Spousal Spillover in Health Screening: Evidence from National Health Screening Program in South Korea*

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Social interactions can strongly shape preventive health behaviors, but little is known about how they shape participation in formal health screening programs. This study investigates spousal spillovers in screening participation using South Korea's National Health Screening Program, which subsidizes 90–100% of screening costs biennially at even-numbered ages. Exploiting the spouse's even age as an instrument, we estimate that a spouse's screening increases one's own participation by 7.9 percentage points, equivalent to 37 of the direct subsidy effect. Spillovers primarily run from wives to husbands, and evidence points to coordination as a key mechanism, as many couples undergo screening on the same day. These findings highlight the importance of household dynamics in preventive care and suggest that policies engaging families jointly could substantially enhance the effectiveness of public health screening programs.

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1 Introduction

Promoting participation in public health programs is an important topic for both researchers and policymakers. One interesting question is how intra-household decision-making affects participation in these programs and its distributional consequences. Previous research suggests that health behaviors and take-up of public programs are affected by interaction with family members or peers in the workplace (Dahl et al., 2014; Humlum et al., 2024). Shared habits, information, and budget within households can amplify or dampen participation, which could make a policy more or less effective than expected from individual-level impacts alone.

In addition to the existence of spillover effects, who exhibits spillover matters for policy implications. Many public health programs aim to narrow health disparities, but spillover may unintentionally increase inequality if participation is concentrated among health-conscious or high-SES networks. In the context of health screenings, this is particularly important, since many health screening programs suffer from poor targeting, which limits the overall effectiveness of the program (Einav et al., 2020; Kowalski, 2023; Kim and Lee, 2017). Individuals with lower income and education levels face higher cancer mortality, but their take-up in health screenings is lower. Understanding whether spillover attracts high- or low-risk partners can inform better targeting in the design of public health screening programs.

This study examines spillover in health screening participation between spouses, focusing on the context of National Health Screening Program (NHSP) from South Korea. We investigate two research questions. First, is there spousal spillover in health screening take-up? Does spousal eligibility for subsidized screenings increase one's own screening participation? Second, who responds to spouse's screening participation and subsequently participate in screening? Are these compliers from higher or lower socioeconomic backgrounds?

This study exploits biennial subsidies for health screenings provided by the South Korea's NHSP. A set of comprehensive tests for cardiovascular and general health conditions, commonly referred to as "general screening", and 3 types of cancer screenings (stomach, breast, and cervical cancer screenings) are subsidized once every two years when one's age is even-numbered from age 40.[1] General and cervical screenings are fully subsidized, while stomach and breast screenings are 90 percent subsidized, leaving 10 percent copayment at even ages. We show that this age-based subsidy rule generates quasi-random variation in the composition of subsidy eligibilities across couple.[2] We categorize couples into four types based on their age combination each year: (i) Even/Even, (ii) Even/Odd, (iii) Odd/Even, and (iv) Odd/Odd. Here, the first term refers to the respondent's age and the second to their spouse's. We first show that four couple types are well balanced conditional on flexible function of own age and the spouse's age.[3] Then, by comparing (i) Even/Even to (ii) Even/Odd, and (iii) Odd/Even to (iv) Odd/Odd, we estimate spousal spillover effects conditional on one's own eligibility.

This study uses Korean Health Panel Survey data for the main analysis and complement them with insurance claims data from South Korea's National Health Insurance Service (NHIS). The survey data, conducted annually from 2008 to 2018 through face-to-face interviews, surveys approximately 7,000 households and includes information on all household members, allowing us to identify married couples each year. The dataset contains detailed information on demographics, socioeconomic status, health behaviors, and health care utilization. Despite annual data collection, health care use is recorded at the visit level, made possible by a specially designed health diary that participants are required to complete. The survey also includes a specific module on health screenings, documenting the exact date, type, and the results of each screening. The NHIS claims data provide a longitudinal panel of 320,000 randomly sampled couples from 2002 to 2021 and are used to examine spousal spillover in cancer diagnoses. However, we do not

[1] Only cervical screening is subsidized from age 30. To ensure everyone is subject to biennial subsidy schedule, we focus on common age range starting from age 40.

[2] In this study, "age" refers to calendar age, calculated as the difference between the current year and the birth year. Individuals are eligible for subsidies in a calendar year, from January 1 to December 31, when their calendar age is even-numbered. The policy rule verbatim states that those born in even-numbered years are eligible for subsidies in even-numbered years, and those born in odd-numbered years are eligible for subsidies in odd-numbered years. This is equivalent to providing subsidies in years when one's age is even.

[3] We control for own and spouse's age to control for mechanical imbalance between even- and odd-aged groups. Since our analytical sample starts from age 40, an even number, this creates imbalance, which results in even-aged group being younger. We use linear splines in 5 years interval, for one's own and the spouse's age. Controlling for age effects, the four couple types are well balanced.

use these claims data to study screening take-up, as they do not capture screenings at odd ages. These are paid entirely out of pocket and thus do not generate any insurance claim.[4]

We find clear evidence of spousal spillover in health screening take-up. In reduced-form estimates, a spouse's subsidy eligibility increases an individual's own participation in any type of screening by 1.7 percentage points. This effect is similar regardless of whether the individuals themselves are eligible for subsidized screenings. To estimate the causal effect of a spouse's screening behavior, we instrument spousal screening take-up with spousal subsidy eligibility. The two-stage least squares estimate shows that a spouse's screening increases one's own screening participation by 7.7 percentage points, which corresponds to 37 percent of the direct effect of receiving a subsidy.

Spillover effects are stronger from wives to husbands. When a wife undergoes screening, her husband's participation increases by 9.5 percentage points. In contrast, a husband's screening raises his wife's participation by only 5.4 percentage points, suggesting differences in intra-household influence over health decisions. We also explore coordination as a likely mechanism underlying spousal spillovers. Many screenings involve logistical or emotional burdens, such as fasting, sedation, or anxiety, which may be reduced when couples participate together. Supporting this view, we find that among couples who both receive screenings in the same year, 53 percent do so on the same day.

We characterize selection into screening in response to spousal spillover separately for individuals who themselves are eligible versus ineligible for subsidies. Following Angrist and Pischke (2009), we compare first-stage coefficients across subsamples to calculate the relative likelihood that compliers belong to different groups. Among individuals ineligible for subsidized screenings, spousal subsidy eligibility induces people with higher income and education levels to participate in screenings. Compliers are 71 percent more likely to be college graduates and are 50 percent more likely to have household income above

[4] Survey data do not suffer from this limitation, as they include all self-reported screening participation. Therefore, we rely on survey data for our main analysis. As a robustness check, Appendix Section B analyzes spillover in publicly subsidized screenings using claims data. Although the results are consistent, the estimated spillover effects are smaller, because the claims data only reflect publicly subsidized screenings rather than all screenings.

median than entire sample. The fact that higher-SES individuals respond more strongly suggests that spillover widens inequality in screening take-up.

In contrast, we find that among individuals already eligible for subsidized screenings, spousal eligibility further increases take-up among those with lower income and education levels. Compliers are 72 percent less likely to be college graduates and are 60 percent less likely to have household income above median than entire sample. The response from lower-SES individuals indicates that spousal spillover can reinforce the redistributive intent of the subsidy policy, potentially narrowing disparities in screening participation (Park, 2024).

This study makes two contributions. First, it adds to the literature on intra-household spillover in public program take-up. While prior research has primarily documented spillover from eligible to the ineligible individuals, we show that spillovers also occur between eligible individuals. Importantly, we show that this distinction has important implications for selects into treatment. In our context, an individual's own subsidy eligibility does not affect the magnitude of the spousal spillover in screening take-up, but it does shape who exhibits spillover. Spillovers from eligible to ineligible spouses are concentrated among individuals with higher socioeconomic status (SES), whereas spillovers between eligible individuals are more pronounced among those with lower SES. In this respect, our study complements Humlum et al. (2024), who examine a national vaccination program in Denmark and document spillover from eligible children to their ineligible siblings. They show that this spillover happens in families with high SES, which widens inequality in vaccination. Consistent with their findings, we show that spillover from eligible to ineligible spouses are driven by individuals with high income and education. However, our study also highlights an important contrast. Spillovers between eligible individuals reduce inequality by increasing participation among low-SES individuals. This suggests that public health programs aiming to reduce health disparities may benefit from broad eligibility rules, which can foster positive spillover among disadvantaged populations.

Second, this study contributes to the literature on peer effects in health behaviors.

Using quasi-random variation in social groups, a wealth of empirical studies have documented spillover effects in health behaviors and conditions, such as obesity (Christakis and Fowler, 2007; Cohen-Cole and Fletcher, 2008; Kling et al., 2007), male circumcision (Kim et al., 2018), substance use (Argys and Rees, 2008; Lundborg, 2006), and exercise (Carrell et al., 2011). However, peer effects in health screening participation remain relatively unexplored. Health screenings represent a setting where peer influence can substantially affect take-up, because, unlike behaviors such as smoking, exercise, or eating, screening involves information gaps, uncertainty, and fear. Peers and family members can play a crucial role in sharing information and experiences, providing moral support, and reducing anxiety. Additionally, screenings often require logistical assistance, such as physical support after fasting or sedation, in contrast to health behaviors that are typically self-managed. Coordination with a spouse or coworker can lower these costs. Despite these theoretical mechanisms, existing studies examining peer influence in screening decisions often lack exogenous variation in peer structure (Redler and Reichel, 2024; Pruckner et al., 2020; Lurgain et al., 2025). This study leverages quasi-random variation in screening subsidy eligibility across couples and shows that one spouse's screening participation causally increases the likelihood of the other's participation.

