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Undetected: Dementia Diagnosis Under Fee-for-Service and Capitated Medicare

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Undetected: Dementia Diagnosis Under Fee-for-Service and Capitated Medicare

Abstract

Timely dementia detection determines access to care planning, supportive services, and emerging treatments, yet whether the healthcare system has become better at identifying dementia—and whether this varies with the payment arrangement under which beneficiaries receive care—is unknown. We link older adults with probable dementia in the Health and Retirement Study to Medicare claims (1998–2020) and estimate the covariate-adjusted share receiving a claims-based dementia diagnosis by year. Among Traditional Medicare (TM) enrollees, fewer than half of all cases—and fewer than one-third of early-stage cases—had ever been diagnosed, showing no significant improvement. Annual detection was higher under fee-for-service TM than under capitated Medicare Advantage (MA) plans. Annual detection rose over time in both plan types, but not among early-stage cases, a pattern more consistent with greater recognition of advanced disease than with upcoding following the 2019 reintroduction of dementia into MA risk adjustment. The results reveal a persistent gap between the policy emphasis on early diagnosis and clinical practice, and suggest that payment structure and provider networks, not only enrollee composition, shape how well dementia is identified.

JEL classification

I11, I13, I14, I18, J14, H51

Keywords

dementia, diagnosis and detection, Medicare Advantage, Traditional Medicare, capitation, risk adjustment, geographic variation

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1. Introduction

Early detection of dementia is a critical public health issue affecting the quality of care and life for the more than 6 million older adults living with dementia in the United States (U.S.) and their families.¹ Delays in diagnosis lead to missed opportunities for advance care planning and timely access to supportive services and emerging treatments. A clinical diagnosis also determines eligibility for innovative care programs, such as the Centers for Medicare & Medicaid Services (CMS) Guiding an Improved Dementia Experience (GUIDE) model, which provides comprehensive dementia care management to Medicare beneficiaries.² Over the past decade, growing awareness and policy initiatives have aimed to improve dementia recognition. However, it remains unclear whether the proportion of older adults with probable dementia who receive a clinical diagnosis has increased.

Dementia detection and its trajectory may differ by the type of Medicare coverage under which beneficiaries receive care. Unlike fee-for-service Medicare (traditional Medicare; TM), Medicare Advantage (MA) plans, which are paid a fixed monthly amount for each enrollee rather than per service delivered,³ operate under incentives to manage the cost and quality of care in ways that may affect diagnostic patterns. Policy changes may also have shaped detection differently across plan types. CMS introduced billing codes for cognitive assessment and care planning in 2017,⁴ creating a direct payment incentive under TM, and reintroduced two dementia categories into the MA risk-adjustment model in 2019,⁵ strengthening providers' incentive to document dementia in MA. Characterizing detection within each plan type is therefore important for assessing how well dementia is identified across the Medicare population, particularly as MA now covers more than half of beneficiaries.⁶

Detection may also vary geographically. Regions differ in the intensity of diagnostic practice,⁷ the supply of specialists and memory care services,⁸ and care-seeking behavior,⁹ all of which may shape how likely dementia is to be identified. The extent of this variation may differ between TM and MA, as MA plans provide access through restricted provider networks whose breadth varies across local markets, whereas TM imposes no such limits. Understanding whether detection differs across regions and plan types is important because it may reveal where, and under which coverage arrangement, gaps in dementia identification are greatest.

Prior studies have examined concordance between survey-identified dementia and claims-based diagnoses at a single point in time,¹⁰ but these cross-sectional comparisons do not capture whether clinical recognition of dementia among individuals who ultimately develop the disease has improved over time. A few studies examining dementia diagnosis rates across plan types and regions have focused on the general population,^{5,11,12} not specifically on individuals with probable dementia, so observed differences may reflect variation in who develops dementia rather than in how well it is detected. Whether detection has improved among individuals with probable dementia, both overall and among those in the early stages who stand to benefit most from timely intervention, remains unknown.

Using nationally representative survey-linked claims data, this study examined trends in claims-based dementia detection among individuals with probable dementia over two periods. We first examined ever-diagnosed proportions among TM enrollees from 2004 to 2019, as ascertaining ever-diagnosed status requires a complete claims history available only for TM. We then

examined annual diagnostic claims by insurance plan type from 2015 to 2019, the years for which MA claims were available. These trends were also examined among person-years observed before dementia onset or within one year after onset, the period when early intervention and care planning are most actionable. We further assessed geographic variation in detection across U.S. census regions.

