



# Health information on chronic diseases for societal impact: a blueprint for population data platforms

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# Why do we need health information in Europe?

- To make **policy makers accountable** for the results obtained by the EU legislation and National policies
- To evaluate **adherence to evidence-based guidelines** and set achievable targets for quality of care and outcomes
- To share **best practices** and avoid common mistakes
- To **benchmark** the effect of local policies and health services organization against different alternatives, using standardized criteria
- To avoid drawing conclusions from **random variation**, which is more critical in countries that have a smaller population and a limited number of cases for any problem investigated

# Which comparisons can be made across the EU today?

- Certainly **not enough** to monitor action and planning of prevention measures and health care for people with diabetes in Europe
- General data on **diabetes prevalence** (total number of people in diabetes at a specific point in time), poor data on incidence (how many new cases per year)
- Few indicators calculated from **administrative data sources** (e.g. hospital data), prone to bias due to financing mechanisms (e.g. DRGs)
- No indicators on **intermediate and terminal outcomes** (those that really matter for people with diabetes)



# Insufficient diabetes information in Europe

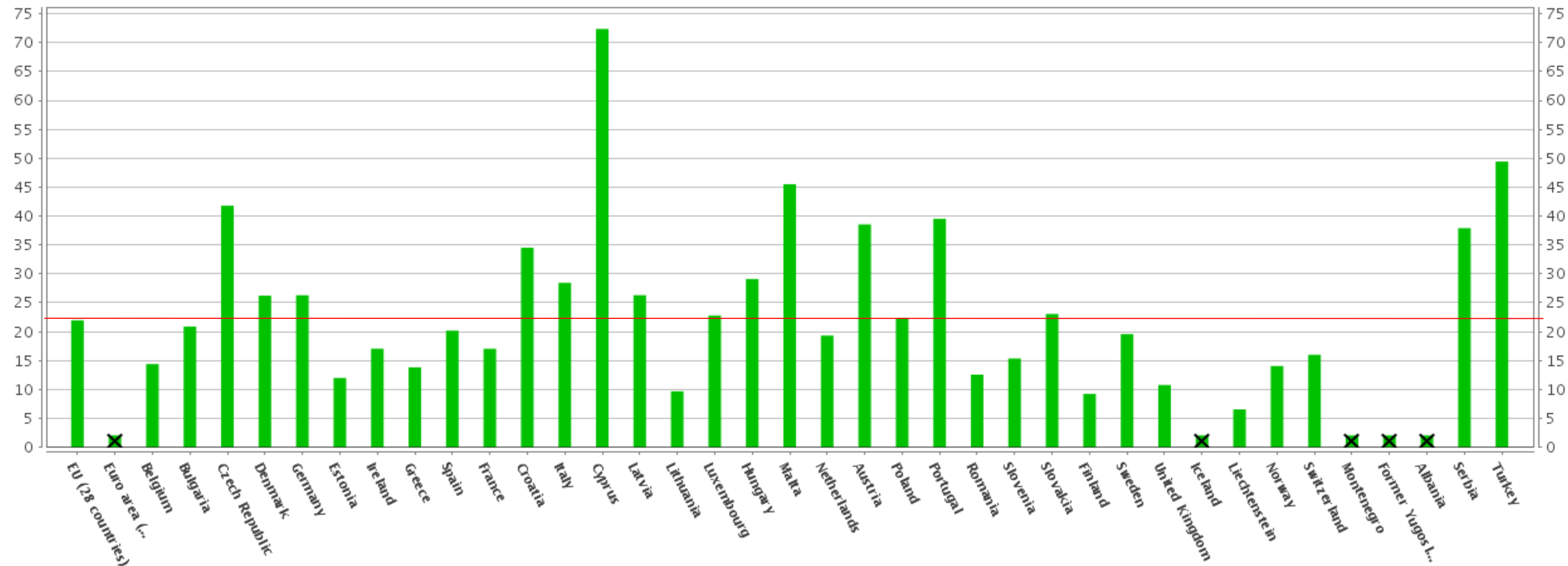
...although the data available are already enough to seriously worry...

...and to urge countries to deliver and use more information on diabetes!

