



Data and Statistics for Demography: the present and the future at Statistics Portugal

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VI CONGRESSO PORTUGUÊS DE DEMOGRAFIA

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I. The Present



A. Main statistical operations

1. Vital Statistics

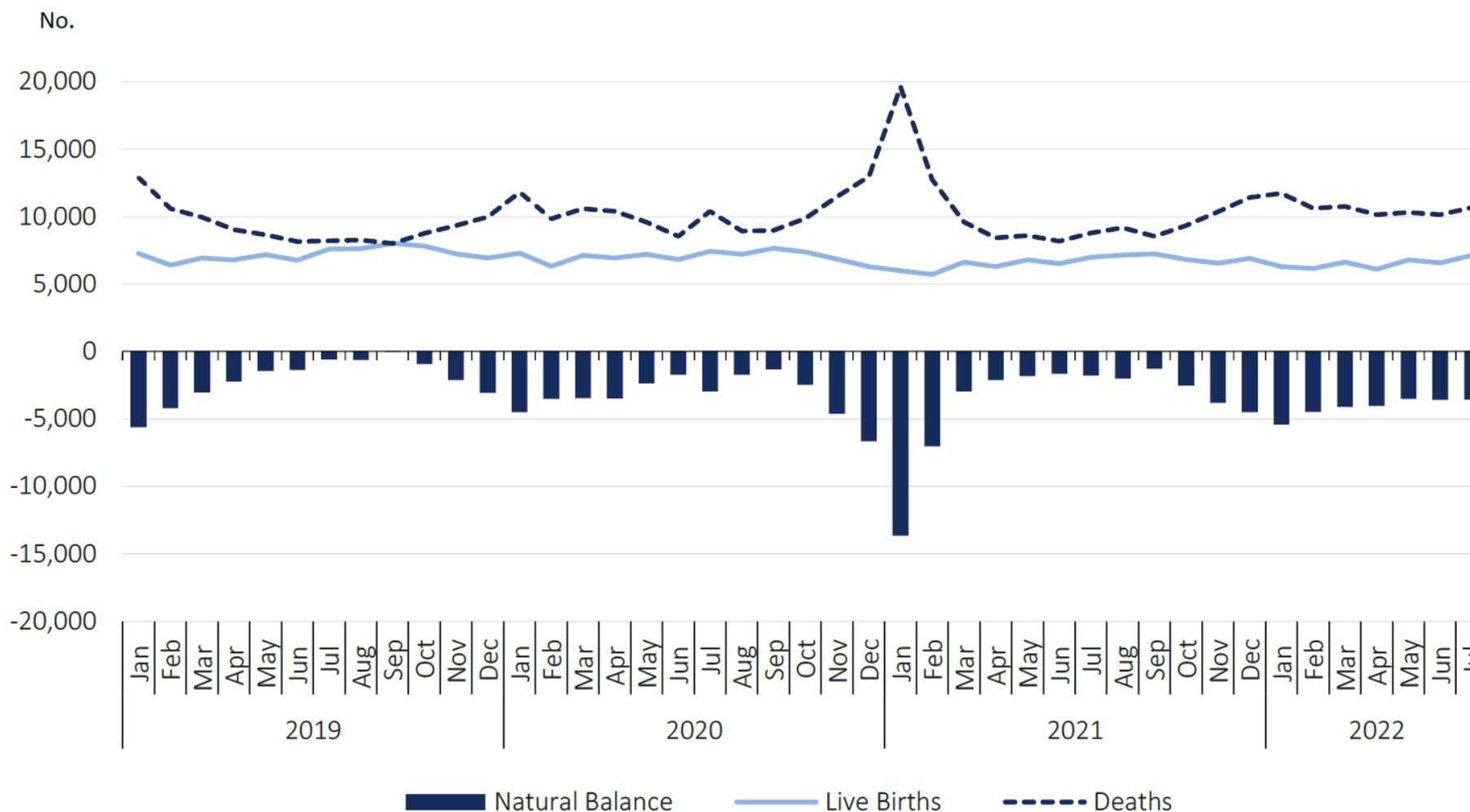
Statistical operations resulting from the administrative use of facts subject to civil registration (Civil Register is universal and mandatory since 1911).

- Live Births
- Foetal deaths and deaths (no “cause of death”)
- Marriages and Divorces

Cooperating Entities: Institute of Registries and Notaries / Civil Register Offices (CRC): births, deaths, marriages, and divorces decreed by the CRC

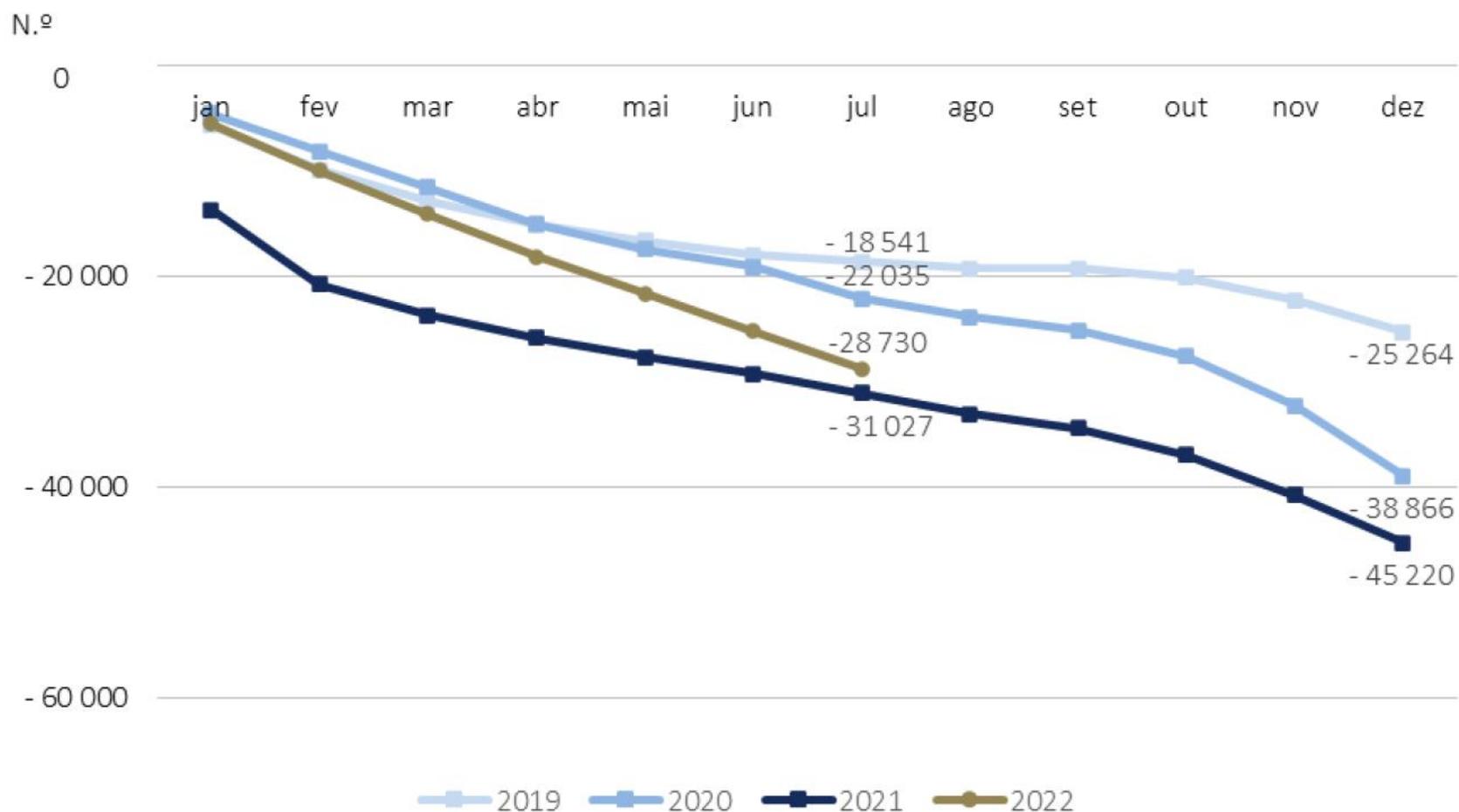
Other National Authorities: Directorate-General for Justice Policy / Ministry of Justice: divorces decreed by the courts

