Supplemental Material

Title: Implications of the use of algorithmic diagnoses or Medicare claims to ascertain dementia

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Supplemental Methods

ICD-9-CM codes used to identify dementia in Medicare data (originally from Taylor et al. 2009 [1]):

> 331.0 Alzheimer's disease
> 331.1 Pick's disease
> 331.2 Senile degeneration of the brain
> 331.7 Cerebral degeneration in diseases classified elsewhere
> 290.0 Senile dementia, uncomplicated
> 290.1 Presenile dementia (brain syndrome w/presenile dementia)
> 290.10 Presenile dementia, uncomplicated
> 290.11 Presenile dementia, w/delirium
> 290.12 Presenile dementia, w/delusional features
> 290.13 Preseniledementia, w/depressive features
> 290.20 Senile dementia, w/delusional features
> 290.21 Senile dementia, w/depressive features
> 290.3 Senile dementia, w/delirium
> 290.40 Arteriosclerotic dementia, uncomplicated
> 290.41 Arteriosclerotic dementia, w/delirium
> 290.42 Arteriosclerotic dementia, w/ delusional features
> 290.43 Arteriosclerotic dementia, w/ depressive features
> 294.0 Amnestic syndrome (Korsakoff's psychosis or syndrome, nonalcoholic)
> 294.1 Dementia in conditions classified elsewhere
> 294.8 Other specified organ brain syndrome (chronic)
> 797 Senility without mention of psychosis

1.   Taylor DH, Jr., Ostbye T, Langa KM, Weir D, Plassman BL. The accuracy of Medicare claims as an epidemiological tool: the case of dementia revisited. J Alzheimers Dis. 2009;17(4):807-15.

Supplemental Table 1. Performance metrics for each algorithm derived through comparison to Wave A dementia diagnoses in the common and Medicare samples									
	Common Sample (n=608)								Medicare Subsample, Any FFS (n=517)
	H-W	L-K-W	Crimmins	Hurd	Wu	Expert Model	LASSO	Modified Hurd	Medicare 3-year
Overall									
Sensitivity	41%	56%	64%	63%	63%	79%	89%	80%	47%
Specificity	100%	97%	97%	99%	98%	92%	91%	95%	98%
Accuracy	93%	92%	93%	94%	94%	90%	91%	93%	91%
Under Age 80									
Sensitivity	47%	57%	56%	49%	51%	62%	84%	64%	40%
Specificity	100%	98%	99%	100%	99%	97%	94%	98%	99%
Accuracy	97%	95%	96%	97%	96%	95%	94%	96%	96%
Age 80 and over									
Sensitivity	38%	55%	68%	69%	69%	86%	91%	87%	50%
Specificity	100%	95%	95%	96%	96%	81%	84%	87%	95%
Accuracy	86%	86%	88%	90%	90%	82%	85%	87%	85%
Non-Hispanic Black									
Sensitivity	43%	69%	73%	90%	63%	88%	97%	90%	38%
Specificity	98%	84%	96%	96%	94%	91%	87%	88%	98%
Accuracy	87%	81%	91%	95%	88%	90%	89%	89%	85%
Non-Hispanic White									
Sensitivity	41%	54%	62%	59%	63%	77%	87%	78%	49%
Specificity	100%	98%	98%	99%	99%	92%	91%	95%	98%
Accuracy	93%	93%	94%	94%	95%	91%	91%	93%	92%
Male									
Sensitivity	26%	44%	54%	50%	42%	63%	70%	69%	39%
Specificity	100%	95%	97%	98%	98%	93%	92%	94%	97%
Accuracy	92%	90%	93%	93%	93%	90%	90%	91%	91%
Female									
Sensitivity	49%	61%	68%	69%	73%	87%	98%	85%	51%
Specificity	100%	98%	98%	99%	98%	92%	90%	95%	98%
Accuracy	93%	93%	94%	95%	95%	91%	91%	94%	92%
< High School									
Sensitivity	35%	57%	62%	67%	72%	79%	89%	83%	33%

