



Dashboard Design Workshop

<https://dashboarddesignpatterns.github.io>

Benjamin Bach, University of Edinburgh



Visual+
Interactive
Data

design
informatics



THE UNIVERSITY
of EDINBURGH



University
of Glasgow

THE UNIVERSITY OF
WARWICK

KING'S
College
LONDON



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OXFORD

Goals

Learn about design guidelines for dashboard design.

Design your own dashboard(s) in the form of visual mockups and sketches.

Understand **design decisions** and tradeoffs.

Make **deliberate design** decisions and reflect on these choices.

Discuss your designs with peers and learn from others.

Not goals

An introduction to Tableau, Power BI, or similar tools.

A workshop on programming visualizations, e.g., using d3.js or other libraries.

An opportunity to obtain a certificate in dashboard design.

Today's outline

1/ Dashboard Design & guidelines

2/ Design Tradeoffs

3/ Design Patterns

5/ Activity 1: What am I designing for?

6/ Activities 2: How am I creating a design?

Who are **you**?

Do you have a dashboard **project**?

Dashboard **Design**

“A visual display of the most important information needed to achieve one or more objectives; consolidated and arranged on a single screen so the information can be monitored at a glance.”

Stephen Few, 2006

Few, S., 2006. *Information dashboard design: The effective visual communication of data* (Vol. 2). Sebastopol, CA: O'Reilly.

“A dashboard seeks to add as a translator, not simply a mirror, setting the forms and parameters for how data are communicated.”

Rob Kitchin et al., 2015

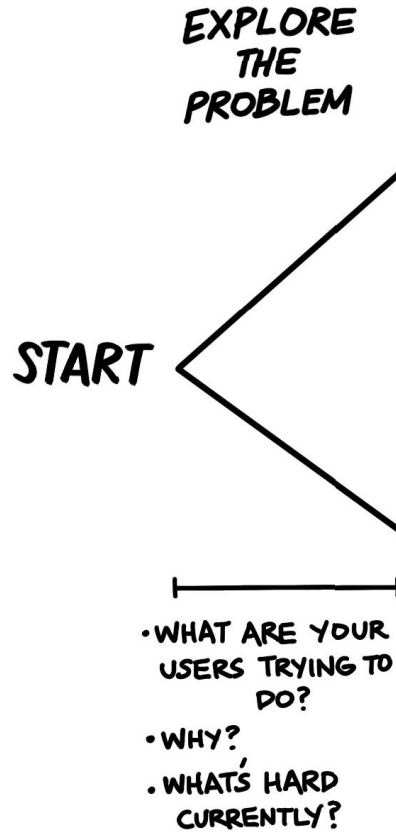
Kitchin, R., Lauriault, T.P. and McArdle, G., 2015. Knowing and governing cities through urban indicators, city benchmarking and real-time dashboards. *Regional Studies, Regional Science*, 2(1), pp.6-28.

Design Guidelines

1. Don't overwhelm viewers
2. Avoid visual clutter
3. Avoid poor visual design
4. Carefully chose KPIs
5. Align with existing workflows
6. Don't add too much data
7. Provide for consistency
8. Provide for interaction affordances
9. Manage complexity
10. Organize charts symmetrically
11. Group charts by attribute
12. Order charts by time
13. Balance data + space
14. Increase information
15. Avoid redundancy of information
16. Show information, rather than data
17. Design is an iterative process
18. Context is very important
19. State your meta data
20. Use color carefully

etc...

Design Process: the double diamond



**Visual
Representation**

**Number
of Pages**

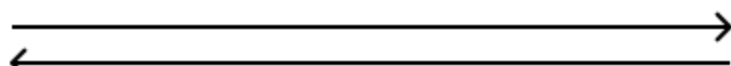
**Data
Abstraction**

Interactivity

**Visual
Representation**

decrease

increase

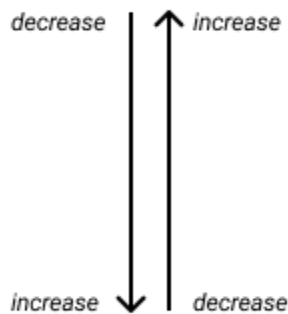


**Number
of Pages**

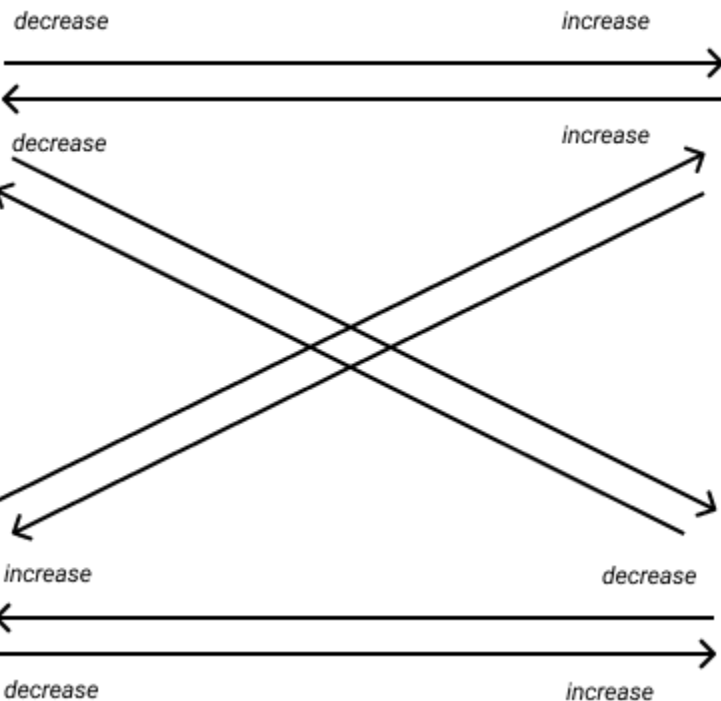
**Data
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Interactivity

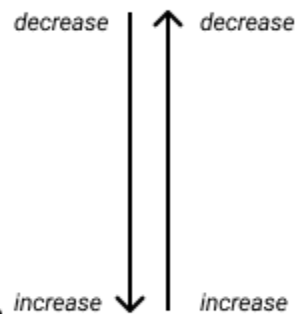
**Visual
Representation**



**Data
Abstraction**



**Number
of Pages**



Interactivity

Dashboard **Genres**

UK Summary

The official UK government website for data and insights on coronavirus:

See the [simple summary](#) for the UK.