Live births, deaths, and natural balance, January 2019 to July 2022



Source: Statistics Portugal, Live births, Deaths, and Demographic indicators, [Vital Statistics – Monthly data](#), Sept. 2022

Monthly natural balance (cumulative values), 2019-2022



Source: Statistics Portugal, Live births, Deaths, and Demographic indicators, [Vital Statistics – Monthly data](#), Sept. 2022



2. Migration and Foreign Population Statistics

In the absence of administrative records of entry and exit of residents or a single and exhaustive register of the resident population (updated and updatable), the measurement of migratory flows uses alternative sources - household surveys:

- Annual emigration estimates (Emigration Survey) + Annual immigration estimates (Labour Force Survey)

and foreign population statistics:

- Statistics on acquisition and attribution of Portuguese citizenship + Statistics on foreign population

Cooperating Entities: Foreigners and Borders Service / Ministry of Internal Administration;
Directorate-General for Consular Affairs and Portuguese Communities / Ministry of Foreign Affairs

Other National Authorities: Directorate-General for Justice Policy / Ministry of Justice

3. Resident Population Estimates (Annual)

Calculated based on information on live births and deaths and on estimates of immigration and emigration

Resident population estimates can be of two types:

- Post-census estimates: calculated from the results of the most recent population census; designated as provisional estimates of the resident population
- Inter-census estimates: calculated based on the results of two consecutive population censuses, referring to the years between them and designated as definitive estimates of the resident population (this comprises a revision of the series of provisional estimates)

4. Other projects

Annual demographic indicators relating to population, fertility, marriage, and mortality (summary indices of demographic structures, crude rates; total fertility rate (TFR); fertility rates, mean ages of the mother at birth, marriage, and divorce, etc.)

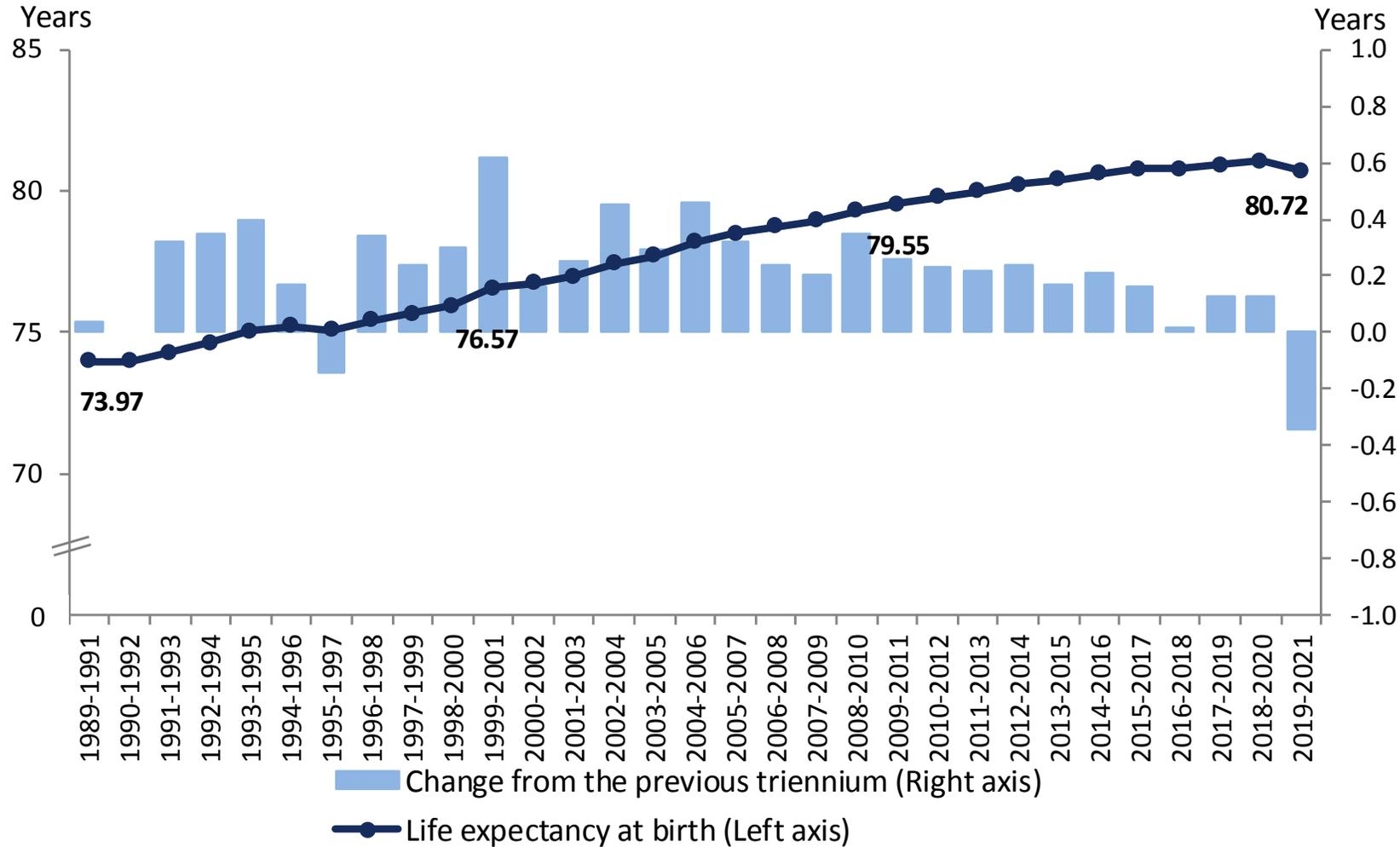
Resident population projections (last exercise released in 2020)

