

# Dashboards - What are the Common Features of Actionable Dashboards?

Niek Klazinga Amsterdam University Medical Centre

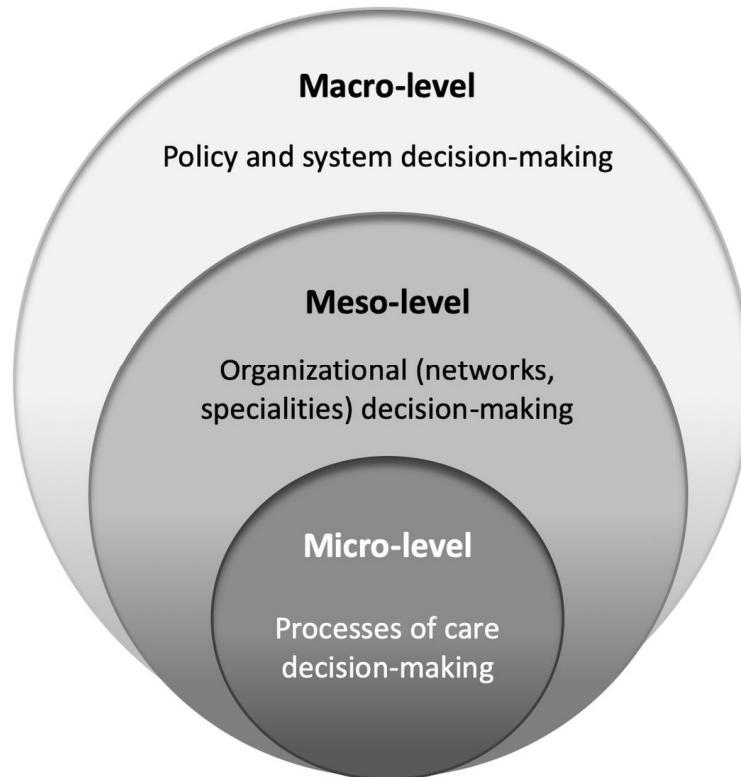
Aalborg November 2th 2021



# Dashboards – What are the Common Features of Actionable Dashboards?

- Using frameworks, balanced-score cards and dashboard to communicate indicators
- Data, information, intelligence
- Learning health systems
- Fitness for purpose and fitness for use to enhance actionability
- Exploring the actionability of healthcare performance indicators for quality of care: a qualitative analysis of the literature, expert opinion and user experience. Barbazza E, Klazinga NS, Kringos DS. BMJ Qual Saf. 2021 May 7:bmjqs-2020-011247.
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## Decision-making contexts across healthcare systems.



Erica Barbazza et al. BMJ Qual Saf doi:10.1136/bmjqqs-2020-011247

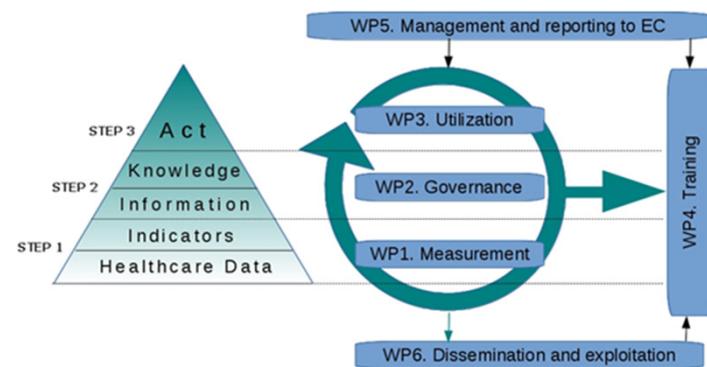
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& Safety



HealthPros

**ROS** a Marie Skłodowska-Curie innovative training network for a first cohort of Healthcare Performance Intelligence Professionals



## Fellows

# Hosting universities

# Three research pillars

## Partner organisations



Visit the HealthPros website for more on the network and its research activities: <https://www.healthpros-h2020.eu>

