

# EU/EEA surveillance today and in the (near) future

Julien Beauté



# ECDC surveillance activities



- Tools and procedures
- Data analysis and interpretation
- Data dissemination

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## Surveillance and disease data

### Surveillance ATLAS of Infectious diseases

Latest data on numerous infectious disease and antimicrobial resistance

[Access the ATLAS](#)



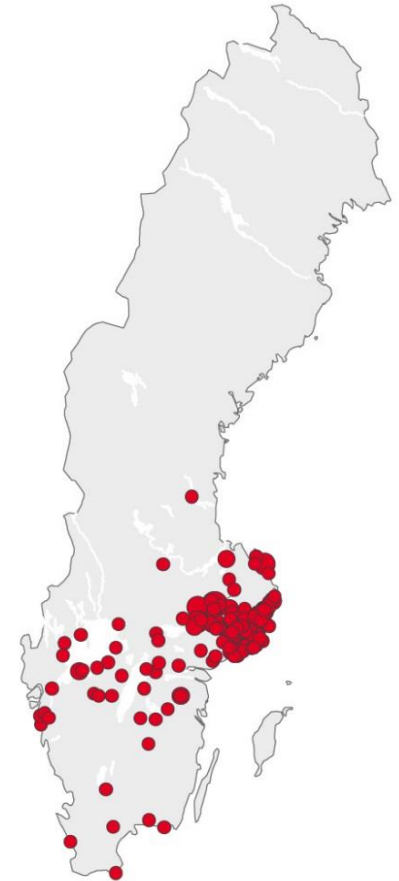
[Access the ATLAS](#) [Annual Epidemiological Reports](#)



# Objectives of surveillance

- Descriptive disease epidemiology
- Outbreak detection
- Evaluation of interventions
- Information for healthcare provision
- Research
- ...

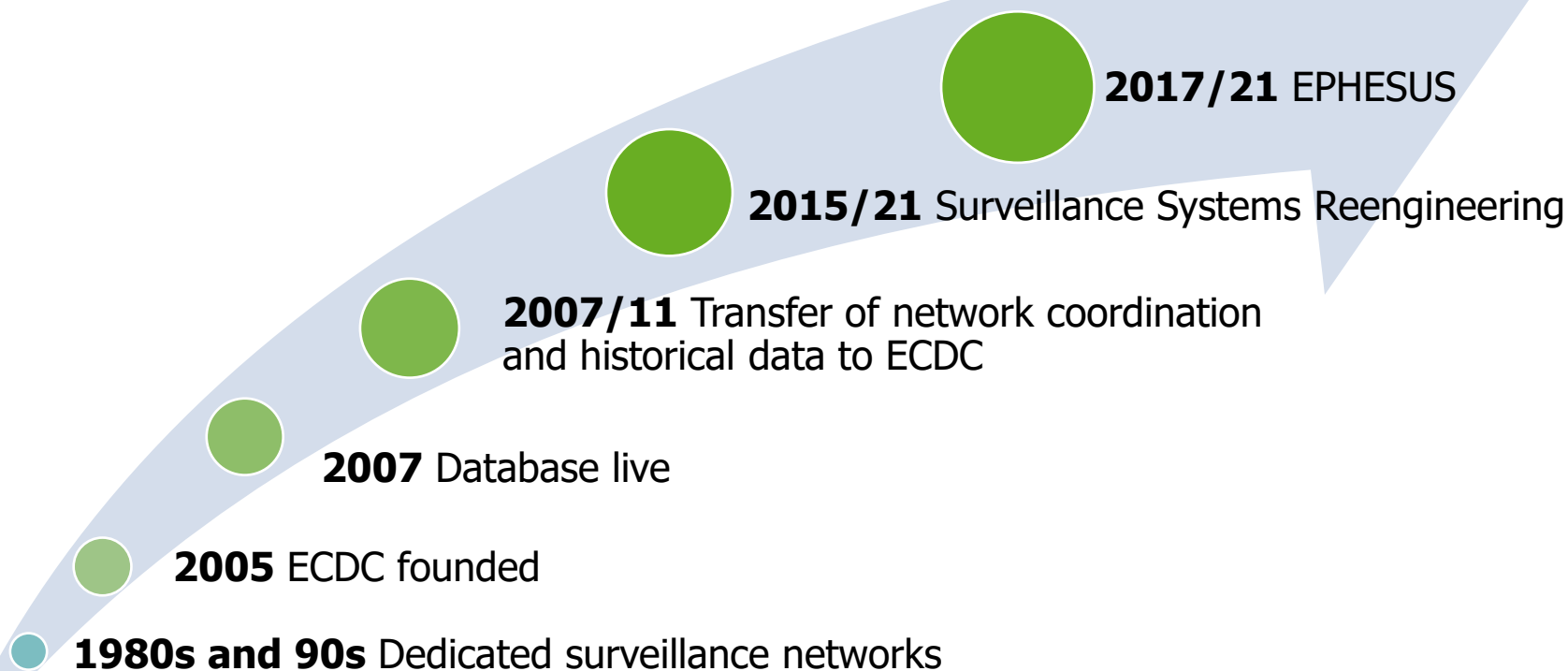
**FIGURE 1**  
Location of tick-borne encephalitis cases in Sweden, 2010



