

**European Centre for Disease Prevention and Control** 

# Digital advances in disease surveillance and extended remit of ECDC

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ERS presidential summit - 4 June 2020

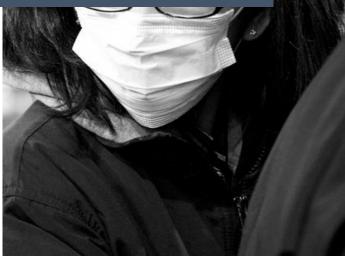
I have no financial conflicts of interest on this topic, other than being staff of ECDC





### **SARS Coronavirus**





(cc) milolovitch69, via flickr.com

(cc) Chris & Lara Pawluk, via flickr.com

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## **ECDC** – current mission and mandate

To identify, assess and communicate current and emerging threats to human health posed by infectious diseases. Disease Surveillance & Epidemic intelligence

> Response support & Risk assessments Preparedness & capacity strengthening

Scientific advice & guidance

EU and external stakeholders & Country support

Public health training

Communication

Vaccine-preventable diseases and Immunisation

Sexually transmitted infections, Blood-Borne Viruses and Tuberculosis

Antimicrobial resistance and healthcare-associated infections

Emerging, Food and vectorborne diseases

### **Continuous threat monitoring** (Round Table meeting)





## Public Health Event level 2 as of 31 January 2020

ECDC works 24/7 during PHE 2

#### **Proposed new mandate for ECDC:**



- Epidemiological surveillance enabling real-time surveillance;
- **Preparedness and response** planning, reporting and auditing;
- Provision of **non-binding recommendations** for risk management;
- Monitoring and assessing health systems capacity for diagnosis, prevention and treatment of specific communicable diseases as well as patient safety.
- Capacity to mobilise and deploy EU Health Task Force to assist local response in Member States;
- Build a network of EU reference laboratories and a network for substances of human origin.
- Reinforce the contribution to the EU commitment to global health security preparedness

#### **History of surveillance solutions at ECDC**



#### 2017/21 EPHESUS

2015/21 Surveillance Systems Reengineering

**2007/11** Transfer of network coordination and historical data to ECDC

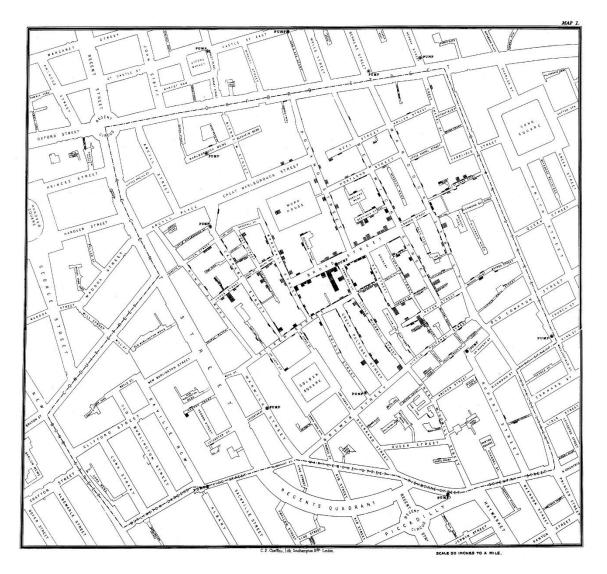
**2007** Database live

2005 ECDC founded

**1980s and 90s** Dedicated surveillance networks

#### **Epidemiology in surveillance: Describe time, place and personal characteristics**





#### The European Surveillance System (TESSy)



- Purpose-built integrated database for all diseases under EU surveillance
- Web interface, password protection
- Functions:
  - Data upload and validation
  - Customised data download
  - Cluster search

Home Upload	Review Query	Reports Data so	irces Network workspa	ice My profile Do	ocuments
'ou are here: ECDC Extranet > TESS Home	у				Contact HelpDes Online He
liseases at the European level.	This TESSy Web application e	enables nominated users to up	minating surveillance data on comm oad surveillance data from their cou		
rom ECDC, to access historical			les users from the participating cou rough the Query data feature.	ntries and	
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#### **Automated surveillance outputs**



#### TESSy reports

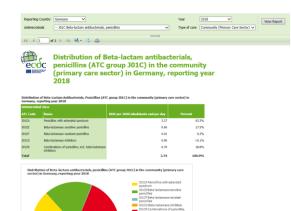
- Restricted
- Static
- Costly customization

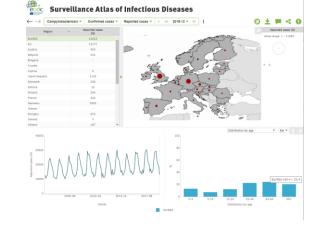


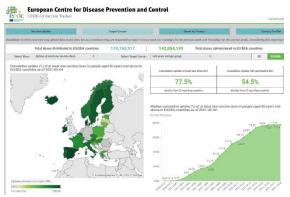
- Public
- Limited interactivity
- Costly customization

