

The background of the slide is a collage of medical and scientific imagery. It includes a stethoscope, several white pills, a calculator, and a line graph with data points. The overall color scheme is a mix of teal, blue, and light green, with a semi-transparent grid overlay.

Health Science, Clinical Research

Fast & Curious

Reusability with standardized dashboards  
for safety and study follow-up

**DV07**

Health Inspired,  
Quality Driven.



## Disclaimer and disclosures

The views and opinions expressed in this presentation are those of the author(s) and do not necessarily reflect the opinions of PHUSE members, respective companies or organizations.

# Belgium COVID-19 Epidemiological Situation Summary

Incidence of the Last 14 days\*

1,156 (Cases / 100k inhab.)

Vaccinated 1st dose

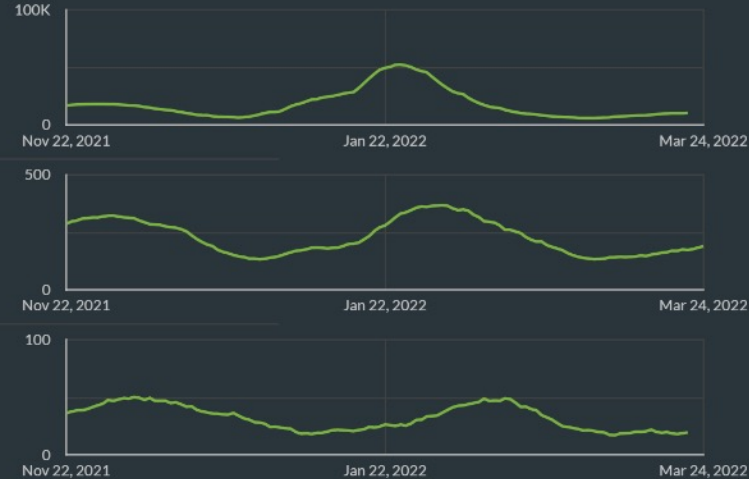
79% (/ total population)

Vaccinated booster dose

62% (/ total population)

|                                     | Total  | Last 7 days<br>Daily Average |
|-------------------------------------|--------|------------------------------|
| Cases                               | 3.8M   | 10,412*<br>+21%              |
| Hospital Admissions<br>for COVID-19 | 115.3K | 189.1<br>+16%                |
| Deaths                              | 30.7K  | 19.4*<br>-11%                |

Nov 22, 2021 - Mar 25, 2022



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1,156 (Cases / 100k inhab.)

Vaccinated 1st dose

79% (/ total population)

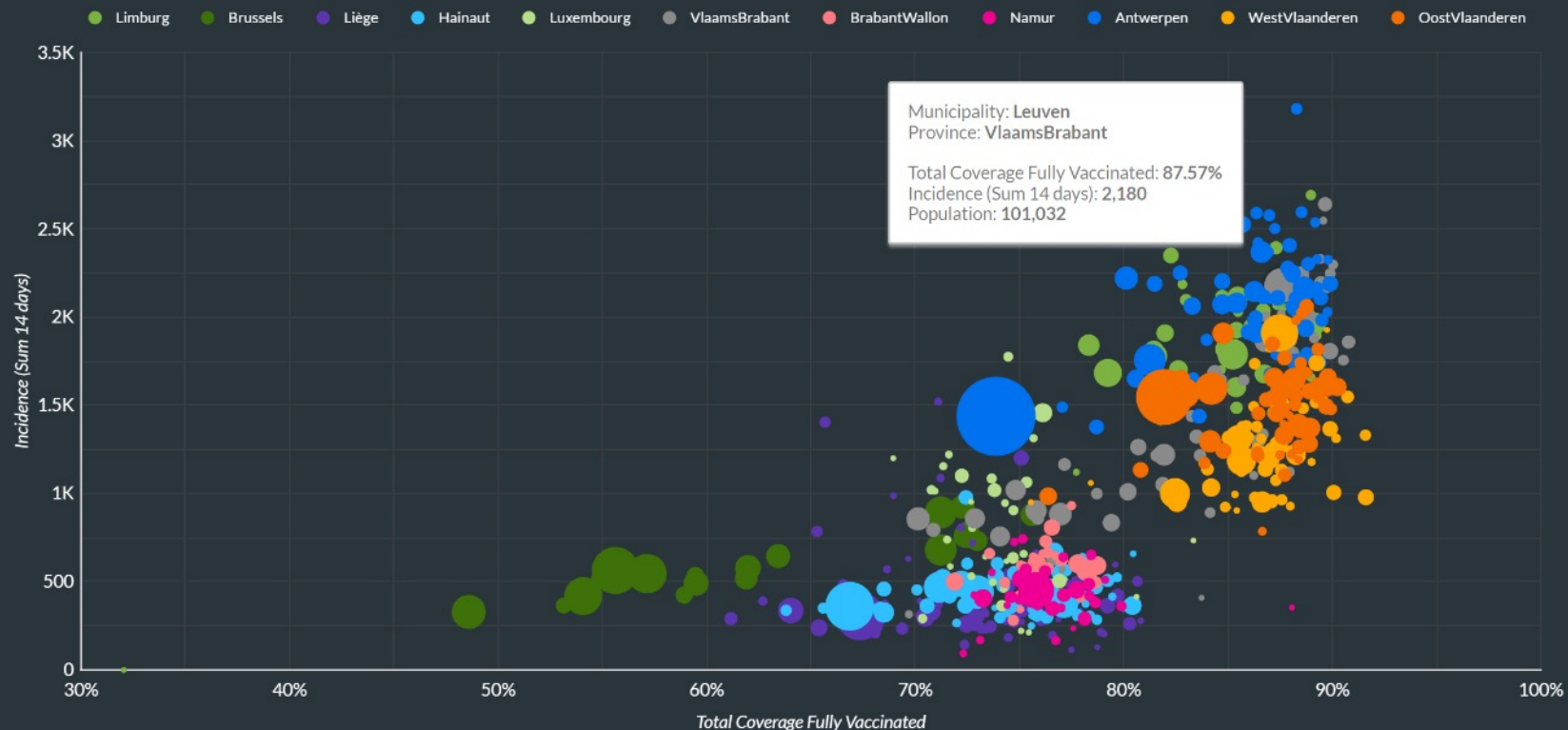
Vaccinated booster dose

62% (/ total population)