Specificity	99%	92%	94%	97%	95%	87%	86%	93%	99%
Accuracy	88%	86%	88%	92%	91%	86%	86%	91%	85%
High School +									
Sensitivity	46%	54%	65%	60%	56%	78%	89%	77%	60%
Specificity	100%	98%	99%	99%	100%	94%	93%	96%	97%
Accuracy	95%	94%	96%	95%	95%	93%	93%	94%	94%
Diabetes									
Sensitivity	29%	42%	53%	61%	68%	73%	82%	82%	25%
Specificity	100%	95%	97%	99%	99%	93%	93%	95%	99%
Accuracy	93%	89%	92%	95%	96%	91%	92%	94%	89%
No Diabetes									
Sensitivity	44%	58%	66%	63%	62%	80%	90%	80%	52%
Specificity	100%	97%	97%	98%	98%	92%	91%	95%	97%
Accuracy	93%	93%	94%	94%	94%	90%	91%	93%	92%
1+ IADL Limitation									
Sensitivity	60%	74%	83%	86%	85%	98%	100%	99%	54%
Specificity	99%	88%	84%	92%	93%	74%	73%	82%	97%
Accuracy	84%	82%	84%	90%	90%	83%	83%	88%	80%
No IADL Limitation									
Sensitivity	6%	21%	27%	18%	20%	42%	68%	44%	33%
Specificity	100%	98%	100%	100%	99%	95%	94%	97%	98%
Accuracy	95%	94%	96%	95%	95%	92%	93%	94%	95%
Self-respondent									
Sensitivity	14%	31%	42%	32%	36%	62%	79%	63%	34%
Specificity	100%	97%	99%	99%	99%	93%	93%	95%	98%
Accuracy	94%	93%	95%	94%	95%	91%	92%	93%	93%
Proxy respondent									
Sensitivity	73%	84%	89%	98%	94%	98%	100%	100%	63%
Specificity	99%	75%	49%	83%	76%	45%	24%	72%	100%
Accuracy	81%	81%	76%	93%	88%	81%	75%	91%	76%
All estimates are weighted using Wave A ADAMS sampling weights.									

Supplemental Table 2. Dementia prevalence by ascertainment strategy and participant characteristics										
	Common Sample, n=608									Medicare Subsample, Any FFS (n=517)
	In-Person Evaluation	Existing Algorithms					Algorithms Designed to Minimize Race/Ethnicity Differences in Sensitivity and Specificity			Medicare
	ADAMS	H-W	L-K-W	Crimmins	Hurd	Wu	Expert Model	LASSO	Modified Hurd	Medicare 3-year
	Dementia Prevalence (95% Confidence Interval)									
Overall	11.8% (9.5%, 14.5%)	5.0% (3.8%, 6.6%)	9.4% (7.7%, 11.5%)	9.8% (8.0%, 12.0%)	8.7% (6.9%, 10.9%)	8.9% (7.1%, 11.1%)	16.3% (13.5%, 19.4%)	18.3% (15.2%, 21.8%)	14.1% (11.7%, 16.9%)	7.9% (6.0%, 10.3%)
Age										
Under Age 80 (ref)	5.7% (3.6%, 9.0%)	2.8% (1.5%, 5.1%)	5.5% (3.8%, 8.0%)	4.5% (2.9%, 7.0%)	3.2% (1.8%, 5.5%)	3.7% (2.2%, 6.1%)	6.3% (4.3%, 9.2%)	10.0% (7.1%, 14.0%)	5.4% (3.6%, 7.9%)	3.3% (1.8%, 5.7%)
Age 80 and over	22.9% (18.2%, 28.4%)	9.1% (7.0%, 11.9%)	16.6% (13.2%, 20.7%)	19.6% (15.6%, 24.2%)	18.9% (14.8%, 23.8%)	18.5% (14.5%, 23.3%)	34.6% (28.3%, 41.5%)	33.6% (27.4%, 40.3%)	30.1% (24.5%, 36.4%)	15.6% (11.5%, 20.8%)
PR (95%CI)	3.99 (2.41, 6.60)	3.26 (1.68, 6.31)	3.00 (1.94, 4.63)	4.35 (2.64, 7.16)	5.91 (3.26, 10.71)	4.99 (2.87, 8.68)	5.46 (3.60, 8.30)	3.35 (2.27, 4.97)	5.61 (3.64, 8.66)	4.81 (2.52, 9.17)
Gender										
Male (ref)	9.9% (7.0%, 13.8%)	2.9% (1.8%, 4.6%)	8.5% (6.2%, 11.6%)	8.4% (6.0%, 11.6%)	6.8% (4.8%, 9.5%)	5.5% (3.9%, 7.8%)	12.8% (9.5%, 16.8%)	13.8% (10.1%, 18.6%)	12.3% (9.3%, 16.2%)	6.5% (3.8%, 10.9%)
Female	13.0% (9.8%, 17.0%)	6.4% (4.6%, 8.9%)	10.0% (7.7%, 12.9%)	10.7% (8.2%, 13.9%)	10.0% (7.5%, 13.3%)	11.1% (8.4%, 14.5%)	18.5% (14.6%, 23.2%)	21.2% (16.9%, 26.3%)	15.2% (11.9%, 19.2%)	8.8% (6.4%, 12.0%)
PR (95% CI)	1.31 (0.85, 2.03)	2.22 (1.25, 3.92)	1.18 (0.78, 1.76)	1.29 (0.85, 1.96)	1.48 (0.94, 2.32)	2.00 (1.29, 3.11)	1.45 (1.01, 2.10)	1.54 (1.05, 2.25)	1.23 (0.85, 1.78)	1.35 (0.73, 2.50)
Education										
HS or greater (ref)	9.4% (7.0%, 12.4%)	4.3% (2.9%, 6.4%)	6.5% (4.8%, 8.9%)	7.3% (5.4%, 9.8%)	6.4% (4.7%, 8.8%)	5.7% (4.1%, 7.8%)	12.8% (9.9%, 16.3%)	14.4% (11.1%, 18.5%)	11.3% (8.7%, 14.5%)	8.0% (5.6%, 11.2%)
<HS	17.5% (12.7%, 23.5%)	6.7% (4.7%, 9.5%)	16.2% (12.5%, 20.9%)	15.7% (11.8%, 20.7%)	14.1% (10.1%, 19.2%)	16.5% (12.1%, 22.1%)	24.5% (18.6%, 31.4%)	27.4% (21.2%, 34.6%)	20.6% (15.6%, 26.6%)	7.7% (5.1%, 11.5%)

