



EUROPEAN CONFERENCE ON QUALITY IN OFFICIAL STATISTICS 2024 ESTORIL - PORTUGAL



EUROPEAN CONFERENCE ON
QUALITY IN OFFICIAL STATISTICS
2024 ESTORIL - PORTUGAL

Exploring the synergies between Statistics Portugal and the Academia



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The conference is partly
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Session “Cooperation with academia”

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Agenda

1. The National Data Infrastructure - the context

2. Contracts and collaboration with academia

StatsLab

Portuguese Science Foundation project

Emos

3. Training

4. Research access to official microdata

5. Conclusions and Next Steps



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STATISTICS PORTUGAL

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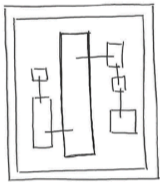
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1. National Data Infrastructure (NDI)

From 2018 onwards, the development of NDI is ongoing.

Single point access to several data bases available to multiple purposes and users

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

Main Purposes

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



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2. Agreements and collaboration with academia

Resident researchers are providing valuable contributions in several statistical areas.

Some examples are:

Survey Income and Living Conditions

Mortality tables

Sampling frames and other related issues

It must be highlighted the recent contribution given by the resident researchers in the development of the National Data Infrastructure, contributing to a more comprehensive and interconnected data system.



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2. Contracts and collaboration with academia StatsLab

Available at Statistics Portugal's website where new statistical products are presented still under development, taking advantage of new data sources and new methodologies

Census with administrative data – progress report

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



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23rd May 2023

National Data Infrastructure: The use of administrative data

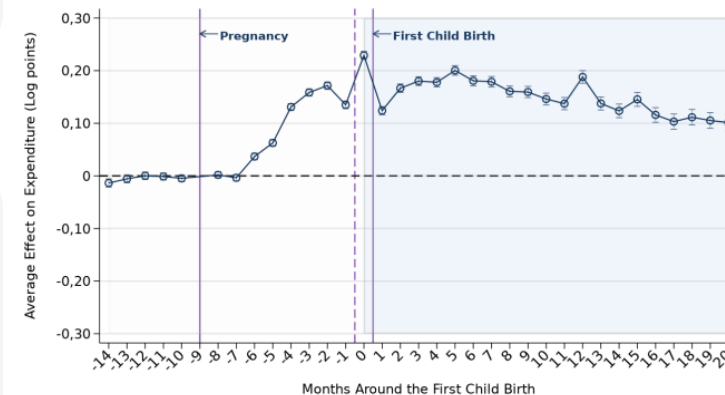
January 2016 to December 2019

AD-HOC PRESS RELEASE ON THE 88TH ANNIVERSARY OF STATISTICS PORTUGAL

BIRTH OF THE FIRST CHILD: WHAT CHANGES IN THE PATTERN OF FAMILY EXPENSES?

Using integrated administrative records on income tax and monthly household expenditures from electronic invoices, we estimate that, on average, the birth of the first child increases total household's expenditure by 20% in the six months that follow childbirth, as compared to the months before the beginning of the pregnancy. The change in total household expenditure can be attributed to an increase of 52% in expenditures in retail trade, 36% increase in health expenditures, 16% increase in electricity and gas and 9% in water. We also observe a significant increase in education expenditures, but contrary to the previous categories, education expenditures only increase sixth month after childbirth.

Figure 1. Effects on Household Monthly Expenditure: Total Expenditure



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



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2. Contracts and collaboration with academia

Portuguese Science Foundation project

The Portuguese Science Foundation (FCT) regularly organizes calls for proposals to fund research projects by teams of researchers, promoting both annual calls for applications in all scientific areas and calls for proposals aimed at specific scientific themes and areas.

In 2022, it was submitted a project “Inequality, Individual behavior, and policy reforms: evidence from administrative tax records”, by a multidisciplinary team, including 3 experts from Statistics Portugal. This 3-year project started in January 2023.

During this year, several working meetings occurred. (E-invoice database was made available to the scientific community, in December 2023).



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2. Contracts and collaboration with academia EMOS

The European Master in Official Statistics (EMOS) is a network of Master programmes in EU Member States, EFTA and EU candidate countries providing post-graduate education in the area of official statistics at the European level.

