

A practical guide to user-friendly data in publications

This guide helps you with all data-related aspects of your publication: writing about data, creating data visualisations, and preparing and publishing data. The guide provides you with tips and resources that will make the data of your publication more accessible and reusable.

[Structure](#) [Write](#) [Visualise](#) [Prepare Visuals](#) [Prepare Data](#) [Publish](#)



Structuring your publication

Data, visualisations, and text are all important components of your publication. The following tips help you structure these components in a way that makes your publication pleasant to read and allows others to reuse them.

Introduce your data in a dedicated section

Why

You might be publishing original data, or you might be using data from various sources to support your arguments. Either way, thoroughly introducing your readers to the data used in your publication fosters understanding, trust and transparency.

How

Describe what the data covers (dimensions and units), why it was collected (policy context), how it was collected and processed (methodology), who collected it and who owns it (source), and what it can and cannot be used for (definitions and limitations).

Besides describing the data in a text, you can also present the most important metadata in a table. If you are using one dataset throughout the publication, describe your data in the introductory chapter. This section should also contain a link to the main datasets or database. If you are using multiple datasets, you might introduce these throughout the publication.

Examples

➤ [Key figures on the European food chain, Eurostat \(2022\)](#)

In the introduction of this publication, the data is described in a dedicated section, including coverage, methodology and limitations.

Create a consistent, logical sequence of text and visualisations



Why

Publications with too much text often lack variety and publications with too many data visualisations often lack context. Balancing the amount of text and data visualisations and bringing textual and visual elements into a consistent sequence, will make your publication enjoyable and easy to read.

How

Set a rule of thumb for how much text follows or precedes each data visualisation. For example, you could aim for always having three to four paragraphs of text between visualisations.

In a print or PDF publication, try to place each visualisation as close as possible to the paragraphs that reference it. In an online publication, integrate the visualisation into the text flow: The paragraphs before the visualisation highlight the most important findings and introduce any concepts that are necessary for the reader to understand the visualisation. The paragraph after the visualisation can provide more context and summarise the most important message of the visualisation. When referencing visualisations from other parts of the publication, provide a direct link to the visualisation or to the page that contains the visualisation.

Resources

➤ [Publications Office editorial advice service](#)

Contacts

➤ [Publications Office Editorial Advice team](#)

Examples

➤ [National Climate Assessment, US Global Change Research Program \(2014\)](#)

The National Climate Assessment 2014 uses full-width images to delineate sections and alternates text with interactive charts. This balance between visual elements and text gives the report structure and makes it more enjoyable to read.

➤ Key figures on Europe – Statistics Illustrated, Eurostat (2020)

In this publication, the text is always right below or above the data visualisation, making it easier for the reader to read the text and the visualisation together.

Provide a reference list of the data used in the publication

Why

Just as you might provide a list of the literature that is referenced in your publication, it is good practice to provide a reference list of the data that you have used in your publication. This allows others to identify and locate your data sources, to reuse the data, to reproduce results, and to cross-check your data sources against others.

How

The format recommended by the European Commission is the following: Author(s), 'Title,' version, Publisher, date, date of citation, PID

The PID is a Persistent Identifier in the form of a link to the dataset. The reference list should be numbered. Use a consistent referencing format throughout your publication.

Example: Sevini, F. and Arnés-Novau, X., 'Export control handbook for chemicals', version 2021 edition, European Commission, Joint Research Centre (JRC), 2021, accessed 23 September 2022, <http://data.europa.eu/89h/8f0d4fa2-110d-4c05-b2a8-ecd3adbf16b>

Resources

➤ [Data Citation: A Guide to Best Practice \(2021\)](#)

Examples

➤ [Confronting the Crisis, OECD Economic Outlook \(Volume 2022 Issue 2\)](#)

The OECD, in a well-structured way, references and provides access not only to the tables and graphs of the publication, but also to the related database(s) from which the data has been extracted.

Include data visualisations in the figure list



Why

Most likely you are already providing a list of figures. Data visualisations should be included in this list so that they can be looked up and referenced as well.

How

The publication's charts and maps can be entered into a simple reference list that is formatted according to your organisation's citation guidelines. Additionally, you can also show each visualisation as a thumbnail to provide a visual reference. This is especially popular online where the publication's charts and maps are sometimes collected on an additional page. Often, this is also where readers can download the visualisations.

Examples

↗ [Early Childhood Education and Care in Europe, Eurydice / EACEA \(2019\)](#)

This publication contains a classic table of figures.

↗ [Wellbeing in Germany, The Federal Government Germany \(2016\)](#)

This publication collects all the visualisations on one page named 'Indicators'. On that page you can download the visualisations and have access to the data behind the visualisations.

See Also

→ [Provide your visualisations as downloads](#)

→ [Provide your data as download](#)

Mention your data and data visualisations in the copyright notice

Why

Data and data visualisations, like other literary, scientific, or artistic works, may be protected by intellectual property rights so you need to respect the rules. At the same time, to encourage reuse efforts (and with that the further distribution of your work, and the added value that may be generated as a result), you need to clearly communicate if and under which terms the data, and the data visualisations of your publication can be reused.

How

Data and visualisations created by you belong to the EU (or to your agency), so be sure to follow the reuse policy of your service. The general copyright notice of the publication may thus cover these data and visualisations. For example, for the European Commission's publications, you should use the Creative Commons Attribution 4.0 International (CC BY 4.0) licence to allow others to reuse your publications, including your data and visualisations. You can see more details about copyright notices in the quick reference guide under 'Resources' below. You may also release specifically raw data, or metadata under the even opener provisions of the Creative Commons Universal Public Domain Dedication deed (CC0 1.0).

The EU (or your agency) is also the owner of the publications produced by your contractor through a contract by which the rights have been properly transferred to the EU (or to your agency). To make sure that the EU (or your agency) also becomes owner of data and the data visualisations underlying your publication, mention explicitly those elements as contract's deliverables (including in which formats).

Good-practice tips:

- In the copyright notice, give as much information as possible and mention the third-party elements your publication includes.
- Facilitate the reuse of the data visualisations of your publication as standalone elements.
- Include copyright and reuse information in the metadata, for both the data visualisations and the data underlying it.
- If in doubt, contact the Publications Office Copyright team.

Resources

- ↗ [European Commission Reuse Guidelines \(2019\)](#)
- ↗ [CC BY 4.0: a summary of the licence](#)
- ↗ [Publisher's information in print and PDF publications: a quick reference guide](#)
- ↗ [CC0 1.0: public domain dedication \(no copyright\)](#)
- ↗ [Understanding open data – legal openness: a data.europa academy webinar](#)

Contacts

- ↗ [Publications Office Copyright team](#)
- ↗ [European Commission Central Intellectual Property Service](#)

Examples

- ↗ [Wellbeing in Germany, The Federal Government Germany \(2016\)](#)
In this publication, the licence is clearly stated and explained, both for the visualisations and for the data.

See Also

- Obtain necessary permissions and credit third-party elements in the copyright notice
- State the author of the visualisation, the data source and the reuse licence
- Add metadata to your visualisation
- Describe your data with metadata

Obtain necessary permissions and credit third-party elements in the copyright notice

Why

Unlike for data and visualisations produced by you, which belong to the EU or to your agency and which may be reused according to the reuse policy of your service (find out more under 'See also' below), you should be particularly careful when you use third-party data and data visualisations in your publication. Data and data visualisations not owned by your organisation may be protected by intellectual property rights, and infringement of such rights may have financial and reputational consequences for your organisation.

How

You (or your contractor) need to obtain the necessary permissions to use third-party data and data visualisations in your publication. The licence under which the rights have been obtained must be respected. You may

need, for example, to credit the author, perhaps in a specific manner, or to mention that a particular data or visualisation is subject to a specific licence, different from the general one that would cover your entire publication. You may even need to mention if some third-party data and/or visualisation cannot be reused.

Good-practice tips:

- In the copyright notice, give as much information as possible and mention the third-party elements your publication includes.
- Keep a copy of the licences covering third-party elements in your file.
- Facilitate the reuse of the data visualisations of your publication as standalone elements.
- Include copyright and reuse information in the metadata, for both the data visualisations and the data underlying it.
- If in doubt, contact the Publications Office Copyright team.

