



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



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QUALITY IN OFFICIAL STATISTICS  
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# Interactive Web Visualisation of Eurostatistics via R: Enhancing the Quality of Data Presentation through Storyboarding

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# Eurostatistics

An article in Eurostat's Statistics Explained wiki complemented by an interactive visualisation

Provides a snapshot of the macroeconomic situation

Coverage includes the EU/euro area and individual countries

Includes short-term indicators across multiple domains from various sources



European  
Commission



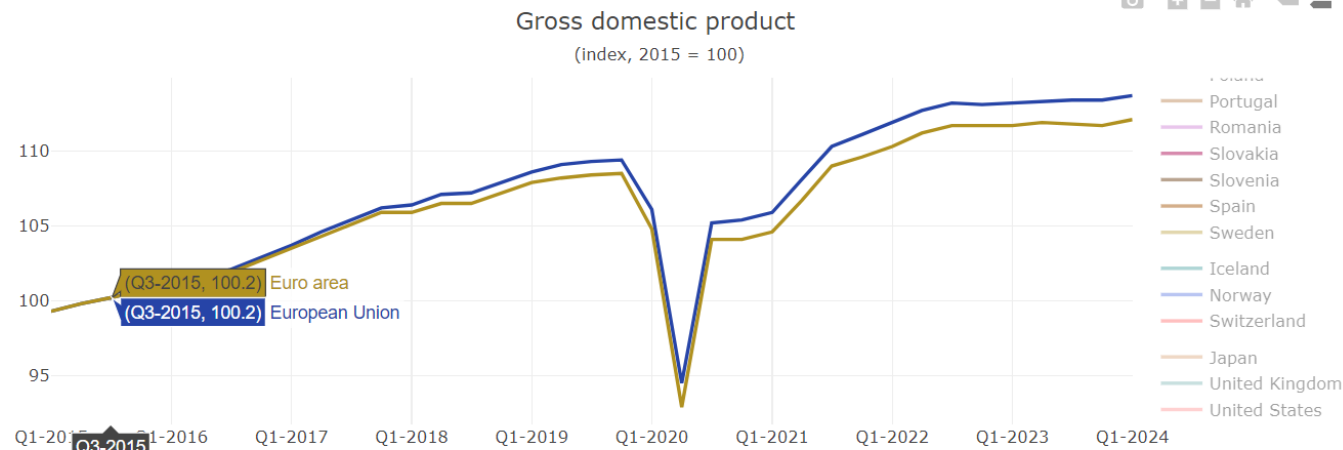
GDP increased

Industrial production increased

Production in construction  
increased in the euro area and  
decreased in the EU

Retail trade sales increased

Annual inflation stable



Source: Eurostat ([namq\\_10\\_GDP](#)) and OECD.

#### Development of GDP

##### Situation in the euro area and the EU

In the 1st quarter of 2024, seasonally adjusted GDP increased by 0.3% quarter-on-quarter in both the euro area and the EU. For comparison, in the 4th quarter of 2023, GDP had decreased marginally (by 0.1%) in the euro area and had been stable in the EU.

##### Situation in the EU countries

Based on the latest quarter-on-quarter rates of change, GDP increased in the 1st quarter of 2024 in 17 countries, decreased in 3 and remained stable in 1 (1st quarter data are not available for 6 countries at the time of writing). Cyprus (up 1.2%) and Ireland (up 1.1%) recorded the largest increases of GDP.



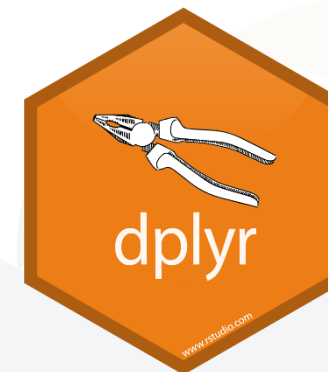


# Technical implementation in R

R Markdown in RStudio



R packages





# R Markdown



Combines narrative text written in  
Markdown with R code and its output

Generates reports with integrated data

Makes it easy to reproduce and update  
documents/files

Produces HTML, PDF and MS Word files

Simplifies web page creation without  
HTML knowledge

```
---  
output: html_document  
---  
  