PR (95% CI)	1.87 (1.22, 2.85)	1.55 (0.91, 2.63)	2.48 (1.66, 3.73)	2.16 (1.44, 3.25)	2.19 (1.40, 3.42)	2.92 (1.87, 4.54)	1.91 (1.34, 2.74)	1.90 (1.34, 2.71)	1.82 (1.26, 2.63)	0.97 (0.57, 1.64)
Race										
White (ref)	11.1% (8.8%, 14.0%)	4.61% (3.4%, 6.3%)	8.0% (6.3%, 10.1%)	9.2% (7.3%, 11.5%)	7.7% (5.9%, 10.0%)	8.2% (6.4%, 10.5%)	15.5% (12.7%, 18.9%)	17.3% (14.2%, 21.0%)	13.0% (10.5%, 15.9%)	7.8% (5.8%, 10.4%)
Black	19.3% (12.8%, 28.1%)	9.9% (6.3%, 15.3%)	26.4% (18.2%, 36.6%)	17.4% (11.5%, 25.6%)	20.6% (13.9%, 29.5%)	17.0% (11.5%, 24.5%)	24.6% (16.8%, 34.6%)	29.4% (20.5%, 40.3%)	26.9% (18.6%, 37.2%)	9.7% (5.7%, 15.8%)
PR (95% CI)	1.74 (1.10, 2.74)	2.15 (1.25, 3.71)	3.31 (2.18, 5.03)	1.90 (1.20, 3.02)	2.68 (1.70, 4.23)	2.07 (1.32, 3.26)	1.59 (1.05, 2.39)	1.70 (1.15, 2.51)	2.08 (1.39, 3.10)	1.24 (0.70, 2.23)
Diabetes										
No (ref)	12.0% (9.6%, 15.0%)	5.5% (4.0%, 7.4%)	9.5% (7.5%, 11.8%)	10.2% (8.1%, 12.7%)	9.0% (7.1%, 11.3%)	9.0% (7.2%, 11.4%)	16.8% (13.7%, 20.3%)	19.0% (15.6%, 23.0%)	14.3% (11.7%, 17.4%)	8.7% (6.5%, 11.6%)
Yes	10.5% (5.5%, 19.2%)	3.1% (1.7%, 5.4%)	9.2% (6.0%, 13.9%)	8.1% (5.0%, 13.0%)	7.4% (3.5%, 14.9%)	8.2% (4.2%, 15.7%)	14.0% (8.5%, 22.1%)	14.9% (9.4%, 23.0%)	13.1% (8.00%, 20.8%)	3.9% (2.1%, 7.1%)
PR (95% CI)	0.87 (0.45, 1.70)	0.56 (0.30, 1.06)	0.98 (0.61, 1.56)	0.80 (0.47, 1.35)	0.82 (0.39, 1.75)	0.91 (0.45, 1.84)	0.83 (0.50, 1.39)	0.78 (0.48, 1.27)	0.92 (0.55, 1.54)	0.44 (0.22, 0.87)
Any IADL Limitation										
No (ref)	5.0% (3.3%, 7.4%)	0.3% (0.2%, 0.6%)	2.7% (1.9%, 3.9%)	1.8% (1.1%, 2.8%)	1.4% (0.9%, 2.0%)	1.7% (1.2%, 2.5%)	6.9% (5.0%, 9.4%)	9.0% (6.5%, 12.3%)	5.2% (3.8%, 7.2%)	3.7% (2.0%, 6.5%)
Yes	38.6% (30.0%, 47.9%)	23.7% (17.5%, 31.1%)	35.9% (28.0%, 44.7%)	41.5% (32.6%, 50.9%)	37.9% (29.4%, 47.1%)	37.2% (28.8%, 46.5%)	53.4% (42.9%, 63.6%)	55.1% (44.3%, 65.4%)	49.1% (39.1%, 59.2%)	22.7% (16.9%, 29.9%)
PR (95% CI)	7.72 (4.87, 12.24)	73.37 (36.93, 145.79)	13.16 (8.67, 19.99)	23.04 (13.90, 38.19)	27.94 (17.5, 44.6)	21.38 (13.76, 33.23)	7.76 (5.37, 11.21)	6.13 (4.22, 8.89)	9.42 (6.44, 13.76)	6.23 (3.27, 11.86)