Total  
Cases 3.8M  
Hospital Admissions for COVID-19 115.3K  
Deaths 30.7K

## Incidence vs. Vaccination Coverage per Municipality

1 bubble is 1 municipality ; Bubble size = Population ; Color = Province





## Visualization of clinical data

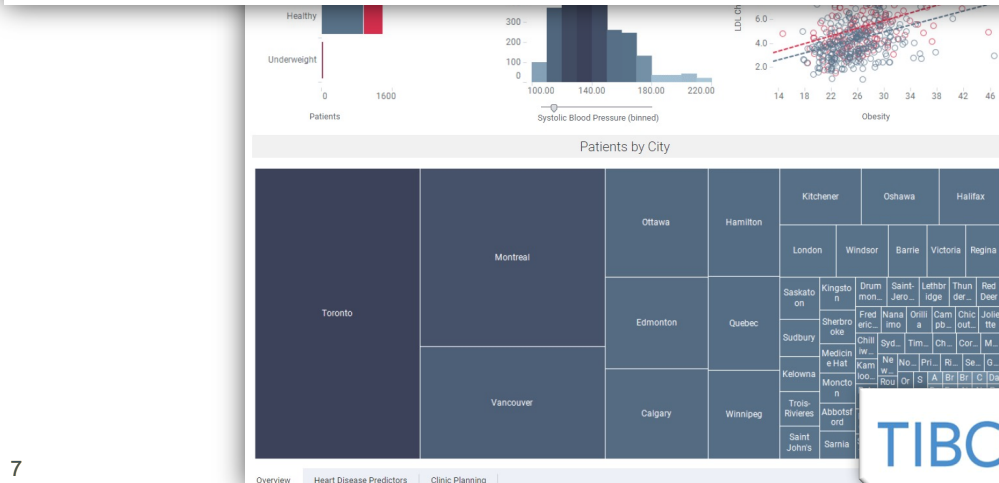
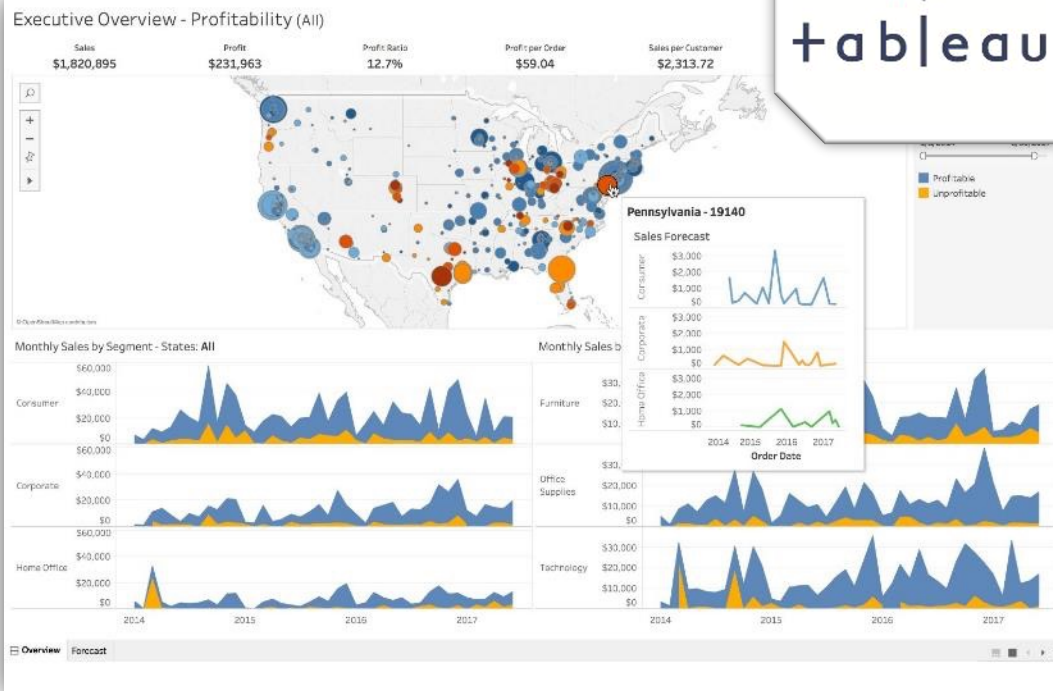
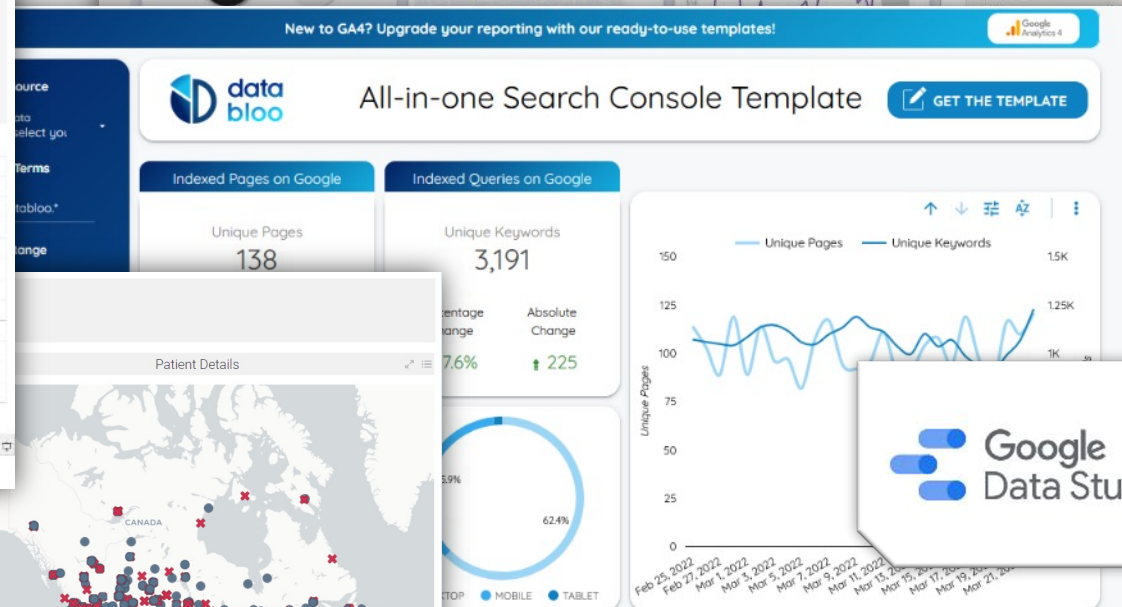
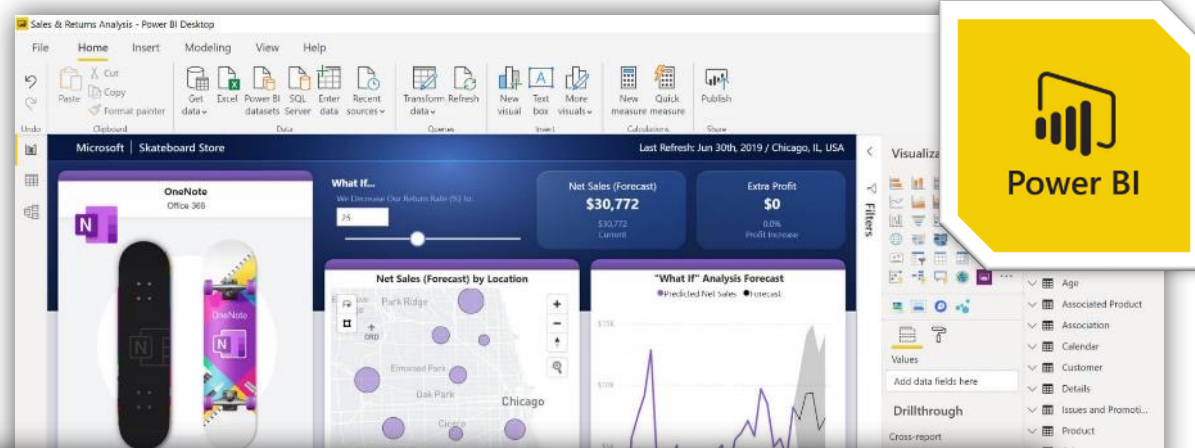
- Our clients want to track study progression & safety, see how their sites are performing...
  - High and urgent demand!
  - From the moment a study goes live!

