WEBINAR

The European Drug Report: using an open data approach to improve data visualisation

data.europa academy

21 June 2024

10.00 — 11.30 CEST

Rules of the game

The webinar will be recorded and shared with you, and the material will be published in the data.europa academy

Please reserve 3 min after the workshop to help us improve by filling in our feedback form

For questions, please use the ClickMeeting chat

Introduction

Inmaculada Farfan Velasco
Data.europa academy
Publications Office of the EU

Rosemary Martin de Sousa
Head of Communication, European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)

Sonia Vicente
Digital production manager, European Drug Report, European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)

David Penny
Web manager,European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)

data europa academy

Introduction

10.05 – 10.10	Opening and introduction – *Inmaculada Farfan Velasco*
10.10 – 10.25	How an open data approach transforms publications – *Rosemary Martin de Sousa*
10.25 – 10.50	The European Drug Report 2024 and its visualisations– *Sonia Vicente, David Penny*
10.50 – 11.10	Case studies: data re-use by media and press – *Rosemary Martin de Sousa*
11.10 – 11.25	Q&A session
11.25 – 11.30	Closing remarks – *Inmaculada Farfan Velasco*

data europa academy

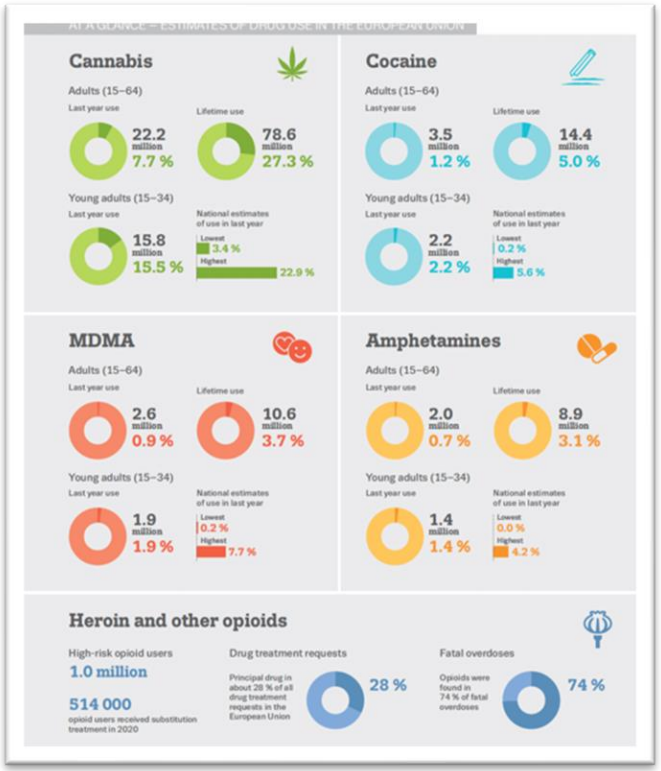
1

How an open data approach transformed our publications

The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)

- One of the EU's decentralised agencies, set up in **1993 in Lisbon**
- Specialised in **illicit drugs and drug addiction**, and their consequences
- National data provided by national focal points ('Reitox'): **EU, Norway and Türkiye**
- **Local and city-level data** by partnerships with specialised networks
- On 2 July 2024 the EMCDDA will become the **European Union Drugs Agency (EUDA)**

European Drug Report (print and PDF)



- Published every year **since 1996**
- The Agency's **flagship product**
- A concise **overview of the drug situation** in Europe
- Until 2023, conceived and designed for **print and PDF**
- **Graphic and data-rich**
- **Translated** into over 20 EU languages

European Drug Report print and PDF: a success story

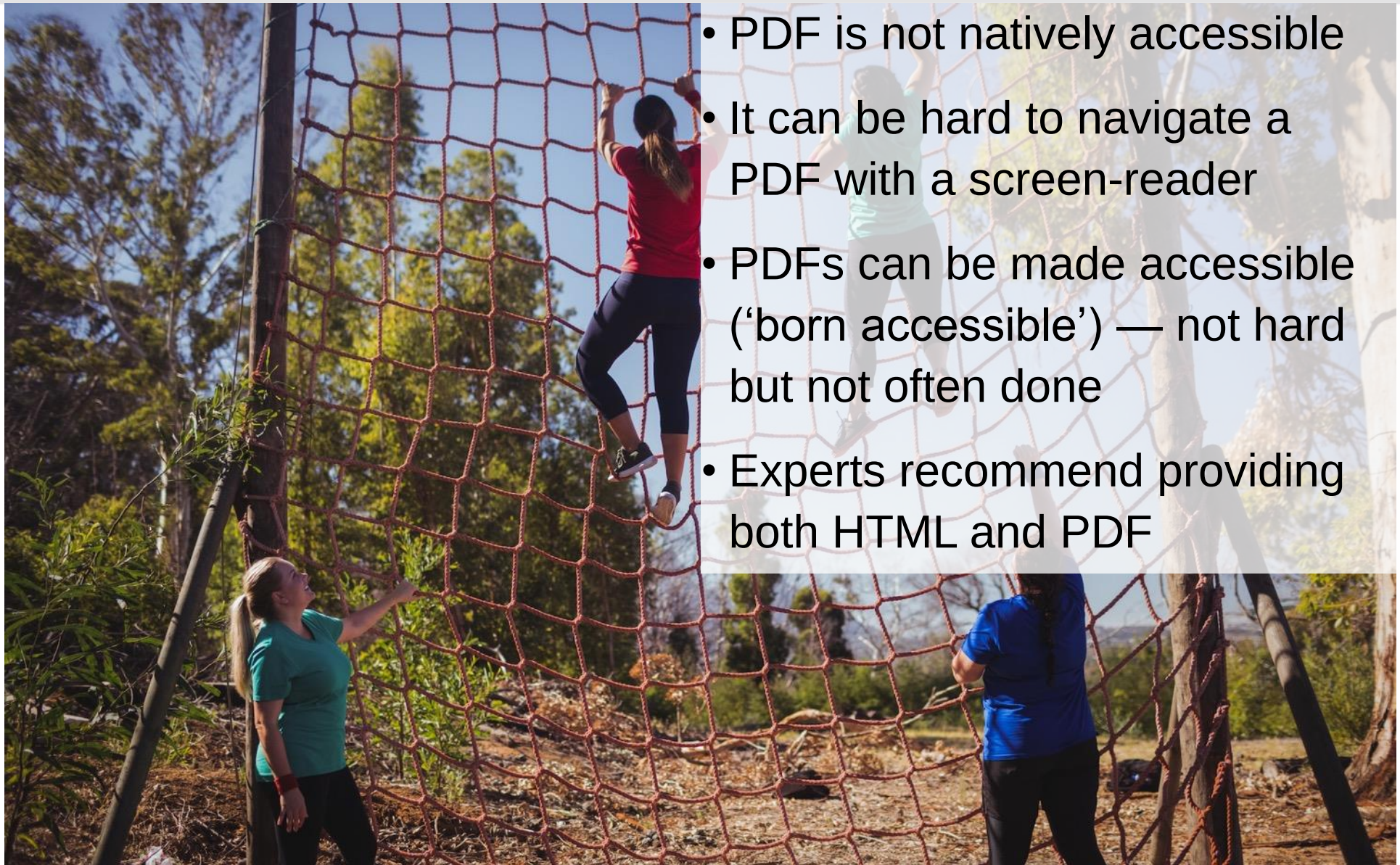
- **4 500** downloads in 5 days post launch in 2022 (1 download every 2 minutes)
- **Consistently highly rated** by our partners and main customers
- **Strong press + media** uptake
- **Established production process:** Word, Excel and InDesign
- **Tried and trusted technologies:** PDF for the web, print for the real world
- **Something visually pleasing** to hand out to visitors, leave in the lobby, etc.

You want to do what…?

PDF process: error prone and NOT open data friendly

- Data often **ceases to be machine-readable** early in the production process
- **Corrections** are made directly in graphics or proofs
- **Process is error prone** and requires vigilance and continuous checking
- **Increasingly difficult to update** as process advances
- **‘Source data**’ often needs to be reconstructed at the end

PDF: an accessibility obstacle course

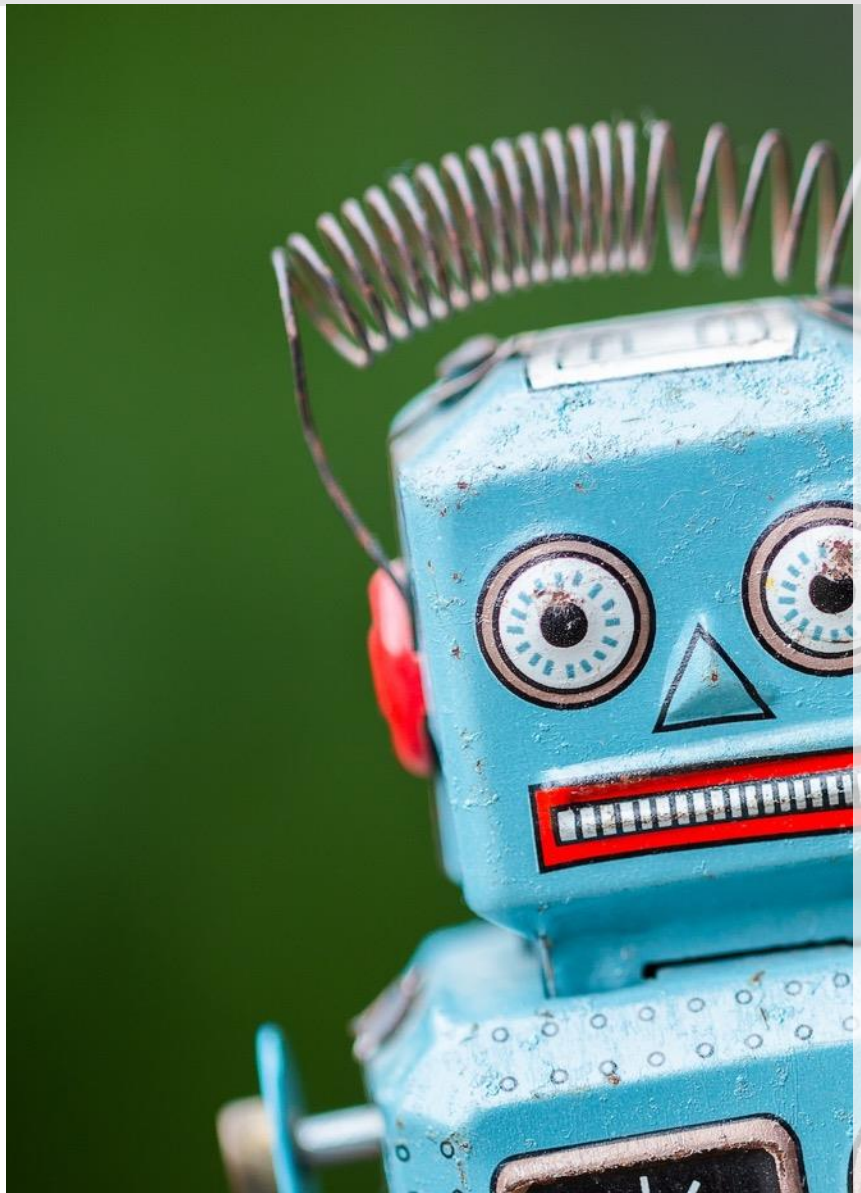


- PDF is not natively accessible
- It can be hard to navigate a PDF with a screen-reader
- PDFs can be made accessible (‘born accessible’) — not hard but not often done
- Experts recommend providing both HTML and PDF

