

Table e-1. Variables included in the multiple imputation model.

<p><b>Imputed variables</b></p>	<p>Alcohol intake, anxiety, APOE E4 status, atrial fibrillation, BMI, history of falls, family history of dementia, gait problems, history of depression, hyperlipidemia, informant-rated memory decline, marital status, occupation, pulse, self-rated poor memory, severe head injury, sleep problems, thyroid disease.</p>
<p><b>Auxiliary variables (not imputed)</b></p>	<p>Age, arthritis, cancer, dementia status, diabetes, difficulty managing medication, difficulty managing money, difficulty preparing meals, difficulty shopping, difficulty using the phone, difficulty with travel, ethnicity, gender, hearing impairment, height, hypertension, illiteracy, informant-rated poor memory, language, motor impairment, nursing home residency, physical activity, self-rated memory decline, self-rated poor health, smoking status, stroke history, visual impairment, weight loss, years of education.</p>



Depression, N (%)	108 (39.9)	8 (40.0)	96 (25.3)	48 (31.4)	86 (36.0)	30 (57.7)	120 (26.4)	24 (30.8)	92 (40.4)	24 (38.1)	128 (26.8)	16 (28.6)
Hypertension, N (%)	219 (80.8)	19 (95.0)	313 (82.4)	131 (85.6)	190 (79.5)	48 (92.3)	377 (82.9)	67 (85.9)	183 (80.3)	55 (87.3)	394 (82.6)	50 (89.3)
Hyperlipidaemia, N (%)	56 (20.7)	5 (25.0)	160 (42.1)	46 (30.1)	46 (19.3)	15 (28.9)	180 (39.6)	26 (33.3)	46 (20.2)	15 (23.8)	194 (40.7)	12 (21.4)
Diabetes, N (%)	45 (16.6)	4 (20.0)	79 (20.8)	44 (28.8)	34 (14.2)	15 (28.9)	104 (22.9)	19 (24.4)	37 (16.2)	12 (19.0)	108 (22.6)	15 (26.8)
Heart problems , N (%)	159 (58.7)	15 (75.0)	215 (56.6)	93 (60.8)	136 (56.9)	38 (73.1)	258 (56.7)	50 (64.1)	133 (58.3)	41 (65.1)	270 (56.6)	38 (67.9)
Stroke, N (%)	109 (40.2)	9 (45.0)	55 (14.5)	28 (18.3)	91 (38.1)	27 (51.9)	70 (15.4)	13 (16.7)	93 (40.8)	25 (39.7)	70 (14.7)	13 (23.2)
APOE E4, N (%)	100 (36.9)	7 (35.0)	79 (20.8)	44 (28.8)	98 (41.0)	9 (17.3)	111 (24.4)	12 (15.4)	81 (35.5)	26 (41.3)	111 (23.3)	12 (21.4)
Current smoking, N (%)	14 (5.2)	2 (10.0)	37 (9.7)	20 (13.1)	11 (4.6)	5 (9.6)	53 (11.7)	4 (5.1)	10 (4.4)	6 (9.5)	51 (10.7)	6 (10.7)
Low physical activity, N (%)	244 (90.0)	15 (75.0)	249 (65.5)	116 (75.8)	214 (89.5)	45 (86.5)	310 (68.1)	55 (70.5)	212 (93.0)	47 (74.6)	319 (66.9)	46 (82.1)
Subjective memory												
Informant-rated memory decline, N (%)	261 (96.3)	20 (100.0)	188 (49.5)	85 (55.6)	234 (97.9)	47 (90.4)	223 (49.0)	50 (64.1)	222 (97.4)	59 (93.7)	243 (50.9)	30 (53.6)
Informant-rated poor memory, N (%) <sup>e</sup>	107 (39.5)	2 (10.0)	2 (0.5)	2 (1.3)	103 (43.1)	6 (11.5)	4 (0.9)	0 (0.0)	101 (44.3)	8 (12.7)	3 (0.6)	1 (1.8)
Self-rated memory decline, N (%)	119 (43.9)	9 (45.0)	121 (31.8)	53 (34.6)	110 (46.0)	18 (34.6)	139 (30.6)	35 (44.9)	107 (46.9)	21 (33.3)	149 (31.2)	25 (44.6)
Self-rated poor memory, N (%)	76 (28.0)	3 (15.0)	23 (6.1)	14 (9.2)	74 (31.0)	5 (9.6)	26 (5.7)	11 (14.1)	74 (32.5)	5 (7.9)	29 (6.1)	8 (14.3)

