



# EUROPEAN CONFERENCE ON QUALITY IN OFFICIAL STATISTICS 2024 ESTORIL - PORTUGAL





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# Strengthening Modernization and Innovation – a holistic approach

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## Strengthening Modernization and Innovation – a holistic approach

- Introduction
- Initiatives for strengthening modernization and innovation:
  - Strategic and organizational
  - Technological and Methodological
  - Dissemination and Communication
  - Human resources
- E-Invoice: the proof of concept
- StatsLab – latest press releases
- Conclusions



## Introduction

- Rapidly changing ecosystem
- Imperative to embrace new technologies and methodologies to stay relevant and provide accurate and timely information
- Streamline processes - do more with less

## Statistics Portugal's initiatives in the new Ecosystem



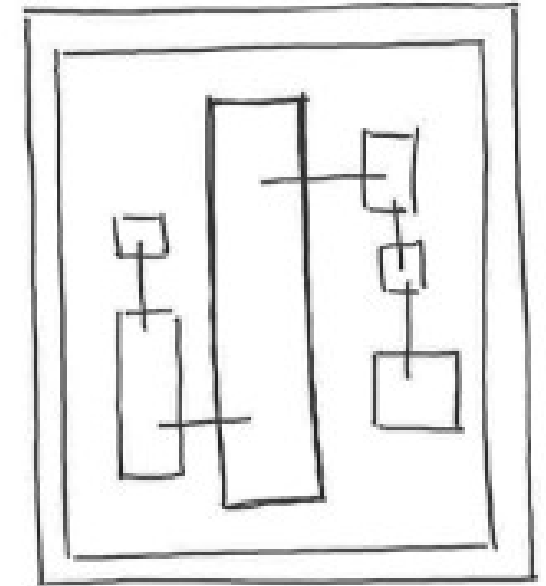
## Strategic and Organizational Initiatives

### National Data Infrastructure

**Single point access to several types of data; make it available to multiple purposes and users**

#### Main goals

- Use of multiple data sources
- Increase the analytical capacity and flexibility in data management
- Exploitation of new data sources for statistical purposes
- Innovation





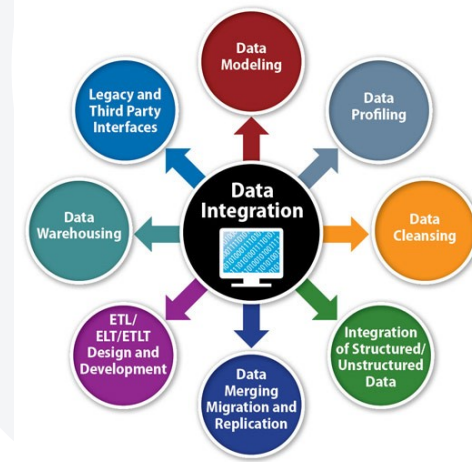
## Organizational Initiatives

**Adjustments:** In 2019, adjustments in the internal organization for strengthen the capacity for data management and analysis Methodology and Information System Management and Data Collection Departments

These changes in competences were formalized in Statistics Portugal Statutory Laws

The **Statistical Production Process Handbook** was updated in 2020 to introduce National Data Infrastructure and put a greater emphasis on appropriation, validation, treatment, analysis and integration of sources, other than surveys

In 2020, creation of a **dedicated unit:** Administrative Data Unit, under the Management and Data Collection Department





## Technological and Methodological Initiatives

**More intensive  
use of  
Artificial  
Intelligence  
and Machine  
Learning**

**Administrative  
and other  
Data  
are currently  
evaluated and  
processed  
centrally**

**Data  
protection  
methods**

**Access  
control and  
database  
auditing**



## Dissemination and Communication

### For internal use:

Consolidated and  
enriched databases  
(one database for all  
users)  
Specific tailored  
tables

