



# Consumption decisions and the COVID-19 pandemic: evidence from administrative data

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# Motivation

COVID-19 is an extreme event with large, negative consequences

Decisions on what, where, and when to consume changed dramatically since the COVID-19 outbreak

Describe changes in individual consumption expenditures using a sample of the resident population in Portugal

Integrating different administrative data sources – test the information available

Expand the scientific and statistical capabilities for analyzing the Portuguese society

# Examples of new statistical products available at [StatsLab](#)

Census with administrative data

Gross monthly earnings per employee (Social Security at the company level)

Population mobility indicators at regional level - a view based on Facebook's "Data for Good" initiative

Income statistics at the local level - Reported income on Personal Income Tax indicators

COVID-19 pandemic in Portugal: Regional Economic Activity E-invoice 2019 – 2020



# Data Sources

[Resident Population Database](#) – main foreseen outcome: the administrative Census  
Integrates data from the several registers: Civil, Social Security, Immigration, Education, Tax, Unemployment, ...

Income taxes (annual)

Monthly Statement of Earnings from the Tax Authority

[E-Fatura](#) (e-invoice) – consumption expenditures – electronic receipts that firms provide to the Tax Authority as part of their value-added tax

# Sample

Random sample of five hundred thousand persons who filed income taxes as residents in 2017

who were at least 20 years old in 2020 and excluding those older than 80

Exclude persons who were unemployed or inactive; also if without expenses registered

Final sample contains 421,337 persons and more than 15 million person-month observations from January 2018 to December 2020