#### Dashboards

- Public
- Interactive
- Easy customization



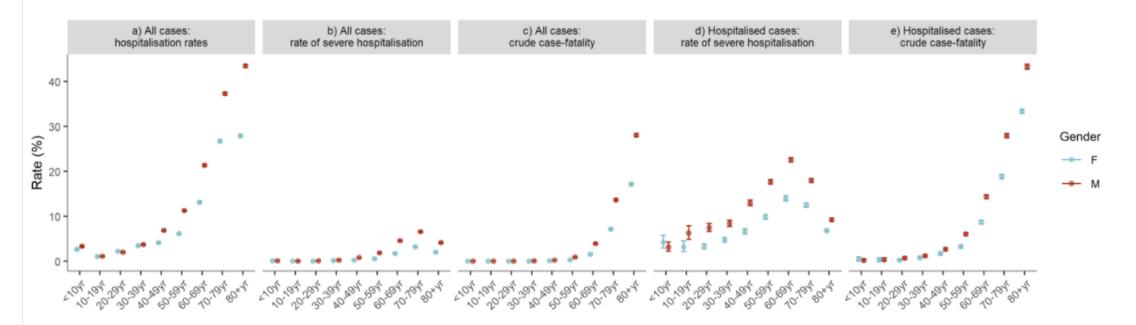




#### **Customisation of automated outputs: Risk factor analysis for COVID-19**

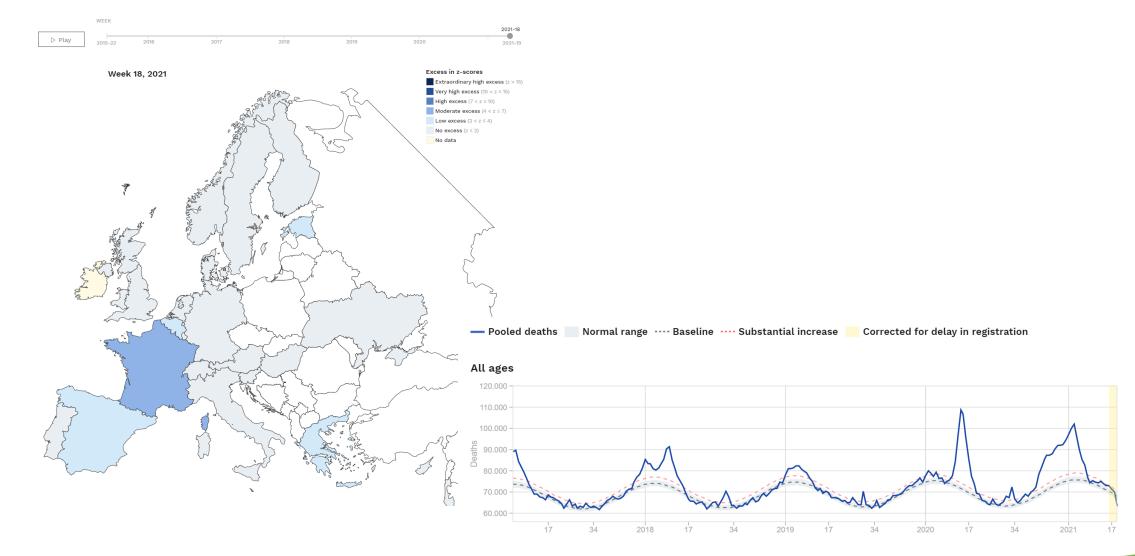


Age-sex-specific rates of hospitalisation (a), severe hospitalisation (b, d) and case-fatality (c, e), all cases and hospitalised cases, EU/EEA countries, to 22 November 2020