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Methodological  
note

Flash report /  
Dashboard  
Service Level  
Agreement  
*Execution Report*

### For data providers:

Own files enriched  
with  
characterization  
variables

-----  
Methodological  
note

Dashboards  
Feedback on the use  
of admin data

### For scientific community:

Fully anonymized  
micro data files  
Ready-made tables  
Safe center

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Methodological  
note

Characterization  
reports

### For society:

Statistical  
information  
Statistics in  
development

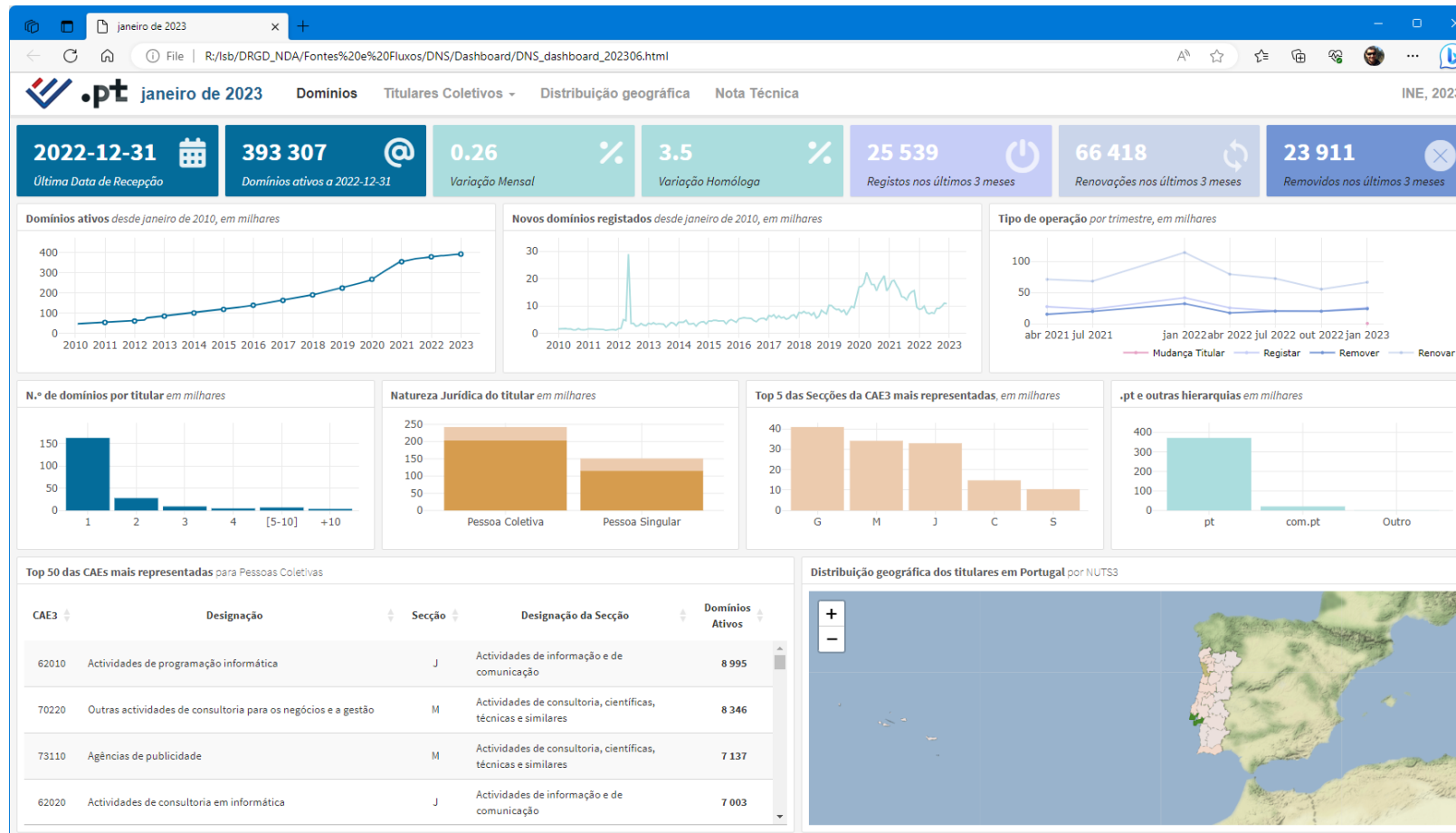
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Methodological  
note