Static Dashboard

42 
 

Vaccinations

People vaccinated

Up to and including 10 March 2022

Daily – first dose

4,765

Daily – second dose

14,282

Daily – booster or third dose

20,616

Total – first dose

52,692,089

Total – second dose

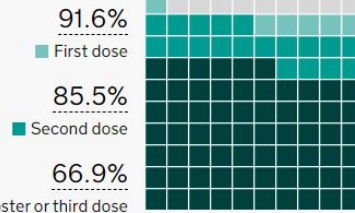
49,164,620

Total – booster or third dose

38,458,430

[All vaccinations data](#)

Percentage of population aged 12+



Cases

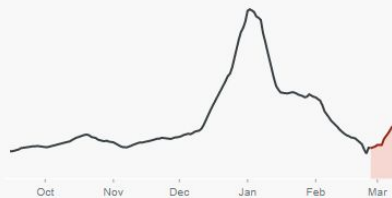
People tested positive

Latest data provided on 11 March 2022

Last 7 days

399,820 ↑ 143,956 (56.3%)

▶ Rate per 100,000 people: **458.7**



[All cases data](#)

Deaths

Deaths within 28 days of positive test

Latest data provided on 11 March 2022

Last 7 days

730 ↑ 20 (2.8%)

▶ Rate per 100,000 people: **0.9**



[All deaths data](#)

Healthcare

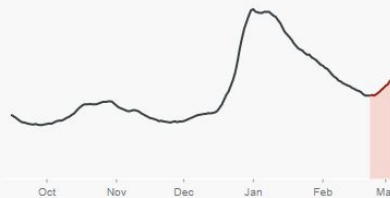
Patients admitted

Latest data provided on 7 March 2022

Last 7 days

9,475 ↑ 1,369 (16.9%)

[All healthcare data](#)



Testing

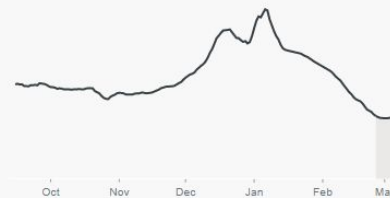
Virus tests conducted

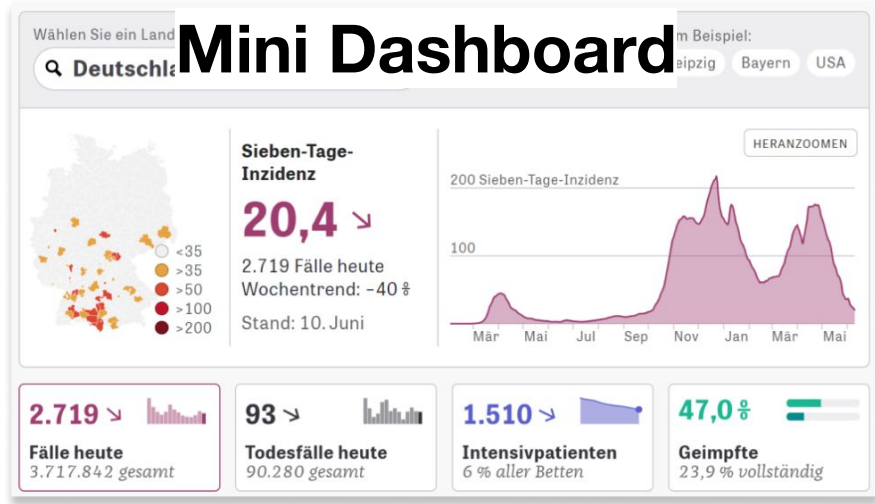
Latest data provided on 10 March 2022

Last 7 days

4,553,814 ↑ 199,269 (4.6%)

[All testing data](#)







Repository Dashboard



<https://www.scotland.nhs.uk/what-we-do/our-services/our-services>

National Data

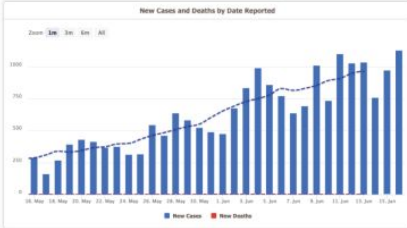
Last updated: 16th June

Cases
249,644
+1,129

Deaths
7,684
+1

In Hospital
133
-4

In ICU
15
-2



June 16th at a Glance

Vaccinations
Today, **43,435** new vaccinations were reported, which is an **increase** from yesterday's figure of 37,140. This was made up of 20,278 first doses, and 23,177 second doses.

Testing
We are currently administering an average of **44,139** new vaccinations per day. This is a **decrease** from from this time last week, when we were doing 49,098 a day.

Hospital/ICU
In total, **85.0%** of the entire Scottish population has had their first dose, and **45.6%** have had both doses. In the past 7 days alone, **5.7%** of Scotland has received a dose!

Deaths

Percentage in Scotland who...

Have been tested
45.0%
roughly every 1 in 2 people

Have tested positive
0.1%
roughly every 1 in 22 people

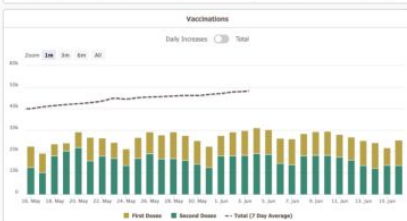
Have had both doses
45.6%
roughly every 1 in 219 people



Total Tests Conducted
6,767,664
+31,638

Percentage of Tests Positive
Total: 0.1%
Past 7 days: 0.1%

Individual People Tested
2,127,130
+6,300



Vaccinated with First Dose
3,551,739
+20,278
That is **65.9%** of Scotland, and **79.8%** of all Scottish Adults

Worldwide, around 2.3 billion vaccine doses have now been administered

Vaccinated with Second Dose
2,493,358
+23,177
That is **48.6%** of Scotland, and **58.1%** of all Scottish Adults

incomplete, therefore a 3 day lag has been applied to this data.

Neighbourhood population estimates remain at NRS mid-2019 until the 2022 estimates become available for this level of geography.

The Scotland level view is coloured according to the rate of confirmed positive cases per 100,000 population in each Local Authority area. You can also view maps showing confirmed cases in neighbourhoods within each Local Authority.

b. The data for the most recent days are likely to be

To see cases in your neighbourhood, choose your Local Authority area from the drop down list below.

Select Local Authority:

Use the slider to change 7 day range (based on specimen date): 10 August 2021

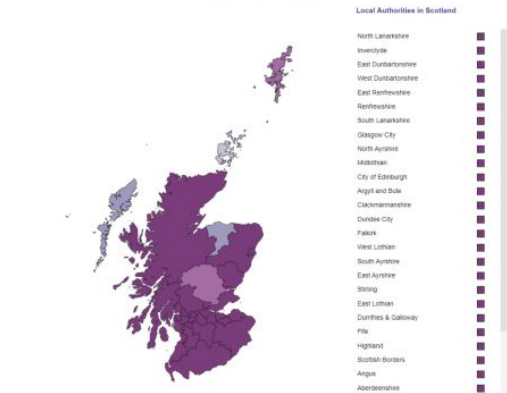
To improve performance the data is restricted to the previous 6 months. The data oldest from March 2020 is available on the open data gateway: <https://www.opendata.scot.nhs.uk/open-data/>

7 day positive cases in Scotland based on people tested between 24 August 2021 and 30 August 2021

| 7 day positive cases | 7 day positive rate per 100,000 population | 7 day test positivity rate |
|----------------------|--|----------------------------|
| 40,935 | 748.9 | 13.4% |

Clicking on the area you are interested in on the map below will display a box with 7 day figures and population count for that neighbourhood.

