neuroSHARE
Early Detection of Neurodegenerative Diseases

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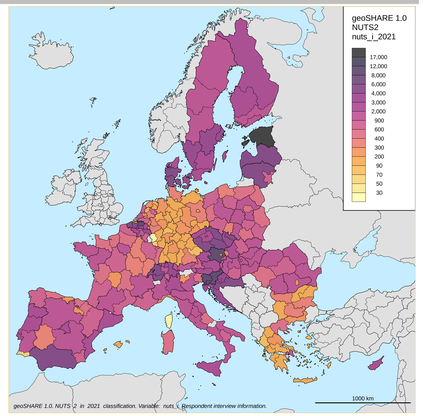
SHARE ERIC
SURVEY OF HEALTH, AGEING AND RETIREMENT IN EUROPE

SHARE: Survey of Health, Ageing, and Retirement in Europe

- Representative sample age 50+
- 600,000 interviews
- 140,000 respondents
- 20,000 users
- Cross-national
- Harmonized HRS, ELSA, JSTAR, KLOSA, CHARLS, LASI
- Multidisciplinary
- Panel: 10 waves
- Data collection every 2 years

- Sample: 5,000 in each country



SHARE Questionnaire

- Demographics
- Education
- Childhood and children
- Work, income and wealth
- Housing and consumption
- Retirement, pensions
- Social networks
- Health and health care
- Physical measurements
- Cognitive tests
- Accelerometry
- Mental well-being
- Activities and expectations

SHARE Special Modules

- Life history
- Household and Job Episode Panel
- Exit interview
- COVID-19 surveys
- National questionnaires (external researchers)
- geoSHARE geographic locations
- linkSHARE to administrative data
- HCAP Human Cognition Assessment Protocol

SHARE Biomarkers and Exposomes

bioSHARE
- Objective measurements
- Dried blood spots
- Venous blood samples
- Harmonize with HRS

expoSHARE
- Internal and External
- Short- and long-term cumulative environmental exposure
- Relate outcome measures to heterogeneous environment
- RECETOX Laboratories as EIRENE-ERIC

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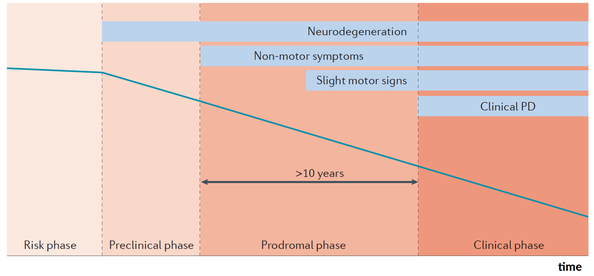
- Early markers for neurodegenerative diseases in prodromal phase
- Appearance of initial symptoms before the full development of the disease



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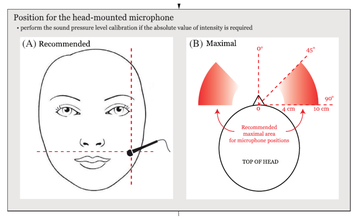
- Develop early markers for neurodegenerative diseases
- Parkinson's disease (PD)
- Dementia with Lewy bodies (DLB)
- Alzheimer's Disease (AD)
- Multiple system atrophy (MSA)
- Three tests: speech, smell, sleep

neuroSHARE: Speech Test in CAPI Mode

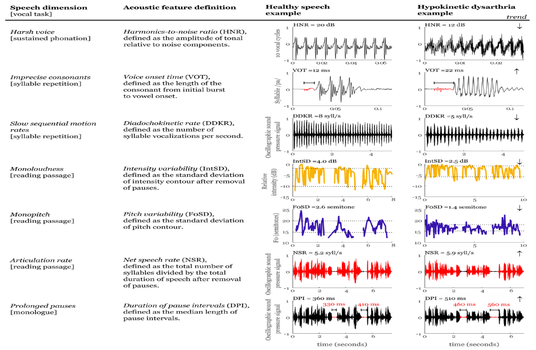
- SHARE face-to-face interview
- CAPI with sensitive microphone
- Short questionnaire