The red dots show probable geographical location of infection for the cases.



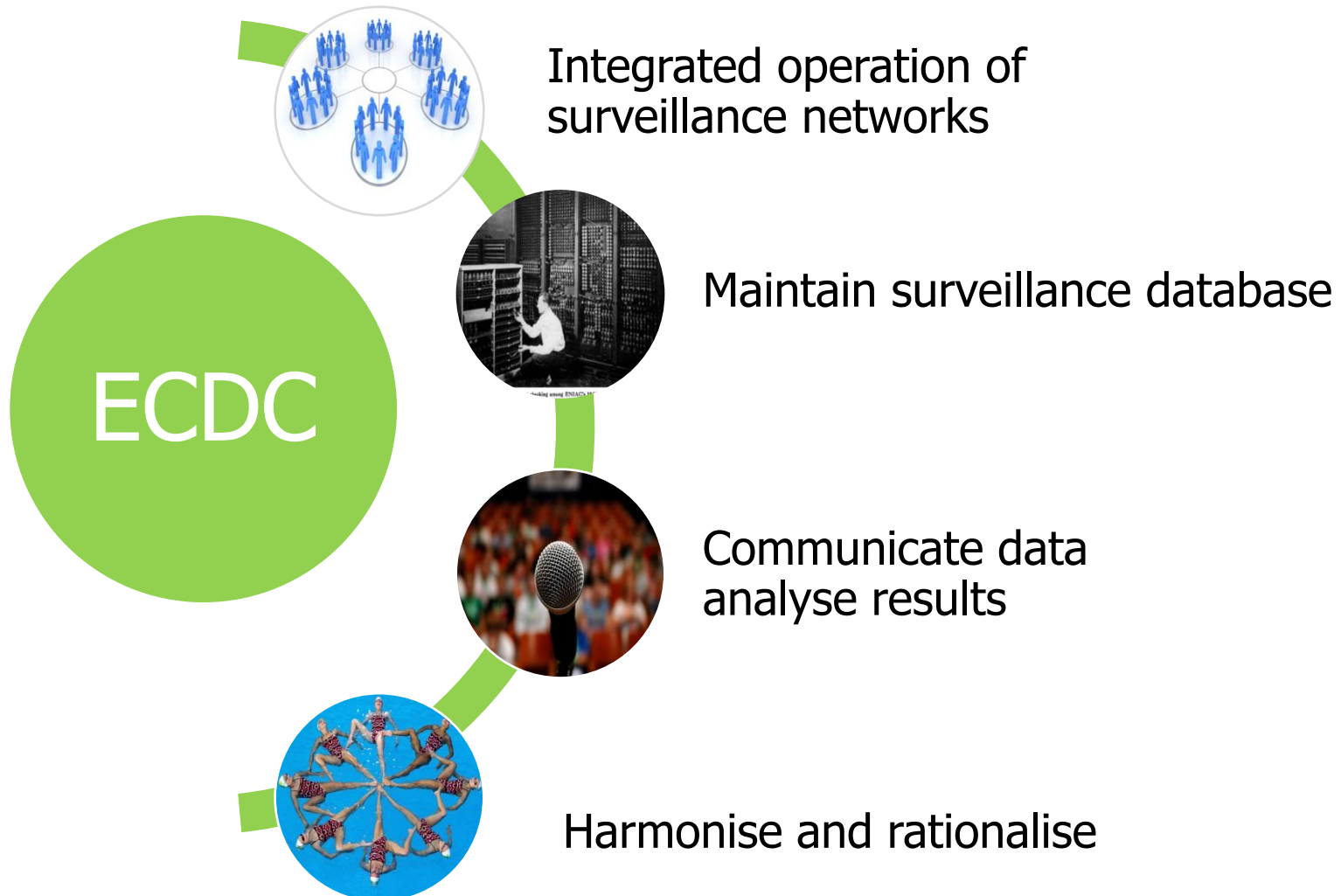
# History





# Role of ECDC

(as per founding regulation)





# 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

ECDC Extranet | **TESSy** The European Surveillance System

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You are here: ECDC Extranet > TESSy

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**Welcome to the TESSy Web site!**

TESSy—The European Surveillance System—is responsible for collecting, storing, and disseminating surveillance data on communicable diseases at the European level. This TESSy Web application enables nominated users to upload surveillance data from their country to the TESSy database, which is the repository for these data. The TESSy Web interface also enables users from the participating countries and from ECDC, to access historical data in the form of standard reports and ad hoc queries, through the Query data feature.



**TESSy STATISTICS**

	Last 24 hours	Last week	Last month	Total
Users logged in	63	229	390	3713
Files uploaded	61	496	2286	161873
Records uploaded	112796	521001	2642974	205251739
Subjects reported	39	52	76	108



# Surveillance systems



- Description of surveillance system
  - To make sure it is fit for purpose
  - To help interpret the data
- Set of indicators, including
  - System design
  - Coverage
  - Case definition
  - ...
