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

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Abstract

Medicare Advantage (MA) plans are increasingly offer fitness benefits, yet the evidence on their causal impact remains limited. Using a regression discontinuity in difference in difference (RDDD) design using the age-65 Medicare eligibility threshold as an exogenous variation, this study provides the first quasi-experimental evidence on how MA enrollment affects seniors' physical activity. Using nationally representative survey data on workout behavior with insurance coverage information, we find that the discontinuity in vigorous workout days at age 65 is significantly larger for MA enrollees than for non-MA beneficiaries, who do not receive comparable fitness benefits. Robustness checks including placebo test and a donut-hole analysis yield consistent results. These findings emphasize that insurance plan features can determine healthy behaviors, providing relevant evidence for policy makers considering how benefit structures might promote healthy aging.

Keywords: Medicare Advantage, physical activity, fitness benefits, fuzzy regression discontinuity

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1 Introduction

The United States is aging at an unprecendented pace. By 2034, adults over 65 will outnumber children under 18 for the first time in U.S. history (U.S. Census Bureau (2018)). This demographic shift, illustrated in Figure ?? has critical implications for health policy. Medicare already accounts for 21% of national health health expenditure and 10 % of the federal budget (Cubanski and Neuman (2023)), and the fiscal pressures will only intensify as the population ages in this pace. At the same time, improvements in health behaviors at older ages can have substantial returns in longevity and quality of life (Fries et al. (2011)). Physicl activity is particularly promising as it is one of the most cost-effective and time-efficient way to promote healthy aging

However, physical inactivity remains pervasive across all ages worldwide, in particular among seniors. More than 25 percent of those aged 65 years and older report no leisure-time physical activity, and only 14 percent meet the 2018 Federal Physical Activity Guidelines for aerobic and muscle-strengthening exercise (CDC (2022)). These guidelines recommend at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity exercise per week, along with muscle-strengthening activities. Compliance with these federal physical activity guidelines varies considerably between regions. 17 percent of older adults in the West meet the standard , compared with just 12 percent in the South. Moreover, older adults in metropolitan counties are also more active than those in non-metropolitan areas (Elgaddal and Kramarow (2024)). These disparities underscore that physical activity is not only a medical challenge but also an equity issue.

The health consequences of this widespread physical inactivity are severe. Sedentary lifestlyes are strongly correlated with cardiovascular disease, diabetes, cognitive decline , and musculoskeletal disorder (Warburton et al. (2006);Lee et al. (2012)). Physical inactivity significantly increases the risk of falls, the leading cause of injury-related death or hospitalization among older adults (Jiang and Wang (2022)). The economic burden is equally substantial as medical expenditure attributable to insufficient physical activity are estimated at $117 billion annually in the U.S. (Carlson et al. (2015)). Promoting physical activity among seniors is thus both a public health imperative and an economic necessity. Even modest increase in activity can slow functional decline and reduce healthcare spending, making fitness-promoting policies an attractive intervention target(Paterson and Warburton (2010)).

Medicare Advantage (MA), the privately administered alternative to traditional Medicare (TM), offers one such mechanism. Unlike traditional Medicare, Medicare Advantage plans have supplemental benefits including fitness programs such as SilverSneakers, Renew Active, Silver&Fit, and Enhance Fitness, which provide free or subsidized gym memberships, group exercise classes, and community-based fitness opportunities, lowering both logistical and financial barriers to physical activity. As MA enrollment has grown, so too has access to these fitness benefits. As of 2025, more than half of Medicare beneficiaries are enrolled in MA plans and it is projected to grow by 64 percent by 2033 (KFF (2025) ; Congressional Budget Office (2025)).Figure **??** illustrates this trend.

Substantial evidence suggests that participation in these fitness programs can improve health outcomes. Studies show they enhance physical and emotional well-being and reduce functional impairment (Hamar et al. (2013)). In particular, group-based exercise programs have been shown to reduce isolation and loneliness (Brady et al. (2018)) , increase mobility and quality of life (Belza et al. (2006)) , reduce inpatient admissions and total self-reported healthcare costs (Nguyen et al. (2008)). However, prior studies examine individuals who have already enrolled in fitness programs, raising concerns about selection bias. These participants may differ systematically from non-participants in ways that affect health outcomes (Newhouse (2014)). The critical question remains unanswered: Does enrollment in Medicare Advantage itself causally increase physical activity among seniors? Given the policy stakes, this question requires rigorous causal inference methods (Pinheiro et al. (2023))

We provide the first quasi-experimental evidence on the causal impact of Medicare Advantage (MA) enrollment on seniors' physical activity using a Regression Discontinuity-in-Differences (RDDD) design. Rather than relying on a fuzzy regression discontinuity, our updated strategy compares the discontinuity in workout behavior at the Medicare eligibility threshold between MA enrollees and non-MA individuals. This approach removes universal age-65 shocks—such as retirement or Social Security eligibility—and eliminates time-invariant selection into Medicare Advantage, isolating the incremental, time-varying behavioral response attributable to the availability of MA fitness benefits. Using nationally representative Health and Retirement Study data from 2012 to 2022, we link individual self-reports of vigorous physical activity to insurance enrollment histories and exploit precise age measurements around the Medicare eligibility cutoff.

This study makes several contributions. Empirically, we provide the first causal evidence on how MA enrollment influences seniors' physical activity at the Medicare eligibility threshold. Methodologically, we apply an RDDD design that isolates the behavioral effect of MA coverage while addressing favorable selection. Our findings shed light on how subsidized fitness access within insurance plans shapes preventive health behaviors among seniors.

2 Data

The main data source is from the Health and retirement Study (HRS) covering the years 2012 to 2022. The HRS is a nationally representative, longditudinal survey of adults that provides rich information on demographics, labor market status, self-reported health, and insurance coverage. For the analysis, we construct a precise measure of age using survey year and month with individuals' birth year and month. Although HRS does not provide interview date, we can still calculate exact age in years with decimals, which is crucial for implementing the regression discontinuity in difference in difference design, using age 65 (Medicare eligibility) as a running variable. Specifically, using interview year, interview month , birth year, and birth month, we construct precise and continuous age.

The main outcome variable is physical activity measured as a frequency of engaging in vigorous-intensity workout days per week. The HRS asks, *"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?"*. We use the response of this question as a proxy for workout days. Our main outcome is a binary indicator for meeting a minimum threshold of regular physical activity. We code the response "Everyday" as 1, and all other categories ("More than once a week" , "Once a week" , "One to three times a month", "Hardly ever or never") as 0.

This cutoff isolates individuals who consistently engage in vigorous exercise at the highest observable frequency, which can provide a conservative and policy-relevant measure of workout frequency. Daily vigorous activity represents the group most likely to exceed the federal Physical Activity Guideline (more than 150 minutes of vigorous physical activity). By using unequivocal and behaviorally distinct threshold availabe, our outcome capture a clean and interpretable measure of high intensity exercise that best aligns with the behavioral mechanisms linked with Medicare Advantage fitness benefits. We also complement this binary outcome by using quasi-continuous and parsimonious recoding ("hardly ever or never" as 0; "once a week" as 1; "one to three times a month" as 1; "more than once a week" as 1; and "every day" as 7) for the robustness check to ensure the main specifications are not driven by the imposed binary cutoff.

2.1 Sample Construction and Summary Statistics

We define three mutually exclusive person level groups : (1) MA-only : observed in Medicare Advantage at least once and never in Traditional Medicare across all survey waves, (2) TM-only observed in Traditional Medicare at least once and never in Medicare Advantage across all survey waves, (3) No-Medicare: never observed in any Medicare plan across all survey waves. Non-MA group includes group 2 and 3. In addition, we exclude survey year 2020 from the main analysis as the outbreak of the COVID-19 pandemic in 2020 and government lockdown policy caused widespread disruptions in physical activity , access to gym, and health behaviors broadly, which is independent of Medicare coverage status. Including this year may blur the causal impact of Medicare Advantage enrollment with exercise behavior changes driven by the pandemic shock. The resulting summary statistics for the constructed samples are provided in Table 1.

