Get Fit with MA?
Estimating the Impact of Medicare Advantage on Physical Activity

Jong Min Jung* Jing Li†

Abstract

Medicare Advantage (MA) plans increasingly offer supplemental fitness benefits, yet evidence on whether MA affects preventive health behavior among older adults is limited. Using nationally representative panel data from the Health and Retirement Study, we implement a difference-in-discontinuities design around the age-65 Medicare eligibility threshold, comparing changes in physical activity at Medicare entry between individuals who eventually enrolled in MA and those who enrolled in Traditional Medicare or non Medicare-enrollees. Crossing age 65 is associated with a 3.9 percentage point larger increase in the probability of daily vigorous exercise among MA enrollees, relative to a pre-65 mean of 3 percent. Event study estimates show no differential trends before age 65. The estimated differences are concentrated among women, non-White beneficiaries, and those without a college degree. These findings suggest that features of MA coverage may promote physical activity at least in the short run.

JEL Classification: I12, I13, I18, J14

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*Department of Economics, University of Washington
†Department of Pharmacy, University of Washington

1 Introduction

Physical activity plays a central role in maintaining health and independence in later life. Regular exercise reduces the risk of cardiovascular disease, diabetes, functional limitation, cognitive decline, and falls among older adults (Warburton et al. (2006), Lee et al. (2012)). Accordingly, the 2018 *Physical Activity Guidelines for Americans* recommend that adults aged 65 and older engage in 150 to 300 minutes per week of moderate intensity aerobic activity or 75 to 150 minutes per week of vigorous intensity aerobic activity, along with multicomponent exercises that include muscle-strengthening and balance training (U.S. Department of Health and Human Services (2018)). Despite the well-documented health benefits, physical inactivity remains widespread. In 2022, only 13.9 percent of U.S. older adults met the federal physical activity guidelines (Centers for Disease Control and Prevention (2024), Elgaddal and Kramarow (2024)).

Several barriers may contribute to low levels of physical activity among older adults. Exercise produces health benefits that accumulate over time, but it also imposes immediate costs such as time, monetary cost (e.g. for equipment and gym membership), effort, and structured planning. Older adults may additionally face physical limitations, pain, fear of falling, chronic conditions, lack of motivation, limited social support, and problems with access to suitable exercise opportunities (Franco et al., 2015; Bethancourt et al., 2014). Transportation difficulties and limited availability of accessible exercise facilities may further increase the cost of physical activity. As some of these financial and logistical barriers are potentially modifiable, policies that lower the cost of exercise or improve access to structured exercise opportunities may encourage physical activity among older adults.

In this study, we examine the effect of a prominent policy tool, the Medicare Advantage (MA) insurance design, on the exercise behavior among older adults. Medicare Advantage, also known as Medicare Part C, is a privately administered alternative to Traditional Medicare (TM). It provides Medicare Part A coverage for inpatient services and Part B coverage for outpatient services through private insurers, while also offering supplemental benefits such as dental, vision, and fitness benefits not typically covered by TM. This makes MA a particularly relevant policy setting to investigate the role of insurance design in affecting physical activity. Over half of all Medicare beneficiaries enroll in MA as of 2026 and fitness benefits are among the most common supplemental benefits provided by MA plans, with approximately 95 percent of individual MA plans offering a fitness benefit by 2025 (Freed et al., 2024). Fitness benefits are provided through programs such as SilverSneakers, Renew

Active, and Silver&Fit. These programs offer older adults free or subsidized access to gyms, group exercise classes, and community-based fitness opportunities. By lowering the financial and logistical barriers to exercise, MA plans may affect not only medical care use but also preventive health behaviors that shape later-life health.

Fitness benefits may influence exercise behavior through several mechanisms. The most direct mechanism is lowering the financial barrier to exercise. A free or subsidized membership eliminates or substantially reduces recurring fees that may otherwise deter participation. The benefit may also reduce information and search costs by directing beneficiaries toward participating facilities and organized programs. Group classes can provide instruction, scheduling, and social interaction, while access to multiple facilities may reduce travel and hassle costs. The inclusion of fitness coverage in a health insurance plan may additionally increase the salience of physical activity at the time of Medicare enrollment. Thus, MA fitness benefits may serve not only as a price subsidy but also as an information and access intervention.

However, benefit availability does not necessarily imply actual participation. Beneficiaries may be unaware of the benefit, lack a conveniently located participating facilities, face transportation or mobility barriers, or enroll but attend infrequently. Even among beneficiaries who initially use a fitness program, sustained participation may depend on whether exercise becomes compatible with daily routines and whether individuals develop habits, familiarity, or social relationships that lower the future cost of exercise. Existing literature on exercise incentives suggests that incentives can increase physical activity in the short run, but sustained participation is more difficult to achieve (Charness and Gneezy, 2009; Acland and Levy, 2015; Royer et al., 2015). This distinction between initiating and maintaining exercise behavior is particularly relevant for evaluating MA fitness benefits. Importantly, fitness benefits are not the only feature of MA that could influence physical activity. MA plans may differ from TM in preventive care, care management, plan communications, and interactions with health care providers. Preventive health incentives and recommendations from physicians may also encourage beneficiaries to exercise more frequently. Therefore, MA enrollment may affect physical activity beyond provision of fitness benefits.

Despite the rapid expansion of MA enrollment, rigorous evidence on its behavioral impact remains limited. Existing studies of MA-covered fitness programs document improvements in participants' physical and mental health and reductions in health care spending, but the program participants are likely to differ systematically from non-participants in unobserved

characteristics such as motivation and exercise preferences (Belza et al. (2006); Hamar et al. (2013); Brady et al. (2020); Nguyen et al. (2008)). Fitness benefits themselves may also influence plan selection. Consistent with this concern, Cooper and Trivedi (2012) find that the introduction of a fitness benefit was associated with enrollment by beneficiaries with more favorable self-reported health. Thus, it remains unclear whether enrollment in MA changes exercise behavior around Medicare eligibility and, if so, whether the widespread availability of supplemental fitness benefits represents one potential channel.

As MA enrollees may systematically differ from TM enrollees in ways that also affect exercise, we do not compare their exercise levels. Instead, we compare how each group's exercise behavior changes at the age-65 Medicare eligibility threshold, using nationally representative panel data from the Health and Retirement Study (HRS) for 2012–2022. The main empirical strategy is a Difference-in-Discontinuities (DiDC) design that compares the age-65 discontinuity in daily vigorous exercise among MA enrollees with the corresponding discontinuity for non-MA individuals. The DiDC design differences out age-65 changes common to both groups, such as retirement, Social Security claiming, and general aging-related trends, while isolating the MA-specific discontinuity in exercise behavior. Importantly, because our data do not capture actual fitness program enrollment or utilization, and because MA differs from TM along several dimensions beyond supplemental fitness benefits (see Section 2), our estimates capture the differential change in exercise frequency at the age-65 eligibility threshold among MA enrollees relative to those not enrolled in MA, rather than the causal effect of MA fitness benefits per se.

We find that the discontinuity in the probability of daily vigorous exercise around Medicare eligibility is approximately 3.9 percentage points larger among MA enrollees relative to the corresponding discontinuity in the non-MA group which includes those enrolled in TM and not in Medicare. The effects are larger among women, non-White beneficiaries, and individuals without a college degree, consistent with the hypothesis that supplemental fitness benefits may matter most for groups facing greater barriers to exercise. Event study shows no evidence of differential trends prior to age 65, while the effect is concentrated near the eligibility threshold and attenuates over the following two years. This pattern suggests that access to fitness benefits and other features of MA may generate an initial behavioral response but may not lead to sustained increases in exercise on their own.

This paper makes three main contributions. First, we contribute to the broader literature on the effects of Medicare Advantage enrollment on health care utilization and preventive

health behaviors. Prior research has examined whether MA enrollment affects preventive care use and health behaviors such as vaccination and smoking, with mixed evidence of improvement. Most closely related, Park (2023) finds that MA increases participation in any physical activity and muscle-strengthening activity. We differ in three ways. First, rather than comparing MA and TM enrollees after enrollment, we follow the same individuals across the age-65 transition, which allows us to absorb fixed differences between those who choose MA and those who do not and to test for differential trends before enrollment. Second, we study the frequency of vigorous exercise, the margin most closely linked to gym-based fitness benefits and to guideline-concordant activity, not whether individuals exercise at all. Third, our panel extends through 2022, covering the period where fitness benefits became nearly universal in MA, and allows us to trace how the response evolves after enrollment.

Second, we contribute to research on how health insurance affects health behavior. A central concern in this literature is ex ante moral hazard. By lowering the cost of illness, insurance may weaken incentives to invest in prevention. Consistent with this concern, Dave and Kaestner (2009) find that Medicare eligibility at age 65 reduces physical activity among men. However,insurance design need not push only in this direction such that benefits that lower the cost of prevention itself can offset these incentives. We provide evidence on this margin, showing that MA enrollment increases vigorous exercise at Medicare entry. More broadly, our findings show that insurers' benefit design can shape health investments beyond medical care use, a channel that has received little attention relative to effects on spending and utilization.

Third, we contribute to the literature on financial incentives for exercise. Field experiments show that paying people to exercise increases gym attendance while incentives are in place, but that effect fades once they end. (Charness and Gneezy, 2009; Acland and Levy, 2015; Royer et al., 2015; Carrera et al., 2020). These studies largely involve younger or working-age adults and short-term payments. MA fitness benefits differ in two respects such that they reach older adults at a major life transition, and they are an ongoing, in-kind subsidy that lowers the fixed cost of access, not a payment tied to each visit. We find a similar pattern among older adults. The response is concentrated at enrollment and attenuates within two years, suggesting that lowering access costs is sufficient to initiate exercise but not to sustain it.

