Managed Care in Medicaid's Long-Term Services and Supports*

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September 16, 2025

Abstract

The American healthcare system and care economy face growing demands from an aging population, raising important questions regarding the organization, delivery, and funding for services in these two sectors. Long-term services and supports (LTSS) include medical and personal care services for individuals requiring assistance with daily activities. Over the last two decades, state Medicaid programs—which pay for more than half of all LTSS delivery—have shifted away from traditional fee-for-service (FFS) payment models toward managed care systems in which private insurers cover LTSS in exchange for capitated payments from the state. We study the effects of the transition to managed LTSS (MLTSS) in Florida's and New York's Medicaid programs on healthcare utilization among dual-eligible Medicare-Medicaid beneficiaries aged 65 and older. Using administrative Medicare claims data, we leverage the county-by-county rollouts of MLTSS mandates in the two states in a stacked difference-in-differences design. We find that in both states, MLTSS leads to a reduction in the use of preventive care, including evaluation & management visits with primary care providers and specialists, and laboratory testing. We also observe reductions in the use of some prescription drugs and in outpatient emergency department (ED) visits. At the same time, we find increases in emergent hospitalizations and ED visits that result in inpatient stays. Since all of these healthcare utilization outcomes are covered by traditional fee-for-service Medicare, these effects can be interpreted as externalities of MLTSS on healthcare excluded from the managed care model. On net, we find that MLTSS reduces annual Medicare spending by 16 percent in Florida and 5 percent in New York.

JEL classification: H51, H75, I13, I18
Keywords: long-term services and supports; Medicaid managed care; dual-eligible population

*We thank Sherry Glied, Mary Goldstein, and Sherri Rose for helpful comments. We are also extremely grateful to Mohan Ramanujan and Carla Tokman at the National Bureau of Economic Research for assistance and guidance with accessing the CMS data. Research reported in this article was supported by the National Institute on Aging of the National Institutes of Health under award number R01AG077949. Su also acknowledges support from the National Science Foundation Graduate Research Fellowship (under grant number DGE-1656518). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or the National Science Foundation. All errors are our own.

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1 Introduction

More than one in five Americans will be aged 65 or older by 2030 (Vespa et al., 2020). Driven by rising life expectancy and a declining fertility rate, an aging population places increasing demands on the healthcare system and the care economy, and raises important questions about how to organize, deliver, and pay for services in these two sectors.

This paper studies these issues in the context of long-term services and supports (LTSS) delivery. LTSS encompasses a broad spectrum of personal care and medical services, including assistance with daily living activities such as eating, bathing, dressing; physical, occupational, and speech therapy; and in some cases dental care, optometry, and podiatry. The delivery of LTSS can take place in several settings, including nursing homes, adult day care centers and other community-based facilities, and in a patient's home. In 2022, total spending on LTSS in the United States amounted to $415 billion, more than half of which was paid by Medicaid, the largest public insurance program for low-income and disabled individuals (Chidambaram and Burns, 2024). Therefore, understanding how Medicaid's administration of LTSS impacts healthcare utilization, outcomes, and costs is critical for identifying best practices in serving a rapidly aging American population.

Currently, the majority of Medicaid beneficiaries is enrolled in private managed care plans that assume patients' financial risks in exchange for capitated payments from the government, reflecting a major shift from prior delivery models in which states reimbursed healthcare providers directly on a fee-for-service (FFS) basis (Gruber, 2017; Hinton and Raphael, 2025).[1] While LTSS have been historically excluded from managed care models, this is rapidly changing as state Medicaid programs contract with private plans to offer "managed LTSS" (MLTSS).[2] By outsourcing the coordination of LTSS to private plans and financing them via capitation payments, MLTSS in Medicaid may make the delivery of these services more efficient and lead to more predictable (and possibly lower) costs to the state. Further, capitation payments are often adjusted to incentivize home-based and community-based services relative to nursing home care, which some patients and caregivers may prefer (Lewis et al., 2018; Tuck and Moore, 2019). At the same time, patients may have a more limited network of LTSS providers covered by their MLTSS plan than they would have had in a FFS system. Surveys also indicate that individuals on MLTSS plans have lower satisfaction rates and perceive a shift away

[1] In Medicare, 54 percent of beneficiaries are enrolled in private "Medicare Advantage" (MA) plans (Freed et al., 2024).

[2] Only eight state Medicaid programs offered managed care plans to LTSS patients in 2004, whereas 24 states did by the end of 2023 (Lewis et al., 2018; Dobson et al., 2021; Stockdale et al., 2024).

from a "patient-centered approach" of healthcare delivery compared to those for whom LTSS operates on a FFS basis (Salehian et al., 2022; American Council on Aging, 2025a). To date, there is limited causal empirical evidence regarding the impacts of the shift to MLTSS in Medicaid on the healthcare utilization and health outcomes of patients.[3]

To isolate the impacts of managed care in LTSS, we focus on individuals who are dual-eligible for Medicaid and Medicare, aged 65 and above, and enrolled in "traditional" (FFS) Medicare benefits.[4] For these beneficiaries, the Medicaid program pays for LTSS, while the Medicare program is the primary payer for all other healthcare services, including hospitalizations, office visits with primary care providers (PCPs) and specialists, emergency department (ED) visits, and prescription drugs.[5] In this setting, we can identify effects on patients' care outcomes that are *not* covered or administered by MLTSS plans, thereby shedding light on patient health and overall welfare resulting from the shift to MLTSS.

Our analysis leverages the county-by-county transitions to Medicaid MLTSS in New York and Florida, which occurred between 2012 and 2015. We use a stacked differences-in-differences (DD) design (Cengiz et al., 2019; Deshpande and Li, 2019; Butters et al., 2022; Wing et al., 2024) in which we compare changes in outcomes among beneficiaries in treated Florida and New York counties to those among beneficiaries in never-treated counties in two control states—Pennsylvania and California—over the same time period. We use administrative claims data for beneficiaries enrolled in traditional FFS Medicare to study care in outpatient, inpatient, and ED settings, prescription drug use, and mortality.[6]

Using a balanced panel of Medicare beneficiaries who are continuously enrolled in full dual benefits and in traditional FFS Medicare for a window of three years before to four years after the MLTSS

[3]There is a large broader literature on the effects of Medicaid managed care (relative to FFS) on costs and patient health outcomes, but until recently it mostly focused on relatively younger and healthier populations, and not on managed care in LTSS specifically (Cutler et al., 2000; Duggan, 2004; Howell et al., 2004; Currie and Fahr, 2005; Aizer et al., 2007; Herring and Adams, 2011; Duggan and Hayford, 2013; Kuziemko et al., 2018; Chorniy et al., 2018; Duggan et al., 2018; Brown et al., 2014; Cabral et al., 2018; Curto et al., 2019; Duggan et al., 2018; Layton and Politzer, 2025).

[4]Individuals are dual-eligible for Medicaid and Medicare if their household income falls below their state's eligibility threshold and/or if they are eligible for Supplemental Security Income (SSI).

[5]Medicaid also pays for cost-sharing for Medicare-covered services for dual-eligible beneficiaries.

[6]We use 100% claims data when studying inpatient outcomes and mortality, and a 20% random sample of FFS beneficiaries to study outcomes in the outpatient files. Our analysis of prescription drug outcomes is limited to beneficiaries with Medicare Part D coverage, and also uses a 20% random sample.

mandate and controlling for individual fixed effects,[7] we find that the shift to MLTSS reduces the use of preventive care, including evaluation & management (E&M) visits with PCPs and specialists. Specifically, we find a 4.2 percentage point (6.1 percent relative to the pre-treatment mean) decrease in the likelihood of an E&M visit in Florida in the four years since the mandate, and a 1.8 percentage point (2.5 percent relative to the pre-treatment mean) reduction in the likelihood of such a visit in New York. E&M visits with specialists go down by 4.8 percentage points (6.7 percent) in Florida and by 1.4 percentage points (1.9 percent) in New York. We additionally find 3.4 percentage point (3.8 percent) and 1.8 percentage point (2.1 percent) reductions in the likelihoods of receiving laboratory or other testing (e.g., routine venipuncture, urinalysis, blood counts, and glucose tests, among others) in Florida and New York, respectively. Overall use of prescription drugs covered by Medicare Part D goes down as well: by 0.8 percentage points (0.8 percent) in Florida and by 0.4 percentage points (0.5 percent) in New York. These declines are mostly driven by reductions in prescriptions of painkiller drugs.

To examine the downstream implications of decreased preventive care, we next study inpatient stays and ED visits. In Florida, we find that the shift to MLTSS leads to a 0.9 percentage point (4.2 percent) increase in the likelihood of a hospitalization in the four years since the mandate. Importantly, this overall hospitalization effect is driven by a 1.8 percentage point (10.1 percent) increase in emergent hospitalizations. We also document a 0.07 day (5.2 percent) increase in the average length of stay (including zeros for those who do not have a hospitalization), and a 1.3 percentage point (7.2 percent) increase in ED visits that lead to a hospitalization. In New York, the coefficients measuring effects on emergent hospitalizations, length of stay, and ED visits resulting in a hospitalization are all positive, but not statistically significant.

Interestingly, ED visits that do not lead to hospitalizations decline in both Florida (1.8 percentage points, or 7.0 percent) and New York (1.3 percentage points, or 6.4 percent). These patterns suggest that Medicaid's MLTSS may be effective at reducing the need for urgent (but relatively mild) care but can increase the probability of more severe health issues that require inpatient care.

[7] Enrollment in full dual benefits is necessary for Medicaid coverage of LTSS. In supplementary analyses, we find that the shift to MLTSS reduces the likelihood that a Medicare beneficiary is enrolled in full dual benefits in Florida, and increases the likelihood of enrollment in full dual benefits in New York. This effect might reflect patient preferences to opt in or out of Medicaid coverage of LTSS once the managed care model is in place. We also find that the shift to MLTSS increases the likelihood that a Medicare beneficiary opts into Medicare Advantage, i.e., Medicare's privatized managed care program. This effect is likely driven by the fact that some plans offer consolidated Medicare and Medicaid services, which means that the MLTSS mandate might encourage some enrollees to shift to a managed care plan covering all of their healthcare. Because of these patterns, we use a balanced panel of beneficiaries and individual fixed effects when studying our healthcare utilization outcomes to avoid bias from the changes in sample composition induced by our treatment variable.

To examine the impacts of MLTSS on patient mortality, we calculate county×year mortality rates, using a denominator of all Medicare enrollees aged 65 and above. We do not restrict to either dual-eligible beneficiaries or those who are on traditional FFS Medicare, since we observe some indication of differential selection out of these groups. We do not find any statistically significant effects on county mortality rates in either New York or Florida following the implementation of MLTSS.

To quantify the externalities that MLTSS imposes on services covered by Medicare, we study effects on Medicare spending. We find that the transition to MLTSS leads to a 16.3 percent decline in annual Medicare spending in Florida and a 4.9 percent decline in New York.

Lastly, to shed light on the mechanisms underlying the effects on healthcare utilization that we find, we use the linkage between the Medicare files and the Minimum Data Set for nursing homes. We find no significant changes in the incidence of nursing home assessments in either Florida or New York in the four years following an MLTSS mandate, suggesting that there is no extensive margin effect on nursing home care. We also find no clear evidence of either switching between nursing homes or changes in nursing home quality following the shift to MLTSS. Taken together, these results suggest that the effects of MLTSS on healthcare utilization appear to materialize through channels occurring outside of nursing homes—that is, in community-based or home settings.

Our paper makes several contributions to the existing literature. We build on a large body of work that compares patient health outcomes and healthcare costs between fee-for-service (FFS) and capitated managed care models in various health insurance programs (Cutler et al., 2000; Duggan, 2004; Howell et al., 2004; Currie and Fahr, 2005; Aizer et al., 2007; Herring and Adams, 2011; Duggan and Hayford, 2013; Brown et al., 2014; Cabral et al., 2018; Kuziemko et al., 2018; Chorniy et al., 2018; Duggan et al., 2018; Curto et al., 2019; Lee and Vabson, 2024). Three recent studies have analyzed the effects of transitions from FFS to Medicaid managed care on disabled and elderly patients. Layton et al. (2022) find increased use of outpatient services and higher costs in Texas; Duggan et al. (2021) find an increase in emergency department visits and mortality; and Layton and Politzer (2025) find an increase in overall costs in the following four years.[8] However, these studies do not consider the effects of managed care in LTSS on healthcare utilization that is not under the same model. Our findings of decreases in the use of preventive care and prescription drugs, combined with increases in emergent hospitalizations, and mixed evidence on ED visits—all services that are paid by Medicare—

[8] Another recent study considers the effects of managed care in the Medicare program on hospitalizations among nursing home residents: Rahman et al. (2025) analyze the impacts of enrollment in Institutional Special Needs Plans—which are specific MA plans for individuals who are certified as requiring facility-based long-term care—and find evidence of a reduction in hospitalizations among these patients.

underscore the possibility of fiscal spillovers of Medicaid's MLTSS on spending in another public program.