2. Methods

2.1. Data Source and Study Population

This cohort study used 1998-2020 Health and Retirement Study (HRS)-linked Medicare claims of adults aged 65 years or older. The HRS is a nationally representative biennial survey of older adults in the U.S. that collects detailed information on demographics, socioeconomic status, and cognitive and physical functioning. Linkage to Medicare claims enabled annual longitudinal tracking of dementia diagnosis, with a linkage rate of 96% in our sample. From HRS, we identified persons with probable dementia (PWPd) as those meeting criteria for dementia based on the Langa-Weir classification in at least two HRS waves during 1998 to 2020.¹³ This validated method classifies cognitive status based on HRS cognitive assessments, with classification thresholds calibrated against gold-standard in-person clinical examinations.¹⁴

For each PWPd, a person-year was defined as each calendar year in which the individual was enrolled in Medicare. Within each person-year, we determined whether a dementia diagnosis was recorded in the individual's Medicare claims. We included all such person-years within the analytic periods, 2004-2019 for the ever-diagnosed analysis in TM and 2015-2019 for the annual diagnosis analysis in TM and MA (as described above). Although our analysis spans 2004 to

2019, PWPD were identified over the broader 1998-2020 window to more accurately ascertain dementia onset timing (defined below).

Plan type was determined from the Master Beneficiary Summary File (MBSF). Individuals were considered MA enrollees if enrolled in an MA plan in any month of the year,^{15,16} and TM enrollees otherwise. Within-year switching was uncommon, with the assigned plan type covering at least 10 months of enrollment in 90% of person-years. Diagnoses were ascertained using MA claims for MA enrollees and fee-for-service claims for TM enrollees, with no cross-plan mixing. The institutional review board of Yale University approved this study.

2.2. Outcomes

We defined two outcomes that capture distinct aspects of dementia detection. The first was whether a PWPD had ever received a claims-based dementia diagnosis by a given calendar year. This measure captures cumulative detection of dementia in the health care system and reflects the population-level reach of diagnosis over time. The second was whether a PWPD received a dementia diagnosis in a given calendar year. This measure captures ongoing clinical recognition, reflecting the active documentation of a patient's dementia in a given year. Sustained recognition keeps the diagnosis salient to providers and patients, supporting symptom monitoring, medication management, and care planning.

Diagnoses were determined based on the *International Classification of Diseases, Ninth or Tenth Revision, Clinical Modification* diagnosis codes from all available claim types, including carrier, inpatient, outpatient, skilled nursing facility (SNF), home health, hospice, and durable medical

equipment (**eTable 1** in the Supplement).¹⁷⁻¹⁹ In the primary analysis, receipt of diagnosis was defined as a single diagnosis claim, which likely reflects a true clinical diagnosis, given that the analytic sample was already restricted to PWPDP as defined in the HRS. In sensitivity analyses, we applied a more stringent diagnostic algorithm requiring at least two claims from professional services at least 7 days apart to reduce potential misclassification from rule-out diagnoses.¹⁰

2.3. Statistical Analysis

We estimated logistic regressions of the ever and annual dementia diagnosis indicators on calendar-year indicators and covariates. Predictive margins were used to compute covariate-adjusted proportions of PWPDP for each outcome by calendar year. Models adjusted for age, sex, race and ethnicity, educational attainment, number of chronic conditions, and years relative to dementia onset (described below).

Dementia onset was defined as the calendar year of the HRS interview in which a person was first classified as having dementia. Adjusting for years relative to onset accounted for potential differences in the timing of observations relative to dementia onset. The timing partly reflects dementia stage and could otherwise confound comparisons of the likelihood of receiving a diagnosis across calendar years. We estimated outcomes in two samples. The first included all available person-years of PWPDP, regardless of timing relative to dementia onset, and the second was restricted to person-years of early-stage PWPDP, defined as those observed before dementia onset or within one year after onset. For both samples, we estimated: 1) the adjusted proportion of PWPDP who had ever received a dementia diagnosis by each calendar year from 2004 to 2019

in TM; 2) the adjusted proportion of PWPD who had a dementia diagnosis in each calendar year from 2015 to 2019 in TM and MA.

In addition, we estimated adjusted annual diagnosis proportions among all PWPD by census region from 2015 to 2019, separately for TM and MA. To ensure comparability between TM and MA, we excluded dementia diagnoses from hospice claims, as hospice benefits for all Medicare beneficiaries, including those enrolled in MA, are administered through TM.

All analyses were weighted using HRS sampling weights to produce nationally representative estimates. Standard errors were clustered at the individual level to account for the correlation of repeated observations within individuals. The analyses were conducted using Stata statistical software version 14.1 (StataCorp). Two-sided $P < .05$ was considered statistically significant.