Table 1: Baseline Characteristics by Medicare Advantage Status

	Non-MA (TM + No Medicare) N (%)	MA Only N (%)
Gender		
Male	2,955 (44.2%)	1,775 (39.3%)
Female	3,735 (55.8%)	2,739 (60.7%)
Race		
White	4,656 (69.9%)	2,666 (59.3%)
Black	1,222 (18.4%)	1,254 (27.9%)
Other	782 (11.7%)	573 (12.8%)
Hispanic		
Non-Hispanic	5,507 (82.5%)	3,614 (80.2%)
Hispanic	1,170 (17.5%)	894 (19.8%)
Education		
No college degree	4,261 (64.2%)	3,244 (72.5%)
College degree or higher	2,378 (35.8%)	1,232 (27.5%)
Physical Activity (Vigorous)		
More than once per week	1,783 (26.7%)	1,117 (24.8%)
Once per week	777 (11.7%)	545 (12.1%)
1–3 times per month	739 (11.1%)	484 (10.8%)
Hardly ever or never	3,155 (47.3%)	2,214 (49.2%)
Every day	213 (3.2%)	138 (3.1%)
Sample size		
Total observations	6,690	4,514

Notes: This table reports counts and column percentages for respondents ages 60–70 by Medicare Advantage (MA) enrollment status. Non-MA includes individuals enrolled in Traditional Medicare (TM) only and those not enrolled in Medicare

3 Empirical Strategy

A critical challenge in identifying the causal impact of Medicare Advantage on physical activity is endogeneity of MA enrollment and all other confounding shocks that happen at age 65. Individuals who choose MA or non-MA may systematically different in their underlying health conditions, motivations for exercise, health preferences, and socio-economic status. Naive mean comparison in workout days is contaminated with these confounders. To address this concern, we employ a Regression Discontinuity in Difference in Difference (RDDD) design.

The RDDD combines the local identification of a regression discontinuity (RD) with difference-in-difference (DiD) framework to isolate the causal impact of MA enrollment at the age of Medicare eligibility. The RD component uses the sharp discontinuity in Medicare eligibility at age 65, which generates local exogenous variation in coverage. However, multiple life events such as retirement are also happening around this cutoff which can potentially confound a simple RD estimates. Furthermore, direct comparison of workout levels between MA and non-MA group is confounded as both of enrolling in MA and enrolling in TM at age 65 are endogenous choices. This estimate suffers from selection issues such as wealthier and healthier individuals may enroll in MA rather than TM.

To isolate the effect of MA-specific fitness coverage, we apply the Difference-in-Difference logic , comparing the discontinuity in workout frequency for MA enrollees with the corresponding discontinuity for non-MA individuals. Formally, the RDDD estimand captures the difference in discontinuities between MA and non-MA groups as follows :

$$\begin{aligned}\text{RDDD} = &\Big[E(Y \mid Age \downarrow 65,\ MA{=}1) - E(Y \mid Age \uparrow 65,\ MA{=}1)\Big] \\ &- \Big[E(Y \mid Age \downarrow 65,\ MA{=}0) - E(Y \mid Age \uparrow 65,\ MA{=}0)\Big]. \qquad (1)\end{aligned}$$

This decomposition can be expressed as follows:

$$\begin{aligned}
\Delta^{MA} &= \big(Workout^{MA}_{65,\text{post}} - Workout^{MA}_{65,\text{pre}}\big) \\
&= \underbrace{\text{Universal 65 shock}}_{\text{common to all}} + \underbrace{\text{MA-specific time-varying effect}}_{\text{treatment effect}} + \underbrace{\text{Time-invariant selection}}_{\text{fixed traits}}
\end{aligned}$$

$$\begin{aligned}
\Delta^{\text{non-MA}} &= \big(Workout^{\text{non-MA}}_{65,\text{post}} - Workout^{\text{non-MA}}_{65,\text{pre}}\big) \\
&= \underbrace{\text{Universal 65 shock}}_{\text{common to all}} + \underbrace{\text{Non-MA time-varying effect}}_{\text{counterfactual path}} + \underbrace{\text{Time-invariant selection}}_{\text{fixed traits}}
\end{aligned}$$

Taking the difference between these two jumps eliminates the components common to both groups:

$$\text{RDDD} = \Delta^{MA} - \Delta^{non\text{-}MA} = (\text{MA-specific time-varying effect}) - (\text{Non-MA time-varying effect})\,.$$

Hence, the RDDD estimand removes the universal 65 shock such as retirement or social security and time invariant selections into Medicare Advantage such as fixed individual differences.

3.1 RDDD Specification

We estimate the following equation for 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} denotes vigorous workout days per week for individual i at time t. Post_{it} equals 1 if $Age_{it} \geq 65$. MA_i equals 1 for individuals ever observed in Medicare Advantage. $f(Age_{it})$

is a smooth local-linear function of age X_{it} includes demographic controls such as gender, race , education level. μ_i and τ_t denote individual and year fixed effects. Standard errors are clustered at the individual level.

In addition, to examine the evolution of the treatment effect and test for pre-trends as well as possible selections, we estimate a dynamic RDDD model where b_{it} indexes one-year age bins relative to age 65 ($b_{it} = 0$ for age 65; $b_{it} = -1$ for 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-specific difference in outcomes between MA and non-MA individuals relative to $k = -1$ (age 64). Pre-trend validation requires $\beta_k \approx 0$ for $k < 0$. Post-65 β_k trace the timing and persistence of behavioral responses.

4 Results

4.1 Discontinuities in Workout Behavior

We begin by presenting nonparametric evidence on workout behavior around the Medicare eligibility threshold. Figure 1 plots monthly LOWESS-smoothed average workout days, separately for MA and Non-MA enrollees. LOWESS fit has an advantage over polynomial fit as it does not assume any functional forms. Two patterns emerge clearly in the plot. Prior to age 65, MA and non-MA beneficiaries display nearly parallel trends in workout frequency, supporting the parallel trend assumptions. In addition, exactly at the eligibility threshold, MA enrollees exhibit a discrete increase in workout days, whereas Non-MA enrollees do not.

This visual jump anticipates the parametric RDDD estimates and suggests that MA-linked fitness benefits trigger behavioral responses.