Abbreviations: CI, Confidence Interval; PR, Prevalence Ratio

All estimates are weighted using Wave A ADAMS sampling weights.

*Medicare estimates derived from Medicare-FFS user subset of the common sample (n=517), while all other estimates are derived from the common sample (n=608)

Supplemental Table 3. Adjusted associations between participant characteristics and dementia status by dementia classification strategy										
	Common Sample (n=608)									Medicare Subsample, Any FFS (n=517)
	In-Person Evaluation	Existing Algorithms					Algorithms Designed to Minimize Race/Ethnicity Differences in Sensitivity and Specificity			Medicare, Any FFS
	ADAMS	H-W	L-K-W	Crimmins	Hurd	Wu	Expert Model	LASSO	Modified Hurd	Medicare 3-year
	Prevalence Ratio (95% Confidence Interval)									
Age (per 10 years)	1.85 (1.38, 2.48)	1.01 (0.82, 1.25)	1.37 (1.06, 1.76)	1.55 (1.21, 1.98)	1.56 (1.19, 2.05)	1.56 (1.21, 2.01)	2.18 (1.68, 2.82)	1.87 (1.45, 2.39)	2.11 (1.57, 2.84)	2.10 (1.41, 3.14)
Female	1.11 (0.73, 1.69)	1.75 (1.03, 2.99)	0.99 (0.71, 1.39)	1.02 (0.74, 1.41)	1.19 (0.84, 1.69)	1.72 (1.17, 2.53)	1.20 (0.89, 1.61)	1.33 (0.97, 1.82)	0.98 (0.71, 1.35)	1.17 (0.61, 2.22)
Less than HS	0.96 (0.67, 1.39)	0.66 (0.45, 0.98)	1.07 (0.76, 1.49)	0.92 (0.67, 1.27)	0.88 (0.65, 1.19)	1.34 (1.00, 1.79)	1.00 (0.75, 1.32)	1.07 (0.80, 1.42)	0.85 (0.63, 1.15)	0.49 (0.29, 0.81)
Black	1.45 (0.99, 2.11)	1.96 (1.31, 2.93)	2.57 (1.79, 3.69)	1.53 (1.09, 2.16)	2.20 (1.57, 3.09)	1.55 (1.14, 2.11)	1.33 (0.98, 1.80)	1.42 (1.07, 1.89)	1.77 (1.33, 2.37)	1.35 (0.81, 2.26)
Diabetes	0.99 (0.60, 1.64)	0.57 (0.29, 1.12)	0.97 (0.58, 1.61)	0.90 (0.51, 1.61)	0.90 (0.62, 1.31)	0.90 (0.66, 1.24)	0.99 (0.69, 1.42)	0.86 (0.61, 1.21)	1.09 (0.75, 1.60)	0.54 (0.27, 1.05)
Any IADL Limitation	3.09 (1.81, 5.27)	19.90 (8.20, 48.28)	5.30 (3.25, 8.66)	8.62 (4.63, 16.08)	9.39 (5.33, 16.54)	6.13 (3.52, 10.67)	3.39 (2.18, 5.26)	2.54 (1.56, 4.16)	4.47 (2.81, 7.11)	2.59 (1.19, 5.61)

Abbreviations: CI, Confidence Interval; FFS, fee-for-service; HS, high school; IADL, instrumental activities of daily living
All estimates are weighted using Wave A ADAMS sampling weights, and mutually adjusted for all other characteristics listed in the table as well as HRS proxy versus self-respondent status.