3. Results

The final cohort included 3,144 PWPD, contributing 24,606 person-years from 2004 to 2019 for analyses of ever diagnosis and 6,761 person-years from 2015 to 2019 for analyses of annual diagnosis across plan types. **Table 1** presents overall sample characteristics and characteristics in 2004, 2015, and 2019 by plan type. In 2004, when only TM enrollees were observed, most beneficiaries were female (65.1%) and non-Hispanic White (61.7%). In addition, 45.1% were aged 80 years or older, 43.9% had at least a high school education, the mean number of chronic conditions was 2.02, and 12.8% resided in the Western US. In 2019, compared with MA beneficiaries, those in TM were older (69.6% aged ≥ 80 years vs 60.3%), more likely to be non-Hispanic White (57.3% vs 35.9%) and have at least a high school education (52.7% vs 41.5%),

had fewer mean chronic conditions (2.67 vs 2.84), but were less likely to reside in the Western US (15.0% vs 21.0%). Characteristics in 2015 showed similar patterns.

From 2004 to 2019, the adjusted proportion of PWPD who had ever received a diagnosis in TM increased from 39.6% (95% CI, 37.3%-41.9%) in 2004 to 45.8% (95% CI, 41.1%-50.4%) in 2019 (**Figure 1**), though this increase was not statistically significant ($P = .13$). Among early-stage PWPD, the ever-diagnosed proportion was lower, ranging from 21.7% (95% CI, 18.9%-24.4%) to 31.0% (95% CI, 25.3%-36.7%) over the period, with a slight but nonsignificant increase from 23.9% (95% CI, 21.2%-26.7%) in 2004 to 26.2% (95% CI, 20.3%-32.1%) in 2019 ($P = .07$).

When examining annual diagnosis by plan type from 2015 to 2019, the adjusted proportion of PWPD receiving a dementia diagnosis in a given year was consistently higher in TM than in MA (2015: 36.7% [95% CI, 32.6%-40.8%] vs 32.1% [95% CI, 27.4%-36.8%]; 2019: 48.8% [95% CI, 44.0%-53.6%] vs 39.2% [95% CI, 34.2%-44.2%]) (**Figure 2, Panel A**). The same pattern was observed for early-stage PWPD, except in 2019, though the confidence intervals were wide and mostly overlapping (2015: 28.1% [95% CI, 20.5%-35.8%] vs 26.3% [95% CI, 14.9%-37.7%]; 2019: 26.4% [95% CI, 19.2%-33.5%] vs 31.7% [95% CI, 22.1%-41.3%]) (**Figure 2, Panel B**). Over this period, the adjusted annual proportion receiving a diagnosis increased significantly among all PWPD in both TM ($P < .001$) and MA ($P = .03$), but not among early-stage PWPD (TM: $P = .96$; MA: $P = .39$).

Between 2015 and 2019, the adjusted annual proportion of PWPd diagnosed varied by census region for both TM and MA, with the highest proportions in the Northeast (TM: 50.0% [95% CI, 41.3%-58.6%], MA: 39.8% [95% CI, 30.2%-49.4%]) and the lowest in the West (TM: 39.5% [95% CI, 31.3%-47.7%], MA: 25.7% [95% CI, 19.7%-31.8%]) (**Figure 3**). In addition, the adjusted proportions were consistently higher in every region for TM enrollees than for MA enrollees, with the gap most pronounced in the West (13.8 percentage points) and narrowest in the Midwest (4.3 percentage points; 43.1% [95% CI, 36.4%-49.9%] vs 38.8% [95% CI, 29.8%-47.7%]).

Sensitivity analyses using a more stringent diagnostic definition that required at least 2 professional service claims with a diagnosis at least 7 days apart or at least 1 diagnosis in an inpatient, skilled nursing facility, or home health claim yielded results consistent with the primary findings (**eFigures 1-3**).

4. Discussion

In this study, we used nationally representative survey-linked Medicare claims data to examine trends in claims-based dementia detection among individuals with probable dementia. Fewer than half of all PWPd and fewer than one-third of early-stage PWPd in TM had ever received a dementia diagnosis, and these proportions did not improve significantly from 2004 to 2019.

Although annual diagnosis proportions increased significantly among all PWPd in both TM and MA from 2015 to 2019, no such improvement was observed among early-stage PWPd. Annual detection was also consistently higher in TM than in MA across all census regions. To our knowledge, this is the first analysis to examine temporal trends in dementia detection among

individuals who ultimately develop the disease across Medicare plan types, highlighting a persistent gap between the growing policy emphasis on early diagnosis and actual detection in clinical practice.

Prior studies have examined the timely detection of dementia, assessing the extent to which individuals received a diagnosis in the years prior to or at dementia onset, but relied on pooled cross-sectional data rather than examining temporal trends, and their cumulative measures naturally yield higher proportions than annual estimates.^{10,20} Our analysis extends this work by including all person-waves of PWPd, both before and after onset, to capture the full trajectory of diagnostic detection among individuals who ultimately develop the disease, and by estimating detection within each calendar year to assess whether the health care system has improved its ability to identify dementia over time, both overall and at the early stage when diagnosis can most meaningfully inform care planning and treatment decisions.