# Deaths due to diabetes mellitus

Standardized death rate by 100 000 inhabitants, Year 2014

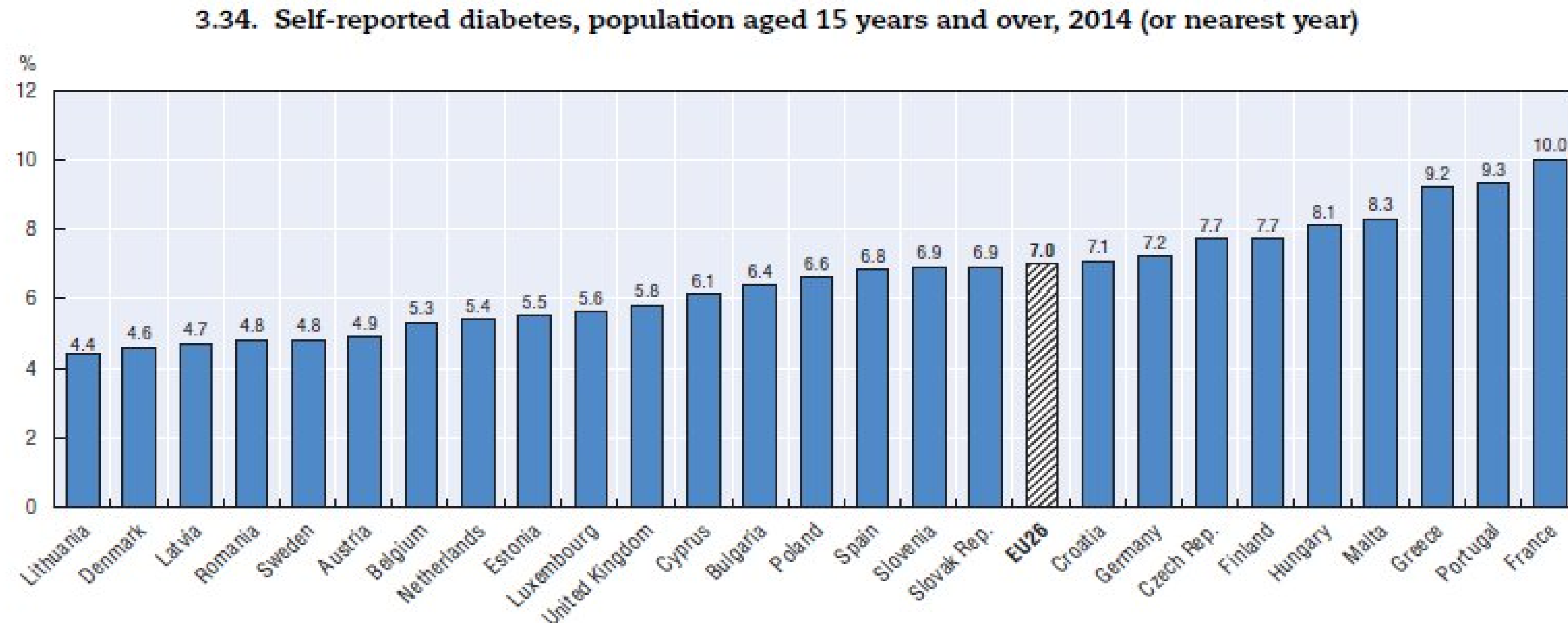
Source: Eurostat 2017



# Diabetes Prevalence

Self-reported, Year 2014

Source: Eurostat (revised in "OECD Health at a Glance: Europe 2016")



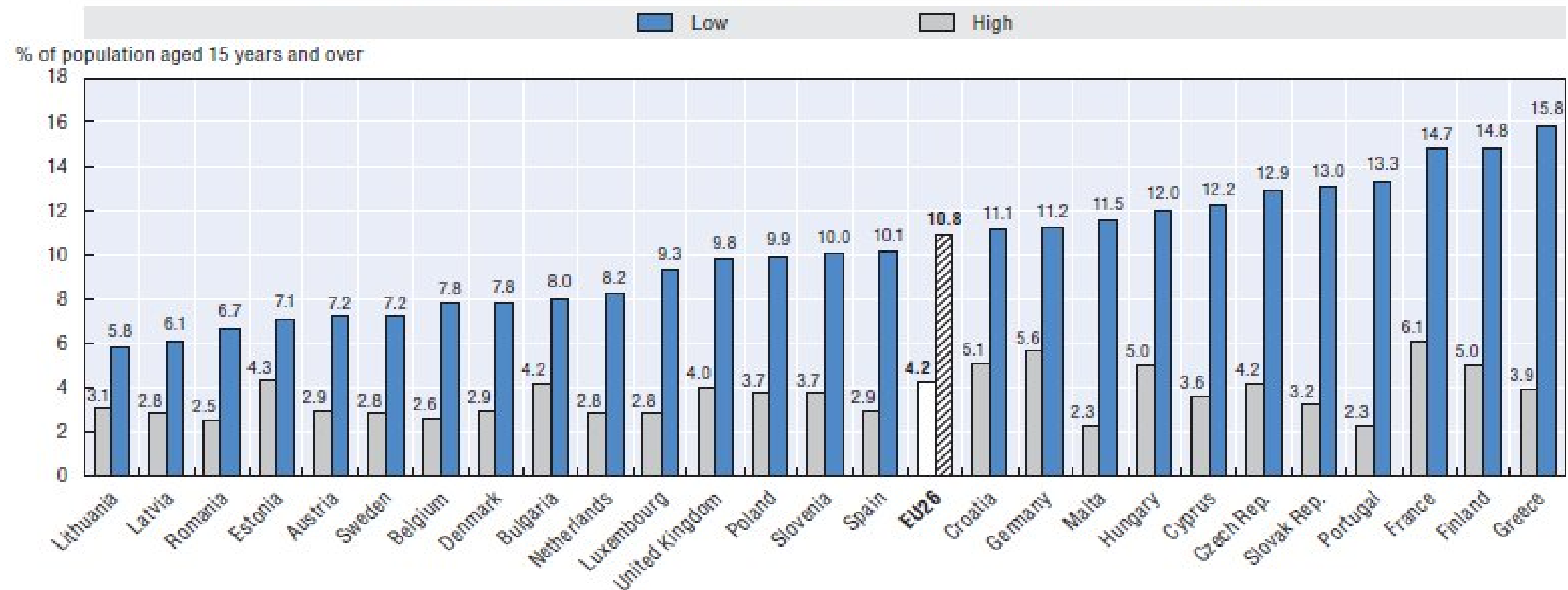
Source: Eurostat Database, based on Health Interview Surveys.

# Diabetes Prevalence by level of education

Self-reported, Year 2014

Source: Eurostat (revised in "OECD Health at a Glance: Europe 2016")