- Toward surveillance standards

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Home > Publications & data > Surveillance systems overview for 2019

## Surveillance systems overview for 2019

Table  
18 Jan 2021

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This spreadsheet contains all surveillance system overview tables from ECDC's annual epidemiological report for 2019.

**Download**

[Surveillance systems overview for 2019 - EN - \[XLSX-203.26 KB\]](#)

[Anthrax](#) | [Botulism](#) | [Campylobacteriosis](#) | [Chikungunya virus disease](#) | [Chlamydia infection](#) | [Cholera](#) | [Crimean-Congo haemorrhagic fever](#) | [Cryptosporidiosis](#) | [Dengue](#) | [Diphtheria](#) | [Ebola haemorrhagic fever](#) | [Echinococcosis](#) | [EU/EEA](#) | [Giardiasis](#) | [Hantavirus infection](#) | [Healthcare-associated infections](#) | [Hepatitis A](#) | [Hepatitis B](#) | [Hepatitis C](#) | [HIV infection](#) | [Influenza](#) | [Invasive Haemophilus influenzae disease](#) | [Lassa fever](#) | [Leptospirosis](#) | [Listeriosis](#) | [Malaria](#) | [Marburg haemorrhagic fever](#) | [Meningococcal disease](#) | [Mumps](#) | [Pertussis](#) | [Plague](#) | [Pneumococcal disease](#) | [Polio](#) | [Rabies](#) | [Rift Valley fever](#) | [Salmonellosis](#) | [Severe acute respiratory syndrome \(SARS\)](#) | [Shigellosis](#) | [Smallpox](#) | [Surveillance](#) | [Verotoxigenic Escherichia coli infection](#) | [West Nile virus infection](#)