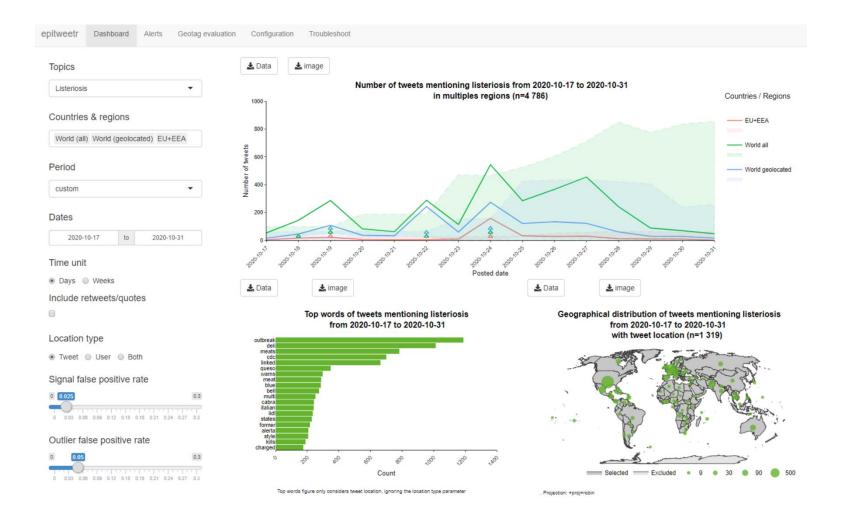


#### EuroMoMo.eu – dynamic mapping of excess mortality





## **Epitweetr – monitoring social media**



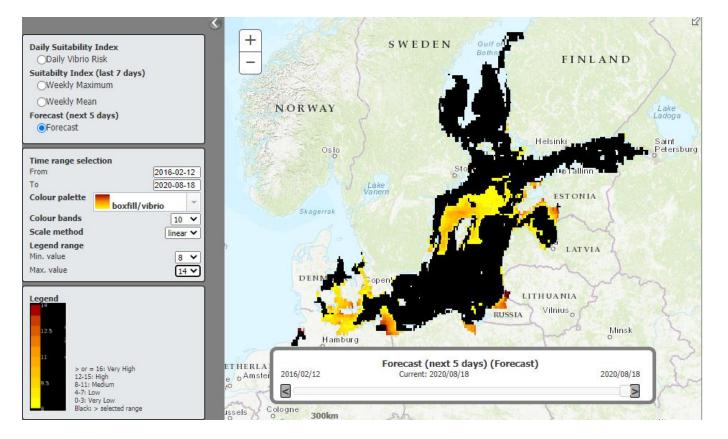
#### Vibrio monitoring in the Baltic sea



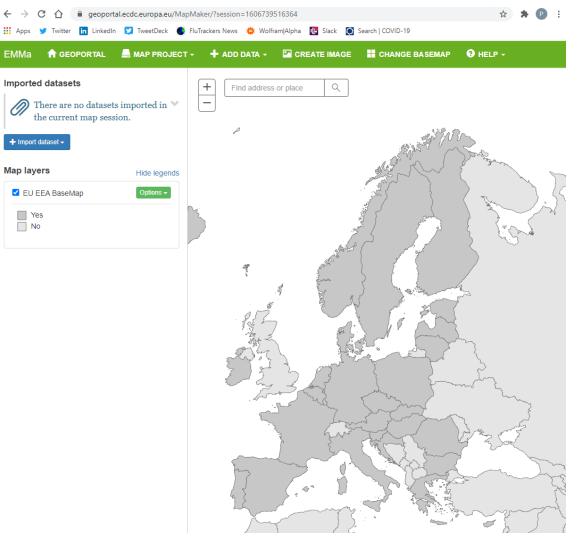
Evaluation of the suitability conditions for some *Vibrio* species in the Baltic sea

Few cases a year

Tool with salinity and water temperature



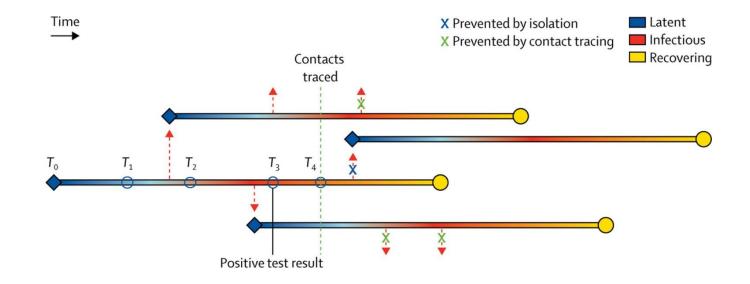
#### **Providing map creation tools for stakeholders: ECDC EMMA**



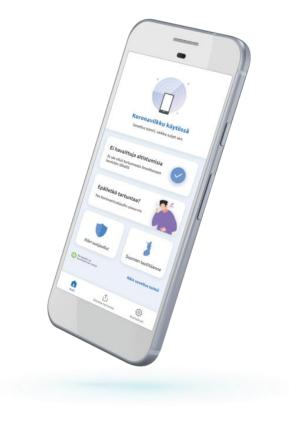


# Digital proximity tracing complements conventional contact tracing









#### Koronavilkku.fi

# The overall iterative process of a public health surveillance system

#### Data Analysis/Interpretation · Data Analysis: lack of supervised information extraction, source identification (i.e. self-reported vs. general statements), lack of geo-spatial analysis • Data Interpretation: lack of longitudinal analysis. -Mm-Evaluation Data Collection Evaluation method: lack of sensitivity · Data source bias: limited platforms/population and and representativeness analysis, lack content bias/misinformation/small sample size of longitudinal evaluation DIGITAL PUBLIC · Data collection: limited to specific hashtags and Q manual/subjective search term definitions, HEALTH SURVEILLANCE language limitations, and limited data types. Planning/Design (DPHS) • Scope (theme): lack of studies on disease burden, occupation safety, and nutrition. **Dissemination/Action** • Scope (audience): no study on vulnerable Public health actions: less than 1% utilized their populations. results for public health actions • Scope (method): Lack of infoveiullance studies o, ×) (×) R

Shakeri Hossein Abad, Z., Kline, A., Sultana, M. *et al.* Digital public health surveillance: a systematic scoping review. *npj Digit. Med.* **4**, 41 (2021). https://doi.org/10.1038/s41746-021-00407-6

#### Thank you for notifying infectious diseases!

#### Thank you for your attention!

Thank you for providing support with slides and content to ECDC colleagues: Julien Beauté, Antonis Lanaras, Lina Nerlander and co



ecdc.europa.eu