<sup>a</sup> True-positives are individuals who have dementia and received a positive brief cognitive assessment result using the specified cut-off

<sup>b</sup> False-negatives are individuals who have dementia and received a negative brief cognitive assessment result using the specified cut-off

<sup>c</sup> True-negatives are individuals who do not have dementia and received a negative brief cognitive assessment result using the specified cut-off

<sup>d</sup> False-positives are individuals who do not have dementia and received a positive brief cognitive assessment result using the specified cut-off

<sup>e</sup> A separate category was used for missing observations (13.5%)

Table e-3. Bootstrap Inclusion Fraction for variables associated with false-positive, false-negative and overall misclassification by the MMSE, MIS and AN brief cognitive assessments in 1000 bootstrap samples.

	False-negative misclassification			False-positive misclassification			Overall misclassification		
	MMSE	MIS	AN	MMSE	MIS	AN	MMSE	MIS	AN
Age	39.1	<b>72.5<sup>a</sup></b>	39.7	23.5	<b>96.1</b>	<b>70.1</b>	7.2	<b>94.4</b>	34.1
Education	<b>62.3</b>	26.3	44.9	<b>100.0</b>	46.6	44.4	<b>97.6</b>	49.1	<b>74.7</b>
Nursing home	<b>64.3</b>	14.4	<b>90.1</b>	<b>67.1</b>	18.7	<b>61.7</b>	22.1	12.6	38.4
Informant-rated poor memory	<b>65.5</b>	<b>96.5</b>	<b>90.1</b>	15.3	N/A <sup>b</sup>	16.0	<b>99.7</b>	<b>99.4</b>	<b>74.5</b>
Black ethnicity (v Caucasian)	26.0	11.6	32.2	<b>96.8</b>	32.9	<b>59.6</b>	<b>88.1</b>	16.5	16.9
Hispanic ethnicity (v Caucasian)	9.8	40.0	22.6	16.9	43.9	40.1	31.1	17.0	12.9
APOE	11.7	<b>92.6</b>	21	<b>68.7</b>	44.4	5.0	13.1	<b>79.7</b>	25.1
Visual impairment	32.3	31.8	36	<b>81.5</b>	39.7	10.5	36.0	<b>52.6</b>	9.1
Self-rated poor memory	18.6	<b>82.8</b>	<b>67.8</b>	11.2	26.0	17.4	11.2	10.0	24.1
Illiteracy	27.6	44.4	15.9	<b>82.1</b>	14.7	24.4	12.7	17.4	16.2

Depression	16.7	<b>95.4</b>	13.4	37.3	24.4	10.5	23.7	<b>83.9</b>	12.3
Informant-rated memory decline	18.8	<b>83.9</b>	14.5	26.1	32.8	6.0	26.0	30.5	<b>56.6</b>
Hypertension	<b>67.6</b>	20.1	36.6	17.4	8.8	17.7	7.1	27.4	23.8
Current smoking	31.7	<b>67.6</b>	14.8	15.3	12.7	23.1	31.6	8.0	15.2
Hyperlipidaemia	14.7	41.9	9.2	23.3	7.2	<b>50.4</b>	16.4	6.6	<b>78.3</b>
Physical activity	18.3	11.6	<b>62.7</b>	5.2	25.1	13.5	17.7	16.6	10.7
Diabetes	13.8	40.4	9.6	7.8	8.1	7.3	12.9	23.0	7.0
Sex	28.5	10.1	35.7	45.6	8.4	18.9	27.8	7.1	7.6
Hearing impairment	31.3	19.7	37.9	10.0	8.0	7.8	6.5	6.6	16.7
Heart problems	15.7	34.6	21	17.5	7.6	40.3	<b>54.4</b>	30.9	<b>67.8</b>
Motor impairment	12.3	13.8	16.2	14.1	6.8	19.2	7.8	5.8	9.3
Self-rated memory decline	13.3	23.6	21.6	26.7	24.2	17.2	8.6	19.2	7.7
Stroke	11.2	16.5	9.9	16.9	14.3	22.4	10.7	14.4	41.6
Total predictors included	<b>4</b>	<b>7</b>	<b>4</b>	<b>6</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>

Notes: MMSE = Mini-mental State Examination. MIS = Memory Impairment Screen. AN = Animal Naming. Bold figures indicate BIF  $\geq$  50%

and therefore inclusion in the final model.