# COVID-19 specific studies (only AMC-affiliated HealthPros)

Focus	Research topics and applications	Partners
Actionability of COVID-19 dashboards	<p><a href="#">Study of 158 COVID-19 dashboards globally</a> for a state-of-the-art overview of why, what and how data is communicated and appraisal of features common to highly actionable dashboards.</p>	
Changes to COVID-19 dashboards over time	<p>Follow-up study of 26 Canadian COVID-19 dashboards investigating changes between the first and second wave and their overall actionability. More follow-up studies in the Netherlands (data collection completed) and Germany (study design phase).</p>	
Lessons from dashboard developers	<p>Surveying COVID-19 dashboard developers for insights into the development and lessons learned from public reporting during the pandemic.</p>	  
Monitoring the effects of COVID-19	<p>Reviews to ongoing development of indicator set for <a href="#">monitoring to signal and address the wider effects of the COVID-19 pandemic</a>.</p>	
COVID-19 and nursing homes	<p>Study on the preparedness of nursing homes and its effects on nursing home personnel safety culture and well-being in Portugal (Algarve, Alentejo).</p>	
COVID-19 and hospitals	<p>“Beyond hospital data: from hospital performance to system performance” – A survey among HOPE Exchange Programme participants on integration, data, its use and the way forward</p>	
Reorganization of health care systems	<p>Performance indicators to measure the impact of COVID-19 pandemic in on health care services regarding for non-communicable diseases</p> <p><a href="#">"The organisation of resilient health and social care following the COVID-19 pandemic"</a> and “European solidarity in the public health emergencies”</p>	 
		

# What makes COVID-19 dashboards actionable?

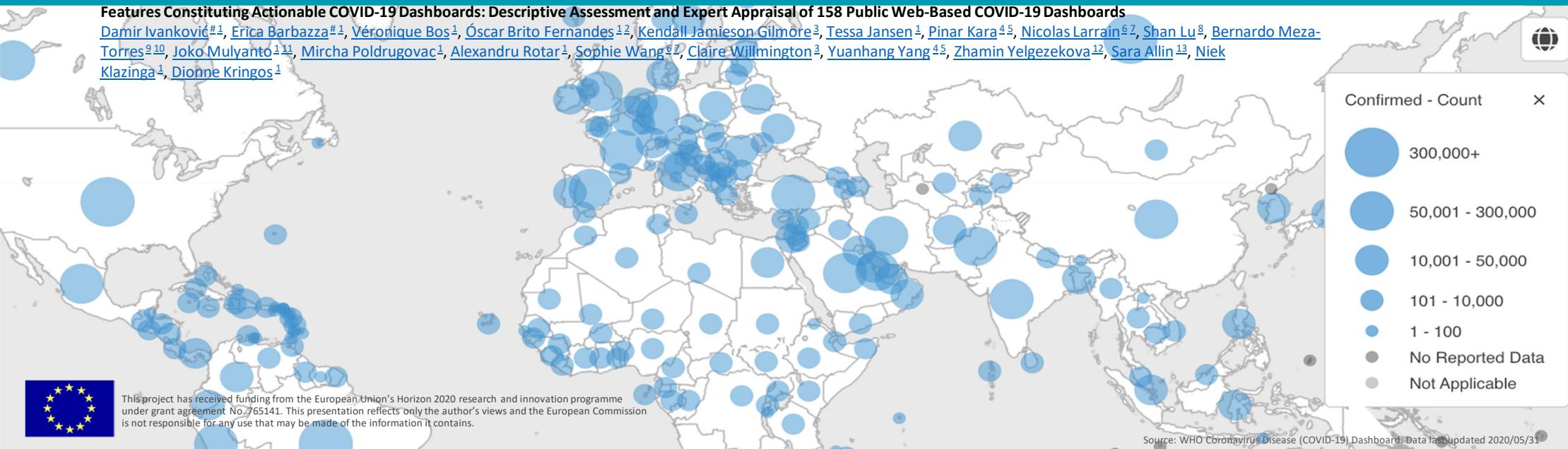
## A descriptive assessment and expert appraisal of 158 public, web-based COVID-19 dashboards

Journal of Medical Internet Research . 2021 Feb 24;23(2):e25682.

doi: 10.2196/25682.