```{r setup, include=FALSE}  
knitr::opts_chunk$set(echo = TRUE)  
library(dplyr)  
library(ggplot2)  
library(tidyr)  
```\n\n## GDP in the EU  
The EU economy showed zero growth in Q4 2022, avoiding a  
contraction despite exceptional adverse shocks (see Figure 1)\n\n```\n\n{r pressure, echo=FALSE}  
pathRecDashb <- "C:\\Users\\ronkopi\\Documents\\recoverydashboard"  
dataRecDashb <- read.csv(paste(pathRecDashb,  
"RecDashbAllData.csv", sep = "\\"),  
stringsAsFactors = FALSE) %>%  
  data.frame(stringsAsFactors = FALSE) %>%  
  mutate(date = as.Date(date))\n\ndata <- dataRecDashb %>%  
  filter(IND == "GDP_INDR", GEO == "EU27", date >= "2019-12-01")  
%>%  
  drop_na(obsvalue)  
#View(data)\n\nggplot(data, aes(date, obsvalue)) +  
  geom_hline(yintercept = 100, size = 1.2, linetype = 'solid',  
  colour = "grey") +  
  geom_line() +  
  labs(title = "Figure 2: Gross domestic product for the EU",  
  subtitle = "(rebased index, 2019Q4=100)")\n```\n\n```\n\n
```



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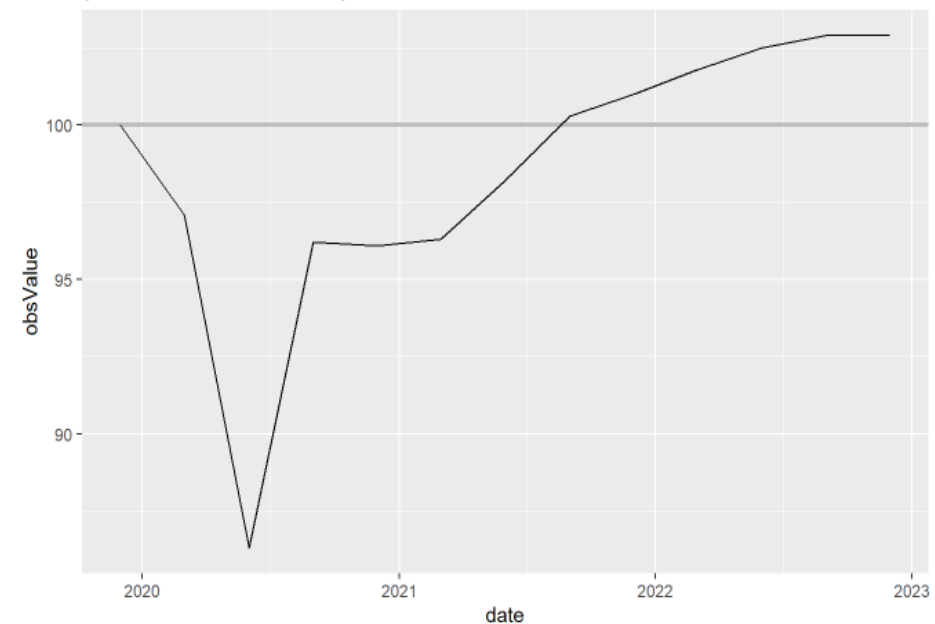
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## GDP in the EU

The EU economy showed zero growth in Q4 2022, avoiding a contraction despite exceptional adverse shocks (see Figure 1)

Figure 1: Gross domestic product for the EU  
(rebased index, 2019Q4=100)