60% of our visitors are using mobile…

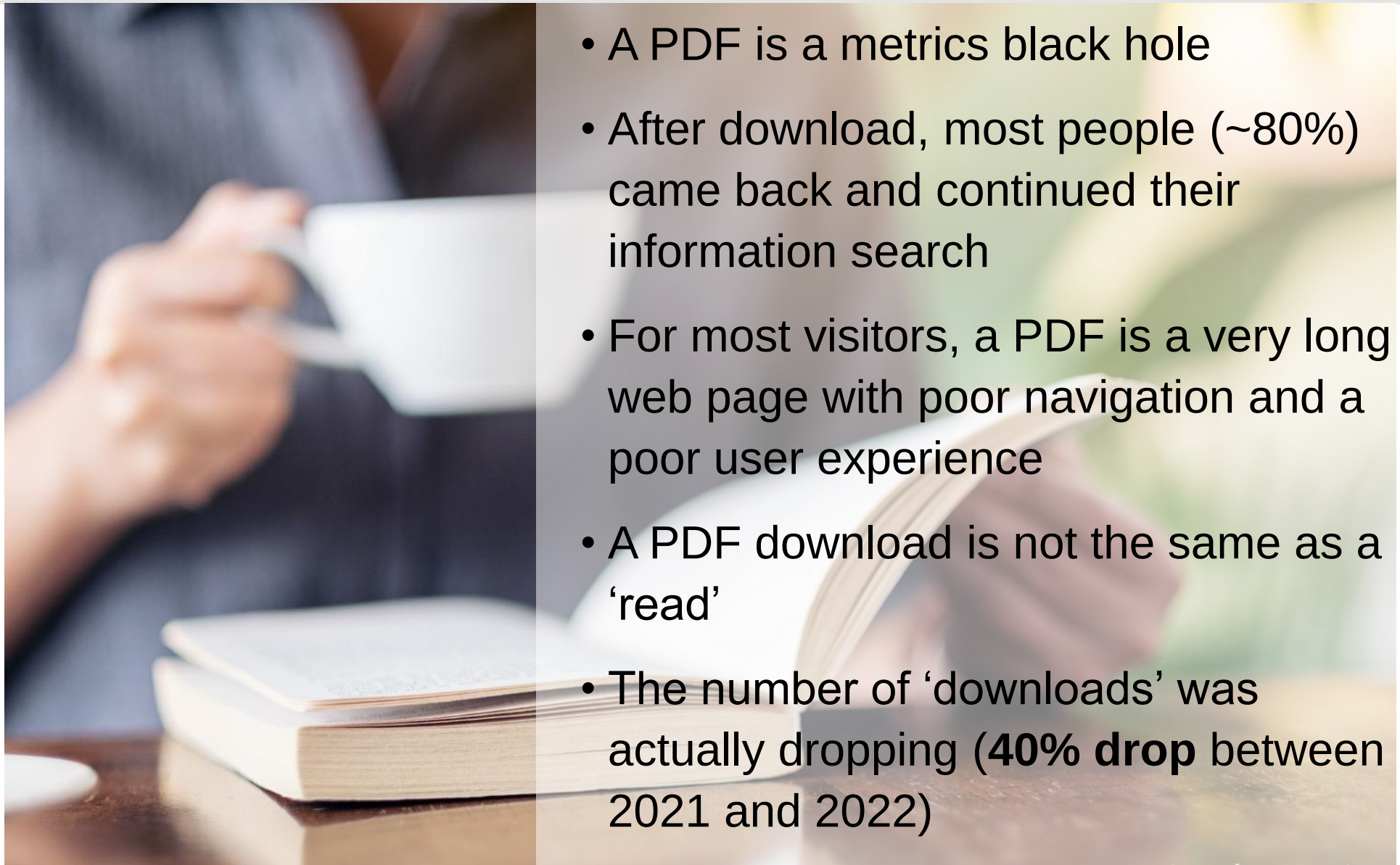
- PDF provides a very poor experience on mobile
- Not ‘responsive’
- Difficult to navigate
- Difficult to read
- Difficult to view data and charts
- Difficult to find information
- **Why are we doing this to the majority of our customers with our flagship publication?**

Search engine bots hate PDF…



- PDFs rank lower in search results than web pages
- Algorithms favour mobile-friendly and accessible information sources
- We saw very out-of-date content in HTML being served ahead of our most recent PDFs
- Search engines matter! 90% of all our visitors find our information through organic search

Downloading a report is not the same as reading a report



- A PDF is a metrics black hole
- After download, most people (~80%) came back and continued their information search
- For most visitors, a PDF is a very long web page with poor navigation and a poor user experience
- A PDF download is not the same as a ‘read’
- The number of ‘downloads’ was actually dropping (**40% drop** between 2021 and 2022)

Going ‘digital first’

- **Data to remain machine-readable** throughout the process
- **Data-driven visualisations** generated ‘on the fly’
- **It should be born accessible**
- **Facilitate translation**
- **Format-neutral:** mobile, desktop, print
- **Search engine** friendly
- **Modular**

Managing the change

- **Changing the format** — fun mainly technical and design-orientated. Agile approach and worked in sprints.
- **Changing processes** — harder: early and regular stakeholder consultation highly recommended!

2i

emcdda

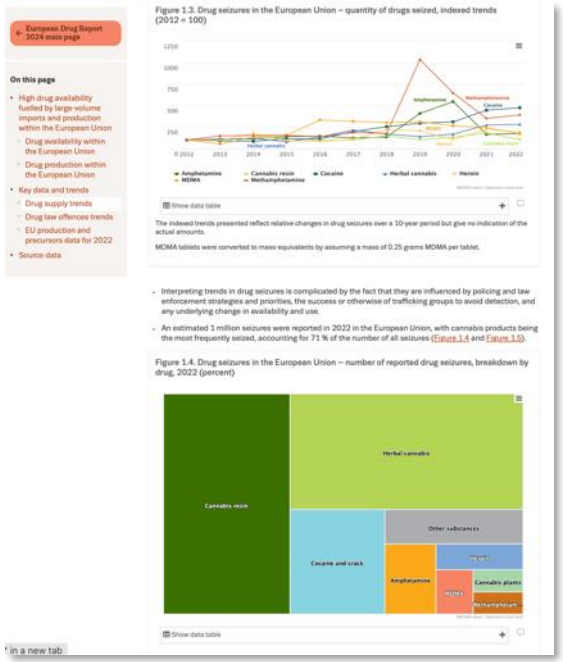
The European Drug Report 2024

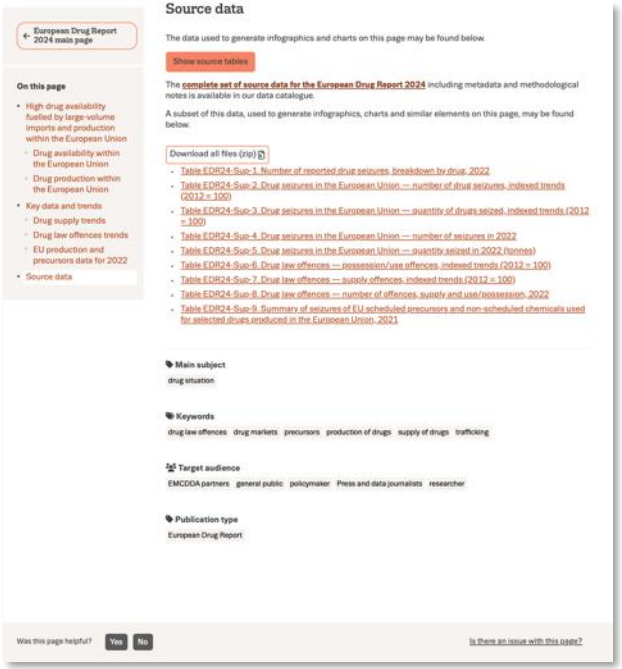
Open data in action. The structure of the report and behind the scenes.

European Drug Report 2024: structure

- Structured as thematic **modules**, that can be read in isolation
- Good for search and web metrics
- Also works as a single report (the ‘traditional report’) — important for researchers and stakeholders

Modules (‘chapters’): 14 + annexes





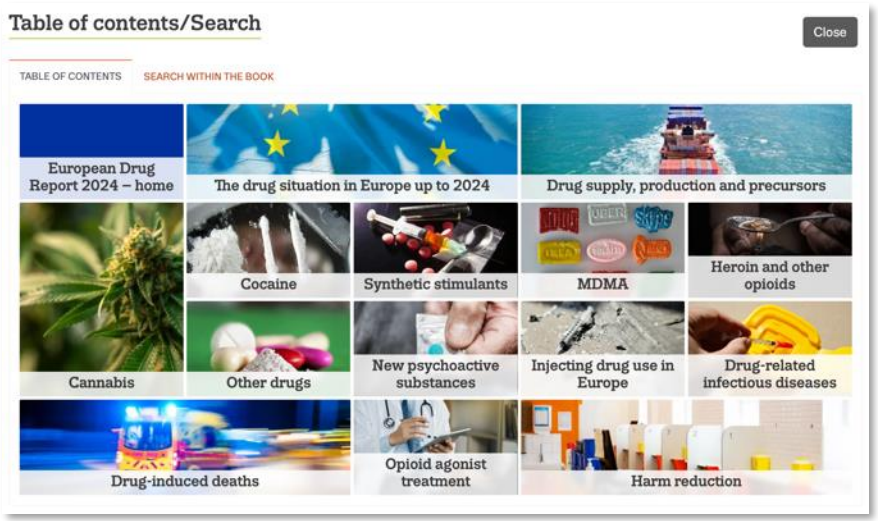
- Side menus for in-page navigation
- Data visualisations generated dynamically from source data
- Source data for graphics always available on page

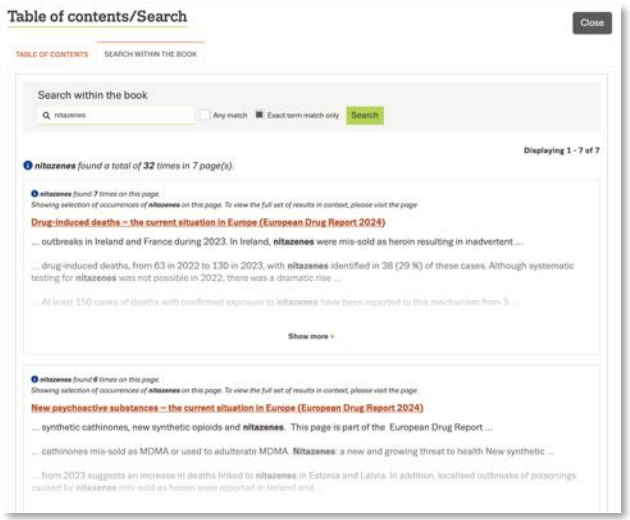
HTML *and* PDF

- A PDF can be generated ‘on the fly’ from any module
- PDF preserves structure and graphics
- Full compiled version from main page **(new for 2024)**
- Unlike traditional PDF, easy to make changes as needed

The ‘mosaic’

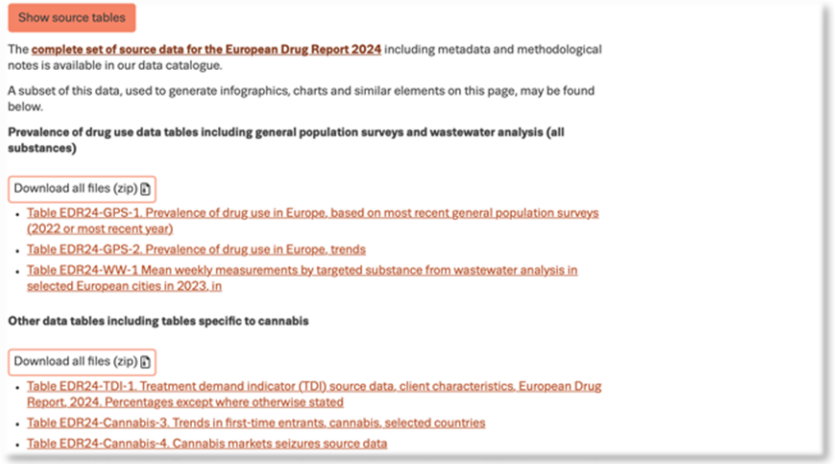
- The ‘mosaic’ is a visual motif linking the modules
- Shape, pictures and size of tiles can be easily changed in the backend
- Also serves as the main navigational tool between each module
- Incorporates a powerful tool to search within entire report **(new for 2024)**