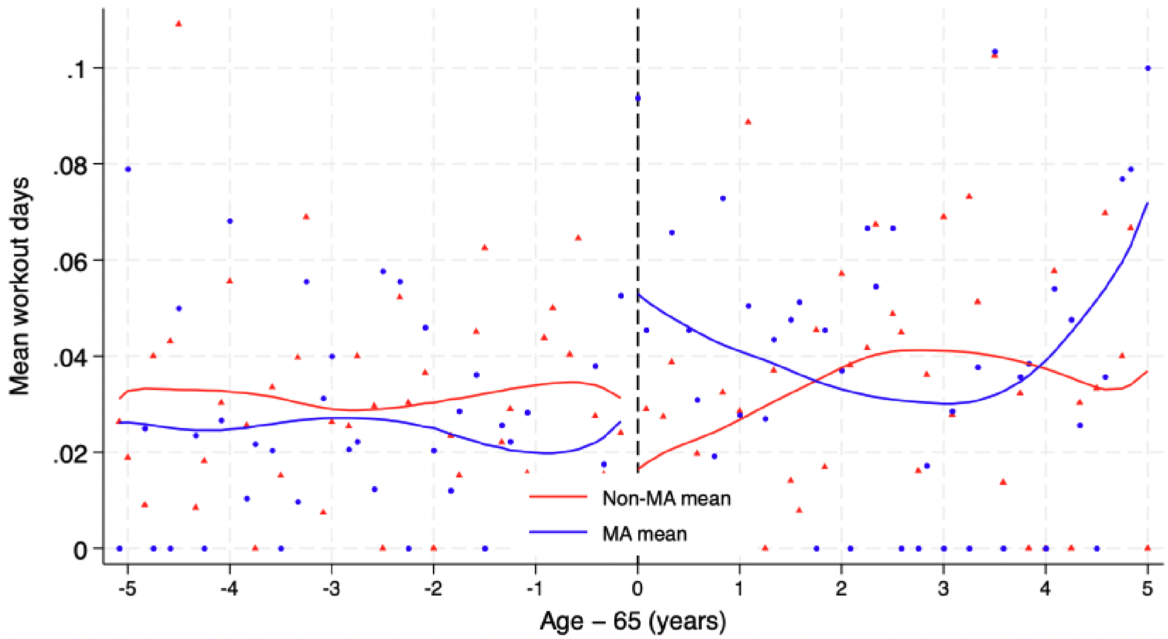


Figure 1

Notes: Monthly LOWESS-smoothed probability of exercising every day (binary outcome = 1 if daily workout) around age 65 for Medicare Advantage (MA) and non-MA groups. Circles represent MA group means and triangles represent non-MA group means.

Importantly, the figure also demonstrates that while MA workout levels rise at age 65, Non-MA drops their workout frequencies, consistent with a wide range of age-related health, and lifestyle transitions such as retirement, increased caregiving responsibilities, and broader aging related change in physical activity. In other words, as multiple forces are contemporaneously shifting at age 65, simple RD or DiD designs are insufficient for isolating the causal effect of MA enrollment.

A standard RD at age 65 would conflate MA-specific behavioral responses with univeral age-65 shocks while a traditional DiD would not effectively control non-linear age profiles or discontinuities common to both groups. Likewise, if Medliciare eligibility itself is used as an instrument directly, it raises concerns about the exclusion restrictions as we can see the drop in workout frequencies for non-MA group. For these reasons, the LOWESS fit further motivates and validates our RDDD approach as it expliity differences out the discontinuity that Non-MA beneficiaries experience at age 65 , which allows us to attribute the residual discontinuity in workout days among MA groups to MA-specific incentives rather than to broader aging effect.

4.2 Static RDDD results

Figure 2 presents the first stage discontinuity of Medicare Advantange enrollment at the Medicare eligibility cutoff. Consistent with the institutional rule, we observe a sharp and visually clear discontinuity in MA enrollment at the threshold. This confirms the strong first stage relevance for the RDDD design and validate age 65 as an effective running variable for identifying the variation in MA enrollment.

Table 2 presents the main RDDD estimates of the reduced form effect of Medicare Advantage on weekly workout days in local bandwidths. Using Calonico et al. (2014) bias-corrected , data-driven optimal bandwidth of 2.5 years, we find that MA enrollment leads to a statistically significant increase in vigorous exercise about 4.7 percentage points. Although binary exercise measure does not capture minutes of activity directly, this improvement implies a greater likelihood of approaching or meeting federal physical activity guideline ($\geq$ 150 minutes vigorous workout per week). Considering the fact that adherence to these guidelines is only 14% among older adults (CDC (2022)), even a modest increase in exercise represent meaningful behavioral improvements.

To complement main specification, we also estimate the RDDD model using alternative bandwidths in Table 2 Panel B. In particular, as Health and Retirement Study is conducted biennially, bandwidths between two and four years align with our study design so that we can at least include one or two waves pre- and post- 65. Across these bandwidths windows, the estimated MA effect remain positive, stable in magnitude and statistically significant. This validates that the discontinuity is not an artifact of bandwidth choice, but reflects consistent and robust increase in physical activity linked with MA's fitness benefits.

Figure 3 presents the event study of the RDDD design, which we use primarily for assessing the parallel pre-65 trend which is the critical assumption of our identification strategy. The difference in discontinuity between MA and non-MA beneficiaries are flat and statistically insignificant which supports the key assumption that, in the absence of MA-specific fitness benefits, both groups would have shown similar discontinuities in workout frequency. At the Medicare eligibility threshold, the event study plot shows a sharp jump in physical activity among MA enrollees relative to non-MA enrollees. The magnitude is considerable and immediate precisely at age 65 which aligns with the activation of MA-linked fitness benefit. However, this effect attenuates and becomes insignificant overtime. This highlights a short-run behavioral boost as individuals gain access to free fitness benefits, consistent with the idea that new financial incentives initially increase the workout frequency.

This attenuation in later years aligns with exisiting evidence in the physical activity literature among younger population Pojskic et al. (2019), which has shown that financial incentives, fitness subsidies generate short-run and immediate response but it is hard to sustain this positive impact in the long-run. Commitment, habit formation and motivation, rather than financial incentives alone, are the key barriers to long-term adherence in physical activity.

To further address the concern that MA and Non-MA enrollees may already differ in workout level , not the discontinuity, even before Medicare eligibility, we plot a standard event study of raw workout level differences for both groups in Figure 4. This allows us to visually compare the difference in the baseline and trajectories of workout level without imposing the RDDD structure. The pattern highlights that MA and Non-MA individuals exhibit similar workout levels prior to age 65 with no systematic divergence in the years approaching Medicare eligibility. At age 65,we observe a noticeable widening of the gap , indicating MA beneficiaries increase their workout frequency while Non-MA individuals show no comparable shift. However, it is tricky to interpret post-65 estimates as both enrollment in MA and enrollment in TM (which Non-MA group includes) are endogenous choices. As a result, the regular event study cannot fully address selections into plan type, whereas the RDDD effectively differences out these sources of endogeneity by isolating the relative discontinuity at the threshold.