# Flexdashboard



Built upon R Markdown

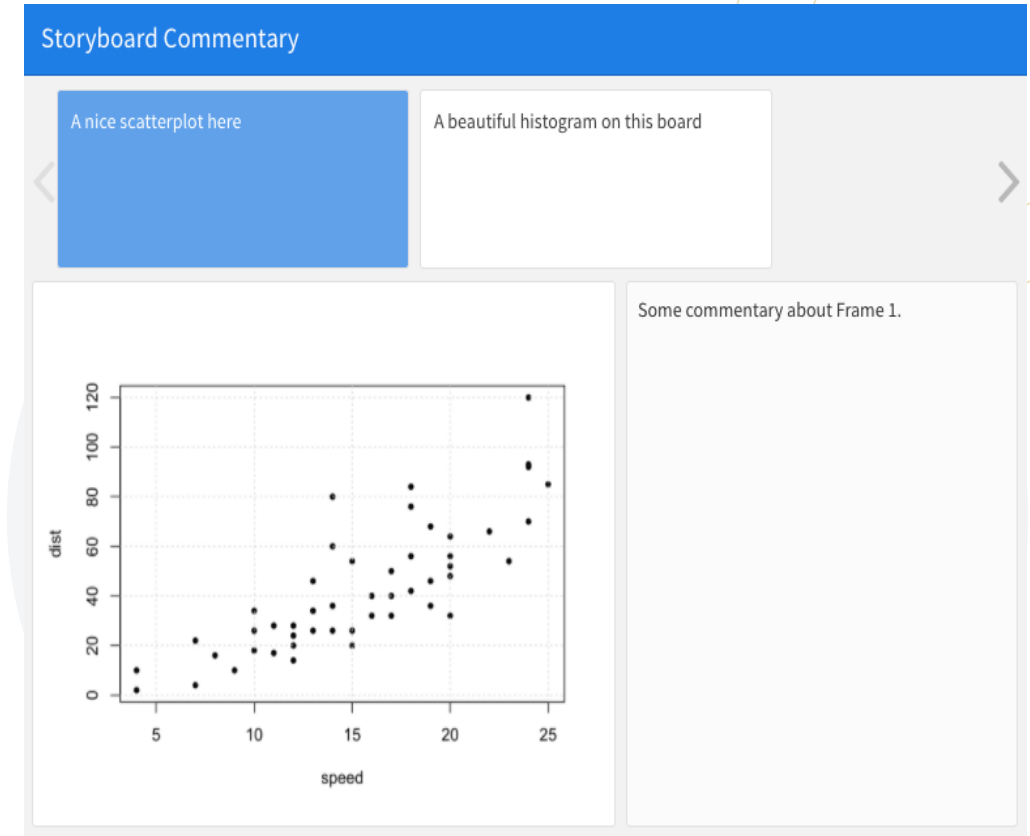
Helps to publish a group of related data charts  
and their analysis as a dashboard

Generates outputs for both desktop and mobile  
viewing

Does not require server-side scripting

Provides predesigned layouts for HTML pages

Includes the storyboard layout strengthening  
the effectiveness of data presentations







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# Flexdashboard - storyboard layout



Organises data and analysis into a sequence of slides, resulting in a more comprehensive step-by-step narrative for readers,

Provides easy-to-use forward and backward navigation, engaging viewers in a more interactive exploration of data,

Includes interactive elements such as charts with commentary text, complementing the general narrative by explaining underlying patterns and insights within the data.



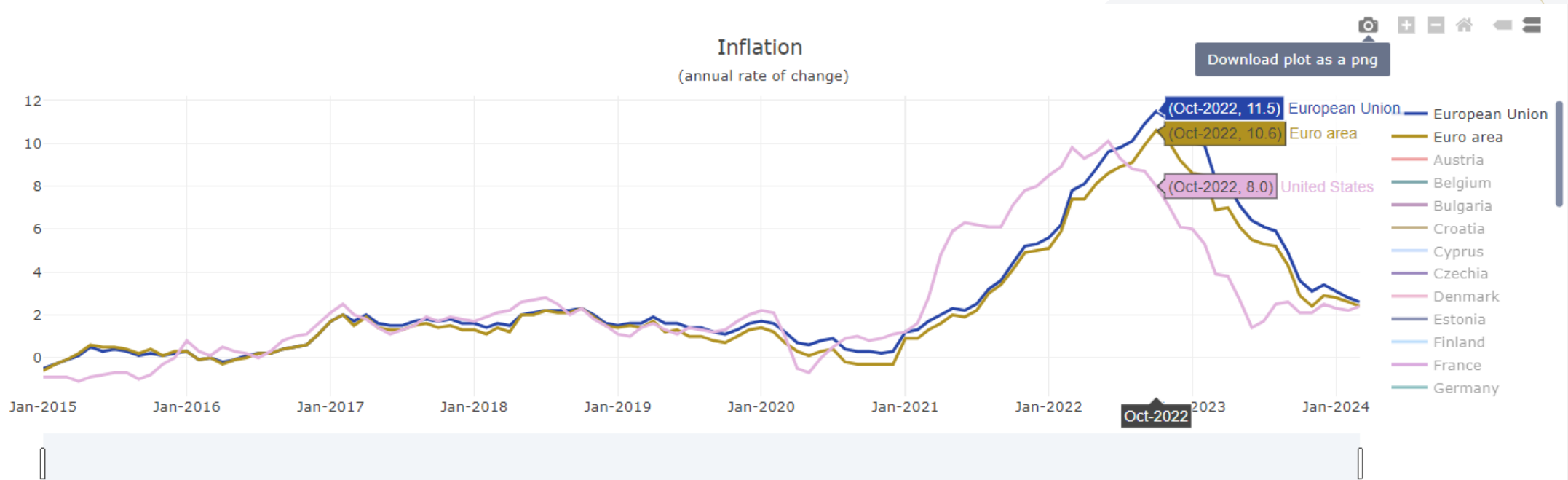
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# Plotly