7 day positive rate per 100,000 population



How are neighbourhood areas defined?

These maps use local neighbourhood areas defined by the Scottish Government. Their geographical size varies because they are based on the number of people who live in the area. Most neighbourhood areas contain between 2,500 and 5,000 residents, but some have a notably lower or higher number than this because their population has changed since these area boundaries were last reviewed.

How do I find the name of my neighbourhood?

To test the name of your neighbourhood (Intermediate Zone), you can search by place or postcode at <https://nhs.uk/nhs.uk/your-local-authority>

What determines the colours on the map?

We have used population rates to colour these maps to show the number of cases in the context of the number of people living in that area. Areas with the same number of cases can be a different colour (a different population rate) because they have different population sizes. The rates associated with each colour are displayed on a scale above the map.

How accurately do these maps show infection rates?

Public Health means across Scotland are constantly monitoring a range of different types of information to manage the pandemic. These maps show only confirmed cases, not suspected or asymptomatic cases, so they can only ever give an indication of the true rate of infection in each area. The data underlying the maps is refreshed daily, so you may notice small changes as records are updated and amended.

Why are some areas coloured white and labelled ****?

Where a local neighbourhood has fewer than 3 positive cases, the actual number of cases and population rate has not been shown. This is to help protect patient confidentiality and to reduce instances where very small numbers of cases drive high rates. Where a Local Authority has fewer than 5 positive cases in the selected 7 day period, a more detailed map is not available to protect patient confidentiality.

How do these maps relate to the levels set by Scottish Government?

The Scottish Government makes decisions about restrictions based on a set of indicators: test positivity rate, positive case population rate, projected case rates, projected hospital and intensive care unit demand. Decisions are made at Local Authority level. You can read more about the indicators and thresholds used at <https://www.gov.scot/topics/health/19-scottish-standards-for-scotland/>

View the Notes page for more information on the data in this dashboard



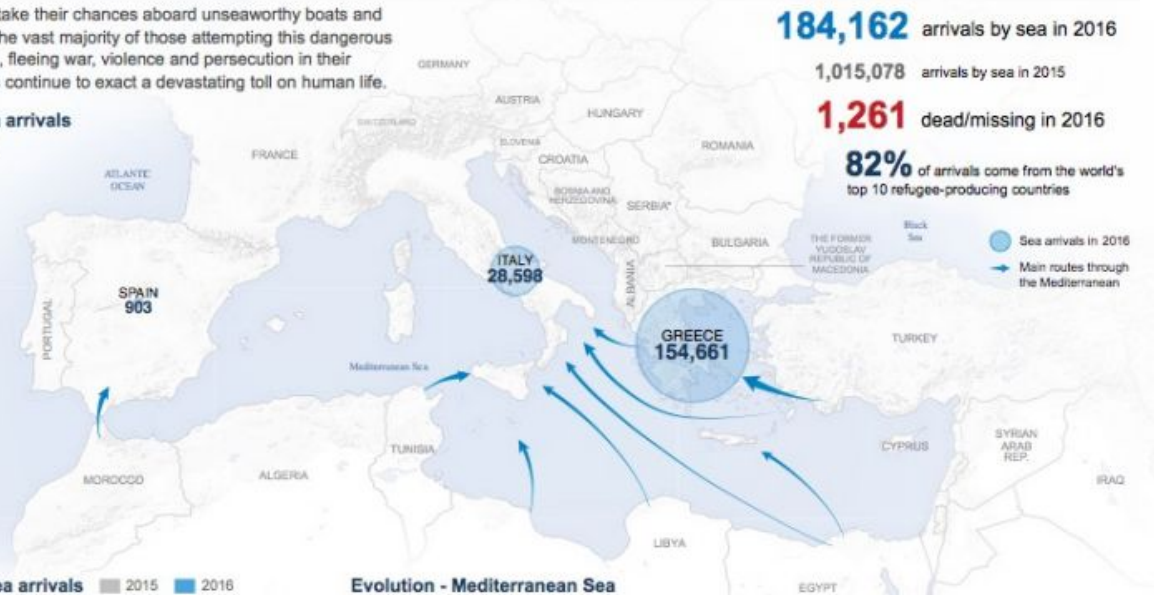
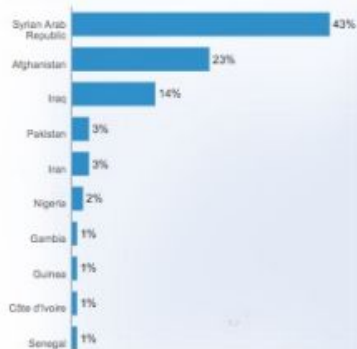
Refugees/Migrants Emergency Infographic Dashboard

42

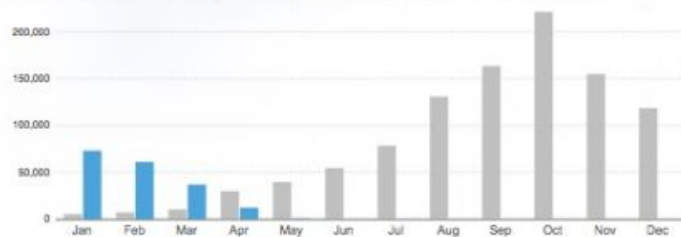
Increasing numbers of refugees and migrants take their chances aboard unseaworthy boats and dinghies in a desperate bid to reach Europe. The vast majority of those attempting this dangerous crossing are in need of international protection, fleeing war, violence and persecution in their country of origin. Every year these movements continue to exact a devastating toll on human life.

Top-10 nationalities of Mediterranean sea arrivals

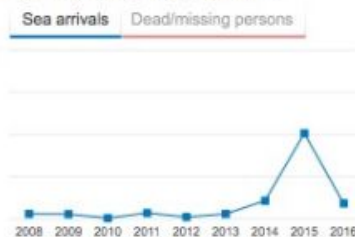
Top-10 nationalities represent **92%** of the sea arrivals based on arrivals since 1 Jan 2016



Comparison of monthly Mediterranean sea arrivals



Evolution - Mediterranean Sea



Demographics based on arrivals since 1 Jan 2016



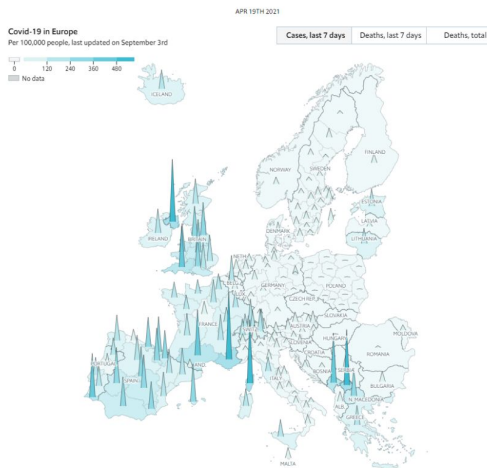
*Serie (AND KOSOVSO) SRES/124 (1999) [Download excel data](#)

The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations

[Click here to view sources and disclaimer](#)

Tracking the coron. Magazine Dashboard

How countries and regions are c



IN SPRING 2020 much of Europe was shut down to slow the spread of covid-19. Ten months on the continent is once again trying desperately to restrain the pandemic. By July 27th the first wave had resulted in the loss of 180,000 lives across Europe's 39 countries and territories (see the map above). After some respite during the summer months a second wave—now largely driven by a more infectious variant first spotted in Britain in December—has caused a further 350,000 deaths.