The rest of the paper is organized as follows. Section 2 introduces South Korea's National Health Screening Program and the subsidy schedule that provides quasi-random variation in take-up. Section 3 outlines the identification strategies using composition of subsidy eligibilities within couples. Section 4 discusses the survey and administrative datasets used for this study. Section 5 presents the results on screening take-up and selection into screening. Lastly, Section 6 concludes.

2 Institutional background

This study examines the National Health Screening Program (NHSP) administered by the South Korean National Health Insurance Service (NHIS). The mandatory national health insurance system covers approximately 52 million population and provides regular health screenings for major chronic diseases and cancers common among South Koreans. These programs collectively constitute one of the world's largest health screening programs (Shin et al., 2022).

National Health Screening Program provides a comprehensive set of screenings for cardiovascular and general health conditions, commonly referred to as "general screening". It consists of measurement of height, weight, waist circumference, blood pressure, blood sugar, cholesterol level, and other key health indicators. National Cancer Screening Program provides subsidized cancer screenings for five types of cancers: stomach, breast, cervical, colorectal, and liver cancer.[5] While all screenings are provided for all the citizens, liver screening was subsidized only for high-risk patients who suffer from chronic liver diseases or hepatitis. Each screening program uses pre-specified medical tests (reported in Table 1) to detect and diagnose cancer. If initial screening tests are positive, one undergoes follow-up tests, such as biopsies, to confirm the diagnosis and determine the presence of cancer.

General health screening and cancer screenings are typically provided once every two years, "biennially", at even-numbered ages from age 40. Throughout this paper, age refers to the calendar age, calculated as the difference between the current year and the birth year.[6] So, one is eligible for subsidized screenings at ages 40, 42, 44, and onwards at even ages, but not at ages 41, 43, 45, and at other odd ages. They are also not provided before age 40. There are variation in cutoff age and frequency of subsidies across screenings. Liver and colorectal screenings are annually subsidized.[7] Subsidies for cervical and colorectal screenings begin from age 30 and 50, respectively.[8] Table 1 provides a summary of the subsidy schedules for the general and cancer screenings.

[5] After the study period, lung cancer screening was added in 2019.

[6] For example, a woman born in 1968 would be eligible for subsidized screenings throughout 2024, since her age is 56 (=2024-1968), an even number. Next year in 2025, her age will be 57, an odd number, and she would need to pay the full cost for the same screenings if she wants to receive them. The subsidy rule verbatim states that those born in even (odd) years are eligible for subsidies at even (odd) calendar years starting from age 40. This rule is equivalent to providing subsidies when the age, defined as the difference between the current year and the birth year, is even. This is because the difference between two even numbers or two odd numbers is always even.

[7] Colorectal screening used to be biennially subsidized at even ages, but became annually subsidized from 2012.

[8] Subsidies for cervical screening begin from age 30, but it was lowered to 20 in 2016.

Despite these differences in eligibility rules, Park (2024) documents that all screenings exhibit systematically larger take-up at even ages than at odd ages due to the tendency to undergo multiple screenings during a single hospital visit. Therefore, this paper focuses on participation in any type of screening, rather than examining each screening individually.

The amount of subsidies is full coverage for the general health screening and 90% subsidies for five types of cancer screenings. So, one pays nothing for the general health screening, but needs to pay 10% copay for cancer screenings. Subsidies became more generous over time. Cervical screening was fully subsidized during our study period, and colorectal screenings became fully subsidized after our study period. For those with low income, the 10% copay for cancer screenings are also subsidized, making cancer screenings free.[9]

The health screening programs were actively promoted by NHIS to encourage participation. Paper mails were sent to eligible individuals that include information on one's subsidized screenings and medical facilities in the vicinity that provides screenings. NHIS also conducts public campaigns, including advertisements on television, media, and outdoor spaces. Participants can select any accredited medical facility, such as private clinics, hospitals, or public health centers, for their screenings (Shin et al., 2022).

To promote participation in general health screening, employers were mandated to ensure their employees participate in general health screening by the Occupational Safety and Health Act. NHIS provides a list of eligible employees to employers, allowing companies to organize group participation in the general health screening. Employers face financial penalties if their employees do not participate, resulting in a high participation rate among workplace employees (Kang et al., 2017).

3 Identification

This study exploits variation in couple's age combinations to estimate spousal spillover effects in health screening take-up. Subsidy schedules, which provide subsidies to individ-

[9] Kim and Lee (2017) exploits the health insurance premium cutoff for free cancer screenings to examine the effect of copay on take-up and cancer detection.

uals with even-numbered ages, create four distinct types of couples with different subsidy eligibility: (*i*) Even/Even, (*ii*) Even/Odd, (*iii*) Odd/Even and (*iv*) Odd/Odd. In the first group (Even/Even), both partners have even ages and are thus simultaneously eligible for subsidies in a given year. In the second group (Even/Odd), own age is even, hence eligible for subsidies, and the spouse's age is odd, hence not eligible for subsidies. In the fourth group (Odd/Odd), both have odd ages and neither is eligible for subsidies. It is important to note that these group definitions are time-variant. For instance, couples in group 1 this year will transition to group 4 next year, and vice versa, while groups 2 and 3 alternate every year.[10]

To motivate the identification strategy, we present the take-up of any kind of screening for each age with different couple age combinations in Figure 1. Red lines plot the take-up when one's age is even, while blue lines plot the take-up when one's age is odd. Within each red and blue lines, solid lines correspond to the take-up when the spouse's age is even, while the dashed lines correspond to the take-up when the spouse's age is odd. Thus, the 4 lines represent the average take-up rates for the 4 age groups described earlier. A sharp increase in take-up in even age groups at age 40 indicates the effect of one's own subsidy eligibility.[11] Within each even and odd group, the solid lines are above the dashed lines. This suggests that one is more likely to participate in screening when one's spouse has an even age, and hence eligible for subsidized screenings. This visually displays the positive spousal spillover in screening take-up.

To argue that the difference in take-up between having a spouse with an even or odd age is the causal spousal spillover effect rather than being driven by other correlated factors, we examine the balance between the groups. Specifically, our goal is to show that the group with a spouse of even age is comparable to the group with a spouse of odd age, except the difference in spouse's age itself. We use the following econometric

[10]The presence of annual subsidies for colorectal or liver screening does not invalidate this research design. Despite annual subsidies, colorectal and liver screening take-up still exhibits biennial pattern, with larger take-up at even ages. This is driven by a tendency to receive multiple screenings during one hospital visit. As a result, the variation in take-up between even and odd ages still holds.

[11]The divergence between the even and odd age groups starts before age 40, since biennial subsidies for general screening are available to (*i*) self-employed and (*ii*) employee insurance holders at even ages below 40. Section 2 provides detailed explanation for the exception to the biennial rules.

specification to evaluate the balance between the two groups.

$$y_{it} = \alpha_0 + \alpha_1 spouse\_age\_even_{iat} + f(spouse\_age_{it}) + \varepsilon_{iat} \tag{1}$$

The analytical sample consists of currently married couples whose age and the spouse's age is in [40, 79] age range. Both husbands and wives are present in the dataset. We conduct balance test separately after splitting the sample into a group whose own age is even and another group whose own age is odd. The outcome variable y_{it} is a pre-specified characteristic of individual i in year t. The coefficient of interest, α_1, captures the difference in outcomes between individuals with spouse of even versus odd ages. To control for the spouse age effects, we include a flexible control of the spouse's age, $f(spouse\_age_{it})$.[12] In this study, we choose linear splines of spouse's age with 5 years interval. We cluster the standard error at the couple level to account for potential within-couple correlations over the years.

Table 2 compares the four age groups using the econometric specification (1). First, note that these 4 groups are almost equally sized at 25 percent. This suggests that even-odd age distinction divides the population into two roughly equal halves and there is little correlation between one's age being even and their spouse's age being even. Next, we compare individuals across a range of characteristics. Column 3 compares the (*i*) Even/Even with (*ii*) Even/Odd groups and column 6 compares the (*iii*) Odd/Even with (*iv*) Odd/Odd groups. Conditional on spouse's age controls, the 4 groups are well balanced on demographic and socioeconomic characteristics, such as years of education, income or working status.

To estimate the impact of spouse's subsidy eligibility and to compare it to the impact of own subsidy eligibility, we use the following modified econometric specification.

$$\begin{aligned} y_{it} =& \beta_0 + \beta_1 age\_even_{it} + \beta_2 spouse\_age\_even_{it} + \beta_3 age\_even_{it} \times spouse\_age\_even_{it} \\ &+ g(age_{it}) + f(spouse\_age_{it}) + \varepsilon_{it} \end{aligned} \tag{2}$$

[12] Age controls are required due to mechanical imbalance that the even group is younger. This is because sample starts from age 40, an even number.

Outcome variable y_{it} is the take-up in any kind of screening of individual i in year t.[13] The coefficient β_1 captures the effect of own subsidy eligibility, while the coefficient β_2 captures the spousal spillover in take-up. The coefficient of the interaction term β_3 tests for any additional effect when both spouses are simultaneously eligible. We control for the difference in age between groups with even age and odd age by including own age control $g(age_{it})$ and the spouse's age control $f(spouse\_age_{it})$. Both use linear splines of age with 5 years interval. Standard errors are clustered at the couple level.

4 Data

This study uses Korean Health Panel Survey dataset spanning years 2008 to 2018.[14] It is an annual panel dataset of nationally representative 7,000 households with 21,300 individuals and provides information on social demographics, health care usage, health behaviors and so forth. Data are collected through annual face-to-face interviews, so all information is self-reported.

