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# Collecting and Analysing Data to Understand Population Health of Ageing Populations: A Czech Perspective


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# We **do not** have sufficient, **good-quality data** to **study and adapt to population ageing**



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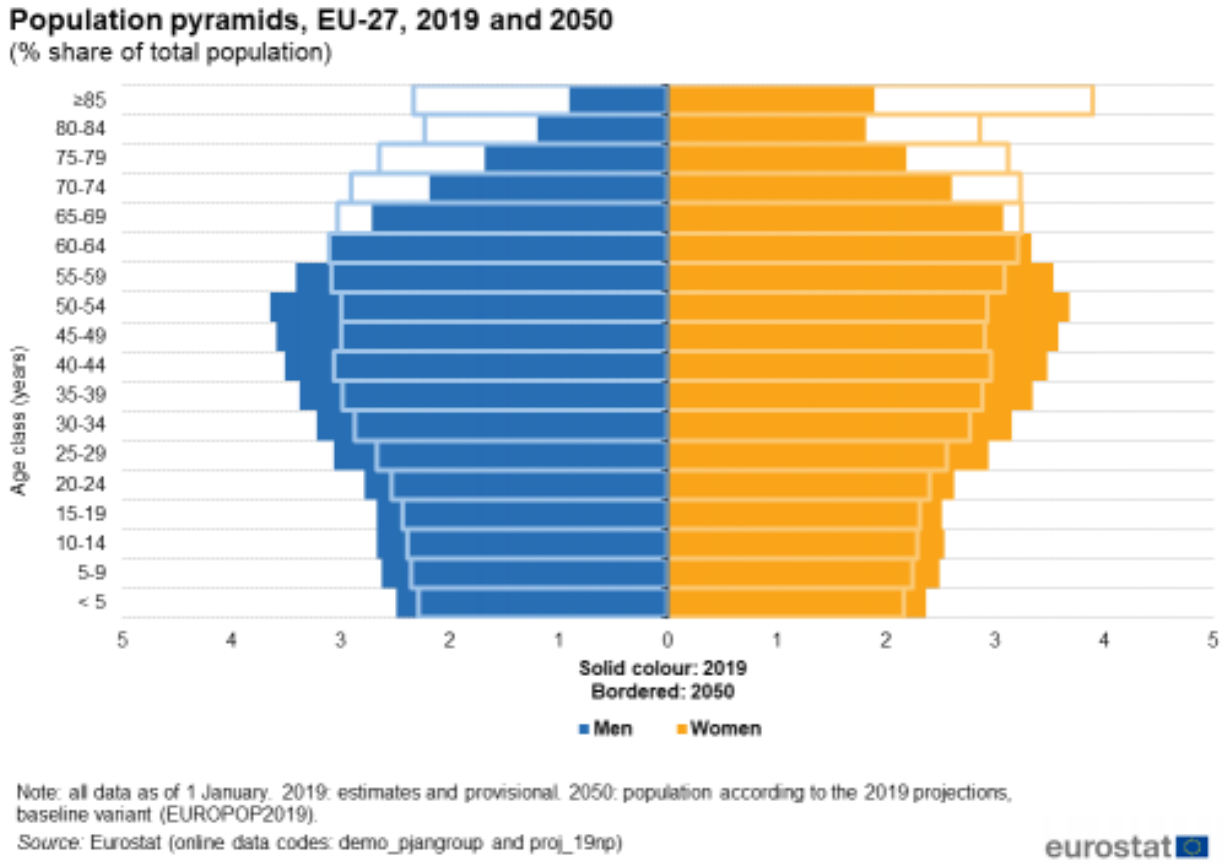
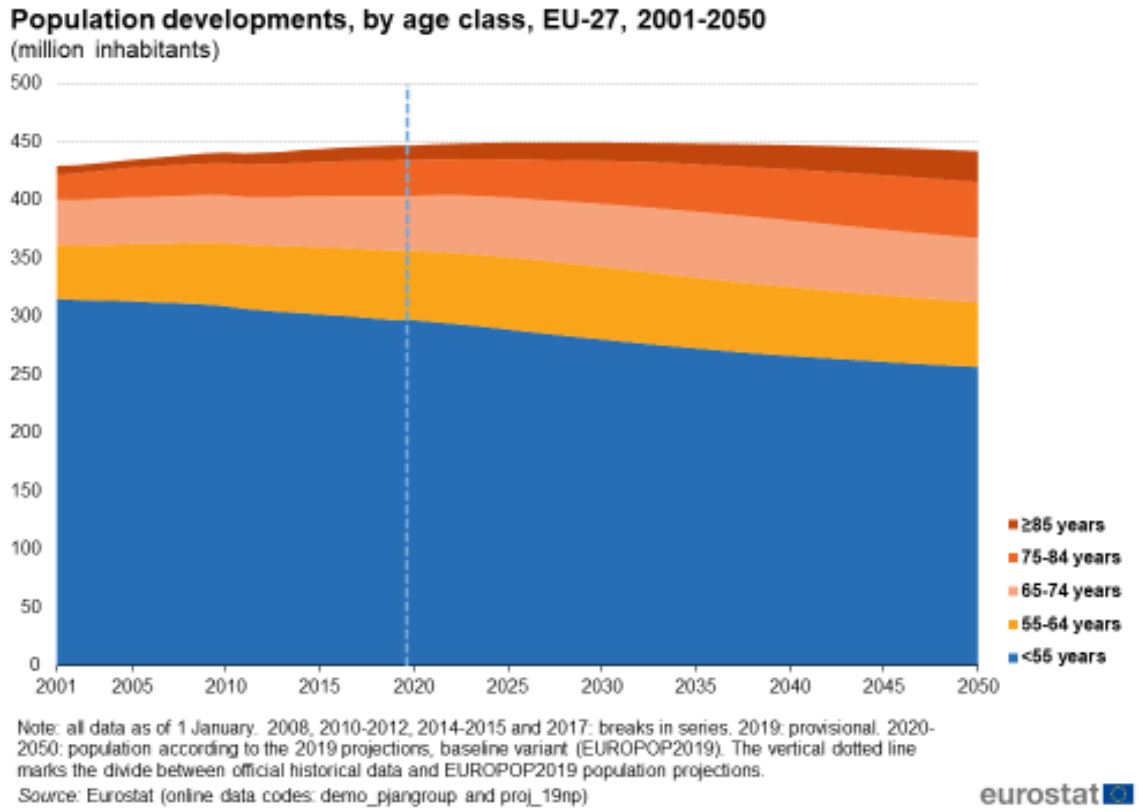
# Population Ageing: a Crisis or Opportunity?