3.35. Self-reported diabetes by level of education, 2014 (or nearest year)

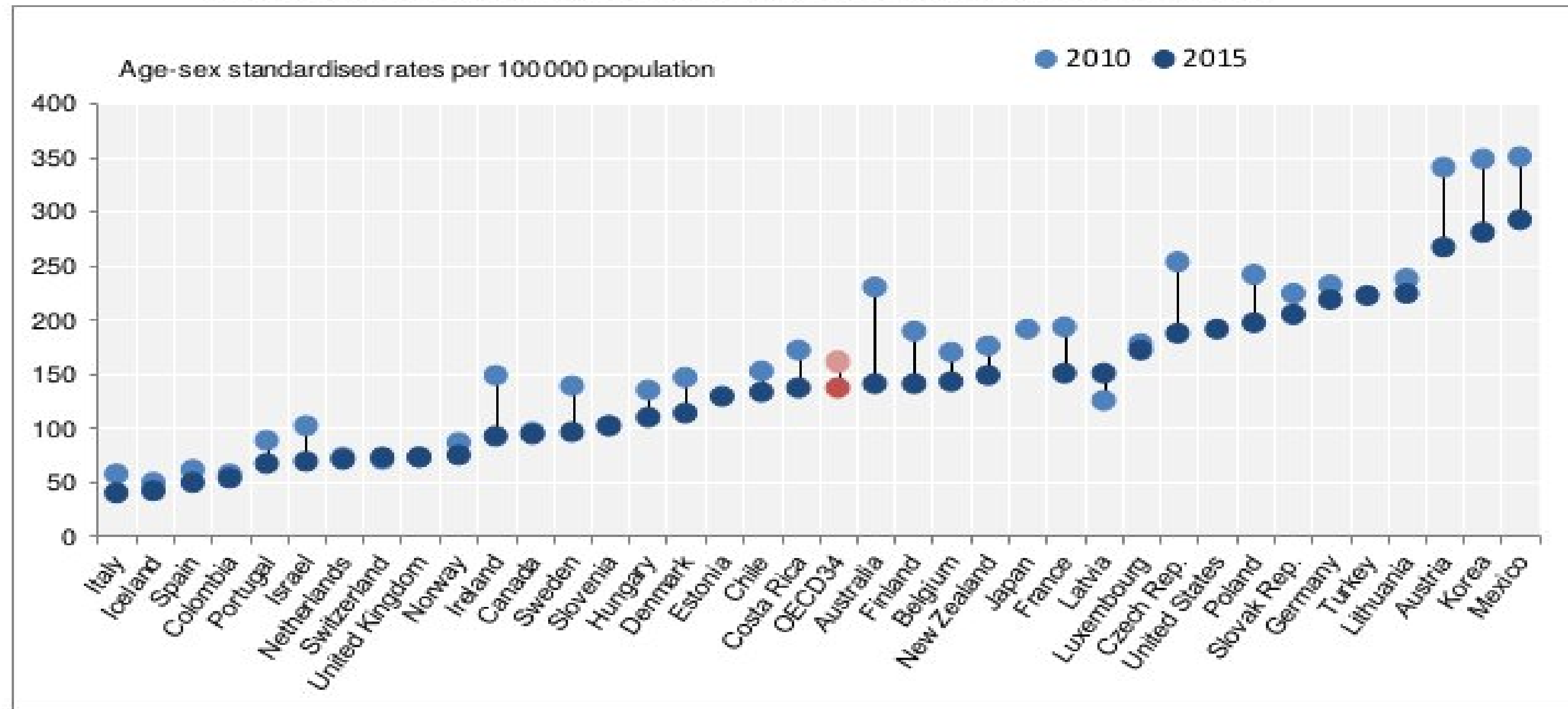


Source: Eurostat Database, based on Health Interview Surveys.

# Diabetes Hospital Admissions, 2015

Source: OECD Health at a Glance 2017

6.11. Diabetes hospital admission in adults, 2010 and 2015 (or nearest years)



Note: Three-year average for Iceland and Luxembourg.

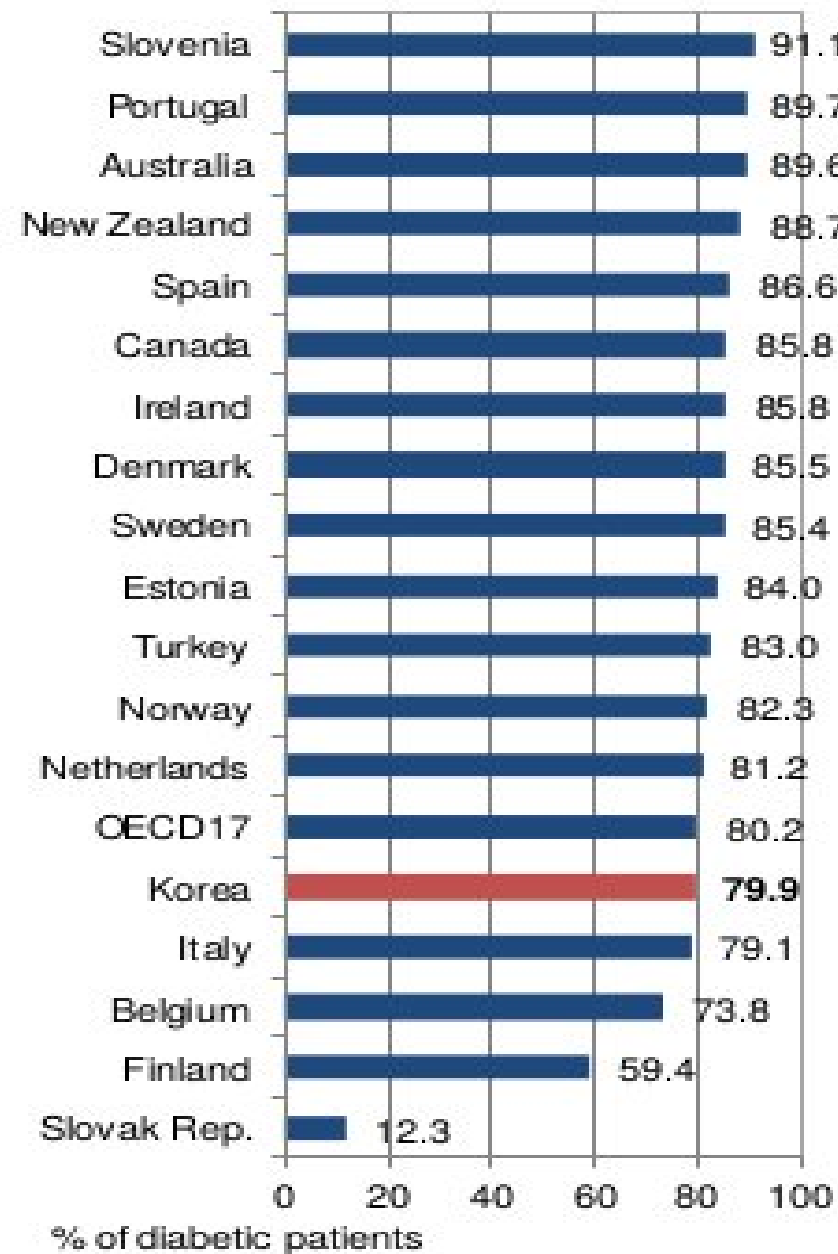
Source: OECD Health Statistics 2017.