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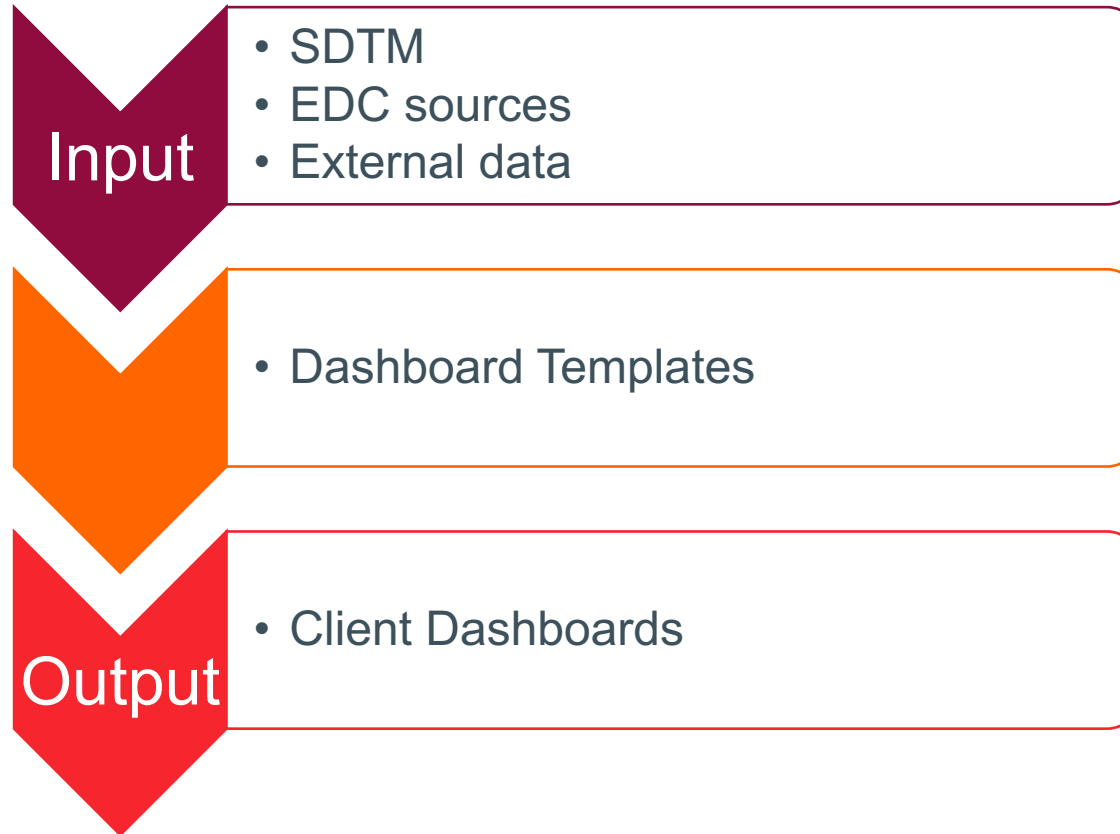
# Visualization of clinical data