Supplemental Table 4. Sensitivity analysis for dementia prevalence by ascertainment strategy and participant characteristics using all available data										
	In-Person Evaluation	Existing Algorithms					Algorithms Designed to Minimize Race/Ethnicity Differences in Sensitivity and Specificity			Medicare, Any FFS
	ADAMS N=751	H-W N=751	L-K-W N=750	Crimmins N=717	Hurd N=724	Wu N=750	Expert Model N=745	LASSO N=655	Modified Hurd N=720	Medicare 3-year N=640
	Dementia Prevalence (95% Confidence Interval)									
Overall	13.2% (10.9%, 15.8%)	5.4% (4.2%, 6.8%)	10.2% (8.6%, 12.2%)	12.0% (9.9%, 14.4%)	9.6% (7.8%, 11.8%)	9.8% (8.1%, 11.8%)	18.0% (15.3%, 21.1%)	19.2% (16.1%, 22.7%)	15.6% (13.2%, 18.4%)	9.5%, (7.4%, 12.0%)
Age										
Under Age 80 (ref)	6.2% (4.2%, 9.1%)	3.0% (1.8%, 5.1%)	6.0% (4.3%, 8.3%)	5.5% (3.6%, 8.2%)	3.4% (2.0%, 5.5%)	4.1% (2.7%, 6.3%)	7.5% (5.3%, 10.5%)	10.8% (7.8%, 14.9%)	5.7% (4.0%, 8.0%)	4.2%, (2.6%, 6.8%)
Age 80 and over	25.2% (20.6%, 30.4%)	9.5% (7.6%, 12.0%)	17.6% (14.4%, 21.3%)	23.0% (18.8%, 27.9%)	20.4% (16.4%, 25.2%)	19.7% (16.0%, 23.9%)	36.2% (30.4%, 42.4%)	34.6% (28.6%, 41.2%)	33.5% (27.9%, 39.5%)	17.6%, (13.4%, 22.6%)
PR (95%CI)	4.07 (2.64, 6.27)	3.19 (1.79, 5.69)	2.93 (2.00, 4.29)	4.20 (2.67, 6.61)	6.08 (3.54, 10.44)	4.77 (2.98, 7.65)	4.84 (3.31, 7.09)	3.20 (2.21, 4.65)	5.92 (4.01, 8.75)	4.14 (2.40, 7.13)
Gender										
Male (ref)	10.3% (7.6%, 13.8%)	3.8% (2.5%, 5.6%)	9.1% (6.9%, 11.9%)	10.8% (7.8%, 14.6%)	7.4% (5.4%, 10.1%)	6.7% (4.9%, 9.0%)	14.6% (11.2%, 18.8%)	15.3% (11.4%, 20.3%)	13.5% (10.4%, 17.3%)	7.5%, (4.8%, 11.5%)
Female	15.1% (11.9%, 18.9%)	6.5% (4.8%, 8.7%)	11.0% (8.8%, 13.8%)	12.7% (10.0%, 16.1%)	11.0% (8.4%, 14.3%)	11.9% (9.4%, 15.0%)	20.3% (16.4%, 24.8%)	21.8% (17.5%, 26.8%)	17.1% (13.7%, 21.1%)	10.7%, (8.0%, 14.2%)
PR (95% CI)	1.46 (1.00, 2.13)	1.72 (1.05, 2.81)	1.22 (0.85, 1.74)	1.18 (0.80, 1.75)	1.50 (0.99, 2.26)	1.77 (1.21, 2.60)	1.39 (1.00, 1.93)	1.43 (1.00, 2.04)	1.26 (0.91, 1.76)	1.43 (0.85, 2.40)
Education										
HS or greater (ref)	10.5% (8.0%, 13.5%)	4.2% (2.9%, 5.9%)	6.7% (5.0%, 8.8%)	9.0% (6.8%, 11.9%)	7.6% (5.7%, 10.2%)	6.1% (4.6%, 8.1%)	14.4% (11.5%, 18.0%)	15.3% (11.9%, 19.5%)	13.0% (10.3%, 16.3%)	9.1%, (6.6%, 12.4%)
<HS	19.4% (14.9%, 24.8%)	8.2% (6.0%, 11.1%)	18.4% (14.7%, 22.9%)	18.8% (14.6%, 23.9%)	14.2% (10.5%, 18.8%)	18.3% (14.2%, 23.3%)	26.1% (20.6%, 32.4%)	28.3% (22.2%, 35.2%)	21.7% (17.0%, 27.2%)	10.2%, (7.2%, 14.3%)
PR (95% CI)	1.86 (1.29, 2.67)	1.98 (1.24, 3.17)	2.77 (1.93, 3.97)	2.09 (1.44, 3.03)	1.85 (1.23, 2.79)	3.02 (2.07, 4.41)	1.81 (1.32, 2.49)	1.85 (1.32, 2.58)	1.66 (1.20, 2.31)	1.12 (0.71, 1.78)
Race										
White (ref)	12.4% (10.0%, 15.1%)	4.7% (3.5%, 6.1%)	8.5% (6.9%, 10.4%)	10.8% (8.8%, 13.3%)	8.5% (6.7%, 10.8%)	8.9% (7.1%, 11.0%)	17.1% (14.3%, 20.4%)	18.3% (15.0%, 22.0%)	14.5% (12.0%, 17.4%)	9.2%, (7.1%, 11.9%)