2 Background

2.1 Medicare and Medicare Advantage

Medicare is the federal health insurance program that primarily covers adults age 65 and older, as well as some younger individuals with disabilities or end stage renal disease. Most beneficiaries become eligible at age 65, creating a major transition in insurance coverage and healthcare financing. Traditional Medicare, also called fee-for-service (FFS) Medicare, consists of Part A, which covers inpatient hospital services, and Part B, which covers outpatient services. Beneficiaries may receive outpatient prescription drug coverage through a separate Part D plan and may purchase a Medigap policy to reduce cost-sharing exposure. Traditional Medicare generally allows beneficiaries to obtain services from any participating provider, but it does not include a comprehensive annual out-of-pocket maximum and does not routinely cover several additional services that older adults may commonly use, such as most dental, vision, hearing, and fitness services (Centers for Medicare & Medicaid Services, 2026b).

Medicare Advantage (MA), also known as Medicare Part C, is a privately administered alternative to Traditional Medicare. Individuals who enroll in MA can receive Medicare Part A and Part B benefits, but those benefits are delivered through a private health plan that receives risk-adjusted, capitated payments from the federal government. Most MA plans also incorporate Part D prescription drug coverage. Unlike Traditional Medicare, MA plans commonly require provider networks and plan-specific cost-sharing arrangements. They are also required to establish an annual limit on beneficiaries' out-of-pocket spending for Part A and Part B services. Thus, the choice between Traditional Medicare and Medicare Advantage involves a tradeoff between relatively broad provider choice under Traditional Medicare and the more managed benefit structure, financial protections, and additional services that MA plans may offer (Centers for Medicare & Medicaid Services, 2026b; Medicare Payment Advisory Commission, 2025).

This payment system gives MA plans an important role in benefit design. Each plan submits a bid reflecting the projected cost of providing Medicare-covered Part A and Part B services in a county. The bid is compared with an administratively determined county benchmark. When a plan's bid falls below the benchmark, a portion of the difference is returned to the plan as a rebate. Plans must use these rebate dollars to provide additional value to beneficiaries through lower premiums, reduced cost sharing, enhanced Part D coverage, or supplemental benefits. Thus, the amount available for supplemental benefits varies

across plans and markets according to plan bids, county benchmarks, quality ratings, and other features of the MA payment system (Medicare Payment Advisory Commission, 2025). This institutional structure makes supplemental benefits a prominent dimension where MA plans compete for enrollment.

MA has become a central component of the Medicare program. As of 2026, approximately 35.2 million people, representing 55 percent of eligible Medicare beneficiaries, are enrolled in an MA plan (Freed et al., 2026b). MA enrollment is voluntary, and individuals may select plans on the basis of premiums, provider networks, prescription drug coverage, health status and preferences, expected healthcare use, and the perceived value of supplemental benefits. This selection is important for the empirical analysis because beneficiaries who choose MA may differ systematically from those who enroll in Traditional Medicare or no Medicare at all.

2.2 Supplemental Benefits in Medicare Advantage

MA plans must cover all medically necessary services covered by Medicare Part A and Part B, but they may also offer benefits beyond the Traditional Medicare package. These supplemental benefits can be grouped into several broad categories. Plans may reduce beneficiary cost sharing for Medicare-covered services, and they may also use rebates to reduce Part B or Part D premiums. Furthermore, plans may enhance prescription drug coverage and provide non-Medicare services such as routine dental care, eye examinations and eyeglasses, hearing examinations and hearing aids, meals after hospitalization, transportation to medical appointments, remote access technologies, in-home support, acupuncture, and fitness benefits (Medicare Payment Advisory Commission, 2025; Freed et al., 2026a). Some plans, particularly special needs plans, may also offer benefits intended to address health-related social needs, subject to federal eligibility and targeting requirements.

Fitness coverage is one of the most widespread MA supplemental benefits. Traditional Medicare does not cover a gym membership or a general fitness program, whereas most individual MA plans include these services as part of their supplemental benefit package (Centers for Medicare & Medicaid Services, 2026a). Fitness benefits became increasingly common among MA plans, with 61 percent of MA enrollees in plans offering enhanced fitness coverage in 2012 (Neuman and Jacobson, 2018) and 98 percent of enrollees in individual MA plans in plans offering fitness benefits in 2022 (Fuglesten Biniek et al., 2022).

In practice, MA fitness benefits generally provide flexible access rather than a fixed number of exercise sessions. Beneficiaries may use participating gyms and fitness centers, attend instructor-led group classes including strength, balance, and yoga classes, and access live or on-demand exercise programs. For instance, SilverSneakers provides access to thousands of participating fitness locations as well as in-person, community-based, live online, and on-demand classes, although specific facilities, classes, and amenities vary across locations (SilverSneakers, 2026). This allows beneficiaries to choose when and how often to participate rather than follow a predetermined exercise schedule.

Importantly, the Medicare enrollment process begins before coverage becomes active. For individuals newly eligible at age 65, the initial enrollment period begins three months before they turn 65. During this period, beneficiaries can navigate and compare available insurance coverage options and may request enrollment in an MA plan before Medicare coverage begins. If enrollment is requested before Medicare Part A and Part B coverage starts, MA coverage generally begins on the same date as Medicare coverage (Centers for Medicare & Medicaid Services, 2026b). Thus, although the fitness benefit itself becomes available with plan coverage, beneficiaries may learn about the benefit and plan for its use beforehand. This provides a plausible channel through which some behavioral adjustment could begin shortly before the Medicare eligibility transition.

Fitness benefits may influence exercise behavior through several mechanisms. The most direct mechanism is a reduction in the financial barrier to exercise. A free or subsidized membership eliminates recurring fees that may otherwise deter participation, particularly among beneficiaries with limited disposable income. The benefit may also reduce information and search costs by directing beneficiaries to participating facilities and organized programs. Group classes can provide instruction, scheduling, and social interaction, while access to multiple facilities may reduce travel and convenience barriers. The inclusion of fitness coverage in a health plan may additionally increase the salience of physical activity at the time of Medicare enrollment.

However, benefit availability alone may not produce sustained participation. Survey evidence suggests that actual use of gym and fitness benefits is substantially lower than the share of beneficiaries enrolled in plans that offer them, and administrative data on supplemental-benefit use remain incomplete (Medicare Payment Advisory Commission, 2025). Beneficiaries may be unaware of the benefit, lack conveniently located participating facilities, face transportation or mobility barriers, or enroll but attend infrequently. These gaps between

availability, take-up, and sustained use are important for interpreting our estimates because we observe MA enrollment but not actual fitness-program participation.

Fitness benefits may also affect plan selection because such benefits are likely to be more attractive to individuals who are already relatively healthy, mobile, or interested in exercise. Consistent with this, Cooper and Trivedi (2012) find that the introduction of a fitness benefit was associated with enrollment by beneficiaries with more favorable self-reported health. Therefore, naive comparisons between fitness-program users and nonusers may confound the effect of the program with preexisting differences in health, motivation, and exercise preferences.

2.3 Exercise Behavior, Barriers, and Financial Incentives

Whether MA fitness benefits translate into greater physical activity depends on the barriers that prevent older adults from exercising in the first place. Exercise produces health benefits that accumulate over time, but it also imposes immediate costs in the form of time, cost, effort, planning, equipment, and transportation. It may additionally involve discomfort, fatigue, embarrassment, or fear of injury. Thus, individuals make exercise decisions by weighing immediate and relatively certain costs against health benefits that are delayed and difficult to observe.

These barriers can be particularly substantial for older adults. Prior studies identify physical limitations, pain, fear of falling, chronic conditions, competing priorities, lack of motivation, limited social support, and problems with access as recurring barriers to physical activity among older adults (Franco et al. (2015)). In addition, aging-related health limitations, inadequate professional guidance, and the absence of accessible exercise opportunities can be significant barriers to exercise (Bethancourt et al., 2014). Transportation difficulties, unsafe or poorly maintained neighborhoods, and unfavorable weather can further increase the cost of exercise.

Exercise behavior is also shaped by psychological and social factors. Self-efficacy, perceived competence, enjoyment, prior exercise experience, social support, and beliefs about the benefits and risks of activity are consistently associated with participation (Bauman et al., 2012; Koeneman et al., 2011). Older adults may avoid vigorous or moderate physical activity because they are uncertain about which activities are safe or appropriate for their

health conditions. Advice from a physician or exercise professional may reduce these informational barriers, while supervised or group-based programs may reduce fear and increase confidence and participation. Social interaction can also provide an additional benefit of participation, particularly for retired or socially isolated adults.

Behavioral economics provides another explanation for persistent inactivity. Individuals may place disproportionate weight on the immediate costs of exercise relative to its delayed health benefits, a pattern commonly described as present bias. An individual may plan to exercise in the future but repeatedly postpone the activity when the time to exercise arrives. Time constraints, uncertainty about future schedules, and inaccurate beliefs about future motivation may reinforce this. Thus, exercise may remain below the level an individual would prefer over the long run even when the individual understands its potential health benefits.

Evidence from gym membership and exercise interventions is consistent with these behavioral frictions. DellaVigna and Malmendier (2006) document that consumers choose monthly gym contracts that are more expensive than paying per visit given their realized attendance and that they delay canceling memberships they rarely use. These patterns are consistent with overoptimism about future attendance. Similarly, individuals may overpredict future gym attendance, reflecting self-control and habit formation problems (Acland and Levy, 2015).

A growing experimental literature examines whether financial incentives can overcome these barriers by making the rewards to exercise more immediate. Temporary financial incentives substantially increase gym attendance during the incentive period and can produce some persistence after payments end (Charness and Gneezy, 2009). In addition, an exercise intervention can generate post-intervention attendance consistent with habit formation (Acland and Levy, 2015). In contrast, a short-term incentive alone may produce relatively small lasting changes, while allowing participants to place their own money at risk through a commitment contract generates more durable effects (Royer et al., 2015). Taken together, existing evidence suggests that incentives can encourage the initiation of exercise, but sustained participation depends on whether the intervention changes routines, habits, beliefs, or commitment.