Fertility Survey – 2013 and 2019 editions (household survey)

Labour Force Survey and the regular module on the Situation of migrants and their descendants in the labour market – 2014 and 2021 editions (household)

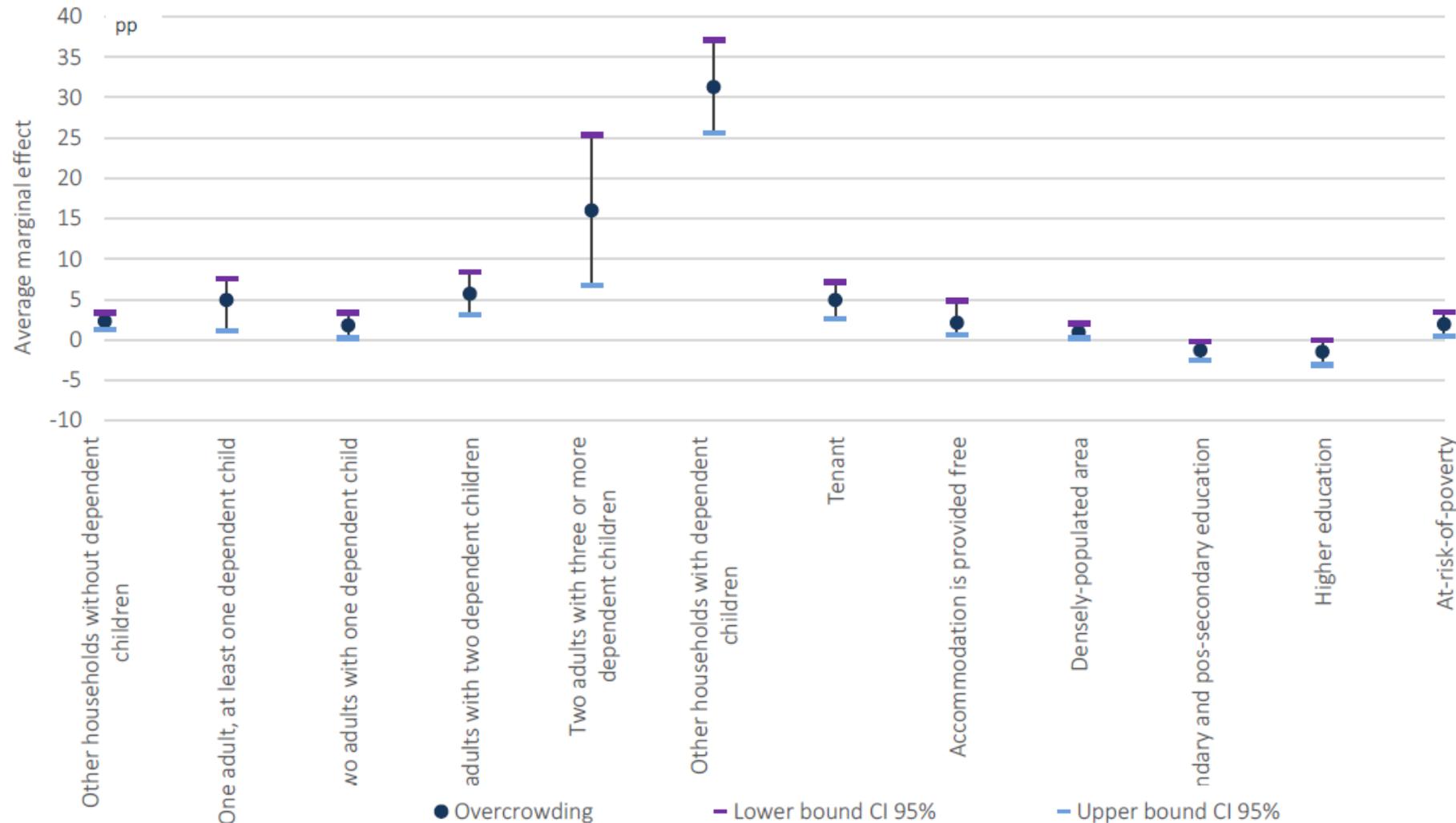
Survey on Income and Living Conditions (EU-SILC)

Life expectancy at birth, Portugal, 1989-1991 to 2019-2021



Source: Statistics Portugal, Complete Life Tables, [Portuguese Life Tables 2019 – 2021](#), May 2022 (w/ [regional breakdown](#) published on September 2022)

Average marginal effects – relation with the probability of living in an overcrowding dwelling, 2021 (EU-SILC)



Source: INE, Survey on Income and Living Conditions, 2021, [Income and Living Conditions – Housing deprivation](#), August 2022

B. Main dissemination products

Annual Press Releases

- Vital Statistics: year $n-1$ released in April year n
- Life table for Portugal: year $n-1$ released in May year n ; Regional life tables year $n-1$ released in September year n
- Estimates of resident population and demographic indicators: year $n-1$ released in June year n
- Demographic Statistics (together with the annual edition of the Demographic Statistics publication): year $n-1$ released in October year n

Monthly News Release

- Vital Statistics: month m released $m+45$ days



B. Main dissemination products

Indicators at the website

- Around 300 indicators updated annually // Regional detail (PT/NUTS 1, 2, 3/Municipality/Parrish) // Time series (beginning in 1970 and 1990) // Seven indicators with monthly updates

Microdata for Research

- Vital Statistics (since 1980).
- Fertility Survey 2013 and 2019.
- Module of the Labour Force Survey, 2014 and 2021, on the Situation of migrants and their descendants in the labour market
- EU-SILC, ...