The sample generalizes to a universe of > 6 million people

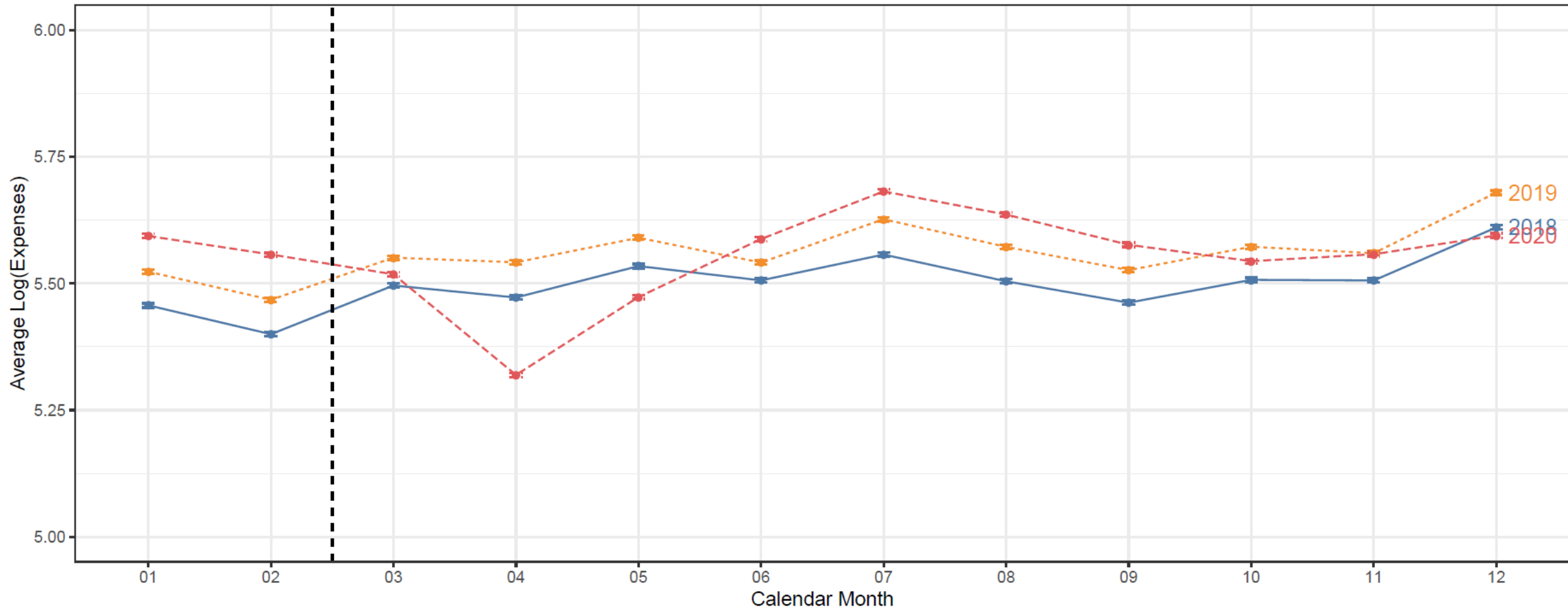
# Evidence – individual consumption

One dimension of everyday life most affected was individual consumption

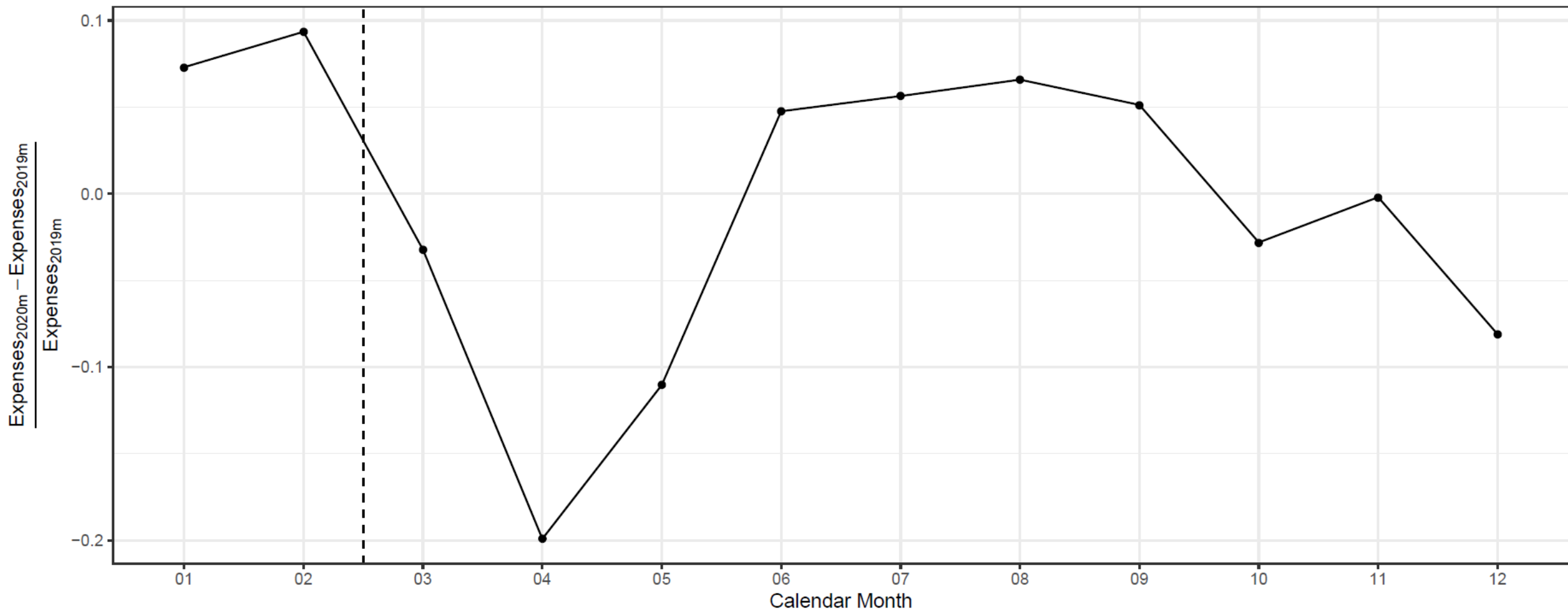
Average logarithm of aggregate monthly consumption expenditures in e-Fatura from January to October in the years 2018, 2019 and 2020