Ever-diagnosed proportions among PWPd in TM did not improve significantly despite national policy initiatives to promote earlier recognition, including Medicare reimbursement for annual wellness visits (AWV) in 2011 and CMS reimbursement for cognitive assessment and care planning services (CACP) in 2017. The limited uptake of these services may help explain the lack of improvement after these policies. About half of beneficiaries reported an annual wellness visit, fewer than one-third a structured cognitive assessment,²¹ and use of CACP billing has remained very low.²² Beyond this, the persistently low level of detection throughout the study period likely reflects broader structural barriers, including limited training in cognitive assessment among primary care clinicians²³, time constraints during clinical encounters²⁴,

diagnostic uncertainty in early disease presentations²⁵, patient and family reluctance to raise cognitive concerns due to stigma or lack of awareness²⁶⁻²⁸, and prolonged wait times for specialist referral.²⁹ An analysis of the factors underlying low detection rates is beyond the scope of this study, but it is clear that timely dementia detection remains a substantial and largely unresolved challenge in real-world clinical practice.

Our finding that annual detection was consistently higher in TM than in MA aligns with prior studies reporting higher dementia diagnosis rates in TM than in MA.^{5,12} However, higher diagnosis rates could reflect differences in the underlying health of enrollees rather than differences in detection. Our analysis addresses this by examining detection among individuals who all meet criteria for dementia, and the TM-MA gap persists, suggesting that structural factors in how dementia is identified across plan types also contribute. These may include differences in provider networks, referral patterns, diagnostic coding practices, and payment incentives. Addressing these detection disparities is essential to ensuring equitable access to timely dementia diagnosis.

Notably, although the inclusion of dementia diagnoses for MA risk adjustment beginning in 2019 increased financial incentives to record dementia diagnoses, detection remained higher in TM than in MA in 2019 among all PWPd. It is possible that risk-adjustment changes take time to affect clinical practice and documentation, so their influence on recorded diagnoses was not yet evident within the study period. The policy change also raised concerns about potential inappropriate upcoding.⁵ Such upcoding would be most likely to inflate detection among early-stage PWPd, where symptoms may be mild and diagnostic uncertainty is greater. However, we

did not observe a statistically significant rise in detection among early-stage PWPd, whereas detection increased among all PWPd, a pattern more consistent with increased detection of more advanced cases than with systematic overdiagnosis. We note, however, that the imprecise early-stage estimates should not be interpreted as evidence against upcoding.⁵

Detection also varied substantially by census region, with the highest proportions in the Northeast and the lowest in the West for both TM and MA, consistent with prior evidence that diagnostic intensity for dementia varies geographically, independent of underlying population risk.³⁰ Our analysis extends this work by demonstrating that regional disparities persist even within the same dementia population and across both TM and MA. These disparities may partly reflect broader regional differences in diagnostic intensity, as the West has been characterized by less aggressive diagnostic practices overall.³¹ The TM-MA gap was also most pronounced in the West, where limited plan competition and weaker provider incentives within MA networks may further contribute to low detection. Addressing these disparities will require further investigation into the drivers of geographic variation in dementia detection and the role of plan-level factors within MA.

At the same time, differences between TM and MA, both overall and across regions, should be interpreted with caution. Enrollment in MA is not random, even among individuals with probable dementia, and MA penetration varies across regions. Beyond the market and provider-side factors discussed above, the characteristics and composition of enrollees across plans, shaped by factors such as patient demand and preferences, may also contribute to the observed patterns.

This study has several limitations. First, we used a validated algorithmic classification to identify individuals with dementia, as consistent clinical ascertainment is not available in HRS. However, our approach of requiring at least two waves meeting criteria for dementia reduces the likelihood of misclassification. Second, MA claims data were available only from 2015 to 2019, limiting our ability to examine longer-term trends in MA detection. As new care models and diagnostic tools emerge, such as FDA-approved blood biomarkers for Alzheimer's disease, continued monitoring of detection trends is warranted. Third, while we document persistent gaps in dementia detection despite policy changes, this study did not evaluate the causal effects of those policies. That said, examining temporal trends in detection reveals whether dementia identification has meaningfully improved over time, independent of the mechanisms driving change.

Acknowledgements/Conflicts/Funding Sources/Consent Statement

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Conflicts of Interest Statement: The authors have no conflicts of interest to declare.

Consent Statement: This study was approved by the institutional review board of Yale University, which waived informed consent based on the minimal risk involved and the impracticality of obtaining consent from participants.