The survey was conducted at the household level and included all the household members, which allows us to identify spouse in every year. Combining household and marital status information, we identify currently married couples where both husband and wife are present in the dataset, which constitute our main analytical sample. Since screening subsidies are provided from age 40, we restrict our sample to couples where both husband and wife have age in [40, 79] range. This ensures that both are subject to the biennial subsidy rule.

We use health screening records from the survey data as our main outcome variable. Despite annual data collection, health care utilization datasets were provided at the visit level. This granular level data were made possible through specifically designed health diaries provided to survey participants. They were required to leave detailed records of every visit to a hospital with receipts, which were collected and recorded by enumerators

[13] Specifically, the outcome variable is defined as take-up in any of the following screenings: general screening, 5 types of subsidized cancer screenings (stomach, breast, cervical, liver, and colorectal) and 2 types of unsubsidized screenings (lung and prostate).

[14] It is version 1.7.1 made jointly by Korean Institute for Health and Social Affairs and National Health Insurance Services.

during annual visits. This allowed comprehensive record of health care utilization without missing period. Every health screening participation includes information on the type of screening received (general or cancer screenings), medical tests performed, screening results, and diagnosis if any disease was detected. In addition to five types of cancers covered by the National Health Insurance Service (NHIS), the dataset additionally captures lung and prostate screenings that are not subsidized by the NHIS. We use these comprehensive screening take-up records to estimate the spousal spillover in screening take-up.

We complement the analysis with the National Health Insurance claims data that spans years 2002 to 2021 to examine whether spousal spillover in take-up leads to additional cancer diagnosis. While marital information are not usually available in many insurance claims data, we specifically used 320,000 pairs of married couples randomly selected from the pool of beneficiaries.[15] The dataset includes basic demographic information on beneficiaries, death, and health care utilization. An advantage of the NHIS claims data is that they include cancer diagnosis information regardless of screening participation. Cancer diagnosis is inferred from Coinsurance Reduction Program for Rare and Severe Diseases (CRP) that reduces the coinsurance rate for hospital visits for those who have pre-specified rare and severe diseases, which include cancers. Registering with the CRP is one of the first things that newly diagnosed cancer patients do, and this provides an exhaustive list of cancer diagnoses and their timing. This program is independent from the health screening programs, so it captures all the cancer diagnoses, made with or without screenings. We use this diagnosis information to investigate whether spousal spillover leads to increase in cancer diagnosis.[16]

[15] We were granted access to the sample of randomly selected beneficiaries who were currently married in year 2012. Then, panel data of the chosen beneficiaries were constructed from year 2002 to 2021. Hence, we are not aware of their marital status in years other than 2012. While we conduct main analysis using the whole sample from year 2002 to 2021, we provide robustness check using only year 2012 data.

[16] The reason insurance claims data is not used for examining screening take-up is that private screenings fully paid by the patients do not generate any insurance claims. Most of the screenings at odd ages are private and they are not captured by the claims data. Therefore, we use the survey data of self-reported take-up to examine spousal spillover in take-up and use the claims data to examine spillover in cancer diagnosis.

5 Results

5.1 Spousal spillover in screening take-up

This section examines spousal spillover in screening participation and cancer diagnosis. We find that subsidy eligibility increases not only one's own participation but also that of their spouse. A likely mechanism is that couples tend to receive screenings together.

Table 3 reports the regression results showing positive spousal spillover in screening take-up. The outcome variable is one's own participation in any type of screening. Column 1 shows that both one's own subsidy eligibility (β_1) and the spouse's eligibility (β_2) are positively and significantly associated with higher screening rates. The estimated direct effect of own eligibility measured in the married group is approximately 22 percentage points, while the effect of the spouse's eligibility is 1.7 percentage points. The interaction term (β_3) is not statistically significant, indicating that the influence of a spouse's eligibility on one's own take-up is similar regardless of whether the individual is also eligible. Column 2 includes linear spline controls for both own and spouse's ages in 5-year intervals to account for age differences between even and odd groups. The estimates remain robust.

To translate the subsidy effect into peer effect in screening, we instrument the spouse's screening participation with the spouse's subsidy eligibility. Column 3 of Table 3 presents the two-stage least squares estimate, showing that a spouse's screening take-up increases one's own probability of screening by 7.9 percentage points. This peer effect represents 37 percent of the direct subsidy effects. Column 4 includes controls for both own and the spouse's ages using linear splines and confirms that the estimate is robust to age adjustment.

To examine the direction of spillover, we split the sample by gender and estimate the effects separately for men and women. Table 4 presents the spillover from husband to wife using the female sample and from wife to husband using the male sample. We begin by comparing the direct effects of own subsidy eligibility. Women are more responsive to own subsidies than men. Subsidy eligibility increases screening take-up by 26 percentage points among women, compared to 17 percentage points among men. In contrast, spousal spillover displays the opposite pattern. When husbands participate in screening, their wives' take-up increases by 5.4 percentage points, while husbands' take-up increases by 9.5 percentage points in response to wives' take-up. Compared to the direct subsidy effect, this implies a 21 percent increase for women and a 56 percent increase for men. These results suggest that men are more sensitive to spousal participation and spillover accounts for a substantial portion of men's screening take-up.

One plausible mechanism is joint decision-making and coordination in health screenings between spouses. Many couples make health care decisions collectively, and coordinating screenings may yield practical benefits. For instance, joint participation can reduce travel costs and help with pre-screening preparations. Some procedures, such as gastroscopy or colonoscopy, require fasting or taking medication beforehand, and spouses may remind each other of these steps. Sedation is also involved in these screenings, where bringing a companion is explicitly advised. These logistical considerations encourage couples to attend screenings together. Emotional support may also play a role: health screenings can provoke anxiety or fear, and attending together may ease psychological discomfort. Supporting this idea, Table 5 shows that among couples in which both spouses undergo screening, 53 percent do so on the same day.

In contrast, our data do not support mechanisms based on information sharing or responses to negative health shocks. One hypothesis is that an eligible spouse might screen first and then encourage the ineligible partner to participate by sharing their experience. If so, we would expect the eligible spouse to undergo screening first. However, Table 5 shows that among couples who do not screen on the same day, the ineligible spouse is slightly more likely to participate first, contrary to this hypothesis. This also makes it unlikely that the spillover is driven by negative health shocks, such as diagnoses that increase preventive care among other family members. The fact that the ineligible partner often screens first undermines this explanation.

Appendix Section A presents robustness checks on spousal spillover in take-up. Table A1 presents the spousal spillover effects in general and each cancer screening separately and find spillover in most of the screenings. Table A2 presents the spillover effects after dropping the same age couples from the Even/Even and Odd/Odd couple types to account for the possibility that couples with same ages are different in unobserved characteristics. The results are highly robust to the exclusion of same age couples. Finally, Table 5 presents evidence that taking screening together on the same day is one mechanism of spousal spillover. Among couples where both partners receive screenings in a given year, 53 percent receive them on the same day.

Appendix Section B presents spousal spillover effects estimated using the NHIS claims data. Since the insurance claims data only capture public screenings and not private screenings fully paid by patients, the effects estimated with NHIS data are spousal spillover effects only in public screenings. As a result, we find significant, but smaller spousal spillover effects of around 0.5 - 1.3 percentage points, as shwon in Table A6 Detailed robustness checks are provided in Appendix Section B.

5.2 Selection in spousal spillover

An interesting finding in Table 3 is the weak interaction effect (β_3). In many settings, peer effects are amplified or only observed when individuals themselves engage in the behavior alongside their peers.[17] In contrast, our weak interaction effect implies that spousal participation in screening increases one's own participation by a similar absolute amount, regardless of whether one is eligible for subsidized screenings or not. When interpreted in relative terms, the spillover is more pronounced for those who are not eligible.[18] One possible explanation is that the type of individuals who respond to a spouse's participation differs systematically depending on their own subsidy eligibility. Hence, this section explores selection into health screenings in response to spousal participation.

Selection into health screening is also an important topic in its own right, since public health screening programs often suffer from poor targeting. Given that the goal of health screening is to detect disease early, the ideal participants are high-risk individuals more

[17] For example, being randomly assigned a binge-drinking college roommate increases one's own alcohol consumption, only among those who drank in high school (Duncan et al., 2005).

[18] Spousal eligibility increases one's take-up by 4.9 percent ($= 0.0172/(0.131 + 0.217)$) among those eligible, and by 13 percent ($= 0.017/0.131$) among those not eligible.

likely to have undiagnosed health conditions. However, previous studies find that policies aimed at increasing screening rates attract lower-risk marginal participants, which limits the effectiveness of screening programs (Einav et al., 2020; Kowalski, 2023; Jones et al., 2019). Therefore, a second goal of this analysis is to identify the conditions under which spousal spillover attracts high-risk individuals most likely to benefit from screenings.

To characterize the compliers in spousal spillover, we compute the spousal spillover effect across various subsamples and compare the first stage coefficients. The ratio of the first stage coefficient for a certain group to that of the entire sample is equal to the relative likelihood that a complier belongs to that certain group (Angrist and Pischke, 2009). For example, the relative likelihood that a complier is male is calculated as follows:

$$\text{Relative likelihood} = \frac{Pr(male \mid compliers)}{Pr(male)} = \frac{\text{1st stage among male}}{\text{1st stage in the entire sample}}$$

Specifically, I estimate the econometric specification for balance check provided in Equation 1 with the male subsample and with the entire sample. To take into account potentially different compliers based on one's subsidy eligibility, the subsample is further divided into the ones with even ages and the ones with odd ages. The ratio of the first stage coefficients among male with even ages to that among entire even ages provides the relative likelihood that a complier in the even age group is male.[19] Standard errors are clustered at the couple level.