Year-on-year monthly expense growth

Individual expenses in e-Fatura



Individual expenses in e-Fatura in year 2020 versus 2019

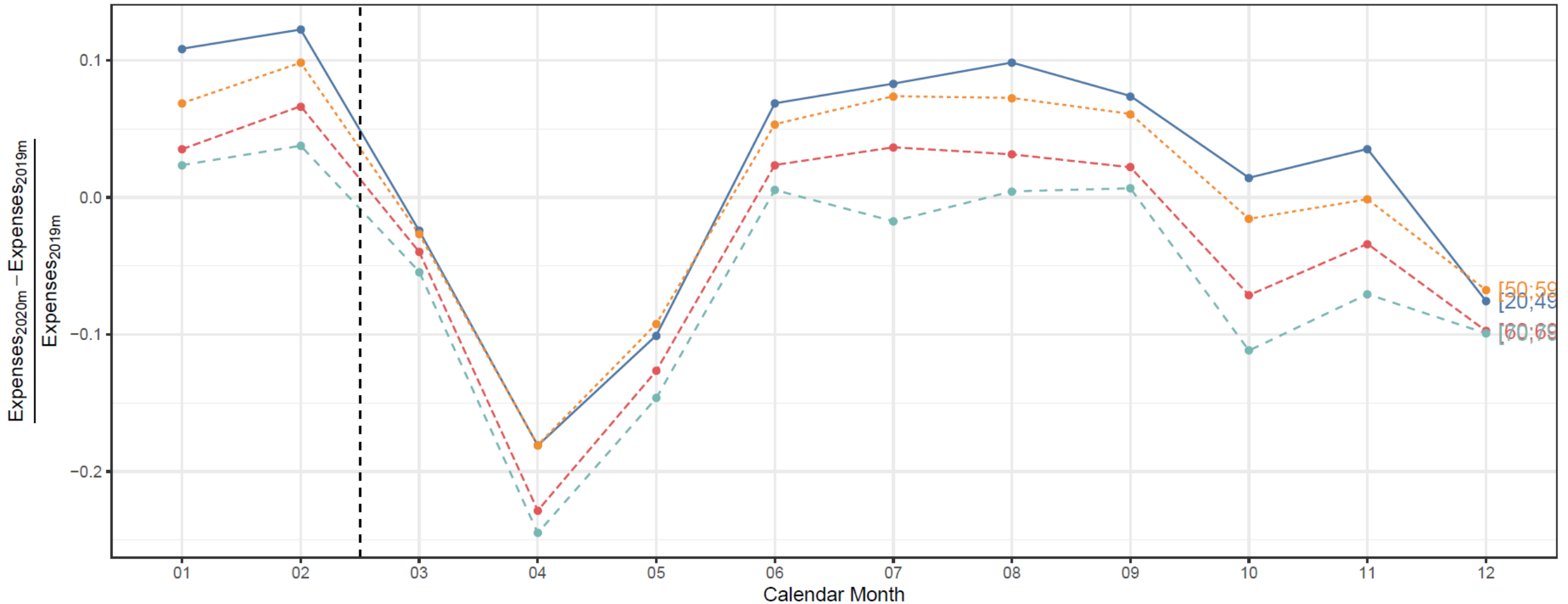




# Age consumption patterns

Individuals adjusted their consumption patterns when facing different COVID-19 case-fatality rates?

Individual expenses in e-Fatura per age group



# Comorbidities

People with underlying health conditions such as heart problems, cancer, obesity, and type-2 diabetes are at greater risk of dying from COVID-19