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### PERSPECTIVE

## Infectious disease surveillance system descriptors: proposal for a comprehensive set

**Julien Beauté<sup>1</sup>, Bruno Christian Ciano<sup>1</sup>, Takis Panagiotopoulos<sup>2</sup>**

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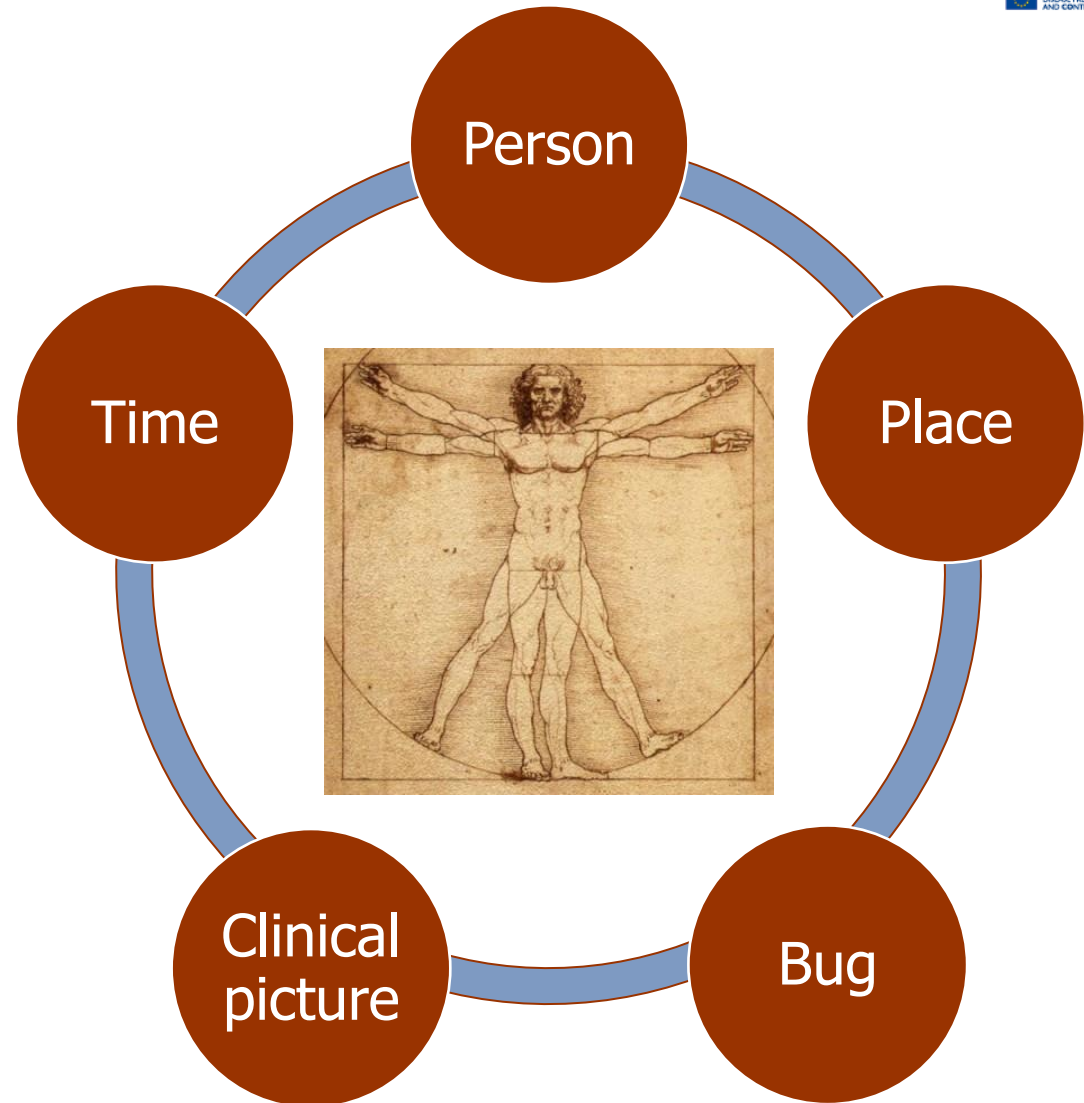
Citation style for this article:  
Beauté Julien, Ciano Bruno Christian, Panagiotopoulos Takis. Infectious disease surveillance system descriptors: proposal for a comprehensive set. Euro Surveill. 2020;25(27):pii=1900708. <https://doi.org/10.2807/1560-7917.ES.2020.25.27.1900708>