Resources

- ↗ [Open Data Institute Reuser's Guide to Open Data Licensing](#)
- ↗ [European Commission Reuse Guidelines \(2019\)](#)
- ↗ [Publisher's information in print and PDF publications: a quick reference guide](#)
- ↗ [Understanding open data – legal openness: a data.europa academy webinar](#)

Contacts

- ↗ [Publications Office Copyright team](#)
- ↗ [European Commission Central Intellectual Property Service](#)

See Also

- [Mention your data and data visualisations in the copyright notice](#)
- [State the author of the visualisation, the data source and the reuse licence](#)
- [Add metadata to your visualisation](#)
- [Describe your data with metadata](#)



Writing about data

Writing about data or writing text for data visualisations is an important but often overlooked skill. This section details some tricks and tips on how to make your copy more reader friendly.

Use various writing techniques to make text about data more comprehensible

Why

Reading a text full of numbers can be exhausting. It is also hard to imagine larger numbers and what they stand for. There are different

ways to write about numbers that help readers get a better grasp of what they mean.

How

Some good guidelines include:

- Use rates, ratios, proportions, and fractions (e.g., 'EUR 5 000 per person' or '1 in 7 EU citizens').
- Normalise your data so that readers don't have to do maths.
- Ditch the decimals; use only whole numbers in your text.
- Use numbers for the main messages in your text and generalise the rest (e.g., 'roughly,' 'around,' 'half of').
- Provide human scale as a comparison (e.g., football fields, coffee cups, etc.)

Resources

- [Six ways to make numbers meaningful](#)
- [Data Journalism Academy: video lectures on writing and editing for data](#)

Examples

- [Wellbeing in Germany, The Federal Government Germany \(2016\)](#)
This publication uses short, concise paragraphs. The formatting of the text (e.g. as title, quotes, body text, etc.) also provides a clear visual hierarchy.

Make sure the text complements the data visualisation

Why

When your body text says one thing and your visualisation shows another, your readers are likely to be confused. Therefore, a text that references or describes a data visualisation must complement what can be seen in that visualisation.

How

Text and visualisation play different roles when presenting data: Text provides context to the data and highlights important findings. Data visualisations allow readers to visually compare variables and discover trends and developments. In the paragraphs that preempt or follow a data visualisation pay attention to the following caveats:

- In the text, make sure to introduce all necessary concepts for people to understand the visualisation.
- Make sure that the trends or overall developments described in the text match what the visualisation shows.
- In the text, use the same units of measurement as in the visualisation. You can always mention other kinds of units additionally.
- Avoid contextual temporal adjectives (e.g., 'last year,' 'next month'). Instead, use exact dates, years or time periods.

Examples

- [Wellbeing in Germany, The Federal Government Germany \(2016\)](#)
This publication uses short, concise paragraphs. The formatting of the

text (e.g. as title, quotes, body text, etc.) also provides a clear visual hierarchy.

See Also

- Write meaningful titles for your visualisations
- Write succinct visualisation legends
- Write alt text for your visualisation

For visualisations that are frequently updated, write generic text

Why

Writing text about data visualisations that are frequently updated with new data is a challenge. However, there are methods that minimise the amount of text that must be completely rewritten every time the data is updated.

How

Either one of following concepts can be used when writing about updating visualisations, in order from more to less work per update:

- You can outline trends and developments and update only those specific descriptions.
- You can state only the values without describing any trends. Those numbers can be updated manually or be programmed to update automatically.
- You can abstain from naming trends or specific values and simply introduce the data and the methodology used to create it.

If the data is updated frequently, you might consider creating two separate products: A dashboard that shows previous versions and new updates for people to explore the data; and publications that focus on a particular update and lead the reader through the most interesting findings of that update.

Examples

- [Vaccination Dashboard, The Federal Government Germany \(2021\)](#)
This website contains text that is automated based on live data.

Write for the web



Why

Whether you are producing a PDF (Portable Document Format) or a web-based publication, chances are your content will be read online on devices ranging from large desktop computers to small mobile phones. If you write for an online publication that will be read on a small screen, you can ensure a more pleasant reading experience across devices (mobile-first approach). In addition, a well-defined text layout will make your content machine-readable and accessible, as online search-engines and assistive technologies make use of these definitions.

How

Some guidelines for web-friendly text include:

- Define clear title hierarchies (3 max.). Consistently use the same font sizes and font styles for each hierarchy. To designate those styles, use HTML-tags online and headings style in Microsoft Word.
- Write in sentences that are concise and are no longer than 25 words.
- Break up your content into short paragraphs of about 1 to 4 sentences. Make sure that the width of these paragraphs in the publication layout is not more than 75 and not less than 45 characters.
- Use hyperlinks to point to further information and original research or data.
- Use the 'inverted pyramid' structure for your texts: start with the essential information, then expand on and supplement this information with details and finally add non-crucial background information.

Resources

- ↗ [European Commission web writing checklist](#)
- ↗ [Writing for the European Commission web presence: checklists and actionable advice](#)
- ↗ [European Commission web writing guidelines](#)
- ↗ [Writing for the web: articles and videos](#)
- ↗ [Be succinct when writing for the web](#)
- ↗ [How to use the inverted pyramid structure in your texts](#)
- ↗ [How people read online](#)
- ↗ [Readability: the optimal line length](#)
- ↗ [All about legibility, readability, and comprehension](#)
- ↗ [Basic tips on structuring and formatting text for the web](#)
- ↗ [Publication Drafting Tool: a Eurolook template for structured manuscripts](#)

Contacts

- ↗ [Publications Office Accessible Publishing team](#)

Examples

- ↗ [Wellbeing in Germany, The Federal Government Germany \(2016\)](#)
This publication uses short, concise paragraphs. The formatting of the text (e.g. as title, quotes, body text, etc.) also provides a clear visual hierarchy.
- ↗ [Paying the Price of War, OECD Economic Outlook, Interim Report September 2022](#)
The digital report puts the main insights at the very beginning and then adds more details below.

Write in plain language



Why

Plain language is simple, concise and well-organised writing that is appropriate for your intended audience. For a variety of reasons, many people struggle to read complex texts. Also, especially online, readers mostly do not study unnecessarily complicated texts. Plain language makes your content accessible and easy to consume.

How

Some good guidelines include:

- Know your audience and know which terms your audience understands.
- Use simple terms and explain them either on their first occurrence or in a glossary.
- Spell out acronyms and abbreviations on their first occurrence or add a list of abbreviations to your publication.
- Write in short sentences (20 – 25 words max.) and paragraphs (1 – 4 sentences max.).

Resources

- [What is plain language?](#)
- [All about legibility, readability, and comprehension](#)
- [Using plain language](#)
- [Writer's toolbox: writing help and advice](#)
- [European Commission Clear Writing Guide: with examples from EC documents](#)

Contacts

- [European Commission Clear Writing team](#)

Examples

- [Wellbeing in Germany, The Federal Government Germany \(2016\)](#)
This publication uses short, concise paragraphs. The formatting of the text (e.g. as title, quotes, body text, etc.) also provides a clear visual hierarchy.



Data visualisations present insights from data in a visual manner. Good data visualisations can act as centrepieces to your line of reasoning. The following tips help you create understandable, accessible, and appealing data visualisations.

Define the purpose of your data visualisation

Why

Data visualisations present an insight into your data. They allow readers to compare, organise, make correlations, and see relationships. Each visualisation in your publication should have a single, clearly defined purpose. The visualisation should be meaningful and easy to understand.

How

After you have analysed your data, think about which insights you have gained from it. Then, decide which of those insights would be interesting to your readers. For example, an insight might be that, over the years, the gender gap in cultural employment has gotten smaller across EU member states. Next, you can translate this insight into a message. Aim to create one visualisation per message. Following our example, the message could be: 'The gender gap in cultural employment is at an all-time low'. Be sure to check this message against your data again.

In some cases, text or other types of graphics might be more suitable than a data visualisation: If your data has caveats (e.g., a small sample size), a data visualisation might mislead your readers. Likewise, if you have qualitative information rather than quantitative data, it might be better to create an infographic or even just describe the information in a text.