# Prescription of hypertensive, Lower extremity amputations in diabetes, 2015

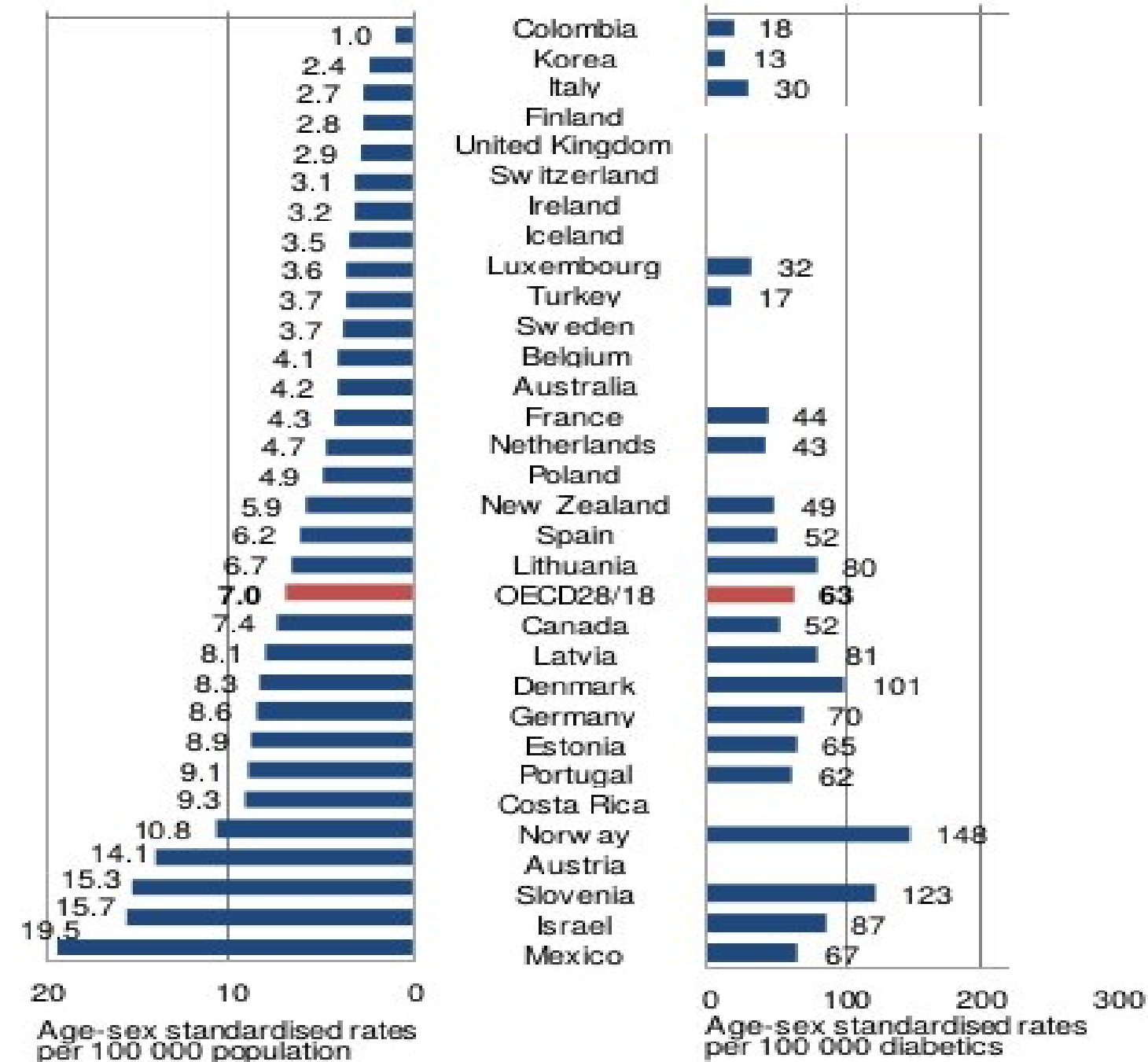
Source: OECD Health at a Glance 2017

6.12 People with diabetes with a prescription of recommended antihypertensive medication in the past year, 2015 (or nearest year)



Source: OECD Health Statistics 2017.

6.13. Major lower extremity amputation in adults with diabetes, 2015 (or nearest year)



Note: Three-year average for Iceland and Luxembourg.

Source: OECD Health Statistics 2017.



# EU BIRO and EUBIROD projects

## **BIRO project (2005-2009)**

### **EU DG-SANCO co-funded public health project in diabetes**

*“to provide European health systems with an ad hoc, evidence and population-based diabetes information system”*

## **EUBIROD project (2008-2012)**

### **EU DG-SANCO co-funded public health project in diabetes**

*“to implement a sustainable European Diabetes Register through the coordination of existing national/regional frameworks and the systematic use of the BIRO system in 20 European countries”*



# BIRO glossary

**System.** *Federation of networks sharing a common distributed health information infrastructure*

**Region.** *A network in the system sharing a homogeneous set of standardized definitions for the collection of health information*

**Statistical Object.** *Element of a distributed information system carrying essential data in the form of one or more embedded aggregate components, specifically designed to produce a summary output for a population of interest*

**Data source.** *Unit within a region contributing to the system through the transmission of statistical objects to the higher level*

**Box.** *Standardized software installed in each data source to generate statistical objects from local data*

# An inspiring statistical reflection

**Box 3.4.2. Output Logistic Model on all observations**

The LOGISTIC Procedure  
Model Information

Data Set	WORK_MODEL_
Response Variable	HI_HBA
Number of Response Levels	2
Number of Observations	17102
Model	binary logit
Optimization Technique	Fisher's scoring

Response Profile

Ordered Value	HI_HBA	Total Frequency
1	1	4856
2	0	12246

Probability modeled is HI\_HBA=1.