Article submitted on 18 Nov 2019 / accepted on 06 Apr 2020 / published on 09 July 2020



# Metadata

- List of variables and values for each disease under surveillance
- Agreed with Member States
- Binding for data providers
- Updates max. once per year





# Data management and analysis

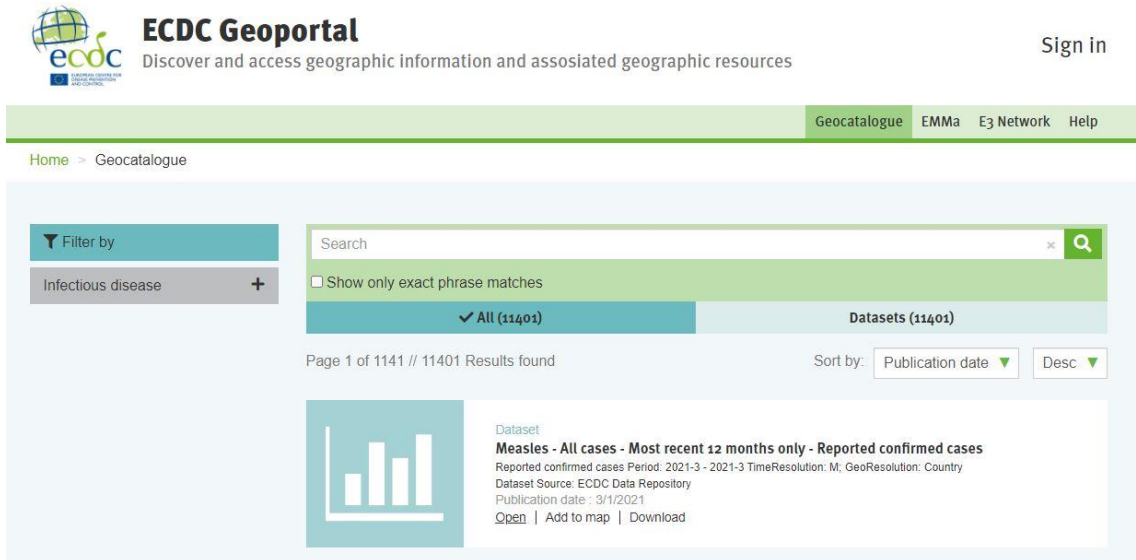
## Data management

- SQL
- Python
- FME
- ArcGIS
- ...

## Data access

## Data analysis

- Stata
- R
- ...



**ECDC Geoportal**  
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Filter by  
Infectious disease +

Search

☐ Show only exact phrase matches

✓ All (11401) Datasets (11401)

Page 1 of 1141 // 11401 Results found

Sort by: Publication date Desc

**Dataset**  
**Measles - All cases - Most recent 12 months only - Reported confirmed cases**  
Reported confirmed cases Period: 2021-3 - 2021-3 TimeResolution: M, GeoResolution: Country  
Dataset Source: ECDC Data Repository  
Publication date: 3/1/2021  
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**Two R packages for  
analysing infectious  
disease surveillance data**

With the new tools, public health experts can detect possible outbreaks or draft epidemiological reports.