<sup>a</sup>A fractional polynomial transformation (3, 3) was the most frequently selected functional form for modelling age in the MIS false-negative model. For all remaining models, where either of the continuous variables (age and education) were selected for inclusion, the most frequently selected functional form was linear.

<sup>b</sup>Informant-rated poor memory was excluded from the MIS false-positive analysis due to insufficient cases and perfect prediction.

Table e-4. Predictors of false-negative and false-positive dementia misclassification by the MMSE, MIS and AN brief cognitive assessments in logistic regression models using multiply imputed data.

Predictors	Factors associated with false-negative misclassification			Factors associated with false-positive misclassification		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	MMSE (n=301)	MIS (n = 301)	AN (n = 301)	MMSE (n = 543)	MIS (n = 543)	AN (n = 543)
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Age	.	1.00 (0.99 – 1.00)	.	.	1.12*** (1.08 – 1.16)	1.10*** (1.05 – 1.15)
Nursing home resident	0.15 (0.19 – 1.23)	.	0.14** (0.03 – 0.59)	8.58** (1.99 – 37.03)	.	4.78* (1.26 – 18.09)
Years of education	1.23** (1.08 – 1.41)	.	.	0.77*** (0.71 – 0.84)	.	.
African-American ethnicity	.	.	.	3.32*** (1.76 – 6.27)	.	4.25*** (2.16 – 8.36)
Hispanic ethnicity	.	.	.	1.12 (0.48 – 2.61)	.	3.72** (1.66 – 8.36)
Illiteracy	.	.	.	5.73** (1.77– 18.56)	.	.
Visual impairment	.	.	.	2.55*** (1.55 – 4.17)	.	.
APOE E4	.	0.25** (0.10 – 0.59)	.	2.04* (1.16 – 3.58)	.	.

Smoking	.	4.33* (1.28 – 14.64)	.	.	.	.
Hyperlipidemia	.	.	.	.	.	0.62 (0.31 – 1.23)
Low physical activity	.	.	0.33** (0.14 – 0.74)	.	.	.
Depression	.	3.66*** (1.80 – 7.44)	.	.	.	.
Hypertension	4.27 (0.54 – 33.47)	.	.	.	.	.
Self-rated poor memory	.	0.30* (0.11 – 0.87)	0.32* (0.12 – 0.89)	.	.	.
Informant-rated poor memory	0.37 (0.96 – 1.43)	0.24** (0.09 – 0.64)	0.34* (0.14 – 0.78)	.	.	.
Informant-rated memory decline	.	0.24 (0.06 – 1.04)	.	.	.	.

*Notes:* MMSE = Mini-mental State Examination. MIS = Memory Impairment Screen. AN = Animal Naming. The ORs are for a one-year increase in age or years of education. \*= $p < .05$ . \*\*= $p < .01$ . \*\*\*= $p < .001$ . OR = Odds ratio. CI = Confidence Intervals. <sup>a</sup> A fractional polynomial transformation (3, 3) was used for age.



Table e-5. Predictors of overall misclassification of dementia by the MMSE, MIS and AN  
 brief cognitive assessments in logistic regression models using multiply imputed data.

	<b>Model 7</b> <b>MMSE (N=851)</b>	<b>Model 8</b> <b>MIS (N=856)</b>	<b>Model 9</b> <b>AN (N=845)</b>
Predictors	<b>OR (95% CI)</b>	<b>OR (95% CI)</b>	<b>OR (95% CI)</b>
Age	.	1.05*** (1.03-1.08)	.
Years of education	0.85*** (0.81-0.90)	.	0.91*** (0.87-0.95)
African-American ethnicity	2.29*** (1.44-3.63)	.	.
Visual impairment	.	1.73** (1.17-2.57)	.
APOE E4	.	0.50** (0.31-0.83)	.
Heart problems	1.48* (1.02-2.17)	.	1.95** (1.25-3.04)
Hyperlipidemia	.	.	0.46** (0.28-0.76)
Depression	.	1.99** (1.34-2.96)	.
Informant-rated poor memory	0.10*** (0.04-0.27)	0.19*** (0.08-0.46)	0.35** (0.17-0.75)
Informant-rated memory decline	.	.	1.68* (1.06-2.67)

*Notes:* MMSE = Mini-mental State Examination. MIS = Memory Impairment Screen. AN = Animal Naming. The ORs are for a one-year increase in age or years of education. \*= $p < .05$ . \*\*= $p < .01$ . \*\*\*= $p < .001$ . OR = Odds ratio. CI = Confidence Intervals.