Press releases  
Media  
communications





## Dissemination and Communication



Example of a dashboard:  
interactive, with major  
insights



## Human Resources Initiatives

Specific recruitment has been carried out for this unit, where scientific skills in terms of data appropriation, data analysis, programming skills and machine learning techniques are highlighted.

Up to now, this unit has **6 dedicated FTE**, and 1 research holder.

### In addition:

- Resident researchers (hiring service providers) specialized in the processing and analysis of large datasets;
- Specialized consulting contracts with academia;
- Specific training in programming languages for data analysis
- “half-an-hour<sup>R</sup>” weekly meetings: stimulating the maintenance of a "community of R statisticians”

# E-Invoice: the proof of concept



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The conference is partly  
financed by the European Union

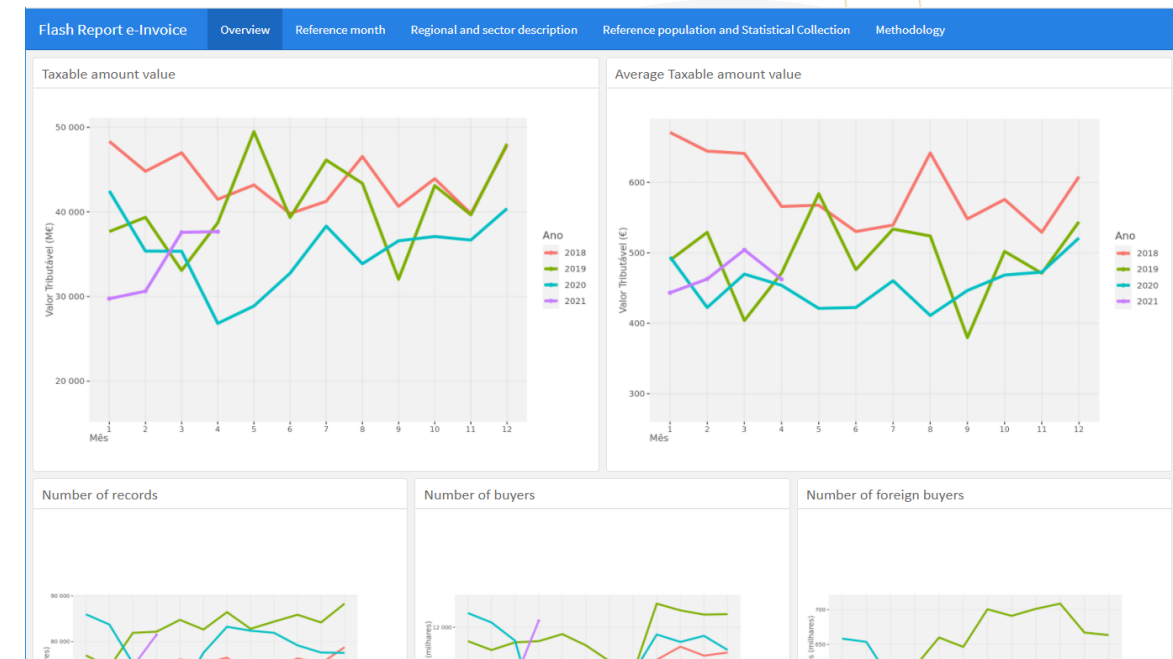
Protocol with Tax Authority, Statistics Portugal receives  $\approx$  80 million records a month.

