new non-prescribers						
Initiated care + follow-up	-0.005	0.003	**-0.008**	-0.002	0.000	**-0.003**
	(0.006)	(0.002)	**(0.006)**	(0.004)	(0.001)	**(0.004)**
Mental health visits	0.013	0.058	**-0.045**	0.011	0.058	**-0.046**
	(0.041)	(0.021)	**(0.046)**	(0.034)	(0.021)	**(0.040)**
Acute-care utilization						
Any mental health ED visit	0.002	0.007	**-0.005**	0.004	0.008	**-0.005**
	(0.006)	(0.002)	**(0.007)**	(0.005)	(0.002)	**(0.005)**
Any mental health hospitalization	0.009	0.004	**0.005**	0.008	0.008	**0.000**
	(0.006)	(0.002)	**(0.007)**	(0.004)	(0.002)	**(0.005)**

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using the difference-in-differences model specified by Equation 3, where the interaction term is an indicator for residing in a rural zip code in quarter −8 relative to opt out. "Post-period" is the effect during relative quarters +1 through +7. Standard errors are in parentheses and clustered at the clinician level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A15: Heterogeneity analysis by diagnosis of serious mental illness (SMI)

	Opt-out quarter			Post-period		
Outcome	SMI	No SMI	**Diff.**	SMI	No SMI	**Diff.**
Overall mental health care						
Mental health visits	-0.581	-0.534	**-0.047**	-0.570	-0.450	**-0.120**
	(0.082)	(0.084)	**(0.104)**	(0.083)	(0.086)	**(0.103)**
Psychotropic Rx fills	0.032	0.017	**0.015**	-0.042	0.021	**-0.063**
	(0.067)	(0.082)	**(0.105)**	(0.065)	(0.076)	**(0.098)**
Continuity with assigned psychiatrist						
Prescription fills from assigned psychiatrist	-0.406	-0.328	**-0.078**	-0.599	-0.315	**-0.284***
	(0.139)	(0.143)	**(0.153)**	(0.147)	(0.150)	**(0.159)**
Care from focal PCP						
Office visits	0.058	-0.001	**0.059***	0.031	0.018	**0.012**
	(0.019)	(0.029)	**(0.034)**	(0.017)	(0.025)	**(0.030)**
Psychotropic Rx fills	0.120	0.061	**0.059**	0.115	0.091	**0.023**
	(0.030)	(0.033)	**(0.045)**	(0.032)	(0.030)	**(0.042)**
Care from previously-seen mental health clinician						
Office visits	0.010	0.014	**-0.005**	-0.037	0.045	**-0.082**
	(0.037)	(0.035)	**(0.048)**	(0.041)	(0.036)	**(0.051)**
Psychotropic Rx fills	0.117	0.051	**0.066**	0.146	0.039	**0.107****
	(0.033)	(0.027)	**(0.042)**	(0.036)	(0.029)	**(0.044)**
Care from new prescribers						
Initiated care + follow-up	0.019	0.013	**0.006**	0.004	0.007	**-0.004**
	(0.004)	(0.004)	**(0.005)**	(0.002)	(0.002)	**(0.003)**
Mental health visits	0.045	0.019	**0.025**	0.065	0.041	**0.024**
	(0.022)	(0.018)	**(0.027)**	(0.016)	(0.017)	**(0.022)**
Psychotropic Rx fills	0.111	-0.010	**0.120****	0.112	0.002	**0.110****
	(0.035)	(0.036)	**(0.048)**	(0.037)	(0.036)	**(0.049)**
Care from new non-prescribers						
Initiated care + follow-up	0.004	-0.000	**0.004**	-0.000	0.001	**-0.001**
	(0.003)	(0.003)	**(0.004)**	(0.002)	(0.002)	**(0.002)**
Mental health visits	0.068	0.029	**0.039**	0.065	0.036	**0.029**
	(0.023)	(0.032)	**(0.038)**	(0.023)	(0.032)	**(0.038)**
Acute-care utilization						
Any mental health ED visit	0.007	0.008	**-0.001**	0.008	0.007	**0.001**
	(0.003)	(0.003)	**(0.004)**	(0.002)	(0.002)	**(0.003)**
Any mental health hospitalization	0.004	0.007	**-0.003**	0.008	0.009	**-0.002**
	(0.003)	(0.003)	**(0.004)**	(0.002)	(0.002)	**(0.003)**