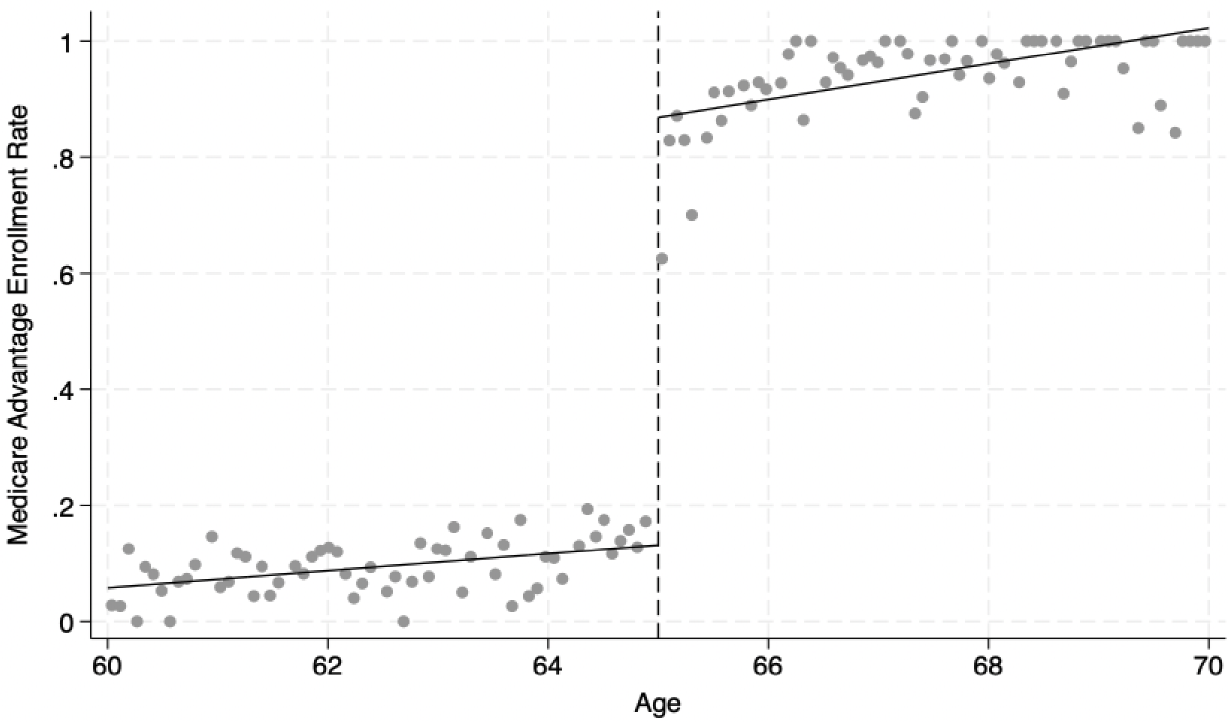


Figure 2
First stage Discontinuity in Medicare Advantage Enrollment at Age 65

Table 2: RDDD Estimates of the differential jump in workout at age 65

	Panel A: Main	Panel B: Alternative bandwidths			
	(1) $h = 2.539$	(2) $h = 1$	(3) $h = 3$	(4) $h = 4$	(5) $h = 5$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$ (pp)[a]	0.047**	0.411*	0.057***	0.039***	0.024*
	(0.022)	(0.236)	(0.017)	(0.015)	(0.013)
Pre-65 mean, MA group[b]	0.027	0.016	0.027	0.025	0.024
Post-65 mean, MA group[b]	0.044	0.031	0.041	0.038	0.039
Pre-65 mean, Non-MA group[b]	0.030	0.044	0.030	0.031	0.030
Post-65 mean, Non-MA group[b]	0.029	0.026	0.031	0.033	0.033
Observations	5,142	356	6,724	9,295	11,079
R^2	0.547	0.503	0.539	0.476	0.433
Individual fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓

Notes: Table reports reduced-form RDDD estimates of the differential discontinuity at age 65 in a binary indicator for regular exercise, using different bandwidth choices h (in years). The dependent variable equals 1 if the respondent reports exercising "every day", and 0 otherwise. The coefficient $\Delta^{MA} - \Delta^{\text{Non-MA}}$ captures the difference between the jump at age 65 for individuals in the MA group and the corresponding jump for the non-MA comparison group.[a] Coefficients are reported in percentage points.[b] Means are computed within the estimation sample for each bandwidth, separately by MA status and by whether age is below (Pre-65) or above (Post-65) the cutoff; values are probabilities of regular exercise. Standard errors clustered at the individual level are reported in parentheses. All specifications include individual and year fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

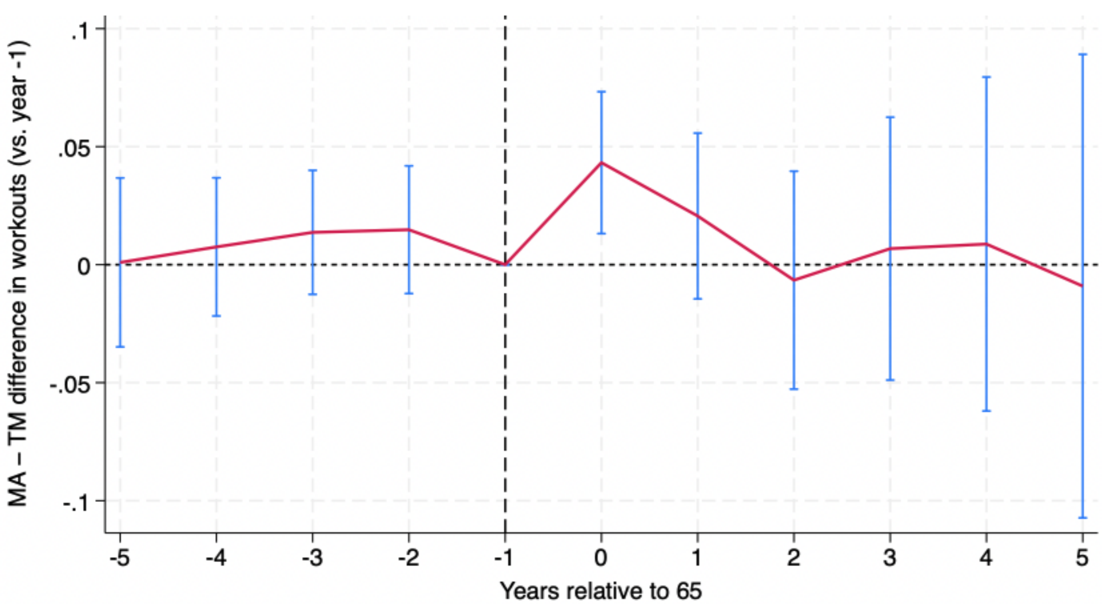


Figure 3
Notes: Event-study estimates of yearly workout frequencies between Medicare Advantage (MA) and Non-MA beneficiaries in workout days, relative to age 65. The dotted horizontal line indicates zero difference and the dashed vertical line marks Medicare eligibility at age 65. Points represent bin means and bars show 95% confidence intervals.

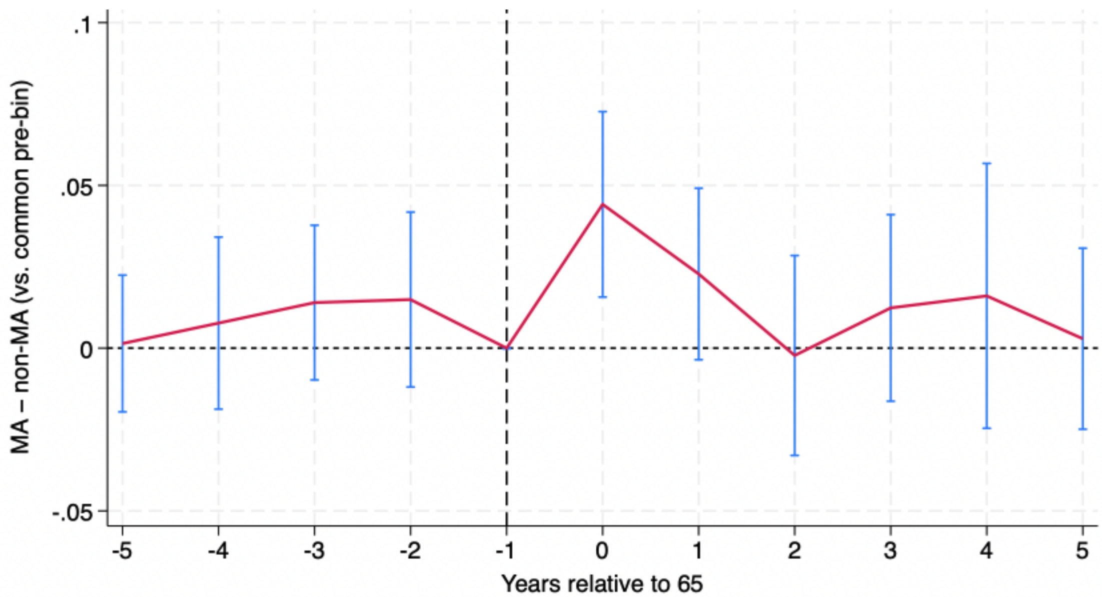


Figure 4
Notes: Event-study estimates of yearly differences in workout level between Medicare Advantage (MA) and Non-MA beneficiaries, relative to age 65. The dotted horizontal line indicates zero difference and the dashed vertical line marks Medicare eligibility at age 65. Points represent bin means and bars show 95% confidence intervals.