Analysis of Maximum Likelihood Estimates

Standard Parameter	Wald DF	Estimate	Error	Chi-Square	Pr > ChiSq
Intercept	1	-0.6862	0.1028	44.5243	<.0001
GENDER	1	-0.2297	0.0343	44.7555	<.0001
CL_AGE2	1	0.0916	0.1092	0.7027	0.4019
CL_AGE3	1	-0.1465	0.1040	1.9842	0.1589
CL_AGE4	1	-0.2491	0.1086	5.2637	0.0218

**Box 3.4.4. Observed/expected rates by centre using logistic regression**

Centre	Den.	Num.	% Observed	% Expected	95% Lower	95% Upper
1	7699	2189	28.4	28.5	27.5	29.5
2	2360	1000	42.4	28.0	26.1	29.8
3	3422	916	26.8	28.4	26.9	29.9
4	1239	222	17.9	28.3	25.8	30.8
5	2382	529	22.2	28.4	26.6	30.2

**Box 3.4.3. Output Logistic Model on aggregate data**

The LOGISTIC Procedure  
Model Information

Data Set	WORK.IN_SEDIS
Response Variable	HI_HBA
Number of Response Levels	2
Number of Observations	16
Weight Variable	COUNT
Sum of Weights	17102
Model	binary logit
Optimization Technique	Fisher's scoring

Response Profile

Ordered Value	HI_HBA	Total Weight	Total Frequency
1	1	8	4856.000
2	0	8	12246.000

Probability modeled is HI\_HBA=1.

Analysis of Maximum Likelihood Estimates

Standard Parameter	Wald DF	Estimate	Error	Chi-Square	Pr > ChiSq
Intercept	1	-0.6862	0.1028	44.5243	<.0001
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CL_AGE3	1	-0.1465	0.1040	1.9842	0.1589
CL_AGE4	1	-0.2491	0.1086	5.2637	0.0218

Same results !

Complete Sample

Combinations of Levels of Covariates

# Privacy by design

Di Iorio CT et al. Privacy Impact Assessment in the design of transnational public health information systems: the BIRO project, Journal of Medical Ethics, 2009 35: 753-76, <http://jme.bmj.com/content/35/12/753>

**BIRO = Best Information through Regional Outcomes**

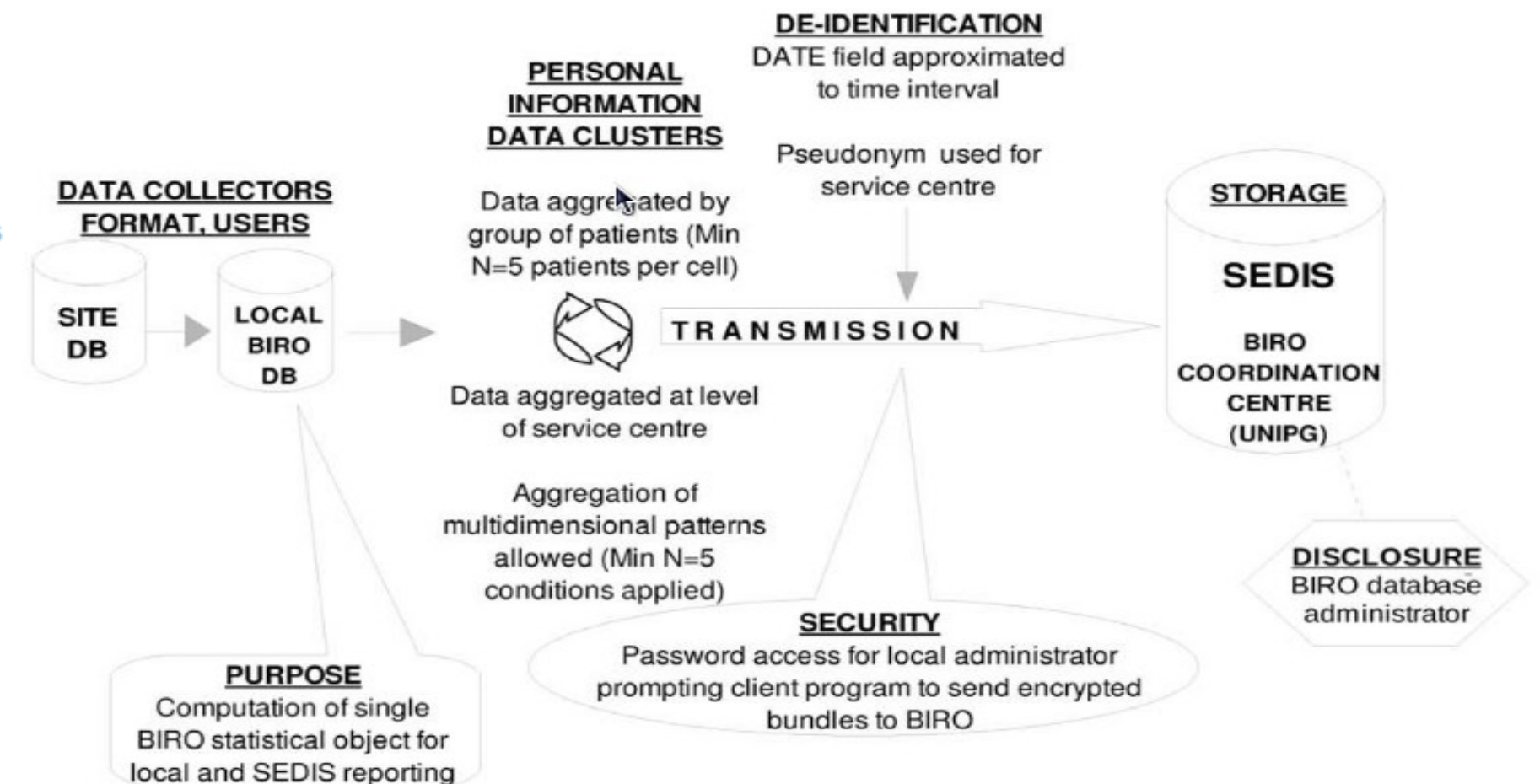
Designed and implemented to report on quality of care and outcomes in diabetes in Europe