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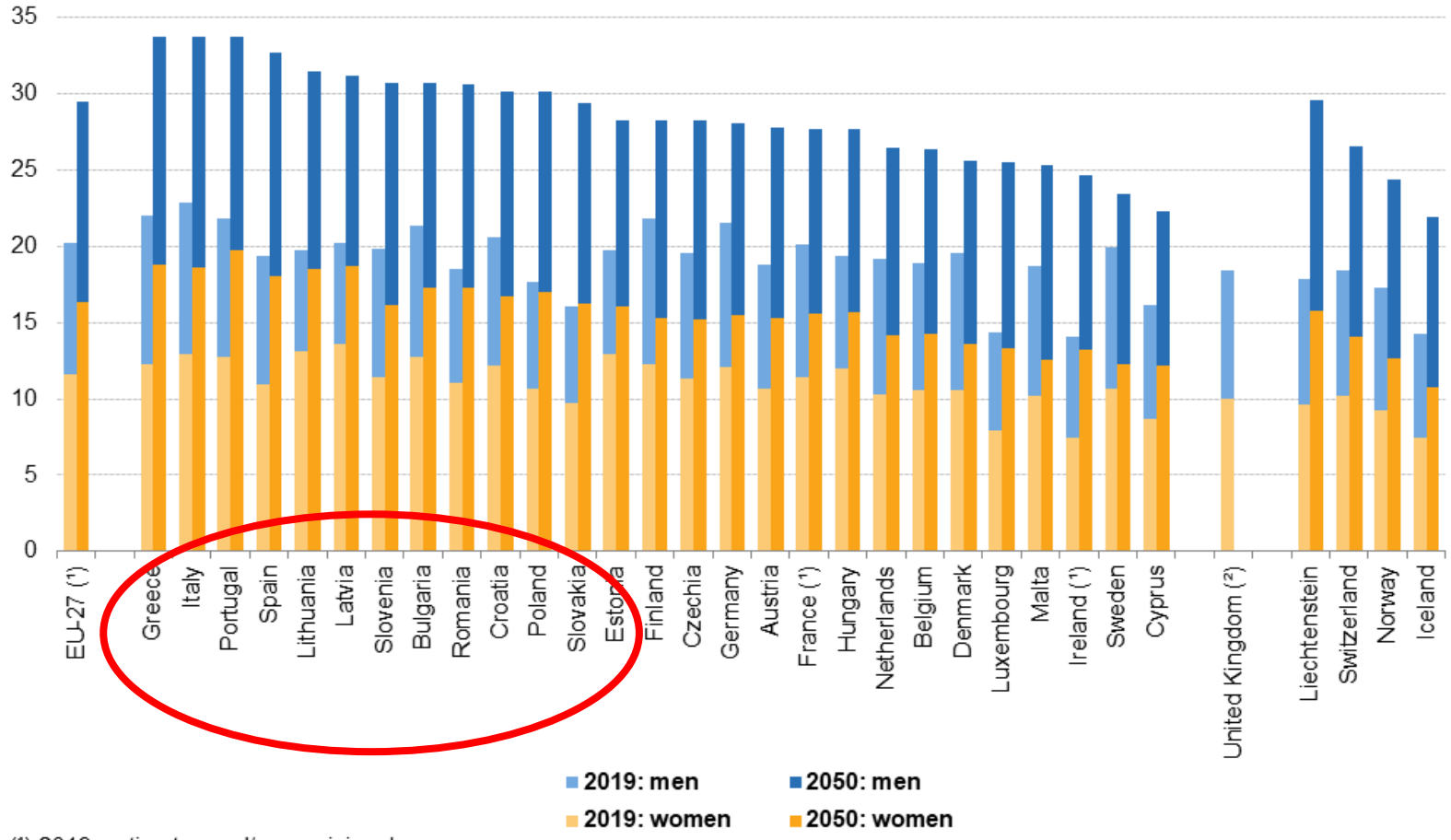
# The share of people 65+ will grow from 20% to almost 30% in the next 20 years, a ~50% increase!