Black	22.2% (15.4%, 30.9%)	13.6% (8.8%, 20.5%)	29.6% (21.4%, 39.4%)	25.2% (17.0%, 35.5%)	21.6% (14.9%, 30.1%)	20.2% (14.1%, 28.2%)	27.4% (19.6%, 36.9%)	29.6% (21.1%, 39.9%)	27.9% (19.9%, 37.5%)	12.4%, (7.3%, 20.1%)
PR (95% CI)	1.79 (1.20, 2.68)	2.92 (1.76, 4.84)	3.49 (2.41, 5.04)	2.32 (1.52, 3.54)	2.53 (1.65, 3.87)	2.28 (1.52, 3.43)	1.60 (1.11, 2.30)	1.62 (1.12, 2.35)	1.92 (1.33, 2.77)	1.34 (0.76, 2.37)
Diabetes										
No (ref)	13.6% (11.1%, 16.4%)	6.0% (4.7%, 7.8%)	10.3% (8.4%, 12.5%)	12.6% (10.2%, 15.4%)	10.2% (8.2%, 12.6%)	10.3% (8.5%, 12.5%)	18.9% (15.8%, 22.5%)	20.3% (16.8%, 24.3%)	16.4% (13.7%, 19.5%)	10.6%, (8.2%, 13.6%)
Yes	11.6% (6.8%, 19.1%)	2.7% (1.5%, 4.6%)	10.1% (6.8%, 14.9%)	9.3% (5.9%, 14.5%)	7.3% (3.7%, 13.9%)	7.6% (4.1%, 13.8%)	13.9% (8.9%, 21%)	14.5% (9.2%, 22.1%)	12.5% (7.9%, 19.2%)	4.2%, (2.4%, 7.3%)
PR (95% CI)	0.85 (0.49, 1.48)	0.44 (0.24, 0.80)	0.99 (0.64, 1.53)	0.74 (0.45, 1.22)	0.72 (0.36, 1.44)	0.74 (0.39, 1.40)	0.73 (0.46, 1.17)	0.72 (0.45, 1.15)	0.76 (0.47, 1.23)	0.40 (0.22, 0.73)
Any IADL Limitation										
No (ref)	5.2% (3.6%, 7.3%)	0.4% (0.2%, 0.7%)	2.8% (2.1%, 3.9%)	2.7% (1.6%, 4.4%)	1.8% (1.2%, 2.6%)	2.1% (1.5%, 2.9%)	8.3% (6.3%, 11.0%)	9.5% (7.0%, 12.9%)	6.4% (4.8%, 8.5%)	4.1%, (2.5%, 6.6%)
Yes	42.1% (34.1%, 50.4%)	23.4% (18.0%, 29.7%)	37.0% (29.9%, 44.7%)	46.5% (37.9%, 55.3%)	38.1% (30.4%, 46.5%)	37.9% (30.5%, 45.9%)	53.0% (43.9%, 62.0%)	55.3% (45.1%, 65.1%)	49.5% (40.5%, 58.5%)	26.2%, (20.1%, 33.4%)
PR (95% CI)	8.15 (5.45, 12.2)	57.93 (31.13, 107.82)	13.05 (9.02, 18.88)	17.34 (10.27, 29.26)	21.19 (13.75, 32.67)	18.23 (12.33, 26.95)	6.37 (4.58, 8.84)	5.81 (4.07, 8.29)	7.70 (5.50, 10.77)	6.42 (3.72, 11.11)

Abbreviations: CI, Confidence Interval; PR, Prevalence Ratio

All estimates are weighted using Wave A ADAMS sampling weights.

