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# DATA LANDSCAPE INFECTIOUS DISEASES IN BELGIUM

Nina Van Goethem

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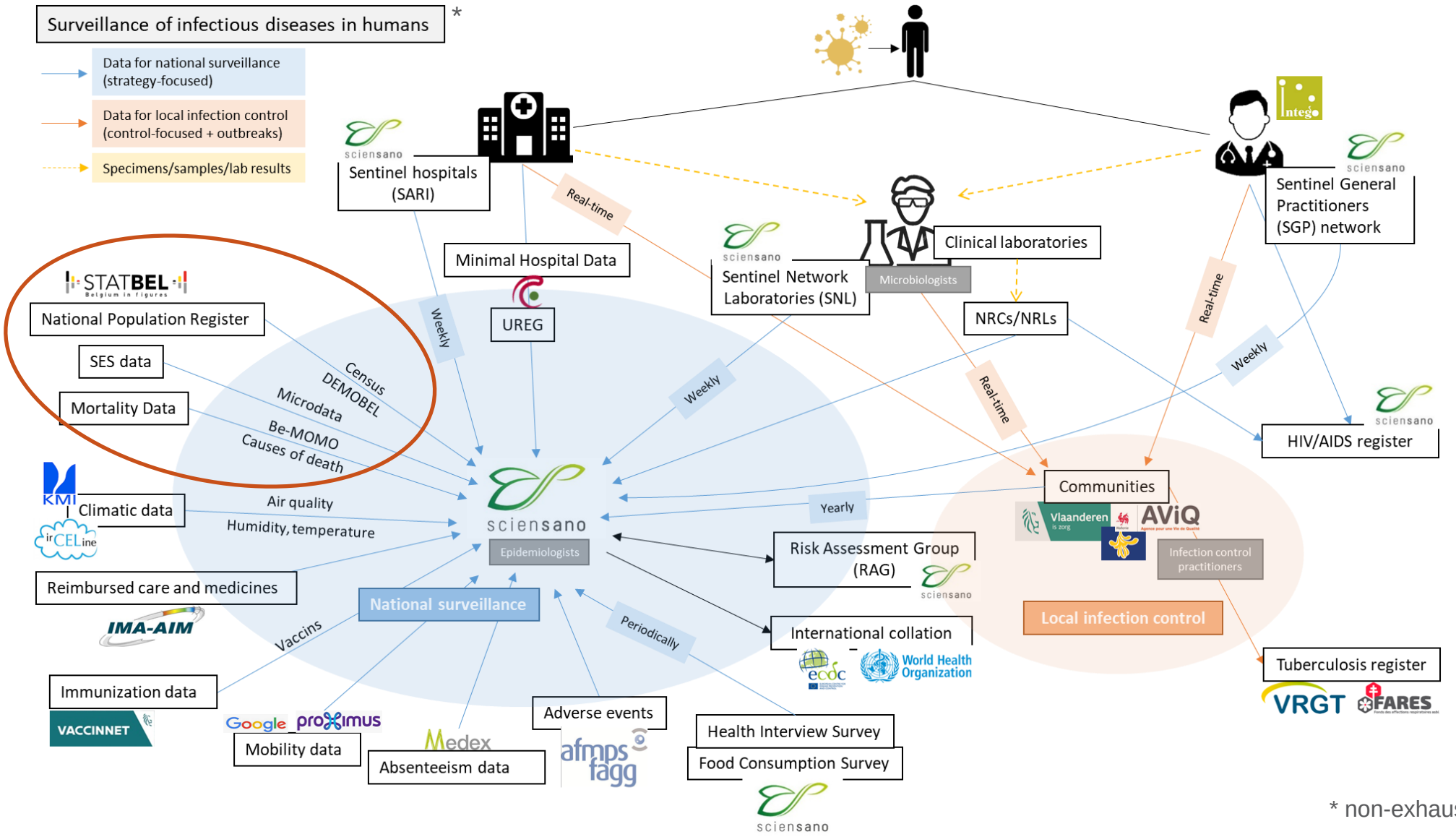
# Surveillance of infectious diseases in Belgium