The distinction between initiating and maintaining exercise is particularly relevant for Medicare Advantage fitness benefits. A subsidy or new insurance benefit may encourage an

individual to visit a gym or attend an exercise class initially, but sustained participation requires exercise to become compatible with daily routines and for its perceived benefits to continue to exceed its costs (Koeneman et al., 2011). Repeated participation may generate skills, familiarity, social relationships, and habits that lower the future cost of exercise. Alternatively, participation may decline when health, caregiving, work, transportation, or motivational constraints reemerge.

Furthermore, the design of the incentive matters. An immediate payment tied to completed exercise directly offsets the present effort cost, whereas a fitness benefit primarily reduces the fixed financial and access costs of participation. Thus, such benefits may generate larger responses among individuals for whom price, information, or access is an important binding constraint and smaller responses among those primarily constrained by mobility, time, transportation, or low motivation. At the same time, an in-kind fitness benefit may provide advantages beyond a price reduction. It can remain available throughout the plan year, direct beneficiaries toward participating facilities and organized programs, and facilitate access to instructors, group classes, and social interaction. Medicare Advantage fitness benefits can therefore be viewed as combining elements of a price subsidy, information intervention, and access intervention.

3 Data

The main data source we use is the Health and Retirement Study (HRS), a nationally representative longitudinal survey of older adults in the United States conducted biennially by the University of Michigan. We use survey waves from 2012 to 2022, providing detailed information on insurance coverage, demographics, labor market status, and self-reported physical activity. As our empirical strategy exploits the Medicare eligibility threshold at age 65, a key variable in the analysis is continuous age. Thus, we construct a precise age by using the respondent's birth year and month with the survey year and month. This allows us to implement the difference-in-discontinuities design with age as the running variable centered at 65.

The primary outcome is vigorous physical activity based on the following HRS question: *"How often do you take part in sports or activities that are vigorous, such as running or jogging, swimming, cycling, aerobics or gym workout, tennis, or digging with a spade or shovel?"* Respondents report one of five levels ("Every day", "More than once a week", "Once a week", "One to three times a month", or "Hardly ever or never"). We construct

the main outcome as a binary indicator equal to one if the respondent reports vigorous exercise every day, and zero otherwise. This is an intensive margin of physical activity. As shown in Table 1, only about 3 percent of respondents in the analytic sample report daily vigorous exercise. We focus on this threshold for both policy and measurement reasons. First, daily vigorous activity is the HRS category most closely aligned with federal guideline concordant physical activity. The 2018 *Physical Activity Guidelines for Americans* recommend that older adults engage in 75 - 150 minutes per week of vigorous-intensity aerobic activity or 150 - 300 minutes per week of moderate-intensity aerobic activity, along with muscle-strengthening and multicomponent exercise (U.S. Department of Health and Human Services (2018)). As the HRS reports exercise frequency but not minutes, daily vigorous exercise provides the clearest available proxy for respondents who are likely to meet or exceed the federal guideline of vigorous-intensity physical activity.

In addition, daily vigorous exercise corresponds closely to the type of structured, gym-based activity that Medicare Advantage fitness benefits are designed to encourage. The HRS question explicitly includes activities such as running, swimming, cycling, aerobics, gym workouts, and tennis, all of which could be affected by free or subsidized access to fitness facilities. Although daily vigorous exercise is a demanding outcome, this feature strengthens the interpretation of the result that detecting a significant effect on such a low-prevalence and intensive margin suggests that MA-linked fitness benefits may shift some older adults into a substantively meaningful level of preventive health behavior. Thus, we interpret the main estimate as evidence on a high-value, federal guideline-concordant behavioral margin rather than as a measure of all physical activity. In Appendix Table 4A, we additionally examine broader binary cutoffs and a workout-frequency score to assess whether the result is sensitive to the specific daily-exercise threshold.

In the main analysis, we define insurance groups using observed Medicare coverage histories. The MA group consists of respondents who are observed in Medicare Advantage but never in Traditional Medicare during the sample period, while the comparison group includes respondents observed in Traditional Medicare or never enrolled in Medicare at the time of the survey. In addition, we exclude respondents who switch between Medicare Advantage and Traditional Medicare during the sample period. This restriction maintains mutually exclusive insurance groups and avoids assigning individuals to a single group when their observed coverage type changes over time. To ensure balanced identification on both sides of the eligibility threshold, we restrict the samples to respondents who are observed in at least one wave before and one wave after age 65. Including individuals who are only observed prior

to age 65 would contribute observations exclusively to the left side of the cutoff, introducing asymmetry in the local comparison and potentially biasing the discontinuity estimate. This restriction ensures that the DiDC estimate is identified from within-person variation across the eligibility threshold rather than from cross-sectional comparisons between individuals who happen to fall on only one side of age 65. In addition, we drop the year 2020 as the COVID-19 pandemic substantially disrupted physical activity opportunities and health behaviors, including widespread gym closures that may have directly affected access to fitness services. We separately assess the sensitivity of our results to including 2020 observations in the robustness analysis.

Table 1 reports pre-65 baseline characteristics for the estimation sample. Among respondents in the MA group, 59.8 percent are female, 49.0 percent are non-Hispanic White, and 26.6 percent have a college degree or higher. The corresponding proportions in the Non-MA group are 55.2 percent, 59.6 percent, and 34.1 percent. Married or partnered respondents account for 65.4 percent of the MA group and 70.7 percent of the Non-MA group, while 38.2 percent and 37.1 percent, respectively, live with children. At baseline, 10.2 percent of the MA group and 7.3 percent of the Non-MA group are already enrolled in Medicare. Daily vigorous exercise is relatively uncommon in both groups, with 2.6 percent of respondents in the MA group and 3.4 percent of respondents in the Non-MA group reporting vigorous exercise every day. The mean number of chronic conditions is 1.98 in the MA group and 1.87 in the Non-MA group, while average household income is approximately 78 thousand and 93 thousand, respectively. Overall, these statistics indicate modest baseline differences in demographic, socioeconomic, health, and physical activity characteristics across the two groups prior to age 65.

4 Empirical Strategy

A central challenge is that both Medicare Advantage and Traditional Medicare enrollment are endogenous choices. Individuals who select MA over TM or no Medicare may differ systematically in their health preferences, socioeconomic status, underlying health conditions, and baseline physical activity. A direct comparison of exercise behavior across insurance groups therefore conflates the behavioral effect associated with MA coverage with selection on unobserved characteristics.

We address this challenge using a difference-in-discontinuities (DiDC) design following Grembi et al. (2016). This method exploits the exogenous timing of Medicare eligibility at

age 65 and compares the discontinuity in exercise behavior among individuals in the MA group with the corresponding discontinuity among individuals in the non-MA comparison group. Medicare eligibility produces a sharp increase in Medicare coverage and MA enrollment at age 65. However, other factors that may affect exercise, such as retirement and Social Security claiming, may also change around the same threshold. A standard regression discontinuity design would therefore conflate the MA-specific behavioral response with other age-65 shocks, while a traditional difference-in-difference design would not directly isolate the discontinuous change occurring at the eligibility threshold. The DiDC framework addresses both limitations by differencing the age-65 discontinuity experienced by the MA group from the corresponding discontinuity experienced by the non-MA group. Under the identifying assumption that other age-65 shocks affect both groups similarly, the remaining differential discontinuity captures the MA-specific behavioral response at the eligibility threshold.

Formally, the DiDC estimand is:

$$\begin{aligned}\text{DiDC} = &\Big[E(Workout \mid Post65,\, MA{=}1) - E(Workout \mid Pre65,\, MA{=}1)\Big] \\ &- \Big[E(Workout \mid Post65,\, MA{=}0) - E(Workout \mid Pre65,\, MA{=}0)\Big]. \qquad (1)\end{aligned}$$

To clarify what this estimand recovers, we decompose the within-group differences for each insurance group as follows :

$$\begin{aligned}\Delta^{MA} &= \left(Workout^{MA}_{65,\text{post}} - Workout^{MA}_{65,\text{pre}}\right) \\ &= \underbrace{\text{Universal 65 shock}}_{\text{common to all}} + \text{MA-specific selection} + \text{MA fitness benefit} + \underbrace{\cancel{\text{Time-invariant selection}}}_{\text{fixed traits}}\end{aligned}$$

$$\begin{aligned}\Delta^{\text{non-MA}} &= \left(Workout^{\text{non-MA}}_{65,\text{post}} - Workout^{\text{non-MA}}_{65,\text{pre}}\right) \\ &= \underbrace{\text{Universal 65 shock}}_{\text{common to all}} + \text{Non-MA-specific selection} + \underbrace{\cancel{\text{Time-invariant selection}}}_{\text{fixed traits}}\end{aligned}$$

Within-group differencing cancels time-invariant selection, and taking the difference across groups eliminates the universal age-65 shock common to both groups :

$$\text{DiDC} = \Delta^{MA} - \Delta^{\text{non-MA}} = \text{MA fitness benefit} + (\text{MA-specific selection} - \text{Non-MA-specific selection})$$

The DiDC estimand therefore removes confounders common to both groups at age 65 as

well as time-invariant individual differences in exercise preferences. However, the remaining threat to identification is the possibility that MA and non-MA enrollees already exhibit different exercise trajectories before age 65. To assess this, we perform an event study to check differential pre-trends in exercise behavior prior to age 65.