**People aged ≥65 years, by sex, 2019 and 2050**
(% share of total population)




(1) 2019: estimates and/or provisional.
(2) 2050: not available.
*Source:* Eurostat (online data codes: demo_pjangroup and proj_19np)



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# Data Collection of Interest (CZ case)

**Administrative Health Data:** Records from health services (e.g. hospital discharges, insurance claims), no real electronic health records outside of medication use registry.

**Health Registries:** Disease-specific registries (e.g. National Cancer Registry, other chronic disease registries).

**Population Surveys:** National and international surveys on health (EHIS, EU-SILC) and ageing (e.g. SHARE).

**Long-Term Care (LTC) Data:** Social sector statistics on home care, nursing homes, care allowance recipients.

**Mortality & Morbidity Statistics:** Vital statistics (life expectancy, causes of death) and illness incidence/prevalence from surveys and registries.

# Data Collection of Interest (CZ case)

| | Subjective Scoring |
|---|---|
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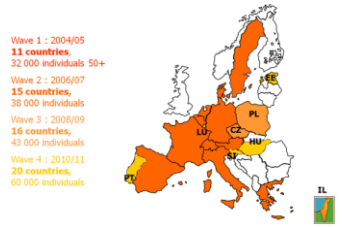
# Administrative/Claims & Registry Data

- **National Health Information System (NHIS):** Integrated system managed by ÚZIS (IHIS CZ).
  - Contains mandatory health claims covering the entire population, **limited use for research**
  - Example: the **National Register of Hospitalised Patients** captures every hospital stay nationwide
- **Disease Registries**
  - **Long-established registries**, e.g. the **Czech National Cancer Registry** (population-based since 1977)
  - Track incidence, prevalence, treatment and survival for major diseases (cancers, cardiovascular events, etc.)
  - Data from these registries inform epidemiologic research and policy
- **Vital Statistics:** Death Certificate Information System records all deaths and causes
  - **Mortality data is of relatively high-quality** and used for indicators like life expectancy and cause-specific death rates.
- **Administrative Health Records:** health insurance billing data (reimbursed services) and electronic health records, while collected, are very fragmented by provider.
  - They are **not yet fully centralized** for analysis, but contain **rich information** (diagnoses, prescriptions, visits) on patients' healthcare utilization.