Microdata for Research

Number of accesses to research databases (between January 1, 2010, and October 6, 2021)

- Live births: 39
- Total Deaths: 41
- Foetal and Neonatal Deaths: 20
- Marriages: 13
- Divorces: 11
- Fertility Survey 2013 (IFEC 2013):12
- Fertility Survey 2019 (IFEC 2019): 6
- LFS Module 2014 – Situation of migrants and their descendants in the labour market: 13
- LFS Module 2021 – Situation of migrants and their descendants in the labour market: 1



C. The Census 2021

Census day: April 19, 2021 (collection until the end of May)

Preliminary results: July 28, 2021

Provisional results: December 16, 2021

Definitive results: November 23, 2022 – with a full range of dissemination products



Provisional Results: 10,344,802 residing in Portugal

Population declined 2.1% over the last decade

Population distribution with a significant disparity across the territory

Concentration on the coastline and closer to the capital

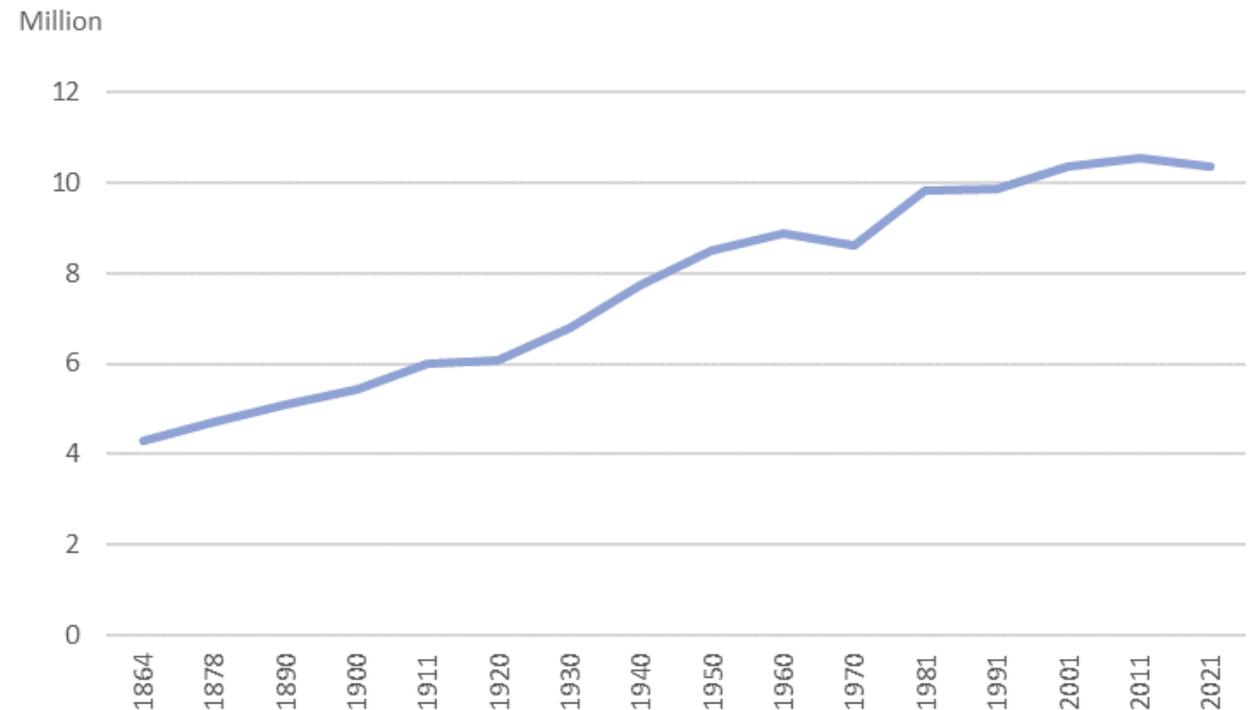
Population ageing worsened, a significant increase in the elderly and a decline in the youngest population: 182 older adults per 100 young people

The foreign population grew by 40 % (now >500k)

Level of education increased significantly

The number of people living alone increased compared to 2011 and the average size of households decreased

Resident population in Portugal, 1864-2021



Source: Statistics Portugal, Population and Housing Census, [Census 2021 — Provisional Results](#), December 2021

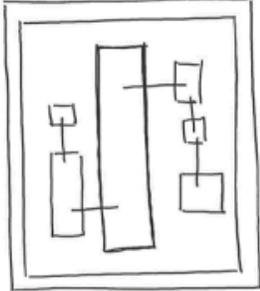
II. What's next?



The National Data Infrastructure

From 2018 onwards, the development of NDI by INE is ongoing

- Single point access to several types of data and make it available to multiple purposes and users
- Use of multiple data sources
- Increase the analytical capacity and flexibility in data management
- Exploitation of new data sources for statistical purposes

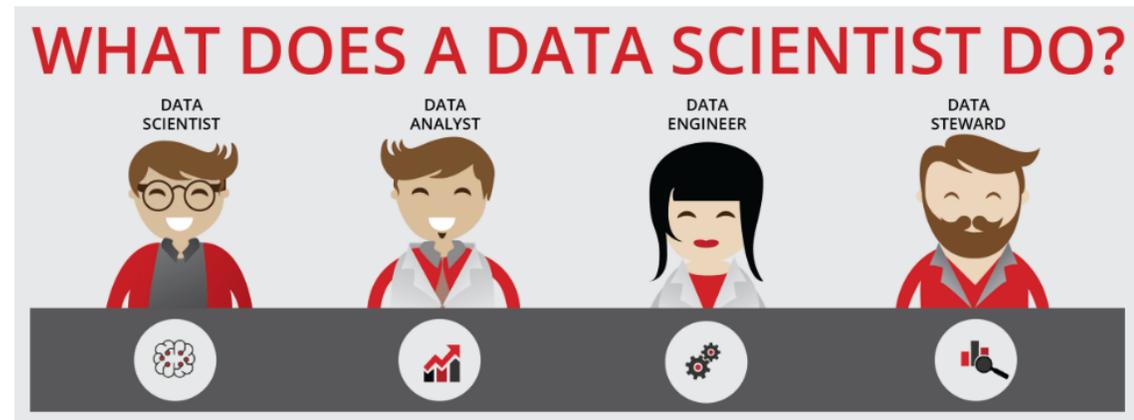
Appropriation and use of administrative data and other sources	Partnerships	New roles
Data integration		Information security and data protection
Innovation	Integrate and share platforms, algorithms, knowledge, ...	Increase the economic and social value of the public good: statistical information