5 Heterogeneous Analysis

We investigate whether the RDDD differential effect of medicare eligibility on daily exercise differs across subgroups. Heterogeneity analysis is crucial for our understanding of how behavioral response to Medicare Advantage's fitness benefits. We examine heterogeneity along three dimensions : Gender, Race/Ethnicity (White vs all other groups) , Educational attainment (College degree vs No College degree). For each subgroup analysis, we estimate the same reduced-form RDDD specification used in the main analysis and report static RDDD estimate using data-driven optimal bandwidths and alternative bandwidths as well as dynamic event study.

5.1 Static RDDD results

Gender Differences

The static RDDD estiamtes in Tables 3 and 4 show that female beneficiaries exhibit larger increase in the probability of exercising daily at age 65. For femal, the differential in discontinuity is around 5-6 percentage points at optimal bandwidths and remains positive across a range of alternative bandwidths. On the other hand, point estimates for male are smaller (around 2-4 percentage point) but statistically insignificant. This heterogeneity in gender is consistent with prior evidence showing that women are more responsive to health promoting incentives **literature** and more women participate in MA fitness programs then men Xu et al. (2025).

Race/Ethnicity Differences

Racial heterogeneity is prominent in Table 5 and Table 6. White respondents show small and statistically insignificant RDDD estimates across all bandwidths. in contrast, Non-White seniors respond strongly to MA fitness benefits with 14 percentage points at the optimal bandwidth. These effect sizes are among the largest among different subgroups. This pattern highlights that MA's supplement fitness offerings may benefit minority populations who face greater barriers to physical activity, including unequal access to community recreational facilities and higher financial constraints which all significantly limit the gym or fitness program participations.

Educational Differences Differential impact depending on educational attainment is also substantial in Table 7 and Table 8. Among college-educated respondents, we find no statistically significant results while non-college educated seniors show modest but significant responses. This finding implies that the MA fitness benefit reduces meaningful barriers for lower-education groups, potentially related to baseline knowledge about the benefits of exercise , affordability, access, and motivation.

Table 3: RDDD Estimates of the Differential Jump in Daily Exercise at Age 65, Male

	Panel A: Main	Panel B: Alternative bandwidths			
	(1) $h = 2.606$	(2) $h = 1$	(3) $h = 3$	(4) $h = 4$	(5) $h = 5$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$ (pp)[a]	0.043	0.047	0.052*	0.021	0.015
	(0.031)	(0.360)	(0.028)	(0.025)	(0.021)
Pre-66 mean, MA group[b]	0.038	0.031	0.036	0.032	0.032
Post-66 mean, MA group[b]	0.039	0.000	0.043	0.045	0.048
Pre-66 mean, Non-MA group[b]	0.047	0.095	0.043	0.043	0.043
Post-66 mean, Non-MA group[b]	0.042	0.000	0.044	0.044	0.045
Observations	2,274	148	2,789	3,897	4,677
R^2	0.571	0.549	0.553	0.499	0.465
Individual fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓

Notes: Table reports reduced-form RDDD estimates of the differential discontinuity at age 65 in a binary indicator for exercise frequency, restricting the sample to male. The dependent variable equals 1 if the respondent reports exercising "every day", and 0 otherwise. The coefficient $\Delta^{MA} - \Delta^{\text{Non-MA}}$ captures the difference between the jump at age 65 for individuals in the MA group and the corresponding jump for the non-MA comparison group.[a] Coefficients are reported in percentage points.[b] Means are computed within the estimation sample for each bandwidth, separately by MA status; values are probabilities of exercising everyday. Standard errors clustered at the individual level are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: RDDD Estimates of the Differential Jump in Daily Exercise at Age 65, Female

	Panel A: Main	Panel B: Alternative bandwidths			
	(1) $h = 2.913$	(2) $h = 1$	(3) $h = 3$	(4) $h = 4$	(5) $h = 5$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$ (pp)[a]	0.055**	0.583	0.059***	0.050***	0.028*
	(0.023)	(0.371)	(0.021)	(0.018)	(0.015)
Pre-66 mean, MA group[b]	0.020	0.000	0.021	0.021	0.020
Post-66 mean, MA group[b]	0.040	0.063	0.040	0.033	0.032
Pre-66 mean, Non-MA group[b]	0.021	0.014	0.021	0.021	0.021
Post-66 mean, Non-MA group[b]	0.022	0.042	0.021	0.024	0.024
Observations	3,651	208	3,935	5,398	6,402
R^2	0.520	0.554	0.522	0.447	0.389
Individual fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓

Notes: Estimates are obtained from the same reduced-form RDDD specification described in the male subgroup table above. The only difference is that the sample is restricted to the subgroup indicated in each panel. All variable definitions, interpretation of coefficients, and model components (e.g., fixed effects, clustering of standard errors) remain identical.

Table 5: RDDD Estimates of the Differential Jump in Daily Exercise at Age 65, White Respondents

	Panel A: Main	Panel B: Alternative Bandwidths			
	(1) $h = 2.556$	(2) $h = 1$	(3) $h = 3$	(4) $h = 4$	(5) $h = 5$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$ (pp)[a]	-0.002	0.208	0.023	0.019	0.003
	(0.026)	(0.146)	(0.020)	(0.018)	(0.015)
Pre-65 mean, MA group[b]	0.032	0.000	0.031	0.028	0.027
Post-65 mean, MA group[b]	0.046	0.027	0.043	0.040	0.042
Pre-65 mean, Non-MA group[b]	0.025	0.035	0.028	0.027	0.027
Post-65 mean, Non-MA group[b]	0.024	0.035	0.025	0.028	0.031
Observations	3,394	246	4,432	6,106	7,247
R^2	0.571	0.516	0.558	0.487	0.439
Individual fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓

Notes: Estimates are obtained from the same reduced-form RDDD specification described in the male subgroup table above. The only difference is that the sample is restricted to the subgroup indicated in each panel. All variable definitions, interpretation of coefficients, and model components (i.e. fixed effects, clustering of standard errors) remain identical.

Table 6: RDDD Estimates of the Differential Jump in Daily Exercise at Age 65, Non-White Respondents

	Panel A: Main	Panel B: Alternative Bandwidths			
	(1) $h = 2.915$	(2) $h = 1$	(3) $h = 3$	(4) $h = 4$	(5) $h = 5$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$ (pp)[a]	0.141***	0.429	0.130***	0.080***	0.060**
	(0.037)	(0.440)	(0.034)	(0.028)	(0.023)
Pre-65 mean, MA group[b]	0.019	0.038	0.021	0.021	0.021
Post-65 mean, MA group[b]	0.037	0.038	0.038	0.034	0.032
Pre-65 mean, Non-MA group[b]	0.041	0.071	0.038	0.040	0.038
Post-65 mean, Non-MA group[b]	0.047	0.000	0.045	0.045	0.041
Observations	2,084	108	2,267	3,150	3,784
R^2	0.499	0.558	0.510	0.461	0.425
Individual fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓

Notes: Estimates are obtained from the same reduced-form RDDD specification described in the male subgroup table above. The only difference is that the sample is restricted to the subgroup indicated in each panel. All variable definitions, interpretation of coefficients, and model components (i.e. fixed effects, clustering of standard errors) remain identical.