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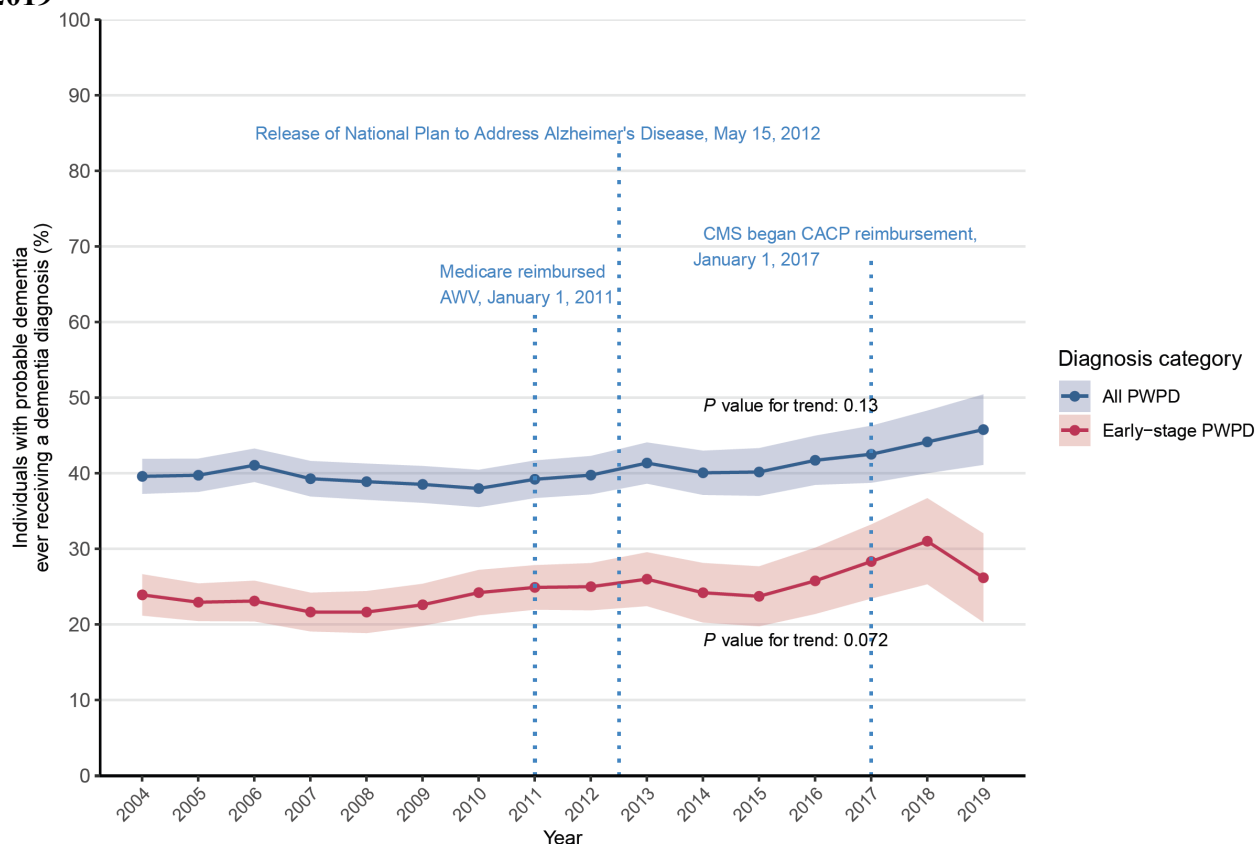
Research in Context

1. **Systematic review:** The authors reviewed literature in PubMed and Google Scholar. Prior studies have examined concordance between survey-identified dementia and claims-based diagnoses but have not assessed whether clinical recognition among individuals who ultimately develop dementia has improved over time, across Medicare plan types, or by region.
2. **Interpretation:** Using survey-linked Medicare claims data, we found that fewer than half of individuals who ultimately developed dementia had ever received a diagnosis in Traditional Medicare, and fewer than one-third among those in the early stage, with no significant improvement from 2004 to 2019. Annual detection was higher in Traditional Medicare than Medicare Advantage between 2015 and 2019 and remained low among early-stage individuals. Detection varied by region. Despite policy initiatives, structural barriers to dementia detection persist across plan types and regions.
3. **Future directions:** Future research should investigate drivers of persistently low detection and its geographic and plan-type variation.

Highlights

- We examined dementia detection trends using survey-linked Medicare claims data.
- Fewer than half of persons with probable dementia and fewer than one-third in the early stage had ever received a dementia diagnosis in Traditional Medicare, with no significant improvement from 2004 to 2019.
- Annual dementia detection from 2015 to 2019 was higher in Traditional Medicare than in Medicare Advantage.
- Detection varied substantially by census region, with the highest proportions in the Northeast and the lowest in the West for both plan types.