- Create data visualization dashboards that can be deployed quickly and easily
- But this is not always evident
  - Creating meaningful and easy-to-understand dashboards is difficult and time consuming
  - Input data can take different forms and structures, come from different sources

# Tools & Software

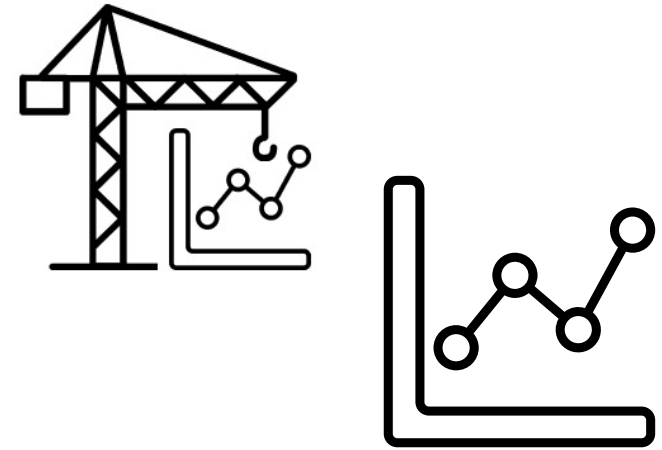


# How we do it at SGS



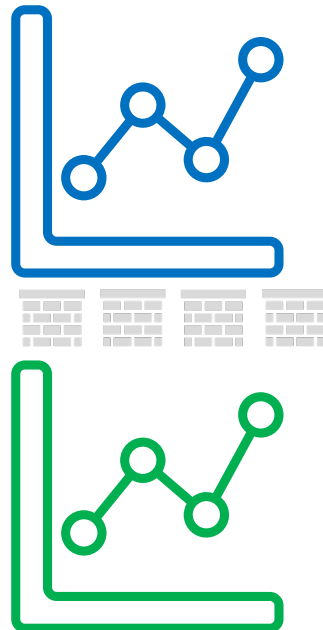
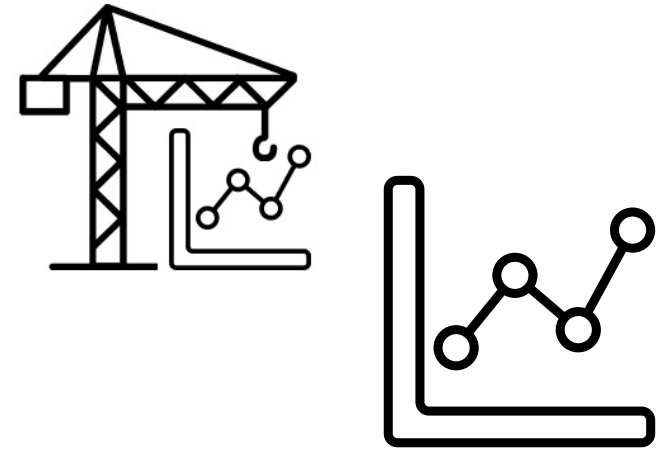
# How we do it at SGS

- These templates can be deployed:
  - Internally in a study to quickly go from a quality control environment to production



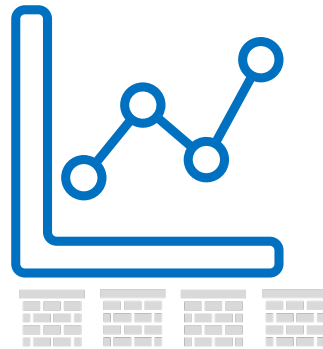
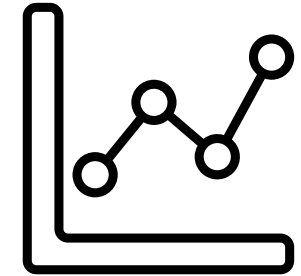
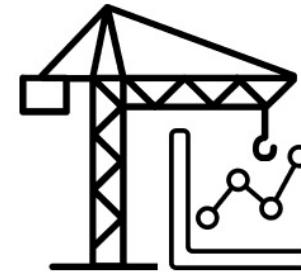
# How we do it at SGS

- These templates can be deployed:
  - Internally in a study to quickly go from a quality control environment to production
  - Between different studies of a same client