The most closely related study is by Bhaumik et al. (2025), who analyze the impacts of state Medicaid programs transitioning to MLTSS on survey respondents in the Health & Retirement Study who are aged 65+ and report having at least one functional limitation. They find that the shift to MLTSS increases the use of home-based care services, decreases the use of informal care, and has no impact on nursing home care, hospitalizations, or the incidence of falls.[9] We build on this study in several ways. First, we use administrative Medicare claims data, allowing us to comprehensively track healthcare utilization and outcomes. Second, we measure treatment at the county level rather than the state level, which reduces measurement error in the analysis,[10] and allows us to uncover differences in impacts across two states. Third, we focus on dual-eligible patients for whom all non-LTSS healthcare is covered by Medicare FFS, enabling us to capture impacts on health outcomes not directly targeted by the managed care model.

2 Background

Long-term services and supports (LTSS). Long-term services and supports refer to a broad set of medical and personal care services, including assistance with eating, preparing meals, bathing, dressing, managing medications, and housekeeping, as well as occupational and physical therapy and in some circumstances dental care, optometry, and podiatry. These services can be delivered in nursing homes, community-based, or home-based settings, and are provided by different healthcare professionals, including nurses, nursing aides, and home health aides. According to most recent estimates, more than 8 million Americans use paid LTSS with total costs amounting to $415 billion, while an unknown (but likely even larger) number use unpaid care services provided by family members, friends, or neighbors (Chidambaram and Burns, 2024).

LTSS under Medicaid. Medicaid pays for over 60 percent of all LTSS costs, making it the primary insurance program for these services. While in the last three decades, state Medicaid programs have transitioned over three-quarters of all enrollees to capitated managed care plans (Hinton and Raphael,

[9] Other analyses of Medicaid MLTSS have included a descriptive reports by Mathematica Policy Research (Libersky et al., 2018) and the Government Accountability Office (Office, 2020), a difference-in-differences evaluation of nursing home quality and patient composition in 3 states (Potter and Bowblis, 2021), and a pre-post evaluation of Virginia's Medicaid MLTSS transition using Medicaid data (Mellor et al., 2024).

[10] For example, Bhaumik et al. (2025) use 2013 as Florida's year of treatment, whereas we can analyze the quarterly evolution of outcomes in Florida as different counties switched to MLTSS between August 2013 and March 2014.

2025), LTSS patients have only begun to be affected by this change in more recent years (Hinton et al., 2022).

Under Medicaid managed care systems, states pay private insurers a fixed fee per month per enrollee (i.e., a capitation payment) for providing the Medicaid benefits specified in their contracts. The plans, which are sometimes referred to as managed care organizations (MCOs), in turn, establish networks of providers and develop other coordination and gatekeeping mechanisms that aim to reduce costs and improve the efficiency of care delivery.

To develop the capitation payments, states use recent data to determine the baseline cost of providing the contracted services to enrollees (MACPAC, 2022). The baseline is then adjusted for subgroups of enrolled populations. In the early 2000s, most states relied solely on basic demographic factors to adjust their capitation payments (Courtot et al., 2012). Today, more sophisticated risk-adjustment models are sometimes used to better reflect enrollee health status and expected costs of care, but there is a significant amount of variation in the use of risk adjustment across states.

New York Medicaid's MLTSS. New York's Medicaid program mandated enrollment in managed LTSS plans (in New York, they are called managed long-term care, or MLTC, plans) on a staggered basis across different counties from 2012 through 2015. The mandate was specific to people who are dual-eligible for Medicaid and Medicare, aged 21 or older, and are in need of community-based LTSS for more than 120 days based on an assessment.[11]

Appendix Figure B1 plots the trends in the number of dual-eligible beneficiaries (with full dual benefits) who are enrolled in an MLTC plan in three groups of New York counties, based on the timing of their mandate: September 2012 in sub-figure (a), May 2013 in sub-figure (b), and September 2013 in sub-figure (c).[12] We see evidence of increases in enrollment in the months leading up to the mandates, which is consistent with the fact that beneficiaries were able to voluntarily enroll prior to them going into effect. However, following each of the mandates, there is a clear change in the rate of the increase,

[11] An initial assessment is conducted by the plan within 30 days of referral. Then, the plans are required to conduct routine assessments every six months. Note, the mandate does not exclude nursing home residents if they qualify for community-based LTSS as well.

[12] We use Medicaid Analytic eXtract (MAX) data to document these trends. Our data reuse agreement allows us to use 2008–2013 MAX data files, so we are only able to show trends in MLTSS plan enrollment over this time period. We are unable to analogously plot trends in MLTSS plan enrollment in Florida due to poor data quality. Over 86 percent of beneficiaries who ever have full dual status in 2013 in Florida have missing plan information.

as evidenced by the steeper slope of the trend line.[13]

New York's MLTC plans receive a capitation payment from the state Medicaid program based on a risk-adjustment algorithm, which incorporates 26 predictor variables, including age, sex, and some selected diagnoses, including an indicator for an Alzheimer's or dementia diagnosis (Hinton et al., 2016).

Florida Medicaid's MLTSS. Florida's Medicaid program implemented its mandatory managed LTSS program for eligible beneficiaries across its counties between 2013 and 2014. To qualify, individuals must be aged 65 or older and eligible for Medicaid (or aged 18 or older and eligible for Medicaid due to a disability) and functionally eligible based on a state assessment.

Florida Medicaid's MLTSS plans receive capitation payments based on the proportion of enrollees in home- and community-based settings relative to nursing facilities. Specifically, plans are directly incentivized to facilitate the transition of enrollees to home- and community-based care (and out of nursing home care): the base capitation rate is adjusted by a transition percentage, penalizing plans for the share of nursing home enrollees until this share falls below 35 percent. Unlike New York, Florida does not further adjust rates based on patient conditions or other demographic characteristics. We present a more detailed comparison of the MLTSS programs in Florida and New York in Appendix Table C1.

Control states. In both of our analyses of the MLTSS transitions in Florida and New York, we use beneficiaries residing in California and Pennsylvania counties that are never-treated during our study period as controls. We chose these two control states because they have similar population demographics and Medicare enrollment trends as the treatment states (see Appendix Figure B2).[14]

In California, 51 of 58 counties were not mandated to enroll their dual-eligible beneficiaries into MLTSS plans until 2023. We exclude the seven counties that implemented MLTSS during our sample

[13] In principle, beneficiaries also have an option to voluntarily enroll in a plan that covers all other healthcare services in addition to LTSS. Plans that cover full healthcare services are called Medicaid Advantage Plus (MAP) and the Program of All-Inclusive Care for the Elderly (PACE). As of December 2019, at the end of our data period, there were 7 MAP plans, 9 PACE plans, and 26 MLTC plans operating in New York. However, in practice, most enrollees in New York chose a plan that only covers LTSS. For instance, in December 2019, 250,743 (or 91.5%) MLTSS enrollees were in MLTC plans, compared to 17,620 (6.4%) in MAP and 5,734 (2%) in PACE plans (NYDOH, n.d.). As a result, most dual-eligible LTSS patients in New York receive their long-term care services through an MLTC plan, while Medicare covers all of their other primary and acute care services in office-based, outpatient, inpatient, and ED settings.

[14] We were required by the Centers for Medicare & Medicaid Services to select our control states prior to receiving access to the data. Our data reuse agreement forbids us from accessing data from any states other than Florida, New York, California, and Pennsylvania.

period.[15]

Pennsylvania's Medicaid program only began implementing MLTSS in 2018, with 14 counties adopting MLTSS mandates beginning in January 2018.[16] We include the remaining 53 Pennsylvanian counties in our control group. Since the last transition to MLTSS in New York occurred in February 2015, we exclude the 14 counties that were mandated into MLTSS in 2018 from our analyses to avoid making biased comparisons that involve "contaminated" treated units in our event-study analyses that use a three-year event window.

3 Data

We use administrative Medicare enrollment and FFS claims data for years 2008–2019 from the Centers for Medicare and Medicaid Services (CMS). Our data reuse agreement permits the use of data from four states: California, Florida, New York, and Pennsylvania.

For each individual enrolled in Medicare, we observe their demographic characteristics (age, race/ethnicity), county of residence, enrollment status, and date of death (if applicable), as well as all of their hospital inpatient, hospital ED, and outpatient claims which can be linked using their unique beneficiary identifiers. Additionally, for a random 20 percent sample of beneficiaries, we can link to their carrier files, which contain FFS claims submitted by non-institutional providers including physicians, laboratories, and ambulance services,[17] as well as their claims submitted for prescription drugs covered under Medicare Part D. Finally, we use a linkage to the Minimum Data Set (MDS), which contains information on nursing home assessments, to capture nursing home care utilization and quality.

Identifying dual-eligible beneficiaries. Only beneficiaries who are enrolled in full dual (rather than partial dual) benefits have LTSS covered by Medicaid, and are therefore affected by the transition to MLTSS. To identify full dual beneficiaries, we follow recommendations from the CMS Research Data Assistance Center (RESDAC), and categorize a beneficiary as having full dual benefits if they have a dual status code of "02," "04," or "08".[18] We code a beneficiary as having full dual benefits

[15] These counties are Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Mateo, and Santa Clara.

[16] These counties include Allegheny, Armstrong, Beaver, Bedford, Blair, Butler, Cambria, Fayette, Greene, Indiana, Lawrence, Somerset, Washington, and Westmoreland counties. The remaining 53 counties adopted the mandate in 2019 or 2020.

[17] The Medicare carrier files were previously known as Physician/Supplier Part B claims files.

[18] The codes are defined as follows: "02"—QMB and full Medicaid coverage, including prescription drugs; "04"—SLMB and full Medicaid coverage, including prescription drugs; "08"—Other dual eligible (not QMB, SLMB, QWDI, or QI) with full Medicaid coverage, including prescription drugs (Centers for Medicare & Medicaid Services, 2021).

as long as they have them in at least one month in a calendar quarter. Analogously, we identify beneficiaries enrolled in partial dual benefits, for whom Medicaid pays for cost-sharing through the Medicare Savings Programs but does not cover LTSS, as those with a dual status code of "01," "03," "05," or "06".[19]

Outcomes. We consider multiple measures of healthcare utilization. More details on exact codes used in constructing our outcomes are in Appendix A. To study utilization of preventive care services, we use the carrier files and identify new and established evaluation & management (E&M) office visits. We create binary indicators capturing whether a beneficiary had any E&M visit with a PCP or a specialist (defined as all specialties other than PCP). We similarly create a binary indicator capturing whether a beneficiary had any laboratory or other type of test.

We also study prescription drugs in the Part D files. We map the National Drug Codes (NDC) in the Part D files to Anatomical Therapeutic Chemical (ATC) Level 5 codes to categorize drugs by their therapeutic intent or nature.[20] We specifically create binary indicators capturing the use of any prescription drugs, as well as the fills of antibiotics and painkillers.

Additionally, we study hospitalizations and ED visits in the claims data. To classify the type of hospital admission, we use the "inpatient admission type code" included in the inpatient claims. "Emergent" hospitalizations are described as those in which "the patient required immediate medical intervention as a result of severe, life-threatening, or potentially disabling conditions" (ResDAC, n.d.). These patients are generally (but not always) admitted through the emergency department (ResDAC, n.d.). We also categorize ED visits into outpatient versus inpatient visits. Outpatient ED visits indicate that a patient visited the emergency department and was treated and released, whereas inpatient ED visits indicate that a patient received ED care during their inpatient stay.[21]

In addition, we observe nursing home assessments from the Minimum Data Set (MDS), versions 2.0 (for January 2009–September 2010) and 3.0 (for October 2010–December 2017). The MDS contains assessment records for all residents regardless of payer in Medicaid- and Medicare-certified nursing homes. These assessments occur upon admission, periodically, and upon discharge. We use an indica-

[19]The codes are defined as follows: "01"—QMB only (qualified Medicare beneficiaries; Medicaid pays Part A and B premiums); "03"—SLMB only (Specified Low-Income Medicare Beneficiaries; Medicaid pays Part B premium); "05"—QDWI (Qualified Disabled and Working Individuals; Medicaid purchases Part A benefits, but no Medicaid benefits); "06"—Qualifying individuals (QI; Medicaid pays Part B premium, but no Medicaid benefits).

[20]We use the NDC-ATC5 crosswalk available here: https://github.com/fabkury/ndc_map.