* non-exhaustive overview

# COVID-19 pandemic

**DATA**

- Transformation public health surveillance landscape
  - Adapt existing systems
  - Establish new systems
  - → Ever growing amount of data

**POLICY**

- Answers to policy-relevant questions, such as
  - Clinical impact of SARS-CoV-2 variants
    - *~ predict hospital/ICU load*
  - Vaccine effectiveness
    - *~ evaluate vaccination programs*
  - → Timeliness
  - → Questions change over time

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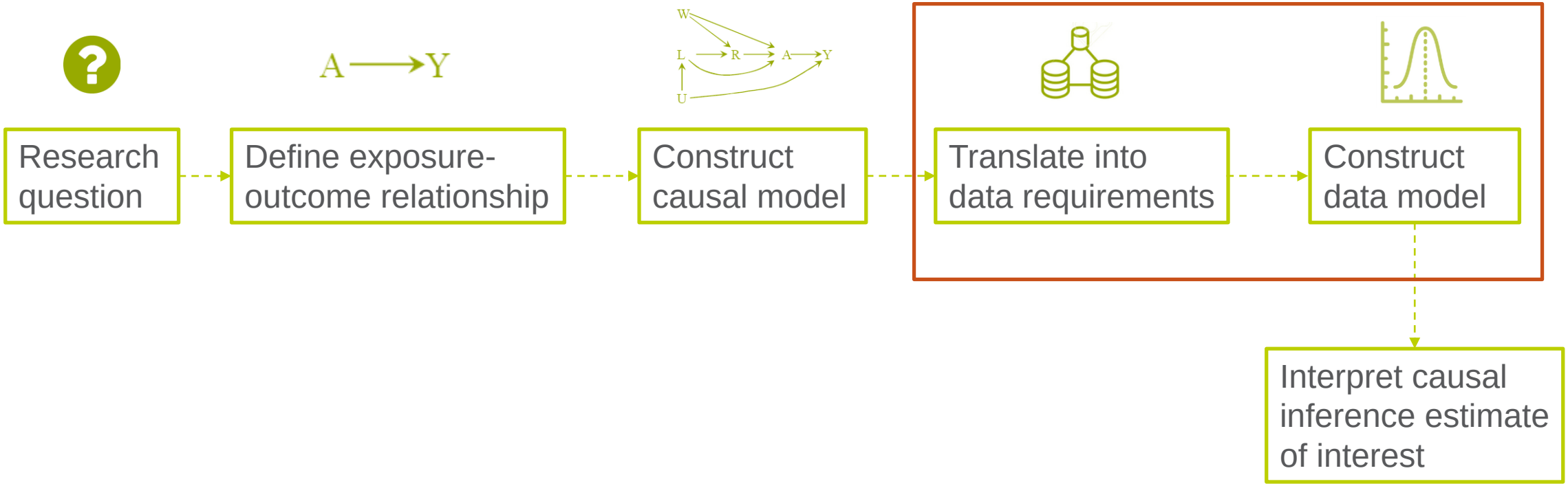
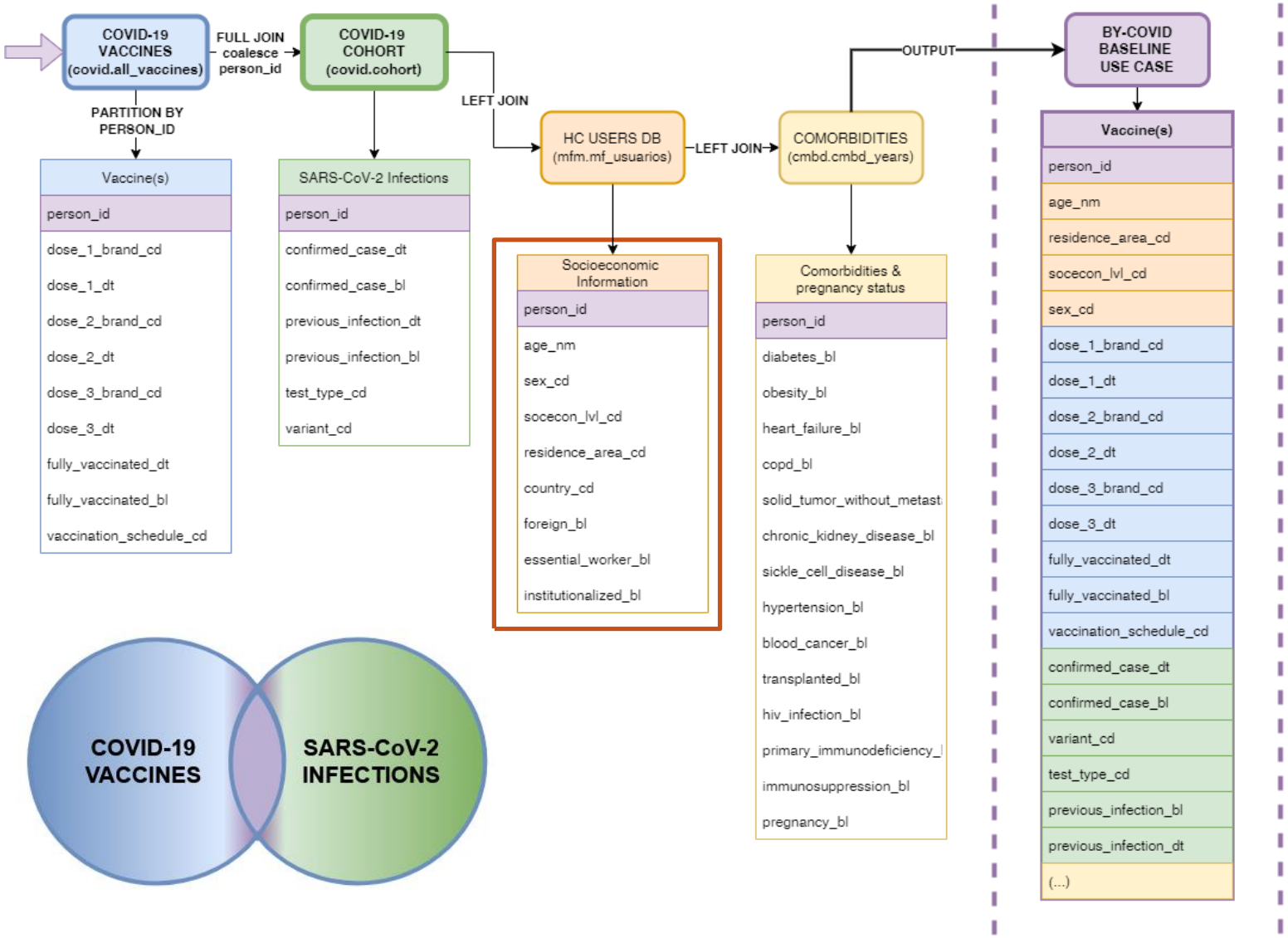
# Causal framework