### Features Constituting Actionable COVID-19 Dashboards: Descriptive Assessment and Expert Appraisal of 158 Public Web-Based COVID-19 Dashboards

Damir Ivanković<sup>#1</sup>, Erica Barbazza<sup>#1</sup>, Véronique Bos<sup>1</sup>, Óscar Brito Fernandes<sup>1,2</sup>, Kendall Jamieson Gilmore<sup>3</sup>, Tessa Jansen<sup>1</sup>, Pinar Kara<sup>4,5</sup>, Nicolas Larraín<sup>6,7</sup>, Shan Lu<sup>8</sup>, Bernardo Meza-Torres<sup>9,10</sup>, Joko Mulyanto<sup>1,11</sup>, Mircha Poldrugovac<sup>1</sup>, Alexandru Rotar<sup>1</sup>, Sophie Wang<sup>6,7</sup>, Claire Willmington<sup>3</sup>, Yuanhang Yang<sup>4,5</sup>, Zhamin Yelgezekova<sup>12</sup>, Sara Allin<sup>13</sup>, Niek Klazinga<sup>4</sup>, Dionne Kringos<sup>4</sup>



# What is a '*public web-based dashboard*'?

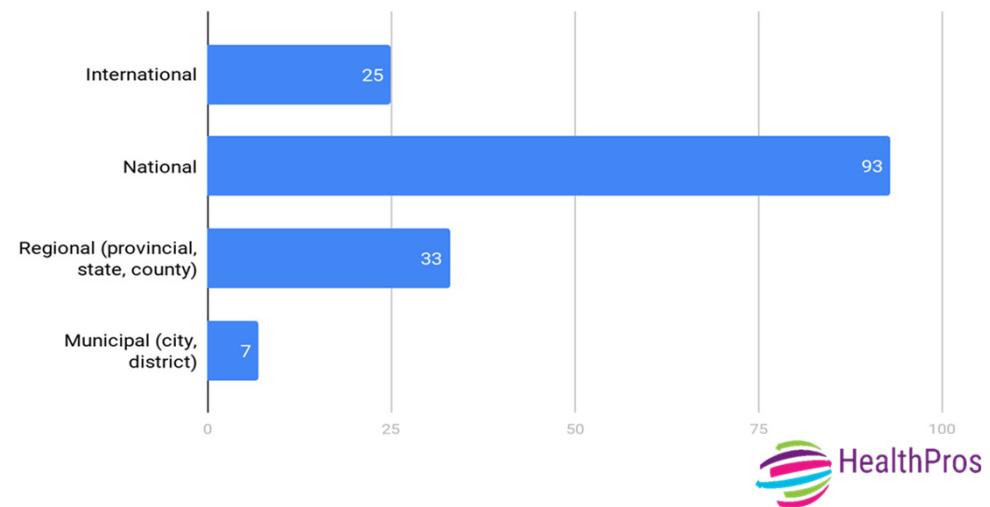
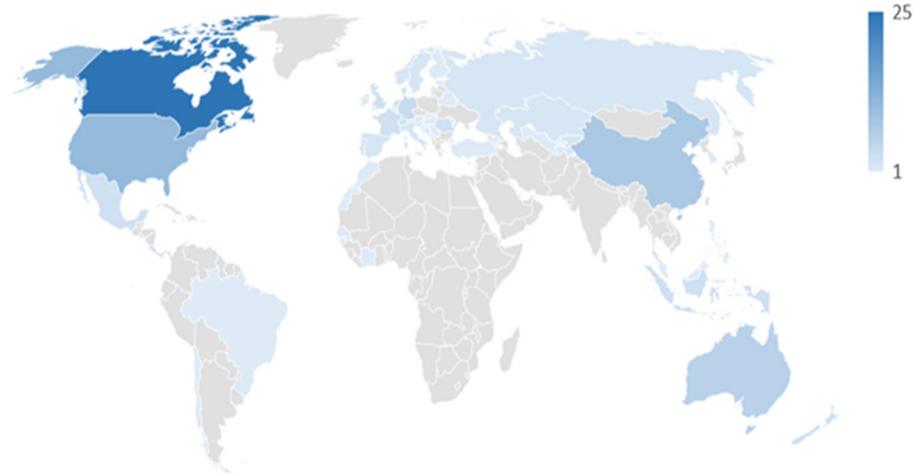
## Inclusion