4.1 Difference-in-Discontinuity Specification

We estimate the following reduced-form equation as our main specification:

$$\begin{aligned} Y_{it} = \alpha &+ \beta\,(\text{Post}_{it} \times MA_i) + \gamma_1\,\text{Post}_{it} + \gamma_2\,MA_i \\ &+ f(Age_{it}) + \text{Post}_{it}\,f(Age_{it}) + MA_i\,f(Age_{it}) \\ &+ (\text{Post}_{it} \times MA_i)\,f(Age_{it}) + \boldsymbol{\delta}^\top X_{it} + \mu_i + \tau_t + \varepsilon_{it}, \end{aligned} \tag{2}$$

where Y_{it} is a binary indicator equal to 1 if individual i reports daily vigorous exercise at time t, and 0 otherwise. Post_{it} equals 1 if $Age_{it} \geq 65$ and 0 otherwise. MA_i equals 1 for individuals ever observed in Medicare Advantage during the study period and 0 for individuals in the non-MA comparison group. $f(Age_{it})$ is a local-linear function of age, estimated separately on each side of the cutoff and allowed to differ by MA status. X_{it} includes time-varying controls including health conditions, marital status, co-residence with children, and total household income. Health conditions are the sum of indicators for whether a doctor has ever told respondents that they had any of the conditions including high blood pressure, diabetes, cancer, lung disease, heart disease, stroke, psychiatric problems and arthritis. μ_i and τ_t denote individual and year fixed effects, respectively, which absorb time-invariant unobservables and common aggregate shocks. Standard errors are clustered at the individual level.

The coefficient of interest is β, which captures the differential discontinuity at age 65 in the probability of daily vigorous exercise for MA enrollees relative to non-MA individuals. Under the identifying assumption that both groups would have experienced similar discontinuities in exercise at age 65 absent MA-specific fitness benefits, β recovers the reduced-form causal effect of MA enrollment on exercise behavior at the eligibility threshold. The local-linear age controls on each side of the cutoff, interacted with both Post_{it} and MA_i, flexibly absorb smooth age trends in exercise that may differ across groups, ensuring that β is identified from the discontinuous discontinuity at the threshold rather than extrapolation from age trends.

We select the estimation bandwidth using the data-driven procedure of Calonico et al. (2014), which selects the bandwidth by minimizing the asymptotic mean squared error of the local polynomial estimator. This approach balances bias and variance in estimation near the threshold without relying on an artificial bandwidth choice. The resulting data-driven bandwidth is approximately 3.5 years. To assess sensitivity, we report estimates across a range of alternative bandwidths and present the full bandwidth sensitivity plot.

To assess whether the two groups exhibit detectable differential trajectories before age 65 and to describe how the MA–non-MA difference evolves after eligibility, we estimate an event-study specification. Let b_{it} index one-year age bins relative to age 65, so that $b_{it} = 0$ corresponds to the eligibility year and $b_{it} = -1$ serves as the omitted reference category which is a year before Medicare eligibility (age 64) :

$$\begin{aligned} Y_{it} = \alpha &+ \sum_{k \neq -1} \beta_k \mathbb{1}\{b_{it} = k\}\, MA_i + \sum_{k \neq -1} \phi_k \mathbb{1}\{b_{it} = k\} \\ &+ g(Age_{it}) + \mathrm{Post}_{it}\, g(Age_{it}) + MA_i\, g(Age_{it}) + (\mathrm{Post}_{it} \times MA_i)\, g(Age_{it}) \\ &+ \boldsymbol{\delta}' X_{it} + \mu_i + \tau_t + \varepsilon_{it}. \end{aligned} \tag{3}$$

The coefficients β_k measure the age-bin-specific difference in the probability of daily vigorous exercise between the MA and non-MA groups, relative to the corresponding difference in the omitted year immediately before Medicare eligibility (age 64). The pre-65 coefficients are used to assess whether there are detectable differential exercise trajectories before age 65 and the post-65 coefficients describe how the MA–non-MA difference evolves after the eligibility threshold.

5 Results

5.1 Discontinuities in Workout Behavior

We begin by presenting non-parametric evidence on exercise behavior around the Medicare eligibility threshold. Figure 1A and Figure 1B plot three-month binned means of probability of daily vigorous exercise, with linear fits estimated on each side of age 65 separately for individuals in the Medicare Advantage group and those in the non-MA group. Prior to age 65, the probability of daily vigorous exercise is lower in the MA group than non-MA group but, exactly at the eligibility threshold, MA enrollees exhibit a discrete increase in

daily vigorous exercise probability, whereas non-MA enrollees do not. This visual discontinuity anticipates the parametric DiDC estimates and suggests that MA-linked fitness benefits may trigger behavioral responses.

Notably, the rise in daily vigorous exercise among the MA group in Figure 1A appears to begin slightly before, rather than precisely at, age 65. This pattern is consistent with the institutional timing of MA enrollment discussed in Section 2. As the initial enrollment period opens three months before a beneficiary turns 65, individuals who intend to enroll in MA may learn about supplemental fitness benefits and begin adjusting their exercise behavior in anticipation of coverage, rather than only after coverage formally begins. Such anticipatory adjustment would imply that the sharp age-65 cutoff slightly understates the full behavioral response to MA enrollment, since part of the response may occur just before the nominal threshold. However, we note that the event-study estimates in Appendix Figure A1 do not detect statistically significant differential pre-trends, so this pattern should be read as suggestive and descriptive rather than as evidence of a distinct pre-period effect.

5.2 Difference-in-Discontinuities Results

Figure 2 presents the discontinuity in Medicare Advantage enrollment at the Medicare eligibility cutoff. Panel B restricts the sample to respondents classified as MA-only and shows that MA enrollment rises from roughly 10 - 15 percent immediately before age 65 to more than 80 percent immediately after the threshold. This pattern indicates that most respondents in the MA-only group gain MA coverage around Medicare eligibility rather than already being enrolled before age 65. Consistent with the institutional setting, Medicare Advantage enrollment increases sharply at age 65, indicating that Medicare eligibility generates substantial variation in MA enrollment. This pattern supports the empirical relevance of the age-65 cutoff for the DiDC design.

Table 2 reports reduced-form DiDC estimates of the differential age-65 discontinuity in the probability of daily vigorous exercise for the MA group relative to the non-MA group across several bandwidth choices. Our preferred specification uses the MSE-optimal bandwidth following Calonico et al. (2014). In our setting, the selected reference bandwidth is approximately 3.5 years, allowing the local estimation window to be determined by the statistical properties of the data rather than by an arbitrary bandwidth choice.

At this data-driven bandwidth, the estimated differential discontinuity is 0.039, corresponding to a 3.9 percentage point increase in the probability of daily vigorous exercise for the MA group relative to the corresponding age-65 change in the non-MA group. This estimate should not be interpreted as the difference between the raw pre- and post-65 means reported in Table 2. Those means average all observations within the selected bandwidth, whereas the regression estimates the discontinuous change at the age-65 threshold after accounting for group-specific local age trends, individual fixed effects, year fixed effects, and observed covariates. The estimate therefore implies approximately four additional daily exercisers per 100 MA individuals at the threshold, relative to the counterfactual change represented by the non-MA group.

To assess sensitivity to the choice of local window, Panel B of Table 2 reports estimates using narrower and wider bandwidths around the cutoff, and Figure 3 plots the corresponding point estimates and 95% confidence intervals across bandwidths. The estimates are noisier at very narrow bandwidths, reflecting limited precision in a small local sample, but remain positive and broadly stable across bandwidths between 2.5 years and 4.25 years. This pattern indicates that the main result is not driven by a single bandwidth choice.

As an additional diagnostic to check differential pre-trends, Appendix Figure A1 reports event-study estimates around age 65. The pre-65 coefficients are statistically insignificant, providing no evidence of differential exercise trends between the MA and non-MA groups before Medicare eligibility. At age 65, the estimated MA–non-MA differential rises by approximately 3.5 percentage points. The estimates in subsequent age bins are generally smaller and imprecisely estimated. This pattern descriptively highlights the attenuation following the initial age-65 response rather than a clearly sustained effect. However, as enrolling in MA and TM are both endogenous choices, the post-65 coefficients are not interpreted as causal dynamic treatment effects. Instead, they describe how the conditional MA–non-MA exercise differential evolves after Medicare eligibility.

6 Heterogeneity Analysis

We examine whether the reduced-form association between MA enrollment and daily vigorous exercise differs across demographic subgroups in three dimensions including Gender, Race/Ethnicity (White and non-White), Educational attainment (College degree and No College degree). For each subgroup analysis, we estimate the same reduced-form DiDC specification used in the main analysis and report the DiDC estimates using data-driven

bandwidths following Calonico et al. (2014).

The heterogeneity results presented in Figure 4 underscore the meaningful variations in behavioral responses to Medicare Advantage (MA) fitness benefits at age 65. Female beneficiaries experience an increase of approximately 5 percentage points in the probability of exercising daily, while the corresponding estimate for males is smaller and statistically insignificant. The difference by race/ethnicity is particularly pronounced, as Non-White beneficiaries experience a large increase of approximately 8 percentage points. We do not detect any significant impact among White beneficiaries. Educational differences mirror this pattern as well. College-educated respondents show small and statistically insignificant effects, while non-college educated seniors show statistically significant increases of roughly 5 percentage points. Overall, the estimates are larger among women, non-White beneficiaries, and beneficiaries without a college degree.

These patterns suggest that the estimated behavioral response to MA enrollment may be larger among populations that face greater barriers to physical activity. However, the subgroup estimates should not be interpreted as direct evidence that MA fitness benefits reduce disparities as the analysis neither observes fitness-benefit uptake nor directly estimates changes in inequality. Instead, the distribution of the estimates is consistent with the possibility that MA-related changes are more prominent among groups facing greater financial, informational, or access barriers.

7 Robustness Checks

To assess the validity of our results, we perform a comprehensive set of robustness checks that address potential concerns about our main findings. These robustness checks assess whether the estimated differential discontinuity at age 65 is sensitive to model specification, local age-related dynamics, irregularities near the cutoff, alternative outcome definitions, or the exclusion of COVID-era observations.

7.1 Alternative Outcomes

We estimate the same DiDC specification using several alternative outcomes that may contemporaneously change around Medicare eligibility and potentially affect workout frequencies including retirement, private insurance coverage, moderate physical activity, and changes in health conditions. The purpose of these robustness checks is to rule out the

possibility that the estimated physical activity discontinuity reflects broader life-cycle transitions around age 65. Consistent with expectations, retirement does not show a meaningful differential discontinuity at age 65, as shown in Table 3. As an additional robustness check, we control for retirement status in the main difference-in-discontinuities specification. The estimated coefficient remains statistically significant and decreases slightly from 0.039 to 0.035, suggesting that changes in retirement status are less likely to explain the observed increase in daily vigorous exercise. In addition, we find a statistically significant decline in the number of private insurance plans at age 65 for the MA group relative to the non-MA group, which indicates that MA beneficiaries are not simultaneously holding private coverage that could independently encourage exercise. The decline in private coverage suggests that changes in other private insurance coverage are unlikely to account for the estimated differential in vigorous exercise.