# Data requirements (Common Data Model)

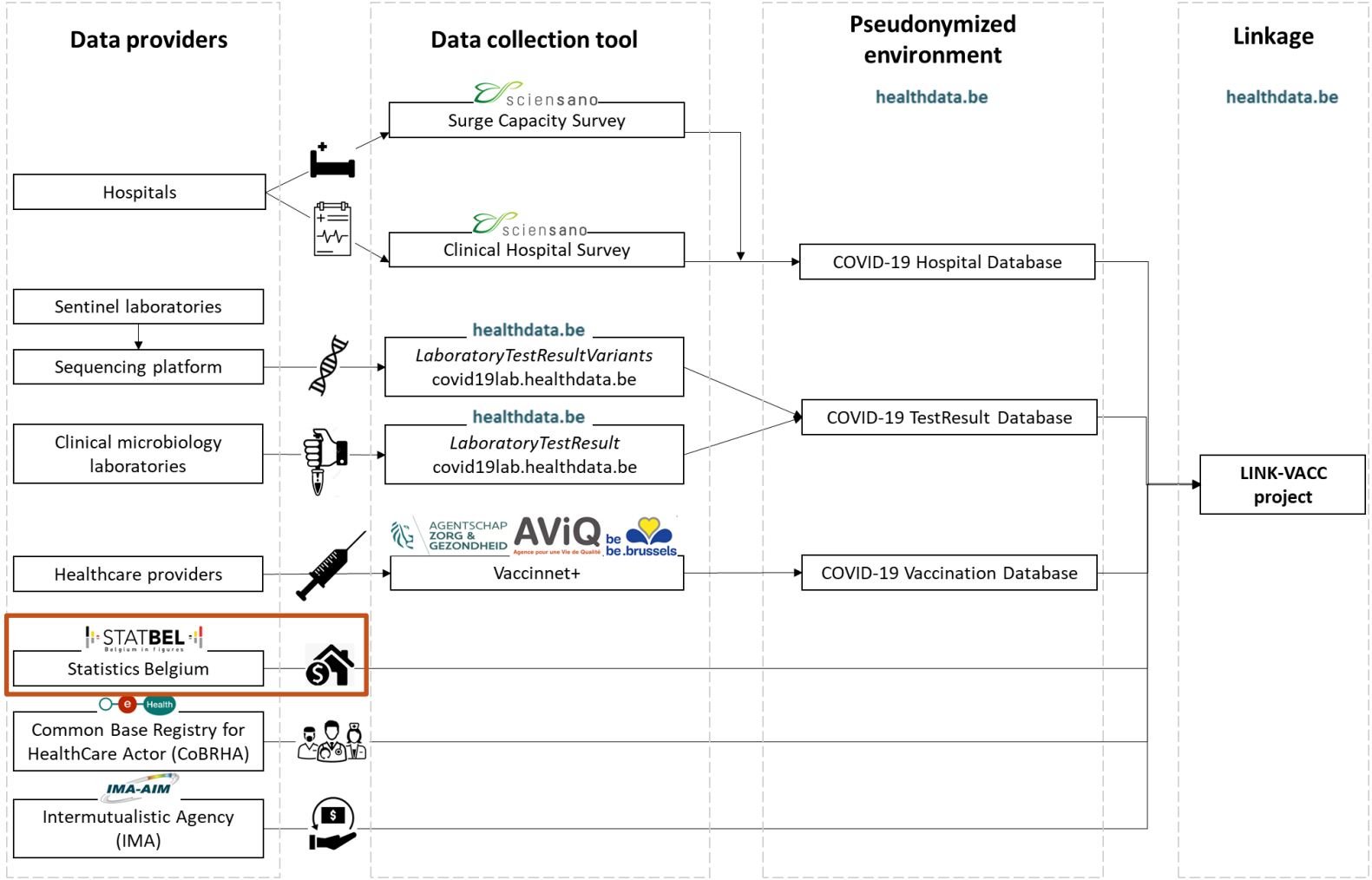



*Slide courtesy of Francisco Estupiñán-Romero*

# Data infrastructure: LINK-VACC project

https://www.sciensano.be/en/projects/linking-registers-covid-19-vaccine-surveillance

**Data infrastructure** that links data from existing COVID-19 registries based on the national reference number

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# Data infrastructure: strengths & weaknesses

**STRENGTHS**

- Rapid implementation of a new infrastructure to merge vaccination registry data with SARS-CoV-2 testing data, and linking to socio-economic and hospital data
- Secured linkage of individual-level data based on the national registry number (healthdata.be)
- Repurposing existing data sources to answer multiple clinical/epidemiological questions without extra investments

**WEAKNESSES**

- Repurposing data without adapting methodology to answer causal research question: depending on the features of the existing data infrastructure
- Sample size depends on the linkage between independent data sources
- Real-time analyses are challenging due to delays in data collection and transfer
- Missing data
- Risk for selection bias