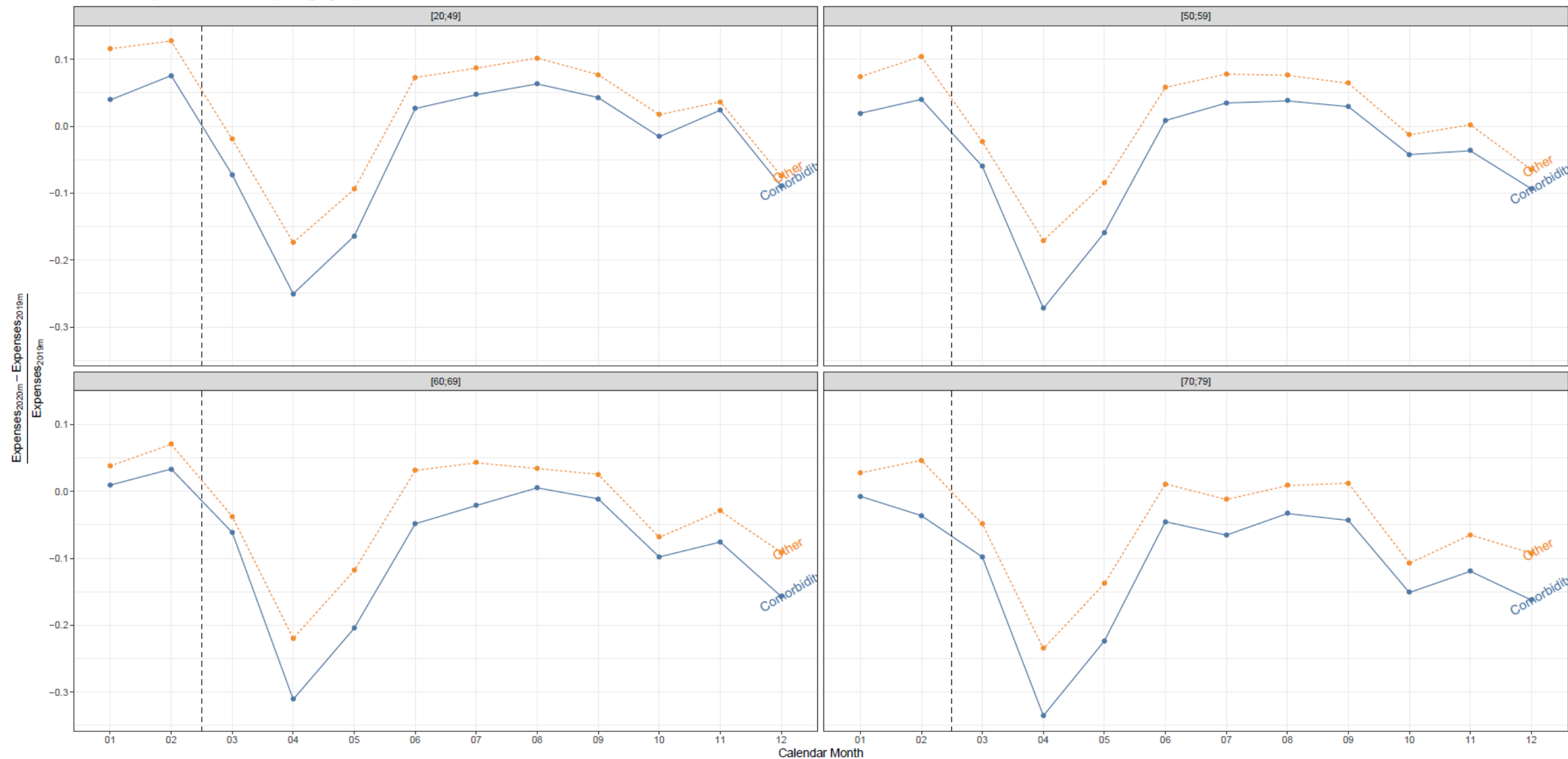
High levels of spending on pharmaceutical drugs may proxy for these and other comorbidities

Split the trend lines in two groups according to the degree of pharmaceutical expenditures in 2018

The comorbidity line includes people whose expenditures on pharmaceutical drugs is in