To further assess whether the estimated MA effect reflects an increase in overall physical activity rather than a mechanism linked to structured fitness benefits, we examine a separate outcome measuring daily engagement in moderate physical activities. We use HRS question, *"How often do you take part in sports or activities that are moderately energetic such as, gardening, cleaning the car, walking at a moderate pace,dancing, floor or stretching exercise"*. Table 3 shows that the differential discontinuity at age 65 in moderate physical activity is small and statistically insignificant. The absence of a significant effect on daily moderate activity suggests that our primary findings on vigorous physical activity are unlikely to be driven by broad shifts in activity or general health motivation triggered by Medicare eligibility. Instead, the results are consistent with a more targeted mechanism where enrollment in MA with fitness benefits primarily affects structured or vigorous exercise behaviors, such as gym-based workouts, rather than everyday moderate physical activity.

As an additional diagnostic, Appendix Figure A2 examines the discontinuity of several observable characteristics around age 65, including health conditions, marital or partnership status, co-residence with children, and household income. Most of these characteristics appear relatively smooth around the eligibility threshold, although the health condition measure shows some visual evidence of a change for the MA group. We therefore further examine whether health conditions exhibit a differential discontinuity between the MA and non-MA groups. As reported in column (4) of Table 3, the estimated differential discontinuity in health conditions is small and statistically insignificant, providing no evidence of a differential change in health conditions at age 65 between the two groups.

We also examine whether the main result extends to alternative measures of vigorous physical activity. Columns (1)–(3) of Appendix Table 4A uses progressively broader binary definitions of vigorous exercise such as exercising more than once per week, exercising at least once per week, and engaging in any vigorous exercise. The estimated differential discontinuities for these outcomes are small and statistically insignificant. These results indicate that the main finding does not extend broadly to less frequent definitions of vigorous exercise and is instead concentrated at the daily exercise margin.

Column (4) of Appendix Table 4Auses an alternative workout-frequency score that retains some information from the original survey categories. For the most parsimonious analysis, the outcome measure is coded as 7 for respondents who report vigorous activity every day, 1 for those who report activity more than once per week, once per week, or one to three times per month, and 0 for those who report no vigorous activity. The estimated differential discontinuity is 0.178 and is statistically significant at the 10 percent level. As this outcome is a frequency score rather than a binary indicator, the coefficient is interpreted in score units rather than percentage points. Taken together, the results indicate that the MA-associated increase in vigorous exercise is concentrated primarily at the daily exercise margin, with more limited evidence of an increase in overall vigorous exercise frequency.

7.2 Placebo Cutoffs and Sample Specifications

We conduct three additional robustness checks to assess whether the main DiDC estimate is driven by local irregularities or anticipatory behavior around the age-65 cutoff, by spurious age-related discontinuities, or by the exclusion of COVID-era observations. First, we estimate a donut-hole specification that excludes observations within six months on either side of age 65. This test addresses concerns that local administrative errors, reporting issues, or mechanical changes around the Medicare eligibility threshold may drive the results. Second, we estimate a placebo DiDC specification using age 64 and 66 as placebo cutoffs. As age 64 and 66 do not correspond to the main Medicare eligibility threshold, we should not observe a meaningful differential discontinuity at these ages. Third, we re-estimate the main specification including year 2020 (COVID) observations that are excluded from the main specification.

Table 4 reports the results using the reference bandwidth for each robustness exercise. The donut-hole estimate remains positive and similar in magnitude to the main estimate, suggesting that the result is not driven by administrative or reporting errors. The placebo

estimates at age 64 and 66 are both small and statistically insignificant, which supports the interpretation that the main discontinuity is specific to the true Medicare eligibility threshold. Finally, when year 2020 (COVID) observations are included, the estimate still remains positive and significant but is smaller in magnitude. This finding highlights that the main result is not mechanically driven by excluding the COVID period, during which nationwide lockdown policies and gym closures significantly disrupted access to structured exercise across both MA and non-MA groups.

7.3 Heterogeneity by Fitness Benefit Availability over Time

The proportion of Medicare Advantage which covers fitness benefits has expanded substantially during the late 2010s and early 2020s(Freed et al., 2024). They report that in 2022, 94% of individual Medicare Advantage plans offer a fitness benefit, underscoring the nearly universal availability of supplemental fitness coverage in recent years. We assess whether the estimated effect of MA enrollment is larger in later years, when fitness benefits were more widely available

For this analysis, we split the sample into an early period (2012 - 2014) and a later period (2016 - 2022). The data-driven bandwidth following Calonico et al. (2014) for the 2012 - 2014 period is 1.47 years, which yields only 630 observations and therefore substantially reduces precision. To facilitate comparison across periods, we use a bandwidth of 4.100 years, corresponding to the bandwidth used for the 2016 - 2022 period. As shown in Table 5, the estimated differential discontinuity is small and statistically insignificant in 2012 - 2014, whereas the estimate is larger and statistically significant in 2016 - 2022. These results are consistent with stronger behavioral responses in the later period, when fitness benefits were more broadly available in Medicare Advantage plans.

8 Conclusion

This paper studies whether insurance benefit design can change preventive health behavior at older ages. Using nationally representative panel data from the Health and Retirement Study from 2012 to 2022, we exploit the Medicare eligibility threshold at age 65 as a source of exogenous variation and estimate a difference-in-discontinuities design comparing MA enrollees with non-MA individuals. The design differences out age-65 shocks common to both groups, including retirement, Social Security claiming, and broader age-related changes in health behavior, while isolating the MA-specific discontinuity in daily vigorous exercise.

The results show that MA enrollment increases the probability of daily vigorous exercise at Medicare eligibility. The estimated effect is meaningful given the low baseline prevalence of daily vigorous activity among older adults. Although daily vigorous exercise is an intensive margin and does not directly measure total weekly minutes of activity, it captures a demanding, guideline-concordant preventive health behavior that is closely aligned with the structured exercise opportunities offered by MA fitness benefits. The subgroup estimates are larger among women, non-White beneficiaries, and adults without a college degree. While the analysis does not directly measure reductions in inequality, the concentration of effects among these groups suggests that supplemental fitness benefits may help reduce disparities in preventive health behaviors in later life.

One limitation is that Medicare coverage type is self-reported, and some respondents may misclassify whether they are enrolled in Medicare Advantage or Traditional Medicare. Such reporting error could introduce measurement error in our classification of the MA and non-MA groups. In addition, we do not observe actual uptake of MA supplemental fitness benefits, so our estimates should be interpreted as the reduced-form effect of MA enrollment rather than the effect of fitness-program participation.

As Medicare Advantage continues to expand, supplemental benefits are likely to play an increasingly important role in shaping the non-medical dimensions of health insurance. The findings in this paper suggest that benefit design can induce preventive health behavior among older adults. Determining whether these behavioral responses persist beyond the initial Medicare eligibility transition will require research designs capable of identifying longer-term effects.

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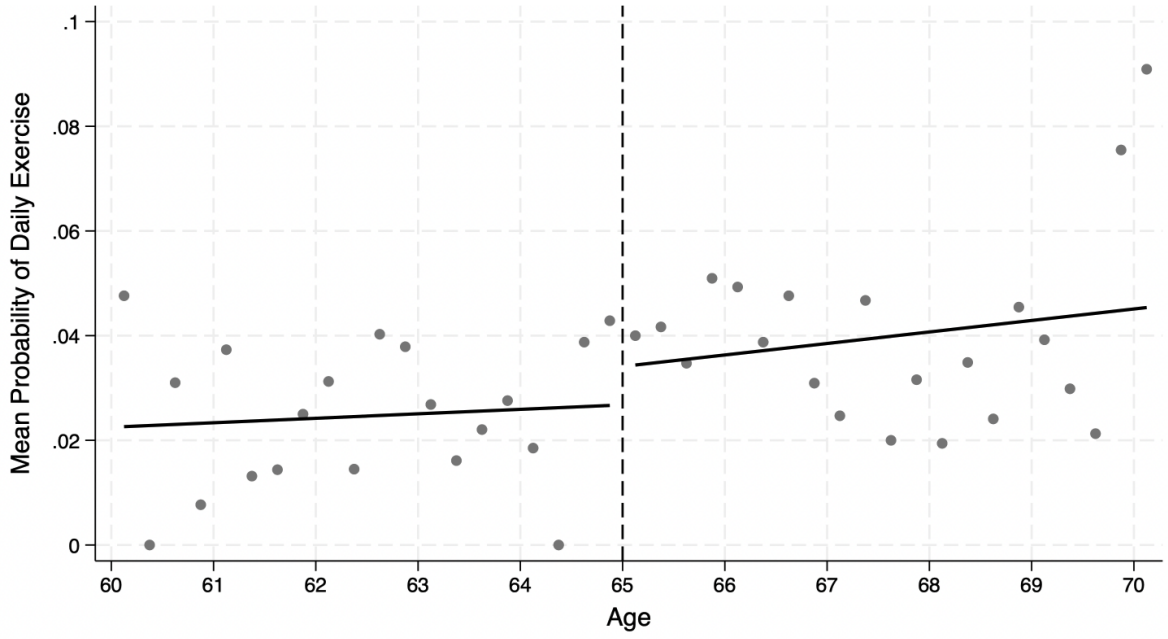
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Tables and Figures