1. Reporting of key performance indicators
2. The use of some form of data visualization
3. Dynamic reporting, meaning data is updated regularly
4. Publicly available in an online, web-based format

## Exclusion

- Dashboards on mobile applications (e.g. Telegram)
- Dashboards with login requirements (e.g. Facebook)
- Dashboards beyond 22-languages competency of the panel

## Dashboards reviewed



1

Know the audience and their information needs

Dashboards with a known audience and explicit aim had focus and continuity in their content, analysis and delivery. Techniques such as guiding key questions or overall composite scores communicated clearly the decision they intended to support. Multi-language functionality and exact timing of updating signalled an awareness and intent to encourage the regular use of the intended decision-maker.

# COVID Act Now

<https://covidactnow.org/?s=1120251>

*Users informed on overall level of risk in their state and counties*



# 2

## Manage the type, volume and flow of information

The selection of a concise number of indicators brought focus and importance to the information and the possibility to view indicators together, at-a-glance. The use of indicators in moderation, yet still spanning varied types of information, was especially effective. The ordering of information, from general to specific or in sections based on theme, made the flow of information intuitive.

### Self-reported social/behaviour

#### indicators Ottawa

<https://www.ottawapublichealth.ca/en/reports-research-and-statistics/daily-covid19-dashboard.aspx>

#### France

<https://geodes.santepubliquefrance.fr/#c=indicators&view=map2>

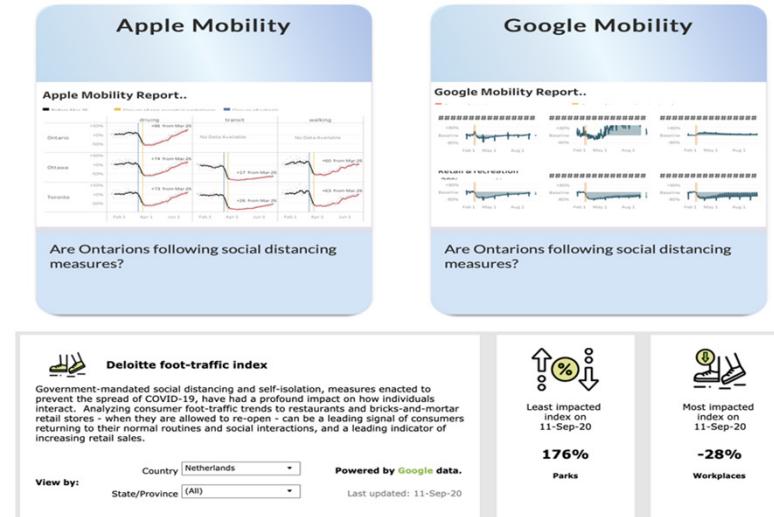


Prevalence of the systematic adoption of wearing a mask in public during the Covid-19 epidemic (%)

### Observed social/behaviour indicators

#### Ontario

<https://howsmyflattening.ca/#/home>



#### Deloitte

<https://www2.deloitte.com/ca/en/pages/about-deloitte/articles/covid-dashboard.html>

# 3

## Report data sources and methods clearly

A clear source of data and explanation of an indicator's construction, including potential limitations, was found an important component of trust in the dashboard and clarity in its reporting. This information can be provided in short narratives that support users to understand what is in fact being presented.