[21]In our sample, out of the set of outcomes that are either classified as emergent hospitalizations or inpatient ED visits, 79 percent are coded as both, 17 percent are inpatient ED visits only, while 4 percent are emergent hospitalizations only.

tor for having any assessment record in this file to measure nursing home utilization on the extensive margin. We also use the Online Survey, Certification and Reporting (OSCAR) database to merge on indicators of nursing home quality, including information about the nursing home's staffing (measured through total hours per resident day), use of restraints (measured as the share of residents who are restrained), and occupancy (measured as the share of available beds that are occupied by residents) in each calendar year.[22]

Finally, we observe mortality in the Medicare Master Beneficiary Summary File (MBSF), which provides information on the date of death. For every county-by-year, we calculate the share out of all Medicare beneficiaries who are aged 65+ at the beginning of each year who die before the end of the year. The denominator includes all Medicare beneficiaries, regardless of dual status or Medicare FFS versus MA, which means that this outcome is unaffected by any compositional changes due to selection into or out of full dual benefits or Medicare FFS following the shift to MLTSS.

4 Empirical Design

While there is geographic and temporal variation in the timing of MLTSS mandates in both Florida and New York, an important empirical challenge is that these mandates occurred over a relatively short time period. As outlined in Appendix Table C2, all 67 Florida counties transitioned to MLTSS between August 2013 and March 2014, and all 62 New York counties did so between September 2012 and February 2015.

To address this challenge, we use a stacked difference-in-differences (DD) design (Cengiz et al., 2019; Deshpande and Li, 2019; Butters et al., 2022; Wing et al., 2024), which allows for a comparison of outcomes between individuals in treated counties and individuals in never-treated counties (counties that are never-treated over the duration of the study period) in separate "experiments" that we stack together for estimation. Specifically, we define each experiment k based on the calendar year-quarter in which the MLTSS goes into effect. Within each experiment, the treatment group consists of all full dual beneficiaries who reside in a treated county and are aged 65 or older as of three years before the quarter of the transition to MLTSS, and the control group consists of all full dual beneficiaries who reside in a never-treated county and are aged 65 or older as of three years before the quarter of the treatment group's MLTSS transition.[23] Since Florida counties transitioned to MLTSS over three distinct

[22] The OSCAR data is obtained through LTCFocus (2000-2020). LTCFocus is sponsored by the National Institute on Aging (1P01AG027296) through a cooperative agreement with the Brown University School of Public Health.

[23] Put differently, we center each of our experiments relative to the year-quarter in which the MLTSS mandate being studied goes into effect.

calendar year-quarters, we create three separate experiments for the Florida analysis. Analogously, since New York counties transitioned to MLTSS over nine distinct calendar year-quarters, we create nine experiments that we stack together for estimation in our analysis of New York's transition to MLTSS.

To measure the impacts of the transition to MLTSS on healthcare utilization outcomes, we use our stacked dataset and estimate the following model:

$$Y_{ictk} = \alpha + \beta MLTSS_{ctk} + \delta_{ik} + \gamma_{tk} + \zeta' X_{itk} + \epsilon_{ictk} \tag{1}$$

for beneficiary i in county c observed in year t and in experiment k. Y_{ictk} is an outcome of interest, such as a binary indicator for whether a beneficiary had an E&M visit with a PCP. $MLTSS_{ctk}$ is a binary indicator equal to 1 for treated counties in all years once the MLTSS mandate is in effect, and 0 otherwise. δ_{ik} are individual-by-experiment fixed effects, which account for all (observable and unobservable) time-invariant differences across individuals within each experiment, while γ_{tk} are experiment-by-year fixed effects, which account for any time trends in outcomes within each experiment. We include X_{itk} as a vector of indicators for an individual's age (65-74, 75-85, and 85+) in each year and experiment. For many of our outcomes, we restrict our analysis to a seven-year event window that spans three years before the mandate, the year of the mandate, and three years after the mandate. We drop individuals who move counties at any point during this seven-year window,[24] and we require individuals to be continuously enrolled in full dual benefits throughout the entire event window. Standard errors are clustered on the county level.[25]

Our main coefficient of interest, β, captures the difference between the change in the outcome in treated counties from before and after the MLTSS mandate, relative to the change in the outcome in the control counties over the same time period within the experiment. We estimate separate models to study the effects of Florida and New York Medicaid's MLTSS transition, using the same control group of the 51 California counties and 53 Pennsylvania counties that are never-treated during the study period.

The key identifying assumption for a causal interpretation of β in equation (1) is that, in the ab-

[24]Since we drop movers, we do not include county fixed effects, as they are subsumed by the individual-by-experiment fixed effects.

[25]We cluster standard errors at county level, since that is the level of variation in our analyses. Since counties can appear multiple times in our stacked DD framework, clustering at the county level will allow for dependence across groups and yield more conservative standard errors (Bertrand et al., 2004; Cameron et al., 2011; Wing et al., 2024). Results when clustering at the experiment-by-county level are similar.

sence of an MLTSS mandate, outcome trends would have evolved in parallel between beneficiaries in treated and control counties within an experiment. While this assumption is inherently untestable, we estimate event-study models that allow us to check for systematic differences in pre-treatment trends between treated and control groups. Specifically, for beneficiary i in county c observed in year t and in experiment k, we model outcome Y_{ictk} as:

$$Y_{ictk} = \alpha + \sum_{j=-3, j\neq -1}^{j=3} \beta_j \mathbf{1}[t - MLTSS_{ctk} = j] + \delta_{ik} + \gamma_{tk} + \zeta' X_{itk} + \epsilon_{ictk} \tag{2}$$

The variables in equation (2) are the same as in equation (1), except that we now include indicators $\mathbf{1}[t - MLTSS_{ctk} = j]$ to capture event-time indicators for the three years before, the year of, and three years following the mandate quarter, with event-time -1 as the omitted category. This model additionally allows us to explore dynamic treatment effects over time.

Spending outcomes. While our analysis of healthcare utilization outcomes uses information on the precise year-quarter of the transition to MLTSS in each experiment, we study Medicare spending using annual data from the Medicare Beneficiary Summary File Cost and Use file segment.[26] Correspondingly, we measure the impacts of an MLTSS mandate in a *calendar year* on logged Medicare spending (in 2019 dollars). Our analysis of Medicare spending in Florida thus consists of two experiments to account for the two treatment years of 2013 and 2014.[27] Analogously, our analysis of New York consists of four experiments that each correspond to the set of New York counties that were treated in calendar years 2012, 2013, 2014, and 2015.

Mortality. As noted in Section 3, we collapse our data to the county×year level to study impacts of MLTSS on mortality. We estimate versions of models (1) and (2) with experiment-by-county and experiment-by-year fixed effects. We include time-varying demographic controls (percent female, percent aged 65-74, percent aged 75-84, and percent aged 85+) and weight our regressions by the 2010 county population from the U.S. Census Bureau.

Summary statistics. Table 1 presents the means of selected characteristics of the individuals in our analytic sample, observed in the quarter-year before the transition to MLTSS in each experiment. We

[26] Although we can calculate Medicare spending using higher-frequency information in the claims data, we opt to use the annual data from the Cost and Use file segment because it is more comprehensive and allows us to separately examine impacts on spending across different service categories.

[27] The counties in the 2013 experiment would include 33 treated FL counties and 104 control CA and PA counties.

use our main analytic sample of beneficiaries with full dual benefits, who are aged 65 or older as of three years before the quarter of the transition to MLTSS, and are continuously enrolled in full dual benefits and in Medicare FFS over an event window that spans three years before the quarter of the transition to MLTSS, the quarter-year of the transition to MLTSS, and first three years after the transition to MLTSS. In this sample, we have 53,942 individuals in Florida, 131,855 individuals in New York, 168,060 individuals in California, and 42,656 individuals in Pennsylvania.

Columns (1) and (2) present the means for individuals who reside in our two treatment states, Florida and New York, respectively. Column (3) presents the means for individuals who reside in the 51 never-treated counties in California, and column (4) presents the means for individuals who reside in the 53 never-treated counties in Pennsylvania. Across the four states, between 62 and 73 percent of the sample is female, and between 11 and 19 percent of the sample is over the age of 85 in the quarter before the transition to MLTSS. Florida has both the highest share female and the highest share aged 85+.

Pennsylvania has the highest share of non-Hispanic white beneficiaries across the four states, while Florida has the highest shares of both non-Hispanic Black and Hispanic beneficiaries. Highlighting the high healthcare needs of our sample, 95 to 98 percent of beneficiaries have at least one chronic condition. The remaining rows of Table 1 present means of chronic conditions that are particularly common among the elderly (American Council on Aging, 2025b). Between five (in California) and 22 (in Florida) percent of beneficiaries in our sample have an Alzheimer's diagnosis. Hypertension and arthritis are very common, with 81–93 percent of beneficiaries having the former and 51–75 percent having the latter. Mental health issues are also prevalent, with 28 (in California) to 60 (in Florida) percent of beneficiaries having a depression diagnosis.

Clearly, the table shows that there are important differences between dual-eligible continuously enrolled beneficiaries across the four states included in our analysis. We include individual fixed effects to account for time-invariant differences between individuals in treatment and control counties within each experiment, and assess any differences in pre-trends using an event-study design.

Selection out of full dual status and FFS Medicare. Before proceeding to our main results using our sample of beneficiaries who are continuously enrolled in full dual benefits and FFS Medicare, we examine how selection in or out of this sample evolves over our analysis period. To do so, we use data on individuals continuously enrolled in Medicare over the event-time window, but do not restrict on

enrollment in either full-dual benefits or FFS.

Appendix Figure B3 presents the event-study estimates from regression models that use as outcomes binary indicators for being enrolled in full-dual and partial-dual benefits in Florida and in New York in sub-figures (a)-(b) and (c)-(d), respectively.

For three of the four event-study plots, we find indication of substantial pre-trends. That is, it appears that enrollment in full-dual vs. partial-dual benefits was changing differentially in the treatment counties relative to the control counties in the years leading up to the MLTSS mandates. After the MLTSS mandate, the likelihood of receiving full-dual benefits decreases in Florida (sub-figure (a)), and increases in New York (sub-figure (c)). Sub-figures (b) and (d) suggest that the changes in enrollment in full-dual benefits correspond to opposite shifts in enrollment in partial-dual benefits.

These patterns could reflect beneficiaries' preferences for either wanting to participate in or avoiding Medicaid's MLTSS mandates, which they might act upon even in the years leading up to them.[28] While some evidence suggests that beneficiaries might prefer FFS over managed care due to their desire to access broader provider networks or avoid documented frictions associated with plan switching (Salehian et al., 2022; Li, 2023), our results suggest that these preferences may not be universal.

Appendix Figure B4 presents similar results for enrollment in Medicare FFS and in Medicare Advantage. We find that the shift to MLTSS reduces the likelihood that a Medicare beneficiary is enrolled in traditional FFS Medicare, and increases the likelihood that they opt into Medicare Advantage, i.e., Medicare's privatized managed care program. This is consistent with the fact that some plans offer consolidated Medicare and Medicaid services, so the MLTSS mandate might encourage some enrollees to shift to a managed care plan covering all of their healthcare.

Regardless of the underlying reasons for these empirical patterns, they call attention to the importance of accounting for compositional changes in the population of beneficiaries enrolled in full-dual benefits and Medicare FFS when studying other outcomes. This motivates our use of a balanced panel of Medicare FFS beneficiaries who are continuously enrolled in full-dual benefits for the duration of the event window. And when studying mortality, we do not condition on enrollment in full-dual benefits or on enrollment in Medicare FFS.

[28] As discussed in Section 2, some MLTSS plans allowed voluntary enrollment prior to the mandate enactment.

5 Results

We begin by presenting our results on the impacts of MLTSS on healthcare utilization outcomes, including PCP and specialist office visits, prescription drugs, hospitalizations, and ED visits. Next, we present our results on mortality rates and annual Medicare spending. Lastly, we present some suggestive analyses of potential mechanisms underlying the effects we find. Throughout, we separately present results for Florida and New York. We report the corresponding pooled DD estimate and standard error below each event-study figure.

5.1 Healthcare utilization

Preventive care. The transition from Medicaid administering LTSS on a fee-for-service basis to MLTSS appears to reduce preventive care utilization in our sample. Figure 1 presents event-study estimates for three outcomes: an indicator for any E&M visits with a PCP, an indicator for any E&M visits with a specialist, and an indicator for any testing.

Across both states, we find that all three measures of preventive care decline following the transition to MLTSS. In Florida, the probability of any E&M office visit with a PCP decreases by 4.2 percentage points (6.1 percent relative to the pre-treatment mean) in the four years after the mandate, although there is some indication of a significant pre-trend in this outcome. The probability of an E&M visit with a specialist decreases by 4.8 percentage points (6.7 percent), and the likelihood of receiving any test goes down by 3.4 percentage points (3.8 percent), and these two outcomes do not appear to exhibit significant pre-trends. In New York, we find a 1.8 percentage point (2.5 percent) reduction in the likelihood of any E&M visit with a PCP, and a similar 1.4 percentage point (1.9 percent) reduction in the probability of an E&M visit with a specialist. The likelihood of receiving any test decreases by 1.8 percentage points (2.1 percent) in New York.