The National Data Infrastructure

In 2019, adjustments in the internal organization – **strengthen** the capacity for data management and analysis in:

- Methodology and Information System Department
- Management and Data Collection Department – namely w/ the creation of a Administrative Data Unit

Strong liaison with the Census Unit and the Department of Demographic and Social Statistics



New skills, tools and techniques

Resident Population Database

Main project of data integration

The [Census with Administrative Data](#)

Goal: To produce census statistics on an annual basis after 2021

1st results in 2025 (draft Regulation on European Statistics on Population)

Comparison with the Resident Population Estimates points to <0.5% differences

Challenge: move to a new model of population statistics

Instituto dos Registos e do Notariado Civil Register	Serviço de Estrangeiros e Fronteiras Immigration Register	Instituto de Informática da Segurança Social Social Security Register
Gabinete de Estratégia e Planeamento, MTSS Private Employment Register	Direção Geral de Estatísticas da Educação e Ciência Education Register	Autoridade Tributária Tax register
Caixa Geral de Aposentações State Pension and Work Fund Register	Instituto de Emprego e Formação Profissional Unemployment Register	DG de Proteção Social Trabalhadores em Funções Públicas Social Protection for Public servants
Instituto do Emprego da Madeira Unemployment Register II	Direção Regional do Emprego dos Açores Unemployment Register III	Direção Regional de Educação da Madeira Education Register II



Resident Population Database

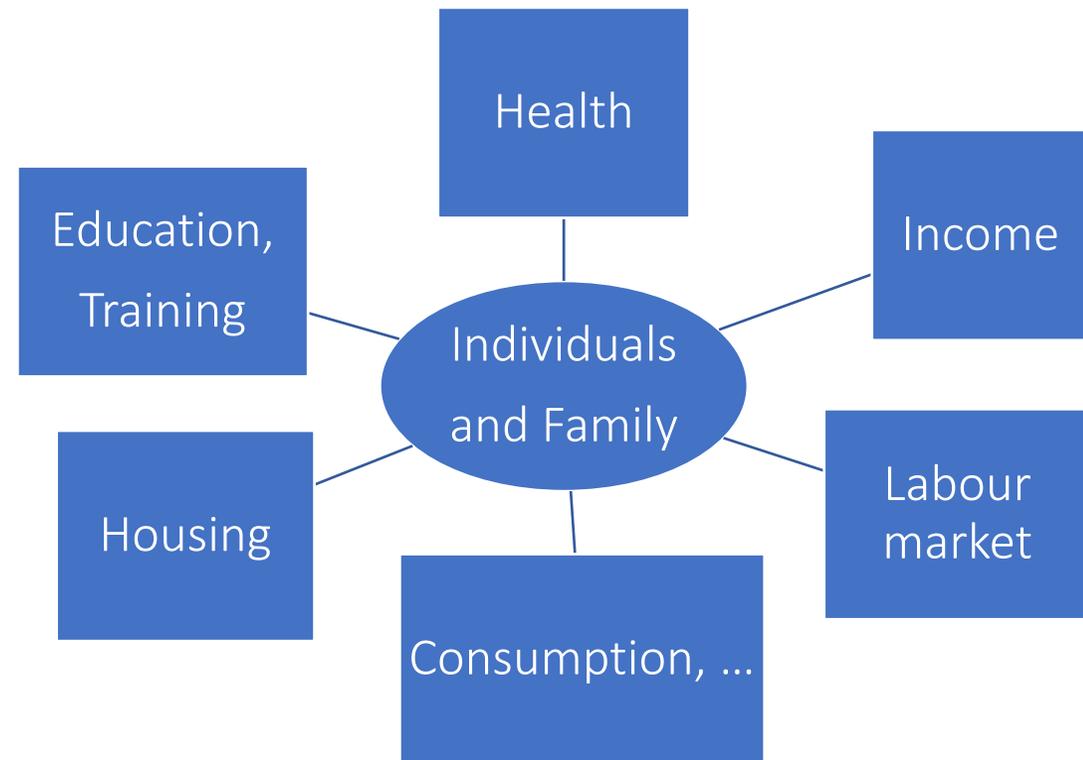
Data integration at individual and family level

Main source for the development of new demographic and social statistics – more granularity, relevance and timeliness

Replace survey collection (or parts of it)

Imposes strong partnerships with Public Administration bodies –ensure continuity and consistency

Efficient internal organization



Examples of data integration #1

Resident Population Database integrated with e-invoice

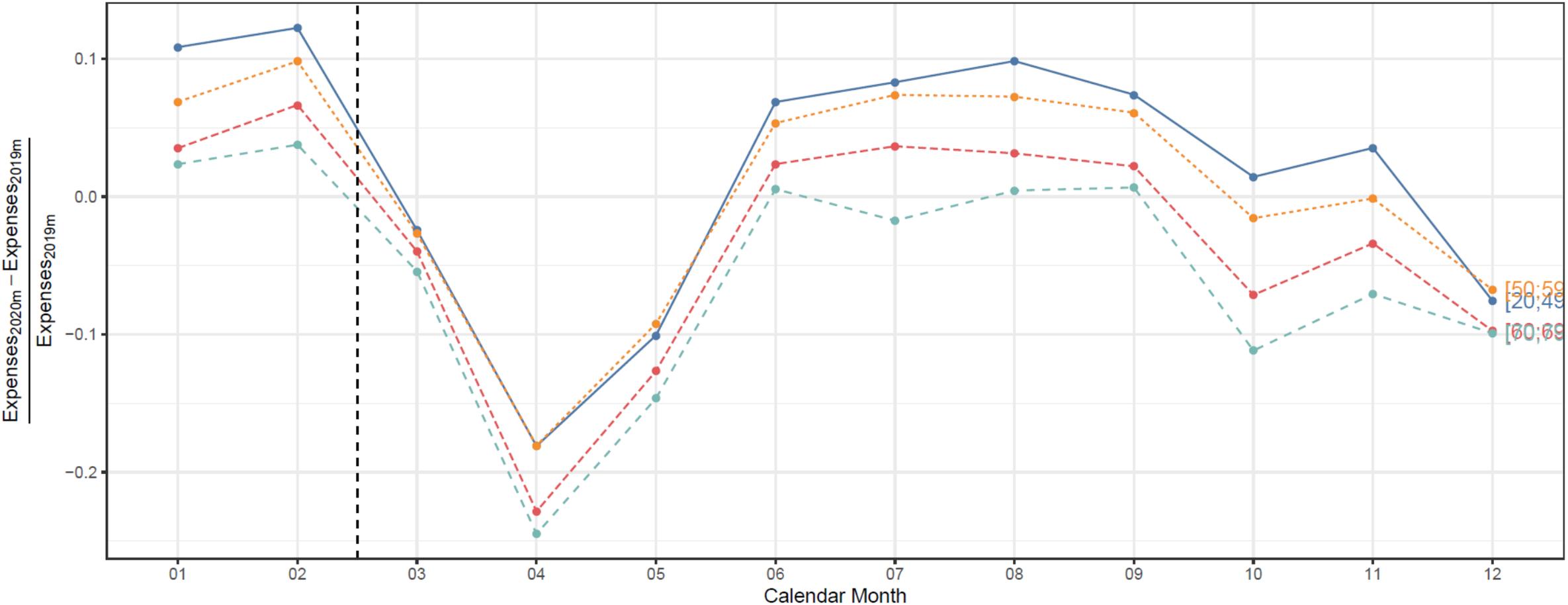
E-invoice – from Tax Authority, 80 million transactions per month w/ info on seller and buyer