[Find out more](#)



**Download COVID-19 datasets**

Find all datasets available for download on COVID-19.

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# Automated surveillance outputs

## TESSy reports

- Restricted
- Static
- Costly customization

## Surveillance atlas

- Public
- Limited interactivity
- Costly customization

## Dashboards

- Public
- Interactive
- Easy customization

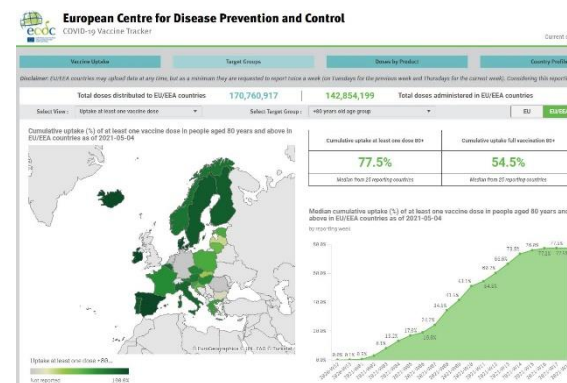
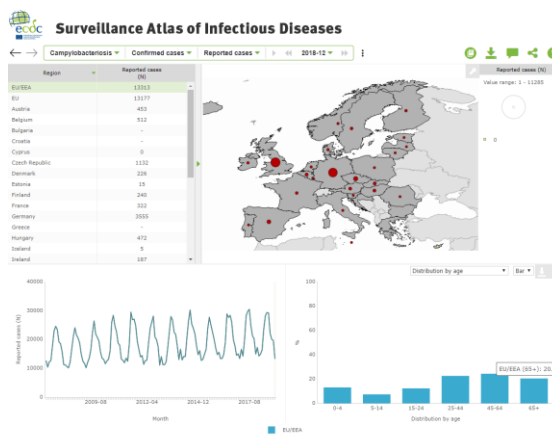
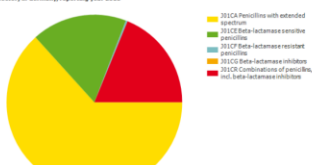
Reporting Country:  Year:   
Antibiotics:  Type of care:

### Distribution of Beta-lactam antibacterials, penicillins (ATC group J01C) in the community (primary care sector) in Germany, reporting year 2018

Distribution of Beta-Lactam Antibacterials, Penicillins (ATC group J01C) in the community (primary care sector) in Germany, reporting year 2018

ATC Code	Human	6000 per 1000 inhabitants and per day	Percent
J01CA	Penicillins with extended spectrum	3.37	63.3%
J01CE	Beta-lactamase sensitive penicillins	0.66	17.5%
J01CF	Beta-lactamase resistant penicillins	0.01	0.3%
J01CG	Beta-lactamase inhibitors	0.00	<0.1%
J01CD	Combinations of penicillins, incl. beta-lactamase inhibitors	0.70	18.0%
Total		3.74	100.0%

### Distribution of Beta-lactam antibacterials, penicillins (ATC group J01C) in the community (primary care sector) in Germany, reporting year 2018