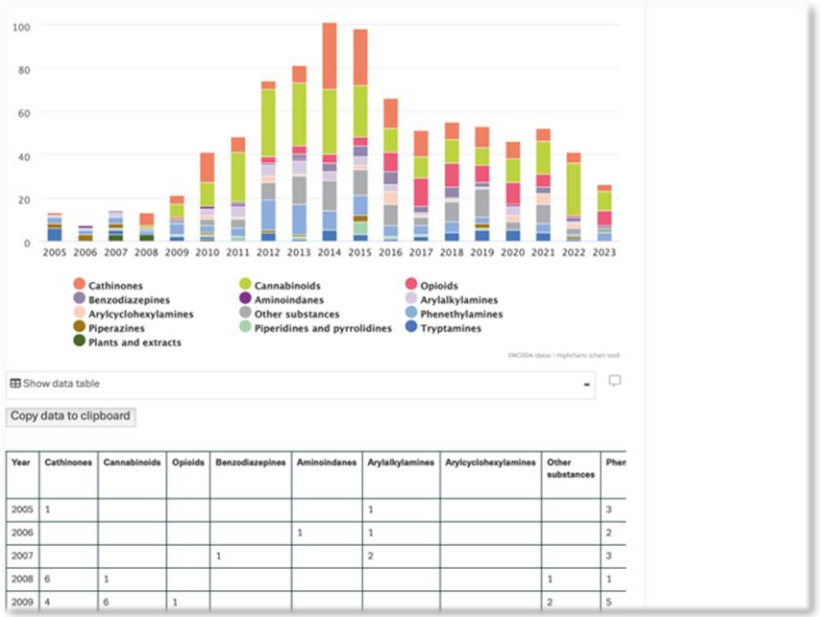




Making it easier to find and re-use the data

- Clear re-use license (CC-BY-4.0)
- All modules contain source data for the page
- The full data set is also contained in our Data Catalogue
- All data is now in CSV format **(new for 2024)**
- CSV bulk downloads **(new for 2024)**
- Data tables can be shown with copy-paste under each graphic **(new for 2024)**





Improving accessibility for data visualisations

- Static images (e.g. photos) are assigned with ‘alt’ text
- Dynamic data visualisations are embedded with tags and *role=“img”* and *alt* attributes
- Alt text is dual-purposed to provide a description beneath each data visualisation **(new for 2024)**
- Text versions of complex graphics are provided

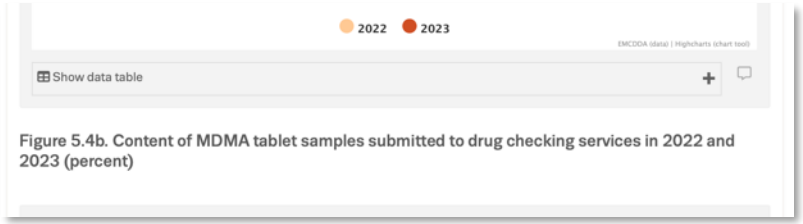
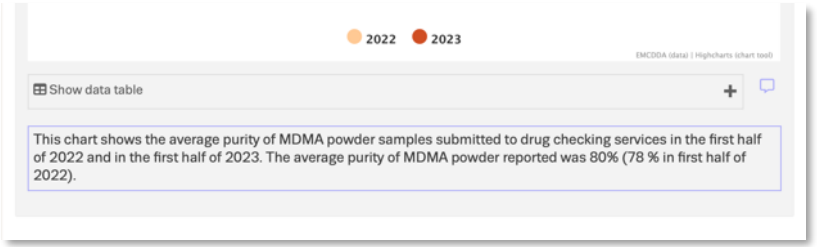
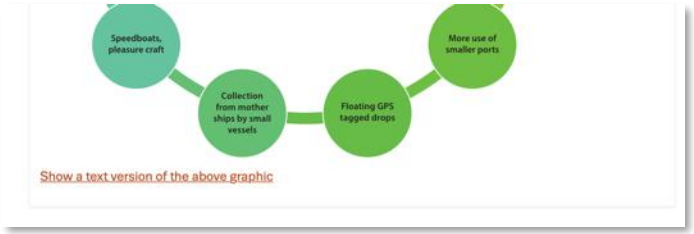
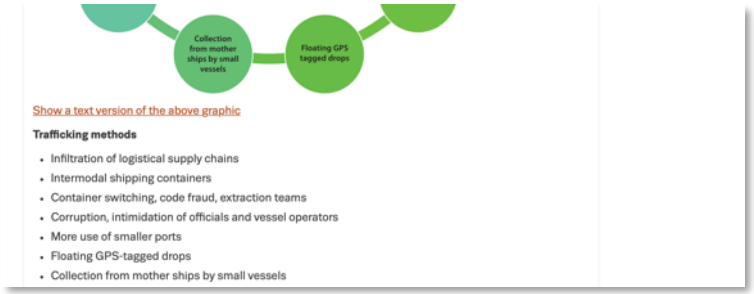


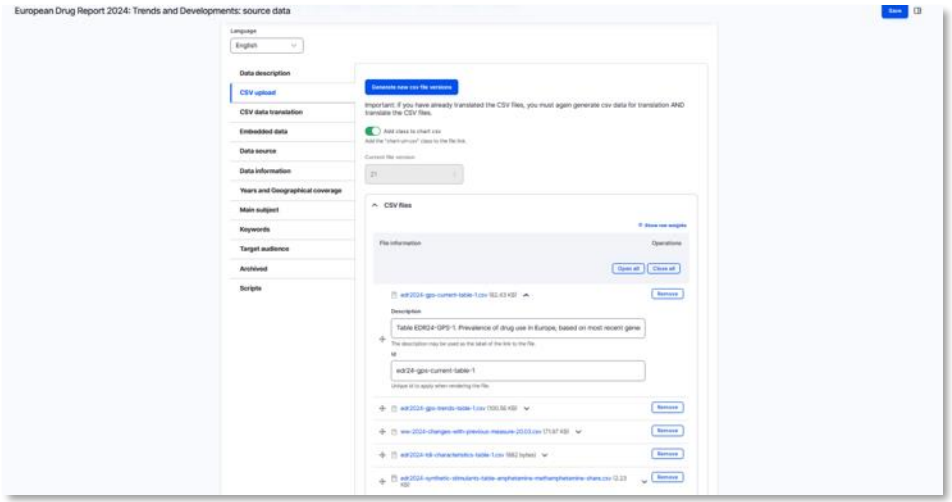
Figure 5.4b. Content of MDMA tablet samples submitted to drug checking services in 2022 and 2023 (percent)

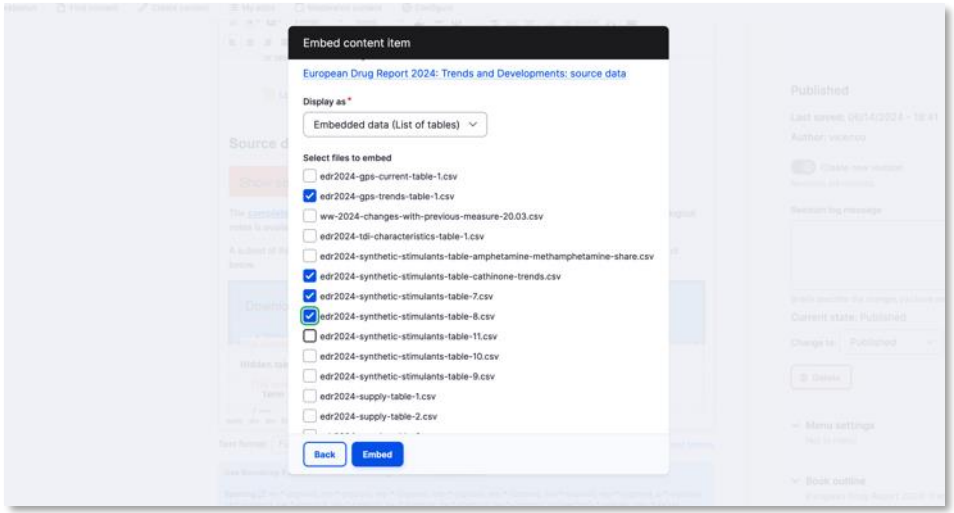






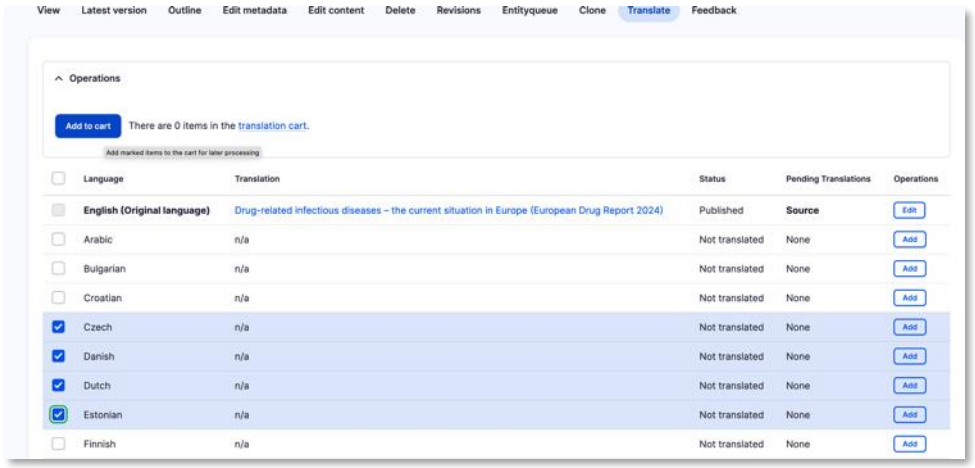
Backend: managing data





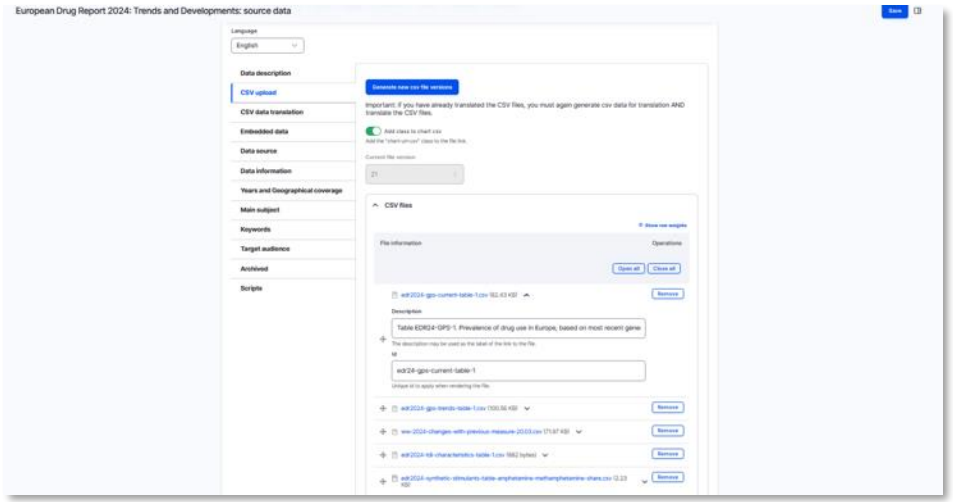
- Data is provided by data management team (110 CSV files)
- Custom-made Drupal data node assigns metadata to each file, auto-generates list and zip archive
- Easy ‘drag and drop’ updates
- Single source: data is embedded on pages
- Versioning (new update = new URI)

Translating content



- Use CdT (EU Translation Centre) module in Drupal
- Easy ‘shopping cart’ process to select and submit translations
- Translated items are sent back directly to Drupal to be published on website

Translating data and visualisations



- Translated data is needed for data visualisations
- Custom-code extracts terms and reduces size of translation
- A ‘constraints’ feature allows us to exclude columns
- Numerical data is not sent
- Data tables reconstructed as translated CSV files