Law, ethics and medicine

## Privacy impact assessment in the design of transnational public health information systems: the BIRO project

C T Di Iorio,<sup>1</sup> F Carinci,<sup>1</sup> J Azzopardi,<sup>2</sup> V Baglioni,<sup>3</sup> P Beck,<sup>4</sup> S Cunningham,<sup>5</sup> A Evripidou,<sup>6</sup> G Leese,<sup>7</sup> K F Loevaas,<sup>8</sup> G Olympios,<sup>6</sup> M Orsini Federici,<sup>3</sup> S Pruna,<sup>9</sup> P Palladino,<sup>10</sup> S Skeie,<sup>8</sup> P Taverner,<sup>8</sup> V Traynor,<sup>6</sup> M Massi Benedetti<sup>3</sup>

Result of the BIRO Delphi panel:  
best alternative identified to balance privacy protection and information content



# EUBIROD Privacy Performance Assessment

DI IORIO CT, CARINCI F et al, European Journal Public Health, 4 May 2012

The European Journal of Public Health Advance Access published May 4, 2012

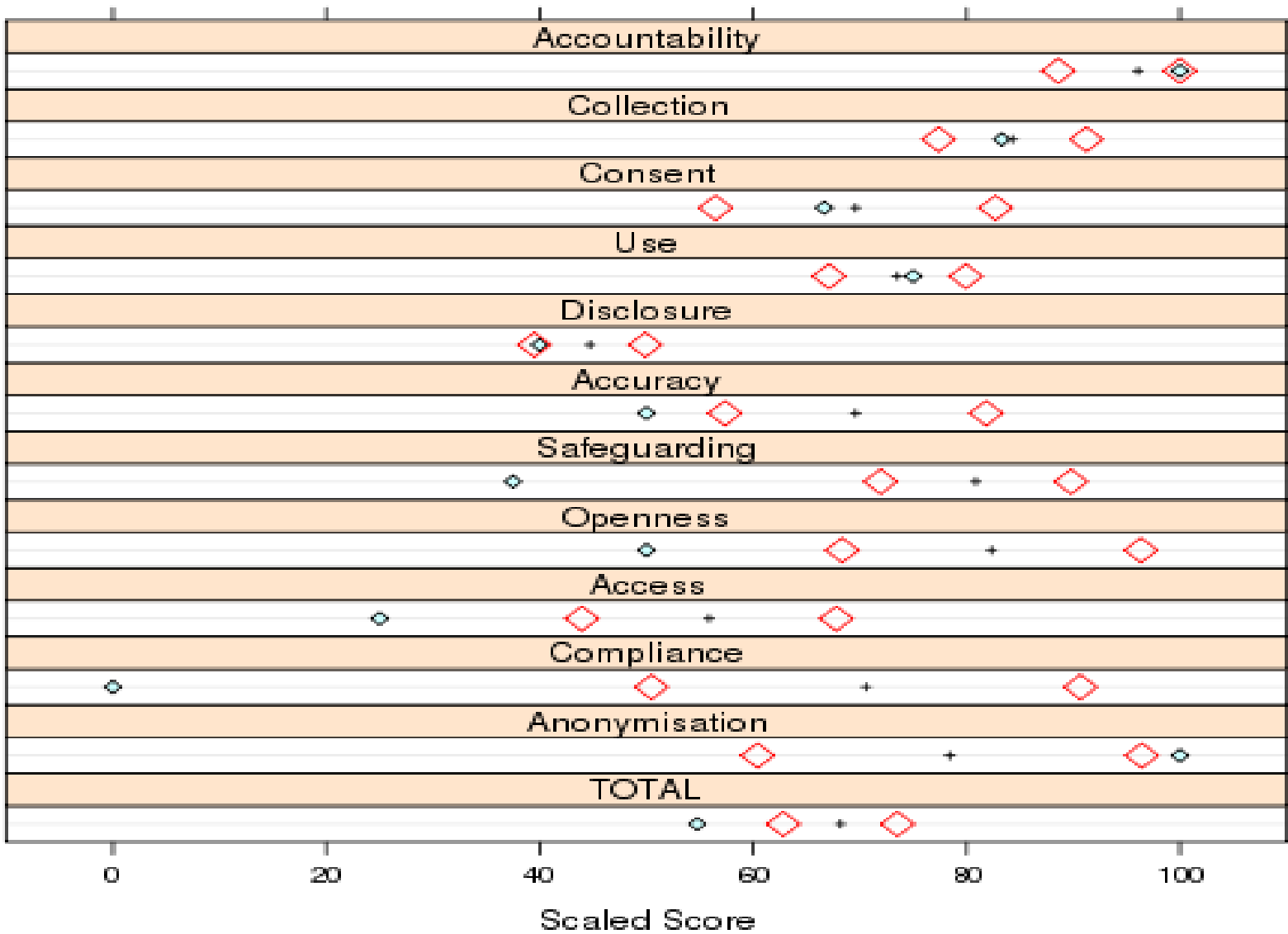
European Journal of Public Health, 000–000  
© The Author 2012. Published by Oxford University Press on behalf of the European Public Health Association. All rights reserved.  
doi:10.1093/eurpub/cks043