Identify consumption patterns at individual level

For example, [study](#) consumption pattern during COVID-19

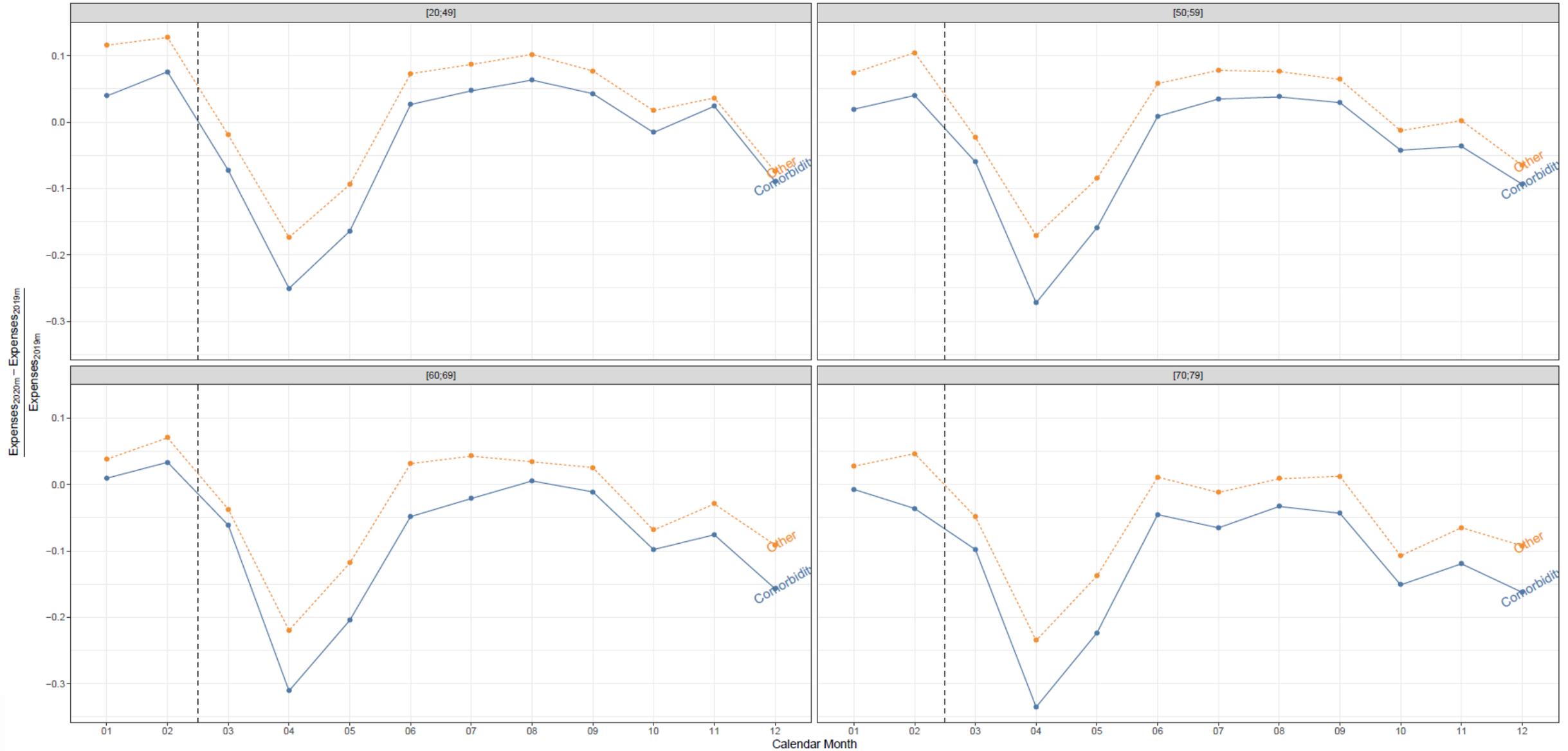
Age consumption patterns - Individuals adjusted their consumption patterns when facing different COVID-19 case-fatality rates? Data for 2020