Table 7: RDDD Estimates of the Differential Jump in Daily Exercise at Age 65, College-Educated

	Panel A: Main	Panel B: Alternative Bandwidths			
	(1) $h = 2.726$	(2) $h = 1$	(3) $h = 3$	(4) $h = 4$	(5) $h = 5$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$ (pp)[a]	0.037	0.163	0.038	0.016	0.031
	(0.039)	(0.198)	(0.033)	(0.029)	(0.023)
Pre-65 mean, MA group[b]	0.031	0.000	0.032	0.026	0.028
Post-65 mean, MA group[b]	0.055	0.000	0.060	0.061	0.059
Pre-65 mean, Non-MA group[b]	0.039	0.045	0.039	0.041	0.038
Post-65 mean, Non-MA group[b]	0.043	0.045	0.046	0.047	0.047
Observations	1,906	120	2,207	2,988	3,576
R^2	0.576	0.520	0.558	0.487	0.458
Individual fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓

Notes: Estimates are obtained from the same reduced-form RDDD specification used in the main results, restricting the sample to college-educated respondents. All variable definitions, interpretation of coefficients, and model components (i.e., fixed effects and clustering of standard errors at the individual level) remain identical to the baseline specification. Coefficients are reported in percentage points.[a] Pre- and post-65 means are calculated within the estimation sample for each bandwidth.[b]

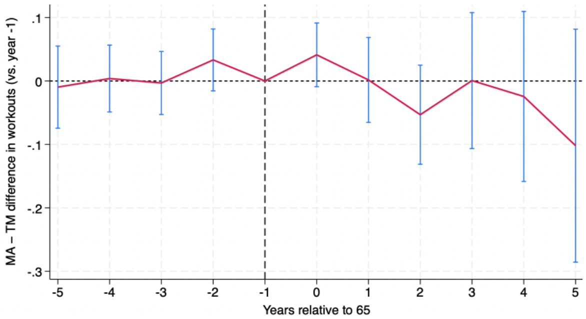
Table 8: RDDD Estimates of the Differential Jump in Daily Exercise at Age 65, Non-College Educated

	Panel A: Main	Panel B: Alternative Bandwidths			
	(1) $h = 2.726$	(2) $h = 1$	(3) $h = 3$	(4) $h = 4$	(5) $h = 5$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$ (pp)[a]	0.053**	0.496	0.063***	0.049***	0.021
	(0.023)	(0.302)	(0.020)	(0.017)	(0.015)
Pre-65 mean, MA group[b]	0.024	0.021	0.024	0.024	0.023
Post-65 mean, MA group[b]	0.036	0.043	0.034	0.030	0.031
Pre-65 mean, Non-MA group[b]	0.027	0.043	0.024	0.024	0.025
Post-65 mean, Non-MA group[b]	0.023	0.014	0.023	0.025	0.026
Observations	3,762	234	4,465	6,230	7,415
R^2	0.534	0.514	0.524	0.470	0.417
Individual fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓

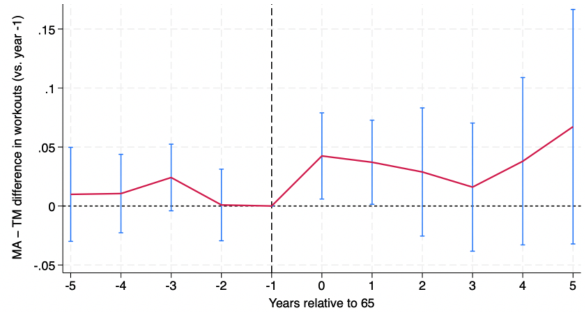
Notes: Estimates are obtained from the same reduced-form RDDD specification described in the male subgroup table above. The only difference is that the sample is restricted to the subgroup indicated in each panel. All variable definitions, interpretation of coefficients, and model components (i.e. fixed effects, clustering of standard errors) remain identical.

5.2 Dynamic RDDD event study results

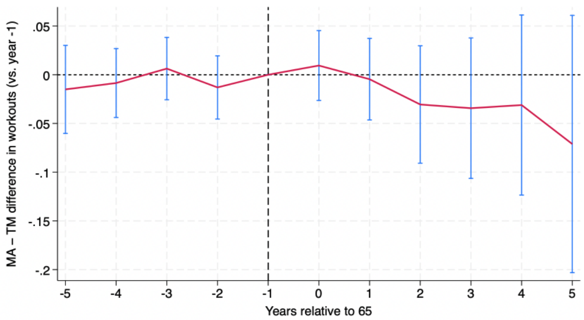
Figure5 presents event study plots for heterogeneity analysis, illustrating how daily exercise probability evolves relative to the reference year (a year before Medicare eligibility). Three consistent patterns emerge : (1) Within each subgroup, we do not find any pre-trend in difference in discontinuity in daily workout probability, (2) Non-white and female seniors show the largest and most immediate response at age 65 , (3) The effect does not persist in the longer term which is consistent with our main pooled RDDD specification results.



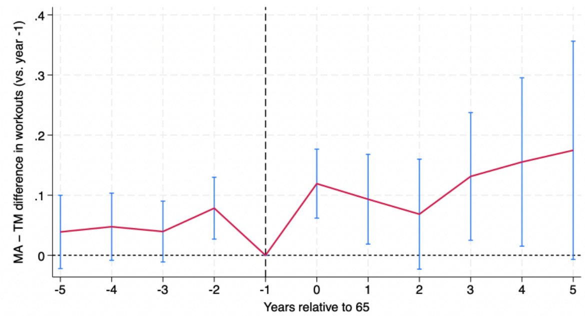
(a) Male



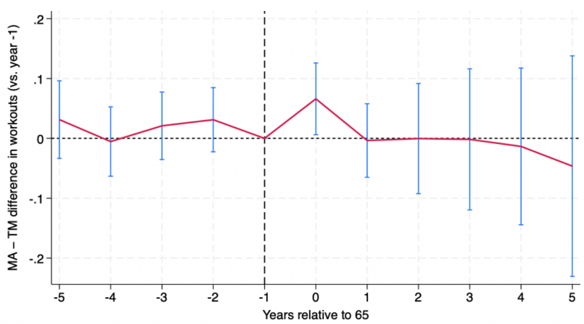
(b) Female



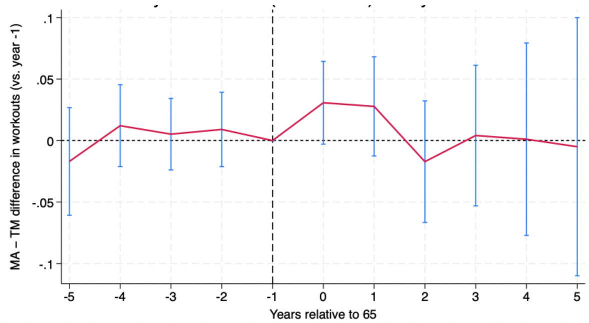
(c) White



(d) Non-White



(e) College degree



(f) No college degree

Figure 5
Reduced-form RDDD estimates of discontinuities in daily exercise between MA and non-MA respondents by subgroup. The dependent variable is a binary indicator equal to 1 for exercising every day. Coefficients represent subgroup-specific estimates of $\Delta^{MA} - \Delta^{\text{Non-MA}}$, the difference in discontinuities in daily exercise at the Medicare eligibility threshold. Pre- and post-65 means are calculated within each subgroup and bandwidth-specific estimation sample. Standard errors are clustered at the individual level. All models include individual and year fixed effects.

6 Robustness Check

To assess the validity of our results, we perform a comprehensive set of robustness checks that address potential concerns about our findings. These series of robustness checks support the estimated differential discontinuity at age 65 represents a genuine behavioral response associated with the enrollment in Medicare Advantage with fitness benefits, rather than the artifacts of model specification, age related dynamics , local irregularities in the running variables, or spurious discontinuities

6.1 Alternative Workout Frequency Measure

To assess whether our main findings are sensitive to the strict binary threshold defining daily vigorous activity, we complement the primary specification with a quasi-continuous recoding of the workout frequency measure. While the binary indicator isolates respondents who consistently engage in vigorous exercise at the highest observable frequency—providing a conservative and policy-relevant measure aligned with exceeding federal Physical Activity Guidelines (more than 150 minutes of vigorous activity per week)—it may mask meaningful variation in lower but still behaviorally significant activity levels. To address this, we construct a parsimonious 0–1–7 scale in which "hardly ever or never" is coded as 0, intermediate low-frequency responses ("once a week" and "one to three times a month") as 1, higher but non-daily frequency ("more than once a week") also as 1, and "every day" as 7. The persistence of the effect under this alternative outcome specification in Table 9strengthens our conclusion that Medicare Advantage enrollment meaningfully increases physical activity among older MA groups compared to Non-MA groups. Figure6 represents the event study plot tracing the dynamic evolve of the difference in discontinuities compared to a reference year (a year before Medicare eligibility). It underscores the immediate positive impact and parallel trends as we find in our main RDDD specification.