### Denmark

<https://www.ssi.dk/sygdomme-beredskab-og-forskning/sygdomsovervaagning/c/covid19-overvaagning>

Detailed description on data sources and definitions to explain the meaning of terms used throughout

#### Data sources

##### Definitions used in epidemiological surveillance

Here you will find an alphabetical list of definitions of a number of key concepts in the epidemiological surveillance of COVID-19.

A

##### The mitigation

phase The mitigation phase replaced the containment phase, as in Denmark from 12 March 2020 they switched to a strategy where the focus was on delaying the spread of infection so that the number of treatment-requiring does not exceed the capacity in the health care system. Initially, people with hospitalization-requiring symptoms of COVID-19 were tested. After March 12, the test strategy has been continuously adjusted and expanded.

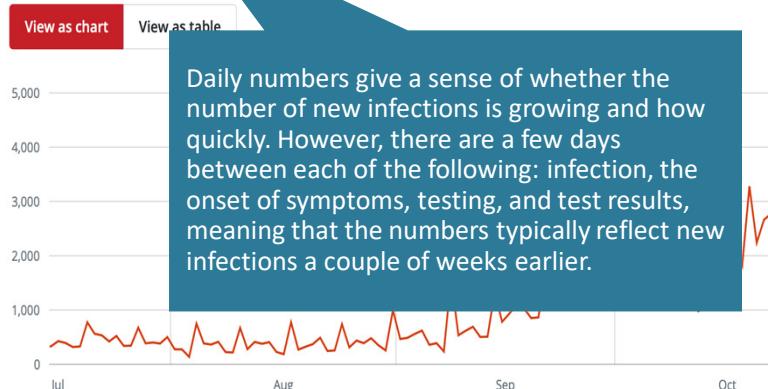
D

##### Discretionary considerations

In order to protect patients' identities, data of less than 5 persons per geographical unit or narrow age and gender groups are generally not displayed.

### Daily new cases

Note: Daily provincial data is not always received by the Public Health Agency of Canada over the weekend. This results in a spike in cases later in the week.



### CBC News

<https://newsinteractives.cbc.ca/coronavirustracker/>

Brief narratives explain how an indicator is calculated and what the data may (or may not) include

# 4

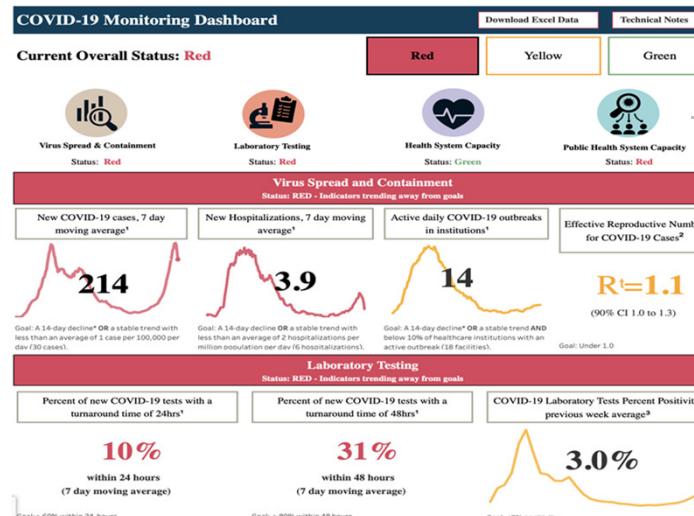
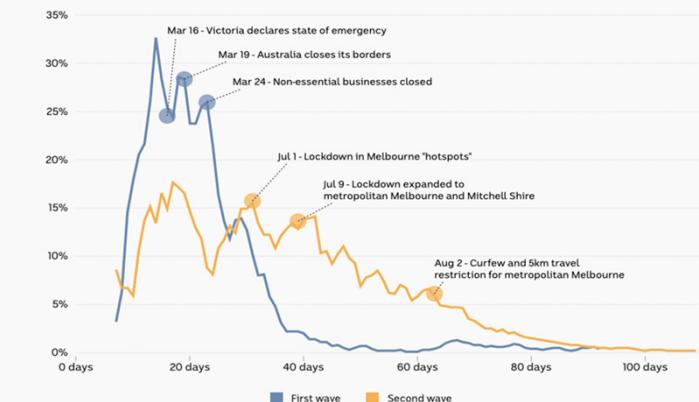
## Link time trends to policy decisions