	In-Person Evaluation	Existing Algorithms					Algorithms Designed to Minimize Race/Ethnicity Differences in Sensitivity and Specificity			Medicare, Any FFS
Supplemental Table 5. Sensitivity analyses for adjusted associations between participant characteristics and dementia status by ascertainment using all available data										
	ADAMS N=751	H-W N=751	L-K-W N=750	Crimmins N=717	Hurd N=724	Wu N=750	Expert Model N=745	LASSO N=655	Modified Hurd N=720	Medicare 3-year N=640
	Prevalence Ratio (95% Confidence Interval)									
Age (per 10 years)	1.83 (1.45, 2.30)	1.08 (0.84, 1.38)	1.42 (1.14, 1.78)	1.62 (1.31, 2.00)	1.76 (1.37, 2.27)	1.71 (1.35, 2.19)	2.20 (1.79, 2.70)	1.74 (1.39, 2.19)	2.28 (1.78, 2.93)	1.80 (1.29, 2.52)
Female	1.18 (0.82, 1.68)	1.39 (0.89, 2.18)	1.01 (0.75, 1.36)	0.94 (0.70, 1.24)	1.17 (0.85, 1.62)	1.50 (1.07, 2.10)	1.15 (0.88, 1.51)	1.21 (0.90, 1.63)	1.02 (0.76, 1.37)	1.21 (0.72, 2.03)
Less than HS	0.98 (0.71, 1.35)	0.76 (0.54, 1.08)	1.18 (0.87, 1.59)	0.90 (0.67, 1.20)	0.80 (0.59, 1.09)	1.36 (1.03, 1.80)	1.00 (0.76, 1.31)	1.03 (0.78, 1.35)	0.83 (0.63, 1.09)	0.61 (0.39, 0.93)
Black	1.47 (1.04, 2.09)	2.41 (1.60, 3.63)	2.49 (1.80, 3.44)	1.80 (1.28, 2.54)	2.20 (1.56, 3.10)	1.61 (1.18, 2.20)	1.33 (1.00, 1.79)	1.39 (1.06, 1.83)	1.72 (1.29, 2.28)	1.41 (0.84, 2.38)
Diabetes	0.97 (0.63, 1.49)	0.43 (0.23, 0.79)	1.00 (0.65, 1.56)	0.85 (0.54, 1.34)	0.79 (0.53, 1.18)	0.83 (0.60, 1.16)	0.92 (0.66, 1.28)	0.80 (0.58, 1.12)	0.99 (0.68, 1.43)	0.44 (0.23, 0.82)
Any IADL Limitation	3.96 (2.50, 6.29)	22.05 (10.43, 46.62)	5.94 (3.88, 9.11)	7.43 (3.90, 14.14)	8.82 (5.21, 14.92)	6.45 (4.01, 10.39)	2.95 (1.98, 4.39)	2.47 (1.52, 4.02)	3.79 (2.53, 5.69)	3.63 (1.86, 7.07)

Abbreviations: CI, Confidence Interval; FFS, fee-for-service; HS, high school; IADL, instrumental activities of daily living

All estimates are weighted using Wave A ADAMS sampling weights, and mutually adjusted for all other characteristics listed in the table as well as HRS proxy versus self-respondent status.

Supplemental Table 6. Sensitivity analyses for dementia prevalence by ascertainment strategy and participant characteristics considering alternate look-back periods for Medicare-based dementia ascertainment