To explore whether specific clinical patient profiles are driving these declines in preventive care, Appendix Figure B5 presents results from event-study models that use as outcomes binary indicators for having any office visit claim with each of the following five major diagnostic category (MDC) codes that are most commonly associated with E&M visits among the individuals in our sample: circulatory system, musculoskeletal system, nervous system, endocrine system, and respiratory system. Overall, we observe declines in office visits among all major diagnostic categories in both states. The largest declines occur for circulatory system visits in both Florida (an absolute decline of 5.2 percentage points, or 8.7 percent relative to the pre-treatment mean) and New York (an absolute decline of 2.7

percentage points, or 4.4 percent relative to the pre-treatment mean).

On the whole, these results suggest that the use of preventive care—as measured by E&M visits and tests—declines following a transition from FFS to managed care in the delivery of LTSS. Importantly, these decreases in preventive care utilization are unlikely to reflect a substitution in the place of care delivery. That is, these patients cannot be receiving formal medical preventive care services as part of MLTSS (which would mean they would not appear in our Medicare data). While it is possible that some patients receive non-medical preventive care type services as part of the LTSS (e.g., check-ins with a home health aide regarding how they are feeling), claims for medical preventive care should still appear in the Medicare claims data, as they are covered by Medicare Part B.

Prescription drugs. Figure 2 plots the coefficients obtained from estimating our event-study model using as the outcome a binary indicator for having any prescription drug fill, separately for Florida (sub-figure (a)) and New York (sub-figure (b)). We find evidence of a small decline in prescription drug fills in Florida (0.76 percentage points, or 0.8 percent relative to the pre-treatment mean), and less conclusive but similarly-sized evidence of a relative decline in New York (0.44 percentage points, or 0.5 percent).

Although the effect magnitudes when using the any drug indicator outcome are small in both absolute and relative terms, they mask important heterogeneity across drug types. When we consider prescriptions for two of the most commonly filled drugs—antibiotics and painkillers—separately in Appendix Figure B6, we find that the decline is driven entirely by painkillers, and there is no change in the incidence of antibiotic prescription fills. There is a 0.91 percentage point (3.9 percent relative to the pre-treatment mean) reduction in painkiller fills in Florida (sub-figure (b)) and a 2.8 percentage point (16 percent) reduction in painkiller fills in New York (sub-figure (d)).

Hospitalizations and ED visits. Having shown that the transition to MLTSS appears to reduce the use of preventive care services and some prescription medications among our sample of dual-eligible continuously enrolled beneficiaries, we proceed to study effects on more severe measures of health—hospitalizations and ED visits. Figure 3 presents the event-study graphs for three outcomes: indicator for any hospitalization, indicator for any emergent hospitalization, and average length of stay (including zeros for those without a hospitalization). Sub-figure (a) shows that in Florida, the likelihood of any hospitalization increases by 0.89 percentage points, or 4.2 percent relative to the pre-treatment mean. Sub-figure (b) demonstrates that this increase is concentrated among emergent hospitaliza-

tions, which rise by 1.8 percentage points, or 10 percent relative to the pre-treatment mean. Average length of stay—which also captures intensive margin changes in hospital utilization—goes up by 0.07 days, or 5.2 percent.

In New York, the corresponding estimates for emergent hospitalizations and average length of stay are not statistically significant, but the coefficients are positive in sign. For example, average length of stay in New York increases by (an insignificant) 0.04 days (3.2 percent), and this effect appears to be getting stronger over time since the mandate.

As with office visits, we estimate our model separately for hospitalizations associated with one of the five major diagnostic categories to explore which conditions drive the observed increase. Appendix Figure B7 reports these results. In Florida, the largest increase is for hospitalizations related to the respiratory system: a 0.67 percentage point rise, or 18.5 percent effect relative to pre-treatment mean. We also observe a statistically significant 0.41 percentage point (7.8 percent) rise in hospitalizations related to the circulatory system.

The results from New York are more mixed, which is consistent with the more muted overall effect on hospitalizations. It appears that hospitalizations associated with the musculoskeletal system increase by 1.4 percentage points (6.3 percent), while hospitalizations related to the circulatory system actually decline by 0.31 percentage points (5.5 percent) following the transition to MLTSS in New York. We do not observe significant changes in hospitalizations associated with other diagnostic categories.

Next, we turn to studying ED visits. Figure 4 plots the event-study coefficients for two binary outcomes: an indicator for any ED visit resulting in an inpatient admission, and an indicator for any outpatient ED visit (i.e., one in which a patient is discharged home without admission to the hospital). In both Florida and New York, it appears that the likelihood of the (more severe) ED visit resulting in an inpatient admission increases, while the likelihood of the (less severe) outpatient ED visit goes down after the transition to MLTSS.

Specifically, we observe a 1.3 percentage point (7.2 percent) increase in the likelihood of an ED visit resulting in an inpatient admission in Florida, and a 0.5 percentage point (3.7 percent) increase in New York. While the difference-in-differences coefficient is only statistically significant in Florida, the corresponding event study graphs (sub-figure (a) and (c)) show that the impact of the MTLSS transition on such ED visits increases over time in both states, becoming statistically significant in the second and third years post-transition in New York.

We observe a 1.8 percentage point (7.0 percent) decline in outpatient ED visits in Florida, and a

1.3 percentage point (6.4 percent) relative decline in such ED visits in New York. Both estimates are statistically significant, and while the event study for New York includes a slight pre-trend, the figures indicate a consistent pattern: transitioning to MLTSS reduces the likelihood of an outpatient ED visit in which the patient is discharged home after receiving care.

5.2 Mortality

Thus far, our results suggest that the transition from FFS to managed care in Medicaid's LTSS delivery has affected healthcare utilization patterns by reducing preventive care and increasing the incidence of emergent and hospital care.

To assess the implications of the MLTSS mandates on the welfare of the affected population, we study county-level mortality rates. By using all age 65+ Medicare enrollees in this analysis, we address concerns regarding composition bias due to changes in who is enrolled in full-dual benefits and FFS Medicare. However, a downside of this approach is that the affected population—dual-eligible beneficiaries enrolled in full dual benefits who are eligible for LTSS—represents a small share of individuals included in the mortality rate. That said, we do not detect any significant changes in mortality in either Florida or New York, as shown in Figure 5. Further, this null effect is relatively precisely estimated. The lower and upper bounds of the 95% confidence intervals on our estimates suggest that we can rule out that MLTSS reduces or increases mortality rates by more than 0.04 percentage points (1 percent relative to the pre-treatment mean) in Florida. Similarly, in New York, we can rule out a decrease of more than 0.05 percentage points (1.2 percent relative to the pre-treatment mean) or an increase of more than 0.03 percentage points (0.7 percent) in New York.

5.3 Medicare spending

While the shift to MLTSS does not appear to have a detectable effect on mortality, there may be other welfare implications. We consider effects on Medicare spending within our analysis sample of continuously enrolled dual-eligible beneficiaries. Since the Medicare program is not directly affected by changes to financial incentives in Medicaid's administration of LTSS, these effects can be interpreted as fiscal spillovers on costs to another major public program.

Figure 6 shows that total Medicare spending decreases in both Florida and New York. Specifically, per-beneficiary spending declines by 15 percent in Florida and by 5 percent in New York. When evaluated at the pre-treatment mean, these effects amount to savings of about $3,489 and $892 per beneficiary in Florida and New York, respectively. In both states, the impact of the transition to MLTSS

on spending increases over time.

These results suggest that for the Medicare program, the cost savings associated with declines in preventive care, prescription drugs, and outpatient ED visits outweigh the increases in costs related to emergent hospitalizations and inpatient ED visits.

5.4 Potential mechanisms

What explains the changes in care utilization that we find? We unfortunately do not have any data allowing us to observe characteristics of LTSS delivery, especially outside of nursing homes. Given that community-based and home-based delivery of LTSS is an important component of MLTSS, this limits our ability to uncover precise mechanisms behind the effects that we find. That said, we can use data on nursing home assessments to explore whether changes in either nursing home utilization on the extensive margin or shifts in the quality of nursing home care might be contributing factors.

Figure 7(a) shows that the probability of receiving any nursing home assessment—our proxy for a nursing home admission—does not change following the transition to MLTSS in Florida. This finding is somewhat surprising in light of the explicit financial incentives in Florida Medicaid's MLTSS related to shifting patients out of nursing home care. That said, it is possible that changes in the location of the provision of LTSS may take a longer time to materialize. Similarly, we do not find any changes in the probability of a nursing home assessment in New York (sub-figure (c)). We also do not detect any effects on the likelihood of switching nursing home facilities in sub-figures (b) and (d).

In Appendix Figure B8, we examine whether the shift to MLTSS changes the average quality of the nursing home in which a patient resides. For this analysis, we restrict our attention to the subset of beneficiaries who are observed to be in a nursing throughout the seven-year event window. To measure quality, we consider three commonly used markers—hours per resident day, occupancy rate, and restraint rate—and calculate each nursing home's within-state percentile rank on each measure in 2011. By holding the relative rank fixed in the pre-period, these measures allow us to detect changes in nursing home quality due to patient reallocation rather than direct effects on nursing home operations following MLTSS. Across the three measures and in both states, we do not detect any statistically significant or economically meaningful changes in pre-period nursing home quality among nursing home residents.

Appendix Figure B9 examines effects of MLTSS on the absolute values of the three markers in a beneficiary's current nursing home. These outcomes can be interpreted as changes in the operations

of the nursing home, especially since we do not find evidence of patients selecting in or out of nursing homes based on quality. While there appears to be some indication of declines in hours per resident day in Florida and an increase in the restraint rate in New York, both of these effects appear to be continuations of pre-existing trends, and therefore cannot be reliably interpreted as causal effects of MLTSS.

On the whole, these analyses suggest that switching in or out of nursing homes (or across nursing homes) is not a primary mechanism driving the results on healthcare utilization. It seems more likely that changes in the delivery of LTSS outside the nursing home as a result of the shift to managed care are the main drivers.

6 Conclusion

Recent calls by the US government to reduce federal spending, including in the Medicaid program, underscore an urgent need to understand how public programs can operate efficiently and effectively.[29] This impetus, combined with the rapidly aging US population, suggests that the structure of Medicaid's coverage of long-term services and supports—for which the program paid more than $255 billion in 2022 (Chidambaram and Burns, 2024)—may play an important role in these considerations.

This paper studies how the shifts from FFS payment models to managed care systems in Florida and New York's Medicaid LTSS programs affect patients' healthcare utilization and mortality. We focus on dual-eligible Medicaid-Medicare beneficiaries aged 65 and above, and use a stacked difference-in-differences empirical design based on the county-by-county transitions to MLTSS in the two states. We study outcomes observed in Medicare FFS claims data, for which Medicare is the primary payer, thus measuring downstream impacts of MLTSS on healthcare not included under managed care.

Focusing on beneficiaries who are continuously enrolled in full dual benefits for a period of time from before to after the shift to MLTSS, we find a reduction in the use of preventive care services, including E&M visits and routine lab testing, in both Florida and New York. We also find a reduction in prescription drug fills covered by Medicare Part D, as well as in outpatient ED visits. Our results show that these decreases in care may lead to more serious health issues that require hospitalization. Specifically, in Florida, we find an increase in emergent hospitalizations, average length of stay, and ED

[29] For a summary of the issues related to Medicaid funding cuts, see Urban Institute's report here: https://www.urban.org/research/publication/reducing-federal-support-medicaid-expansion-would-shift-costs-states-and.

visits resulting in inpatient admission. We find similar patterns in New York, although the estimates are less precise.

However, we do not find any evidence that the shift to MLTSS affects patient mortality in either state. Instead, we document that the shift to MLTSS reduces overall Medicare spending, as the savings from reduced preventive care, prescription drugs, and outpatient ED visits are greater than the increased costs due to hospitalizations and inpatient ED visits. All together, our findings indicate that the transition to MLTSS reduces the use of preventive care, while increasing the incidence of likely serious health issues that require urgent hospital stays. These changes do not appear to save lives (while also not meaningfully increasing deaths), but have important fiscal spillovers by reducing Medicare spending.

An important limitation of this paper is that we do not directly observe any MLTSS claims and we cannot study heterogeneity across different types of MLTSS plans. Prior work documents that Medicaid managed care plans differ substantially in terms of their spending and networks (Geruso et al., 2023; Wallace, 2023), suggesting that there is likely important heterogeneity in impacts across MLTSS plans as well. Future work should consider these issues to better understand the mechanisms behind the effects on healthcare outcomes documented here.