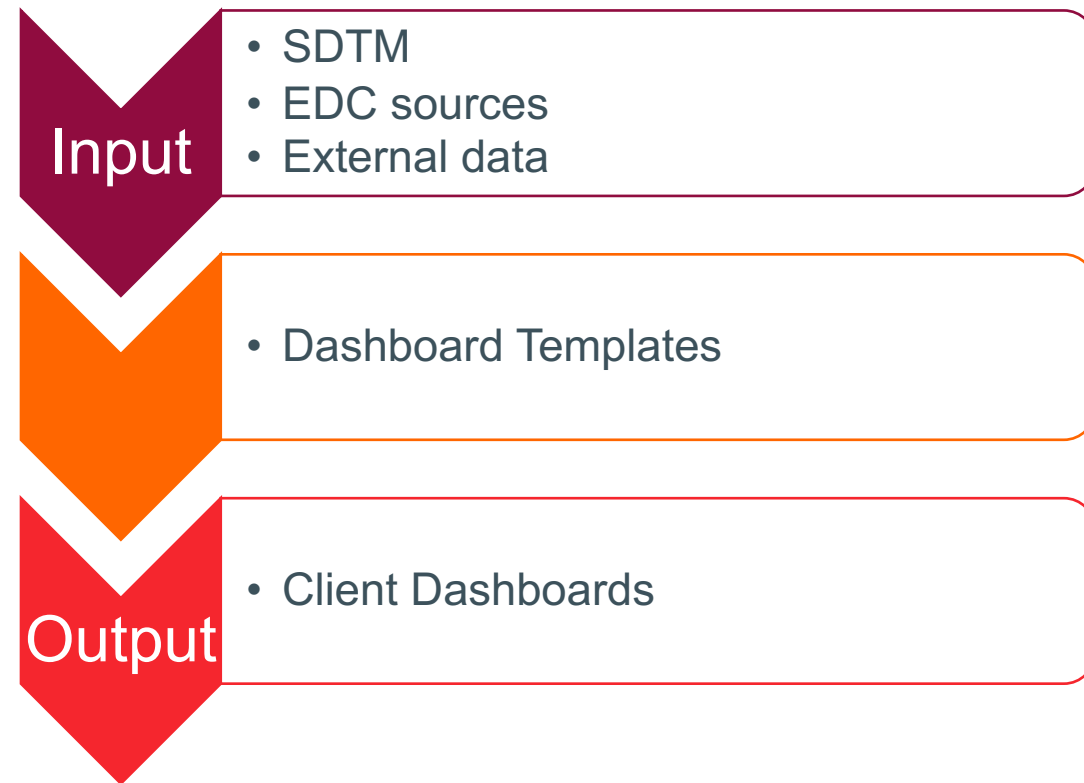
# How we do it at SGS

- These templates can be deployed:
  - Internally in a study to quickly go from a quality control environment to production
  - Between different studies of a same client
  - Over trials from different clients!



# From Data to Dashboard

- Pipeline created that will take input data:
  - EDC files
  - SDTM SAS files
- Updated datasets will be copied to a Tableau server when changes are detected
- Relevant dashboards will be 'refreshed' to show the new information



# From Data to Dashboard



- As part of the standard SGS DM data conversion process
  - New Data is made available automatically
- A new conversion step activates the DataVis processes
  - The locations of input data and linked dashboards are preconfigured **once**
  - Powershell scripts look for updated datasets
  - Those are uploaded to the Tableau server
  - Only relevant dashboards are refreshed, by using the Tableau REST api
- Automated system knows *what* data go *where*
  - No manual intervention



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# Challenges

- Different clients have different sources of data
  - Challenge to create template dashboards that are compatible with these different inputs
    - Different flavors of SDTM
  - Some data in a dashboard might just not be available
    - Care must be taken to make sure that dashboards will still function
    - And result in the appropriate outcome
  - Client expectations might go beyond the standard dashboards
    - A team of DataVis professionals is available
      - Even for the creation of custom, client-specific dashboards!



## Future explorations

- Validation limited to client specific changes of standard dashboards
- Use of dashboards for internal purposes
  - In Data Management
  - And even other departments
- Beyond clinical data
  - Site performance
  - Follow-up on cleaning activities
  - ...