Reporting data over time together with the introduction of key infection control measures facilitated an understanding of their effect (or lack of). This was found to build trust and transparency and can be used in combination with reporting of targets.

### Australia

<https://www.abc.net.au/news/2020-03-17/coronavirus-cases-data-reveals-how-covid-19-spreads-in-australia/12060704?nw=0>

Growth rate of Victoria's first and second waves (3-day moving averages)



### Toronto

<https://www.toronto.ca/home/covid-19/covid-19-latest-city-of-toronto-news/covid-19-status-of-cases-in-toronto/>

# 5

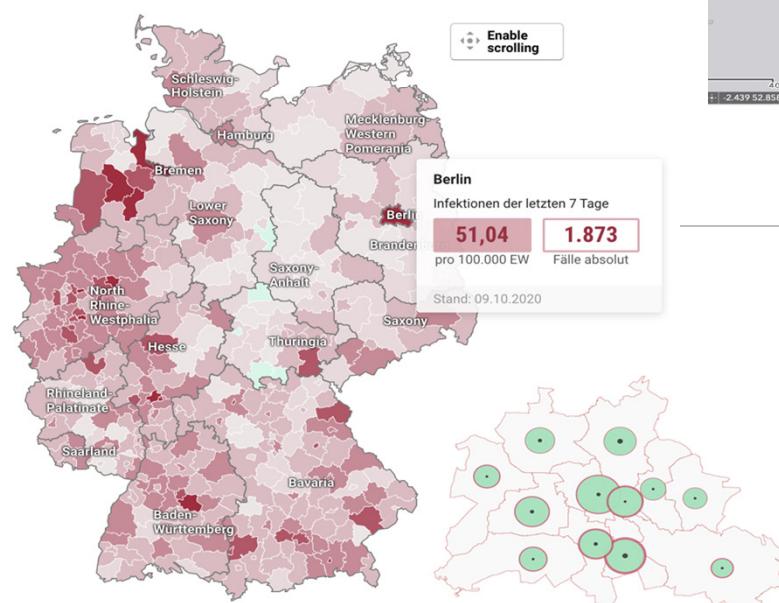
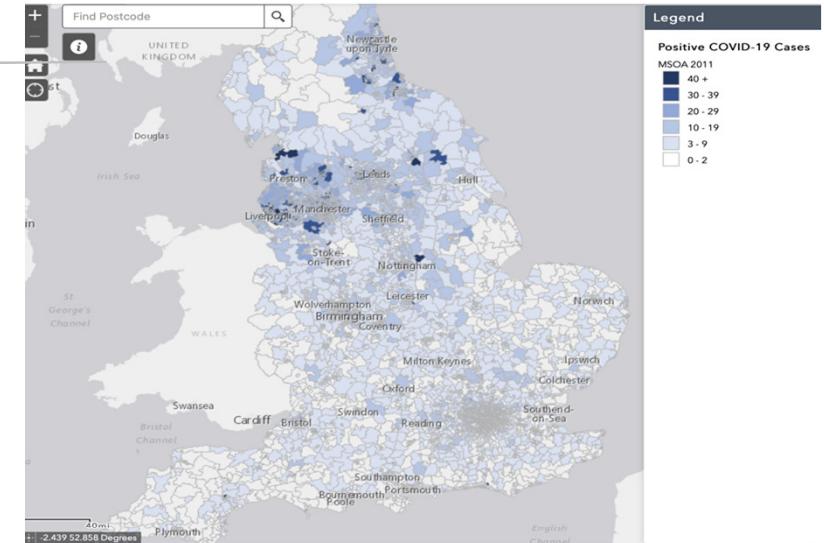
## Provide data “close to home”

To inform individual's on risks in their immediate surroundings, granular geographic breakdowns are needed. Data that is highly aggregated was difficult to understand. Maps (over tables and charts) were most effective for geographic information.