Statistics Portugal joined EMOS in 2019 with the Faculty of Economics of the University of Porto, in a partnership involving the Master's Degree in Data Analytics. Statistics Portugal participates both as a trainer and internship supervisor.



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2. Contracts and collaboration with academia

EMOS

The lecturers are experts in Sampling, Machine Learning and Statistics, and teach topics ranging from elementary statistical concepts to advanced forecasting models.

The specific subjects required for this Master's Degree in order to be awarded the Label EMOS are (1) Official Statistics Systems, (2) Sampling and Data Collection; (3) National Accounts and (4) Economic Statistics. The two latter courses belong to two different master's degrees.

Main results:

2023: three EMOS masters, one of which has done his internship and thesis in Statistics Portugal;

2024: one candidate of EMOS master, he'll be working with administrative data in the context of IDEF



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3. Training

Specialized training courses, in direct articulation with some of the major universities:



Lisbon School
of Economics
& Management
Universidade de Lisboa



LISBOA
UNIVERSIDADE



TÉCNICO
LISBOA



CATÓLICA
LISBOA
BUSINESS & ECONOMICS

Some examples specially designed for Statistics Portugal (custom made):

In 2022 “Econometrics”: 26 participants, 30 hours
“Artificial Intelligence for Businesses” (1st edition): 24 participants, 35h

In 2023 “Macroeconometrics”: 24 participants, 30 hours
“Artificial Intelligence for Businesses” (2nd edition): 21 participants, 35h
“Cybersecurity”: 20 participants, 21 hours

In 2024 “Network Analytics and Deep Learning” : 24 participants, 35 hours





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3. Training

Statistics Portugal participants from different areas inside the organization.

One of the most interesting characteristics: in the final work, participants were divided into groups, to present solutions using AI to solve some specific problem of our work.



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4. Research access to official statistics microdata

Investment in the availability of administrative microdata for the use of the scientific community [Statistics Portugal - Web Portal \(ine.pt\)](https://ine.pt)

According to the Law on the National Statistical System, individual statistical data on individuals and enterprises may be provided for scientific purposes on an anonymous basis.

The access to anonymized official microdata by researchers in Portugal is guaranteed by Statistics Portugal.

The academic community has specific needs for statistical information, namely for the development of research work and for the preparation of Master and PhD theses.



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4. Research access to official statistics microdata

SP facilitates the free access of researchers to the official statistical information needed to carry out their activities. We are also delivering administrative data, only available in safe center.

Three access modes are possible:

Anonymized
data files (by
Cloud)

Ready-made
tables
(by Cloud)



Through a **secure cloud**, based at SP, access is granted in a controlled and totally safe environment to each researcher.

Anonimized
data files in
Safecenter

Output Checking (in Safe Center)

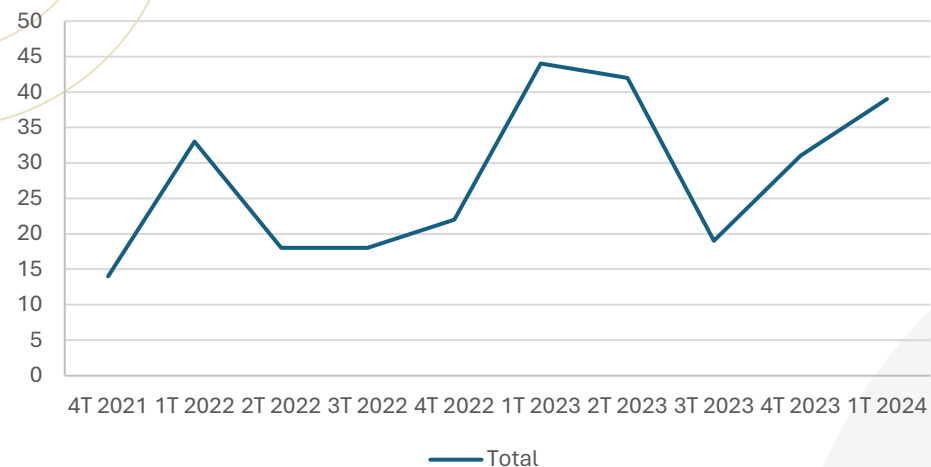
When analysts produce statistics from confidential data, a residual risk exists that the outputs might breach confidentiality. The goal of Output Checking is to avoid data breach.