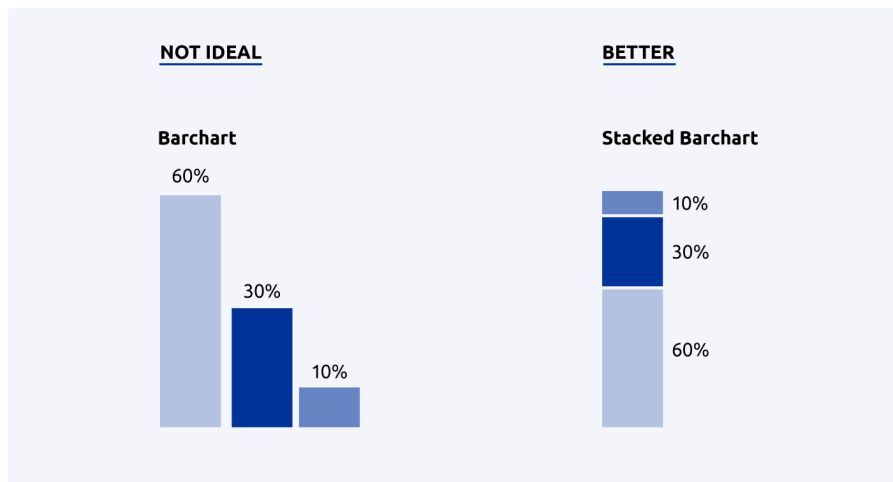
Resources

- [From hypothesis to visualisation: three questions to ask when creating charts](#)
- [Publications Office multimedia production services, including data visualisation](#)
- [Dempub: online platform for creating and managing requests for the Publications Office services](#)

Contacts

- [Publications Office Front Desk for Authors team](#)

Choose the right type of visualisation



Why

Bar charts, scatter plots, line graphs, and area charts are examples of different types of charts. Each chart type encodes data in a specific way, rendering different aspects of the data visible. For example, a bar chart allows readers to compare amounts across different categories while a line chart typically shows a development over time.

How

Choose a chart type that makes the message you want to communicate from your data clear and understandable. Always check, if the chart type also fits the properties of your data. For example, you might want to allow readers to compare amounts across different categories. This would generally call for a bar chart. However, if the amounts are defined in percentages that add up to a whole, a stacked bar chart is more fitting. It allows the reader to compare the amounts in relation to the whole more easily. There are various resources that list all available chart types and help you choose the right one.

Once you have found a fitting chart type, consider small design amendments to communicate the information in your data more clearly (e.g., flip the bar chart 90 degrees so that the bars run horizontally across the page).

Resources

- [The Data Viz Project: a chart encyclopedia](#)
- [RawGraphs: an online tool for chartmaking](#)
- [The Data Visualisation Catalogue: a library of visualisation types](#)
- [Visual Vocabulary: A poster and a website about different chart types, by the Financial Times](#)
- [Publications Office multimedia production services, including data visualisation](#)
- [Dempub: online platform for creating and managing requests for the Publications Office services](#)

Contacts

- [Publications Office Front Desk for Authors team](#)

Examples

- [Wellbeing in Germany, The Federal Government Germany \(2016\)](#)
This online publication uses various types of visualisations to show different aspects of the data.

Follow best design practices

Why

Following common graphic design principles can make your data visualisations more attractive and easier to read. Many of these design principles also help make your visualisation more accessible.

How



Hierarchy: The visualised data should be high in the visual hierarchy while supportive elements, like axes and axes labels, should retreat to the background. Font sizes of text elements should reflect their importance.



Make sure you apply the design principles consistently across the publication: use the same colours to encode the same variables and use the same font sizes and layout for each chart. A section on data visualisation in your style guide and predefined templates (e.g., in Excel) can help you stay consistent throughout and across publications.

Resources

- [Data visualisation training with Maarten Lambrechts: 3 webinars \(2019\)](#)
- [Rate my visualisation: an interactive checklist that helps bring your charts into a good format](#)
- [EU DataViz on data.europa academy: webinars and training material](#)

Contacts

- [Interinstitutional Community of Practice on Data Visualisation](#)

See Also

- ➔ [Use an accessible colour palette](#)

Follow best data visualisation design practices

Why

When statisticians began creating and using data visualisations in the 18th century, people had to learn how to read them at first. Today, people have grown used to certain design elements that help them decipher the meaning of a chart. If you want your readers to understand your visualisations quickly and with ease you can make use of those design patterns.

How

Some Do's and Don'ts:

NOT IDEAL **BETTER**



The image shows two side-by-side stacked bar charts. The left chart is a 3D version with bars that have depth and perspective, making it difficult to read. The right chart is a 2D version with flat bars, which is much clearer. Both charts have three bars of decreasing height from left to right, each composed of three stacked segments in dark blue, medium blue, and light blue. Navigation arrows are present on the left and right sides of the charts, and a series of dots is centered below them.

Don't use 3D-charts. Use 2D-charts instead.

In the best case, these best practices are covered in the data visualisation section of your organisation's style guide.

Resources

- [Data visualisation training with Maarten Lambrechts: 3 webinars \(2019\)](#)
- [Rate my visualisation: an interactive checklist that helps bring your charts into a good format](#)
- [A collection of data viz caveats and how to avoid them](#)
- [EU DataViz on data.europa academy: webinars and training material](#)

Contacts

- [Interinstitutional Community of Practice on Data Visualisation](#)

Examples

- [Wellbeing in Germany, The Federal Government Germany \(2016\)](#)
This online publication uses various types of visualisations to show different aspects of the data.

Use an accessible colour palette



Why

One in twelve men and one in two hundred women have some type of colour blindness. Many people also have poor eyesight or suffer from vision impairment. Under EU law, public body websites and mobile apps have to be accessible to persons with disabilities, including people with visual or hearing impairments. In HTML, essential accessibility requirements are outlined in the Web Content Accessibility Guidelines (WCAG) of the World Wide Web Consortium (W3C), which defines three levels of compliance: A (represents the absolute minimum requirements for basic accessibility), AA, and AAA. Since 2010, all new websites under the EUROPA domain have to be built according to level AA.

How

The first step is to avoid the use of colour and contrast as the only means to convey information. Additionally encode your data with patterns and labels to ensure readability.

Then, when it comes to defining your colour palette, pay attention to 1) contrast and 2) to the combination of colours. Contrast is the difference in brightness between two colours. Your colours should have enough contrast to the background and to one another. You can ensure this by running your visualisation through a contrast checker (see 'Resources' below). For conformance level AA, a contrast of at least 4.5:1 for normal text and 3:1 for large text and graphic elements is required. When it comes to colour combinations, avoid using the following ones: red / green / brown; pink / turquoise / grey; purple / blue. This way people who have a colour weakness or a colorblindness for a certain hue can still distinguish your colours.

Resources

- [Colour Contrast Analyser](#)
- [Colbis: a Color Blindness Simulator](#)
- [Viz Palette: an online tool for picking colours for data visualisations](#)
- [European Commission accessibility checklist](#)
- [Accessible publishing: concepts, tools, tips and tutorials](#)
- [Web Content Accessibility Guidelines \(WCAG\) 2.1](#)
- [A detailed guide to creating an organisational colour palette](#)
- [Visualising data for colourblind readers: a three-part series](#)

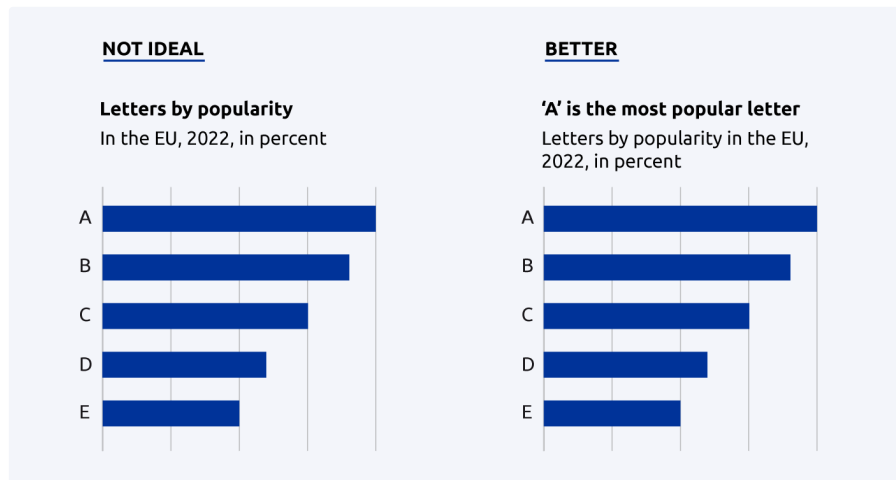
Contacts

- [Publications Office Accessible Publishing team](#)

See Also

- Make sure your interactive charts are accessible with the keyboard
- Write alt text for your visualisation

Write meaningful titles for your visualisations



Why

The title of a visualisation is usually the first – and sometimes the only – element the reader will look at. A meaningful title is a title that summarises the key findings shown in the chart. This helps guide readers through the data and makes the chart self-contained and reusable.