### United Kingdom

<https://www.arcgis.com/apps/webappviewer/index.html?id=47574f7a6e454dc6a42c5f6912ed7076>

*Search bar allows for post-code level searching of COVID indicators*



### Germany

<https://interaktiv.morgenpost.de/coronavirus-karte-infektionen-deutschland-weltweit/>

*City-level breakdown with zoom into city (currently Berlin)*

# 6

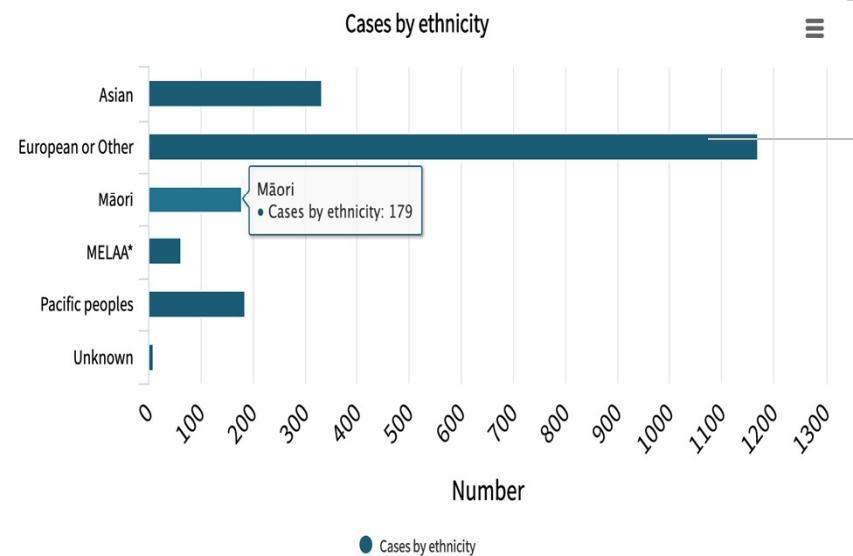
## Breakdown population to relevant sub-groups

Providing data with the possibility to explore varied population characteristics made indicators relatable to individual users. It allows an understanding of risks and trends based one's own demographics. It also can facilitate equity-driven decision-making by exposing differences among the population.

### New York City

<https://www1.nyc.gov/site/doh/covid/covid-19-data.page>

*Breakdown of indicators by race/ethnicity and poverty levels*



### Case, Hospitalization and Death Rates

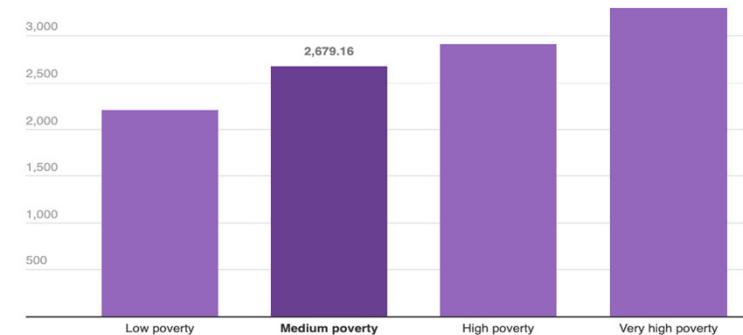
These charts show case, hospitalization and death rates by group since March.