2ii

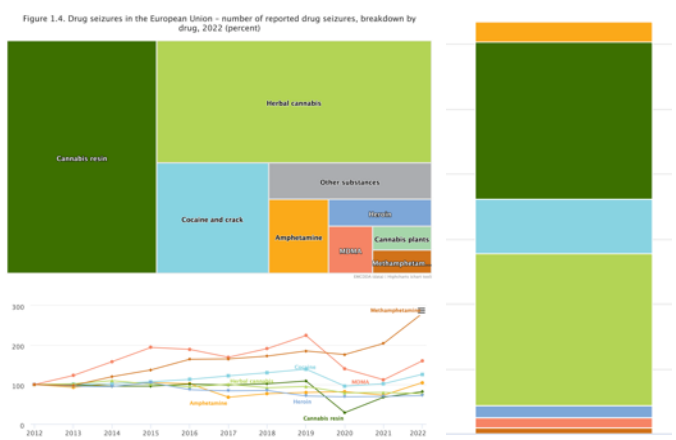
emcdda

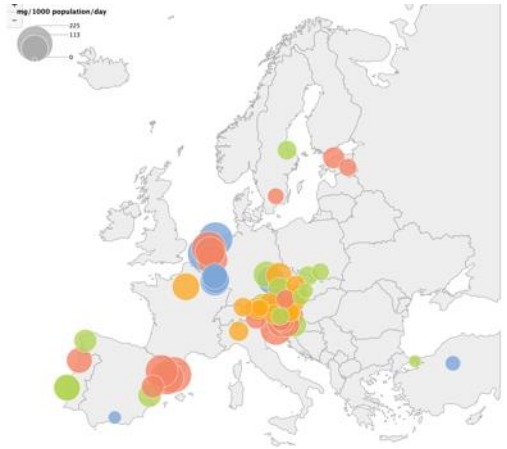
Data visualisations in the European Drug Report

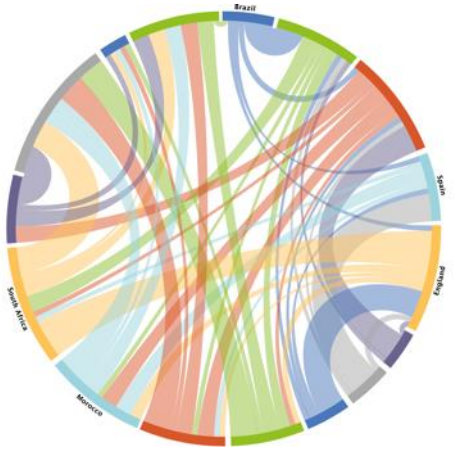
Ensuring that the graphic-rich quality of the original printed version was maintained but with open data to the fore.

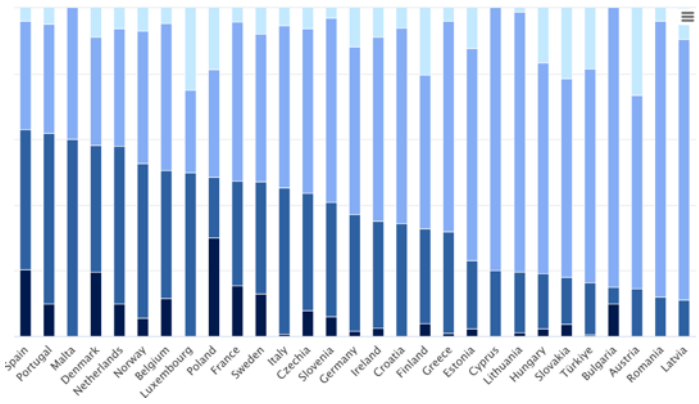
Dynamic data visualisation library

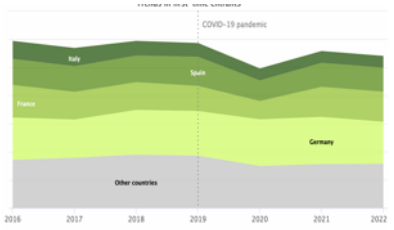
- Generate directly from data
- Easy to update
- Runs on browser (not server solution)
- ‘No code’ (uses data attributes in HTML)

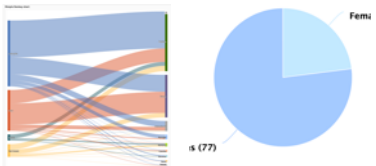


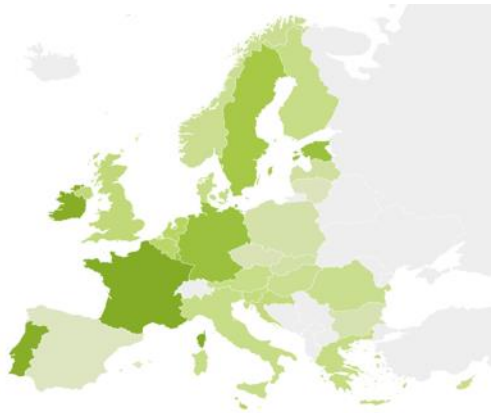




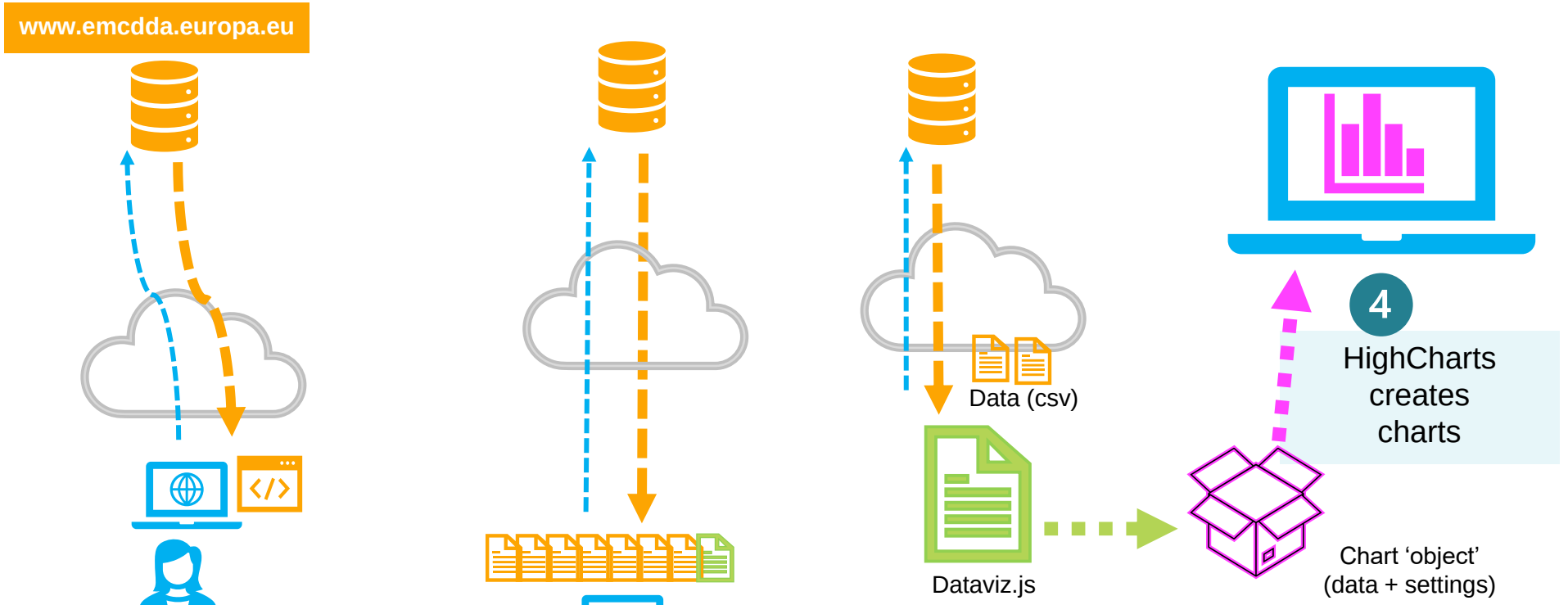








Data visualisation library



1 User requests web page. Web server returns html page

2 Browser downloads all needed files including data viz library

3 Visualisation library inspects web page for '**chart parameters**' downloading data and creating a JS object which can be understood by HighCharts (or other charting library)

4

Chart parameters: example 1

- Chart parameters are standard HTML embedded on web pages
- Based on **data-*** attribute which can be used to embed custom data (instructions to build data visualisations in our case)

```
<div role="img" class="chart-parameters chart" data-chart-table="edr24-table-1" data-chart-type="column" data-chart-table-transform-keep-columns="1,2"> </div>
```

Country	Prevalence (%)	Survey year	Substance	Recall period	Age	Sample size	Males (%)	Females (%)
Austria	11.1	2020	Cannabis	Last year	Young adults (15-34)	1712	10.7	11.4
Belgium	13.6	2018	Cannabis	Last year	Young adults (15-34)	772	19.5	7.8
Bulgaria	5.9	2020	Cannabis	Last year	Young adults (15-34)	1401	5.7	6.1
Croatia	20.3	2019	Cannabis	Last year	Young adults (15-34)	1967	26.8	13.4
Cyprus	10.6	2022	Cannabis	Last year	Young adults (15-34)	1540	13.6	7.4
Czechia	22.9	2020	Cannabis	Last year	Young adults (15-34)	927	31.9	13.3
Denmark	12.5						15.8	9.3

edr24-table-1

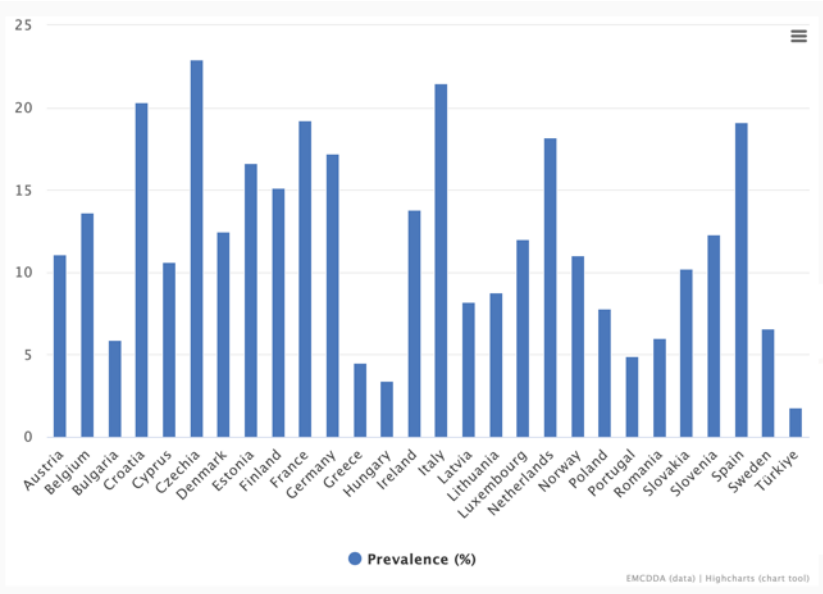
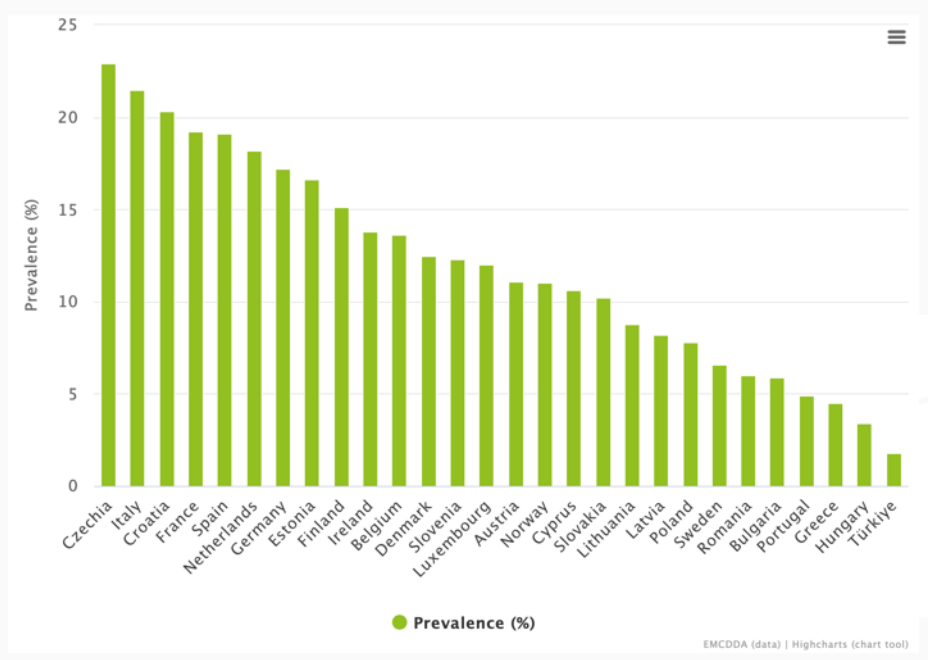