# Demographics



Trial X - Demographics

73 subjects - 3 sites - 10 countries

ARM code  
Null

Countries

Site ID

- ☒ (All)
- ☒ 001
- ☒ 002
- ☒ 004

SEX

- ☒ (All)
- ☒ F
- ☒ M

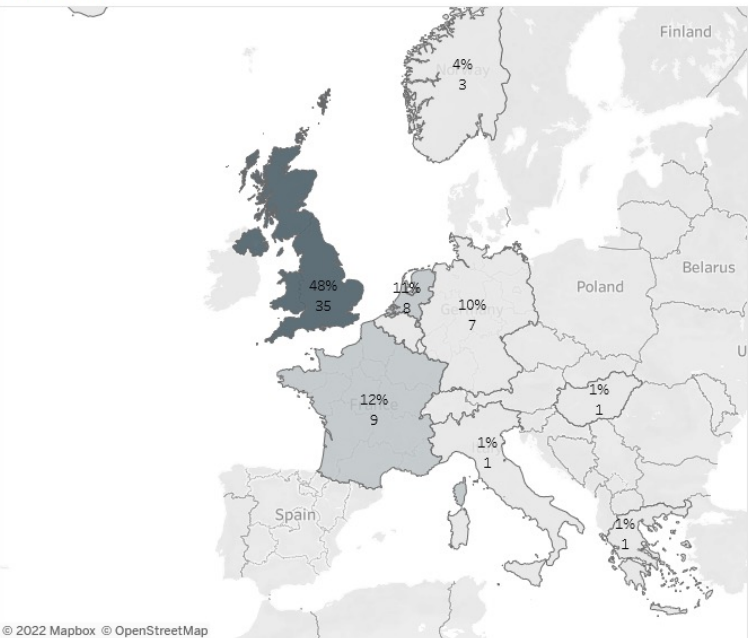
Death

- ☒ (All)
- ☒ Null

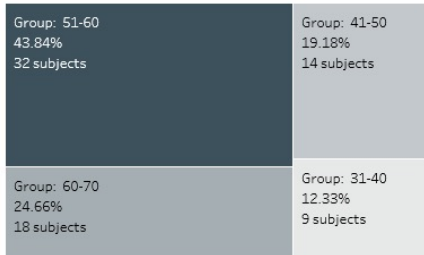
Race

- ☒ (All)
- ☒ ASIAN
- ☒ BLACK OR AFRICAN A...
- ☒ MULTIPLE
- ☒ NATIVE HAWAIIAN OR...
- ☒ OTHER
- ☒ WHITE

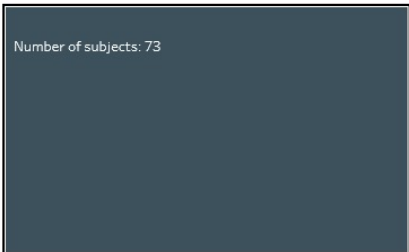
number of subjects



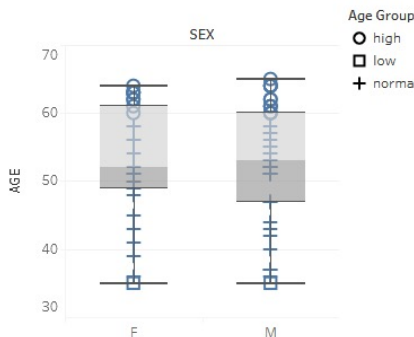
Age distribution



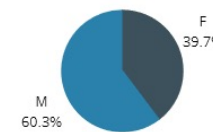
ARM\*



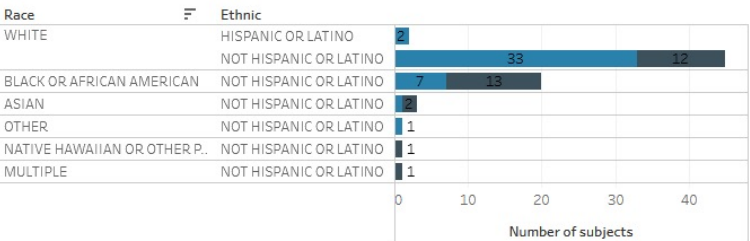
\*Take note: ARM data might be inaccurate or misleading in blinded studies



Gender distribution



Race



Demographics Dataset

| Usubjid            | Subjid   | Siteid | AGE | Ageu  | Race                     | Ethnic                 | SEX | ARM  | Actarm | Brthdtc | Country | Dthdtc | Abc |
|--------------------|----------|--------|-----|-------|--------------------------|------------------------|-----|------|--------|---------|---------|--------|-----|
| SGS-DRG01-001-0002 | 001-0002 | 001    | 45  | YEARS | BLACK OR AFRICAN AMER... | NOT HISPANIC OR LATINO | F   | Null | Null   | 1973    | GBR     | Null   | Abc |
| SGS-DRG01-001-0010 | 001-0010 | 001    | 37  | YEARS | WHITE                    | NOT HISPANIC OR LATINO | M   | Null | Null   | 1981    | GBR     | Null   | Abc |
| SGS-DRG01-001-0014 | 001-0014 | 001    | 63  | YEARS | WHITE                    | NOT HISPANIC OR LATINO | F   | Null | Null   | 1956    | ITA     | Null   | Abc |
| SGS-DRG01-001-0029 | 001-0029 | 001    | 60  | YEARS | WHITE                    | NOT HISPANIC OR LATINO | M   | Null | Null   | 1959    | BEL     | Null   | Abc |
| SGS-DRG01-001-0039 | 001-0039 | 001    | 37  | YEARS | WHITE                    | NOT HISPANIC OR LATINO | M   | Null | Null   | 1981    | BEL     | Null   | Abc |
| SGS-DRG01-001-0046 | 001-0046 | 001    | 53  | YEARS | BLACK OR AFRICAN AMER... | NOT HISPANIC OR LATINO | M   | Null | Null   | 1965    | BEL     | Null   | Abc |
| SGS-DRG01-001-0065 | 001-0065 | 001    | 62  | YEARS | MULTIPLE                 | NOT HISPANIC OR LATINO | F   | Null | Null   | 1957    | BEL     | Null   | Abc |
| SGS-DRG01-001-0066 | 001-0066 | 001    | 51  | YEARS | WHITE                    | NOT HISPANIC OR LATINO | M   | Null | Null   | 1968    | BEL     | Null   | Abc |
| SGS-DRG01-001-0073 | 001-0073 | 001    | 47  | YEARS | BLACK OR AFRICAN AMER... | NOT HISPANIC OR LATINO | M   | Null | Null   | 1972    | BEL     | Null   | Abc |
| SGS-DRG01-001-0077 | 001-0077 | 001    | 52  | YEARS | WHITE                    | NOT HISPANIC OR LATINO | M   | Null | Null   | 1967    | GBR     | Null   | Abc |



# Demographics



Trial X - Demographics

3 subjects - 1 sites - 1 countries

ARM code  
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Countries

Site ID

- ☒ (All)
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SEX

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Death

- ☒ (All)
- ☒ Null

Race

- ☒ (All)
- ☒ ASIAN
- ☒ BLACK OR AFRICAN A...
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- ☒ OTHER
- ☒ WHITE