Table 6 presents the first stage coefficients for spousal spillover across various subsamples. The spousal spillover in the entire sample was 1.8 percentage points in the even age group and 1.6 percentage points in the odd age group. For each age group, first stage coefficients are estimated in the subsample of male, currently working, college graduate, individuals with income in top 25 percent, and households with income above the median. Taking the ratio of the first stage coefficient in the subsample to that of the entire sample

[19]Spousal spillover involves two-sided noncompliance, hence both always-takers and never-takers. Ideally, we can estimate the complier characteristics and compare them to those of always-takers and never-takers using the method provided by Marbach and Hangartner (2020). However, due to the small magnitude of the first stage coefficient, inferring complier characteristics become imprecise and unstable. As a result, we rely on comparisons of first stage coefficients across subsamples to infer complier characteristics.

yields the relative likelihood that a complier belongs to a certain group. Figure 2 plots these relative likelihoods for the even and odd age groups separately.

In both age groups, compliers are more likely to be male and currently working. This is consistent with the direction of spousal spillover results, shown in Table 4, that the spousal spillover is stronger among husbands when wives become eligible for subsidized screenings. However, there is opposite selection pattern in terms of education and income. Among even-aged individuals who can get subsidized screenings, spousal spillover occurs mostly among those from lower socioeconomic backgrounds. Compliers are 72 percent less likely to be college graduates, 49 percent less likely to have individual income in top 25 percentile, and 60 percent less likely to have household income above median compared to the average even-aged individuals. On the other hand, among odd-aged individuals who has to pay the full costs of screenings, spousal spillover happens among those from higher socioeconomic backgrounds. Compliers are 71 percent more likely to be college graduates, 79 percent more likely to have individual income in top 25 percentile, and 50 percent more likely to have household income above median compared to the average odd-aged individuals.

The contrasting selection patterns suggest the importance of screening subsidies on attracting high-risk participants. Park (2024) shows that subsidizing screening induces participation of individuals with worse health condition and lower socioeconomic status. Our paper provides complementary finding that spousal spillover in screening attracts high-risk participants only when both husband and wife are simultaneously eligible for subsidized screenings. This suggests that setting subsidy eligibility at the household level such that both husband and wife can get subsidized screenings in the same year could increase not only take-up, but also attract more high-risk individuals to get screened.

5.3 Spousal spillover in cancer diagnosis

To examine whether spousal spillover in screening participation leads to an increase in cancer diagnosis, we use the NHIS insurance claims data. To focus on the effect of spouse's subsidy eligibility, we use a slightly modified econometric specification.

$$\begin{aligned} y_{iat} =& \gamma_0 + \gamma_1 spouse\_age\_even_{iat} + \gamma_2 age\_even_{iat} \times spouse\_age\_even_{iat} \\ &+ \lambda_a + f(spouse\_age_{iat}) + \varepsilon_{iat} \end{aligned} \tag{3}$$

Outcome variable y_{iat} is the cancer diagnosis of individual i of age a in year t. The only difference from main specification Equation (2) is that we include the own age fixed (λ_a) effects, which absorb the even/odd variation of own age. This obviates the need to include controls of own age, so we only include the controls of spouse age, $f(spouse\_age_{iat})$. Our coefficient of interest is γ_1, which captures the spousal spillover when one's age is odd (Odd/Even - Odd/Odd), and $\gamma_1 + \gamma_2$, which captures the spousal spillover when one's age is even (Even/Even - Even/Odd).

Table 7 presents the estimation results. Despite large number of observations that exceed 6 million, we do not find any significant spousal spillover in cancer diagnosis. This is shown in the insignificant coefficients of γ_1 and $\gamma_1 + \gamma_2$.

6 Conclusion

This study investigates spousal spillover in health screening and provides new evidence on intra-household spillover in preventive care use. Leveraging quasi-random variation in eligibility generated by South Korea's age-based screening subsidy rule, we find that spousal eligibility and participation significantly increase one's own likelihood of screening. In addition, we find that selection depends on one's own subsidy eligibility, with spillover among already-eligible individuals to be concentrated among people from lower socioeconomic backgrounds.

This study presents meaningful policy implications. We show that spillover between eligible spouses draw in couples from lower socioeconomic backgrounds, precisely the groups that public screening programs aim to reach. This suggests that assigning subsidy eligibility at the household level, for example, based on the age of a household head, could enhance both the effectiveness and equity of such programs by encouraging simultaneous participation among household members. Coordinated eligibility may help reduce logistical barriers, amplify positive peer influence, and better target high-risk individuals who might otherwise be left out.

At the same time, the study has limitations. While we find strong spillover in screening take-up, we do not detect statistically significant effects on cancer diagnoses. This should not be interpreted as evidence of no effect, as our estimates have wide confidence intervals and may suffer from limited statistical power. Larger samples are likely needed to assess downstream impacts. In addition, our identifying variation captures short-term behavioral responses, within a one-year window, which limits our ability to examine longer-term health outcomes such as treatment initiation or mortality. Future research using alternative settings or longer time horizons is needed to assess the full health consequences of spousal spillovers in preventive care.

Assessing external validity requires consideration of institutional and cultural context. This study identifies spousal spillover in South Korea's National Health Screening Program, which features a unique age-based subsidy schedule. Several factors may affect generalizability. First, the analysis focuses on married couples living together. In settings where spouses are less involved in each other's health decisions, spillover may be weaker. Second, screenings in Korea are easily accessible. In systems with longer wait times or more complex scheduling, coordination between spouses may be harder. Third, Korea's national insurance provides affordable follow-up care, which may encourage participation. In countries where such care is costly or less accessible, spillover effects may be smaller.

Overall, this study documents the spillover in screening take-up between spouses and highlights the potential for intra-household spillover to either reinforce or mitigate inequalities in health behavior, which calls for integration of family dynamics into the design of public health policy.

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7 Tables

Table 1: Screening schedule

	Biennial subsidy				Annual subsidy		No subsidy	
	General	Stomach	Breast	Cervical	Liver	Colorectal	Lung	Prostate
Frequency	2 years	2 years	2 years	2 years	0.5 year	1 year		
Subsidy starting age	40	40	40	30	40	50		
Subsidy amount	100%	90%	90%	100%	90%	90%	0%	0%
Full cost ($)	50	65	40	15	90	10	100	20
Target			Female	Female	High risk group			Male
Subsidized medical tests		Gastroscopy, biopsy	Mammogram	Pap smear	Ultrasound, MSAFP	Fecal occult blood test, colonoscopy, biopsy		

Notes: This table summarizes the subsidy schedule for general and cancer screenings in Korea. Biennial screenings are subsidized once every two years when one's age (= current year - birth year) is even-numbered. Annual screenings are subsidized every year. No-subsidy screenings are not subject to any subsidy by the Korean National Health Insurance Service during the study period. Liver screening is subsidized up to twice a year. The subsidy starting age for cervical screening was lowered to 20 in 2016. The colorectal screening used to be biennially subsidized at even ages from age 50 until 2011. It became an annually subsidized screening from year 2012. Colonoscopy is subsidized only for those with positive result from fecal occult blood test. MSAFP stands for Maternal Serum Alpha-Fetoprotein test.

Table 2: Balance check in spousal spillover

	(1)	(2)	(3)	(4)	(5)	(6)
	Own age even			Own age odd		
	Even/Even	Even/Odd	Adjusted difference	Odd/Even	Odd/Odd	Adjusted difference
Age	56.480	56.794	-	56.861	57.222	-
	(10.413)	(10.411)	-	(10.375)	(10.368)	-
Female	0.500	0.506	0.002	0.494	0.500	0.003
	(0.500)	(0.500)	(0.002)	(0.500)	(0.500)	(0.002)
Years of education	11.101	11.173	–0.137	11.182	10.982	0.125
	(3.994)	(3.899)	(0.090)	(3.902)	(4.053)	(0.092)
Working status	0.669	0.663	0.0003	0.669	0.665	–0.002
	(0.471)	(0.473)	(0.0081)	(0.471)	(0.472)	(0.008)
Individual income	1641.6	1603.0	1.365	1628.7	1606.5	–18.903
	(2200.3)	(2175.6)	(28.844)	(2176.8)	(2202.5)	(28.422)
Household income	4599.3	4659.3	–82.202	4659.3	4567.9	80.867
	(3339.5)	(4431.3)	(74.377)	(4431.3)	(3429.8)	(77.215)
Own a house	0.778	0.779	0.0003	0.779	0.781	–0.0002
	(0.416)	(0.415)	(0.0106)	(0.415)	(0.413)	(0.0106)
Number of household members	3.272	3.290	–0.034	3.290	3.242	0.029
	(1.140)	(1.155)	(0.024)	(1.155)	(1.141)	(0.024)
N	19,348	18,873		18,873	18,938	
Share	(0.25)	(0.25)		(0.25)	(0.25)	
F-statistic			F(7, 5870) = 1.06			F(7, 5818) = 1.39
Prob > F			0.388708			0.204523

Notes: This table reports the balance in covariates across 4 couple types formed by the combination of their ages. Outcome variable is one's own characteristic. Sample consists of currently married couples both of whose age is in [40, 79]. Even/Even is a group of individuals whose own age and the spouse's age are both even. Even/Odd is a group of individuals whose own age is even and the spouse's age is odd. The rest of the groups are defined similarly. Column 1, 2, 4, and 5 report the mean and standard deviation of the covariates for each group. Column 3 reports the difference between Even/Even and Even/Odd group conditional on spouse's age controls. Similarly, column 6 reports the difference between Odd/Even and Odd/Odd group conditional on spouse's age controls. Age control variables include linear splines of the spouse's age in 5 years interval. Both individual and household incomes are at the annual level and are denoted in 10,000 Korean Won. Standard errors are clustered at the couple level and reported in parentheses. A */**/*** indicates significance at the 10/5/1% levels.