Chart parameters: example 2

- Colours can be changed (scheme or choice of colour within scheme)
- Data can be sorted by column, ascending or descending

```
<div role="img" class="chart-parameters chart" data-chart-table=”edr24-table-1" data-chart-type="column" data-data-chart table-transform-keep-columns="1,2" data-chart-table-col-pre-sort="2,dsc” data-chart-colour="sequential-emcdda-green-hc 9" div>
```

Country	Prevalence (%)	Survey year	Substance	Recall period	Age	Sample size	Males (%)	Females (%)
Austria	11.1	2020	Cannabis	Last year	Young adults (15-34)	1712	10.7	11.4
Belgium	13.6	2018	Cannabis	Last year	Young adults (15-34)	772	19.5	7.8
Bulgaria	5.9	2020	Cannabis	Last year	Young adults (15-34)	1401	5.7	6.1
Croatia	20.3	2019	Cannabis	Last year	Young adults (15-34)	1967	26.8	13.4
Cyprus	10.6	2022	Cannabis	Last year	Young adults (15-34)	1540	13.6	7.4
Czechia	22.9	2020	Cannabis	Last year	Young adults (15-34)	927	31.9	13.3
Denmark	12.5	2023	Cannabis	Last year	Young adults (15-34)	1872	15.8	9.3



edr24-table-1

Chart parameters: example 3

- Chart types can be easily updated
- Target columns for value and category data can be changed through API

```
<div role="img" class="chart-parameters chart" data-chart-table="edr24-table-1" data-chart-type="mirrorBar" data-chart-table-transform-keep-columns="1,8,9" data-chart-table-col-pre-sort="9,asc" data-chart-colour-order="2,5" ></div>
```

Country	Prevalence (%)	Survey year	Substance	Recall period	Age	Sample size	Males (%)	Females (%)
Austria	11.1	2020	Cannabis	Last year	Young adults (15-34)	1712	10.7	11.4
Belgium	13.6	2018	Cannabis	Last year	Young adults (15-34)	772	19.5	7.8
Bulgaria	5.9	2020	Cannabis	Last year	Young adults (15-34)	1401	5.7	6.1
Croatia	20.3	2019	Cannabis	Last year	Young adults (15-34)	1967	26.8	13.4
Cyprus	10.6	2022	Cannabis	Last year	Young adults (15-34)	1540	13.6	7.4
Czechia	22.9	2020	Cannabis	Last year	Young adults (15-34)	927	31.9	13.3
Denmark	12.5	2023	Cannabis	Last year	Young adults (15-34)	1872	15.8	9.3

edr24-table-1

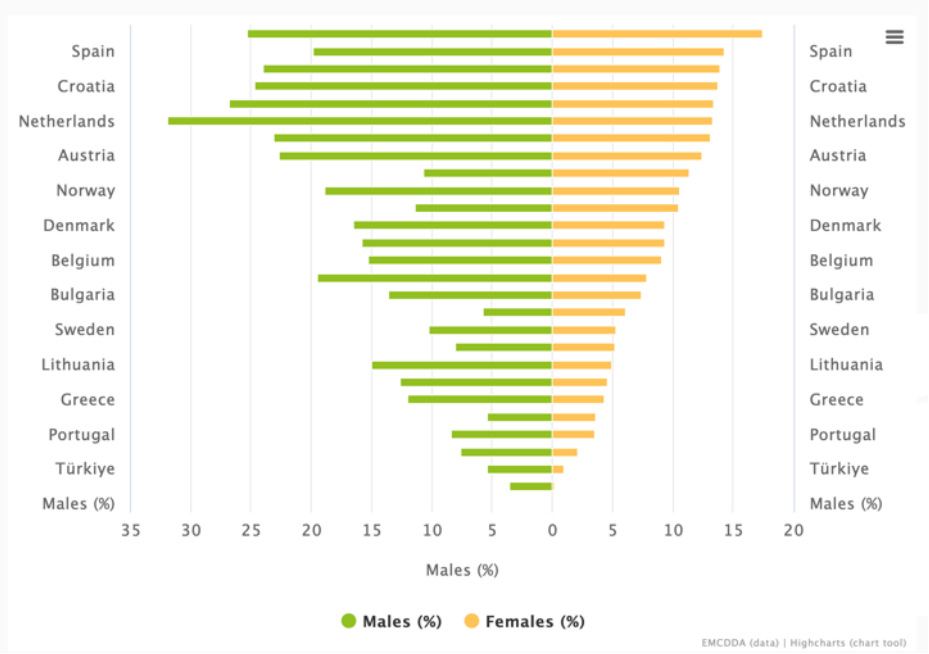


Chart parameters: example 4

- Text can be added directly in attributes but for translation purposes this is actually done with translation lookup tables (not used here) as HTML data attributes are not translated

```
<div role="img" class="chart-parameters chart" data-chart-table=”edr24-table-1" data-chart-type=”choroplethQuantitative" data-chart-table-transform-keep-columns="1,8" data-chart-colour="sequential-emcdda-green-hc-9" data-chart-legend-text-column="Percentage (%)" ></div>
```

Country	Prevalence (%)	Survey year	Substance	Recall period	Age	Sample size	Males (%)	Females (%)
Austria	11.1	2020	Cannabis	Last year	Young adults (15-34)	1712	10.7	11.4
Belgium	13.6	2018	Cannabis	Last year	Young adults (15-34)	772	19.5	7.8
Bulgaria	5.9	2020	Cannabis	Last year	Young adults (15-34)	1401	5.7	6.1
Croatia	20.3	2019	Cannabis	Last year	Young adults (15-34)	1967	26.8	13.4
Cyprus	10.6	2022	Cannabis	Last year	Young adults (15-34)	1540	13.6	7.4
Czechia	22.9	2020	Cannabis	Last year	Young adults (15-34)	927	31.9	13.3
Denmark	12.5	2023	Cannabis	Last year	Young adults (15-34)	1872	15.8	9.3

edr24-table-1

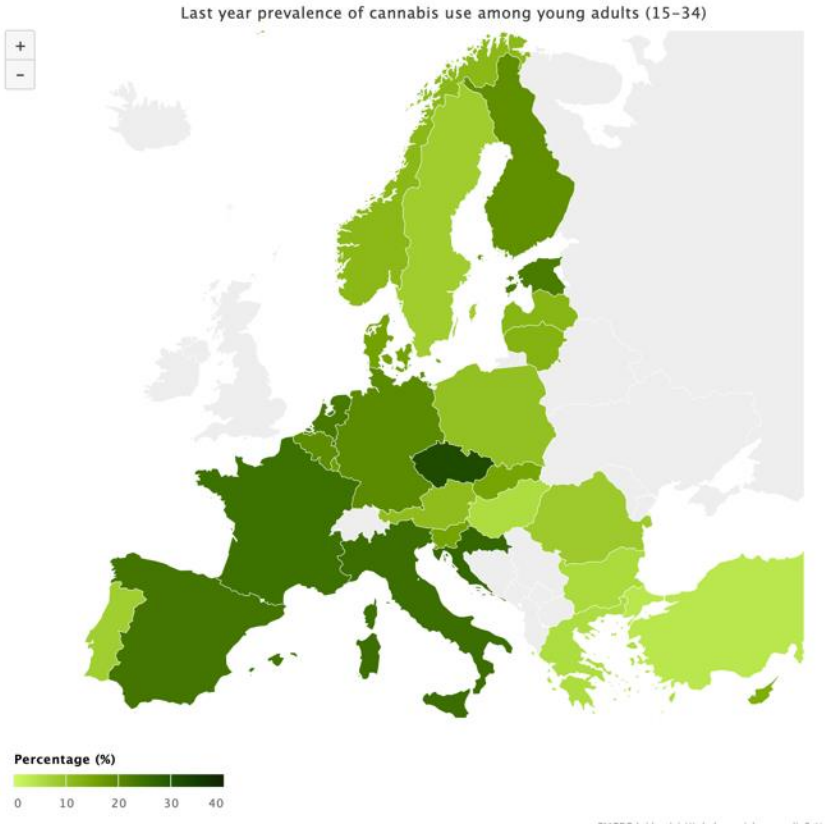


Chart parameters: example 5

- Geocoding can be done with country codes, names or lat,lon coordinates
- Labels can be customised, and set to different values
- Interactive tooltips can be configured to show specific columns

```
<div role="img" class="chart-parameters
chart" data-chart-table="edr24-table-1"
data-chart-type="countriesBubbleMap"
data-chart-header-keys="4=z" data-chart-
colour="sequential-emcdda-blue-hc-9"
data-chart-labelsize="7pt" data-chart-
tooltip-keys="1,3,4,7,8,9"></div>
```

Country	Prevalence (%)	Survey year	Substance	Recall period	Age	Sample size	Males (%)	Females (%)
Austria	11.1	2020	Cannabis	Last year	Young adults (15-34)	1712	10.7	11.4
Belgium	13.6	2018	Cannabis	Last year	Young adults (15-34)	772	19.5	7.8
Bulgaria	5.9	2020	Cannabis	Last year	Young adults (15-34)	1401	5.7	6.1
Croatia	20.3	2019	Cannabis	Last year	Young adults (15-34)	1967	26.8	13.4
Cyprus	10.6	2022	Cannabis	Last year	Young adults (15-34)	1540	13.6	7.4
Czechia	22.9	2020	Cannabis	Last year	Young adults (15-34)	927	31.9	13.3
Denmark	12.5	2023	Cannabis	Last year	Young adults (15-34)	1872	15.8	9.3

edr24-table-1

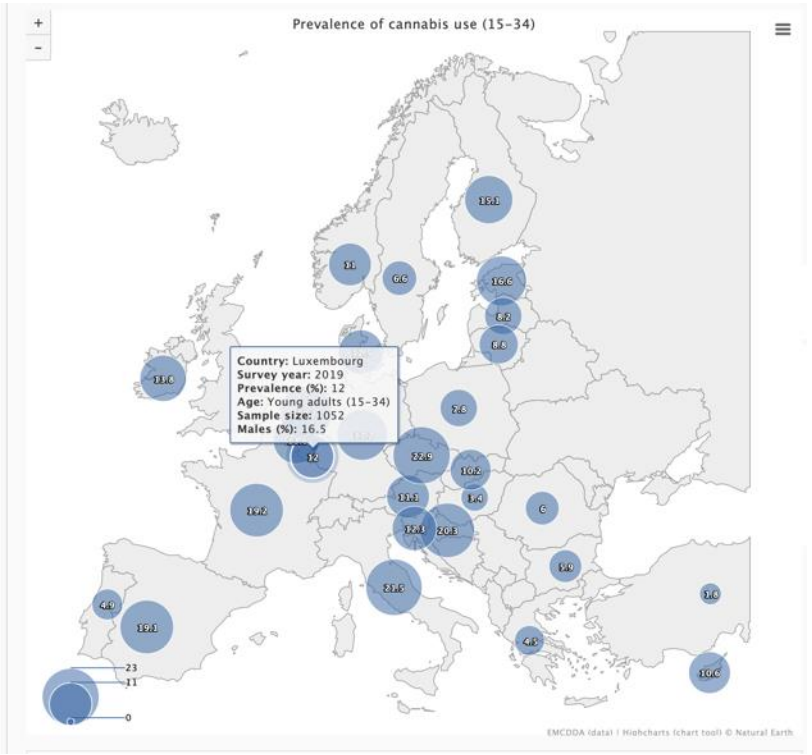


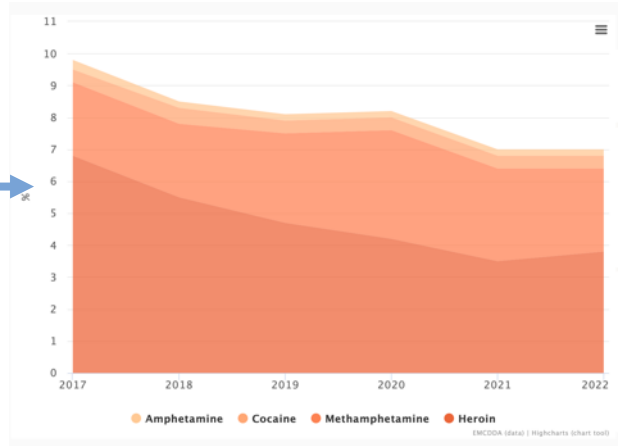
Chart parameters: example 6

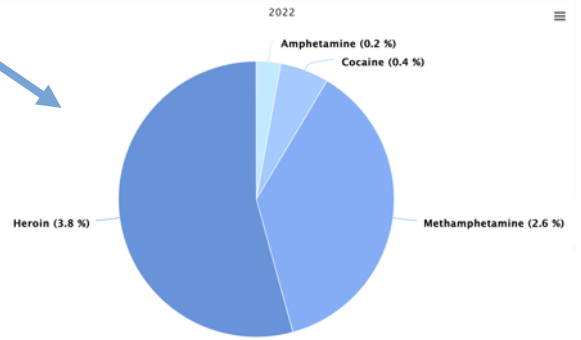
- Data table can be transformed, sorted, filtered, mixed with other tables, etc.
- Non-destructive: same data table can be used for any number of charts

```
<div role="img" class="chart-parameters chart"
data-chart-table="edr24-table-2" data-chart-
type= "stackedArea" data-chart-
colour="sequential-emcdda-red-hc-9" data-
chart-y-title="%" ></div>
```

```
<div role="img" class="chart-parameters chart"
data-chart-table="edr24-table-2" data-chart-type=
"pie" data-chart-colour="sequential-emcdda-blue-
hc-9" data-chart-virtual-column="*col1* (*col7*
%)|combine-columns|*" ></div>
```