# Enhanced reports

## Advanced outputs

- Public
- Descriptive
- Low effort

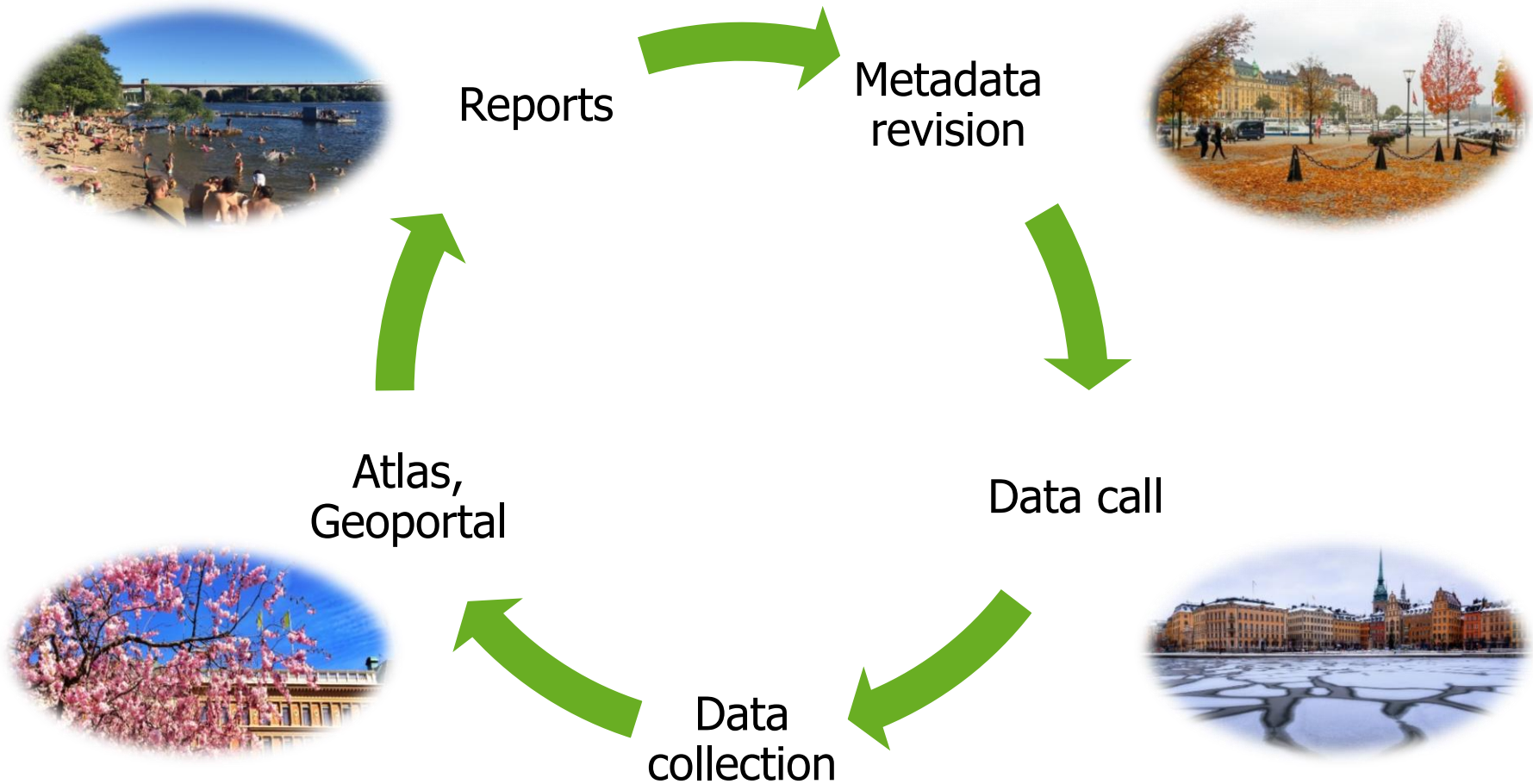
- Public
- Mostly descriptive
- Medium effort

- Public
- Mostly analytic
- High effort

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# Surveillance cycle





# The future

- Multiple data sources
  - Genomic data
  - Web scraping
  - eHealth
  - Environmental data
  - Mobility data
  - Surveys
  - ...
- From TESSy to Epipulse
  - Electronic workflows
  - Validation reports
  - Embedded analytical tools
  - Integration with event-based surveillance





# Thank you