Table 3: Spousal spillover in screening take-up

	(1)	(2)	(3)	(4)
	Outcome var: Own screening take-up of any kind			
Age even	0.218***	0.217***	0.217***	0.216***
	(0.006)	(0.006)	(0.004)	(0.004)
Spouse age even	0.017***	0.017***		
	(0.005)	(0.005)		
Age even	0.0002	0.0002		
× Spouse age even	(0.0096)	(0.0096)		
Spouse screening			0.077***	0.079***
			(0.017)	(0.017)
N	76032	76032	76032	76032
Odd/Odd group mean	0.131	0.131	0.131	0.131
Age controls		Y		Y
Estimator	OLS	OLS	2SLS	2SLS

Notes: This table reports the spillover effect in screening take-up between spouses. Outcome variable is one's own screening take-up of any kind. Sample consists of currently married couples both of whose age is in [40, 79]. Odd/Odd group mean refers to the average take-up when both one's own and the spouse's ages are odd. Age control variables include linear splines of one's own age and the spouse's age in 5 years interval. In column 3 to 4, spouse screening variable is instrumented by spouse age even variable. Standard errors are clustered at the couple level and reported in parentheses. A */**/*** indicates significance at the 10/5/1% levels.

Table 4: Spousal spillover directions

	(1)	(2)	(3)	(4)
	Among wives (husband ⇒ wife)		Among husbands (wife ⇒ husband)	
Age even	0.264***	0.263***	0.171***	0.170***
	(0.005)	(0.005)	(0.005)	(0.005)
Spouse age even	0.009*		0.025***	
	(0.005)		(0.005)	
Spouse screening		0.054*		0.095***
		(0.030)		(0.017)
N	38016	38016	38016	38016
Odd/Odd group mean	0.137	0.137	0.125	0.125
Age controls	Y	Y	Y	Y
Estimator	OLS	2SLS	OLS	2SLS

Notes: This table reports the direction of spousal spillover in screening take-up. Outcome variable is the take-up in any kind of screening. The sample consists of currently married couples both of whose age is in [40, 79]. Column 1 and 2 examine spousal spillover among married females, while column 3 and 4 examine spillover among married males. In column 2 and 4, spouse screening variable is instrumented by spouse even age variable. Age controls of both oneself and the spouse are included in the regressions. For age controls, linear splines of age with 5 years interval are used. Standard errors are clustered at the couple level and reported in parentheses. A */**/*** indicates significance at the 10/5/1% levels.

Table 5: Spousal spillover: share of same day screenings

	(1)	(2)	(3)	(4)	(5)
	Total	Even/Even	Even/Odd	Odd/Even	Odd/Odd
Pr(same day | both participate)	0.528	0.570	0.433	0.433	0.652
Pr(Spouse first | both participate)	0.139	0.149	0.134	0.127	0.121

Notes: This table reports the share of spouses getting screening on the same day given that both participate in screening in a year. Take-up before or after spouse considers 30 day window before and after the screening day. Column 1 reports the share of the couples who participate in a same year. Columns 2 to 5 reports the same share of couples by each even and odd combination.

Table 6: Compliers in spousal spillover

	(1)	(2)	(3)	(4)
	Own age even		Own age odd	
Subsample	First stage	Relative likelihood	First stage	Relative likelihood
Entire sample	0.018**		0.016***	
	(0.007)		(0.005)	
Male	0.030***	1.658	0.020***	1.221
	(0.008)		(0.006)	
Working	0.023***	1.253	0.022***	1.321
	(0.008)		(0.006)	
College graduate	0.005	0.281	0.028**	1.711
	(0.015)		(0.012)	
Individual income top 25%	0.009	0.514	0.029***	1.794
	(0.011)		(0.009)	
Household income top 50%	0.007	0.401	0.025***	1.502
	(0.009)		(0.007)	

Notes: This table reports the characteristics of compliers in spousal spillover. Sample consists of currently married couples both of whose age is in [40, 79]. Column 1 and 2 examine compliers when own age is even and eligible for subsidies. Column 3 and 4 examine compliers when own age is odd and ineligible for subsidies. Column 1 and 3 report first stage coefficients for the even- and odd-aged samples and subsamples. Column 2 and 4 report the relative likelihood compliers belong to a given subsample. Following Angrist and Pischke (2009), the relative likelihood is calculated as the ratio of the first stage coefficient for the subsample to the whole sample first stage. Spouse's age controls using linear splines with 5 years interval are included in the regressions. Standard errors are clustered at the couple level and reported in parentheses. A */**/*** indicates significance at the 10/5/1% levels.

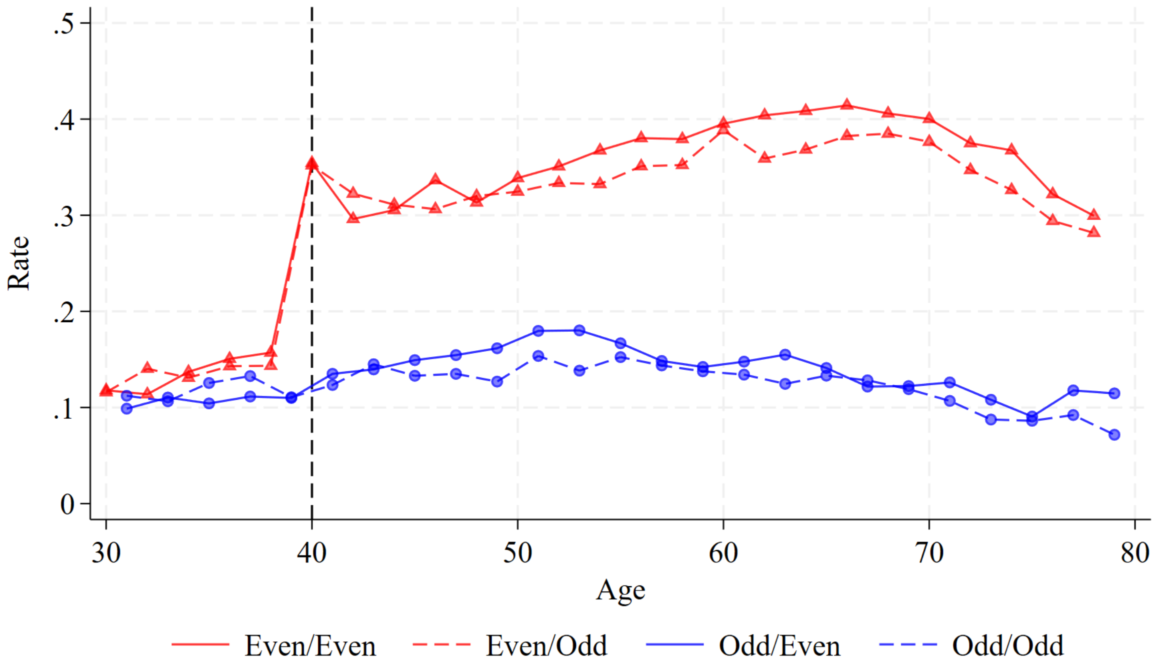
Table 7: Effect of spousal spillover on cancer diagnosis

	(1)	(2)	(3)	(4)
var	Stomach	Breast	Cervical	Colorectal
Spouse age even (γ_1)	–0.000029	0.000010	0.000048	0.000190
	(0.000078)	(0.000188)	(0.000090)	(0.000124)
Age even	0.000068	–0.000008	–0.000080	–0.000219
× Spouse age even (γ_2)	(0.000122)	(0.000271)	(0.000133)	(0.000175)
$\gamma_1 + \gamma_2$	0.000039	0.000002	–0.000032	–0.000029
	(0.000092)	(0.000190)	(0.000094)	(0.000120)
Even/Odd mean	0.002587	0.005120	0.001648	0.002887
Odd/Odd mean	0.001852	0.004683	0.001457	0.002669
N	6,283,843	3,142,036	3,571,159	3,689,649
Own age range	[40, 79]	[40, 79]	[30, 79]	[50, 79]
Spouse age range	[40, 79]	[40, 79]	[40, 79]	[40, 79]

Notes: This table reports the effect of spousal spillover on cancer diagnosis using the National Health Insurance Service claims data. Outcome variable is the diagnosis of given cancer. Econometric specification is given in Equation (3). Sample consists of currently married couples both of whose age is as given in the table for each screening. Even/Odd group mean refers to the take-up when one's own age is even, eligible for subsidies, and the spouse's age is odd, ineligible for subsidies. Standard errors are clustered at the couple level and reported in parentheses. A */**/*** indicates significance at the 10/5/1% levels.