The latest on the coronavirus

- The future of meetings (Sept 2nd)
- How the pandemic became stagflationary (Sept 2nd)
- Vaccine inequality will cost money as well as lives (Aug 30th)
- Australia is ending its zero-covid strategy (Aug 28th)
- To follow The Economist's coverage of the pandemic, visit our coronavirus hub

Europeans and their governments will be hoping that vaccines, developed in record time, as well as lockdowns will help to reduce infections. More than 30 countries have active inoculation programmes, which make use of three main vaccines, developed by Pfizer/BioNTech, Moderna, and AstraZeneca/Oxford University. So far 14m shots have been administered. Britain, which on December 8th was the first country in the world to begin vaccinations, has now given jabs to more than one person in 20.

| Search country...

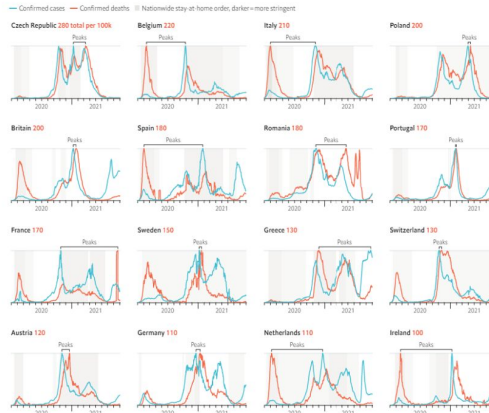
| Country | Cases | Deaths | Recovery | Vaccinations per Day, per 100,000 |
|-------------|-------|--------|----------|-----------------------------------|
| Ireland | 6.84m | 89.5% | 82.0% | 152.2 |
| Spain | 66.1m | 88.0% | 80.4% | 340.3 |
| Denmark | 8.57m | 87.3% | 83.4% | 647.0 |
| France | 87.9m | 86.4% | 71.9% | 617.2 |
| Belgium | 16.2m | 84.1% | 81.2% | 596.8 |
| Finland | 6.83m | 83.0% | 57.9% | 452.2 |
| Norway | 6.95m | 82.6% | 66.0% | 745.5 |
| Britain | 91m | 82.5% | 73.6% | 335.6 |
| San Marino | 46.5k | 80.5% | 80.5% | 796.4 |
| Netherlands | 21.9m | 79.7% | 71.3% | 1,459.9 |
| Sweden | 12.7m | 79.7% | 66.8% | 284.3 |
| Italy | 78.2m | 78.7% | 67.8% | 198.3 |
| | | | | 156.1 |
| | | | | 776.0 |
| | | | | 503.2 |

Show all countries

Although vaccination programmes offer hope that life can return to normal, they remain nascent. In the meantime, to assess how European countries are coping with suppressing the virus, The Economist has assembled data on covid-19 cases and deaths for 39 countries, and for 173 sub-national areas for which data are available. We present the total number of deaths per 100,000 in the population. We also break down the infection and death rates for the past seven days to give a better sense of where the virus is most active.

A different way of visualising these data is shown below, in time series for deaths and infections in 16 countries. To facilitate country-by-country comparisons, we have smoothed both variables using a seven-day moving average and indexed them so that each curve peaks at 100. Just three of the countries in our selection—Ireland, Spain and Sweden—have so far recorded fewer deaths during the second wave than the first. Largely because testing regimes have improved, all 16 have recorded far higher infection peaks than in the spring.

New covid-19 cases and deaths per 100,000 people
Scaled to peak, seven-day moving average, last updated on September 3rd 06:06 UTC

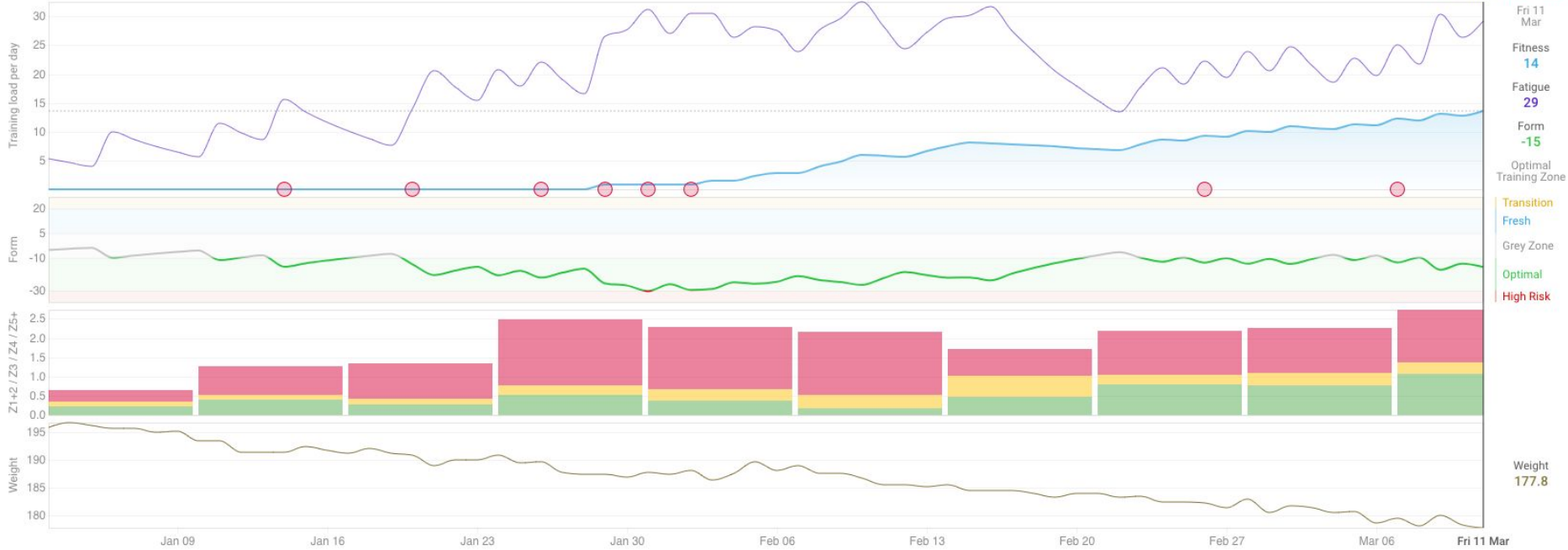


Analytic Dashboard

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10 Weeks

| | | | | | | | |
|------------|------------|------------|----------|-----------|--------|--------|---------|
| Fri 11 Mar | Fitness 14 | Fatigue 29 | Form -15 | Z1+2 1h3m | Z3 18m | Z4 24m | Z5+ 57m |
| | | | | 39% | 11% | 15% | 35% |