How

In the title, try to summarise the main message of the visualisation in less than ten words. Use the subtitle to describe the data, its geography, the time period, and the units of measurement.

Resources

- ↗ [Guidelines for chart titles and text by the Office for National Statistics, UK](#)
- ↗ [What to consider when using text in data visualisations](#)
- ↗ [Data visualisation training with Maarten Lambrechts: 3 webinars \(2019\)](#)

Write succinct visualisation legends

Why

Legends describe how different data variables are encoded in visual elements, thus serving as an instruction on how to read a visualisation. Legends are the key to understanding the visualisation and should therefore be created with considerable care.

How

First, make sure that each visual element is explained. Then, follow these two tips to make your visualisations clear and legible:

NOT IDEAL

- People in the EU, aged 18 – 40
- People in the EU, aged 41 – 80
- People in the EU, aged older than 80

BETTER

- EU-residents, aged ...
- 18 – 40
 - 41 – 80
 - older than 80



Make sure to keep the wording in your legend consistent, succinct, and short. Defer from using abbreviations and complicated words.

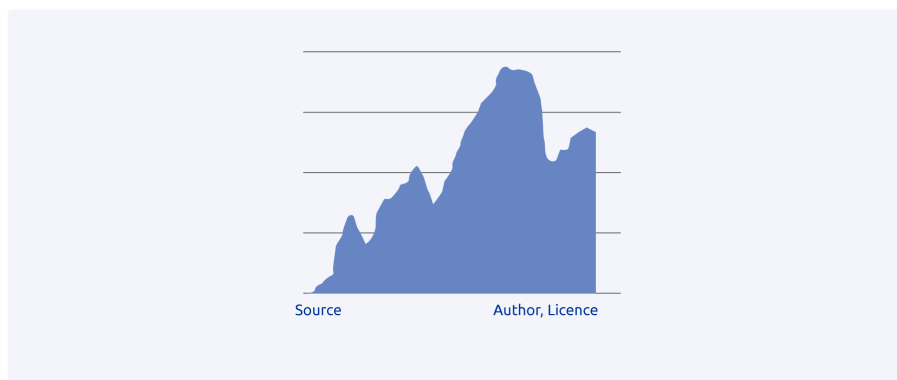


A good way to test if your legend works, is to show it to people outside of your field of expertise. Ask them to describe their thoughts out loud as they try to read the visualisation.

Resources

- [What to consider when using text in data visualisations](#)
- [Data visualisation training with Maarten Lambrechts: 3 webinars \(2019\)](#)

State the author of the visualisation, the data source and the reuse licence



Why

Nowadays, visualisations from a publication can easily be reused: they might be added to a PowerPoint presentation as a screenshot or be downloaded and posted on social media platforms. Because your visualisations might reappear in different contexts, it is best to cite the author (the organisation or person that created the visualisation), the data source (the data used to create the visualisation) and the reuse licence (the conditions under which the visualisation might be reused, if at all) with each chart.

How

The author, data source, and reuse licence are often placed below the visualisation, in the bottom left and right corner. Use a relatively small font size and/or a lighter colour than used in the rest of the chart. If possible, use abbreviations and underlay those abbreviations with links directly to the author, data source and licence description.

For the data source you might choose to use the name of the data provider (e.g., 'JRC'); or you might use your own reference system to refer to the data source (e.g., Eurostat uses a unique code such as 'tag00001' to identify each dataset).

For the reuse licence, follow the reuse guidelines applicable to images, photos, and illustrations. Be mindful of the copyright rules applicable to data visualisations.

Resources

- [Data Citation: A Guide to Best Practice \(2021\)](#)
- [European Commission Reuse Guidelines \(2019\)](#)
- [Data visualisation training with Maarten Lambrechts: 3 webinars \(2019\)](#)

Examples

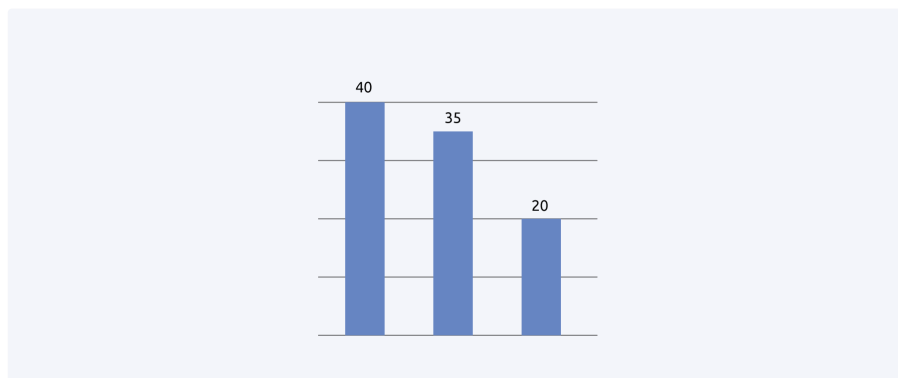
- [Our World in Data](#)

The charts from Our World in Data contain their logo, the link to the chart's main topic, and even the license for reuse.

See Also

- [License your visualisation so that others can reuse it](#)
- [Mention your data and data visualisations in the copyright notice](#)
- [Obtain necessary permissions and credit third-party elements in the copyright notice](#)

Show the data values



Why

Showing the data values in the visualisation allows readers to check the quality of the visualisation. This increases readability and trust in the visualisation. It also makes it possible for readers to reuse the data even if it is not available for download.

How

In static visualisations, the data values can be shown directly on the chart. If there is not enough space to show all data values, annotate the chart

with the most important ones (e.g., minimum, maximum and most recent value). In interactive visualisations, a tool tip can be provided that shows the data values on hover.

In addition to showing the values in the visualisation, you can also show a data table. In a static publication format, the table can be shown below or next to the visualisation. In an interactive publication, you can allow the reader to switch between the chart and the table view.

Resources

➤ [The digital accessibility guidelines at Harvard on providing supplemental data formats](#)

Examples

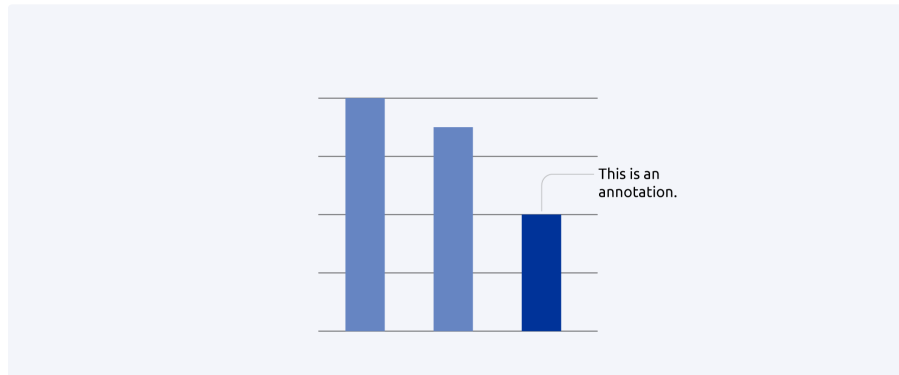
➤ [Early Childhood Education and Care in Europe, Eurydice / EACEA \(2019\)](#)

In this publication, a table is often shown below the visualisation (e.g., p. 30).

➤ [Our World in Data](#)

Our World in Data offers tooltips to read the single data values. In addition, you can switch between a chart, a map, and a table view.

Annotate important features



Why

Annotations can guide readers towards important aspects of your data. They also provide context to the data, often explaining why certain developments, trends or changes show in the visualisation.

How

Identify salient features in your data visualisation: Is there a surprising development? Are there certain points that stand in contrast to the overall statement of the chart? Which features explicitly support the chart's overall statement? Write short sentences or clauses to explain these features. Use arrows or lines to connect the feature with the annotation.