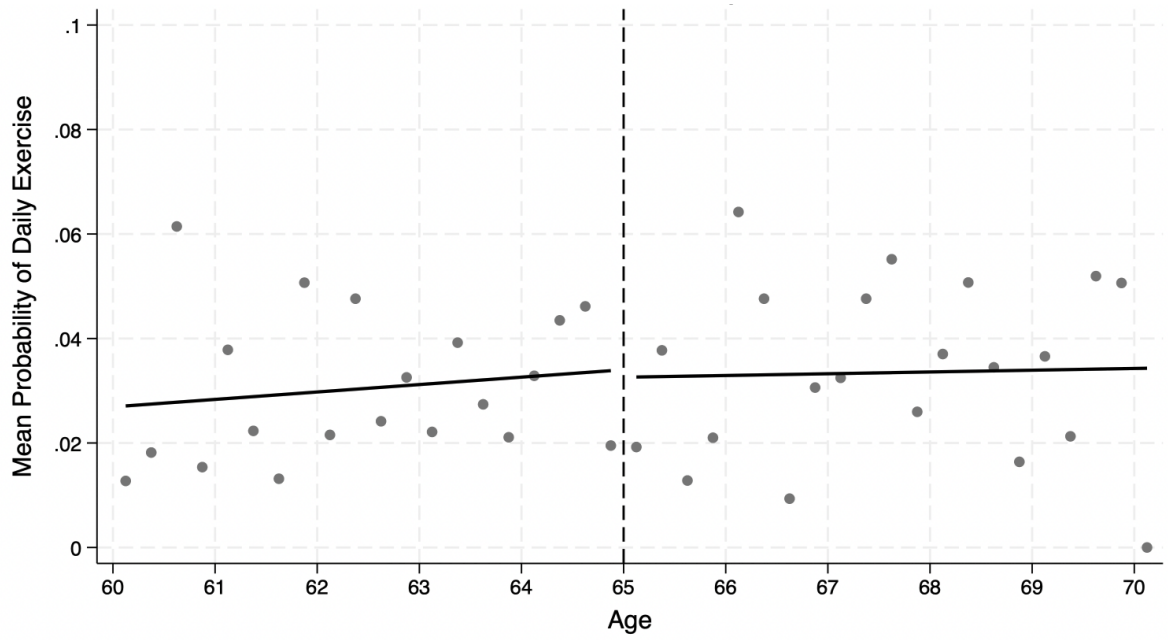
Table 1: Pre-65 Baseline Characteristics by Eventual Medicare Advantage Status

	Non-MA N(%)	MA N(%)	Total N(%)
Gender			
Male	1,016 (44.80)	590 (40.19)	1,606 (42.99)
Female	1,252 (55.20)	878 (59.81)	2,130 (57.01)
Race/Ethnicity			
Non-Hispanic White	1,349 (59.61)	718 (49.04)	2,067 (55.46)
Non-Hispanic Black	416 (18.38)	403 (27.53)	819 (21.97)
Hispanic	406 (17.94)	291 (19.88)	697 (18.70)
Other	92 (4.07)	52 (3.55)	144 (3.86)
Education			
No college degree	1,484 (65.93)	1,068 (73.40)	2,552 (68.86)
College degree or higher	767 (34.07)	387 (26.60)	1,154 (31.14)
Married or Partnered			
Yes	1,602 (70.70)	958 (65.35)	2,560 (68.60)
No	664 (29.30)	508 (34.65)	1,172 (31.40)
Living with Children			
Yes	841 (37.08)	560 (38.15)	1,401 (37.50)
No	1,427 (62.92)	908 (61.85)	2,335 (62.50)
Medicare Enrollment			
Yes	166 (7.32)	150 (10.22)	316 (8.46)
No	2,102 (92.68)	1,318 (89.78)	3,420 (91.54)
Physical Activity (Vigorous)			
Every day	77 (3.40)	38 (2.60)	115 (3.09)
>1 per week	606 (26.79)	370 (25.27)	976 (26.19)
1 per week	261 (11.54)	165 (11.27)	426 (11.43)
1–3 per month	252 (11.14)	175 (11.95)	427 (11.46)
Never	1,066 (47.13)	716 (48.91)	1,782 (47.83)
Health Conditions			
Number of chronic conditions, mean (SD)	1.87 (1.42)	1.98 (1.45)	1.91 (1.43)
Household Income			
Mean (SD), $1,000s	92.98 (135.32)	77.71 (131.12)	86.98 (133.87)
Total respondents	2,268	1,468	3,736

Notes: Counts are shown with column percentages in parentheses, except for the health condition index and household income, which are reported as means and standard deviations. Baseline is defined as the respondent's closest available interview before age 65, restricted to interviews conducted from age 60 to less than age 65. Each respondent contributes one observation. The MA group consists of respondents classified as MA-only, while the Non-MA group combines respondents classified as traditional-Medicare-only and respondents in the no-Medicare control group. Medicare status indicates whether the respondent was enrolled in Medicare at the baseline interview. The health condition index is based on RAND HRS variable and is defined as the sum of indicators for whether a doctor has ever told the respondent that they had any of the following eight conditions including high blood pressure, diabetes, cancer, lung disease, heart disease, stroke, psychiatric problems, and arthritis. Household income is reported in thousands of dollars.

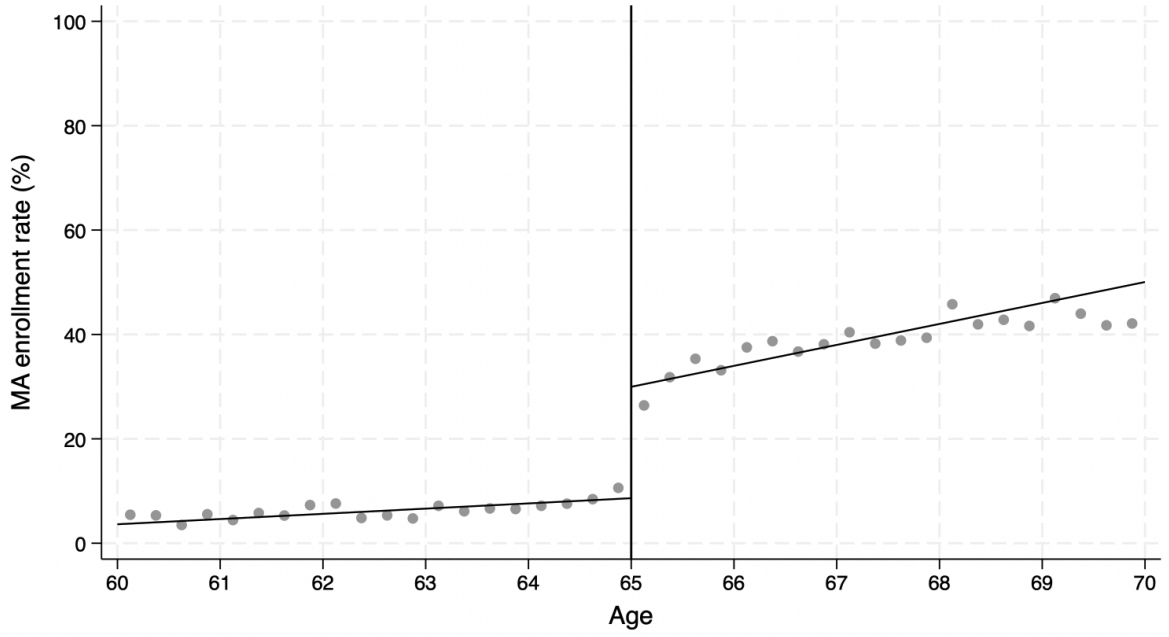


(A) MA-only group

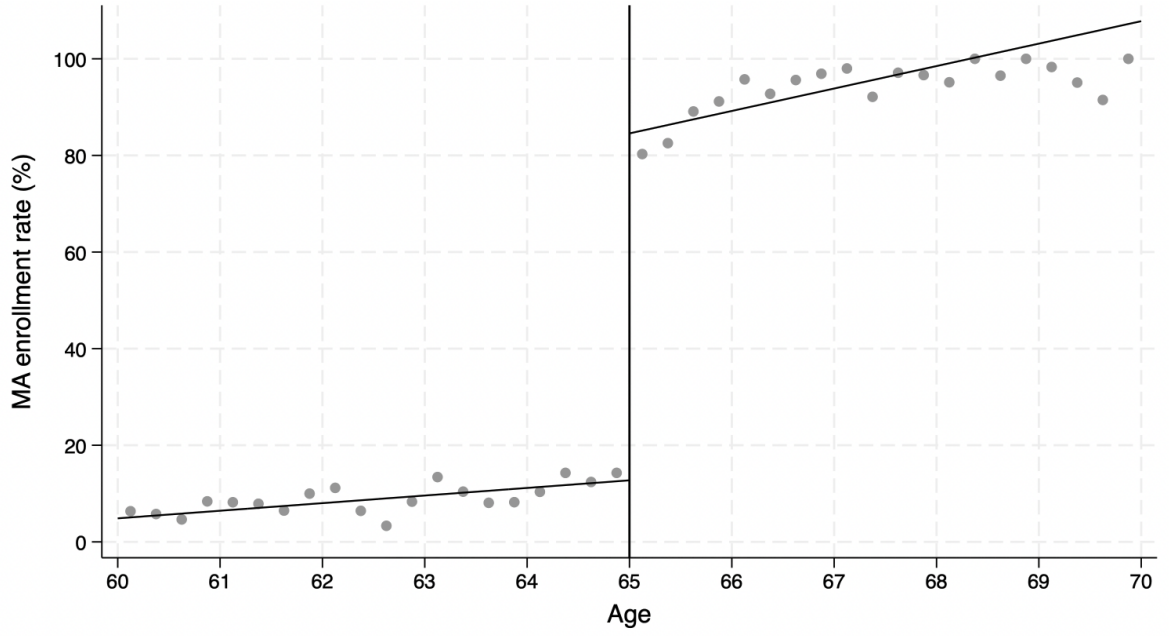


(B) Non-MA group

Figure 1: Dots show 3 months binned means of the probability of daily vigorous exercise. Solid lines show linear fits estimated separately on each side of age 65. The vertical dashed line indicates the age-65 threshold. Panel A presents respondents classified as MA-only, and Panel B presents respondents classified as Non-MA.