The blue line shows fitness. This is a 42 day exponentially weighted moving average of your training load. The purple line shows fatigue. This is a 7 day exponentially weighted moving average of your training load above the blue line. Your form is your fitness less fatigue. When your form is in the **optimal training zone** you are gaining fitness. When your form is **fresh** and you are fit then you are ready to race. Avoid staying in 1 weeks in your training to recover from fatigue and to be at your best for goal events. References: [Monitoring your training load by Science2Sport](#) and [Managing Training Using TSB by Joe Friel](#)

| | | | | | | | |
|--|---|----------|--------|-----------|---------|------|--------|
| | Fri 11 Mar 2022 | 09:24 AM | Avg HR | Intensity | Pace | Load | Weight |
| | 5.78 km | 29m02s | 175 | 99% | 5:01/km | 48 | 80.648 |
| | Morning Run ~ 2x 8m4s 178bpm 3m53s 182bpm | | | | | | |

Dashboard Types



Static



Analytical



Magazine



Infographic



Mini



Slideshow



Repository








<https://dashboarddesignpatterns.github.io/processguidelines.html>

Worksheet 1:
What am I designing for?

Parameters (that you may not control)

1. Who is your audience?
2. What is the context & devices they engage with the dashboard?
3. What are the tasks they perform / decisions they make?
4. What information do they need to fulfill these tasks / make these decisions?

Worksheet 1: Data, Use, & Genres

| DATA <i>List and describe your data. What are the facets/dimensions in your data?</i> | USE | GENRES <i>Look at the Genre patterns. Pick 1-3 genres and describes how they might fit your scenario?</i> |
|---|---|---|
| | <p>Describe your audience? What does the audience know about the data?</p> <p>Describe the information, tasks and decisions your audience is performing? What do they know about these tasks? During which steps of their workflows and during which situations do they need access to the dashboard?</p> <p>What is the context & devices they engage with the dashboard? Is it a mobile, a 2nd screen, a wall-sized display, etc.? What else do they do when they consult the dashboard? How frequently do they consult the dashboard?</p> |  <p>Static</p>  <p>Magazine</p>  <p>Analytical</p>  <p>Infographic</p>  <p>Mini</p>  <p>Repository</p>  <p>Slideshow</p> |

Design **Patterns**

23 Dashboard Design Patterns

Content Dashboard Design Patterns

Data

Less Data



Single value



Derived values



Thresholds



Filtered



Aggregated



Detailed Data

More Data

Meta Data



Data Source



Disclaimer



Data Description



Update Information



Annotations

Visual Representation

More Detail



List



Table



Detailed Visualization



Miniature Chart



Progress Bars & Gauge



Trend arrow



Pictogram

42

Number

Less Detail

Composition Dashboard Design Patterns

Page Layout



Open



Table



Stratified



Grouped



Schematic

Screenspace



Screenfit



Overflow



Detail on demand



Parameterization



Multiple pages

Structure



Single Page



Parallel



Hierarchic



Open

Interaction



Exploration



Navigation



Personalization



Drilldown

Color



Distinct



Data Encoding



Semantic



Emotive

Worksheet 2:
Structure

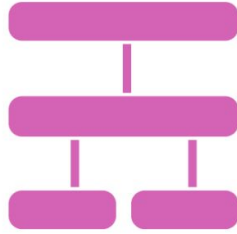
Structure Patterns



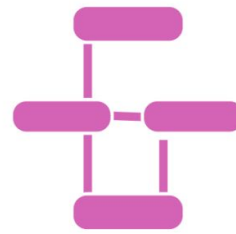
Single Page



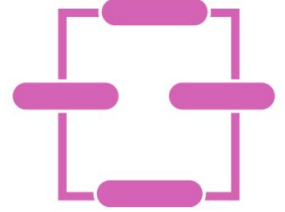
Parallel



Hierarchic



Open



Semantic

Worksheet 2: Structure Patterns

Look at the structure patterns and use the space below to draw possible dashboard structures. A page is a screen the reader sees at any given time. They could switch between pages using interaction.

1. Does your dashboard need (or can) have multiple separate pages?
2. How would you **group information meaningfully** across these pages?
3. What information **must be shown together** on the same page (don't be afraid of duplicating information)?
4. Pick one page to continue the workshop with. (you can repeat the following steps for each of your pages individually and make changes to your page design).



Single Page



Parallel



Hierarchic



Open



Semantic

Worksheet 3

Data & Visual Encoding

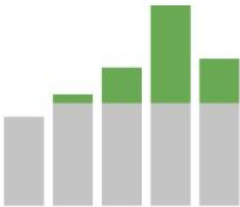
Data Information



Detailed Dataset



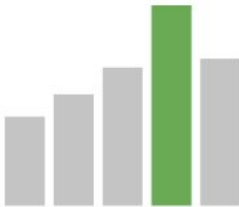
Aggregated Data



Thresholds & Filters



Derived Data



Individual Values

More Data



Less Data

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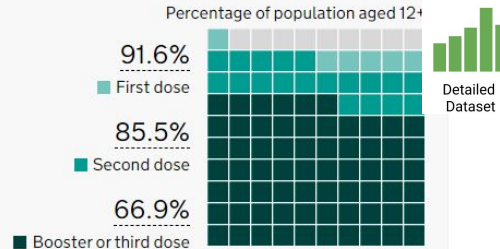
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[All vaccinations data](#)



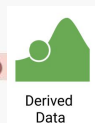
Cases

People tested positive

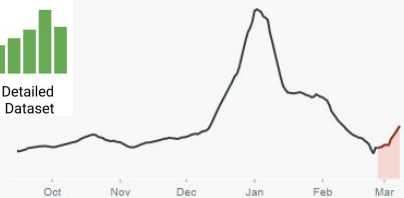
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Last 7 days

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[All cases data](#)

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[All deaths data](#)

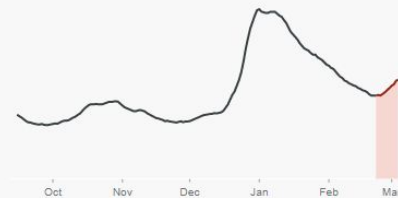
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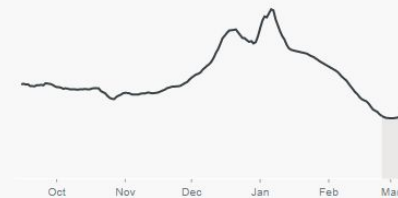
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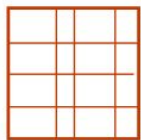