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# STUDYING SOCIO-DEMOGRAPHIC AND SOCIO-ECONOMIC FACTORS

Lisa Cavillot

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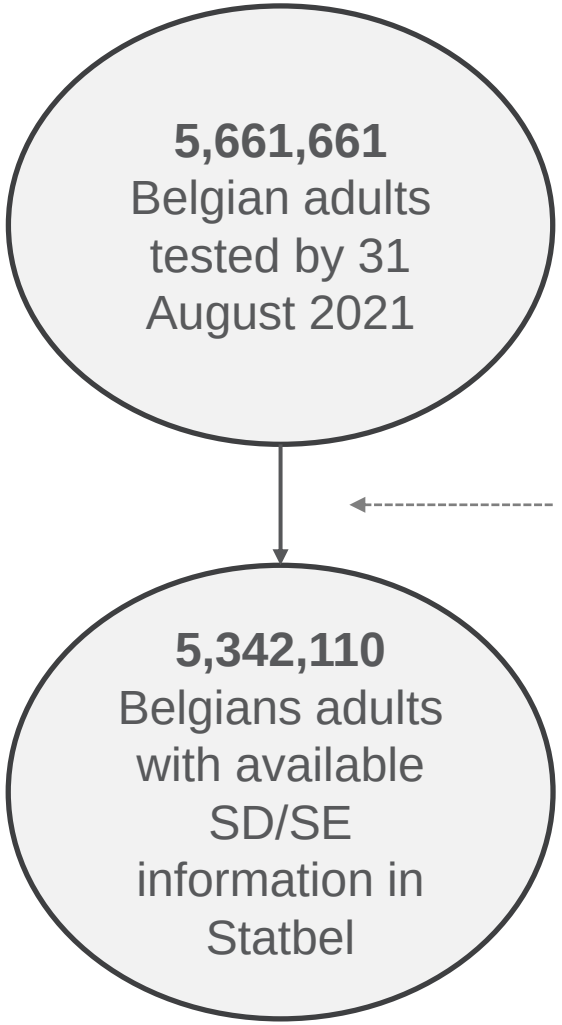
# Use of STATBEL data to study sociodemographic and socioeconomic disparities in COVID-19 vaccine uptake in Belgium (LINK-VACC project)

| Variables | Data Holder | Time frame |
|---|---|---|
| **Outcome** | | |
| First COVID-19 vaccine dose uptake | The Belgian Vaccine Register (Vaccinnet+) | As of 31 August 2021 |
| **Exposure** | | |
| Age groups | National registry | March 2022 |
| Gender | National registry | March 2022 |
| Region | National registry | March 2022 |
| **Household type** | **Statistics Belgium** | **August 2021** |
| **Migration background** | **Statistics Belgium** | **August 2021** |
| **Income** | **Statistics Belgium** | **2018 (fiscal year 2019)** |
| **Education level** | **Statistics Belgium** | **2017** |
| **Employment status** | **Statistics Belgium** | **Year 2019** |
| Health care diploma | Common Base Registry for HealthCare Actors | January 2021 |




**Statbel data available for 98% of the study population**

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# Definition of STATBEL's sociodemographic indicators

## Migration background

→ Based on a combination of the first nationality and the parents' country of origin

- **Native** (first nationality = BE)
- **First generation EU-migrant** (first nationality = EU)
- **First generation non-EU migrant** (first nationality = NON-EU)
- **Second generation migrant** (migration background = PAR)
- **Missing** (first nationality = NA)

## Household type

- **Couples** (married+unmarried)
- **Couples with children** (married+unmarried)
- **Single parents**
- **One-person households**
- **Collectivity** (e.g. prison, nursing home)
- **Missing**

# Definition of STATBEL's socioeconomic indicators

**Income**

→ Available as deciles of the net income of the household:

- **Low income** (deciles 1 to 4)
- **Middle income** (deciles 5 to 7)
- **High income** (deciles 8 to 10)
- **Missing income**

**Education**

→ Based on the International Standard Classification of Education (ISCED):

- **Low education** (ISCED 0-ISCED 2) → early childhood education + primary education+ lower secondary education
- **Middle education** (ISCED 3-ISCED 4) → upper secondary education + post-secondary non-tertiary education
- **High education** (ISCED 5-ISCED 8) → short-cycle tertiary education + bachelor's or equivalent level + master's or equivalent level + doctoral or equivalent level
- **Missing education**

**Employment status**

- **Employed**
- **Unemployed**
- **Missing**

# Main conclusions

Important **social disparities** in COVID-19 vaccine uptake identified in Belgium.

A lower COVID-19 vaccine uptake was found among:

- Young people
- Migrants
- Single parents, one-person household
- SE disadvantaged groups
  - Low income
  - Low education
  - Unemployed

New insights into social patterns in vaccine uptake useful to identify potentially **vulnerable population** in next waves of the epidemic.