(A) Full sample



(B) MA-only group

Figure 2: Dots show 3-month binned means of Medicare Advantage enrollment rates. Solid lines show linear fits estimated separately on each side of age 65. The vertical solid line indicates the age 65 threshold. Panel A presents the full analytic sample, and Panel B presents respondents classified as MA-only.

Table 2: DiDC Estimates of the Differential discontinuity in Daily Exercise at Age 65

	Panel A: Main	Panel B: Alternative Bandwidths			
	(1) $b = 3.53$	(2) $b = 2$	(3) $b = 3$	(4) $b = 4$	(5) $b = 5$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$[a]	0.039**	0.034	0.046***	0.030**	0.019
	(0.015)	(0.030)	(0.017)	(0.015)	(0.012)
Pre-65 mean, MA group[b]	0.026	0.022	0.027	0.025	0.025
Post-65 mean, MA group[b]	0.037	0.039	0.039	0.038	0.038
Pre-65 mean, Non-MA group[b]	0.031	0.026	0.031	0.031	0.030
Post-65 mean, Non-MA group[b]	0.033	0.025	0.031	0.033	0.033
Observations	8,706	3,816	7,213	9,995	11,876
R^2	0.499	0.575	0.538	0.477	0.433
Individual fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓

Notes: Table reports reduced-form DiDC estimates of the differential discontinuity at age 65 in a binary indicator for daily exercise, using different bandwidth choices in years. The dependent variable equals 1 if the respondent reports daily exercise and 0 otherwise. The coefficient $\Delta^{MA} - \Delta^{\text{Non-MA}}$ captures the difference between the discontinuity at age 65 for individuals in the MA group and the corresponding discontinuity for the Non-MA comparison group. For example, the estimate of 0.039 in column (1) corresponds to a 3.9-percentage-point differential discontinuity. The one-year bandwidth is not reported because the HRS is biennial and this window leaves a small and uneven estimation sample around the cutoff. [a] Coefficients are reported in proportion units; multiplying by 100 gives percentage-point effects. [b] Means are computed within the estimation sample for each bandwidth, separately by MA status. Standard errors clustered at the individual level are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

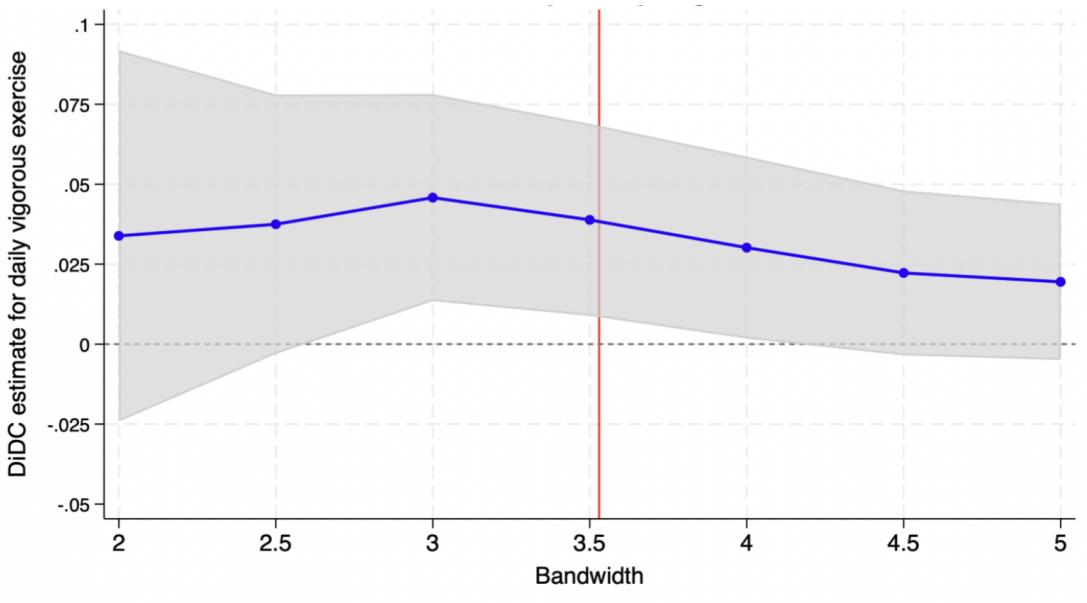


Figure 3: Bandwidth Sensitivity of the Difference-in-Discontinuity Estimate. The figure plots the estimated DiDC coefficient for daily vigorous exercise across alternative bandwidths around the age-65 cutoff. The solid line denotes the point estimate, and the shaded area denotes the 95% confidence interval. The vertical line marks the preferred data-driven bandwidth of 3.53 years.

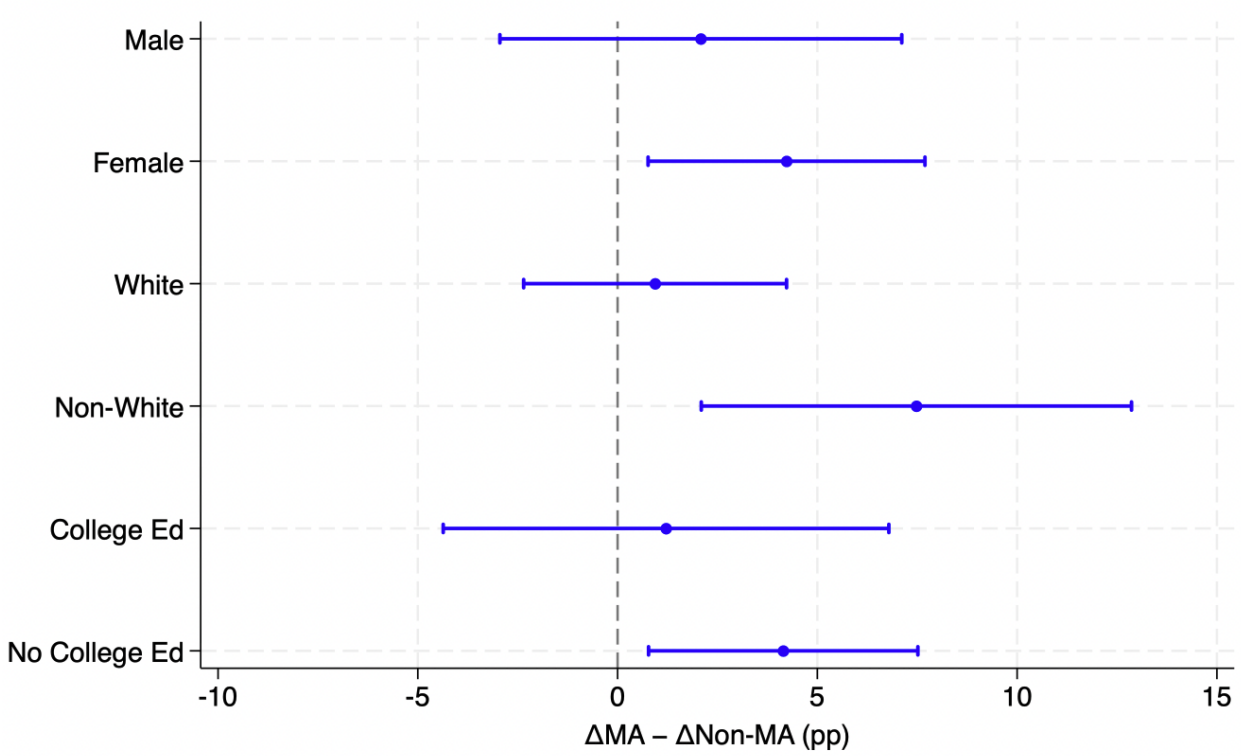


Figure 4: *Notes:* Reduced-form regression discontinuity in difference-in-discontinuities (DiDC) estimates of the differential discontinuity at age 65 in daily exercise across demographic subgroups. Points denote subgroup-specific estimates of $\Delta^{MA} - \Delta^{\text{Non-MA}}$ expressed in percentage points. Horizontal bars represent 95% confidence intervals based on standard errors clustered at the individual level. Estimates are computed using the MSE-optimal bandwidth and include individual and year fixed effects.

Table 3: DiDC Estimates of Differential discontinuities across Falsification Outcomes

	Alternative Outcomes			
	Retirement	Private plan	Moderate PA	Health Conditions
	(1)	(2)	(3)	(4)
	$b = 3.530$	$b = 3.530$	$b = 4.541$	$b = 3.530$
$\Delta^{MA} - \Delta^{\text{Non-MAa}}$	0.042	-0.382***	0.019	0.027
	(0.029)	(0.043)	(0.021)	(0.031)
Mean dependent variable	0.617	0.634	0.096	2.006
Pre-65 mean, MA group[b]	0.565	0.704	0.070	1.949
Post-65 mean, MA group[b]	0.819	0.181	0.099	2.244
Pre-65 mean, Non-MA group[b]	0.499	0.772	0.090	1.818
Post-65 mean, Non-MA group[b]	0.678	0.687	0.122	2.139
Observations	8,544	8,703	11,045	8,747
R^2	0.755	0.689	0.456	0.956
Individual fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓

Notes: This table reports difference-in-discontinuities (DiDC) estimates of the differential discontinuity at age 65 for several alternative outcomes. Each column uses the preferred bandwidth selected for the corresponding outcome. The dependent variables are retirement status, private plan coverage, daily moderate physical activity, and health condition. The coefficient $\Delta^{MA} - \Delta^{\text{Non-MA}}$ reports the differential discontinuity for the MA group relative to the non-MA group at age 65. Pre- and post-65 means are computed within the estimation sample by MA status and age group. Standard errors clustered at the individual level are reported in parentheses. All specifications include individual and year fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Placebo Cutoffs and Sample Specifications