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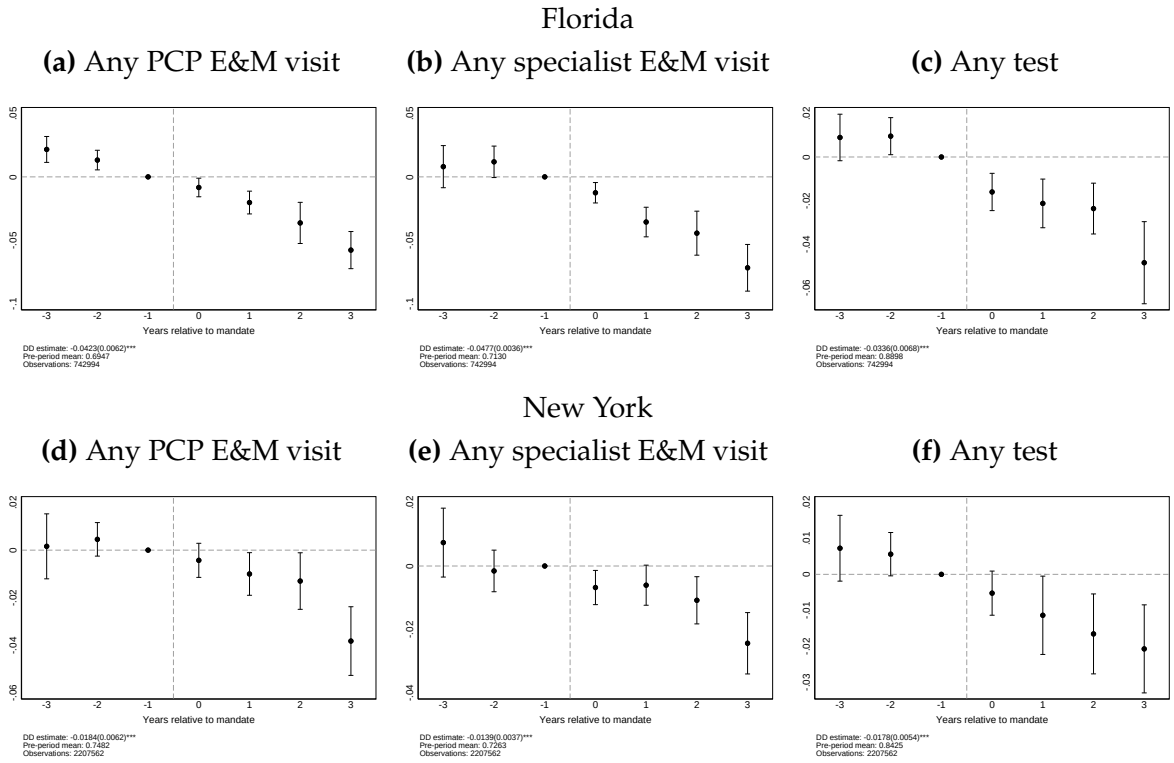
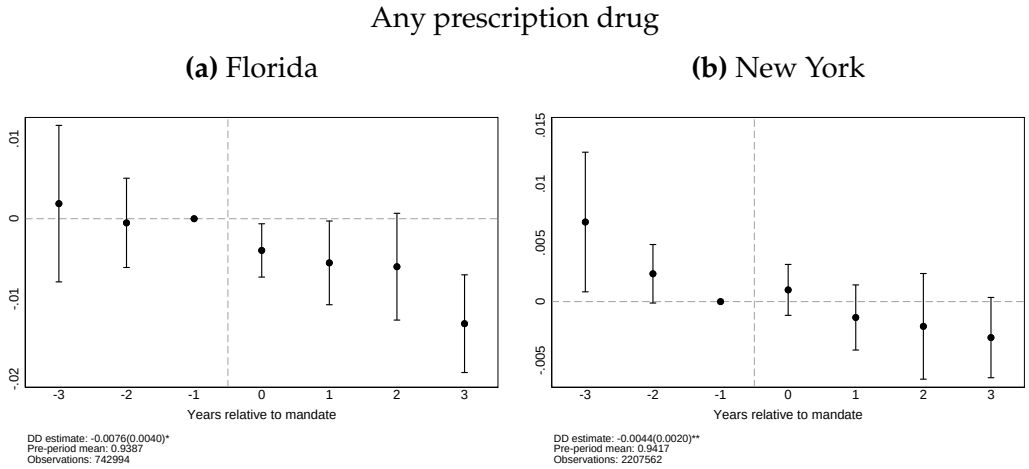
7 Figures and Tables

Figure 1: Event-study estimates of the impacts of MLTSS mandates on preventive care utilization



Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating equation (2). We observe utilization of primary and preventative care services in the carrier files for a random 20 percent of beneficiaries. See notes under Table 1 for information about the analysis sample.

Figure 2: Event-study estimates of the impacts of MLTSS mandates on prescription drug utilization

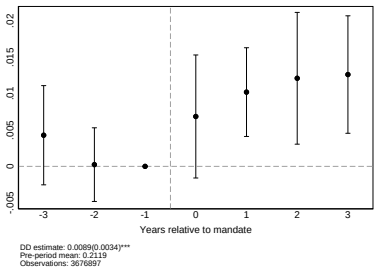


Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating equation (2). We observe utilization of Part D prescription drugs for a random 20 percent of beneficiaries. See notes under Table 1 for information about the analysis sample.

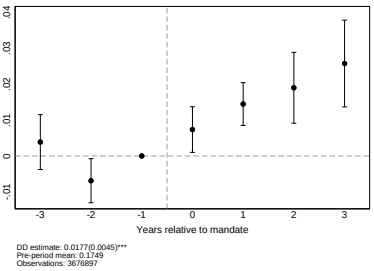
Figure 3: Event-study estimates of the impacts of MLTSS mandates on hospitalizations

Florida

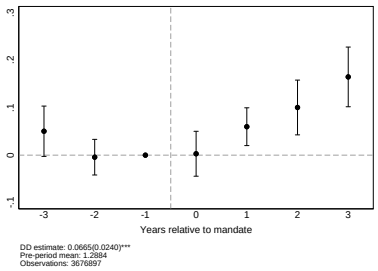
(a) Any hospitalization



(b) Any emergent hospitalization

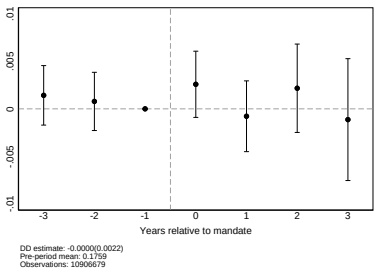


(c) Average length of stay

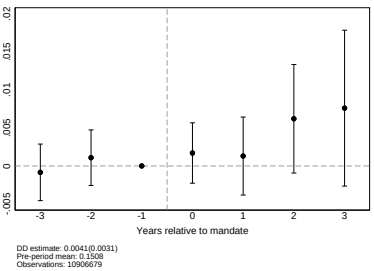


New York

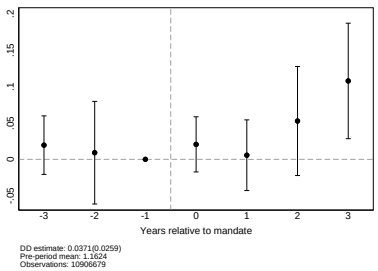
(d) Any hospitalization



(e) Any emergent hospitalization



(f) Average length of stay

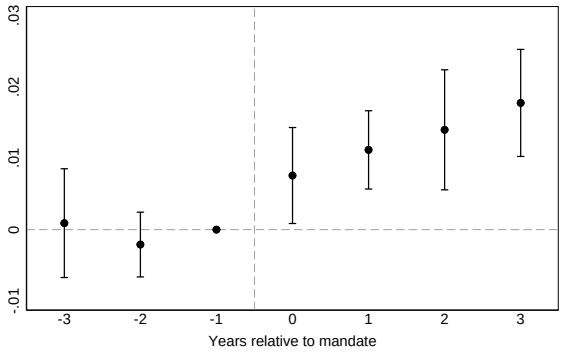


Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating equation (2). We observe hospitalizations for the full sample. "Emergent" hospitalizations are those in which "the patient required immediate medical intervention as a result of severe, life threatening, or potentially disabling conditions. Generally, the patient was admitted through the emergency room" (ResDAC, n.d.). See notes under Table 1 for information about the analysis sample.

Figure 4: Event-study estimates of the impacts of MLTSS mandates on emergency department visits

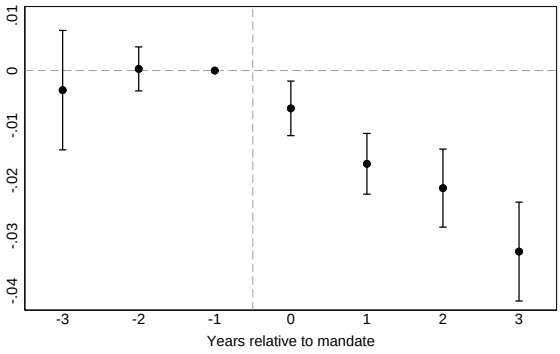
Florida

(a) Any ED visit, inpatient



DD estimate: 0.0130(0.0033)***
Pre-period mean: 0.1801
Observations: 3676897

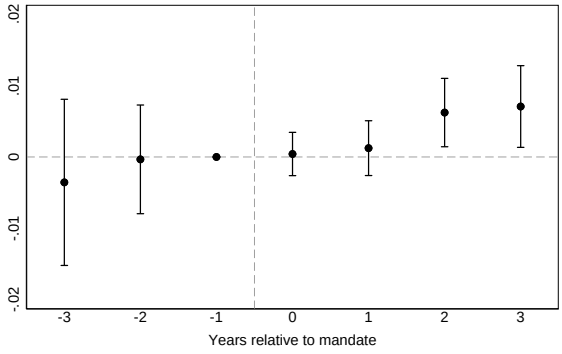
(b) Any ED visit, outpatient



DD estimate: -0.0184(0.0038)***
Pre-period mean: 0.2637
Observations: 3676897

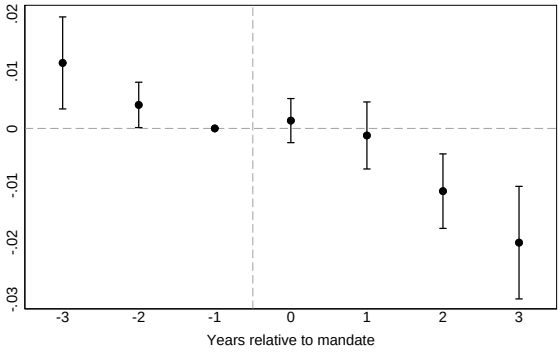
New York

(c) Any ED visit, inpatient



DD estimate: 0.0050(0.0041)
Pre-period mean: 0.1352
Observations: 10906679

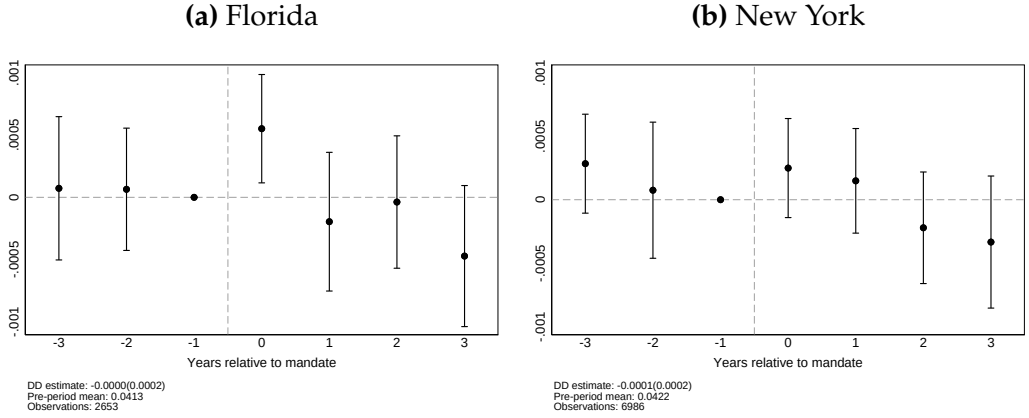
(d) Any ED visit, outpatient



DD estimate: -0.0129(0.0026)***
Pre-period mean: 0.2010
Observations: 10906679

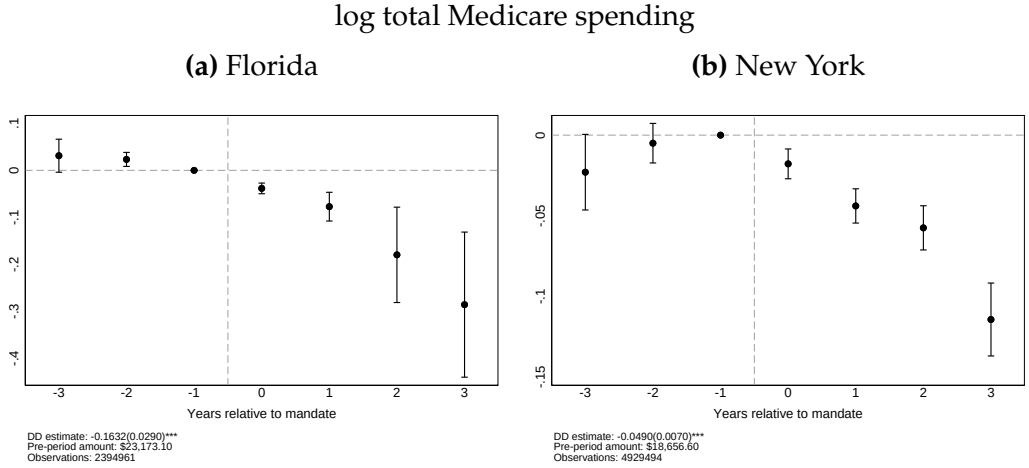
Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating equation (2). We observe ED visits for the full sample. See notes under Table 1 for information about the analysis sample.