# Population Health Surveys & Studies




- **European Health Interview Survey (EHIS)**
  - Czechia participates in EHIS to gather self-reported health status, chronic conditions, functional limitations, lifestyle, etc.,
  - EHIS provides key indicators comparable across EU. However, EHIS *excludes people in institutions*.
- **EU-SILC (EU Statistics on Income and Living Conditions)**
  - An annual household survey that includes some health questions (e.g. long-standing illnesses, self-care limitations).
  - EU-SILC data are used to derive **Healthy Life Years** indicators. Interestingly, different survey contexts lead to different results – **in 2014, Czech Healthy Life Years at age 65 was 9 years for men via EU-SILC, but only ~5.7 years using EHIS data**, due to higher reported disability in the dedicated health survey.
  - *Caveat:* Like EHIS, it covers non-institutionalized population.
- **SHARE (Survey of Health, Ageing and Retirement in Europe)**
  - Longitudinal panel of Europeans aged 50+. SHARE collects detailed **data on health (objective and subjective), socioeconomic status, family support, and healthcare use.**
  - It enables **analysis of ageing trajectories** (e.g. onset of disability, retirement and health, intergenerational support). SHARE's longitudinal data provide insights into transitions (e.g. from independent living to needing care), but **sample sizes per country are modest and the institutionalized elderly are largely missing.**
- **National Surveys & Studies**
  - In the past, ÚZIS ran national Health Interview Surveys (HIS) and there are ad-hoc studies (e.g. the HAPIEE study in one region) that focused on older populations' health determinants. These contribute additional context but are not regular.

***Surveys offer rich individual-level health details (including psychosocial factors) but may under-represent the oldest frail populations.***

# Long-Term Care and Social Sector Data

- **Social Services Statistics**
  - The Ministry of Labour and Social Affairs collects **data on long-term care providers and recipients** which includes counts of seniors receiving in-home care services, numbers of nursing home residents, occupancy of senior homes, etc.
  - However, data on ***individual-level*** **LTC trajectories** (who enters care, duration, outcomes) **are limited**.
  - There is **no unified national client-level LTC registry** akin to health registries.
- **Care Allowance and Informal Care:**
  - Czechia has a **care allowance program for dependent seniors** cared for at home. Administrative data exist on how many people receive these allowances (by dependency level), which can indirectly indicate people with care needs.
  - The **extensive role of family care is not well-captured in current official datasets.**
- **LTC and Health Data Linkage**
  - **The health and social care systems remain siloed.** There is *no routine linkage* between hospital records and subsequent nursing home admission data. As a result, it's **challenging to track the full care pathway of an older person (**e.g. hospitalization followed by rehabilitation or LTC placement).
  - Data on quality of LTC (outcomes, staffing, etc.) are also **fragmentary**.
  - Some indicators (e.g. Healthy Life Years, disability-free life expectancy) attempt to quantify the *balance between health and care needs*, but their accuracy suffers from the data gaps noted.

# Key Data Gaps & Limitations (I.)

- **Regional Granularity:**
  - Many health indicators for seniors are **available only at national level.**
  - Survey sample sizes and data aggregation mean **we cannot reliably assess regional disparities in older population health**. (E.g. life expectancy at 65 is published by region, but *healthy* life expectancy or disability prevalence by region is often unavailable or statistically unreliable).
  - *Data gap:* policy-makers lack region-specific ageing health profiles to target local needs.
- **Institutionalized Population Missing:**
  - Crucially, standard surveys (EHIS, EU-SILC) **do not cover seniors in care institutions**
  - This **underestimates the prevalence of severe disability and chronic illness in** the total elderly population. For instance, a frail 85-year-old in a nursing home is invisible in household surveys.
  - This bias can make Czech seniors appear “healthier” in data than they truly are, complicating planning for healthcare and LTC resources.
- **Fragmented Data Silos:**
  - **Health, social care, and demographic data exist in separate silos with limited interoperability.**
  - Although Czech citizens have a unique personal identifier (“rodné číslo”), **data linkage across sectors is not routinely performed due to legal, privacy, and technical hurdles.**
  - This prevents a holistic view – e.g., linking hospital records with social care use or linking cause-of-death data with prior health status. Unlike Nordic countries where personal IDs enable seamless individual-level linkage across registries, Czech data remain fragmented.



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# Key Data Gaps & Limitations (II.)

- **Inconsistencies & Quality Issues:**
  - Different data sources **yield diverging metrics (as seen with Healthy Life Years).**
  - Some **conditions among seniors may be underreported or misclassified in administrative data** (e.g. dementia might be under-diagnosed on death certificates).
  - There is also a **lack of routine *quality assessments* for some data collections** – fewer than one-third of health monitoring projects in EU countries applied standardized quality checks, and Czechia is no exception.
- **Data Frequency and Timeliness:**
  - **Key surveys on older adults' health are infrequent** (EHIS ~5-6 years, SHARE waves ~2 years).
  - Administrative data are continuous but **published with delays.**
  - Emerging issues (e.g. COVID-19's impact on elderly health) revealed **the difficulty of quickly integrating data across systems** (e.g. excess mortality in seniors was captured but linking that to comorbidities or care settings is challenging in real-time).
  - *Overall*, existing datasets, while rich in certain areas, have **gaps in coverage, integration, and detail that limit their usefulness for comprehensive policy analysis.**



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