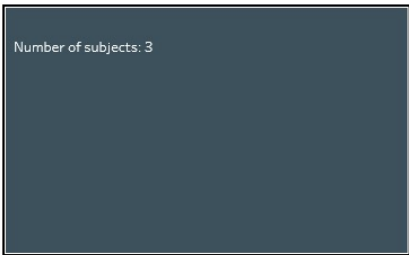
number of subjects



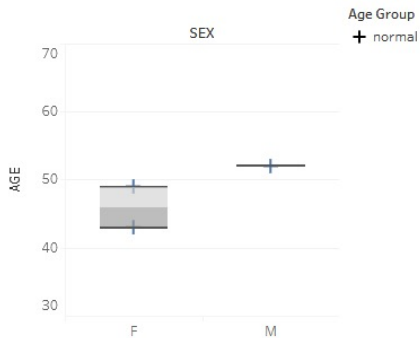
Age distribution



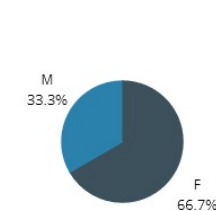
ARM\*



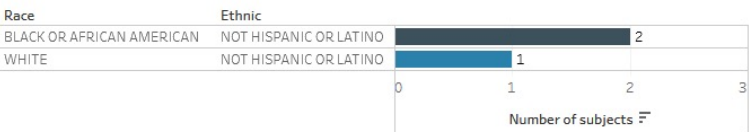
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Gender distribution



Race



Demographics Dataset

| Usubjid            | Subjid   | Siteid | AGE | Ageu  | Race                     | Ethnic                 | SEX | ARM  | Actarm | Brthdtc | Country | Dthdtc |     |
|--------------------|----------|--------|-----|-------|--------------------------|------------------------|-----|------|--------|---------|---------|--------|-----|
| SGS-DRG01-001-0184 | 001-0184 | 001    | 43  | YEARS | BLACK OR AFRICAN AMER... | NOT HISPANIC OR LATINO | F   | Null | Null   | 1976    | NOR     | Null   | Abc |
| SGS-DRG01-001-0194 | 001-0194 | 001    | 52  | YEARS | WHITE                    | NOT HISPANIC OR LATINO | M   | Null | Null   | 1967    | NOR     | Null   | Abc |
| SGS-DRG01-001-0195 | 001-0195 | 001    | 49  | YEARS | BLACK OR AFRICAN AMER... | NOT HISPANIC OR LATINO | F   | Null | Null   | 1970    | NOR     | Null   | Abc |

- Adverse Events

Adverse Events Overview

Concomitant Medication

Medical History Overview

Physical Examination

ARM

Null

Number of subjects per Adverse Event

Aesoc

AeDecod

Nervous system disorders

Headache

Migraine

Lethargy

Presyncope

Poor quality sleep

Hyperaesthesia

Head discomfort

Dysgeusia

Dizziness postural

Dizziness

Infections and infestations

Upper respiratory tr...

Nasopharyngitis

Urinary tract

Rhinitis

COVID-19

Viral upper respirato..

Viral infection

Respiratory tract inf..

Oral herpes

0

10

20

30

Adverse events per subject

Subject

SGS-DRG01-001-002-0035

SGS-DRG01-001-002-0085

SGS-DRG01-001-002-0075

SGS-DRG01-001-001-0002

SGS-DRG01-001-002-0092

SGS-DRG01-001-002-0074

SGS-DRG01-001-001-0235

SGS-DRG01-001-001-0114

SGS-DRG01-001-002-0046

SGS-DRG01-001-001-0129

SGS-DRG01-001-001-0113

SGS-DRG01-001-004-0002

SGS-DRG01-001-002-0095

SGS-DRG01-001-002-0088

SGS-DRG01-001-002-0073

SGS-DRG01-001-001-0195

SGS-DRG01-001-001-0172

SGS-DRG01-001-001-0151

SGS-DRG01-001-001-0146

0

2

4

6

8

Count of Adverse Event Causality

AeDecod

AeRel

Headache

Upper respiratory tract in..

Injection site reaction

Rhinorrhoea

Pain in extremity

Oropharyngeal pain

Nasopharyngitis

Back pain

Urinary tract infection

Rhinitis

Nausea

Myalgia

Migraine

Medical device site reacti..

Lethargy

NOT RELATED

NOT RELATED

NOT RELATED

POSSIBLE

NOT RELATED

NOT RELATED

NOT RELATED

NOT RELATED

NOT RELATED

NOT RELATED

NOT RELATED

NOT RELATED

NOT RELATED

NOT RELATED

NOT RELATED

0

5

10

15

20

25

30

Relation

NOT RELATED

POSSIBLE

Hit any of the numbers below to filter the worksheets

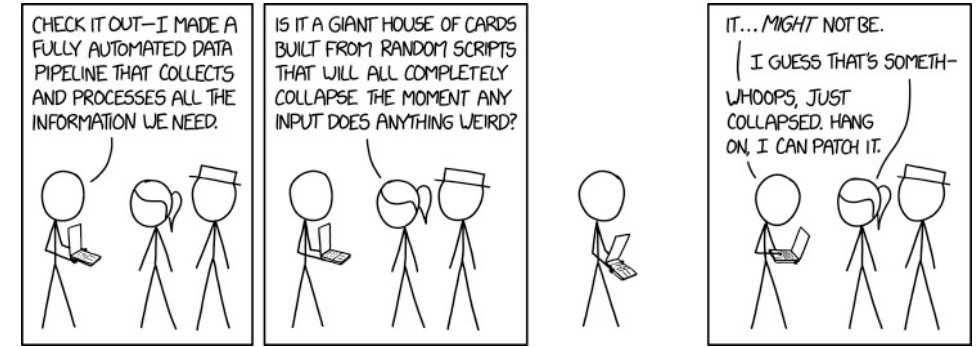
| Reviewed |   |
|----------|---|
| N        | Y |
| 120      | 6 |
| Queried  |   |
| N        | Y |
| 120      | 6 |
| To Query |   |
| N        | Y |
| 118      | 8 |