Figure 5: Event-study estimates of the impacts of MLTSS mandates on county mortality rate



Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating a county×year version of equation (2) with county-by-experiment and year-by-experiment fixed effects. The outcome is the number of individuals who have died, among all Medicare beneficiaries who are aged 65 or older at the beginning of the year.

Figure 6: Event-study estimates of the impacts of MLTSS mandates on log Medicare spending (in 2019 dollars)

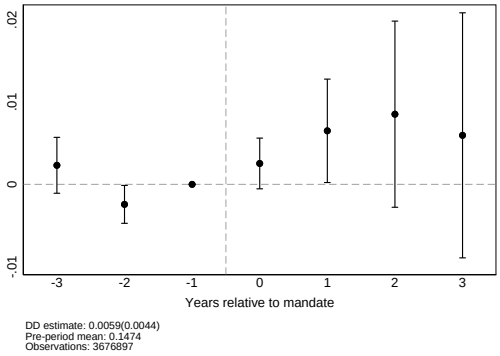


Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating equation (2) on an outcome of logged *annual* total Medicare spending (in 2019 dollars). We observe annual Medicare spending for the full sample. See notes under Table 1 for information about the analysis sample.

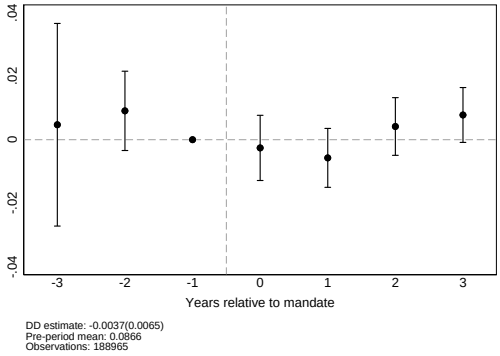
Figure 7: Event-study estimates of the impacts of MLTSS mandates on nursing home utilization

Florida

(a) Any nursing home assessment

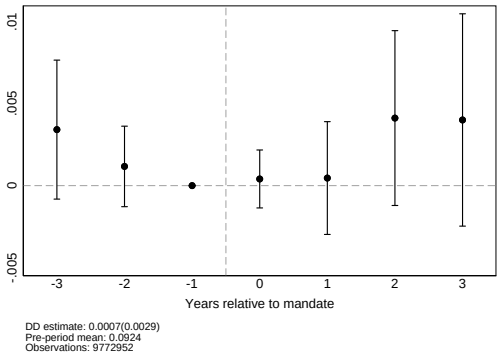


(b) Any nursing home facility change

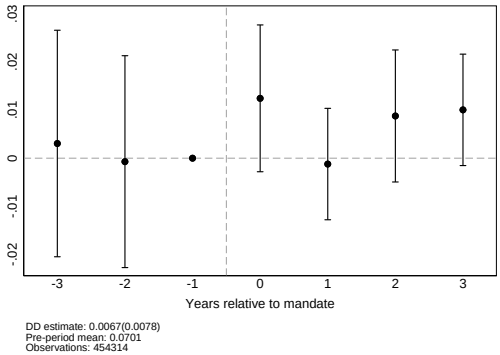


New York

(c) Any nursing home assessment



(d) Any nursing home facility change



Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating equation (2). We observe nursing home assessments that occur on a given date in the Minimum Data Set (MDS) 2.0 (for January 2009–September 2010) and 3.0 (for October 2010–December 2017). See notes under Table 1 for information about the analysis sample. We observe nursing home assessments and facility switches for individuals who appear in the MDS. We code individuals as 0 if they do not have a nursing home assessment in the MDS. In our analysis of nursing home facility changes, we restrict the sample to beneficiaries who are in a nursing home throughout the entire event window.

Table 1: Summary statistics (at baseline)

	Treated counties		Control counties	
	(1)	(2)	(3)	(4)
	Florida	New York	California	Pennsylvania
Percent female	73%	69%	62%	71%
Percent non-Hispanic white	43%	54%	45%	71%
Percent non-Hispanic Black	16%	15%	5%	15%
Percent Hispanic	35%	9%	19%	3%
Percent aged 65-74	40%	44%	56%	54%
Percent aged 75-84	41%	40%	33%	31%
Percent aged 85+	19%	16%	11%	15%
Percent with any chronic condition	98%	98%	95%	96%
Percent with Alzheimer's	22%	11%	5%	11%
Percent with arthritis	75%	67%	51%	56%
Percent with chronic kidney disease	31%	26%	20%	24%
Percent with depression	60%	40%	28%	41%
Percent with diabetes	60%	61%	48%	47%
Percent with ischemic heart disease	73%	69%	43%	52%
Percent with heart failure	44%	45%	27%	33%
Percent with hypertension	93%	90%	81%	84%
Observations (unique individuals)	53,942	131,855	168,060	42,656

Notes: This table presents the summary statistics of the analysis sample used to estimate equations (1) and (2). Each observation is an individual in the year before the transition to MLTSS. The sample includes individuals who are aged 65 or older as of three years before the transition to MLTSS, and who are continuously enrolled in FFS and full dual benefits over an event window that spans three years before the transition to MLTSS, the year of the transition to MLTSS, and three years after the transition. In our stacked DD design, individuals in the control group (in never-treated counties in California and Pennsylvania) can appear across multiple experiments. For these individuals, we report their characteristics using the first time that they appear in the data.

ONLINE APPENDIX

A More Details about Outcome Definitions

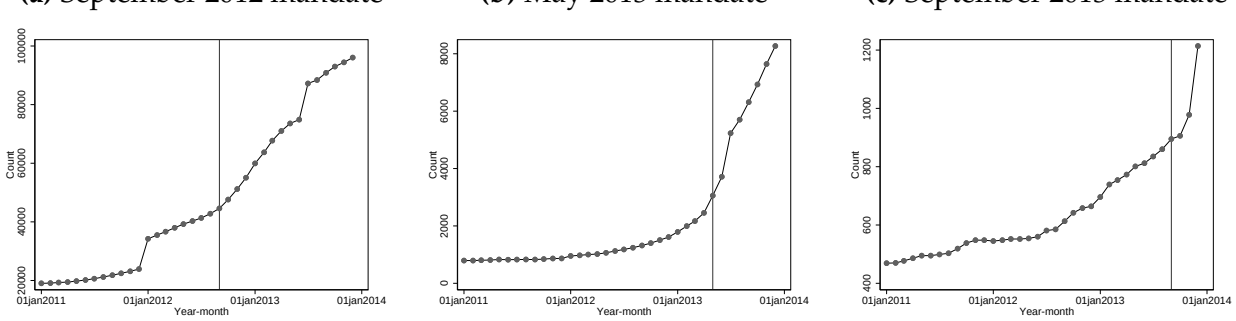
E&M visits with a PCP. We identify new and established evaluation & management (E&M) office visits in the carrier files using the Berenson-Eggers Type of Service (BETOS) codes "M1A" and "M1B," respectively. Further, we use the CMS provider specialty codes "01" (General practice), "08" (Family practice), "11" (Internal medicine), "38" (Geriatric medicine), "50" (Nurse practitioner), "84" (Preventative medicine), and "97" (Physician assistant) to categorize E&M visits that occur with a primary care physician (PCP).

Tests. To identify tests in the carrier files, we use BETOS codes "T1A" (lab tests - routine venipuncture), "T1B" (lab tests - automated general profiles), "T1C" (lab tests - urinalysis), "T1D" (lab tests - blood counts), "T1E" (lab tests - glucose), "T1F" (lab tests - bacterial cultures), "T1G" (lab tests - other (Medicare fee schedule)), "T1H" (lab tests - other (non-Medicare fee schedule)), "T2A" (other tests - electrocardiograms), "T2B" (other tests - cardiovascular stress tests), "T2C" (other tests - EKG monitoring), and "T2D" (other tests - other).

ED visits. For ED visits, we use inpatient and outpatient files with revenue center codes "0450", "0451", "0452", "0453", "0454", "0455", "0456", "0457", "0458", "0459", and "0981".

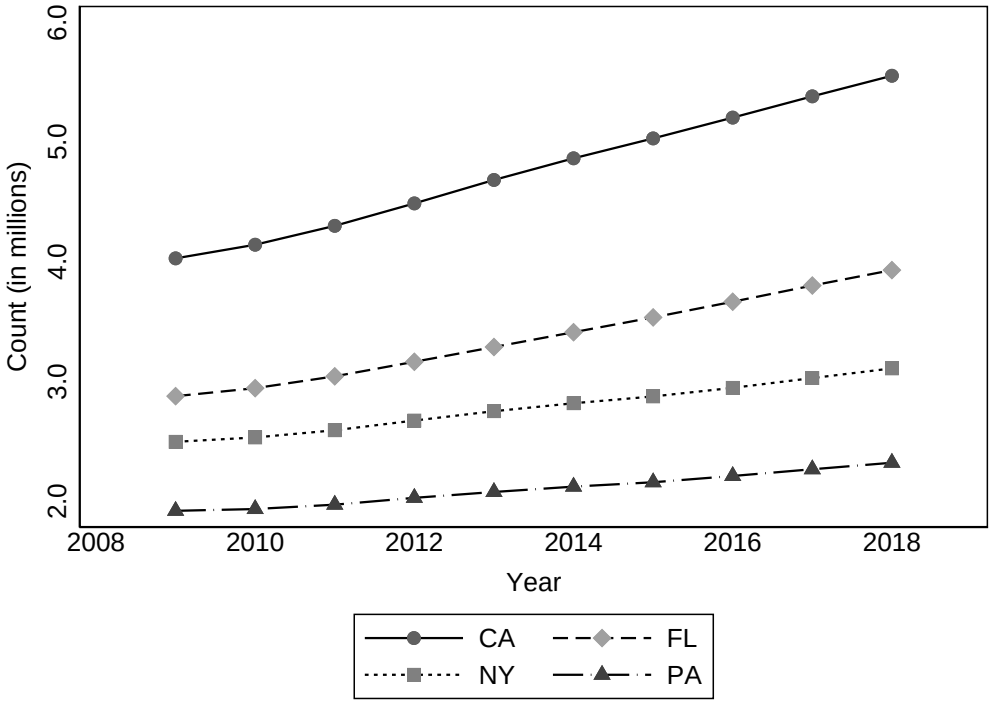
B Appendix Figures

Appendix Figure B1: Number of full dual beneficiaries enrolled in MLTC plans in New York



Notes: This figure presents the number of full-benefit duals who are enrolled in a New York managed long-term care (MLTC) plan in each month-year, as observed in the Medicaid Analytic eXtract (MAX) data. The vertical line in each figure indicates the time of the transition to MLTSS. Sub-figure (a) includes full duals enrolled in MLTC plans in Bronx, Kings, New York, Queens, and Richmond counties. Sub-figure (b) includes full duals enrolled in MLTC plans in Nassau, Suffolk, and Westchester counties. Sub-figure (c) includes full duals enrolled in MLTC plans in Rockland and Orange counties.

Appendix Figure B2: Trends in Medicare enrollment in California, Florida, New York, and Pennsylvania: 2009–2019

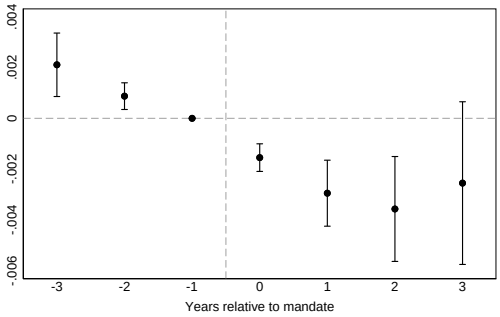


Notes: This figure presents the number of Medicare enrollees between 2009 and 2019 separately for each state (California, Florida, New York, and Pennsylvania).