Resources

➤ [What to consider when using text in data visualisations](#)

➤ [Data visualisation training with Maarten Lambrechts: 3 webinars \(2019\)](#)

Make use of official EU geodata for maps

Why

The mapping of areas, especially disputed areas, in an official context is an extremely sensitive issue. Carelessly plotted, designed, or labelled maps can cause far-reaching diplomatic incidents. The GISCO (Geographic Information System of the European Commission) team at Eurostat, together with DG COMM and the External Action Service of the EU, are responsible for correctly showing the official position of the EU on territorial conflicts.

How

When making maps for your publications make use of GISCO's resources. The GISCO team creates statistical and other thematic maps, manages a database of geographical information, and provides related services to the European Commission. The GISCO tools can be used by all EU institutions, as well as external contractors. A login might be required.

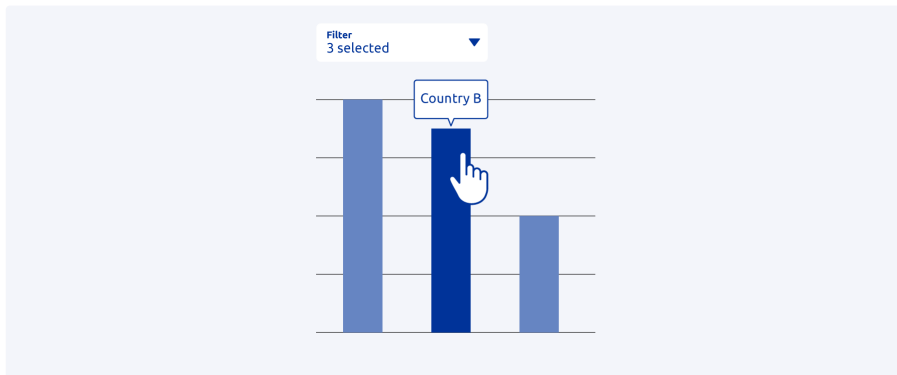
Resources

➤ [GISCO: the Geographic Information System of the Commission](#)

Contacts

➤ [GISCO team](#)

Decide which interactive functionalities to offer



Why

Many online charting tools come with integrated interactive functionalities and animations. These should not distract from the main message of the chart. Instead, they should offer the reader more information on demand and help them explore the visualisation.

How

If you are publishing online, make a conscious decision on which interactive chart functionalities you want to offer. Think about if your aim is to guide the reader through the visualisations (explanatory reading – less interactive functionalities) or if the aim is for them to explore the visualisations on their own (exploratory reading – more interactive functionalities).

Interactive functionalities, in order from less to more exploratory, include:

- **Animations:** Animations might autoplay or play when readers click a button. Used wisely, animations can support the interpretation of the visualisation (e.g., help readers see a development over time).
- **Tooltip that shows underlying values:** Tooltips help readers go into details and read the values without having to download the data. Make sure the tooltips are mobile-friendly and accessible.
- **Controls to toggle or highlight properties of the chart:** Such controls allow readers to set their own focus in the chart and are especially helpful for people who use your publication in a professional context.
- **Controls to change visual properties of the chart:** Such controls allow readers to change the chart type and/or design. This allows readers to prepare the visualisation for their own use.
- **Extended controls:** These functionalities range from simple data filters to options for selecting or adding additional data sources. This allows readers to analyse the data directly in your publication.

More exploratory functionalities like the latter two usually only make sense when you are providing data in a highly interactive format, such as a dashboard.

Resources

- [An overview of how interactivity can be used in charts, including tips and tricks](#)
- [An article about the advantages interactive charts](#)
- [Publications Office multimedia production services, including data visualisation](#)
- [Dempub: online platform for creating and managing requests for the Publications Office services](#)

Contacts

- [Publications Office Front Desk for Authors team](#)

Examples

- [Our World in Data](#)
Our World in Data offers tooltips to read the single data values. In addition, you can switch between a chart, a map, and a table view.

Make sure your interactive charts are accessible with the keyboard

Why

Not everyone can use a mouse to access content online. Therefore, it is important to ensure that charts can be navigated with the computer keyboard alone (e.g., with the 'Shift' and 'Enter' keys).

How

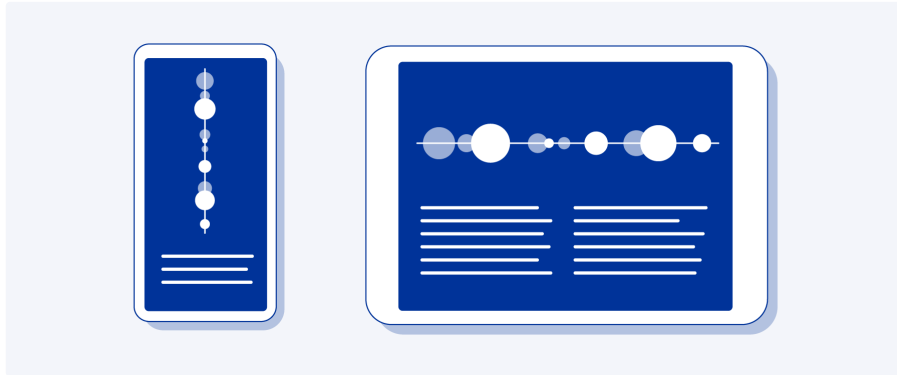
Most interactive charting tools such as Highcharts come with integrated keyboard navigation support. If you are using your own tools or implementing a new charting library, make sure to check and, if necessary, implement these features.

Resources

- [The benefits of a keyboard navigation support feature](#)
- [All about how the tool Highcharts implements accessibility](#)

- [How the tool Everviz implements keyboard navigation](#)
- [Some simple tips to follow to make your data visualisation accessible by keyboard](#)

Create visualisation designs for different screen sizes



Why

Increasingly, content is consumed on smaller screens, i.e., mobile devices. This means that online content needs to responsively adjust to the screen size the reader is using. Data visualisations are no exception: They need to be designed in a way that layout and font-sizes adapt to the width of the screen.

How

Often interactive charting tools such as Highcharts come with built-in functionalities for responsive design. If not, check with your developers and designers for which screen sizes you are optimising. If you are working with static charts, designers might create multiple versions for different platforms and screen sizes (e.g., one for the PDF publication and one for social media platforms).

Resources

- [Tips for creating responsive visualisations by data journalist Gurman Bhatia](#)
- [Techniques for data visualization on both mobile and desktop](#)
- [Publications Office multimedia production services, including data visualisation](#)
- [Dempub: online platform for creating and managing requests for the Publications Office services](#)
- [Highcharts: charting library for web and mobile](#)

Contacts

- [Publications Office Front Desk for Authors team](#)

Keep future translations in mind

Why

In contrast to many other international bodies, the European Union is a multilingual organisation. Many official languages of member states are also official EU languages. For one, this is to ensure that the general public and national courts can read and understand any applicable EU

laws. For another, translated documents ensure democratic discussion and transparency.

How

When creating a visualisation for a multilingual publication, keep in mind that titles, keys, labels, and annotations must all be translated. It is therefore important to keep any text in the visualisation short and succinct. When providing the publication to the translation service, ensure that you provide enough context to avoid that those short texts are mistranslated.

Resources

- ↗ [Multilingualism: one of the EU's founding principles](#)
- ↗ [A talk on challenges that arise when creating multi-language data visualisations](#)



Preparing visualisations for publishing

Your visualisations might be reused in studies, shown in presentation slides, or shared on social media. This section provides advice on how to prepare the visualisations so that they can be found and reused by others.

If necessary, obtain the permission to use third-party visualisations

Why

Visualisations may be protected by copyright. If you (or your contractor) are using data visualisations not owned by the EU (or your agency), it may be needed to get proper permission from the original author to use them and to figure out if and under which conditions the visualisations can be reused by others.

How

If you are not the author of the visualisation, make sure you obtain the permission to use it, and keep proof of this permission. Be mindful of the copyright rules applicable to data visualisations.

Resources

- ↗ [European Commission Reuse Guidelines \(2019\)](#)

Contacts

- ↗ [Publications Office Copyright team](#)
- ↗ [European Commission Central Intellectual Property Service](#)

See Also

- [Mention your data and data visualisations in the copyright notice](#)
- [Obtain necessary permissions and credit third-party elements in the copyright notice](#)

License your visualisation so that others can reuse it

Why

A licence specifies the conditions under which others can reuse and share your visualisations. To support people in using and distributing your data visualisations, clearly communicate a reuse licence for your visualisations.