[All testing data](#)

Visual Representation



List



Table



Detailed
Visualization



Miniature
Chart



Progress Bars
Gauges



Indicators



Trend
arrow(s)



Pictogram

42

Numbers

More Detail

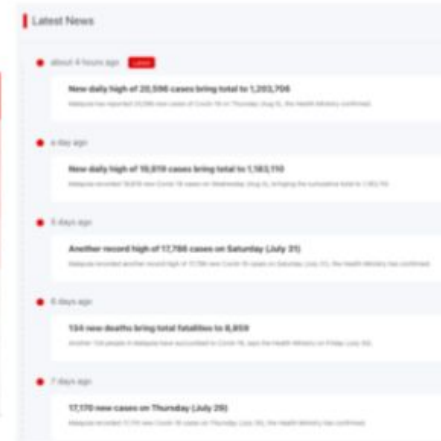


Less Detail

Visual Representation: Data Visualization



People who have received at least one dose by race/ethnicity



Visual Representation: Data Visualization



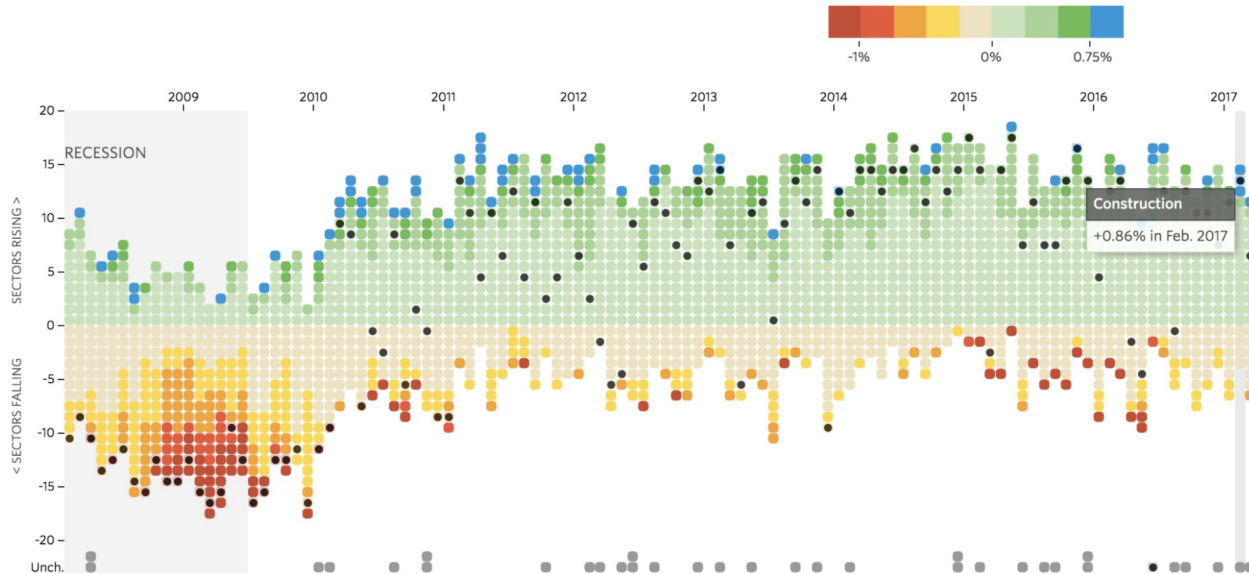
Detailed
Visualization

Track National Unemployment, Job Gains and Job Losses

By [Andrew Van Dam](#) and [Renee Lightner](#)

Winners and Losers: Job Gains and Losses [Jump to National Unemployment](#)

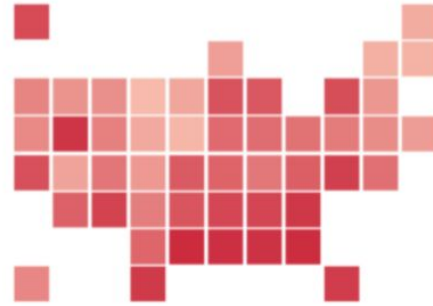
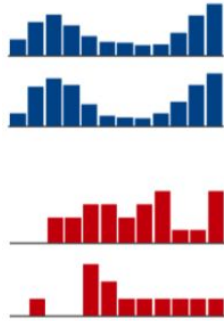
Track the number of sectors gaining or losing jobs each month. Boxes are shaded based on percentage change from the previous month in each sector's payrolls.



Visual Representation: Data Visualization



Miniature
Chart



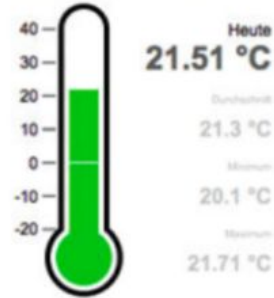
Visual Representations



Progress Bars
Gauges



♥ Heart Pts ↻ Steps

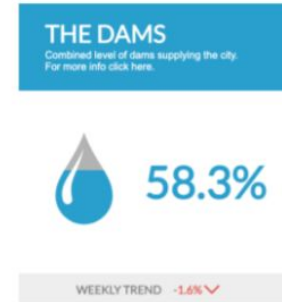


(b) Gauges and progress bars (#19, #99, #16).

Visual Representations



| |  Innengastro |  Außengastro |  Hotels |
|-------------------|---|---|---|
| Baden-Württemberg |  |  |  |
| Bayern |  |  |  |
| Berlin |  |  |  |
| Brandenburg |  |  |  |
| Bremen |  |  |  |



42
Numbers

(a) Pictograms as *data* (#85, #37) and *index* (#102).

Worksheet 3: Data & Representation

DATA ABSTRACTION

Which level of abstraction would you chose for your data for the page you have chosen?



More Data ←————→ Less Data

VISUAL REPRESENTATION

Which visual representations would you chose for the data and their abstractions?