View by:

Age    Sex    Race/ethnicity    Poverty    Borough

Rate per 100,000 people (age-adjusted)

Cases   Hospitalizations   Deaths



### New Zealand

<https://www.stats.govt.nz/experimental/covid-19-data-portal>

*Multiple breakdowns including by ethnicity*

# 7

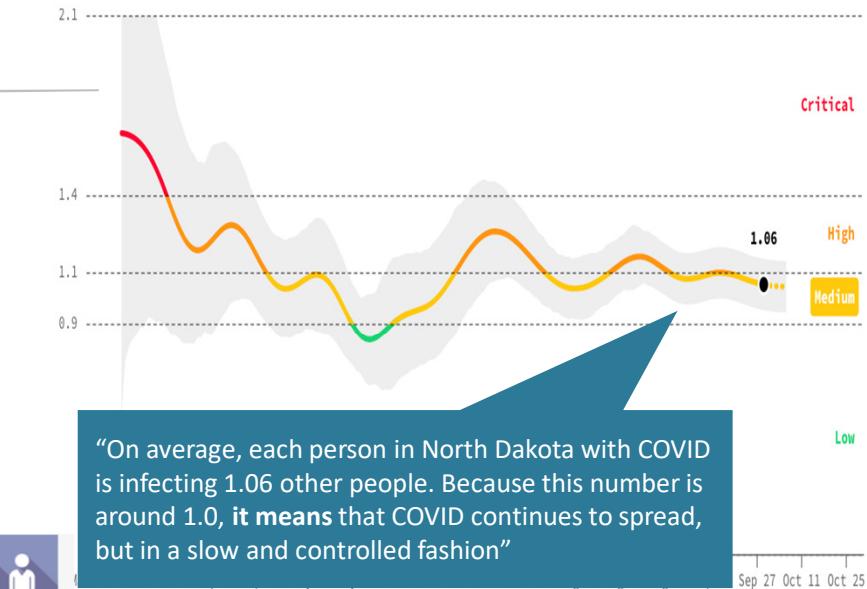
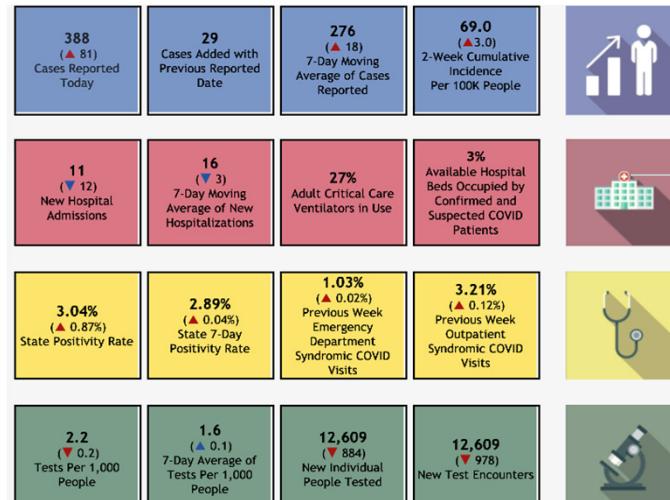
## Use story-telling and other visual cues

A concise narrative explaining the significance of a trend supports users to understand the importance of the information. Bare statistics without a narrated analysis leave the burden of interpretation solely to the user. Brief explanations on the meaning of trends used in combination with visual techniques, like intuitive colour schemes and icons, supported ease of interpretation.

### COVID Act Now

<https://covidactnow.org/us/montana-mt?s=1120251>

*Brief narrative explains the direction of trends and their meaning*



### Colorado State

<https://covid19.colorado.gov/data>

*Indicators clustered in themes and symbols used to indicate indicators increasing or decreasing in value*

# Reflections on actionable dashboards for RKKP

- How is feedback through indicators built into the learning mechanisms of professionals
- How is feedback tailored for other target groups (i.e. public reporting)
- What is the “selection bias” based on available data and technological restrictions
- How “evidence based” are visualizations
- How “inclusive” are chosen means of representation (i.e. relative weights)

**Damir**  
**Erica**  
**Dionne**  
**Niek**

d.ivankovic@amsterdamumc.nl  
e.s.barbazza@amsterdamumc.nl  
d.s.kringos@amsterdamumc.nl  
n.s.klazinga@amsterdamumc.nl

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