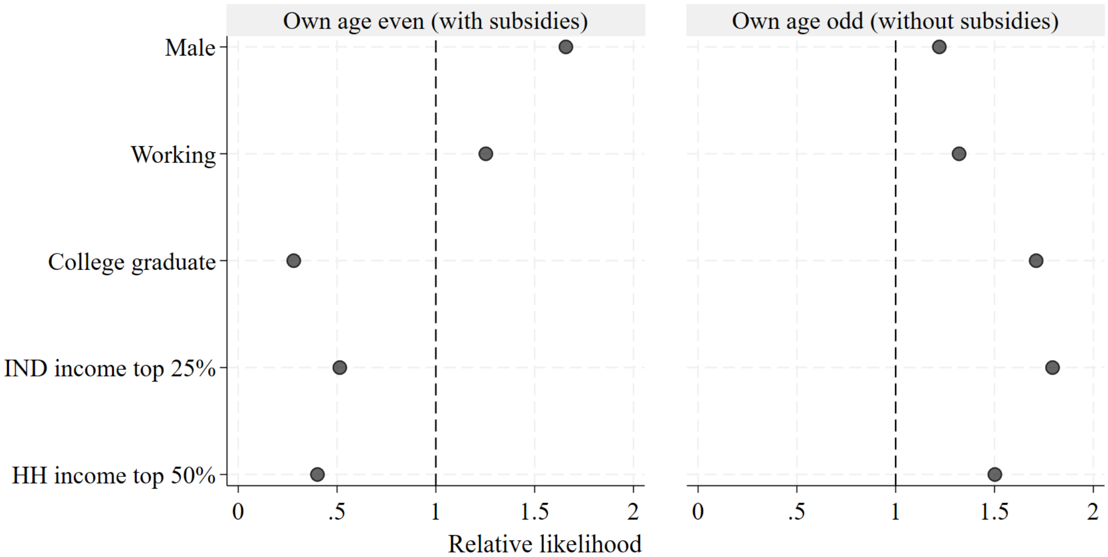
8 Figures

Figure 1: Spousal spillover in screening take-up



Notes: The figure plots the take-up rate of any screening for each age with different spouse age combinations. Red lines plot the take-up when one's age is even. Blue lines plot the take-up when one's age is odd. Within red and blue lines, solid lines plot the take-up when the spouse's age is even. Dashed lines plot the take-up when the spouse's age is odd. The legend presents 4 types of couple age combinations with the one's age presented first and followed by the spouse's age.

Figure 2: Selection in spousal spillover



Notes: The figure plots the relative likelihood that a complier belongs to a given subsample. Sample consists of currently married couples both of whose age is in [40, 79]. Following Angrist and Pischke (2009), the relative likelihood is calculated as the ratio of the first stage coefficient for the subsample to the whole sample first stage. Each first stage coefficient is provided in Table 6.

Appendix A Spousal spillover in take-up robustness checks

Table A1: Spousal spillover by screening types

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	General	Stomach	Liver	Colorectal	Lung	Breast	Cervical	Prostate
Age even	0.199***	0.203***	0.029***	0.038***	0.008***	0.213***	0.191***	0.008***
	(0.005)	(0.005)	(0.003)	(0.003)	(0.001)	(0.006)	(0.006)	(0.002)
Spouse age even	0.016***	0.017***	0.002	0.006***	0.002*	0.009*	0.005	–0.0008
	(0.004)	(0.004)	(0.002)	(0.002)	(0.001)	(0.005)	(0.004)	(0.0015)
Age even	0.0002	0.002	0.002	–0.0004	–0.003	–0.007	–0.010	0.002
× Spouse age even	(0.0086)	(0.008)	(0.005)	(0.0043)	(0.002)	(0.009)	(0.009)	(0.003)
Age controls	Y	Y	Y	Y	Y	Y	Y	Y
N	76032	76032	76032	76032	76032	38016	38016	38016

Notes: This table reports the spousal spillover effect for different types of screenings. Outcome variable is one's own screening take-up. Sample consists of currently married couples both of whose age is in [40, 79]. Age controls of both oneself and the spouse are included in the regressions. For age controls, linear splines of age with 5 years interval are used. Standard errors are clustered at the couple level and reported in parentheses. A */**/*** indicates significance at the 10/5/1% levels.

Table A2: Spousal spillover in screening without same age couples

	(1)	(2)	(3)	(4)
	Outcome var: Own screening take-up of any kind			
Age even	0.220***	0.220***	0.217***	0.217***
	(0.006)	(0.006)	(0.004)	(0.004)
Spouse age even	0.019***	0.020***		
	(0.005)	(0.005)		
Age even	–0.003	–0.004		
× Spouse age even	(0.010)	(0.010)		
Spouse screening			0.079***	0.081***
			(0.018)	(0.018)
N	69624	69624	69624	69624
Odd/Odd group mean	0.128	0.128	0.128	0.128
Age controls		Y		Y
Estimator	OLS	OLS	2SLS	2SLS

Notes: This table reports the spousal spillover in screening take-up without same age couples. Outcome variable is one's own screening take-up of any kind. The sample consists of currently married couples both of whose age is in [40, 79]. As a robustness, we drop couples whose ages are the same. Odd/Odd group mean refers to the average take-up when both one's own and the spouse's ages are odd. Age control variables include linear splines of one's own age and the spouse's age in 5 years interval. In column 3 to 4, spouse screening variable is instrumented by spouse age even variable. Standard errors are clustered at the couple level and reported in parentheses. A */**/*** indicates significance at the 10/5/1% levels.

Appendix B Screening take-up from NHIS claims data

Table A3: General health screening schedule

Insurance type	Share	Ages with subsidies	
		2002-2018	2019-2021
- Self-employed - Dependent of self-employed	28.5%	Even ages Even ages above 40	Even ages Even ages above 20
- Employee - Dependent of employee	68.50%	Even ages Even ages above 40	Even ages Even ages above 20

Notes: This tables summarizes the general health screening subsidy schedules from 2002 to 2021. Insurance type refers to the category of insurance types used by the South Korean National Health Insurance Service (NHIS) that depends on how one gets health insurance coverage. For self-employed and employee insurance types, there are dependents who are subject to different subsidy schedules. The medical aid insurance type that consists of low-income households are excluded from the analysis and not shown in the table.

Table A4: Cancer screening schedule

Cancer screenings	Subsidized medical tests	Year of policy change		
		2002	2012	2016
Stomach	Gastroscopy, UGI	Even ages 40+		
Breast	Mammogram	Even ages 40+		
Cervical	Pap smear	Even ages 30+		Even ages 20+
Liver	Ultrasound, MSAFP	All ages 40+		
Colorectal	FOBT, Colonoscopy	Even ages 50+	All ages 50+	

Notes: This tables summarizes the changes in subsidy frequency and subsidy starting age for 4 different cancer screenings from 2002 to 2021. For each screening, the table reports the frequency of subsidies and the age range when subsidies apply. Age range 40+ indicates ages with 40 or above. UGI refers to upper gastrointestinal series. FOBT refers to fecal occult blood test.

Table A5: Balance table

	(1)	(2)	(3)	(4)	(5)	(6)
	Own age even			Own age odd		
	Even/Even	Even/Odd	Difference	Odd/Even	Odd/Odd	Difference
Panel A. Demographics						
Age	52.233	52.642	-	52.740	52.908	-
	(8.588)	(8.561)	-	(8.477)	(8.479)	-
Female	0.500	0.510	–0.0003***	0.490	0.500	0.0003***
	(0.500)	(0.500)	(0.0001)	(0.500)	(0.500)	(0.0001)
Panel B. Health insurance						
Insurance premium (KRW)	104,851	104,683	551	104,866	105,559	–523
	(108,004)	(109,514)	(338)	(109,457)	(108,827)	(342)
Self-employed insurance: head	0.195	0.193	–0.0002	0.198	0.196	0.0003
	(0.396)	(0.395)	(0.0009)	(0.398)	(0.397)	(0.0009)
Self-employed insurance: dependent	0.158	0.161	–0.0005	0.156	0.159	0.0001
	(0.365)	(0.368)	(0.0008)	(0.363)	(0.365)	(0.0008)
Employee insurance: head	0.391	0.385	0.0007	0.391	0.387	–0.0005
	(0.488)	(0.487)	(0.0011)	(0.488)	(0.487)	(0.0011)
Panel C. City of residence						
Living in a metropolitan city	0.456	0.455	0.0007	0.455	0.456	–0.0003
	(0.498)	(0.498)	(0.0020)	(0.498)	(0.498)	(0.0020)
Population/1,000	423.581	423.452	–0.445	423.343	422.867	0.290
	(261.579)	(262.446)	(1.026)	(262.458)	(261.980)	(1.036)
Panel D. Work						
Working	0.628	0.626	0.0003	0.627	0.627	0.0000
	(0.483)	(0.484)	(0.0015)	(0.484)	(0.484)	(0.0015)
Agriculture, forestry and fishery	0.004	0.004	0.0002	0.004	0.004	–0.0001
	(0.066)	(0.065)	(0.0002)	(0.065)	(0.066)	(0.0002)
Manufacturing	0.358	0.356	0.0003	0.357	0.356	–0.0007
	(0.479)	(0.479)	(0.0019)	(0.479)	(0.479)	(0.0019)
Panel E. Disability						
Have disability	0.049	0.052	–0.001**	0.052	0.051	0.001**
	(0.216)	(0.221)	(0.001)	(0.222)	(0.220)	(0.001)
Disability grade	6.191	6.157	0.041	6.145	6.228	–0.068**
	(4.871)	(4.876)	(0.029)	(4.854)	(4.916)	(0.029)
External physical disability	0.921	0.921	0.00008	0.922	0.922	–0.00037
	(0.270)	(0.270)	(0.00307)	(0.269)	(0.269)	(0.00306)
Internal physical disability	0.059	0.060	–0.0006	0.059	0.059	0.0006
	(0.235)	(0.237)	(0.0027)	(0.236)	(0.235)	(0.0027)
Developmental disability	0.009	0.008	0.0006	0.008	0.008	–0.0005
	(0.094)	(0.091)	(0.0011)	(0.089)	(0.092)	(0.0010)
N	1,728,877	1,640,501	3,369,378	1,640,436	1,644,529	3,284,965
Share	(0.26)	(0.25)	(0.51)	(0.25)	(0.25)	(0.49)
F-statistic			F(15, 259382)			F(15, 255280)
			= 1.72			= 1.67
Prob > F			0.040499			0.048582

Notes: This table reports the balance in covariates across 4 couple types formed by the combination of their ages. The sample is restricted to married couples where one's own and the spouse's age is in [40, 79]. Even/Even is a group of individuals whose own age and the spouse's age are both even. Even/Odd is a group of individuals whose own age is even and the spouse's age is odd. The rest of the groups are defined similarly. Column 1, 2, 4, and 5 report the mean and standard error of the covariates for each group. Column 3 reports the difference between Even/Even and Even/Odd group. Similarly, column 6 reports the difference between Odd/Even and Odd/Odd group. Standard errors are clustered at the couple level and reported in parentheses. A */**/*** indicates significance at the 10/5/1% levels.