the top decile of the 2018 distribution of these expenditures for the person's age group



Individual expenses in e-Fatura per age group



# Isolate the income effect on consumption

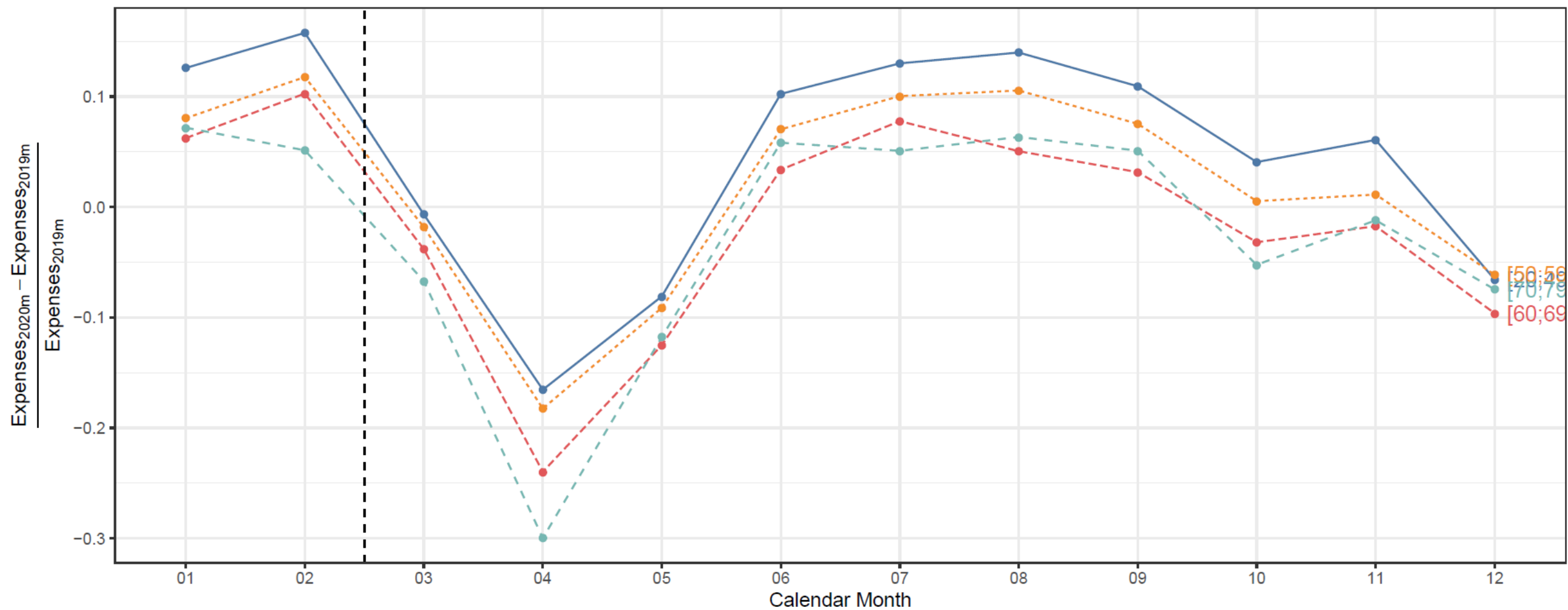
Workers whose wage income in the first six months of 2020 were larger or equal to than in 2019