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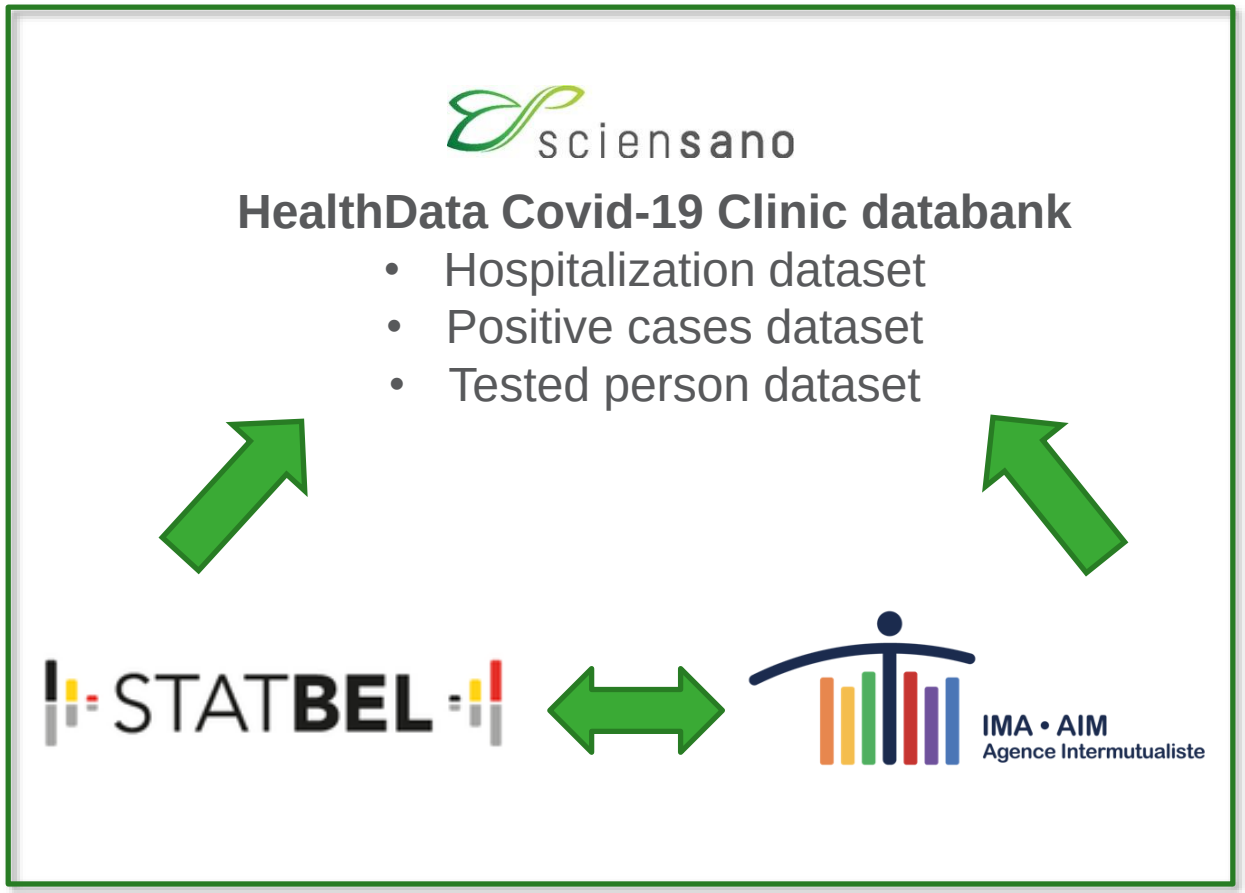
# HELICON Project: Valuation of administrative data sources through links at individual level




**HELICON aims to:**

A. Identify socio-economic and socio-demographic factors of risk and resilience in **COVID-19 testing, infection, hospitalizations and mortality**

B. Describe the **medium- and long-term direct health impact** of COVID-19 infections regarding healthcare use after COVID hospitalization

C. Assess the indirect health impact of the COVID-19 crisis in terms of **non-COVID morbidity and mortality** and the health economic impact of delayed health care use

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