Individual expenses in e-Fatura per age group



High levels of spending on pharmaceutical items may proxy for comorbidities

Individual expenses in e-Fatura per age group



Examples of data integration #2

Identify family events – births

The relationship with family expenditures

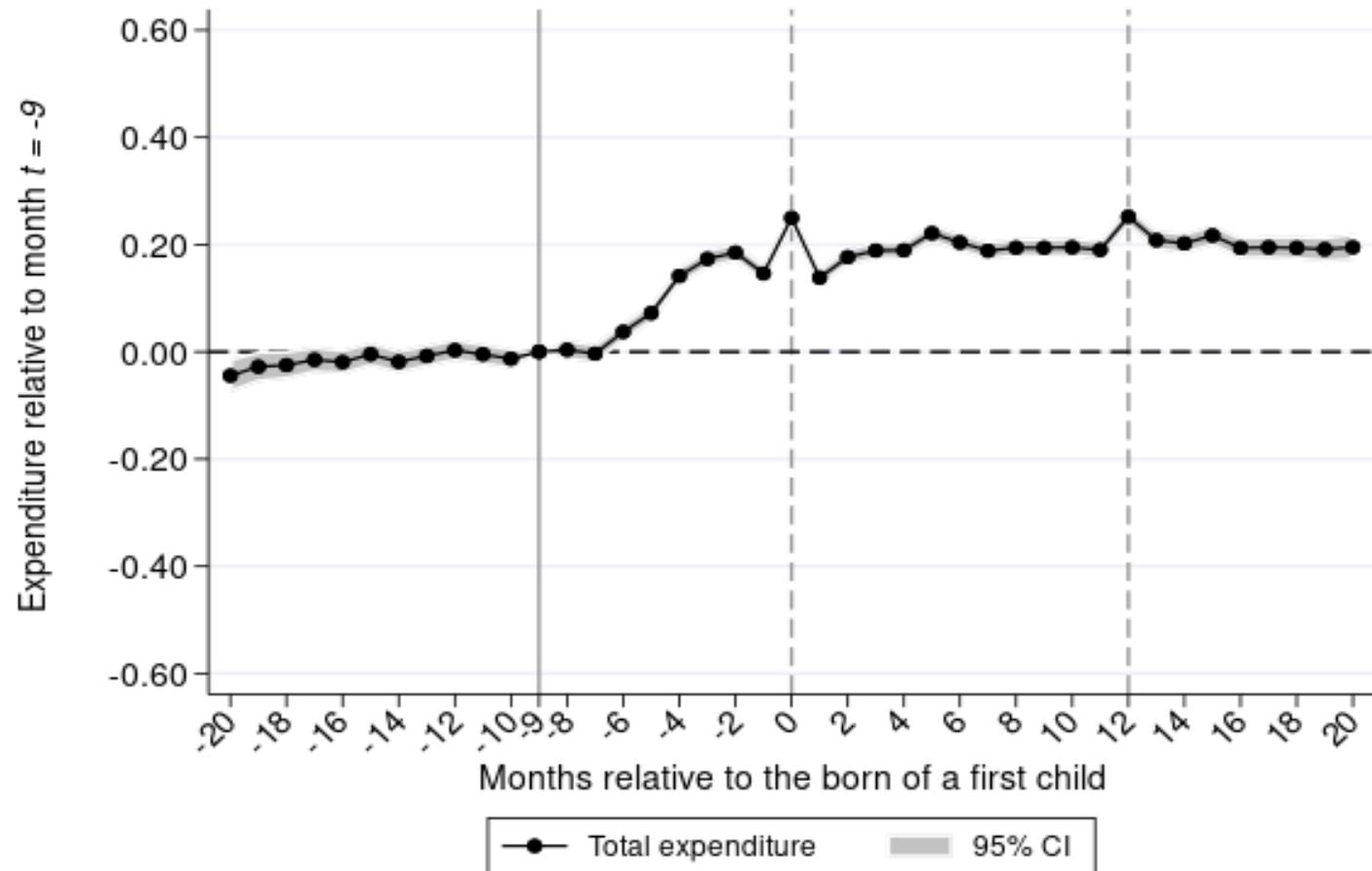
Family – administrative information? No direct source (strangely)

Use tax Authority registers to identify the family integrated with additional sources from the Resident Population Database