| Subject                | Aetern       | Aedecod               | Aebodsys                     | Aestdct      | Aeendct          | Aeout                | Aeacn          | Aerel       | Aeser | Aeshosp | Aesmie | Was CM | CM     | Reviewed | Queried | To Query |    |  |
|------------------------|--------------|-----------------------|------------------------------|--------------|------------------|----------------------|----------------|-------------|-------|---------|--------|--------|--------|----------|---------|----------|----|--|
|                        |              |                       |                              |              |                  |                      |                |             |       |         |        | taken? | Number |          |         |          |    |  |
| SGS-DRG01-001-001-0002 | GENERAL F... | Fatigue               | General disorders and        | 2019-06-02   | 2019-06-02T18:00 | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 1      | Y        | N       | N        | At |  |
|                        | HEADACHE     | Headache              | Nervous system disorders     | 2019-07-03   | 2019-07-03       | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 2      | Y        | Y       | N        | At |  |
|                        |              |                       |                              | 2019-07-06.. | 2019-07-06T23:00 | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 3      | Y        | Y       | N        | At |  |
|                        |              |                       |                              | 2019-07-17.. | 2019-07-17T20:00 | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 4      | N        | Y       | Y        | At |  |
|                        |              |                       |                              | 2019-09-18   | 2019-09-18       | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 5      | N        | N       | Y        | At |  |
|                        |              |                       |                              |              |                  |                      |                |             |       |         |        |        |        |          |         |          |    |  |
|                        |              |                       |                              |              |                  |                      |                |             |       |         |        |        |        |          |         |          |    |  |
|                        |              |                       |                              |              |                  |                      |                |             |       |         |        |        |        |          |         |          |    |  |
|                        | MIGRAINE     | Migraine              | Nervous system disorders     | 2019-06-08.. | 2019-06-09T12:00 | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 6      | N        | N       | Y        | At |  |
|                        | PALPITATIO.. | Palpitations          | Cardiac disorders            | 2019-06-04   | 2019-06-06       | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | N      | Null   | N        | N       | Y        | At |  |
|                        | UPPER RES..  | Upper respiratory ..  | Infections and infestations  | 2019-06-06   | 2019-06-12       | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 8      | N        | N       | Y        | At |  |
| SGS-DRG01-001-001-0010 | HEADACHE     | Headache              | Nervous system disorders     | 2019-08-25   | 2019-08-25       | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 1      | N        | N       | Y        | At |  |
|                        | MYALGIA      | Myalgia               | Musculoskeletal and conn..   | 2019-06-22   | 2019-06-23       | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 2      | Y        | N       | Y        | At |  |
| SGS-DRG01-001-001-0029 | HEADACHE     | Headache              | Nervous system disorders     | 2019-06-29.. | 2019-06-29T16:00 | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 1      | Y        | Y       | Y        | At |  |
| SGS-DRG01-001-001-0039 | MYALGIA      | Myalgia               | Musculoskeletal and conn..   | 2019-06-09.. | 2019-06-11T12:00 | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | N      | Null   | Y        | Y       | N        | At |  |
|                        | NAUSEA       | Nausea                | Gastrointestinal disorders   | 2019-06-02   | 2019-06-27       | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | N      | Null   | N        | N       | N        | At |  |
| SGS-DRG01-001-001-0046 | DRY EYES     | Dry eye               | Eye disorders                | 2019-10-08   | Null             | RECOVERING/RESOLVING | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 1      | N        | Y       | N        | At |  |
| SGS-DRG01-001-001-0065 | NAUSEA       | Nausea                | Gastrointestinal disorders   | 2019-08-11.. | 2019-08-11T18:00 | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | N      | Null   | N        | N       | N        | At |  |
| SGS-DRG01-001-001-0066 | VIRAL INFE.. | Viral infection       | Infections and infestations  | 2019-07-30.. | 2019-08-01       | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | N      | Null   | N        | N       | N        | At |  |
| SGS-DRG01-001-001-0073 | VIRAL UPPE.. | Viral upper respira.. | Infections and infestations  | 2019-10-24   | 2019-10-28       | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 1      | N        | N       | N        | At |  |
| SGS-DRG01-001-001-0077 | CHEST PAIN   | Chest pain            | General disorders and        | 2019-10-13.. | 2019-10-13T10:25 | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 1      | N        | N       | N        | At |  |
|                        | RUNNY NO..   | Rhinorrhoea           | Respiratory, thoracic and .. | 2019-09-20.. | 2019-09-20       | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | N      | Null   | N        | N       | N        | At |  |
| SGS-DRG01-001-001-0080 | SHINGLES     | Herpes zoster         | Infections and infestations  | 2019-10-25   | Null             | RECOVERING/RESOLVING | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 1      | N        | N       | N        | At |  |
| SGS-DRG01-001-001-0106 | UPPER RES..  | Upper respiratory ..  | Infections and infestations  | 2019-10-03   | 2019-10-05       | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 1      | N        | N       | N        | At |  |
| SGS-DRG01-001-001-0112 | UPPER RES..  | Upper respiratory ..  | Infections and infestations  | 2019-11-16   | 2019-11-21       | RECOVERED/RESOLVED   | NOT APPLICABLE | NOT RELATED | N     | Null    | Null   | Y      | 2      | N        | N       | N        | At |  |

# Conclusion

- High demand for meaningful visualisations of clinical trial data
- Template dashboards can be deployed on a per client & trial basis
- Automated processes make this fast and secure
- [Watch our Video!](#)
- Please visit booth 36 for a chat





Source: <https://xkcd.com/2054/>

# Questions?

# Contact us

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