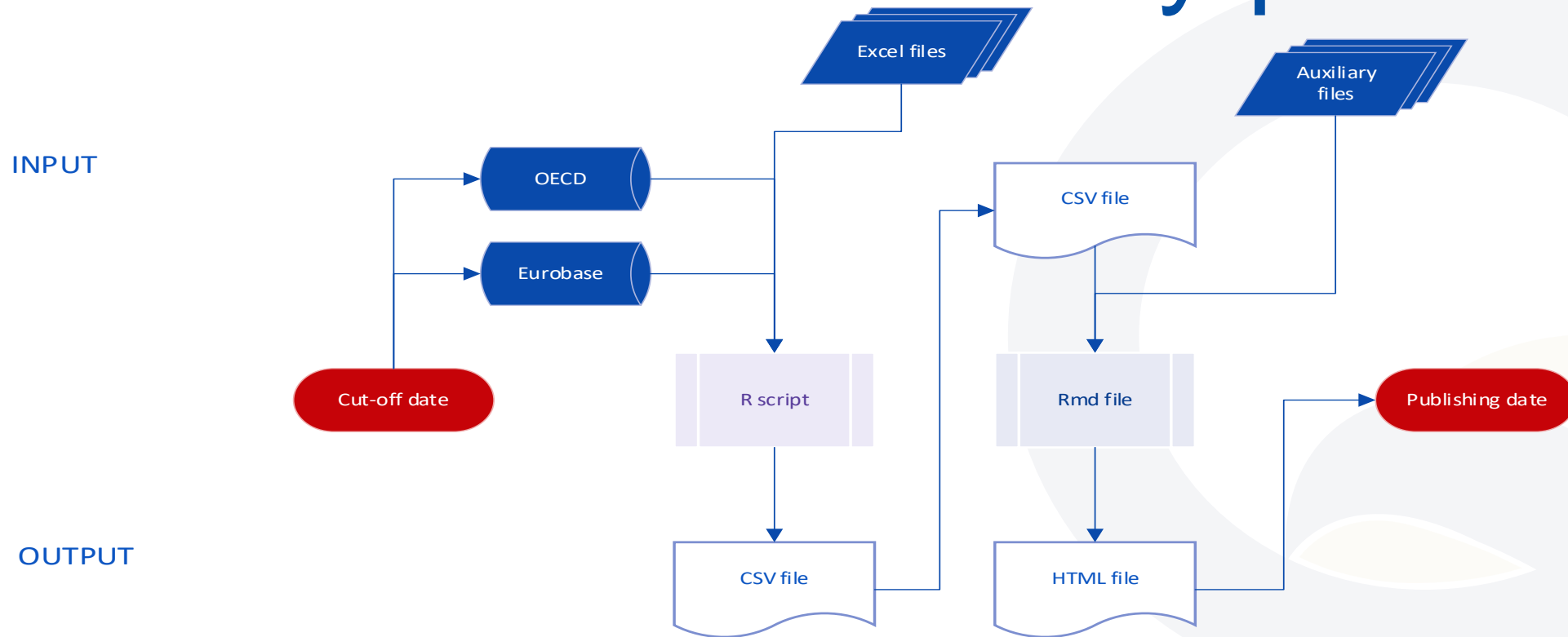
Creates interactive graphs with built-in toolbar



Source: Eurostat ([prc\\_hicp\\_manr](#)) and OECD.