Table e-6. Predictors of false-negative and false-positive dementia misclassification by the MMSE, MIS and AN brief cognitive assessments in logistic regression models using survey weights.

	Predictors of false-negative misclassification (N=291)			Predictors of false-positive misclassification (N=533)		
	Model 1 MMSE	Model 2 MIS	Model 3 AN	Model 4 MMSE	Model 5 MIS	Model 6 AN
Predictors	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Age (p1)	.	1.15 <sup>a</sup> (0.95-1.39)	.	.	1.14*** (1.08-1.19)	1.09** (1.02-1.16)
Age (p2)	.	0.95 <sup>a</sup> (0.88-1.02)	.	.	.	.
Nursing home resident	0.06* (0.01-0.52)	.	0.06** (0.01-0.30)	5.97* (1.52-23.46)	.	5.50* (1.08-28.01)
Years of education	1.12 (0.97-1.28)	.	.	0.80** (0.70-0.91)	.	.
African-American ethnicity	.	.	.	4.19** (1.77-9.87)	.	2.87* (1.22-6.79)

Hispanic ethnicity	.	.	.	0.94 (0.26-3.38)	.	1.71 (0.47-6.26)
Illiteracy	.	.	.	5.86 (0.65-53.10)	.	.
Visual impairment	.	.	.	2.74** (1.42-5.30)	.	.
APOE E4	.	0.14*** (0.05-0.41)	.	2.23* (1.09-4.54)	.	.
Smoking	.	21.66** (3.81-123.06)	.	.	.	.
Hyperlipidemia	.	.	.	.	.	0.49 (0.16-1.46)
Low physical activity	.	.	0.33* (0.12-0.95)	.	.	.
Depression	.	4.04** (1.46-11.13)	.	.	.	.
Hypertension	1.69 (0.20-14.24)	.	.	.	.	.
Self-rated poor memory	.	0.23* (0.08-0.70)	0.22* (0.07-0.73)	.	.	.

Informant-rated poor memory	0.07** (0.01-0.43)	0.10** (0.02-0.51)	0.20* (0.06-0.67)	.	.	.
Informant-rated memory decline	.	0.10** (0.02-0.52)	.	.	.	.

*Notes:* MMSE = Mini-mental State Examination. MIS = Memory Impairment Screen. AN = Animal Naming. The ORs are for a one-year increase in age or years of education. \*= $p < .05$ . \*\*= $p < .01$ . \*\*\*= $p < .001$ . OR = Odds ratio. CI = Confidence Intervals. <sup>a</sup> A fractional polynomial transformation (3, 3) was used for age.

Table e-7. Predictors of overall dementia misclassification by the MMSE, MIS and AN brief cognitive assessments in logistic regression models using survey weights (N=824)

	<b>Model 7 MMSE</b>	<b>Model 8 MIS</b>	<b>Model 9 AN</b>
Predictors	<b>OR (95% CI)</b>	<b>OR (95% CI)</b>	<b>OR (95% CI)</b>
Age	.	1.10** (1.03-1.18)	.
Years of education	0.81*** (0.74-0.89)	.	0.86** (0.79-0.94)
African-American ethnicity	3.84** (1.80-8.21)	.	.
Visual impairment	.	2.15* (1.17-3.94)	.
APOE E4	.	0.65 (0.20 – 2.06)	.
Heart problems	1.69 (0.65-4.40)	.	2.96** (1.69-5.20)
Hyperlipidemia	.	.	0.26** (0.10-0.65)
Depression	.	1.64 (0.90-2.97)	.
Informant-rated poor memory	0.11**(0.03-0.42)	0.17 (0.03-1.02)	0.45* (0.22-0.92)
Informant-rated memory decline	.	.	2.64* (1.14-6.11)

Notes: MMSE = Mini-mental State Examination. MIS = Memory Impairment Screen. AN = Animal Naming. The ORs are for a one-year increase in age or years of education. \*= $p < .05$ . \*\*= $p < .01$ . \*\*\*= $p < .001$ . OR = Odds ratio. CI = Confidence Intervals.