Table 9: RDDD Estimates of the differential jump in workout at age 65

	Panel A: Main	Panel B: Alternative bandwidths			
	(1) $h = 2.853$	(2) $h = 1$	(3) $h = 3$	(4) $h = 4$	(5) $h = 5$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$[a]	0.059***	0.411*	0.057***	0.039***	0.024*
	(0.018)	(0.236)	(0.017)	(0.015)	(0.013)
Pre-65 mean, MA group[b]	0.670	0.578	0.677	0.667	0.660
Post-65 mean, MA group[b]	0.731	0.672	0.737	0.722	0.729
Pre-65 mean, Non-MA group[b]	0.715	0.684	0.713	0.718	0.726
Post-65 mean, Non-MA group[b]	0.707	0.711	0.701	0.700	0.705
Observations	6,226	356	6,724	9,295	11,079
R^2	0.542	0.503	0.539	0.476	0.433
Individual fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓

Notes: Table reports reduced-form RDDD estimates of the differential discontinuity at age 65 in a discrete measure of vigorous exercise, using different bandwidth choices h (in years). The dependent variable takes values 0, 1, or 7, corresponding respectively to "hardly ever or never", "more than once a week, one to three times a month , once a week", and "every day".[a] The coefficient $\Delta^{MA} - \Delta^{\text{Non-MA}}$ captures the difference between the jump at age 65 for individuals in the MA group and the corresponding jump for the non-MA comparison group; coefficients are reported in units of the 0–1–7 exercise index.[b] Means are computed within the estimation sample for each bandwidth, separately by MA status and pre-, post- age 65; values report the average of the 0–1–7 index. Standard errors clustered at the individual level are reported in parentheses. All specifications include individual and year fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

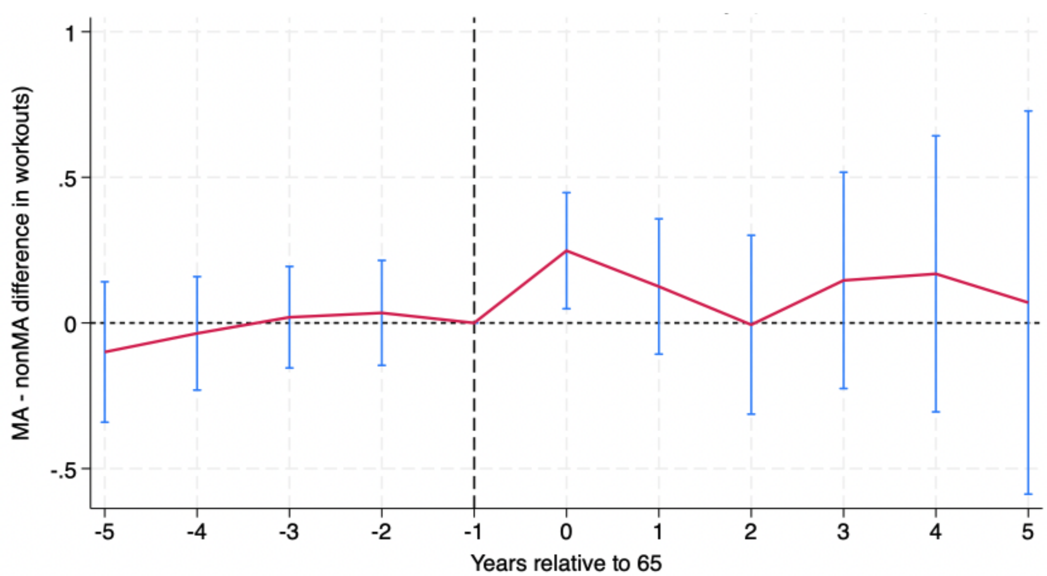


Figure 6
Notes: Event-study estimates of yearly differences in workout level (0,1,7) between Medicare Advantage (MA) and Non-MA beneficiaries, relative to age 65. The dotted horizontal line indicates zero difference and the dashed vertical line marks Medicare eligibility at age 65. Points represent bin means and bars show 95% confidence intervals.

6.2 Alternative outcomes: Retirement and Private Insurance Enrollment Status

We begin by estimating the same RDDD specification using two alternative outcomes that plausibly change around age 65 but should not be directly affected by Medicare Advantage: retirement status and private insurance coverage (e.g., employer-sponsored supplemental plans). The purpose of these tests is twofold. First, they verify that the RDDD framework does not mechanically produce discontinuities for any outcome with a non-linear age profile. Second, they help rule out the possibility that the physical activity jump reflects broader life-cycle transitions around age 65, such as labor force exit or insurance restructuring. Consistent with expectations, neither retirement nor private insurance coverage displays a meaningful differential discontinuity at age 65. This absence of parallel jumps increases confidence that the main estimates for physical activity are not confounded by unrelated behavioral changes occurring at the same age threshold.

Table 10: RDDD Estimates of the differential jump in private coverage at age 65

	Panel A: Main	Panel B: Alternative bandwidths			
	(1) $h = 2.14$	(2) $h = 1$	(3) $h = 3$	(4) $h = 4$	(5) $h = 5$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$ (pp)[a]	-0.345^{***}	0.050	-0.350^{***}	-0.399^{***}	-0.418^{***}
	(0.080)	(0.673)	(0.047)	(0.040)	(0.036)
Pre-65 mean, MA group[b]	0.714	0.656	0.710	0.708	0.712
Post-65 mean, MA group[b]	0.217	0.266	0.178	0.166	0.163
Pre-65 mean, Non-MA group[b]	0.776	0.757	0.780	0.781	0.784
Post-65 mean, Non-MA group[b]	0.717	0.722	0.703	0.712	0.712
Observations	3,837	358	6,730	9,294	11,079
R^2	0.751	0.748	0.722	0.677	0.656
Individual fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓

Notes: Table reports reduced-form RDDD estimates of the differential discontinuity at age 65 in the number of for private health insurance enrollment, using different bandwidth choices h (in years). The coefficient $\Delta^{MA} - \Delta^{\text{Non-MA}}$ captures the difference between the jump at age 65 for individuals in the MA group and the corresponding jump for the non-MA comparison group.[a] Coefficients are reported in percentage points.[b] Means are computed within the estimation sample for each bandwidth, separately by MA status and by whether age is below (Pre-65) or above (Post-65) the cutoff; values are probabilities of private coverage. 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 11: RDDD Estimates of the differential jump in retirement at age 65

	Panel A: Main	Panel B: Alternative bandwidths			
	(1) $h = 2.853$	(2) $h = 1$	(3) $h = 3$	(4) $h = 4$	(5) $h = 5$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$ (pp)[a]	0.047	0.095	0.039	0.048	0.033
	(0.039)	(0.426)	(0.037)	(0.032)	(0.027)
Pre-65 mean, MA group	0.338	0.391	0.333	0.290	0.262
Post-65 mean, MA group	0.563	0.438	0.565	0.585	0.599
Pre-65 mean, Non-MA group	0.306	0.339	0.299	0.259	0.235
Post-65 mean, Non-MA group	0.476	0.452	0.477	0.487	0.496
Observations	6,265	358	6,764	9,336	11,122
R^2	0.748	0.804	0.739	0.693	0.665
Individual fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓