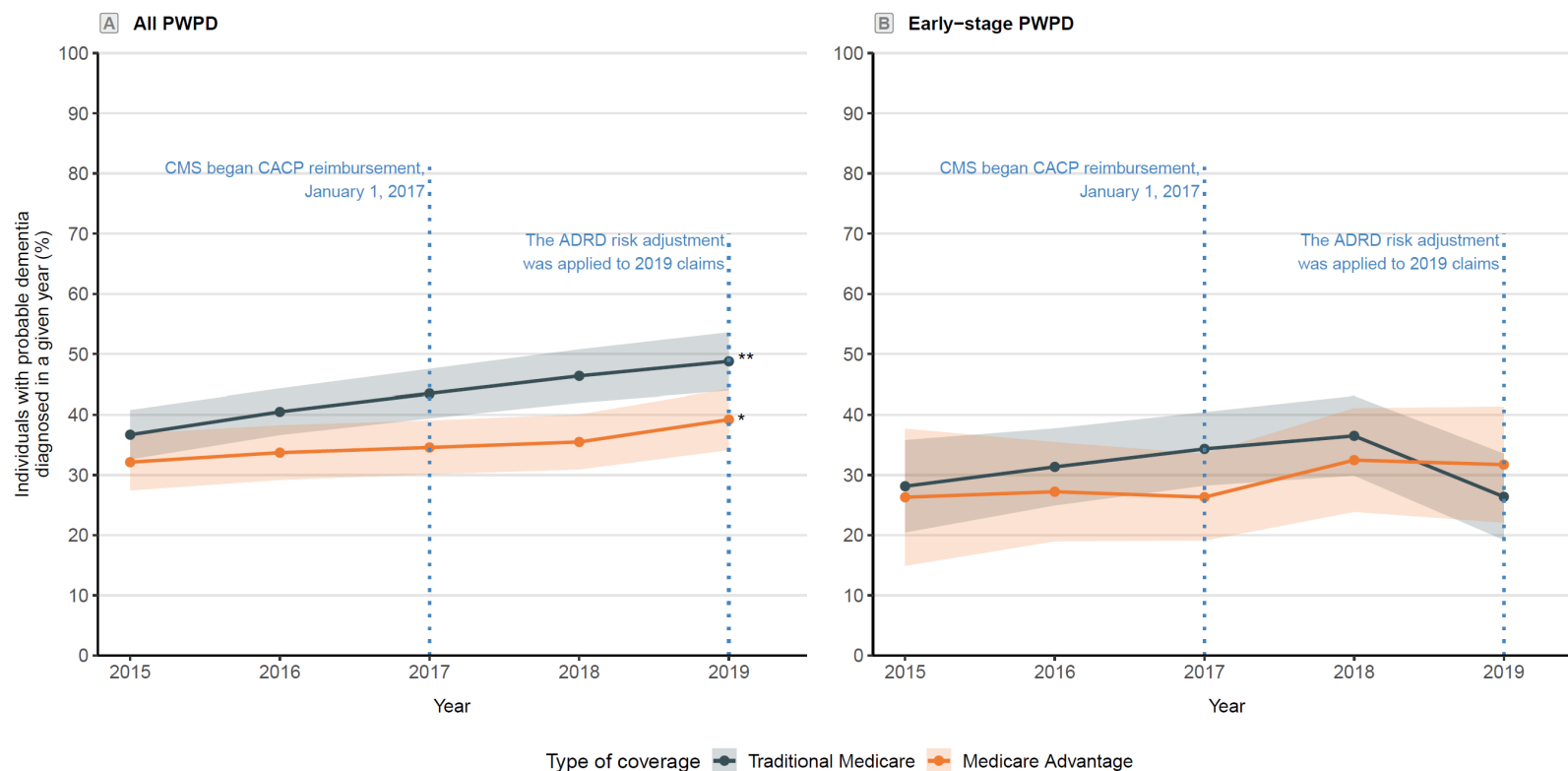
Figure 1. Trends in Adjusted Proportion of Individuals With Probable Dementia Ever Receiving a Diagnosis in Traditional Medicare, 2004-2019



Abbreviations: PWD, persons with probable dementia; AWW, annual wellness visit; CMS, Centers for Medicare & Medicaid Services; CACP, cognitive assessment and care planning.

Notes: The figure shows the adjusted proportion of PWD who had ever received a dementia diagnosis from 2004 to 2019 in Traditional Medicare. The proportions were estimated for all PWD and for early-stage PWD, defined as person-years observed before dementia onset or within one year after onset. Adjusted proportions were estimated using logistic regression with predictive margins, controlling for age, sex, race and ethnicity, educational attainment, number of chronic conditions, and years relative to dementia onset. Missing values for the number of chronic conditions in a given year were imputed using the most recent non-missing value within a 4-year lookback window. Shaded areas represent 95% confidence intervals. All analyses were weighted using HRS sampling weights, and standard errors were clustered at the individual level.