# Workflow for the monthly production





# Enhancing the tool

Development of the R package “eurostatRtool” which can be used by NSIs

New functionalities for showing data such as maps and tables

Streamlined construction of content via an input file

Customisation of layout including colours and logo

Developed in consultation with NSIs in **Estonia, Italy** and **Romania**

A first version of this package should be finalised soon, and available for anybody

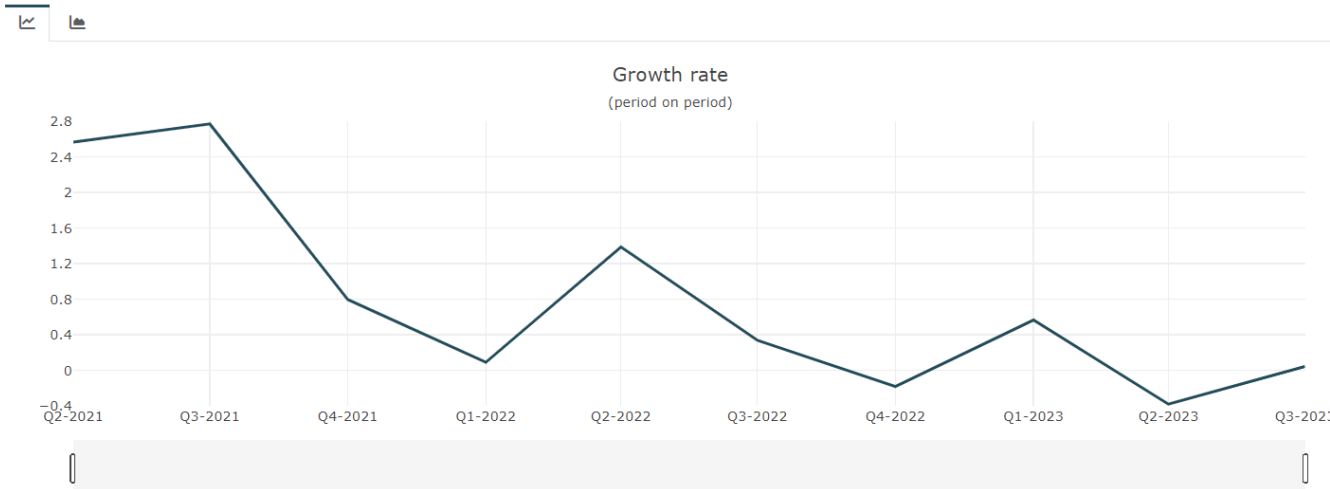




# Example (non official) visualisation from the eurostatRtool

Istat Istituto Nazionale di Statistica Economic situation in Italy Edition: December 2023 Overview **Economic situation** Prices outlook Foreign trade Labour market outlook [Read news](#)

GDP at market prices Industrial Production Index (IPI) Components of GDP Retail trade GDP and Inflation Forecasts



Source: ISTAT (Growth rate, period on period).

## Gross domestic product at market prices

In the second quarter of 2023 Gross Domestic Product (GDP) decreased compared to the previous quarter and in comparison with the second quarter of 2022.

Growth rate, period on period. Quarterly national data for Italy seasonally adjusted. Measure unit: million of euro.

## Trend-cycle estimates

The graph shows the quarterly GDP in current prices for Italy, together with trend-cycle decompositions.

Trends are the natural tendency of the series to variate or remain constant in the long-term in absence of any other influencing variable. The cyclical component expresses the deviation of





# Conclusions

Flexdashboard and Plotly recommended for data visualisations

New R package “eurostatRtool”:

- Facilitates the development of interactive visualisations
- Requires basic knowledge of R
- Quick updates of visualisations, once their layout and content is customised
- Facilitates communication with readers via the storyboard layout
- Supports a wide range of different types of charts, as well as maps and tables
- Allows for an alignment with organisational branding and visual identity



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