Table A6: Spousal spillover in screening take-up

	(1)	(2)	(3)	(4)	(5)	(6)
	Outcome var: Own screening take-up					
	Any	General	Stomach	Breast	Cervical	Colorectal
Spouse age even (γ_1)	0.0047***	0.0049***	0.0038***	0.0023***	0.0013***	0.0035***
	(0.0009)	(0.0009)	(0.0003)	(0.0004)	(0.0004)	(0.0009)
Age even	0.0082***	0.0085***	0.0108***	0.0070***	0.0059***	0.0100***
× Spouse age even (γ_2)	(0.0018)	(0.0017)	(0.0011)	(0.0013)	(0.0012)	(0.0019)
$\gamma_1 + \gamma_2$	0.0129***	0.0134***	0.0146***	0.0093***	0.0073***	0.0135***
	(0.0011)	(0.0011)	(0.0011)	(0.0013)	(0.0011)	(0.0012)
Even/Odd mean	0.5667	0.5362	0.4038	0.4540	0.4031	0.3226
Odd/Odd mean	0.2756	0.2187	0.0530	0.0547	0.0479	0.1743
N	6,654,343	6,654,343	6,654,343	3,327,250	3,812,853	3,841,104
Own age range	[40, 79]	[40, 79]	[40, 79]	[40, 79]	[30, 79]	[50, 79]
Spouse age range	[40, 79]	[40, 79]	[40, 79]	[40, 79]	[40, 79]	[40, 79]

Notes: This table reports the spousal spillover effect in screening take-up stemming from the combination of subsidy eligibilities within couples. Outcome variable is one's own general and cancer screening take-ups. The econometric specification is given in Equation (3). The sample consists of currently married couples where the own age and the spouse's age is as given in the table for each screening. Even/Odd group mean refers to the take-up when one's own age is even, eligible for subsidies, and the spouse's age is odd, ineligible for subsidies. Standard errors are clustered at the couple level and reported in parentheses. A */**/*** indicates significance at the 10/5/1% levels.

Table A7: Spousal spillover in screening take-up in year 2012

	(1)	(2)	(3)	(4)	(5)	(6)
var	Any	General	Stomach	Breast	Cervical	Colorectal
Spouse age even (β_1)	0.0094***	0.0045**	0.0032***	0.0029**	0.0019*	0.0149***
	(0.0022)	(0.0020)	(0.0010)	(0.0013)	(0.0011)	(0.0024)
Age even	0.0021	0.0070**	0.0095***	0.0002	–0.0004	0.0015
× Spouse age even (β_2)	(0.0033)	(0.0032)	(0.0027)	(0.0035)	(0.0033)	(0.0041)
$\beta_1 + \beta_2$	0.0115***	0.0115***	0.0127***	0.0031	0.0015	0.0165***
	(0.0025)	(0.0025)	(0.0025)	(0.0033)	(0.0031)	(0.0031)
Even/Odd mean	0.5945	0.5578	0.4435	0.5046	0.4513	0.3416
Odd/Odd mean	0.2585	0.2218	0.0409	0.0372	0.0321	0.1372
N	355,557	355,557	355,557	177,744	203,073	201,394
Own age range	[40, 79]	[40, 79]	[40, 79]	[40, 79]	[30, 79]	[50, 79]
Spouse age range	[40, 79]	[40, 79]	[40, 79]	[40, 79]	[40, 79]	[40, 79]

Notes: This table reports the spousal spillover effect in screening take-up using year 2012 data. Outcome variable is one's own general and cancer screening take-ups. The econometric specification is given in Equation (**??**). The sample consists of currently married couples where the own age and the spouse's age is as given in the table for each screening. Even/Odd group mean refers to the take-up when one's own age is even, eligible for subsidies, and the spouse's age is odd, ineligible for subsidies. Standard errors are clustered at the couple level and reported in parentheses. A */**/*** indicates significance at the 10/5/1% levels.

Table A8: Spousal spillover in screening take-up without same age couples

	(1)	(2)	(3)	(4)	(5)	(6)
var	Any	General	Stomach	Breast	Cervical	Colorectal
Spouse age even (β_1)	0.0052***	0.0049***	0.0038***	0.0027***	0.0014***	0.0029***
	(0.0010)	(0.0009)	(0.0003)	(0.0005)	(0.0004)	(0.0010)
Age even	0.0053***	0.0062***	0.0077***	0.0056***	0.0040***	0.0111***
× Spouse age even (β_2)	(0.0019)	(0.0018)	(0.0012)	(0.0014)	(0.0013)	(0.0020)
$\beta_1 + \beta_2$	0.0106***	0.0111***	0.0115***	0.0083***	0.0055***	0.0140***
	(0.0012)	(0.0012)	(0.0011)	(0.0013)	(0.0012)	(0.0013)
Even/Odd mean	0.5667	0.5362	0.4038	0.4540	0.4031	0.3226
Odd/Odd mean	0.2777	0.2182	0.0536	0.0554	0.0476	0.1748
N	5,997,627	5,997,627	5,997,627	2,999,089	3,484,692	3,548,383
Own age range	[40, 79]	[40, 79]	[40, 79]	[40, 79]	[30, 79]	[50, 79]
Spouse age range	[40, 79]	[40, 79]	[40, 79]	[40, 79]	[40, 79]	[40, 79]

Notes: This table reports the spousal spillover effect in screening take-up without couples of the same age. Outcome variable is one's own general and cancer screening take-ups. The econometric specification is given in Equation (??). The sample consists of currently married couples where the own age and the spouse's age is as given in the table for each screening. The sample does not include couples whose wife's and husband's age are the same. Even/Odd group mean refers to the take-up when one's own age is even, eligible for subsidies, and the spouse's age is odd, ineligible for subsidies. Standard errors are clustered at the couple level and reported in parentheses. A */**/*** indicates significance at the 10/5/1% levels.

Table A9: Spousal spillover in screening take-up among male

	(1)	(2)	(3)	(4)
var	Any	General	Stomach	Colorectal
Spouse age even (β_1)	0.0059***	0.0054***	0.0045***	0.0058***
	(0.0013)	(0.0013)	(0.0004)	(0.0011)
Age even	0.0113***	0.0115***	0.0148***	0.0098***
× Spouse age even (β_2)	(0.0024)	(0.0023)	(0.0013)	(0.0021)
$\beta_1 + \beta_2$	0.0173***	0.0169***	0.0194***	0.0156***
	(0.0014)	(0.0014)	(0.0013)	(0.0013)
Even/Odd mean	0.5453	0.5298	0.3734	0.2903
Odd/Odd mean	0.3108	0.2539	0.0521	0.1689
N	3,327,093	3,327,093	3,327,093	2,152,966
Own age range	[40, 79]	[40, 79]	[40, 79]	[50, 79]
Spouse age range	[40, 79]	[40, 79]	[40, 79]	[40, 79]

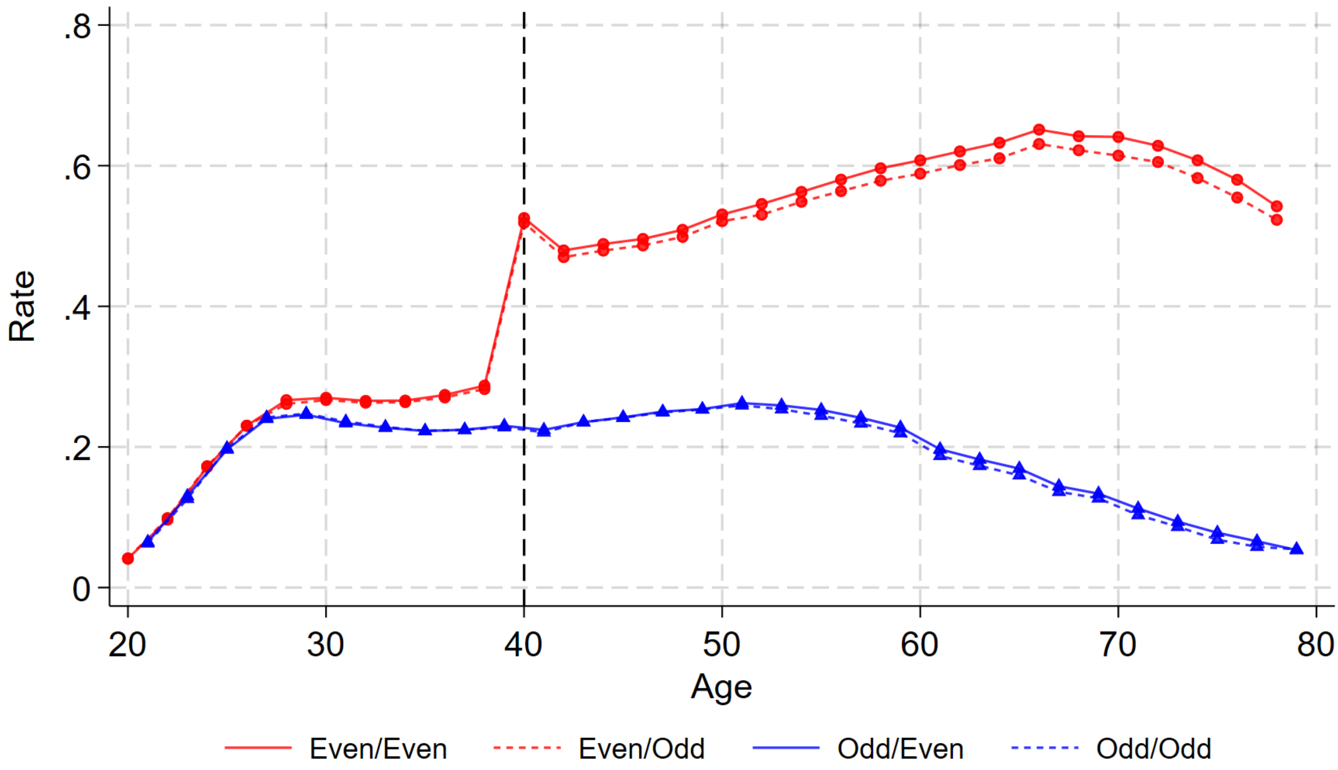
Notes: This table reports the spousal spillover effect in screening take-up among male. Outcome variable is one's own general and cancer screening take-ups. The econometric specification is given in Equation (??). The sample consists of currently married couples where the own age and the spouse's age is as given in the table for each screening. Even/Odd group mean refers to the take-up when one's own age is even, eligible for subsidies, and the spouse's age is odd, ineligible for subsidies. Standard errors are clustered at the couple level and reported in parentheses. A */**/*** indicates significance at the 10/5/1% levels.

