

SAGES II Numeric Variables

Name	Description	Type Unit	Min	Max	*Miss (%)	Source	Time	Notes
vdmoca	Montreal Cognitive Assessment	Num	12	30	None	Patient interview	Baseline	MOCA score is scaled 0-30, with lower scores indicating cognitive impairment.
vdpromis	PROMIS Physical Function	Num	19.1	60.6	15 (4%)	Patient interview	Baseline	Scored automatically via PROMIS Computer Assisted program. Lower score indicates more functional impairment.
vdagesurg	Age at index surgery	Num years	65	90+	None	Patient interview	Baseline	Age at index surgery is defined as (surgery date - date of birth) divided by 365.25. 90 years and above are coded as 90+ for deidentification requirements.
vdbmi	Body Mass Index (BMI)	Num kg/(m) ²	17	>60	4 (1%)	Patient interview	Baseline,	We use self-reported height and weight to calculate BMI using the standard formula: mass (kg) / height (m) ² .
vdcamseveritysf_peak	Peak CAM-S score, short form	Num	0	7	None	Hospital assessment	Hospitalization	Short form Peak CAM-S score during index hospitalization, higher scores indicate higher delirium severity.
vdcamseveritylf_peak	Peak CAM-S score, long form	Num	0	17	None	Hospital assessment	Hospitalization	Long form Peak CAM-S score during index hospitalization, higher scores indicate higher delirium severity.
vdcamseveritysf_sum	Sum of all CAM-S score, short form	Num	0	73	None	Hospital assessment	Hospitalization	Sum of all CAM-S scores in short form during index hospitalization, higher scores indicate higher delirium severity.
vdcamseveritylf_sum	Sum of all CAM-S score, long form	Num	0	148	None	Hospital assessment	Hospitalization	Sum of all CAM-S scores in long form during index hospitalization, higher scores indicate higher delirium severity.
vdcamseveritysf	CAM-S severity score, short form	Num	0	7	10 (1%)	Hospital assessment	Daily	CAM-S severity score short form is the sum of 4 CAM features, including fluctuating course, inattention, disorganized thinking, and altered level of consciousness. A subject missing or “uncertain” on more than 50% of CAM features will have their severity score set to missing. A subject missing or “uncertain” on less than 50% of CAM features will have their severity be pro-rated. Higher scores indicate higher delirium severity
vdcamseveritylf	CAM-S severity score, long form	Num	0	17	11 (1%)	Hospital assessment	Daily	CAM-S severity score long form is the sum of all CAM features, including fluctuating course,

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								inattention, disorganized thinking, altered level of consciousness, disorientation, memory impairment, perceptual disturbances, psychomotor agitation, and sleep-wake disturbance. A subject missing or “uncertain” on more than 50% of CAM features will have their severity score set to missing. A subject missing or “uncertain” on less than 50% of CAM features will have their severity be pro-rated. Higher scores indicate higher delirium severity
vdeduc	Years of education	Num years	8	20	1 (0.3%)	Patient interview	Baseline	Missing values are replaced with singly imputed values (using sex, mother’s and father’s education, nativity, financial well-being in youth) as predictors using iterative chained equations.
vdgcp	General Cognitive Performance (GCP) score	Num	33.6	77.9	None	Patient interview	Baseline	The General Cognitive Performance (GCP) score is a composite score, created from an item response theory based factor score based on patient’s performance on multiple neuropsychological tests. The GCP in SAGES is scaled to the ADAMS study, which is representative of the US population, with a mean of 50 and standard deviation of 10.
vdiqc	Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE) score, proxy reported	Num	2.1	4.3	85 (22%)	Proxy interview	Baseline	SAGES study collects a proxy-rated IQCODE that measures patient’s cognitive decline every six months. IQCODE is a composite score taken the mean of sixteen items. Refused and don’t know responses for each item are coded as missing. The overall IQCODE score is set to missing if more than 8 items are not answered. For the IQCODE, we used standard cutoffs from <i>Jorm AF (2004), The Informant Questionnaire on cognitive decline in the elderly (IQCODE): a review</i> , recommending: >3.2/<3.5 as indicating MCI and >3.5 for dementia