How

Be sure to check your own institution's reuse policy, which regulates which licences can be applied. By default, for example, visualisations created by the European Commission should be licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence. This licence allows anyone to adapt and share the visualisation, even for commercial purposes. Reusers must, however, give appropriate credit and indicate if they have made any changes.

Be mindful of the copyright rules applicable to data visualisations, state the reuse licence beneath your visualisations and in the metadata of the visualisations.

Resources

- ↗ [European Commission Reuse Guidelines \(2019\)](#)
- ↗ [CC BY 4.0: a summary of the licence](#)

Contacts

- ↗ [Publications Office Copyright team](#)
- ↗ [European Commission Central Intellectual Property Service](#)

See Also

- [Mention your data and data visualisations in the copyright notice](#)
- [Obtain necessary permissions and credit third-party elements in the copyright notice](#)
- [State the author of the visualisation, the data source and the reuse licence](#)
- [Add metadata to your visualisation](#)

Add metadata to your visualisation

Why

Metadata not only ensures that visualisations are cited and attributed correctly, it also makes your charts accessible to people using screen readers and increases searchability online.

How

The following information should always be provided in the metadata: Title and subtitle, description, date, author and source, copyright status, copyright notice, keywords.

How you add metadata to your visualisations depends on which formats you are using:

- Standalone visualisation (JPEG, PNG): Images support IPTC (International Press Telecommunications Council) metadata that can

be viewed, added, or modified with several tools, for example Adobe Bridge 2022.

- Visualisations online: As metadata embedded in the standalone image files is not read out by screen readers, it is good to use HTML-tags for image metadata online.
- Visualisations in PDF publications: In a Microsoft Word manuscript you can add metadata to your visualisations by right-clicking on the image and selecting 'edit alt text'. This description remains if the manuscript is converted into a PDF (as opposed to descriptions for tables which are not preserved).

Resources

➤ [How to add alternative text to your Office document](#)

Contacts

➤ [Publications Office Multimedia team](#)

Write alt text for your visualisation

Why

An important type of metadata is alternative text, also known as 'alt text'. Alt text is a written description of the visualisation. If a reader is using a computer or a website in accessibility mode, this description will be read out by the screen reader. This allows visually impaired users to access the data visualisation through an oral representation of it.

How

Alt text is added via the visualisation's metadata. In static data visualisations, the alt text corresponds to the 'description' field in the metadata. Online, alt text is added through the alt attribute in the HTML img-tag. Charting tools often provide the option to add alt-text without the need to write any code yourself. Social media platforms, such as Twitter and Instagram, also allow users to add alt text to their images before posting them.

An easy formula to write alt text goes as follows: [Chart type] of [type of data] where [reason for including the chart]. An example would be:

'Line chart of the number of hectares burnt in Europe over the year in 2020, 2021 and 2022 where 2022 clearly has the highest rates even though the year is not over yet.'

Resources

- [Writing alt text for data visualisation](#)
- [How to write good alternative descriptions for your data visualisation](#)
- [Accessible publishing: concepts, tools, tips and tutorials](#)

Contacts

➤ [Publications Office Accessible Publishing team](#)

Export visualisations separately from the publication

Why

Your readers might want to reuse your visualisations in their own publications and in presentations or share them on social media. Therefore, it makes sense to provide the visualisations as separate files, in addition to the main publication.

How

If you want to provide a closed format that users cannot modify, export the visualisation as a PNG (the 'Portable Network Graphics' format). If you want to allow users to alter the visualisation you can additionally provide a vector-based format such as an SVG (Scalable Vector Graphics). Consider offering multiple aspect ratios, such as a 16:9 format for presentations and a 1:1 format for social media. Be sure that the exported visualisations contain metadata.

If you are working with a contractor, make sure to explicitly mention the data visualisations of your publication as a deliverable (including in which formats). Ask the contractor to prepare the data visualisations in line with the recommendations in this guide.

Contacts

➤ [Publications Office Multimedia team](#)

Examples

➤ [Our World in Data](#)

Our World in Data provides the option to download both a PNG and an SVG – and has nice little descriptions of what the user can do with those formats.

See Also

➔ [Add metadata to your visualisation](#)



Preparing data for publishing

Data needs to be carefully prepared before being published. The following recommendations guide you through open data practices which help you transform raw data into curated, high-quality and publish-ready datasets.

Improve the openness of your data

Why

When public bodies share data openly, they increase transparency and accountability, and encourage better policy-making and value creation. From a legal perspective, open data means that data can be freely accessed and that it can be used, edited, and shared by all individuals and entities without legal restrictions. From a technical perspective, open data means that files can be easily found, retrieved, downloaded, and indexed.

The EU Institutions have adopted open data and reuse policies. In the case of the European Commission, for example, documents and

accompanying data are open data by default. Furthermore, under European law, public administrations that hold 'high-value datasets' should make them available free of charge, in machine-readable formats, via an Application Programming Interface (API). 'High-value datasets' are datasets associated with important societal and economic benefits, such as geospatial or mobility data.

How

The 5-star deployment scheme for open data, suggested by Tim Berners-Lee (see 'Resources' below), can be a guiding principle. Ultimately, as a publisher of open data your goal is to enable others to use the data in as many use cases as possible, as easily as possible. To do so, it is recommended that you follow the FAIR principles: making your data findable, accessible, interoperable, and reusable. The following recommendations in this section provide you with more detailed information on how to make use of the FAIR principles.

Resources

- ↗ [What is Open? Definition and key features of openness](#)
- ↗ [Ten principles for opening up government information](#)
- ↗ [The Open Data Handbook: the why, what and how of open data](#)
- ↗ [The European Commission Open Data policy](#)
- ↗ [Exploring the origin, features and examples of high-value datasets through visualisation](#)
- ↗ [5-star deployment scheme for open data](#)
- ↗ [FAIR principles: Findable, Accessible, Interoperable, Reusable](#)
- ↗ [FAIR Data Maturity Model \(2020\): specification and guidelines, including FAIRness indicators](#)
- ↗ [data.europa academy: the learning corner for open data](#)
- ↗ [Data.europa.eu Data Quality Guidelines: recommendations for data providers, including a checklist](#)
- ↗ [Open Data Goldbook for Data Managers and Data Holders \(2018\)](#)
- ↗ [e-Learning programme on open data: for all levels of expertise](#)
- ↗ [EU Open Data: the Basics for EU Data Providers \(2016\)](#)

Contacts

- ↗ [Publications Office Open Data team](#)

If necessary, obtain the permission to use third-party data

Why

Data and datasets may be protected by intellectual property rights. If you (or your contractor) are using data not owned by the EU (or your agency), it may be needed to get proper permission from the original owner to use it and to figure out if and under which conditions the data can be reused by others.

How

If you are not the data owner, make sure you obtain the permission to use it, and keep proof of this permission. Be mindful of the intellectual property rights rules applicable to data.

Resources

- ↗ [Open Data Institute Reuser's Guide to Open Data Licensing](#)

- [European Commission Reuse Guidelines \(2019\)](#)
- [Understanding open data – legal openness: a data.europa academy webinar](#)

Contacts

- [Publications Office Copyright team](#)
- [European Commission Central Intellectual Property Service](#)

See Also

- [Mention your data and data visualisations in the copyright notice](#)
- [Obtain necessary permissions and credit third-party elements in the copyright notice](#)

License your data so that others can reuse it

Why

A licence specifies the conditions under which others can reuse and share your data. To support people in reusing your data (and in doing so help them create added-value products and services with your data), clearly communicate a reuse licence for your data.

How

Be sure to check your own institution's open data and/or reuse policy, which regulates which licences can be applied. By default, for example, data produced by the European Commission should be licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence, whereas raw data or metadata can be released under even opener provisions of the Creative Commons Universal Public Domain Dedication deed (CC0 1.0).

Even if you don't publish your data on an open data catalogue such as data.europa.eu but on an internal one (e.g., EC Data Catalogue), it still makes sense to licence it accordingly so that other people know what they can do with it.

Be mindful of the intellectual property rights rules applicable to data, and state the reuse licence in your publication's copyright notice and in the metadata of your dataset(s).