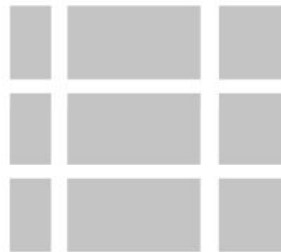
More Detail ←————→ Less Detail

Worksheet 4:
Layout

Layouts



Open



Table



Stratified



Grouped



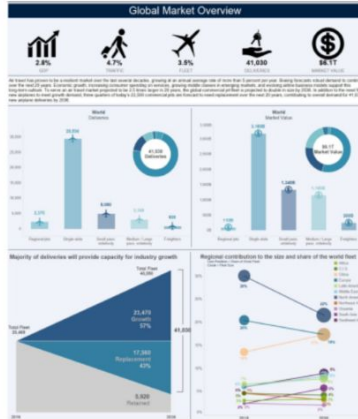
Schematic



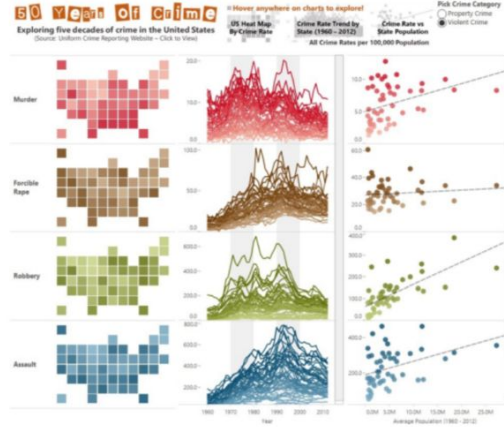
Open Layout



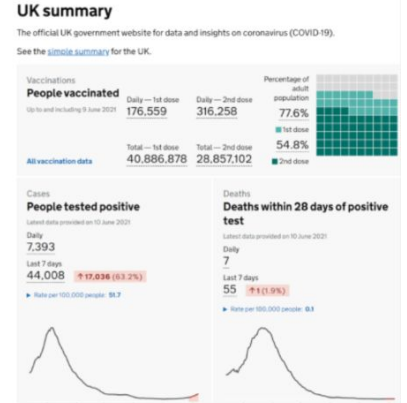
Strata Layout



Grid Layout



Grouped Layout



Worksheet 4: Layout

Look at the layout patterns. Which layout would make sense for your visualizations? Why? Use this page to experiment with different layouts. Use post-its to move components around easier.



Open



Table



Stratified



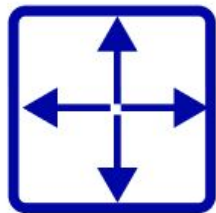
Grouped



Schematic

Design Patterns 5:
Screen space & Interaction

Pagination Patterns



Screenfit



Overflow



Detail on
demand



Parameter
-ization



Multitple
pages

More concise



Less concise

Pagination: Scroll



Overflow



IN SPRING 2020 much of Europe was shut down to slow the spread of covid-19. Ten months on the continent is once again trying desperately to restrain the pandemic. By July 27th the first wave had resulted in the loss of 80,000 lives across Europe's 39 countries and territories (see the map above). After some respite during the summer months a second wave—now largely driven by a more infectious variant first spotted in Britain in December—has caused a further 350,000 deaths.

The latest on the coronavirus

- Does America face a growth slowdown? (Jul 2020)
- India's economy is suffering from long covid (Jul 2020)
- How common is long covid? (Jul 2020)
- Which covid-19 vaccine is the most widely accepted for international travel? (Jul 2020)
- To follow The Economist's coverage of the pandemic, visit our coronavirus hub

Europeans and their governments will be hoping that vaccines, developed in record time, as well as lockdowns will help to reduce infections. More than 30 countries have active inoculation programmes, which make use of three main vaccines, developed by Pfizer/BioNTech, Moderna, and AstraZeneca/Oxford University. So far 14m shots have been administered. Britain, which on December 8th was the first country in the world to begin vaccinations, has now given jabs to more than one person in 20.

Search country...

| Country | Cases administrative | Adults with first infection | Adults with second infection | Vaccinations per day per 100,000 |
|-------------|----------------------|-----------------------------|------------------------------|----------------------------------|
| Malta | 700k | 102.4% | 98.1% | 588.6 |
| Iceland | 470k | 93.1% | 89.1% | 85.8 |
| Denmark | 7.2m | 85.4% | 81.6% | 1,113.8 |
| Ireland | 847k | 80.5% | 87.2% | 1,138.9 |
| Britain | 9.55m | 80.5% | 66.0% | 358.7 |
| Belgium | 14.5m | 80.2% | 66.1% | 1,015.6 |
| Netherlands | 18.8m | 79.9% | 57.7% | 951.9 |
| Sao Paulo | 49.8m | 77.9% | 77.0% | 26.2 |
| Spain | 36.8m | 77.2% | 68.7% | 901.6 |
| Portugal | 12.3m | 77.1% | 63.0% | 871.1 |
| Norway | 5.41m | 76.8% | 38.8% | 792.6 |
| Finland | 5.66m | 76.3% | 40.9% | 799.1 |
| France | 74.1m | 75.9% | 57.7% | 1,504.6 |
| Sweden | 10.8m | 75.7% | 46.7% | 603.9 |
| Austria | 8.23m | 72.0% | 50.4% | 179.6 |

Show all countries

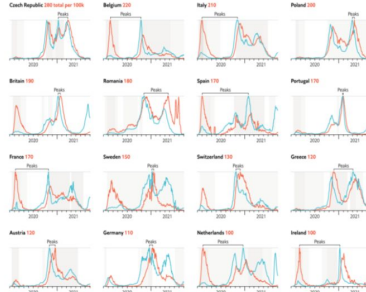
Although vaccination programmes offer hope that life can return to normal, they remain nascent. In the meantime, to assess how European countries are coping with suppressing the virus, The Economist has assembled data on covid-19 cases and deaths for 39 countries, and for 273 sub-national areas for which data are available. We present the total number of deaths per 100,000 in the population. We also break down the infection and death rates for the past seven days to give a better sense of where the virus is most active.

A different way of visualising these data is shown below, in time series for deaths and infections in 16 countries. To facilitate country-by-country comparisons, we have smoothed both variables using a seven-day moving average and indexed them so that each curve peaks at 100. Just three of the countries in our selection—Ireland, Spain and Sweden—have so far recorded lower deaths during the second wave than the first. Largely because testing regimes have improved, all 16 have recorded far higher infection peaks than in the spring.

New covid-19 cases and deaths per 100,000 people

Scaled to peak, seven-day moving average, last updated on August 3rd 10:08 UTC

Confirmed cases | Confirmed deaths | Nationality data at home order (date=most string)

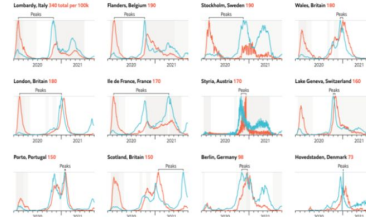


In the charts below, we use the same presentation format as ones above, but for 12 selected sub-national areas. The shape of these curves is very similar to that of the national ones, yet there are important discrepancies. For example, after battling a severe outbreak of infections in the autumn, Britain's North West is now in effect in its third wave of the pandemic.

Regional covid-19 cases and deaths per 100,000 people

Scaled to peak, seven-day moving average, selected regions, last updated on August 3rd 10:08 UTC

Confirmed cases | Confirmed deaths | Nationality data at home order (date=most string)



The table below presents the complete data for deaths and cases over the past week for each of the countries and regions that we are tracking. (You can sort each column by clicking on its header.) These figures are updated twice a day.