Table A10: Spousal spillover in screening take-up among female

	(1)	(2)	(3)	(4)
var	Any	General	Stomach	Colorectal
Spouse age even (β_1)	0.0019*	0.0033***	0.0026***	0.0005
	(0.0011)	(0.0011)	(0.0004)	(0.0012)
Age even	0.0086***	0.0082***	0.0079***	0.0105***
× Spouse age even (β_2)	(0.0020)	(0.0019)	(0.0013)	(0.0024)
$\beta_1 + \beta_2$	0.0105***	0.0115***	0.0105***	0.0110***
	(0.0013)	(0.0013)	(0.0013)	(0.0016)
Even/Odd mean	0.5874	0.5423	0.4332	0.3633
Odd/Odd mean	0.2403	0.1836	0.0539	0.1812
N	3,327,250	3,327,250	3,327,250	1,688,138
Own age range	[40, 79]	[40, 79]	[40, 79]	[50, 79]
Spouse age range	[40, 79]	[40, 79]	[40, 79]	[40, 79]

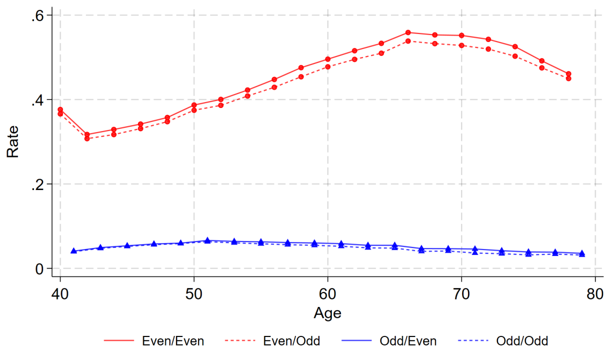
Notes: This table reports the spousal spillover effect in screening take-up among female. Outcome variable is one's own general and cancer screening take-ups. The econometric specification is given in Equation (**??**). The sample consists of currently married couples where the own age and the spouse's age is as given in the table for each screening. Even/Odd group mean refers to the take-up when one's own age is even, eligible for subsidies, and the spouse's age is odd, ineligible for subsidies. Standard errors are clustered at the couple level and reported in parentheses. A */**/*** indicates significance at the 10/5/1% levels.

Figure A1: General screening take-up with 4 age combinations

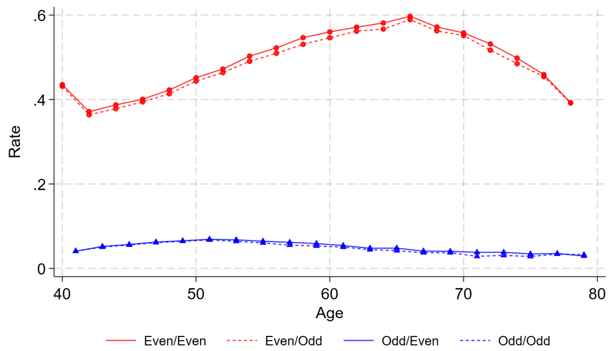


Notes: The figure plots the general screening take-up for each age with different spouse age combinations. Red lines plot the take-up when one's age is even. Blue lines plot the take-up when one's age is odd. Within red and blue lines, solid lines plot the take-up when the spouse's age is even. Dashed lines plot the take-up when the spouse's age is odd. The legend presents 4 types of couple age combinations with the one's age presented first and followed by the spouse's age.

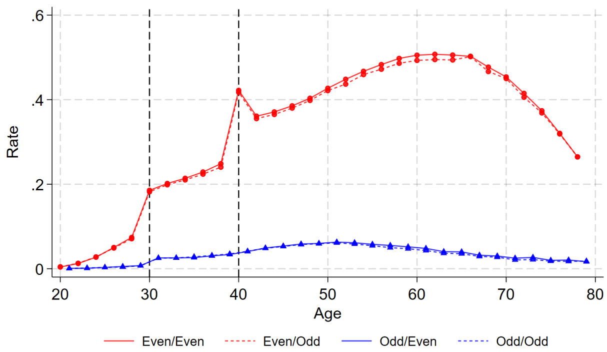
Figure A2: Screening rates for biennial screenings



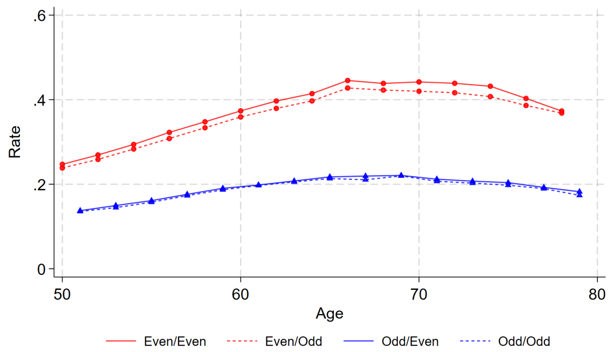
(a) Stomach screening take-up



(b) Breast screening take-up



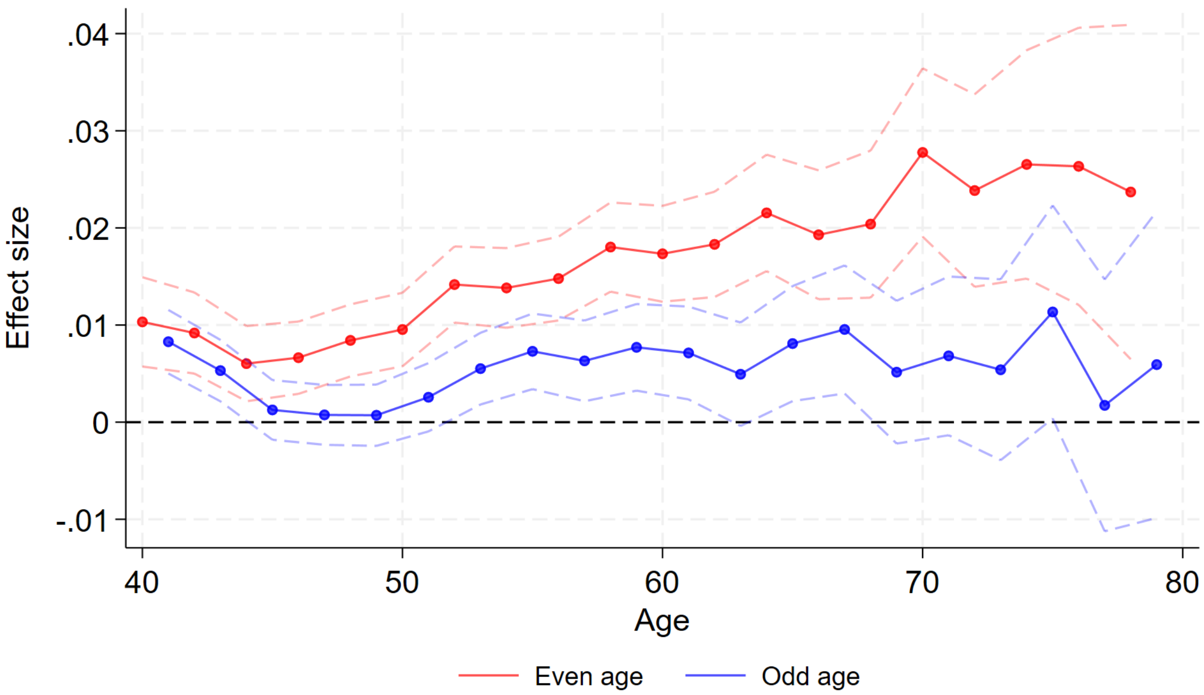
(c) Cervical screening take-up



(d) Colorectal screening

Notes: The figures plot the average take-up for four types of cancer screenings. Red lines plot the take-up when one's age is even. Blue lines plot the take-up when one's age is odd. Within red and blue lines, solid lines plot the take-up when the spouse's age is even. Dashed lines plot the take-up when the spouse's age is odd. Stomach, breast and cervical screenings are subsidized at even ages, while colorectal screening is subsidized every year. Stomach and breast screenings are subsidized from age 40, while cervical and colorectal screenings are subsidized from age 20 and 50, respectively.

Figure A3: Spousal spillover effect size by age



Notes: The figure plots the magnitude of spousal spillover effect size for each age. The outcome variable is screening take-up of any kind.