Resources

- [Open Data Institute Reuser's Guide to Open Data Licensing](#)
- [European Commission Reuse Guidelines \(2019\)](#)
- [Understanding open data – legal openness: a data.europa academy webinar](#)
- [CC BY 4.0: a summary of the licence](#)
- [CC0 1.0: public domain dedication \(no copyright\)](#)
- [Data.europa.eu licensing assistant](#)
- [Creative Commons licence chooser](#)
- [European Commission data catalogues: an overview](#)

Contacts

- [Publications Office Copyright team](#)
- [European Commission Central Intellectual Property Service](#)

Examples

- Wellbeing in Germany, The Federal Government Germany (2016)
In this publication, the licence is clearly stated and explained, both for the visualisations and for the data.

See Also

- Mention your data and data visualisations in the copyright notice
- Obtain necessary permissions and credit third-party elements in the copyright notice
- Describe your data with metadata

Protect personal information before publishing your data

Why

Personal data is any information that relates to an identified or identifiable living individual, for example a name, address, e-mail address or registration number. The protection of personal data is a fundamental right. Such data can only be processed and published if the consequences that arise from doing so are justified (principle of proportionality).

How

Data protection practices include anonymisation and pseudonymisation, as well as sharing data in closed circles, for example only with dedicated researchers. Data protection is a broad and complex topic. If you are working with any kind of personal data, we recommend contacting your Data Protection Coordinator (for Commission and Parliament) or Data Protection Officer (for the other EU institutions and bodies). Get in touch with them at an early stage in the drafting process.

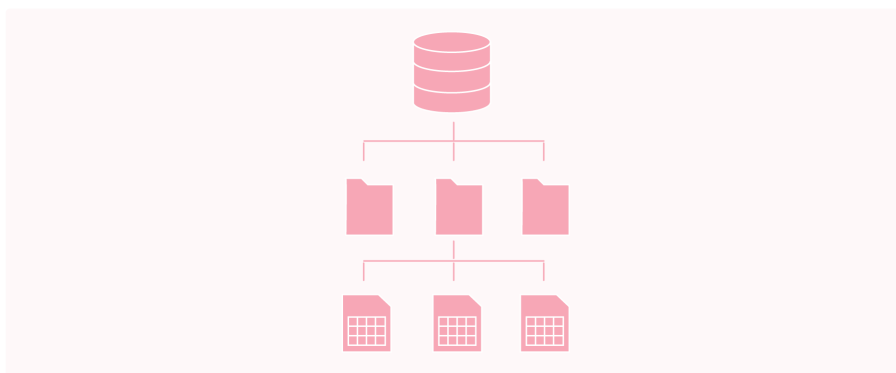
Resources

- General Data Protection Regulation
- European Commission Data Protection Guide (2019)
- Data.europa.eu Data Quality Guidelines: recommendations for data providers, including a checklist
- Learning corner for data providers on data.europa academy
- Data talk on data protection and data governance

Contacts

- European Commission Data Protection Coordinators (DPCs): a list with contact details

Decide on the scope of the data you will publish



Why

Data scope refers to the amount of aggregation the data has gone through. For example, you might have a large database of original study data, single datasets that analyse specific topics, and highly aggregated data tables that are used to create the visualisations. Providing the right amount of data in the right format allows users with different needs to reuse it efficiently.

How

Identify the different data scopes and match those scopes with the types of users you want to reach. For example, you might want to provide programmatic access to the database for researchers while also providing the data tables behind the visualisations for journalists.

Resources

- ↗ [Data.europa.eu Data Quality Guidelines: recommendations for data providers, including a checklist](#)
- ↗ [European Commission Data Advisory: corporate advisory service for data management and analytics](#)

Contacts

- ↗ [Publications Office Open Data team](#)
- ↗ [Ask the European Commission Data Advisory](#)

Examples

- ↗ [Eurostat Data Browser](#)
The Eurostat Data Browser allows users to download the full dataset as well as a custom dataset.

See Also

- [Provide access to your data via an API](#)

Describe your data with metadata

Why

Metadata describes your data with additional information, stating for example, the title, the author and the licence. These descriptions are standardised to ensure compatibility. Metadata allows machines to interpret and people to understand the characteristics and context of your data. If your data is published in a catalogue, metadata also makes it possible for others to find your data. Even if you cannot publish your data as open data, it still makes sense to describe it in a standardised format. That way interested partners know that the data exists. If your data is not open, you must describe how people can request access to it.

How

The following metadata information should be provided in order to increase the findability of data: Title, description, keywords, thematic categories, temporal information, spatial information, licence.

Often, when publishing your data in a catalogue, some metadata fields are set as mandatory, which means that they have to be filled in before the data can be published. However, it is recommended that metadata fields that are not mandatory are also completed. For the description of datasets use DCAT-AP (the Data Catalogue Vocabulary of the EU), for

thematic categorisation and classification use EU reference data such as the Eurovoc thesaurus.

Resources

- [The open data catalogue data.europa.eu: the official portal for European data](#)
- [European Commission data catalogues: an overview](#)
- [Data.europa academy training on DCAT and DCAT-AP: self-paced courses for basic to advanced users](#)
- [DCAT and DCAT-AP made easy: a short data story on data.europa.eu](#)
- [EU Vocabularies catalogue: collections to help you describe data consistently](#)
- [EuroVoc: multilingual and multidisciplinary thesaurus covering the activities of the EU](#)
- [Data.europa.eu Data Quality Guidelines: recommendations for data providers, including a checklist](#)

Contacts

- [Publications Office Open Data team](#)

Structure your data in a machine-readable format

NOT IDEAL

goods	% amt	value	
		in euro	in \$
Insurance	30,3	3	4
Transport	0	0	0
Tourism	40,5	1	1,5

BETTER

goods	percentage	value in millions	currency
Insurance	30,3	3	Euro
Transport	null	null	Euro
Tourism	40,5	1	Euro

Why

Open data is often read and processed with the help of computer programmes. Therefore, it is important to structure the data in a way that makes it easy for a computer to understand – in a logical, consistent way.

How

In structuring your data (e.g., your spreadsheet), there are some simple rules you can follow to make it machine-readable. In the case that you are working with external contractors, make sure to ask the contractor to prepare the data in line with the recommendations we give here.

- Give each column a short descriptive heading.
- Ensure you start your table in the first cell, i.e. A1.
- Use a single header row. Don't use merged cells.
- Avoid white space and additional information in the file. Don't embed charts, comments, or tables within a spreadsheet and don't use colour coding.
- Ensure that all rows have the same number of columns.
- Indicate units in an easily processable way.

- Mark null values explicitly as such.
- Check the formatting of decimal numbers and numbers in the thousands. Don't use thousand separators such as white spaces and dots.
- Make use of standardised character encoding. Don't include special (i.e., non-alphanumeric) characters within the spreadsheet, including commas.
- Encode date and time as ISO 8601 (YYYY-MM-DD hh:mm:ss). If applicable, the time zone used should be stated (derived from UTC – Coordinated Universal Time).
- Use URIs (Uniform Resource Identifiers) to identify entities.

Resources

- ↗ [Data.europa.eu Data Quality Guidelines: recommendations for data providers, including a checklist](#)
- ↗ [Learning corner for data providers on data.europa academy](#)
- ↗ [EU Open Data: the Basics for EU Data Providers \(2016\)](#)
- ↗ [e-Learning programme on open data: for all levels of expertise](#)

Contacts

- ↗ [Publications Office Open Data team](#)

Create documentation about your data

Why

Basic metadata makes your data findable and machine-readable; documentation makes it human-readable. To support people reusing and working with your data, provide documentation.

How

The documentation should include everything that users need to fully understand the data, such as methodology, time ranges, sample sizes, definitions, descriptions of the variables and the acronyms used in the dataset, and limitations. The documentation can be provided in a separate file or published on the landing page from which the data can be accessed (e.g., on the data portal).

Resources

- ↗ [Data.europa.eu Data Quality Guidelines: recommendations for data providers, including a checklist](#)

Examples

- ↗ ['14-day age-specific notification rate of new COVID-19 cases', European Centre for Disease Prevention and Control \(2021\)](#)
In this ECDC open dataset, all that users need to understand the data is documented in a separate file, which is then published along with the dataset.

Save your data in a machine-readable file format

Why

People who reuse your data might use various kinds of computer software or programming languages to do so. Therefore, it is important to provide file formats that can be read and processed, regardless of the specific software being used. These text-based file formats are often smaller and can therefore also be downloaded and handled more easily.