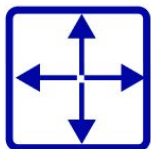
| Region | Country | Population, 1000 | Cases last week per 100k | Deaths last week per 100k |
|----------------------------|---------|------------------|--------------------------|---------------------------|
| Balearic Islands | Spain | 1,198 | 851 | 1.6 |
| Corcia | France | 316 | 676 | 0.9 |
| La Rioja | Spain | 314 | 647 | 1.9 |
| Naveira | Spain | 600 | 623 | 1.1 |
| Catalonia | Spain | 7,566 | 626 | 0.8 |
| Madrid | Spain | 6,642 | 592 | 0.9 |
| Balearic Country | Spain | 2,178 | 586 | 1.0 |
| Piromont-Alpes-Cote d'Azur | France | 5,031 | 574 | 0.8 |
| Aragon | Spain | 1,321 | 572 | 2.0 |
| Galicia | Spain | 2,700 | 530 | 1.1 |
| Ardubaiuta | Spain | 8,427 | 520 | 1.1 |
| Valencia | Spain | 4,875 | 512 | 1.1 |
| Cantabria | Spain | 582 | 501 | 1.1 |
| Castile and Leon | Spain | 2,408 | 499 | 2.1 |
| Extremadura | Spain | 1,065 | 472 | 1.1 |

Show all regions

As ever, some caution is required when interpreting these statistics. Differences in the amount of covid-19 testing and occasionally in the recording of deaths means that direct comparisons between one country's statistics and another's can be tricky. For an all-encompassing measure of covid-19's toll, see our excess-death mortality data, which compare overall death rates in each country with the historical average. However, excess-mortality data are often incomplete and are released with a delay of several weeks or more. Subnational data thus provide useful and timely information on the progress of the pandemic.

To keep up with our coverage of the pandemic, visit our coronavirus hub. Some of our covid-19 coverage is free for readers of The Economist Today, our daily newsletter.

Pagination: Screenfit



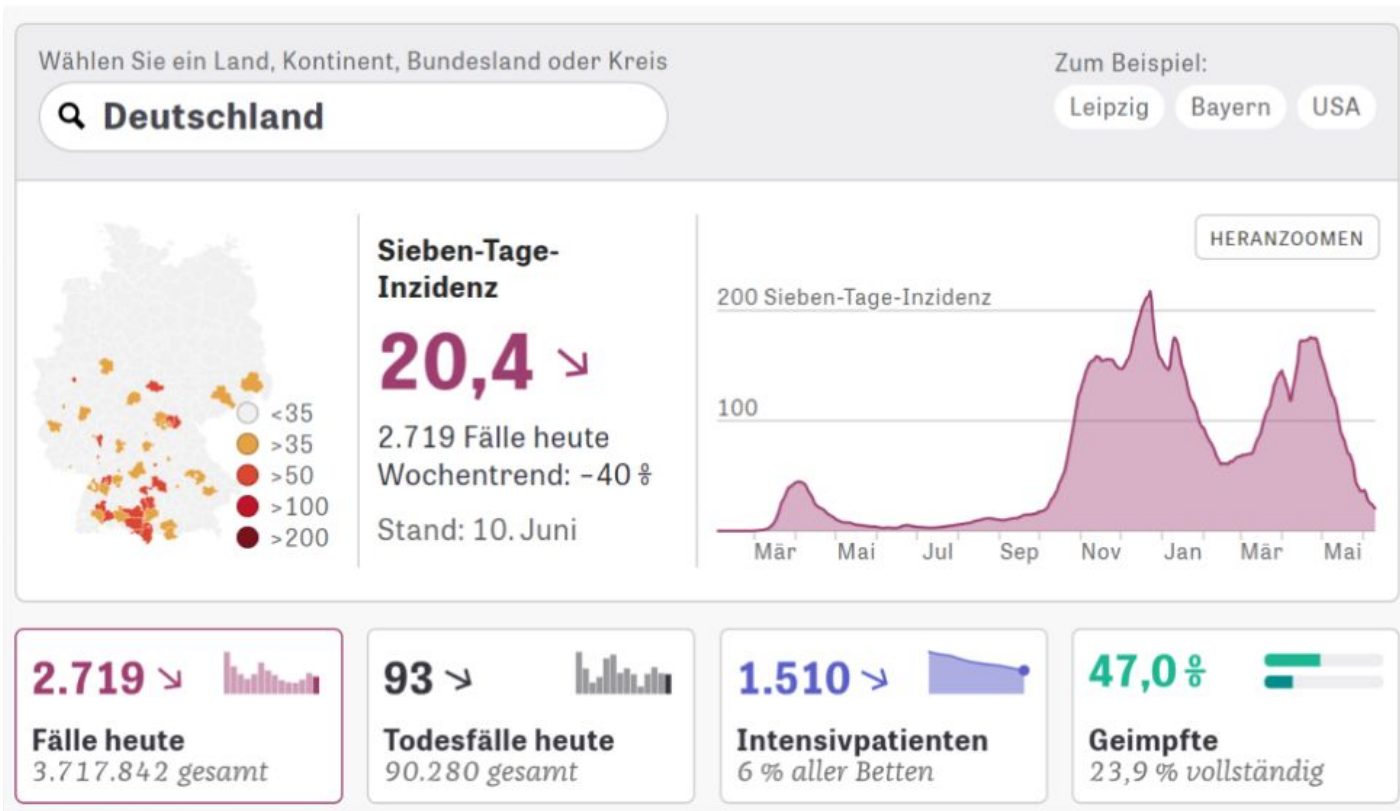
Screenfit



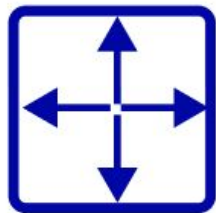
Multiple pages



Parameter-ization



Pagination Patterns



Screenfit



Overflow



Detail on
demand



Parameter
-ization



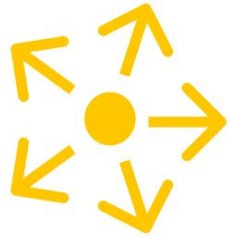
Multiple
pages

More concise



Less concise

Interaction Patterns



Exploration



Navigation



Personal-
ization



Filter &
Focus

Worksheet 5: Screen space & Interaction

SCREEN SPACE

If you are running out of screenspace, how could you support navigation to the off-screen content, e.g., on other pages?



Screenfit



Overflow



Detail on demand



Parameter-ization



Multiple pages

More concise ← → Less concise

INTERACTION

Do you need interaction in your dashboard? What do you need interaction for? How can this interaction be supported in the UI?



Exploration



Navigation



Personalization



Filter & Focus

Final mockup

Worksheet 6: Final Mockup

Create a detailed mockup of your dashboard, using your choices and exploration from the other worksheets. Create two versions if you cannot decide at this time.

Show and **tell!**