Notes: Table reports reduced-form RDDD estimates of the age-65 discontinuity in retirement status. The dependent variable equals 1 if the respondent reports being retired. [a] Coefficients are in percentage points. Standard errors clustered at the individual level in parentheses. All specifications include individual and year fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6.3 Donut hole analysis

Next, we address concerns that observations extremely close to the cutoff may reflect atypical reporting or behavior. Although age manipulation is implausible in the Health and Retirement Study, individuals within a very narrow window around age 65 could exhibit idiosyncratic dynamics—for example, last-minute enrollment decisions, short-term adjustments in expectations, or measurement noise due to rounding of reported ages. To guard against the possibility that such local irregularities bias the RDDD estimates, we re-estimate the model excluding individuals within ±0.5 years of the cutoff. This "doughnut-hole" design deliberately removes the data most sensitive to local misreporting or bunching and tests the stability of the discontinuity when the forcing variable is slightly restricted. As shown in Figure **??**, the estimated differential discontinuity persists and becomes slightly larger in magnitude. The stronger effect under the doughnut-hole design suggests that our main results are not driven by peculiarities among a small group of individuals at the exact age threshold. If anything, removing these observations reveals an even clearer behavioral contrast, reinforcing the robustness of the RDDD evidence.

Table 12: RDDD Donut-Hole Estimates of the differential jump in workout at age 65

	Panel A: Main	Panel B: Alternative bandwidths			
	(1)	(2)	(3)	(4)	(5)
	$h = 2.853$	$h = 1$	$h = 3$	$h = 4$	$h = 5$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$ (pp)[a]	0.052***	0.411*	0.050***	0.034**	0.022*
	(0.019)	(0.236)	(0.017)	(0.015)	(0.013)
Pre-65 mean, MA group[b]	0.027	0.016	0.027	0.025	0.024
Post-65 mean, MA group[b]	0.037	0.031	0.039	0.037	0.038
Pre-65 mean, Non-MA group[b]	0.031	0.044	0.031	0.031	0.031
Post-65 mean, Non-MA group[b]	0.033	0.026	0.032	0.033	0.034
Observations	6,126	356	6,625	9,187	10,968
R^2	0.195	-0.038	0.206	0.185	0.176
Individual fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓

Notes: Table reports reduced-form RDDD "donut-hole" estimates of the differential discontinuity at age 65 in a binary indicator for vigorous exercise, using different bandwidth choices h (in years). The doughnut-hole specification excludes individuals within 3 months on either side of age 65. Means correspond to probabilities of exercise everyday. Standard errors clustered at the individual level are reported in parentheses. All specifications include individual and year fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6.4 Placebo tests at false cutoffs

We further validate the design by implementing placebo tests at a false cutoff of age 67, which serves as a critical falsification check. Unlike age 65, turning 67 does not correspond to any institutional or policy change in Medicare or Medicare Advantage. Thus, a correctly specified RDDD model should produce no meaningful discontinuity at this artificial threshold. We estimate the identical model but recenter the running variable at age 67. Figure **??** displays these results and shows that the placebo discontinuities are small, noisy, and statistically insignificant across all bandwidths. This absence of a spurious jump confirms that the RDDD estimator is not simply capturing secular age trends, inherent curvature in physical activity over the life cycle, or generic structural breaks in the age profile. Instead, it demonstrates that the meaningful behavioral shift observed in the main specification is unique to the true eligibility threshold at age 65.

Table 13: Placebo RDDD Estimates of the differential jump in workout at age 66

	Panel A: Main	Panel B: Alternative bandwidths			
	(1) $h = 3.282$	(2) $h = 1$	(3) $h = 2$	(4) $h = 4$	(5) $h = 5$
$\Delta^{MA} - \Delta^{\text{Non-MA}}$ (pp)[a]	-0.019	-0.157	0.008	-0.013	-0.021
	(0.020)	(0.185)	(0.036)	(0.017)	(0.014)
Pre-66 mean, MA group[b]	0.028	0.000	0.028	0.030	0.029
Post-66 mean, MA group[b]	0.036	0.048	0.033	0.038	0.035
Pre-66 mean, Non-MA group[b]	0.028	0.000	0.026	0.028	0.029
Post-66 mean, Non-MA group[b]	0.036	0.000	0.036	0.038	0.038
Observations	6,369	114	2,746	8,104	10,237
R^2	0.508	0.548	0.568	0.485	0.443
Individual fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓

Notes: Table reports placebo reduced-form RDDD estimates of the differential discontinuity at age 66 (instead of the true age-65 eligibility cutoff) in a binary indicator for regular exercise, using different bandwidth choices h (in years). The dependent variable equals 1 if the respondent reports exercising "every day", and 0 otherwise. The coefficient $\Delta^{MA} - \Delta^{\text{Non-MA}}$ captures the difference between the jump at age 66 for individuals in the MA group and the corresponding jump for the non-MA comparison group.[a] Coefficients are reported in percentage points.[b] Means are computed within the estimation sample for each bandwidth, separately by MA status and by whether age is below (Pre-66) or above (Post-66) the cutoff; values are probabilities of regular exercise. Standard errors clustered at the individual level are reported in parentheses. All specifications include individual and year fixed effects.

7 Conclusion

We provide the first quasi-experimental evidence on how Medicare Advantage (MA) enrollment shapes seniors' vigorous exercise with the binary indicator for exercising daily. Exercising daily gets higher chance for seniors to meet the federal physical activity guideline which is more than 150 minutes per week. Exploiting the Regression Discontinuity in Difference in Difference (RDDD), we estimate a reduced-form of differential discontinuity in the probability of exercising everyday at age 65 for MA enrollees compared to Non-MA enrollees. This approach addresses selection concerns by differencing out within and across group both observable and unobservable characteristics. Using nationally representative panel data from Health and Retirement Study, we find a meaningful and sizable increase in the probability of exercising daily at age 65 among individuals in the MA group compared to Non-MA group. These results emphasize the behavioral importance of supplemental fitness benefit which is uniquely provided by MA plans.

Our findings have several implications and contributions. First , they demonstrate health insurance benefit structure trigger behavioral response, preventive health behavior in particular. By reducing financial and logistical barriers to structured exercise programs, MA plans effectively lead to more active lifestyles when the free fitness benefits activate at the Medicare eligibility. Even modest improvements in vigorous physical activity at older ages may generate substantial effect considering the fact that the baseline physical activity is significantly low among older populations.

In addition, the heterogeneity results underscore who benefits the most from these incentives. The largest increase in daily exercise occur among Non-College educated and Non-White senior groups that historically face structural barriers to physical activity and gym access. Our finding signals that fitness benefits embedded in MA plans may be particularly effective in narrowing socioeconomic and racial disparities in healthy aging especially through improving physical activity.

As MA penetration continues to grow exponentially, the scope and the structure of supplemental fitness benefit will play an increasingly crucial role in shaping health trajectory of the aging population. Our finding emphasize the well-designed, structured insurance programs can function as a policy lever that actively promote healthy aging.

Lastly, the attenuation of effects after age 65 demonstrates the need for sustained engagement. While MA eligibility induces an immediate behavioral response, maintaining improvements in physical activity require recurring incentives, targeted outreach, government support such as transportation support, or even more personalized wellness program. Our results call attention to the potential value of continued reinforcement rather than one-time eligibility shock.

In conclusion, our findings suggest that supplemental MA fitness benefits can serve as a scalable, equity-enhancing tool for inducing preventive health behaviors among older adults. This study provides actionable guidance for policymakers and insurers seeking to design programs that foster healthy aging.

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