## Cross-border flow of health information: is ‘privacy by design’ enough? Privacy performance assessment in EUBIROD

Concetta Tania Di Iorio<sup>1</sup>, Fabrizio Carinci<sup>1</sup>, Massimo Brillante<sup>2</sup>, Joseph Azzopardi<sup>3</sup>, Peter Beck<sup>4</sup>, Natasa Bratina<sup>5</sup>, Scott G. Cunningham<sup>2</sup>, Carine De Beaufort<sup>6</sup>, Noemi Debacker<sup>7</sup>, Przemyslaw Jarosz-Chobot<sup>8</sup>, Michael Jecht<sup>9</sup>, Ulf Lindblad<sup>10</sup>, Tony Moulton<sup>11</sup>, Želiko Metelko<sup>12</sup>, Attila Nagy<sup>13</sup>, George Olympios<sup>14</sup>,

### Register: Q - Privacy Self Evaluation Chart

value ♦ lcl ◇ average + ucl ◇



- Each register can compare own practice against the average of the overall sample and the maximum attainable score
- Example:
  - Maximum score in terms of accountability and anonymisation
  - Acceptable levels for collection, consent, use and disclosure
  - All other factors show poor privacy performance

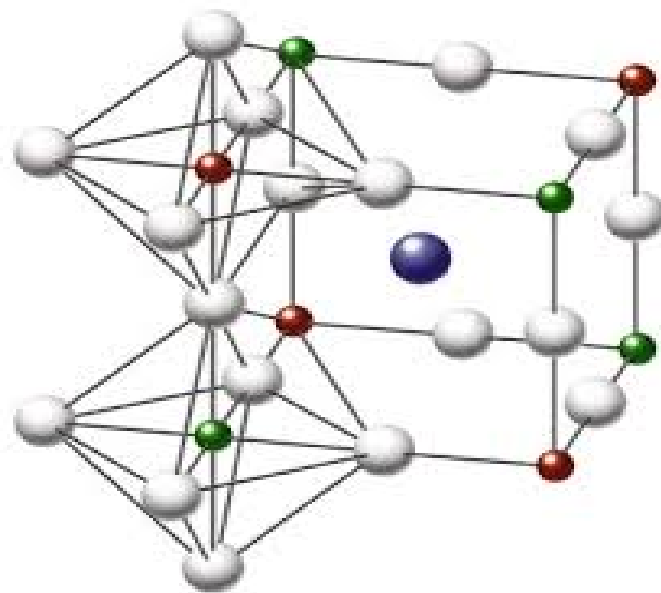


# Core Standards of the EUBIROD Project\*

## Defining a European Diabetes Data Dictionary for Clinical Audit and Healthcare Delivery

S. G. Cunningham<sup>1</sup>; F. Carinci<sup>2,3</sup>; M. Brillante<sup>1</sup>; G. P. Leese<sup>1</sup>; R. R. McAlpine<sup>1</sup>; J. Azzopardi<sup>4</sup>; P. Beck<sup>5</sup>; N. Bratina<sup>6</sup>; V. Boucquet<sup>7</sup>; K. Doggen<sup>8</sup>; P. K. Jarosz-Chobot<sup>9</sup>; M. Jecht<sup>10</sup>; U. Lindblad<sup>11</sup>; T. Moulton<sup>12</sup>; Ž. Metelko<sup>13</sup>; A. Nagy<sup>14</sup>; G. Olympios<sup>15</sup>; S. Pruna<sup>16</sup>; S. Skeie<sup>17</sup>; F. Storms<sup>18</sup>; C. T. Di Iorio<sup>19</sup>; M. Massi Benedetti<sup>2</sup>

<sup>1</sup>University of Dundee, Scotland; <sup>2</sup>Hub for International Health Research, Italy; <sup>3</sup>University of Surrey, United Kingdom; <sup>4</sup>University of Malta, Malta; <sup>5</sup>Joanneum Research, Austria; <sup>6</sup>University Children's Hospital Ljubljana, Slovenia; <sup>7</sup>Centre Hospitalier de Luxembourg, Luxembourg; <sup>8</sup>Scientific Institute of Public Health, Belgium; <sup>9</sup>Medical University of Silesia, Poland; <sup>10</sup>Havelhöhe Hospital, Germany; <sup>11</sup>Department of Primary Care, University of Gothenburg, Sweden; <sup>12</sup>Adelaide and Meath Hospital, Ireland; <sup>13</sup>Vuk Vrhovac University Clinic for Diabetes, Croatia; <sup>14</sup>University of Debrecen, Hungary; <sup>15</sup>Ministry of Health, Cyprus; <sup>16</sup>Telemedica Consulting, Romania; <sup>17</sup>NOKLUS, Norway; <sup>18</sup>Dutch Institute for Healthcare Improvement (CBO), The Netherlands; <sup>19</sup>Serectrix snc, Italy