	In-Person Evaluation (Common Sample)	Medicare Subset, (Any FFS Medicare)			Medicare Subset (No HMO Medicare)
	ADAMS, n=608	Medicare 1-year, n=510	Medicare 3-year, n=517	Medicare 5-year, n=529	Medicare 3-year, n=460
Overall	11.8% (9.5%, 14.5%)	5.8% (4.3%, 7.6%)	7.9% (6.0%, 10.3%)	8.3% (6.4%, 10.8%)	7.9% (5.9%, 10.6%)
Age					
Under Age 80 (ref)	5.7% (3.6%, 9.0%)	2.1% (1.1%, 3.9%)	3.3% (1.8%, 5.7%)	3.3% (1.9%, 5.6%)	3.1% (1.6%, 5.8%)
Age 80 and over	22.9% (18.2%, 28.4%)	11.8% (8.6%, 16.1%)	15.6% (11.5%, 20.8%)	16.7% (12.4%, 22.1%)	15.5% (11.1%, 21.1%)
PR (95%CI)	3.99 (2.41, 6.60)	5.58 (2.81, 11.10)	4.81 (2.52, 9.17)	5.15 (2.76, 9.64)	5.02 (2.47, 10.20)
Gender					
Male (ref)	9.9% (7.0%, 13.8%)	4.6% (2.8%, 7.5%)	6.5% (3.8%, 10.9%)	7.6% (4.6%, 12.2%)	6.3% (3.5%, 11.0%)
Female	13.0% (9.8%, 17.0%)	6.5% (4.6%, 9.1%)	8.7% (6.4%, 12.0%)	8.8% (6.4%, 11.9%)	9.00% (6.3%, 12.6%)
PR (95% CI)	1.31 (0.85, 2.03)	1.40 (0.77, 2.56)	1.35 (0.73, 2.50)	1.16 (0.65, 2.07)	1.42 (0.73, 2.76)
Education					
<HS (ref)	9.4% (7.0%, 12.4%)	5.9% (4.2%, 8.4%)	8.0% (5.6%, 11.2%)	8.00% (5.7%, 11.1%)	7.8% (5.3%, 11.3%)
HS or greater	17.5% (12.7%, 23.5%)	5.4% (3.4%, 8.3%)	7.7% (5.1%, 11.5%)	9.1% (6.00%, 13.5%)	8.2% (5.4%, 12.4%)
PR (95% CI)	1.87 (1.22, 2.85)	0.90 (0.52, 1.58)	0.97 (0.57, 1.64)	1.13 (0.67, 1.93)	1.05 (0.60, 1.84)
Race					
White (ref)	11.1% (8.8%, 14.0%)	5.6% (4.2%, 7.6%)	7.8% (5.8%, 10.4%)	8.2% (6.1%, 10.8%)	7.7% (5.6%, 10.6%)
Black	19.3% (12.8%, 28.1%)	7.4% (4.0%, 13.2%)	9.7% (5.7%, 15.8%)	10.2% (6.2%, 16.4%)	10.6% (6.2%, 17.5%)
PR (95% CI)	1.74 (1.10, 2.74)	1.31 (0.68, 2.54)	1.24 (0.70, 2.23)	1.25 (0.71, 2.20)	1.38 (0.75, 2.52)
Diabetes					
No (ref)	12.0% (9.6%, 15.0%)	6.3% (4.7%, 8.5%)	8.7% (6.5%, 11.6%)	9.2% (6.9%, 12.1%)	8.7% (6.3%, 11.9%)
Yes	10.5% (5.5%, 19.2%)	3.0% (1.5%, 6.0%)	3.9% (2.1%, 7.1%)	3.9% (2.1%, 7.1%)	4.1% (2.1%, 7.7%)
PR (95% CI)	0.87 (0.45, 1.70)	0.48 (0.22, 1.01)	0.44 (0.22, 0.87)	0.42 (0.22, 0.82)	0.47 (0.23, 0.96)
Any IADL Limitation					
No (ref)	5.0% (3.3%, 7.4%)	2.1% (1.1%, 4.0%)	3.7% (2.0%, 6.5%)	4.0% (2.3%, 6.9%)	3.7% (2.0%, 6.9%)
Yes	38.6% (30.0%, 47.9%)	18.7% (13.7%, 25.2%)	22.7% (16.9%, 29.9%)	23.7% (17.7%, 30.8%)	22.1% (16.2%, 29.6%)
PR (95% CI)	7.72 (4.87, 12.24)	9.00 (4.35, 18.60)	6.23 (3.27, 11.86)	5.89 (3.20, 10.85)	5.93 (2.96, 11.90)

Abbreviations: CI, Confidence Interval; PR, Prevalence Ratio
All estimates are weighted using Wave A ADAMS sampling weights.

	In-Person Evaluation (Common Sample)	Medicare Subset, (Any FFS Medicare)			Medicare Subset (No HMO Medicare)
Supplemental Table 7. Sensitivity analyses for adjusted associations considering alternate look-back periods for Medicare-based dementia ascertainment					
	ADAMS, n=608	Medicare 1-year, n=510	Medicare 3-year, n=517	Medicare 5-year, n=529	Medicare 3-year, n=460
	Prevalence Ratio (95% Confidence Interval)				
Age (per 10 years)	1.85 (1.38, 2.48)	2.09 (1.25, 3.48)	2.10 (1.41, 3.14)	2.20 (1.49, 3.26)	2.24 (1.46, 3.42)
Female	1.11 (0.73, 1.69)	1.21 (0.64, 2.29)	1.17 (0.61, 2.22)	1.01 (0.56, 1.83)	1.23 (0.62, 2.47)
Less than HS	0.96 (0.67, 1.39)	0.40 (0.23, 0.71)	0.49 (0.29, 0.81)	0.57 (0.34, 0.98)	0.47 (0.28, 0.79)
Black	1.45 (0.99, 2.11)	1.50 (0.86, 2.62)	1.35 (0.81, 2.26)	1.29 (0.76, 2.18)	1.44 (0.84, 2.46)
Diabetes	0.99 (0.6, 1.64)	0.59 (0.28, 1.26)	0.54 (0.27, 1.05)	0.51 (0.27, 0.99)	0.56 (0.28, 1.12)
Any IADL Limitation	3.09 (1.81, 5.27)	3.41 (1.27, 9.14)	2.59 (1.19, 5.61)	2.36 (1.11, 5.01)	2.30 (1.06, 5.01)

Abbreviations: CI, Confidence Interval; FFS, fee-for-service; HMO, health maintenance organization; HS, high school; IADL, instrumental activities of daily living

All estimates are weighted using Wave A ADAMS sampling weights, and mutually adjusted for all other characteristics listed in the table as well as HRS proxy versus self-respondent status.