	Donut hole	Placebo cutoffs (64, 66)		Including year 2020
	(1) $b = 3.53$	(2) $b = 4.06$	(3) $b = 4.749$	(4) $b = 5.00$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$	0.047**	0.009	-0.009	0.019*
	(0.020)	(0.013)	(0.014)	(0.011)
Pre-cutoff mean, MA group	0.024	0.025	0.027	0.023
Post-cutoff mean, MA group	0.038	0.035	0.036	0.037
Pre-cutoff mean, Non-MA group	0.031	0.028	0.028	0.030
Post-cutoff mean, Non-MA group	0.037	0.033	0.038	0.034
Observations	7,175	10,447	10,369	13,462
Adjusted R^2	0.164	0.468	0.458	0.405
Individual fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓

Notes: The table reports reduced-form DiDC robustness estimates for a binary indicator equal to one if the respondent reports exercising every day. Column (1) excludes observations within six months of age 65 and controls for health conditions, household income, living with children, and marital status. Columns (2) and (3) use placebo cutoffs at ages 64 and 66, respectively. Column (4) includes observations from 2020. Means are computed within each estimation sample. Standard errors clustered at the individual level are reported in parentheses. All specifications include individual and year fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: DiDC Estimates of the Differential discontinuity in Daily Exercise at Age 65 by Period

	Dependent Variable: Daily Exercise	
	2012–2014	2016–2022
	(1)	(2)
	$b = 4.100$	$b = 4.100$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$	0.016	0.038*
	(0.033)	(0.023)
Pre-65 mean, MA group	0.014	0.029
Post-65 mean, MA group	0.029	0.042
Pre-65 mean, Non-MA group	0.020	0.034
Post-65 mean, Non-MA group	0.022	0.037
Observations	2,576	6,045
R^2	0.533	0.538
Individual fixed effects	✓	✓
Year fixed effects	✓	✓

Notes: Columns report reduced-form DiDC estimates using a bandwidth of 4.100 years around age 65. For 2012–2014, the data-driven bandwidth was 1.47 years with only 630 observations. We use the 4.100-year bandwidth to match the specification used for the 2016–2022 period and improve comparability across periods. The coefficient $\Delta^{MA} - \Delta^{\text{Non-MA}}$ captures the difference between the discontinuity at age 65 for individuals in the MA group and the corresponding discontinuity for the non-MA comparison group. Pre- and post-65 means are calculated within the corresponding estimation sample. Standard errors clustered at the individual level are reported in parentheses. All specifications include individual and year fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A Additional Figures and Tables

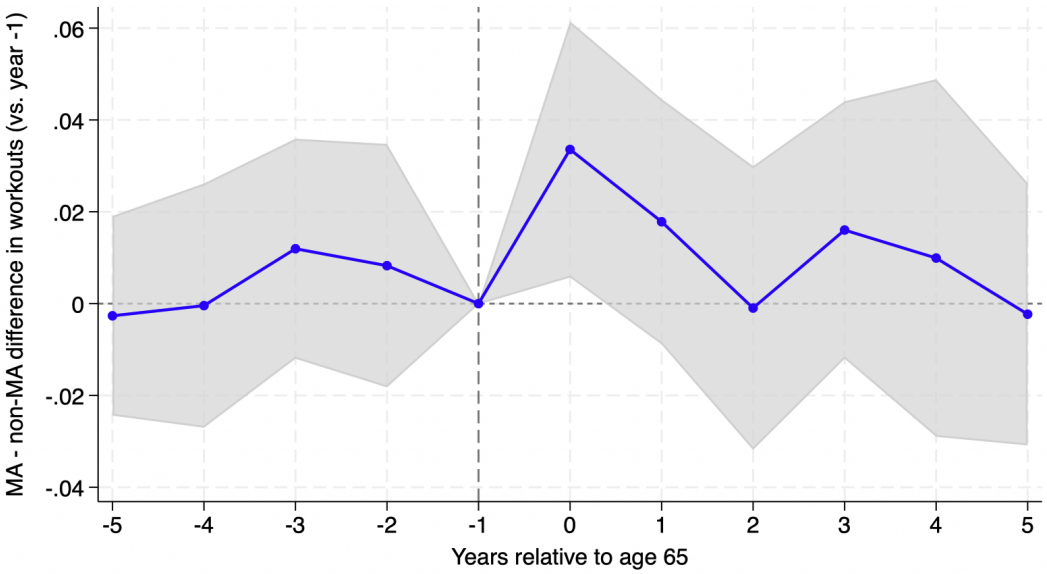
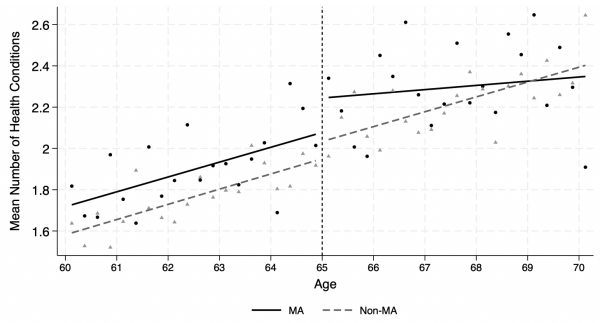


Figure A1: Event-Study Estimates of Daily Exercise Around Medicare Eligibility. Points report estimated age-bin coefficients for the difference in daily vigorous exercise between the Medicare Advantage and non-MA groups, relative to the year immediately preceding Medicare eligibility. Vertical bars show 95 percent confidence intervals. The dotted horizontal line indicates zero, and the dashed vertical line marks the omitted reference period. The figure is used primarily to assess differential pre-trends. The pre-65 estimates are statistically not significant. As MA and TM enrollment are endogenous, coefficients at and after age 65 are descriptive and are not interpreted as causal dynamic treatment effects.

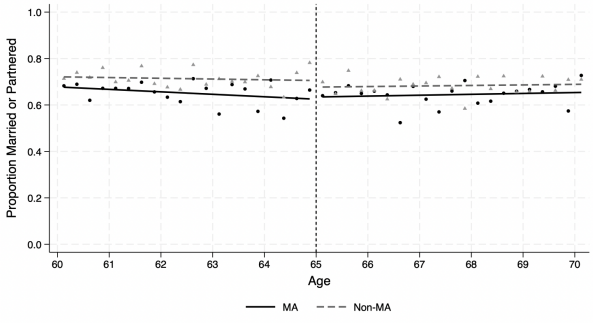
Table 4A: DiDC Estimates Across Alternative Exercise Outcomes

	Dependent Variable			
	$>$ Once/week	At least once/week	Any Exercise	Exercise Index
	(1)	(2)	(3)	(4)
	$b = 5.000$	$b = 3.799$	$b = 4.707$	$b = 3.820$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$	0.005	-0.004	-0.030	0.178*
	(0.027)	(0.036)	(0.030)	(0.098)
Pre-65 mean, MA group	0.276	0.394	0.514	0.658
Post-65 mean, MA group	0.281	0.386	0.491	0.706
Pre-65 mean, Non-MA group	0.306	0.415	0.536	0.711
Post-65 mean, Non-MA group	0.279	0.393	0.505	0.705
Observations	11,876	9,405	11,297	9,405
R^2	0.622	0.667	0.658	0.557
Individual fixed effects	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓
Covariates	✓	✓	✓	✓

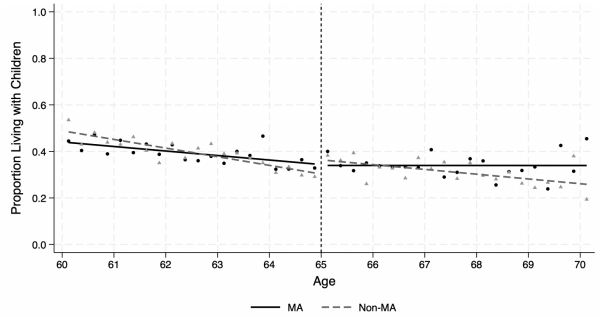
Notes: This table reports reduced-form difference-in-discontinuities (DiDC) estimates across alternative definitions of vigorous exercise. The coefficient $\Delta^{MA} - \Delta^{\text{Non-MA}}$ captures the differential discontinuity at age 65 for the MA group relative to the non-MA comparison group. The pre- and post-65 means are computed within the estimation sample and bandwidth used for each outcome. Column (1) uses an indicator equal to one if the respondent reports vigorous exercise more than once per week. Column (2) uses an indicator equal to one if the respondent reports vigorous exercise at least once per week. Column (3) uses an indicator equal to one if the respondent reports any vigorous exercise rather than never exercising. Column (4) uses an alternative workout-frequency score coded as 7 for vigorous exercise every day, 1 for vigorous exercise more than once per week, once per week, or one to three times per month, and 0 for no vigorous exercise. All specifications control for health conditions, household income, living with children, and marital status, and include individual and year fixed effects. Standard errors clustered at the individual level are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.



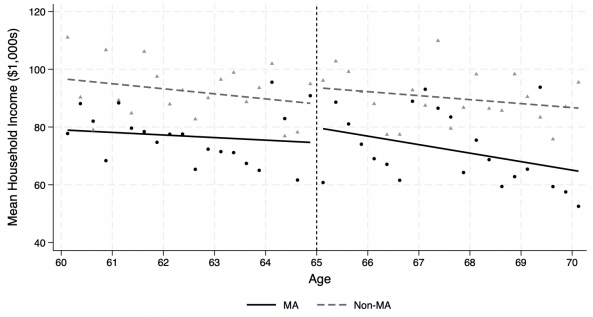
(A) Health conditions



(B) Married / partnered



(C) Living with children



(D) Household income

Figure A2: Points show three-month binned means for the Medicare Advantage (MA) and non-MA groups. Lines show linear fits estimated separately on each side of age 65 for each group. The vertical dashed line indicates the age-65 threshold. Panel A reports the mean number of doctor-diagnosed health conditions ranging from 0 to 8. Panel B reports the proportion of respondents who are married or partnered. Panel C reports the proportion of respondents living with at least one child. Panel D reports mean household income in thousands of dollars.