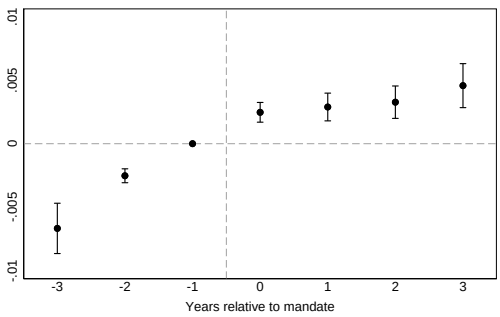
Appendix Figure B3: Event-study estimates of the impacts of MLTSS mandates on enrollment in dual benefits

Florida

(a) Full dual status

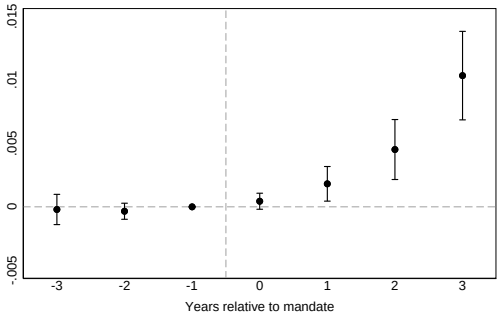


(b) Partial dual status

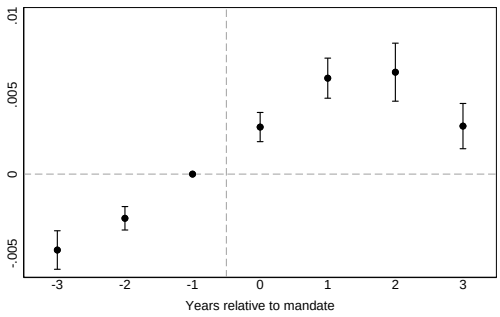


New York

(c) Full dual status



(d) Partial dual status

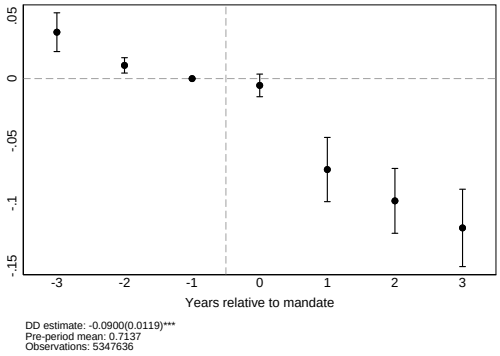


Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating equation (2). We study the impacts of the MLTSS mandates on full and partial dual status among a sample of beneficiaries who are aged 65+ at the beginning of the event window and remain continuously enrolled in Medicare through the entire duration of the event window.

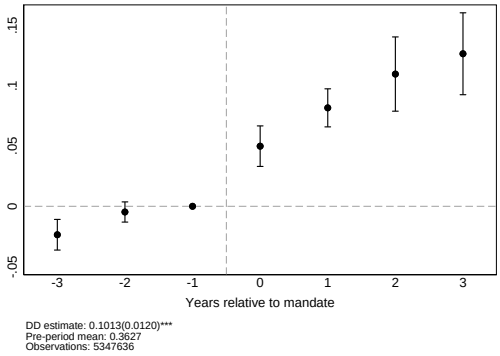
Appendix Figure B4: Event-study estimates of the impacts of MLTSS mandates on Medicare enrollment type

Florida

(a) Traditional (FFS) Medicare

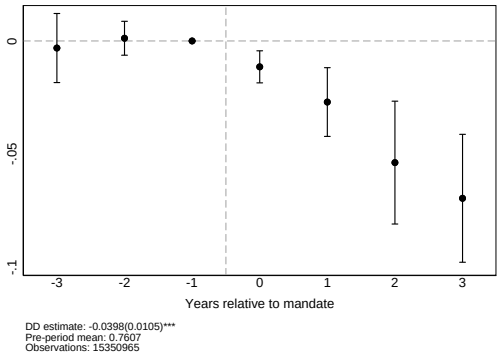


(b) Medicare Advantage

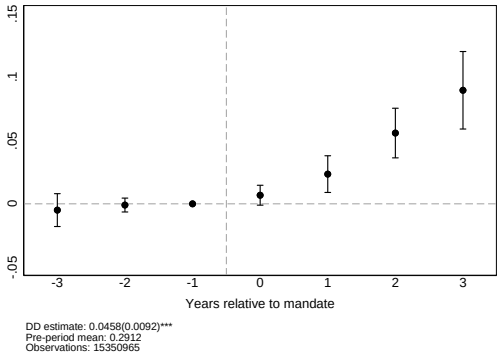


New York

(c) Traditional (FFS) Medicare



(d) Medicare Advantage

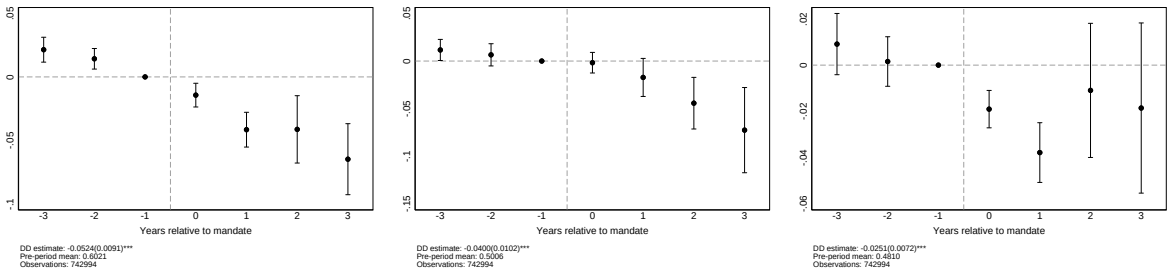


Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating equation (2). We study the impacts of the MLTSS mandates on traditional FFS Medicare and Medicare Advantage enrollment among a sample of beneficiaries who are aged 65+ at the beginning of the event window and remain continuously enrolled in Medicare and in full-dual benefits through the entire duration of the event window.

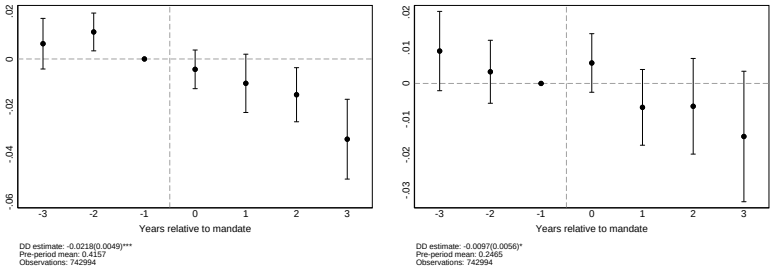
Appendix Figure B5: Event-study estimates of the impacts of MLTSS mandates on office visits, by major diagnostic category (MDC) code

Florida

(a) Circulatory system **(b)** MSK system **(c)** Nervous system

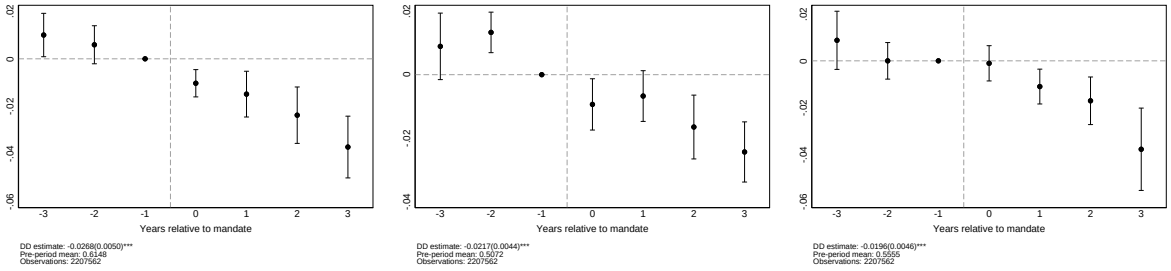


(d) Endocrine system **(e)** Respiratory system

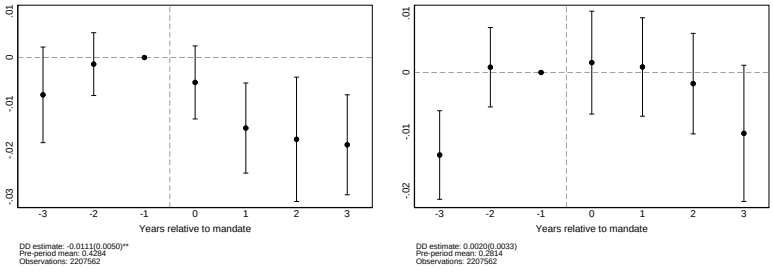


New York

(f) Circulatory system **(g)** MSK system **(h)** Nervous system



(i) Endocrine system **(j)** Respiratory system

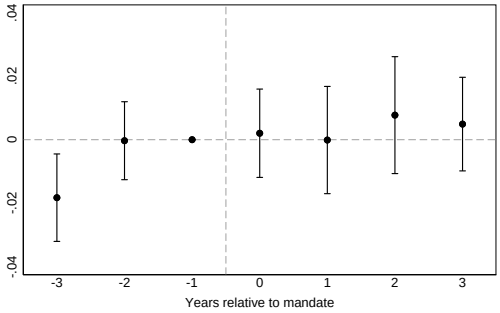


Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating equation (2). Each outcome in each sub-figure is a binary indicator for whether a beneficiary had an office carrier claim with a selected MDC code. We observe utilization of primary and preventative care services in the carrier files for a random 20 percent of beneficiaries. See notes under Table 1 for information about the analysis sample.

Appendix Figure B6: Event-study estimates of the impacts of MLTSS mandates on prescription drug utilization, by prescription type