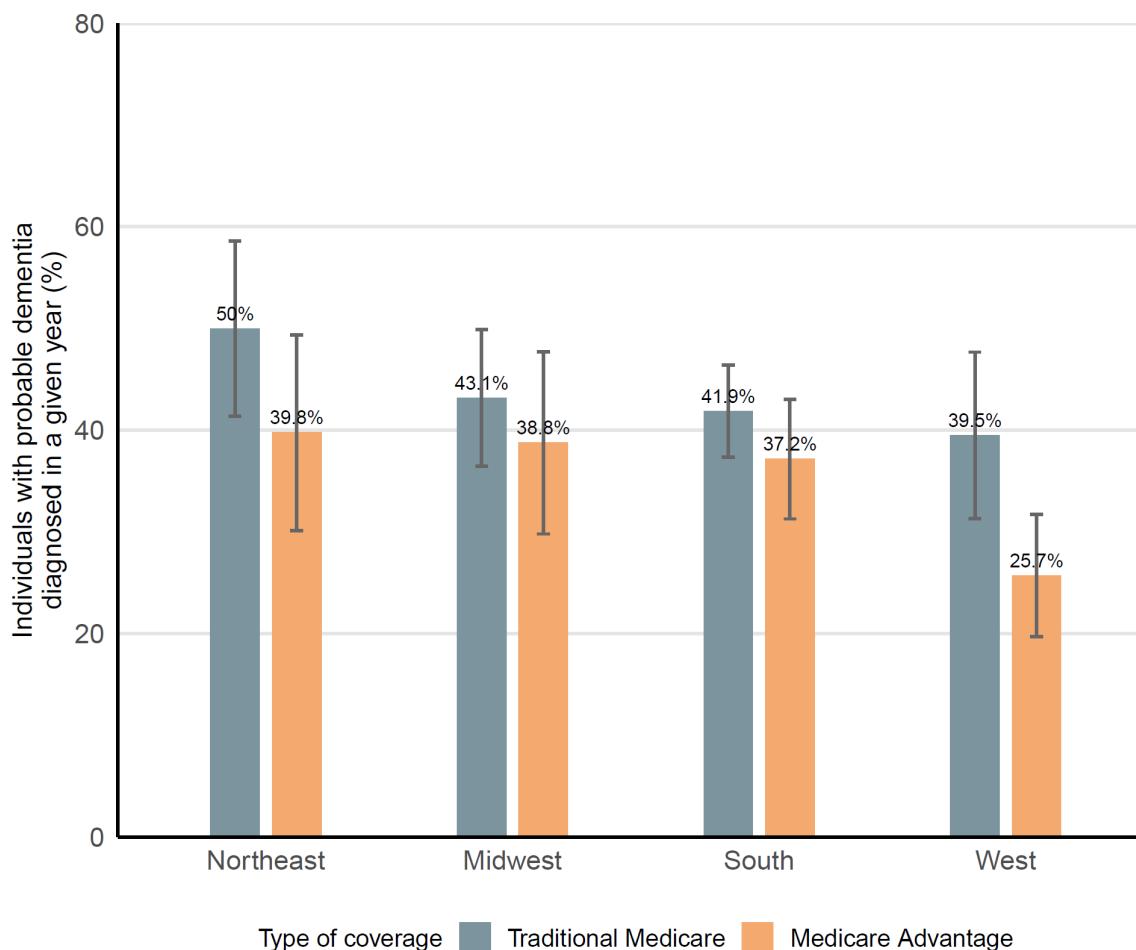
Figure 2. Trends in Adjusted Proportion of Individuals With Probable Dementia Receiving a Diagnosis in a Given Year in Traditional Medicare and Medicare Advantage, 2015-2019



Abbreviations: PWP, persons with probable dementia; CMS, Centers for Medicare & Medicaid Services; CACP, cognitive assessment and care planning; ADRD, Alzheimer disease and related dementias.

Notes: The figure shows the adjusted proportion of PWP receiving a dementia diagnosis in each calendar year from 2015 to 2019 in Traditional Medicare and Medicare Advantage. Panel A presents estimates for all PWP and Panel B for early-stage PWP, defined as person-years observed before dementia onset or within one year after onset. Adjusted proportions were estimated using logistic regression with predictive margins, controlling for age, sex, race and ethnicity, educational attainment, number of chronic conditions, and years relative to dementia onset. Missing values for the number of chronic conditions in a given year were imputed using the most recent non-missing value within a 4-year lookback window. Shaded areas represent 95% confidence intervals. All analyses were weighted using HRS sampling weights, and standard errors were clustered at the individual level. Asterisks indicate p-values for trend significance. Significance levels: * $p < 0.05$, ** $p < 0.01$.