How

Save your data in a non-proprietary file format, such as CSV (Comma-Separated Values) or JSON (JavaScript Object Notation). You can always provide software-specific formats, such as an Excel-file, additionally for less technical users. When saving your data, deposit each table that is part of the dataset as a separate file. Give the file a name that appropriately reflects its content. When you are using the CSV format, make sure to use commas as the delimiter.

If you are working with a contractor, make sure to explicitly mention the data underlying your publication as a deliverable (including in which formats). Ask the contractor to prepare the data in line with the recommendations in this guide.

Resources

- ↗ [Data.europa.eu Data Quality Guidelines: recommendations for data providers, including a checklist](#)
- ↗ [Learning corner for data providers on data.europa academy](#)

Contacts

- ↗ [Publications Office Open Data team](#)

Examples

- ↗ ['City transport by bus by autonomous community', Instituto Nacional de Estadística \(2012\)](#)

This dataset is made available in multiple formats.

- ↗ ['Results of the Open Data Maturity assessment 2022', DG COMM \(2022\)](#)

The CSV-formatted (Comma-Separated Values) distributions of this dataset follow the format-specific recommendations provided in the Data Quality Guidelines (p. 29-37).

See Also

- [Structure your data in a machine-readable format](#)



Publishing the data and the data visualisations with your publication

Releasing your data and data visualisations as individual components makes your work more impactful. The following tips help you publish those components so that they are easy to locate and access for further reuse.

Provide your visualisations as downloads

Why

Readers might want to reuse the visualisations in your publication. Providing a way to download the visualisations separately and in the right format will ensure that they don't just screenshot them in a subpar quality. This should be done only if you hold all the rights on the visualisations and third-party material is properly licenced.

How

Provide the possibility to download your visualisations. Users might want to download all the visualisations from the publication at once. So be sure to provide both a single-file download option and the option to download a zip-file containing all visualisations. If you are publishing an online publication that provides the options for users to make changes to the visualisations (e.g., the colour or the dataset shown in the chart), make it possible for them to download the visualisation as they have changed it.

To provide such download options, you need to create and maintain the necessary hosting infrastructure.

Contacts

➤ [Publications Office Multimedia team](#)

Examples

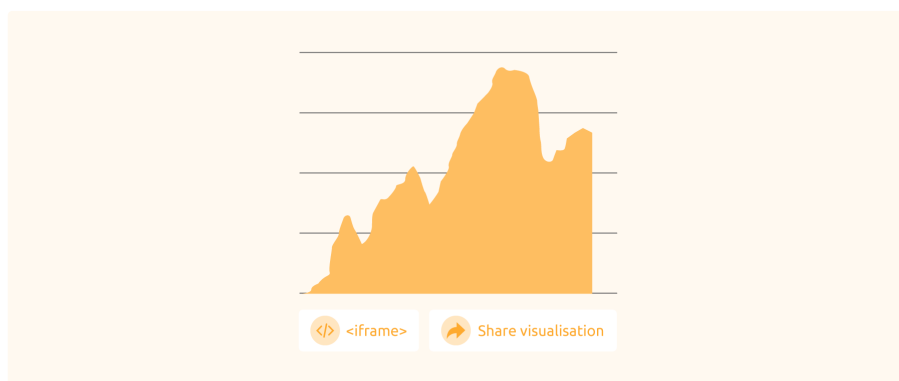
➤ [Our World in Data](#)

Our World in Data provides the option to download both a PNG and an SVG – and has nice little descriptions of what the user can do with those formats.

➤ [Going Digital Toolkit, OECD \(2019\)](#)

The toolkit offers a simple download button next to each chart to download a PNG. It also provides multiple option to share the visualisation on social media platforms.

Provide options to share your visualisation online



Why

Sharing visualisations online are a great way for people to reuse and discuss your work. Share buttons mostly allow readers to share the visualisation on social media platforms but can also give them the option to copy a link to the visualisation or send the visualisation via email.

How

You can provide share buttons no matter if you have a full online publication with interactive charts or are simply providing a PDF

publication and static visualisations to download. If you are using an online charting tool to create the visualisations, you can check if it comes with a built-in functionality to add share buttons.

Apart from social media and link sharing options, consider giving users the possibility to add your charts to their own websites by providing an embed code (a snippet of HTML code which the user can copy).

Only provide the sharing options that are relevant to your target audience, as to not overload the readers with possibilities.

Examples

➤ [Going Digital Toolkit, OECD \(2019\)](#)

The toolkit offers a simple download button next to each chart to download a PNG. It also provides multiple option to share the visualisation on social media platforms.

➤ [Regions in Europe - 2022 interactive edition, Eurostat \(2022\)](#)

This interactive edition of the publication gives users the possibility to add the charts to their own websites by providing an embed code.

Provide your data as download

Why

The most interesting and well-structured data is lost, if that data cannot be found and extracted. Therefore, providing easy and clear access to the data is crucial.

How

Provide the possibility to download your data. As the EU data catalogue data.europa.eu does not normally host the data itself but provides links to the data, the data must be hosted on your organisation's website or on an FTP (File Transfer Protocol) server. It is important to maintain those links to the data, i.e., ensure that the links are not broken if the storage structure changes.

Resources

- [Data.europa.eu Data Quality Guidelines: recommendations for data providers, including a checklist](#)
- [The open data catalogue data.europa.eu: the official portal for European data](#)

Contacts

- [Publications Office Open Data team](#)

Examples

➤ [Paying the Price of War, OECD Economic Outlook, Interim Report September 2022](#)

The digital report offers multiple download options: Download all data; Download the report data; Download the presentation data.

Provide access to your data via an API

Why

An API (Application Programming Interface) is a set of definitions and protocols that grant information users access to the data provided by you, the information provider. With an API, users can acquire your data in an automatic, systematic, and customised manner, often via an URL (Uniform Resource Locator).

How

It makes sense to consider providing an API for advanced users to access your data more easily. Especially for high-value datasets (those whose reuse is associated with important benefits for the society and economy, such as geospatial or mobility data), you are required to do so by law. When setting up your API, it is important to use correct status codes and headers, as well as paging for large amounts of data. Always provide ample documentation of the API to ensure that people can use it.

Resources

- [Directive on open data and the reuse of public sector information](#)
- [The European Commission Open Data policy](#)
- [Exploring the origin, features and examples of high-value datasets through visualisation](#)
- [Data.europa.eu Data Quality Guidelines: recommendations for data providers, including a checklist](#)

Examples

- [MyHelsinki Open API](#)
Helsinki Marketing provides access to three different databases via an API.

Publish your data in a data catalogue



Why

A data catalogue is an inventory for data. It is essentially a collection of metadata records which describe datasets. By providing tools to search this metadata, the catalogue allows users to find and access the data they need. Data catalogues such as data.europa.eu do not normally host the data itself but link to the location where the data can be accessed.

How

If your data is open data, you can catalogue it on data.europa.eu. To do so, make a request for data identifiers in Dempub. This is possible regardless of whether you are publishing the publication with the OP or not. Once the request is processed you will get a unique identifier for your data and the data will be included in the data.europa.eu catalogue.

Even if data cannot be released as open data, reach out to your Local Data Correspondent about publishing it on the internal EC data catalogue (for European Commission services) or on your institution's internal data catalogue (for other Institutions, agencies and bodies).

Resources

- ↗ [Dempub](#): online platform for creating and managing requests for the Publications Office services
- ↗ [The open data catalogue data.europa.eu](#): the official portal for European data
- ↗ [European Commission data catalogues: an overview](#)

Contacts

- ↗ [Publications Office Front Desk for Authors team](#)
- ↗ [Publications Office Open Data team](#)
- ↗ [European Commission Local Data Correspondents: role, and a list with contact details](#)

Examples

- ↗ [Study on Energy Storage, DG ENER \(2020\)](#)
This publication provides access via a permanent link to the main deliverable of the study, which is published as an open dataset on [data.europa.eu](#).
- ↗ ['Inventory of recognised producer organisations in the EU's agricultural sector', DG AGRI \(2019\)](#)
This open dataset published on [data.europa.eu](#) is ANNEX VIII to the 'Study of the best ways for producer organisations to be formed, carry out their activities and supported', and can be accessed via a permanent link directly from the publication.

**A Prototype by the
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Content

Publications Office of the European Union

Development and maintenance

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