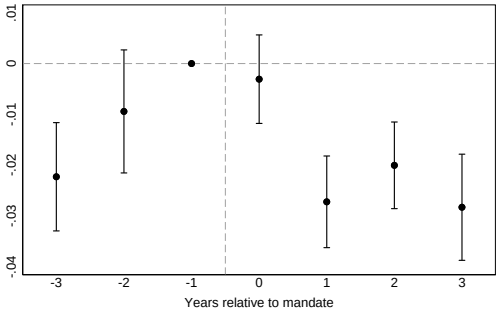
Florida

(a) Any antibiotic



DD estimate: 0.0098(0.0077)
Pre-period mean: 0.3048
Observations: 742994

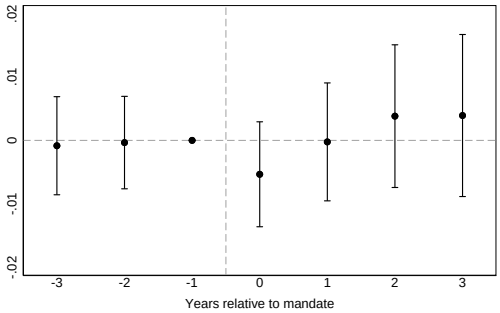
(b) Any painkiller



DD estimate: -0.0091(0.0033)***
Pre-period mean: 0.2323
Observations: 742994

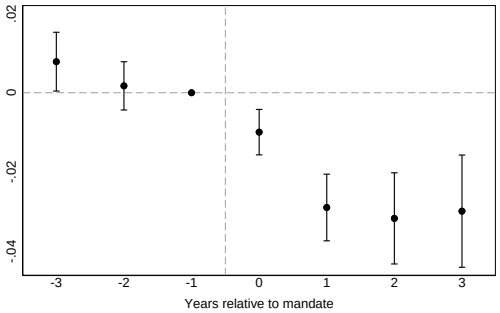
New York

(c) Any antibiotic



DD estimate: 0.0009(0.0050)
Pre-period mean: 0.2647
Observations: 2207562

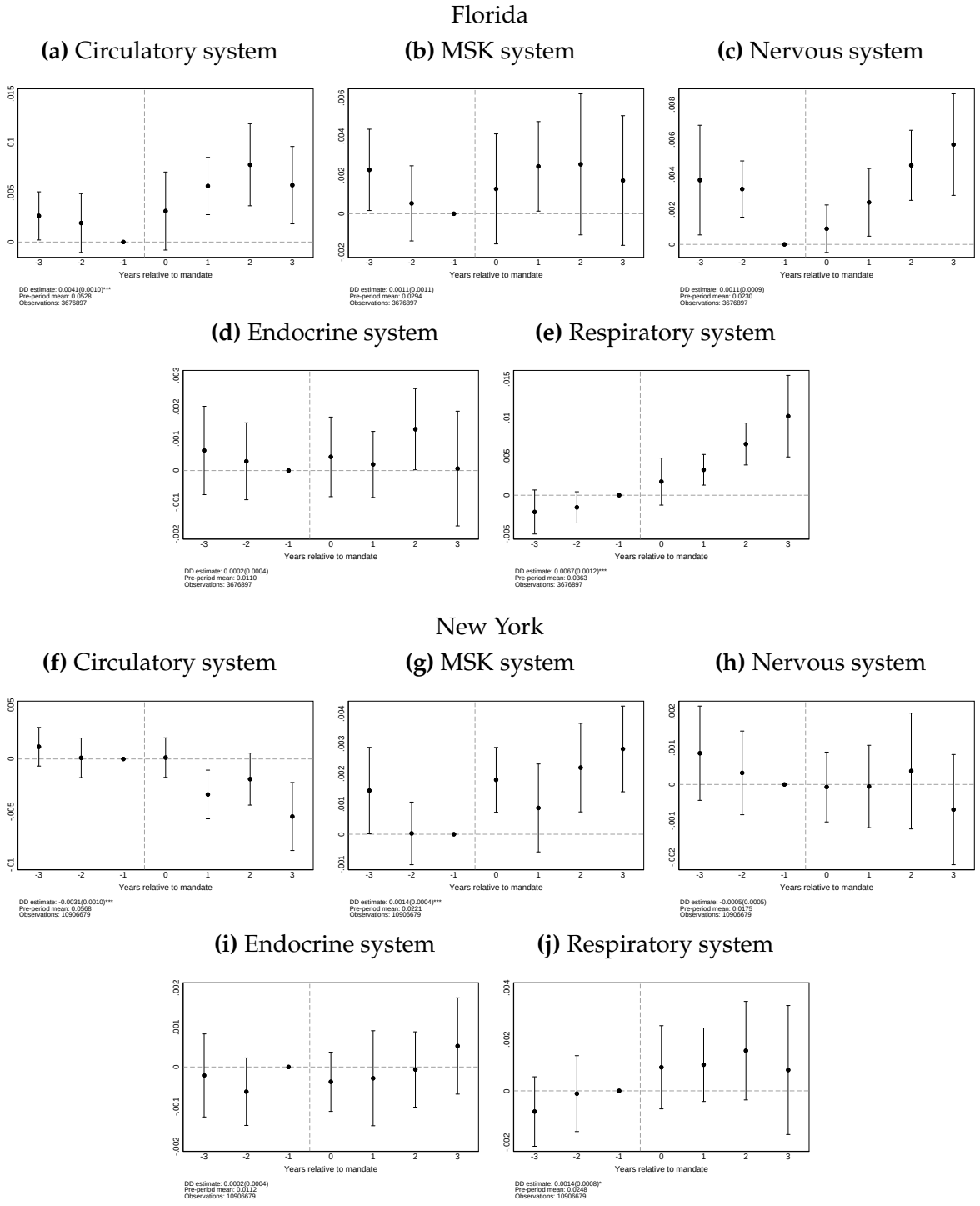
(d) Any painkiller



DD estimate: -0.0283(0.0050)***
Pre-period mean: 0.1824
Observations: 2207562

Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating equation (2). We map the NDC codes in these files to Anatomical Therapeutic Chemical (ATC) Level 5 codes. We categorize antibiotics using ATC5 code "J01" and painkillers using ATC5 code "N02". We observe utilization of Part D prescription drugs for a random 20 percent of beneficiaries. See notes under Table 1 for information about the analysis sample.

Appendix Figure B7: Event-study estimates of the impacts of MLTSS mandates on hospitalizations, by major diagnostic category (MDC) code

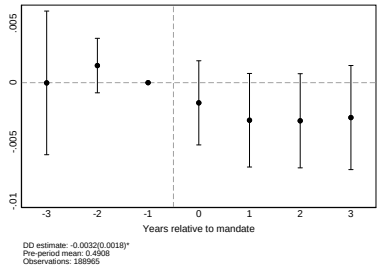


Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating equation (2). Each outcome in each sub-figure is a binary indicator for whether a beneficiary had an hospital inpatient admission with a selected MDC code. We observe hospitalizations for the full sample. See notes under Table 1 for information about the analysis sample.

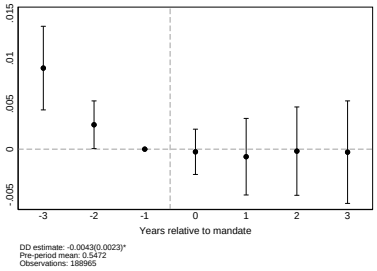
Appendix Figure B8: Event-study estimates of the impacts of MLTSS mandates on nursing home's baseline quality

Florida

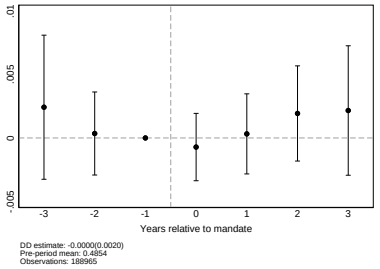
(a) Hours per resident day percentile rank



(b) Occupancy rate percentile rank

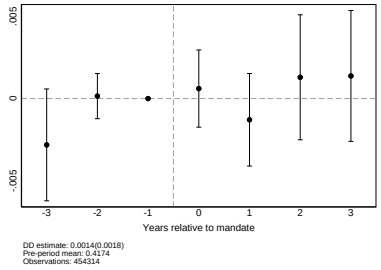


(c) Restraint rate percentile rank

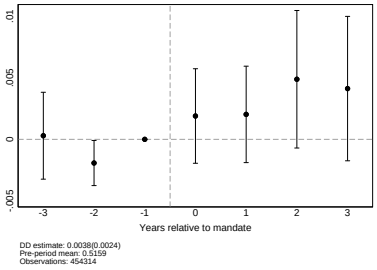


New York

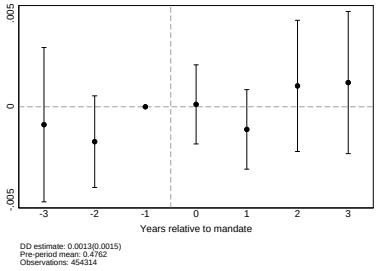
(d) Hours per resident day percentile rank



(e) Occupancy rate percentile rank

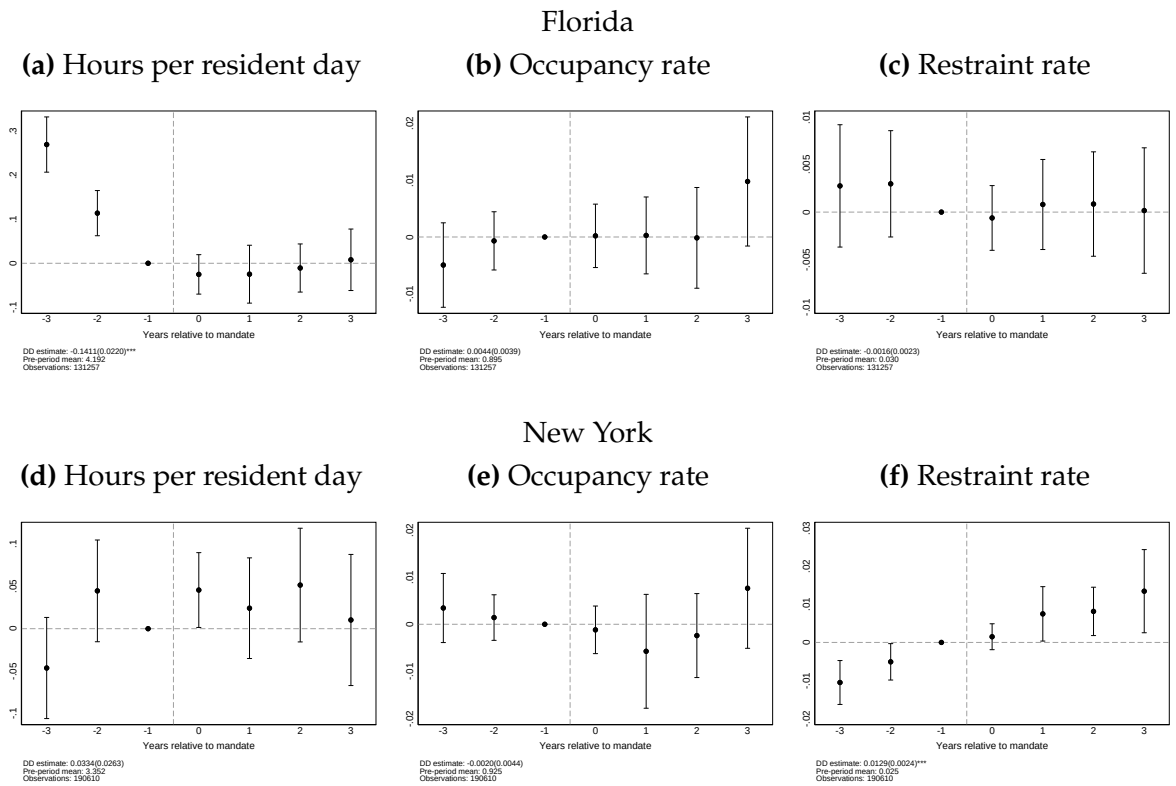


(f) Restraint rate percentile rank



Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating equation (2) on an outcome of pre-period nursing home quality. Each outcome represents the current nursing home's within-state percentile rank in 2011. The analysis sample is restricted to full-benefit duals who are continuously in a nursing home throughout the entire event window.

Appendix Figure B9: Event-study estimates of the impacts of MLTSS mandates on nursing home's current quality



Notes: These figures plot the event-study coefficients and 95% confidence intervals from estimating equation (2) on an annual outcome of the current nursing home's current quality. The analysis sample is restricted to full-benefit duals who are continuously in a nursing home throughout the entire event window.

Appendix Table C1: Comparison of the MLTSS programs for dual-eligible beneficiaries in Florida and New York during the sample period

	Florida	New York
Risk adjustment	Based on population mix in nursing homes, home, and community settings	Based on an algorithm
Plan coverage†	Long-term care services only	Long-term care services only
Type of enrollment	Mandatory	Mandatory
Overall plan incentive	Capitation incentivizes cost reduction, while quality incentives encourage quality improvement	
Differential incentive by expected cost/race	A single, blended capitation rate incentivizes plans to avoid high-cost enrollees and/or to shift enrollees to lower-cost LTC settings	Incentives to risk-select enrollees when their expected costs are high relative to the regional average
Differential incentive by type of service	Incentives to reduce costs in Medicaid long-term care services	Incentives to reduce costs in Medicaid long-term care services

† Both Florida and New York also offer full-capitation plans (such as Program of All-Inclusive Care for the Elderly) that cover both Medicaid and Medicare services. Enrollment in these plans is voluntary.

Appendix Table C2: Timing of MLTSS mandates in Florida and New York

State	Month	Quarter	Counties Mandated
Florida	8/2013	2013 Q3	Brevard, Orange, Osceola, Seminole
	9/2013	2013 Q3	Charlotte, Collier, DeSoto, Glades, Hendry, Indian River, Martin Lee, Okeechobee, Palm Beach, Sarasota, St. Lucie
	11/2013	2013 Q4	Bay, Calhoun, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson, Leon, Liberty, Madison, Taylor, Wakulla, Washington
	12/2013	2013 Q4	Broward, Miami-Dade, Monroe
	2/2014	2014 Q1	Hardee, Highlands, Hillsborough, Manatee, Pasco, Pinellas, Polk
	3/2014	2014 Q1	Alachua, Baker, Bradford, Citrus, Clay, Columbia, Dixie, Duval, Escambia, Flagler, Gilchrist, Hamilton, Hernando, Lafayette, Lake, Levy, Marion, Nassau, Okaloosa, Putnam, Santa Rosa, St. Johns, Sumpter, Suwannee, Union, Volusia, Walton
New York	9/2012	2012 Q3	Bronx, Kings, New York, Queens, Richmond
	5/2013	2013 Q2	Nassau, Suffolk, Westchester
	9/2013	2013 Q3	Rockland, Orange
	12/2013	2013 Q4	Albany, Erie, Onondaga, Monroe
	1/2014	2014 Q1	Columbia, Putnam, Sullivan, Ulster
	6/2014	2014 Q2	Cayuga, Herkimer, Oneida, Rensselaer
	7/2014	2014 Q3	Greene, Saratoga, Schenectady, Washington
	8/2014	2014 Q3	Dutchess, Montgomery, Broome, Fulton, Schoharie
	9/2014	2014 Q3	Delaware, Warren
	10/2014	2014 Q4	Niagara, Madison, Oswego
	11/2014	2014 Q4	Chenango, Cortland, Livingston, Ontario, Steuben, Tioga, Tompkins, Wayne
	12/2014	2014 Q4	Genesee, Orleans, Otsego, Wyoming
	1/2015	2015 Q1	Chautauqua, Chemung, Seneca, Schuyler, Yates, Allegany, Cattaraugus
	2/2015	2015 Q1	Clinton, Essex, Franklin, Hamilton, Jefferson, Lewis, St. Lawrence