Substance	2017	2018	2019	2020	2021	2022
Amphetamine	0.3	0.2	0.2	0.2	0.2	0.2
Cocaine	0.4	0.5	0.4	0.4	0.4	0.4
Methamphetamine	2.3	2.3	2.8	3.4	2.9	2.6
Heroin	6.8	5.5	4.7	4.2	3.5	3.8



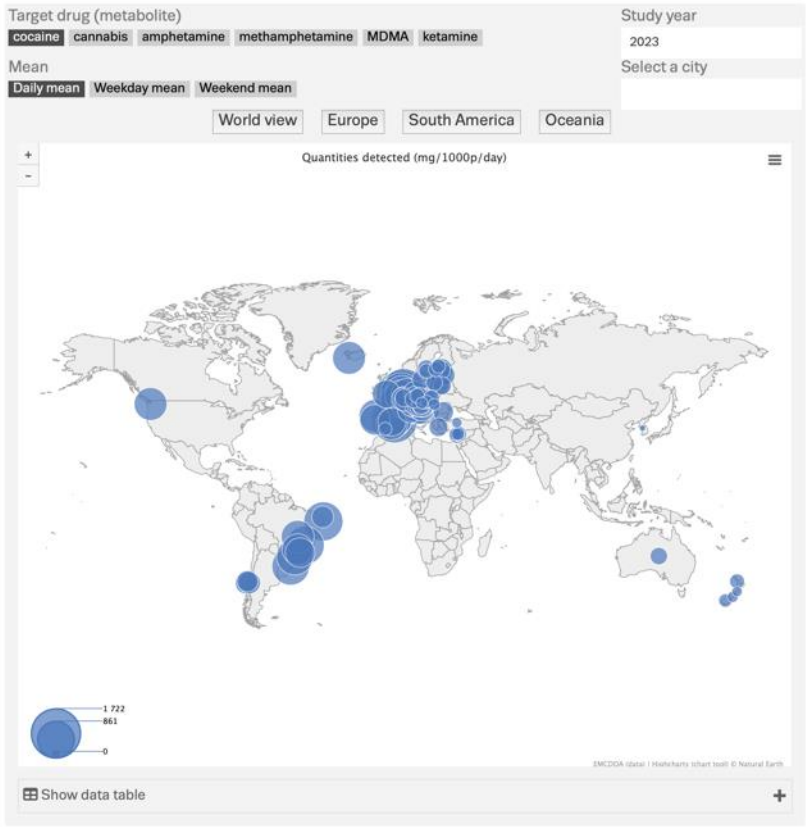


edr24-table-2

Chart parameters: example 7

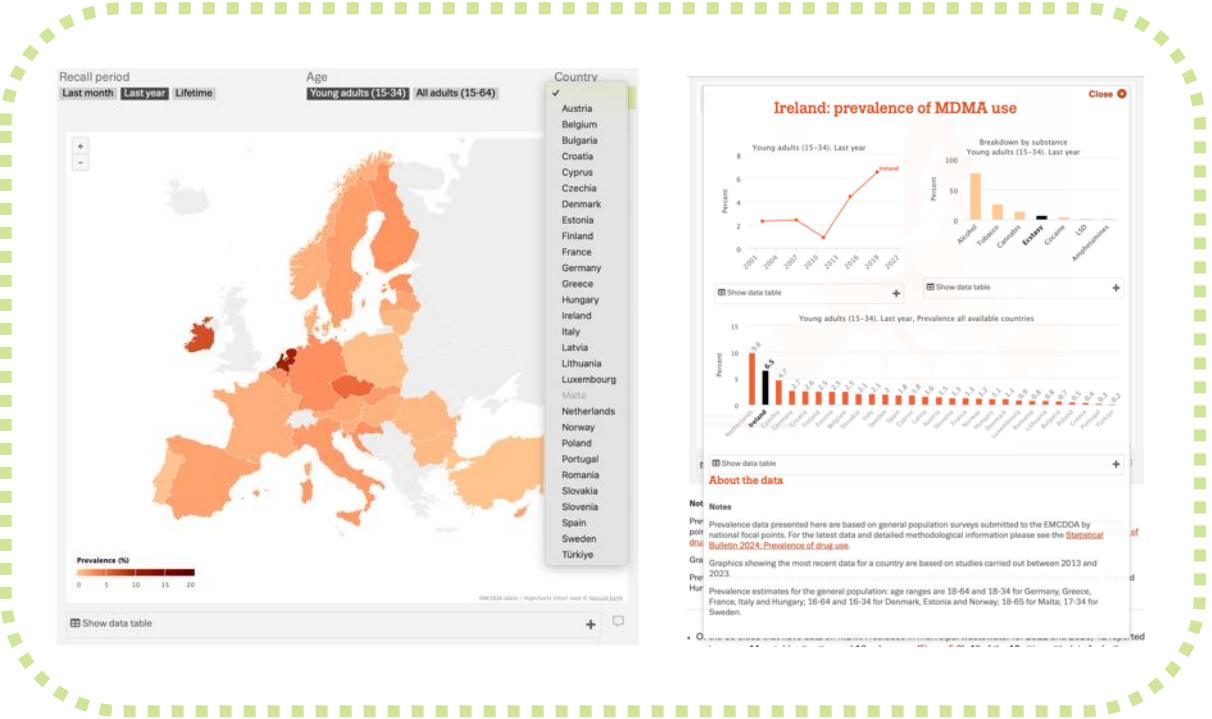
- Using the same principles, more complex visualisations can be built

```
 <div class="data-explorer chart-parameters" data-chart-explorer-chart-attributes="data-chart-type==bubbleMap;data-chart-label-enabled==false;data-chart-colour==emcdda-mix;data-chart-colour-order==*filters[1];data-chart-header-keys==16=lat,17=lon,20=id,*filters[4]=z;data-chart-secondary-chart-trigger==click;data-chart-secondary-chart-parameter==col20,col4;data-chart-in-data-explorer==yes;data-chart-fixed-upper-value==*filters[1];data-chart-bubble-opacity==0.7;data-chart-tooltip-keys==1,2,5,4,13,14,15;data-chart-embedded-title==_t[12];data-chart-map==World;data-chart-map-set-view=4426,7260,-3.105823743513199" data-chart-explorer-filters="type=row,style=buttons,col=2,label=_t[1],valueType=text,manualSortTable=filter-sort:2,fixedUpperValue=3000|300|1000|1000|400|50,colour=1|2|3|4|5|6|;type=row,style=dropdown,col=1,label=_t[3],valueType=number,sort=dsc;type=row,paramFilter=1,style=dropdown,col=20,valueTupe=text,sort=asc,label=_t[5],selected=-1;type=column,style=buttons,col=13|14|15,valueType=text,sort=asc,label=_t[2],select=main" data-chart-explorer-layout="<filters><row><col-9>f-1</col><col-3>f-2</col></row><row><col-9>f-4</col><col-3>f-3</col></row></filters><row><col-3></col><col-9><div id='explorer1-map-zoom'></div></col></row><sc><h2 class='align-center'>title=*col5*, *col18* (*col1*)</h2><row><col-6>sc-1</col><col-6>sc-2</col></row><row><col-7>sc-3</col><col-5>sc-4</col></row>"  data-chart-table="wastewater24-AllData" data-chart-translation-table="ww24-translation-table" data-chart-type="data-explorer" data-chart-virtual-column="5,6,4,3|table-lookup|*|ww2024-siteInfoTableV1|3|1;*col4*: *col5*|combine-columns|*" id="ww-data-explorer" style="min-height:800px"></div>
```

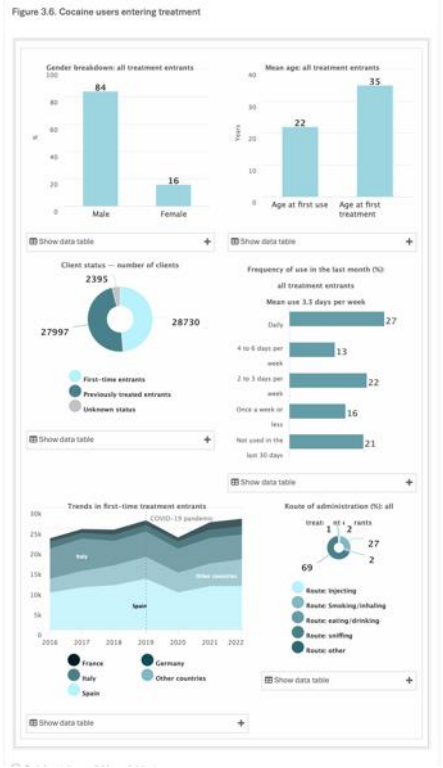


Data explorers and dashboards

- Data explorers: allow users to explore larger data sets (always dynamic) using filters and drill-downs
- Dashboard: simpler view of multiple charts within a pre-defined frame (fixed or dynamic)
- Both fully customisable (and support templating to facilitate creation)



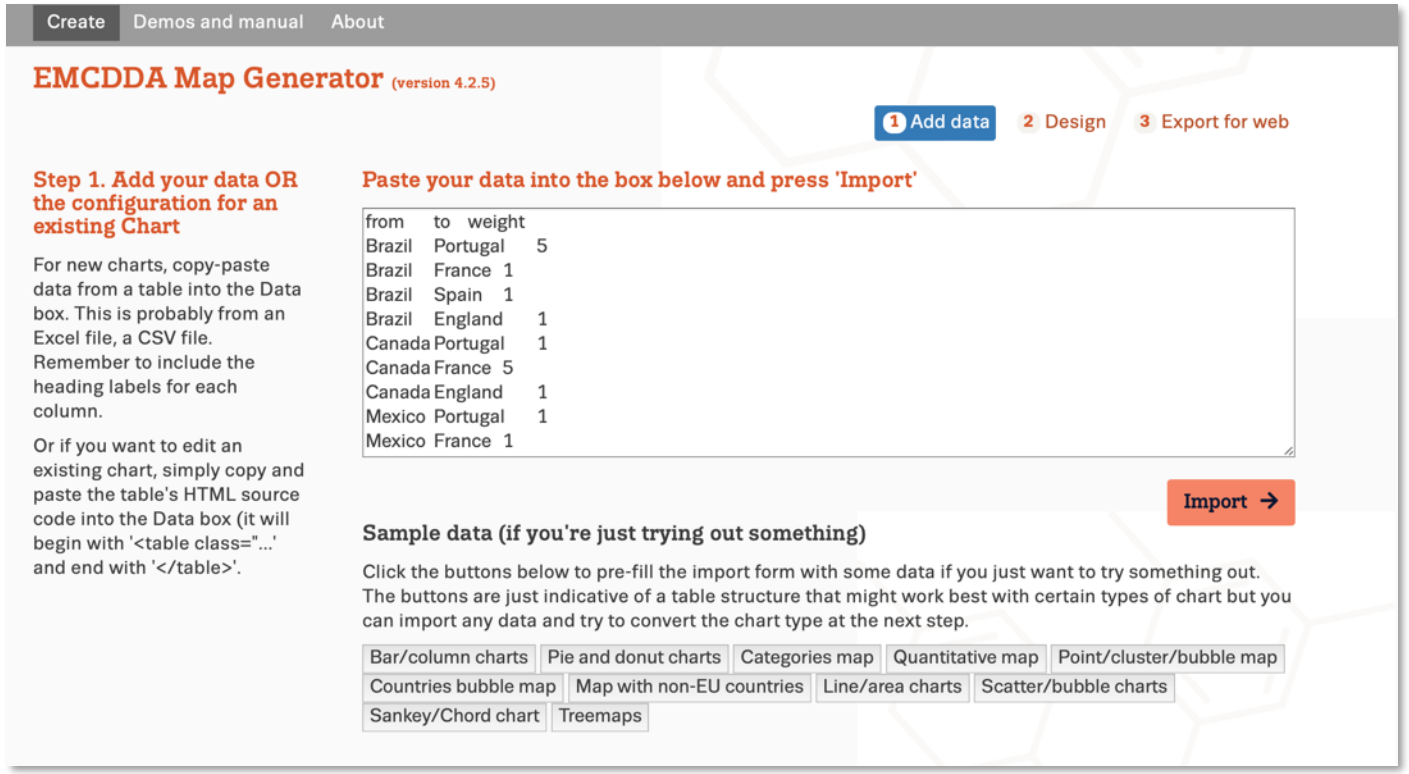
Data explorer: main graphics and filters (l) and drill-down (r)