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using the difference-in-differences model specified by Equation 3, where the interaction term is an indicator for meeting the diagnosis criteria of having a serious mental illness in quarter −8 relative to opt out. "Post-period" is the effect during relative quarters +1 through +7. Standard errors are in parentheses and clustered at the clinician level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A16: Heterogeneity analysis by race/ethnicity

	Opt-out quarter			Post-period		
Outcome	Non-white	White	**Diff.**	Non-white	White	**Diff.**
Overall mental health care						
Mental health visits	-0.383	-0.578	**0.195**	-0.373	-0.532	**0.158**
	(0.117)	(0.073)	**(0.129)**	(0.109)	(0.076)	**(0.122)**
Psychotropic Rx fills	0.133	0.004	**0.129**	0.075	-0.050	**0.125**
	(0.116)	(0.060)	**(0.129)**	(0.118)	(0.057)	**(0.130)**
Continuity with assigned psychiatrist						
Prescription fills from assigned psychiatrist	-0.413	-0.355	**-0.057**	-0.565	-0.469	**-0.095**
	(0.174)	(0.135)	**(0.185)**	(0.193)	(0.142)	**(0.203)**
Care from focal PCP						
Office visits	0.008	0.054	**-0.045**	0.001	0.041	**-0.040**
	(0.033)	(0.018)	**(0.038)**	(0.033)	(0.016)	**(0.036)**
Psychotropic Rx fills	0.092	0.112	**-0.019**	0.028	0.134	**-0.106****
	(0.045)	(0.027)	**(0.051)**	(0.042)	(0.029)	**(0.049)**
Care from previously-seen mental health clinician						
Office visits	0.027	0.014	**0.013**	-0.031	-0.001	**-0.030**
	(0.065)	(0.032)	**(0.070)**	(0.067)	(0.035)	**(0.069)**
Psychotropic Rx fills	0.011	0.120	**-0.109***	0.037	0.139	**-0.102**
	(0.060)	(0.029)	**(0.065)**	(0.061)	(0.031)	**(0.065)**
Care from new prescribers						
Initiated care + follow-up	0.022	0.016	**0.006**	0.001	0.005	**-0.004**
	(0.007)	(0.003)	**(0.007)**	(0.003)	(0.002)	**(0.004)**
Mental health visits	-0.023	0.047	**-0.070***	0.023	0.059	**-0.036**
	(0.038)	(0.017)	**(0.040)**	(0.025)	(0.015)	**(0.028)**
Psychotropic Rx fills	0.069	0.062	**0.007**	0.089	0.059	**0.030**
	(0.061)	(0.031)	**(0.066)**	(0.065)	(0.032)	**(0.070)**
Care from new non-prescribers						
Initiated care + follow-up	-0.001	0.004	**-0.005**	0.003	-0.000	**0.003**
	(0.004)	(0.002)	**(0.004)**	(0.002)	(0.001)	**(0.003)**
Mental health visits	0.030	0.054	**-0.024**	0.018	0.055	**-0.037**
	(0.032)	(0.022)	**(0.039)**	(0.031)	(0.022)	**(0.037)**
Acute-care utilization						
Any mental health ED visit	0.005	0.007	**-0.002**	0.006	0.008	**-0.002**
	(0.006)	(0.002)	**(0.006)**	(0.005)	(0.002)	**(0.005)**
Any mental health hospitalization	0.006	0.004	**0.001**	0.006	0.009	**-0.002**
	(0.005)	(0.002)	**(0.006)**	(0.004)	(0.002)	**(0.004)**

Notes: This table presents regression estimates of the impact of a clinician opting out of Medicare using the difference-in-differences model specified by Equation 3, where the interaction term is an indicator for being non-White in quarter -8 relative to opt out. "Post-period" is the effect during relative quarters $+1$ through $+7$. Standard errors are in parentheses and clustered at the clinician level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix B: Outcome Definitions