A set of ETL procedures are performed, introducing quite significant improvements. Additionally, the database is also treated and enriched with:

- Inclusion of new attributes from other sources;
- Temporal referencing of characterization variables;
- Identification and imputation of anomalous values (systematic approach);
- Creation of new aggregated tables;
- Implementation of alternative plans (ongoing).

One of the main goals is to replace STS turnover variables with this dataset. In 2024, e-Invoice data will replace turnover for the Services sector.

## E-invoice: the proof of concept



**Consolidated database and Flash Report delivered internally within 30 hours**

**Holistic approach: Each component of the system contributes for this achievement.**



## One of the latest releases, in May 2023:

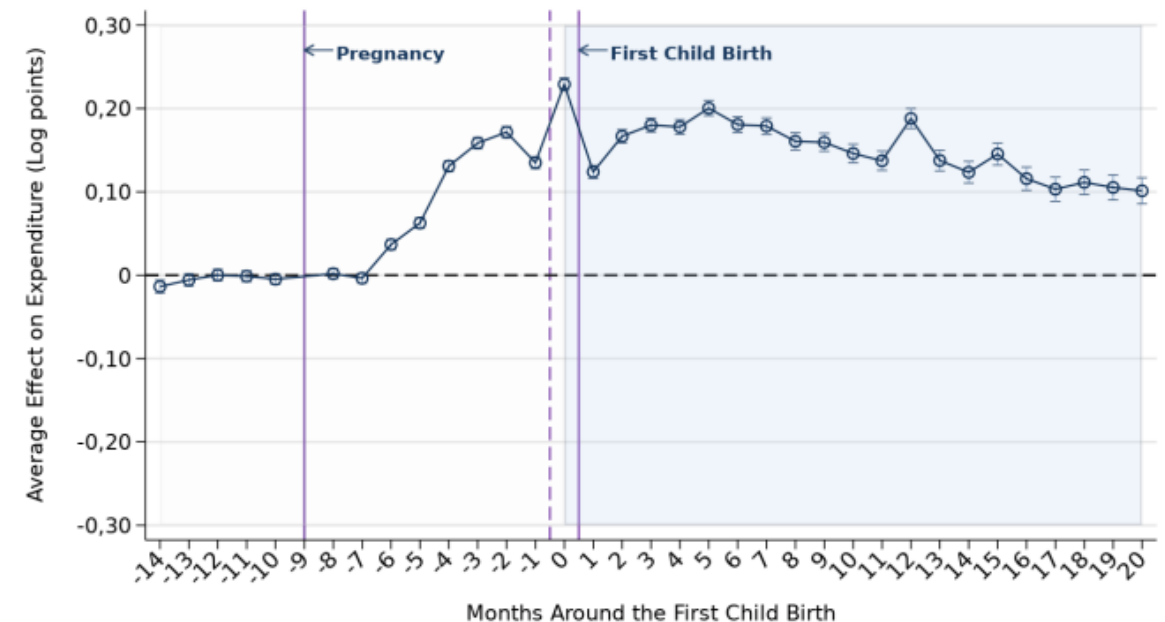
*Birth of the first child: what changes in the pattern of family expenses?*

## Other examples:

- Gross monthly earnings per worker (first published in oct.2019, became official statistics since nov.2021)
- Census with administrative data – progress report
- Monthly Business Demography
- Regional Economic Activity e-Invoice 2019-2020
- Context indicators for the COVID-19 pandemic in Portugal – Data for Good

## StatsLab – press releases

Figure 1. Effects on Household Monthly Expenditure: Total Expenditure



Source: Statistics Portugal, based on the information from Tax Authority.

# Conclusions



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# Conclusions

- Several initiatives implemented in a holistic approach, driven by the need to keep up with the demands of the evolving ecosystem
- Results achieved so far are very positive
- Innovation and efficiency (and user engagement) are key
- Address the challenges: sustainability; maintain quality and integrity
- Ongoing investment in technology and staff training and development



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# Thank you

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