SAGES II Categorical Variables

Name	Description	Type Unit	Min	Max	^a Miss (%)	Source	Time	
vdalcohol	Current Alcohol Consumption (Frequency)	Cat	1 [every day] 2 [5-6 times a week] 3 [3-4 times a week] 4 [1-2 times a week] 5 [1-3 times a month] 6 [<1 time a month] 7 [occasionally] 8 [never]	None		Patient interview	Baseline	We created this indicator from the question “How often do you drink alcoholic beverages?” and add a “never” response value for people indicating so in the precedent question “Do you presently drink alcoholic beverages?” The variable is coded as missing if source variables have either a refused or don’t know response value.
vdcamdelirium	Confusion Assessment Method (CAM) delirium	Bin	0 [no CAM delirium] 1 [CAM delirium]	None		Hospital assessment	Daily	CAM delirium is equal to 1 (present) if patient experiences acute change in mental status or behavior fluctuation in addition to the presence of inattention and either disorganized thinking or altered level of consciousness during daily hospital interview. Each of these symptoms are rated by the SAGES field staff.
vdcamsubsyndromal	Subsyndromal delirium (SSD)	Bin	0 [no SSD] 1 [SSD]	None		Hospital assessment	Daily	Subsyndromal delirium is equal to 1 (present) if patient experiences acute change in mental status or behavior fluctuation in addition to either the presence of two CAM core features (inattention, disorganized thinking, level of consciousness) or one CAM core feature and one of the following symptoms: disorientation, perceptual disturbance, delusion, psychomotor agitation, psychomotor retardation or inappropriate behavior scored in either the CAM or the Delirium Symptom Interview (DSI) when available.
vdcci	Charlson Comorbidity Index	Cat	0, 1, 2, 3, 4, 5, 6, 8, 9	None		Medical chart	Baseline	The Charlson Comorbidity Index is a weighted sum of comorbidities collected from medical chart abstraction. These comorbidities (and their weights) are specified in Charlson et. al. (1987). Higher score indicates higher comorbidity. Various cut points used, including 0,1,2+.
vddrisk93	Visual impairment		0 [no] 1 [yes]	11 (3%)		Patient interview	Baseline	A binary indicator of corrected vision worse than 20/70 or self-reported vision impairment during COVID-19.

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vdesl	English as a Second Language (ESL)	Bin	0 [no] 1 [yes]	None	Patient interview	Baseline	Values of 1 indicate that patient speaks English as a second language.
vdfacilitydc	Discharged to a post-acute facility after index hospitalization	Bin	0 [no] 1 [yes]	None	Medical chart	Baseline	Values of 1 indicate that patient was discharged to: Acute rehabilitation facility; Subacute rehabilitation facility; or Chronic care facility after index hospitalization.
vdfemale	Female sex [self-identification]	Bin	0 [male] 1 [female]	None	Patient interview	Baseline	A binary indicator of patient's sex.
vdhearingimp	Any hearing impairment	Bin	0 [no] 1 [yes]	None	Patient interview	Baseline	We define hearing impairment if patient scores 6 or more incorrect responses on Whisper test uses a hearing aid, or if patient self-reports hearing impairment during COVID-19.
vdlivesalone	Lives alone	Bin	0 [no] 1 [yes]	None	Patient interview	Baseline	Values of 1 indicate patient was living alone at baseline.
vdlivesatnh	Lives in a nursing home	Bin	0 [no] 1 [yes]	None	Patient interview	Baseline	Values of 1 indicate patient was living in a nursing home at baseline.
vdlos	Hospital Length of stay	Cat	1 [1-3 days] 2 [4-5 days] 3 [6+ days]	None	Medical chart	Baseline	Length of stay is calculated as days from admission to discharge.
vdfriedfrail_index	Fried Frailty Index	Cat	0 [Not frail] 1 [Pre frail] 2 [Frail]	None	Patient interview	Baseline	Frailty is operationalized as a function of five indicators: unintentional weight loss, exhaustion, low physical activity, slow gait speed, low grip strength. To create the Fried Index, we count and divide the number of indicators into three groups: 0, not frail; 1-2, pre frail; 3+, frail.

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vdmarried	Marital Status [self-identification]	Bin	0 [unmarried] 1 [currently married or living with partner]	None	Patient interview	Baseline	A binary indicator of patient's marital status at baseline.
vdnonwhite	Non-white or Hispanic [self-identification]	Bin	0 [not white race nor Hispanic ethnicity] 1 [White race or Hispanic ethnicity]	None	Patient interview	Baseline	A binary indicator of patient's race/ethnicity.
vdsagesdeliriumever	Ever delirious by medical chart or in hospital CAM assessments	Bin	0 [no] 1 [Yes]	None	Hospital assessment and medical chart	Hospitalization	Values of 1 indicate patient was classified as delirious if either CAM or medical chart criteria were met on a given day during index hospitalization. Charts were abstracted using the validated CHART-DEL approach.
vdsmokingstatus	Smoking status	Cat	0 [never smokes] 1 [smoked in the past] 2 [currently smokes]	None	Patient interview	Baseline	The variable is code as missing if source variables have either a refused or don't know response value.
vdsurg	Type of surgery	Cat	1 [total knee] 2 [total hip] 3 [cervical laminectomy] 5 [Spinal] 6 [Major General] 7 [Major Vascular] 8 [Major Urology]	None	Medical chart	Baseline	An indicator of surgery type at index hospitalization derived from patient's medical record.

SAGES II Unique Record Indicators

Name	Description	Type	Values	^a Miss (%)
studyid	Study subject Identifier	String		None
day	Hospital interview day	Num		None
DOS	Hospital Day (0=DOS)	Num		None