Dashboard

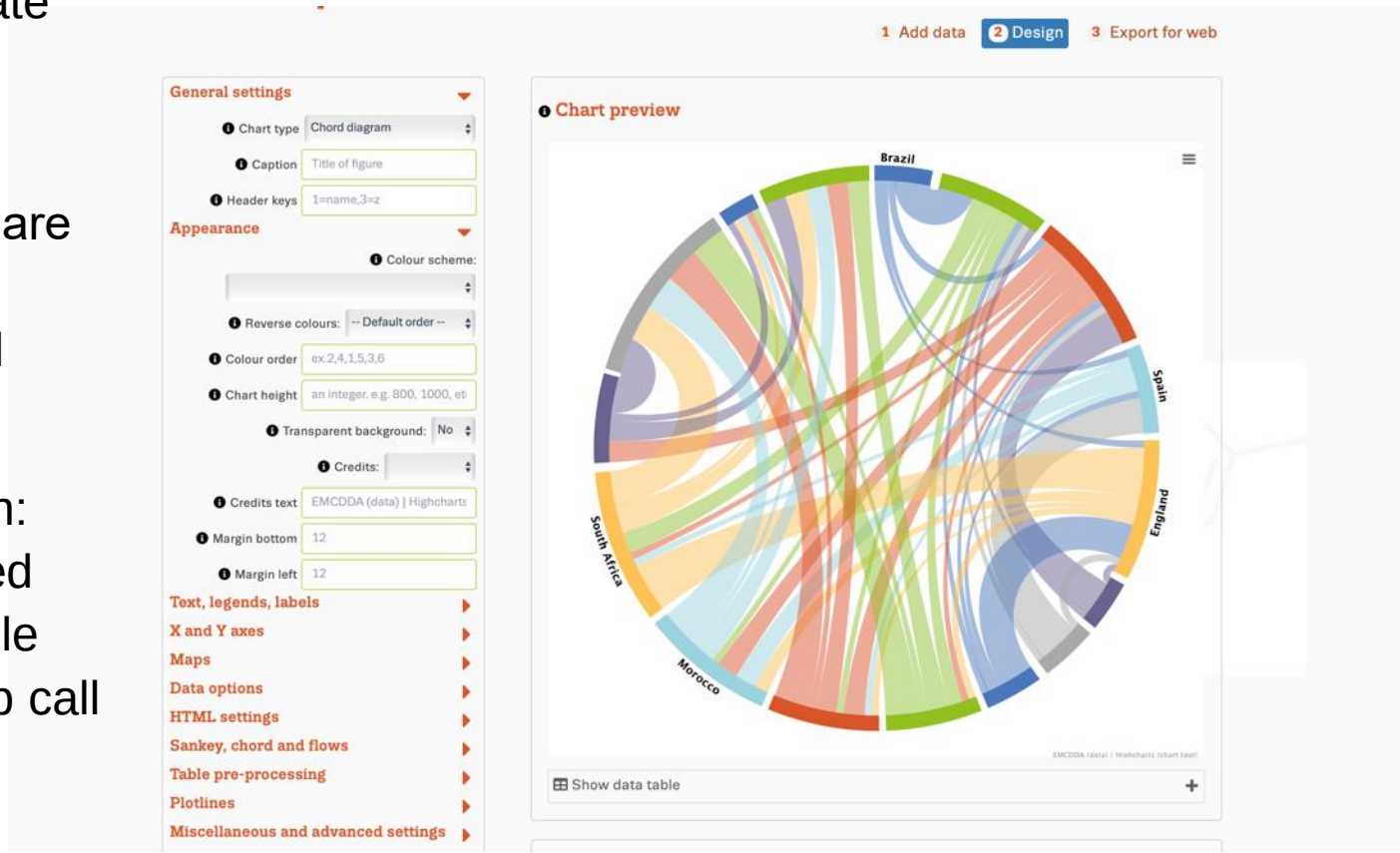
Map and Chart Generator 1

- Map and Chart Generator: ‘no code’ tool for creating visualisations
- Data can be copied-pasted



Map and Chart Generator 2

- Settings panel allows users to quickly create visualisations
- Final code snippets (‘chart parameters’) are exported to be embedded in Drupal alongside data
- Open data by design: data is not embedded and must be available through a public web call



Data visualisations: lessons learned so far

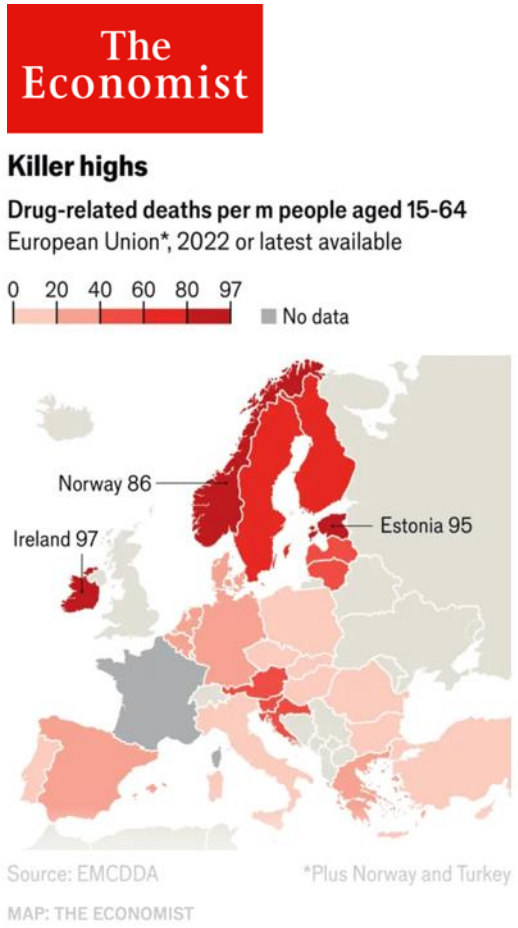
- Open data approach: makes it **much easier** to create, update and translate visualisations
- **Use a single source** for the data and embed where needed
- **Data explorers:** use to complement story but remember they will not work in PDF or print
- **Dashboards:** visually nice on desktop and PDF but on mobile can be tricky for users
- **Keep text and related graphics** near each other — good for accessibility
- **Helps if writers can see text and graphics** as they are drafting

4

Case studies: data re-use by media and press

How an open data approach makes it easier and more likely for journalists and others to reuse our data

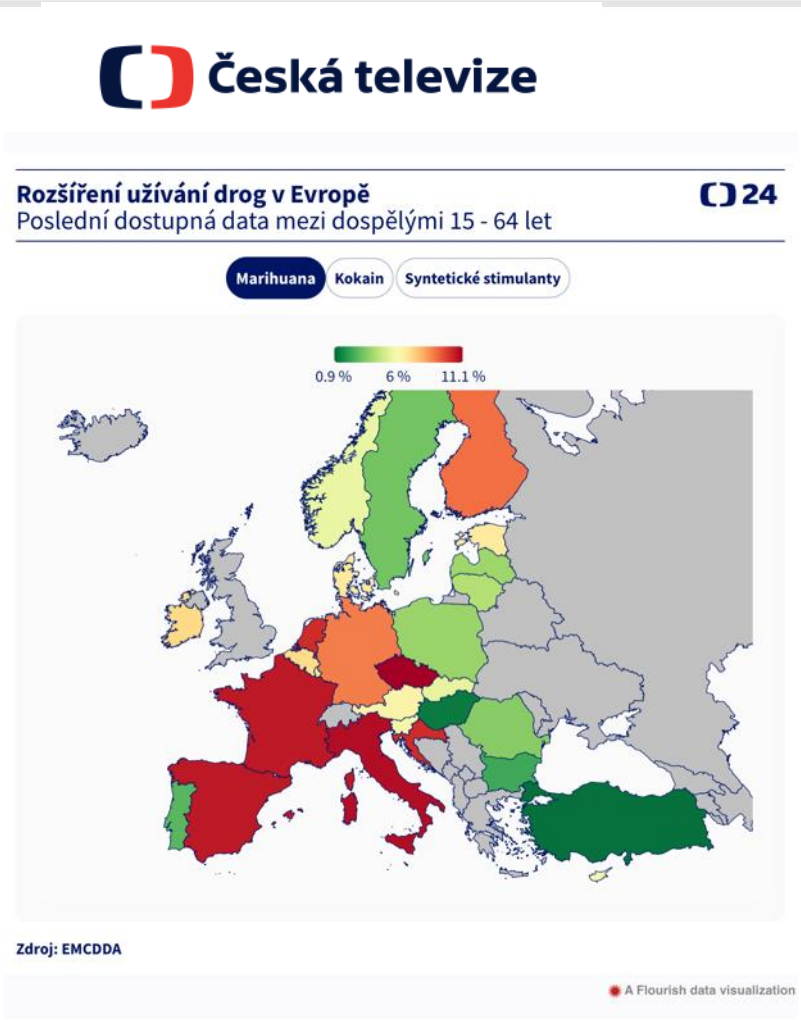
The Economist, June 2024



- Article: ‘The drug-overdose capitals of Europe’*
- Original graphic in Drug-induced deaths chapter of European Drug Report 2024 and supplemented with open data from EMCDDA Statistical Bulletin (and Eurostat population data)
- Journalist reached out and worked with relevant expert and data manager before publication

*https://www.economist.com/graphic-detail/2024/06/12/the-drug-overdose-capitals-of-europe

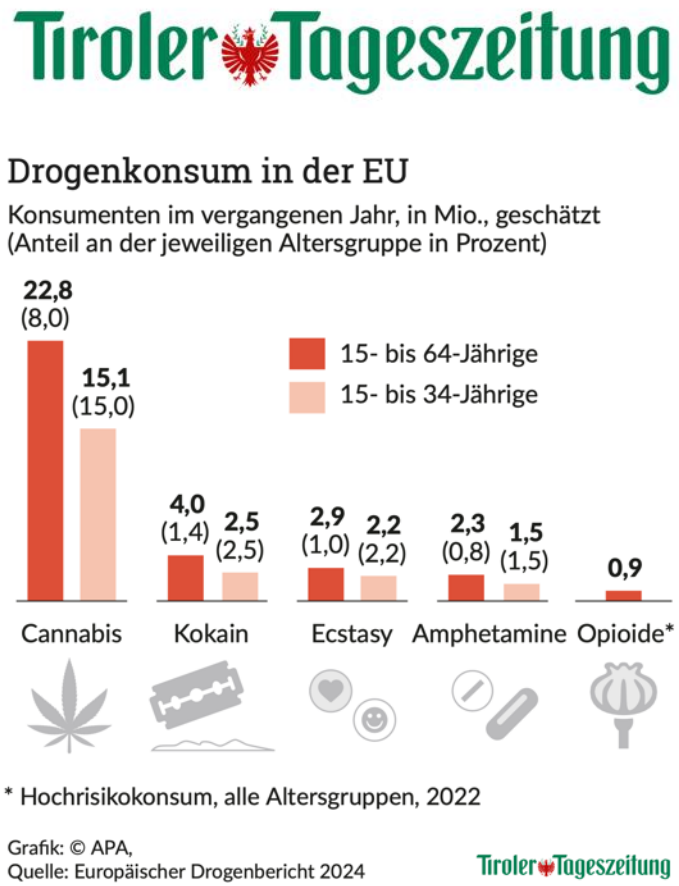
Czech television, June 2024



- Article: ‘Narůstá hrozba syntetických drog, varuje nová zpráva’*
- Mini-data explorer made with Flourish and using drug prevalence data from the European Drug Report
- Good example of reaching a wider audience, helped by making our data open and easy to re-use