Public servants

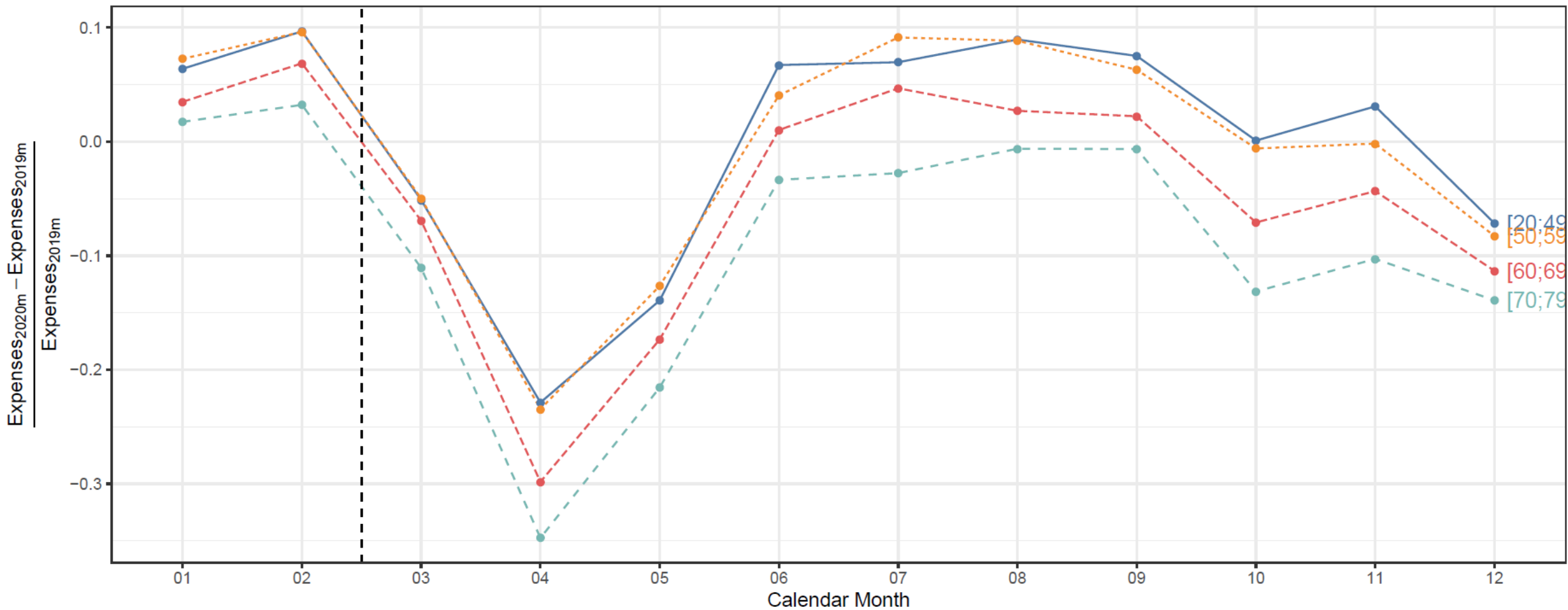
Retirees

Note: there is some overlap between the three groups

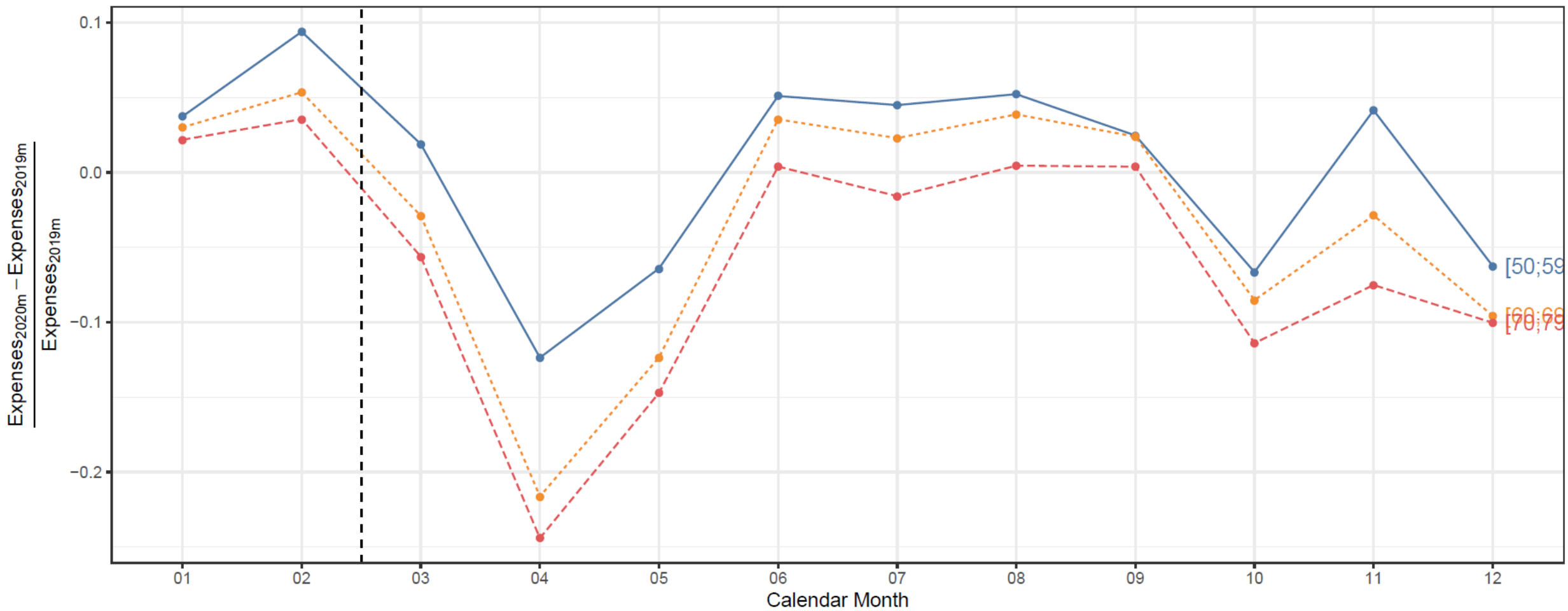
Individual expenses in e-Fatura per age group, for persons with no income loss until July 2020



Individual expenses in e-Fatura per age group, for public servants



Individual expenses in e-Fatura per age group, for retired persons



# Econometric analysis and main results

Eichenbaum et al. (2020) presents the econometric analysis where the implications of a model of risk-taking behavior are compared with estimation results (for the period until May 2020)

Their findings suggest that, at least for events as the COVID-19 pandemic, people respond in a way that is commensurate with the risks they face

The fact that people behave, on average, rationally in the face of such events, does not imply that there is no role for government intervention during the current epidemic

Eichenbaum, M.S., Godinho de Matos, M., Lima, F., Rebelo, S., Trabandt, M. How do People Respond to Small Probability Events with Large, Negative Consequences? *NBER Working Paper Series*, 27988, 2020. doi:10.3386/w27988





# Conclusions

Data from several administrative sources – information on individual spending and sociodemographic characteristics

Develop the capability to produce more granular, relevant and timely statistics

Part of Statistics Portugal's project of making administrative and survey data available for statistical production and research, integrating different sources

Example of Statistics Portugal's work on the creation of the National Data Infrastructure

Thanks!

Francisco Lima

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