Figure 3. Adjusted Annual Proportion of Individuals With Probable Dementia Receiving a Dementia Diagnosis, by Census Region, 2015-2019



Notes: The "Other" region had too few observations for sufficient statistical power and was excluded from the analysis. Adjusted proportions were estimated using logistic regression with predictive margins, controlling for age, sex, race and ethnicity, educational attainment, number of chronic conditions, and years relative to dementia onset. Missing values for time-varying covariates, including the number of chronic conditions and census region, in a given year were imputed using the most recent non-missing value within a 4-year lookback window. Error bars represent 95% confidence intervals. All analyses were weighted using HRS sampling weights, and standard errors were clustered at the individual level.

Table 1: Characteristics of Medicare Beneficiaries With Probable Dementia Between 2004 and 2019

Characteristics	2004		2015		2019		All person-years, 2004-2019
	TM	MA	TM	MA	TM	MA	
Sample size, No.	2,292	NA	942 (58.9)	658 (41.1)	543 (49.6)	552 (50.4)	24,606
Unadjusted % ever receiving a dementia diagnosis	686 (29.9)	NA	491 (52.1)	NA	340 (62.6)	NA	NA
Unadjusted % receiving a dementia diagnosis in the given year	512 (22.3)	NA	378 (40.1)	220 (33.4)	270 (49.7)	211 (38.2)	7,839 (31.9)
Sociodemographic characteristics							
Age category, No. (%), y							
65-69	385 (16.8)	NA	69 (7.3)	69 (10.5)	40 (7.4)	68 (12.3)	2,749 (11.2)
70-74	449 (19.6)	NA	108 (11.5)	71 (10.8)	50 (9.2)	63 (11.4)	3,817 (15.5)
75-79	423 (18.5)	NA	179 (19.0)	155 (23.6)	75 (13.8)	88 (15.9)	4,737 (19.3)
80-85	441 (19.2)	NA	220 (23.4)	150 (22.8)	136 (25.0)	121 (21.9)	5,007 (20.3)
>85	594 (25.9)	NA	366 (38.9)	213 (32.4)	242 (44.6)	212 (38.4)	8,296 (33.7)
Sex, No. (%)							
Female	1,492 (65.1)	NA	608 (64.5)	417 (63.4)	333 (61.3)	353 (63.9)	15,919 (64.7)
Male	800 (34.9)	NA	334 (35.5)	241 (36.6)	210 (38.7)	199 (36.1)	8,687 (35.3)
Race and ethnicity, No. (%)							
Non-Hispanic White	1,415 (61.7)	NA	597 (63.4)	281 (42.7)	311 (57.3)	198 (35.9)	14,630 (59.5)
Non-Hispanic Black	557 (24.3)	NA	198 (21.0)	196 (29.8)	125 (23.0)	186 (33.7)	5,847 (23.8)
Hispanic	267 (11.6)	NA	123 (13.1)	165 (25.1)	93 (17.1)	148 (26.8)	3,534 (14.4)
Other	53 (2.3)	NA	24 (2.5)	16 (2.4)	14 (2.6)	20 (3.6)	595 (2.4)
High school educational attainment or higher	1,006 (43.9)	NA	489 (51.9)	266 (40.4)	286 (52.7)	229 (41.5)	11,625 (47.2)
Health conditions, mean (SD)							
Number of chronic conditions*	2.02 (1.40)	NA	2.46 (1.50)	2.72 (1.34)	2.67 (1.48)	2.84 (1.41)	2.37 (1.46)
Years from dementia onset†	-1.59 (6.62)	NA	4.36 (6.54)	4.53 (6.66)	6.56 (6.77)	6.90 (6.62)	2.01 (7.14)
Region of residence‡							

Northeast	323 (14.1)	NA	137 (14.6)	87 (13.2)	60 (11.2)	77 (13.9)	3,396 (13.8)
Midwest	551 (24.1)	NA	204 (21.7)	118 (17.9)	113 (21.1)	74 (13.4)	5,402 (22.0)
South	1,119 (48.9)	NA	460 (49.0)	310 (47.1)	280 (52.3)	284 (51.4)	12,163 (49.5)
West	294 (12.8)	NA	134 (14.3)	142 (21.6)	80 (15.0)	116 (21.0)	3,538 (14.4)

Abbreviations: TM, Traditional Medicare; MA, Medicare Advantage; NA, not applicable; SD, standard deviation.

* Chronic conditions were obtained from the Chronic Condition Warehouse (CCW) linked to the corresponding Health and Retirement Study (HRS) survey year. Conditions were categorized in alignment with the HRS survey and included seven indicators: high blood pressure, diabetes, cancer, lung disease, heart disease, stroke, and arthritis. HRS self-reported conditions were used to supplement CCW indicators when CCW data were unavailable.

† Dementia onset was defined as the year of the HRS interview in which the Langa-Weir algorithm first classified an individual as having probable dementia from 1998 to 2020. Although the analysis focused on 2004-2019, data from all years (1998–2020) were used to improve the classification of dementia status and the timing of probable dementia onset.