Statistics Portugal is drawing up a document on researcher rules to make the Output Checking easier.

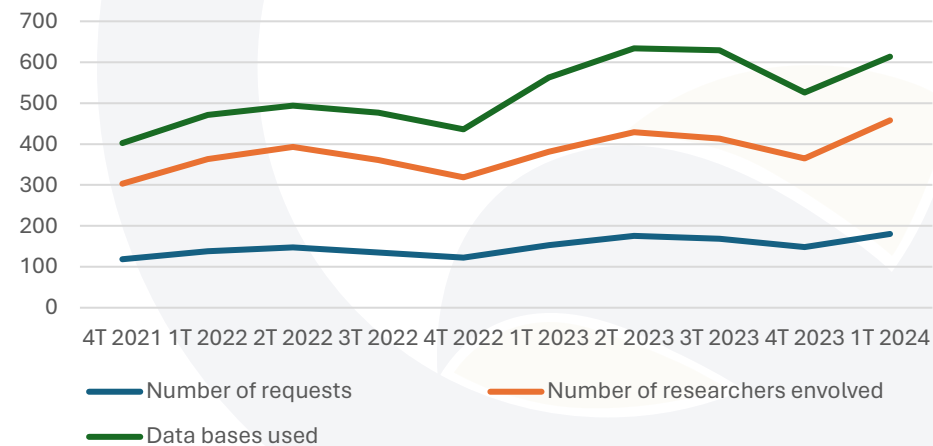


4. Research access to official statistics microdata

New requests from researchers



Active requests; Researchers involved; Data bases used



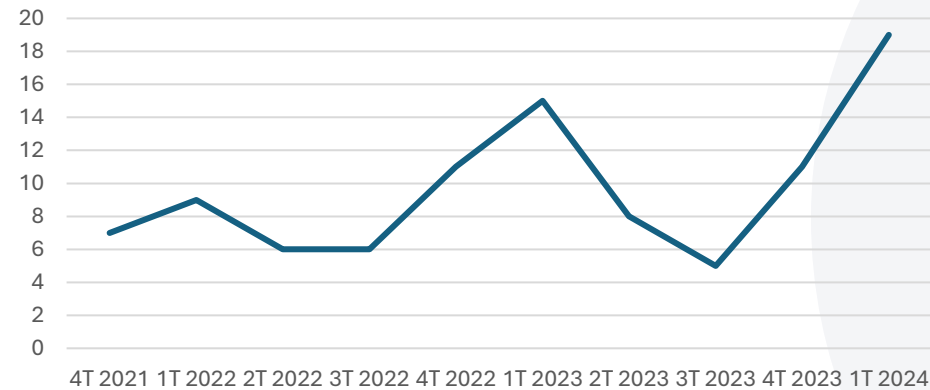


4. Research access to official statistics microdata

A protocol was established between SP and Tax Authority, whereby SP is responsible for making Tax Authority microdata available to the scientific community, duly anonymized.

Data is available, with all the improvements made by SP and with associated meta data. The access mode is done exclusively in the safe center.

Number of active requests - safecenter



- Increase of request at the beginning of civil year
- Impact of the availability of adm. data sources

Highlight: e-invoice data base available at safecentre, since
December 2023



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4. Research access to official statistics microdata – Data infrastructure for researchers

Strategic project: Data infrastructure for researchers

aims to increase:

The number of databases available
Researchers' access capacity
Data integration



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5. Conclusions and Next Steps

Conclusions:

- To face the new challenges, several initiatives are being developed by Statistics Portugal (holistic approach). One of the investments that SP is making is in the collaboration with academia
- Resident researchers experience and skills greatly benefit Statistics Portugal's activities, addressing development needs and the application of new approaches
considered innovative practice in Peer Review report
- Mentorship (project oriented) also emerges as a critical aspect, facilitating the development of the National Data Infrastructure.



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5. Conclusions and Next Steps

Next Steps:

- Continue to invest in the partnerships with academia (resident researchers; training)
- Invest in the internships, in EMOS context
- Increase availability of datasets to the scientific community (including metadata)
- Increase the capacity of the safe centres; work in the possibility of a remote safe centre

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Obrigada
Questions?

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