Integrate with e-invoice to capture expenses at family level

Event-studies around life-time events: childbirth

Total expenditure
response to
childbirth

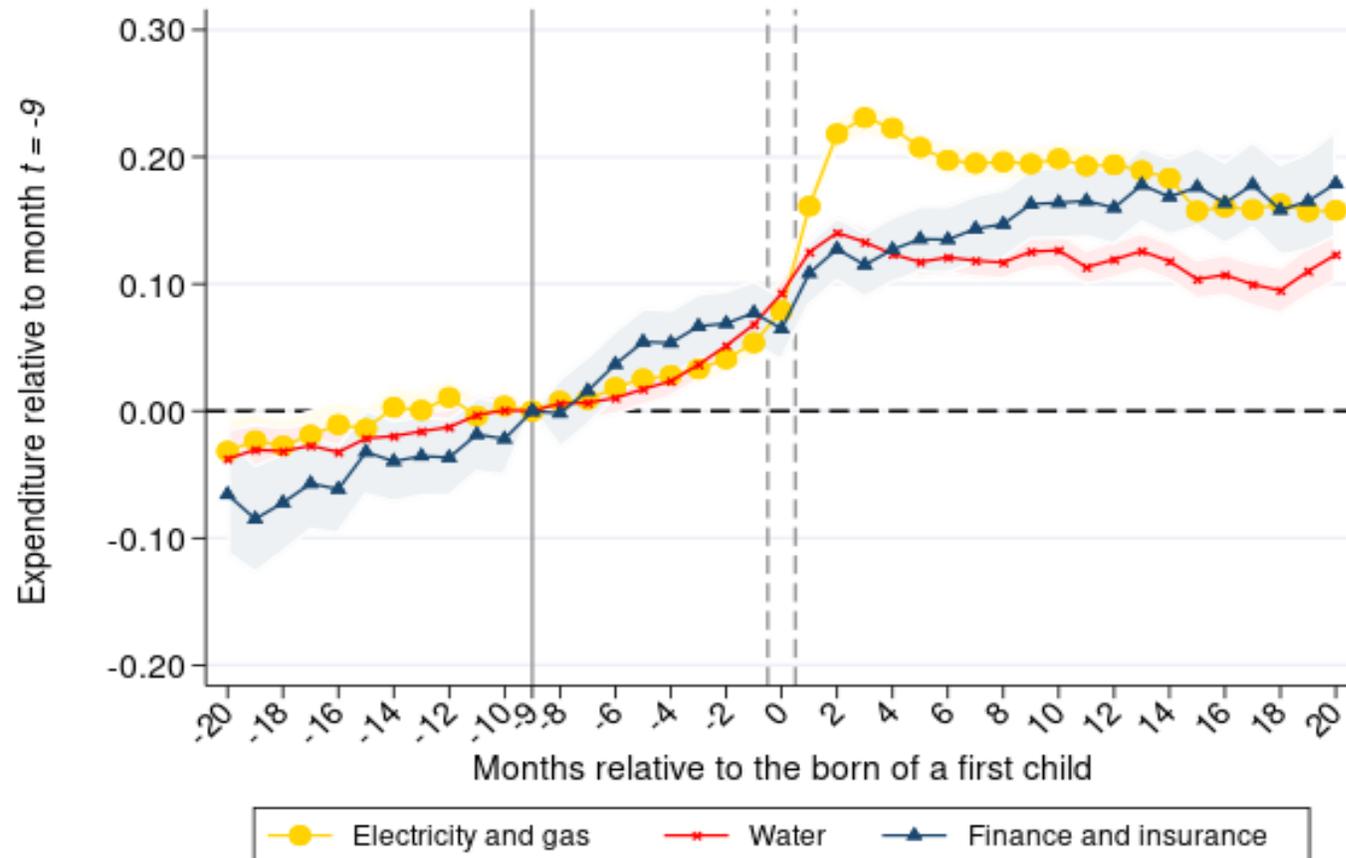


Note: Includes individual
fixed effects

Event-studies around life-time events: childbirth

Expenditure response to childbirth

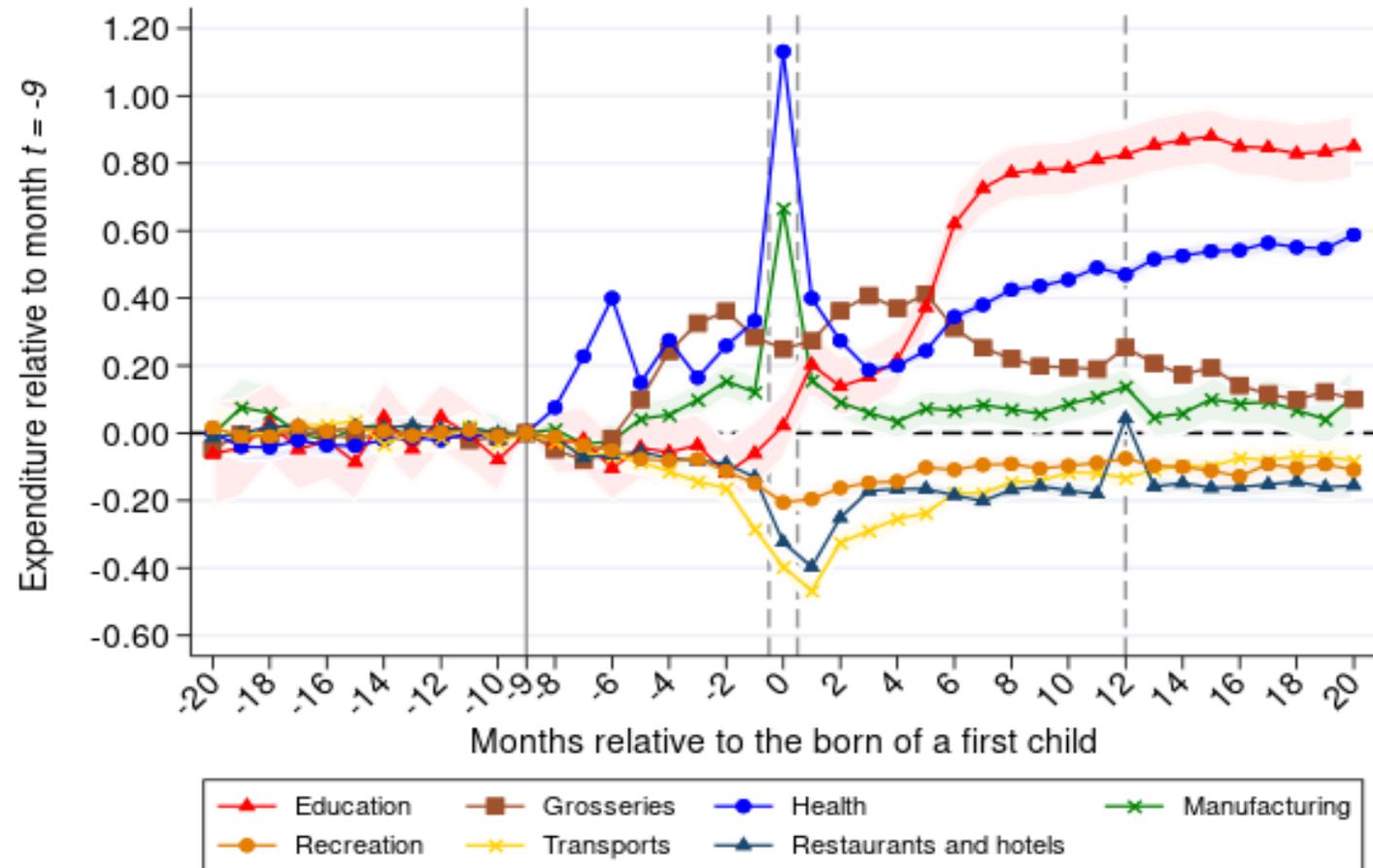
Family expenses by type of product – identified by seller's activity sector



Event-studies around life-time events: childbirth

Expenditure response to childbirth

Family expenses by type of product – identified by seller's activity sector



And the story goes on...

[StatsLab](#) – (statistics in Development), an area available at Statistics Portugal's website with new statistical products, presented before being finalized, aiming at taking advantage of new data sources and new methodologies

Use of artificial intelligence and machine learning – e.g. automatic coding of open questions; imputation of missing observations

Research and development – invest internally, but with partnerships, scholarships, research projects, ...

New [microdata for research](#) – e.g. personal income tax with additional family and individual information integrated from the Resident Population Database (to deploy in the coming weeks)

The road ahead...

More data integration (and more human resources...)

Surveys cover more sensible and difficult issues – e.g. domestic and sexual violence; ethnic origin and discrimination; time use survey ... the ability to cover the uncovered

Access to new data sources, namely privately-held data

Secure sustainable data access

(New) Regulation on European Statistics on Population

Revision of the Regulation of European Statistics and of the National Statistical Law



Conclusion

Demographic statistics with an extended activity plan

Integration, consistency, coherence, quality – more data, more information sets, more statistics

Strong commitment to expand the frontier of production possibilities

Partnerships – Statistics Portugal with a stronger role on the data ecosystem

Process and product innovation coupled with organizational change

Statistics Portugal's outreach surpasses the (official) statistical production

Trust, security, confidence, relevance – serving democracy

Statistics Portugal is the central statistical authority,
independent,
with mandate for data collection and access to data,
data for statistical purposes,
producing official statistics with impartiality and objectivity.



Thanks!

Francisco Lima
Statistics Portugal