neuroSHARE: Speech Test Tasks

- Prolonged phonation
- Syllable repetition
- Reading
- Fairy tale
- Monologue

neuroSHARE: Speech Test



Speech dimension [vocal task]	Acoustic feature definition	Healthy speech example	Hypokinetic dysarthria example
Harsh voice [sustained phonation]	*Harmonics-to-noise ratio* (HNR), defined as the amplitude of tonal relative to noise components.	HNR = 20 dB	HNR = 12 dB
Imprecise consonants [syllable repetition]	*Voice onset time* (VOT), defined as the length of the consonant from initial burst to vowel onset.	VOT =12 ms	VOT =22 ms
Slow sequential motion rates [syllable repetition]	*Diadochokinetic rate* (DDKR), defined as the number of syllable vocalizations per second.	DDKR =8 syl/s	DDKR =5 syl/s
Monofoulness [reading passage]	*Intensity variability* (IstSD), defined as the standard deviation of intensity contour after removal of pauses.	IstSD =4.0 dB	IstSD =2.5 dB
Monopitch [reading passage]	*Pitch variability* (FoSD), defined as the standard deviation of pitch contour.	FoSD =2.6 semitone	FoSD =1.4 semitone
Articulation rate [reading passage]	*Net speech rate* (NSR), defined as the total number of syllables divided by the total duration of speech after removal of pauses.	NSR = 5.0 syl/s	NSR = 5.9 syl/s
Prolonged pauses [monologue]	*Duration of pause intervals* (DPI), defined as the median length of pause intervals.	DPI = 360 ms	DPI = 510 ms

neuroSHARE: Sleep Test

Sleep test (RBDSQ)
- REM sleep behavior disorder
- Short questionnaire

REM Sleep Questionnaire (RBD-SQ) to Be Filled by Respondent (if unable, filled together with the INTERVIEWER)

ne_sleep_q

The following questions are related to your sleep.
Please answer yes or no to the following questions:
(Please check one box on each row)

		Yes	No
1)	I sometimes have very vivid dreams.	☐	☐
2)	My dreams frequently have an aggressive or action-packed content.	☐	☐
3)	The dream contents mostly match my nocturnal behavior.	☐	☐
4)	I know that my arms or legs move when I sleep.	☐	☐
5)	It thereby happened that I (almost) hurt my bed partner or myself.	☐	☐
	I have or had the following phenomena during my dreams:		
6a)	speaking, shouting, swearing, laughing loudly	☐	☐

neuroSHARE: Smell Test

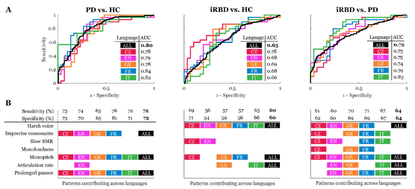
Standardized olfactory test (HCAP)
- Level
- Scents
- Short questionnaire

neuroSHARE: Clinical Examination

- Validate by medical examination
- 5% of respondents with abnormal results

Clinical Results

- Combination of three tests: Odds ratio 100
- PD very precise



neuroSHARE: Fieldwork Results

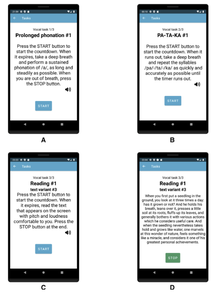
- Consent rate: 85%
- Consent rate with medical examination: 90%
- Fieldwork ended in September 2025

neuroSHARE Population Survey Validation

- SHARE-CZ in wave 10 face-to-face completed and validated
- Link to biomarker data (venous blood)
- Link to administrative data
- Link to HCAP

neuroSHARE Remote

- Develop self-administered remote mode
- Additional measures:
  Facial recognition
  Hearing
  Vision
- Generic version in EN



neuroSHARE: Future

- Data collection in Switzerland in SHARE wave 11
- Multilingual validation (DE, FR, IT)
- Validation by HCAP and administrative data

neuroSHARE in NIA Biomarker Network

- Data collection in other countries
- HRS and ELSA
- Other languages and cultures

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