*https://ct24.ceskatelevize.cz/clanek/domaci/narusta-hrozba-syntetickych-drog-silnejsich-nez-fentanyl-varuje-ve-zprave-evropska-agentura-350141

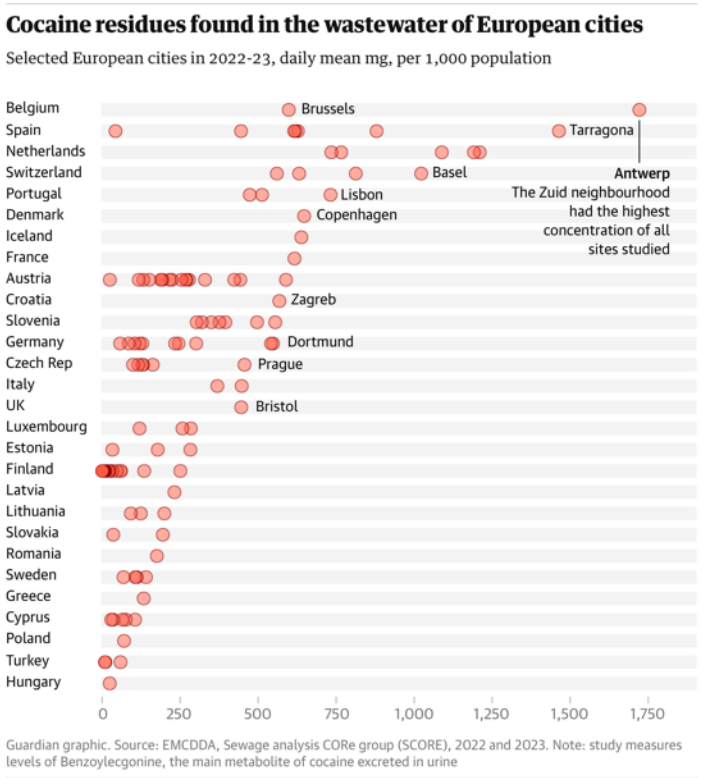
Austria Presse Agentur, June 2024



- Austria Presse Agentur, recreating the '*At a glance*' dashboard from the European Drug Report 2024
- Data is included in source directly on the page
- Infographic appears in multiple other Austrian media outlets
- Good example of how a press agency can multiply a message

*https://www.tt.com/artikel/30884565/drogengefahr-steigt-durch-neue-mischungen-und-veraenderten-konsum

The Guardian, June 2024



- Article by The Guardian* uses multiple sources about Cocaine in Europe, following launch of Drug Report
- Uses open data published by the EMCDDA, including data published in partnership with the SCORE network on wastewater analysis
- Good example of collaboration between different organisations using multiple data sources
- Good example of how we can use data visualisations by others to inspire our work

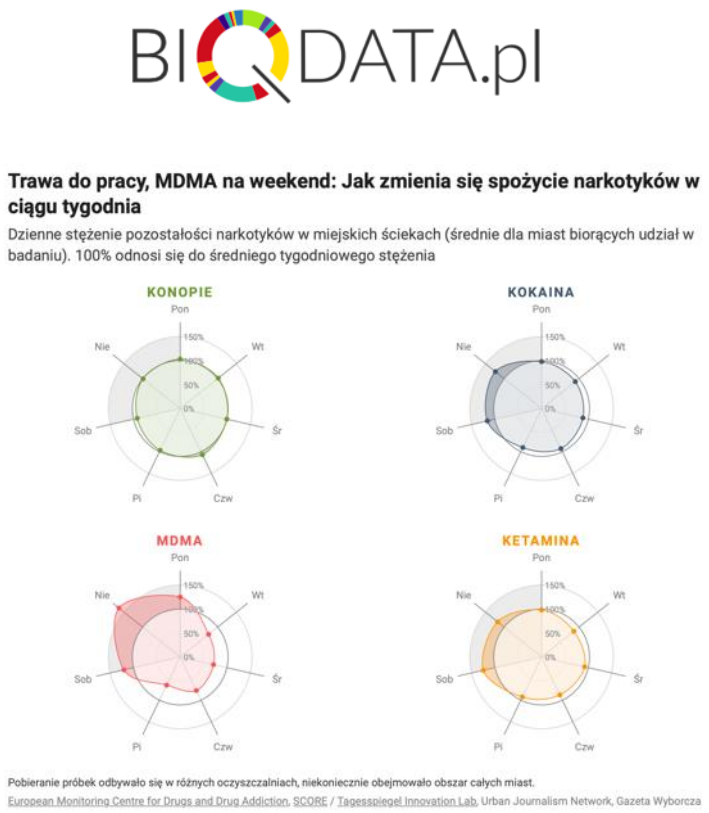
*https://www.theguardian.com/global-development/article/2024/jun/11/how-big-is-europes-cocaine-problem-and-what-is-the-human-cost

Urban Journalism Network

The Urban Journalism Network aims to promote high-quality digital journalism by collaborating across European cities to investigate urban issues

apache / inhoud heerst — Belgium
BIQDATA.pl — Poland
Deník Referendum DR — Czech Republic
EL PAÍS — Spain
wyborcza.pl — Poland
Göteborgs-Posten — Sweden
ICJK Investigatívne centrum Jána Kuciaka — Slovakia
IRPI MEDIA — Italy
iTromsø — Norway
nrc — The Netherlands
ORF — Austria
REPORTERS UNITED — Greece
TAGESSPIEGEL — Germany
t — Hungary

Urban Journalism Network, March 2024



Example article form Wyborcza.pl (Poland)

- Worked with us* prior to the release of our annual wastewater analysis publication in collaboration with the SCORE network
- Sharing the data prior to launch was easy and did not require specific extractions. Data management team formatted the data for us to use in the publication, exactly as needed, and this format also worked for the data journalists
- Resulted in a lot of coverage across multiple quality European press outlets
- Nice example of European wide data collaboration: SCORE-EMCDDA-Urban Journalism Network

*https://urbanjournalism.org/cities-comparisons/

5

Lessons learned and next steps

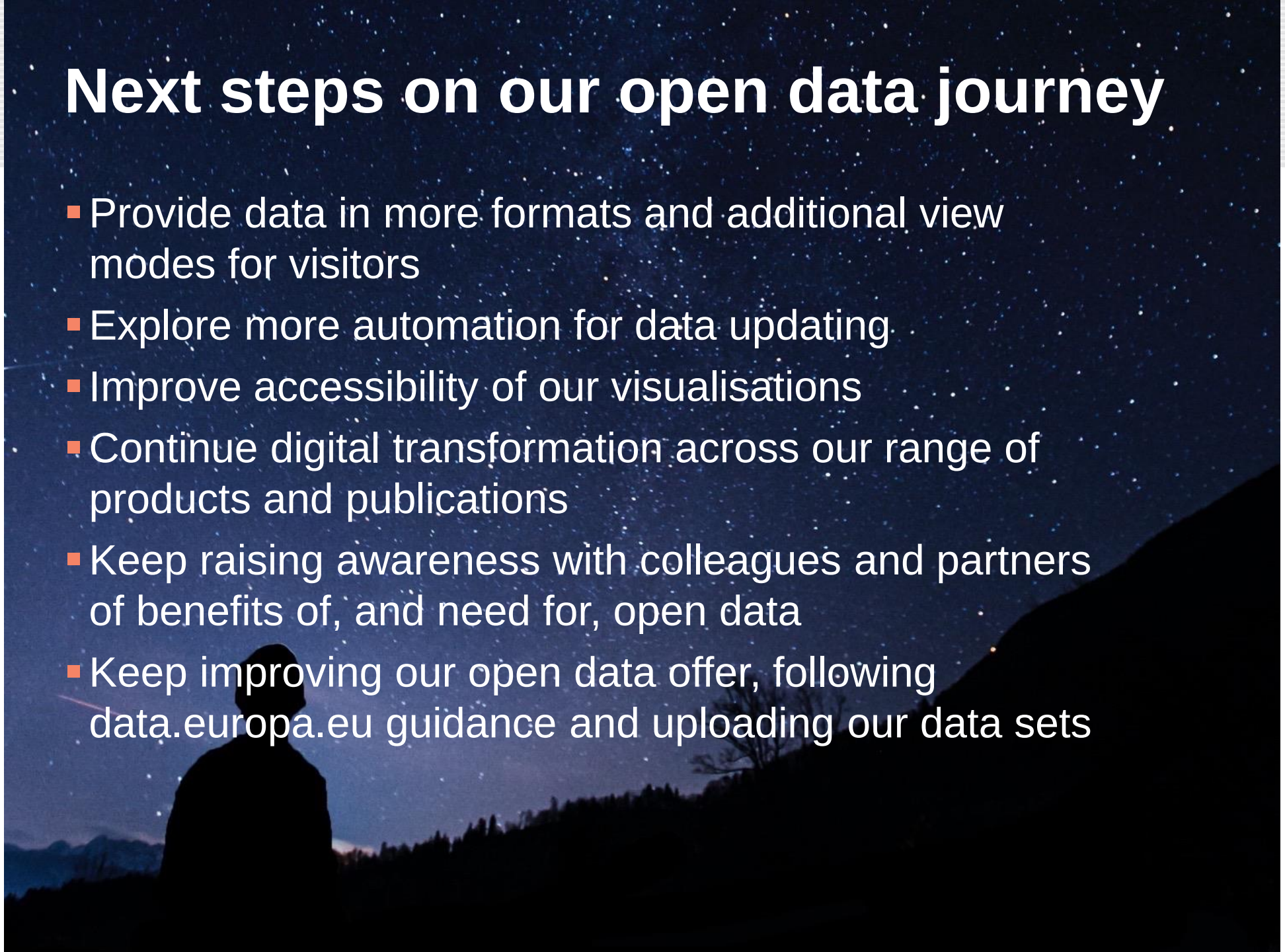
Benefits of digital-first approach

- Production process very efficient compared to print/PDF
- Much less error-prone (less manual intervention)
- Easy to update data and visualisations (single source)
- Good search engine ranking for most pages
- Positive feedback and more buy-in for open data from stakeholders
- Data journalists are directly using the data
- Changes are generally system-based so the benefits are across all products and can be re-used

Lessons learned

- Involve stakeholders early in process and update regularly
- PDF is still very important for many stakeholders
- Be aware of impact on upstream workflows with data management teams, editors and writers (digital transformation) as well as external partners for consultation
- Be aware that translating data can require a different approach to text

Next steps on our open data journey



- Provide data in more formats and additional view modes for visitors
- Explore more automation for data updating
- Improve accessibility of our visualisations
- Continue digital transformation across our range of products and publications
- Keep raising awareness with colleagues and partners of benefits of, and need for, open data
- Keep improving our open data offer, following data.europa.eu guidance and uploading our data sets


Thank you!

Questions & Answers

Inmaculada Farfan Velasco
Data.europa academy
Publications Office of the EU

Rosemary Martin de Sousa
Head of Communication, European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)

Sonia Vicente
Digital production manager, European Drug Report, European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)

David Penny
Web manager,European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)

data europa academy

Stay up-to-date on our activities!

data.europa academy

Join our next webinar!

data europa academy

Your opinion is important to us

data.europa academy

Thank you!

data.europa academy