Table B1: Visit-based outcomes

Diagnosis	**ICD codes**
Mental health diagnosis †	ICD-9 (before Q4 2015): 291.x, 292.x, 295.x–316.x, excluding 305.1x, 305.8x, and 310.x ICD-10 (on/after Q4 2015): F10–F16, F17–F69, and F80–F89
Self-injury ‡	ICD-9 (before Q4 2015): E950–E959 ICD-10 (on/after Q4 2015): X71–X83; T14.91; T36–T65 and T71 with a 6th character of 2 (except for T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, T49.9, T51.9, T52.9, T53.9, T54.9, T56.9, T57.9, T58.0, T58.1, T58.9, T59.9, T60.9, T61.0,T61.1, T61.9, T62.9, T63.9, T64.0, T64.8, and T65.9, which are included if the 5th character is 2)

Visit type	**Definition**	**Codes**
Any outpatient visit	One visit is defined as one beneficiary-clinician-day encounter in an ambulatory place of service in the Carrier claims. Visits are deduplicated at the beneficiary-clinician-date level	Place of service codes 11 (office), 19 (off-campus outpatient hospital), 22 (on-campus outpatient hospital), 49 (independent clinic), 50 (federally qualified health center), 53 (community mental health center), 71 (public health clinic), or 72 (rural health clinic)
Established patient mental health E&M visit §	Outpatient visit with an established-patient E&M code, plus a mental health diagnosis in the first or second diagnosis position	HCPCS codes 90862, 99211–99215
Psychotherapy visit §	Outpatient visit with a psychotherapy HCPCS code	HCPCS codes 90804–90815, 90832–90834, 90836–90840, 90845–90849, 90853, 90857
New patient mental health E&M visit §	Outpatient visit with a new-patient or consultation E&M code, plus a mental health diagnosis in the first or second position	HCPCS codes 99201–99205, 99241–99245 + MH diagnosis
Psychiatric diagnostic evaluation §	Outpatient visit with an evaluation E&M code	HCPCS codes 90801, 90802, 90791, 90792
Mental health emergency department (ED) visit **	Outpatient or inpatient claim with an ED revenue center code, plus a mental health diagnosis in the first diagnosis position OR self-injury in any diagnosis position	Revenue center codes 0450–0459 or 0981
Mental health hospitalization **	Inpatient claim with a primary admission reason of a mental health diagnosis OR self-injury in any diagnosis position	

Sources: † Richard et al. (2022), ‡ Hedegaard et al. (2018), § Cai et al. (2022), ** Busch et al. (2022).
E&M = "evaluation and management".

Table B2: Psychotropic drug classes

Drug class	**Generic name**
Antidepressants	Bupropion HCl, Citalopram Hydrobromide, Clomipramine HCl, Desipramine HCl, Desvenlafaxine Succinate, Doxepin HCl, Duloxetine HCl, Escitalopram Oxalate, Fluoxetine HCl, Fluvoxamine Maleate, Imipramine, Isocarboxazid, Maprotiline HCl, Mirtazapine, Nefazodone HCl, Nortriptyline HCl, Paroxetine, Phenelzine Sulfate, Protriptyline HCl, Sertraline HCl, Tranylcypromine Sulfate, Trazodone HCl, Trimipramine Maleate, Venlafaxine HCl, Amitriptyline HCl
Antipsychotics	Asenapine Maleate, Chlorpromazine HCl, Clozapine, Fluphenazine HCl, Haloperidol, Iloperidone, Loxapine , Lurasidone HCl, Mesoridazine Besylate, Molindone HCl, Olanzapine/Fluoxetine HCl, Olanzapine, Paliperidone, Perphenazine/Amitriptyline HCl, Perphenazine, Pimozide, Prochlorperazine Maleate, Quetiapine Fumarate, Risperidone, Thioridazine HCl, Thiothixene, Trifluoperazine HCl, Ziprasidone HCl, Aripiprazole
Mood stabilizers	Carbamazepine, Divalproex Sodium, Gabapentin, Lamotrigine, Levetiracetam, Lithium , Pregabalin, Tiagabine HCl, Topiramate, Valproic Acid, Valproate Sodium
Other anxiolytics	Buspirone HCl, Meprobamate, Prazosin HCl
Miscellaneous psychotropics	Eszopiclone, Hydroxyzine, Propranolol HCl, Ramelteon, Zaleplon, Zolpidem Tartrate

Source: Albrecht et al. (2017)