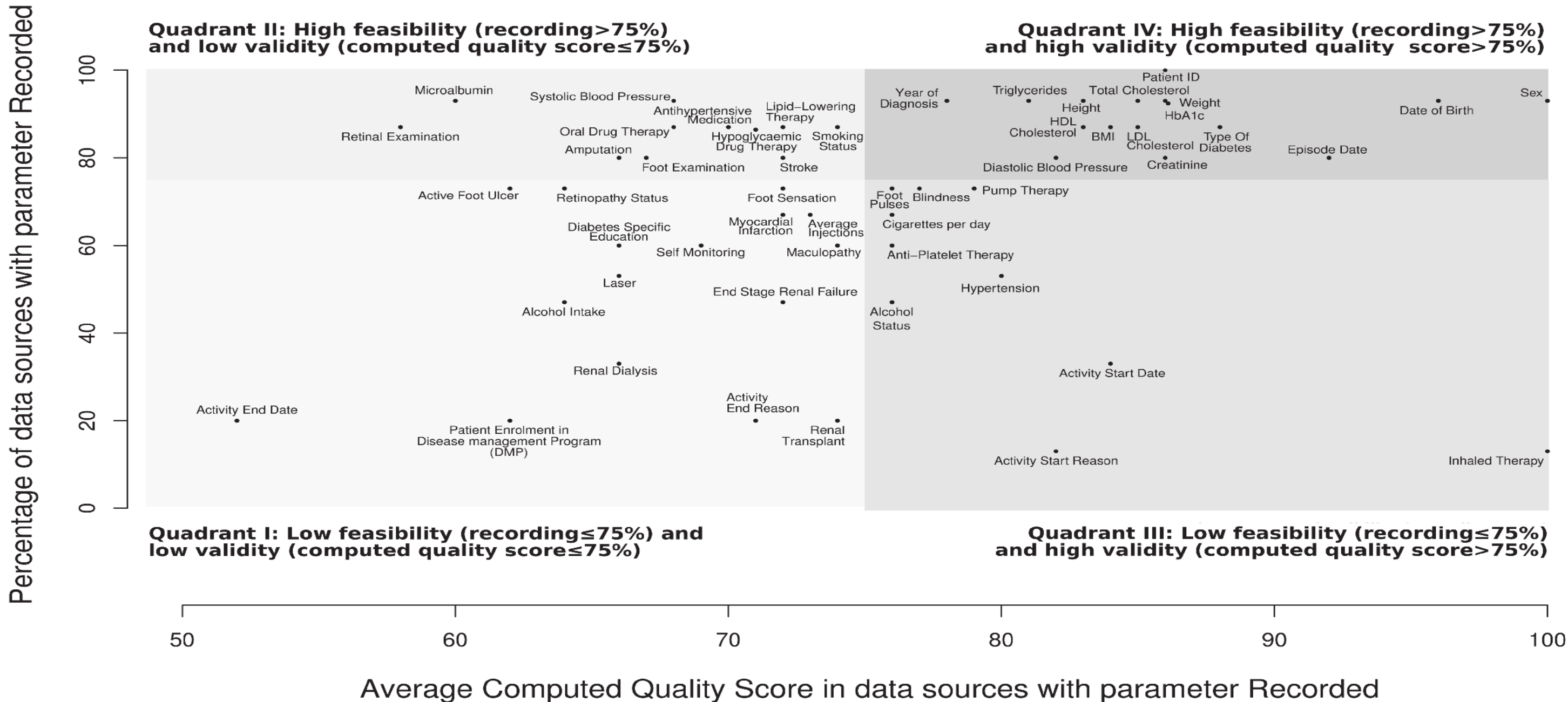


1 DEMOGRAPHIC CHARACTERISTICS	1.1 Basic demographics	
2 CLINICAL CHARACTERISTICS	2.1 Diabetes status	
	2.2 Risk factors for diabetes complicat ons	2.2.1 Obesity and Growth (most recent value in the last 12 months)
		2.2.2 Lifestyle
		2.2.3 Clinical measurements (most recent value in the last 12 months)
	2.3 Diabetes complicat ons	
3 HEALTH SYSTEM	3.1 Structure (provider level)	
	3.2 Structural quality	
	3.3 Processes	3.3.1 Foot examinat on
		3.3.2 Eye examinat on
		3.3.3 Measurement done (in the last 12 months)
		3.3.4 Treatment (at least one prescript on in the last 12 months)
	3.3.5 Management	
4 POPULATION	4.1 Area level	
5 RISK ADJUSTED INDICATORS	5.1 Epidemiology	
	5.2 Process quality (in adults with diabetes in the last 12 months)	
	5.3 Outcome Quality: Intermediate outcomes (in adults with diabetes in the last 12 months)	
	5.4 Outcome Quality: Terminal outcomes (in the last 12 months)	

# Core Standards of the EUBIROD Project\*

## Defining a European Diabetes Data Dictionary for Clinical Audit and Healthcare Delivery

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M. Jecht<sup>10</sup>; U. Lindblad<sup>11</sup>; T. Moulton<sup>12</sup>; Z. Metelko<sup>13</sup>; A. Nagy<sup>14</sup>; G. Olympios<sup>15</sup>;  
S. Pruna<sup>16</sup>; S. Skeie<sup>17</sup>; F. Storms<sup>18</sup>; C. T. Di Iorio<sup>19</sup>; M. Massi Benedetti<sup>2</sup>





# BIRO local „mapping“

BIROBox

Help

**BIROBox** Setup

**BIRO Database** Database Engine

**Local Report** Statistical Engine

**Data Transmission** Communication Software

**Global Report** Central Engine

**Global Connection** Web Portal

**Fields mapping configuration**

Configure mapping between BIRO fields and local fields

BIRO field: **Date of Birth**, **Date of Diagnosis**, **Patient ID**, **Sex**, **Sub-Data Source ID**, **Type of Diabetes**, Alcohol Intake, Alcohol status, Amputation, Anti Platelet Therapy, Average Injections, Blindness, **BMI**, Cigarettes per day, **Creatinine**, Diabetes Specific Education, **Diastolic blood-pressure**, End Stage Renal Failure, **Episode Date**, Eye Examination, Foot Examination, Foot Pulses, Foot Sensation, Foot Ulcer, **HbA1c**, **HDL**, **Height**, Hypertension, Hypertensive Medication, Hypoglycaemic Drug Therapy, Laser, **LDL**, Lipid Therapy, Maculopathy, Microalbumin, Myocardial Infarction, Nasal Therapy, Oral Therapy

BIRO field name: TYPE\_DM  
BIRO field description: Type of Diabetes

☒ Extract from local database

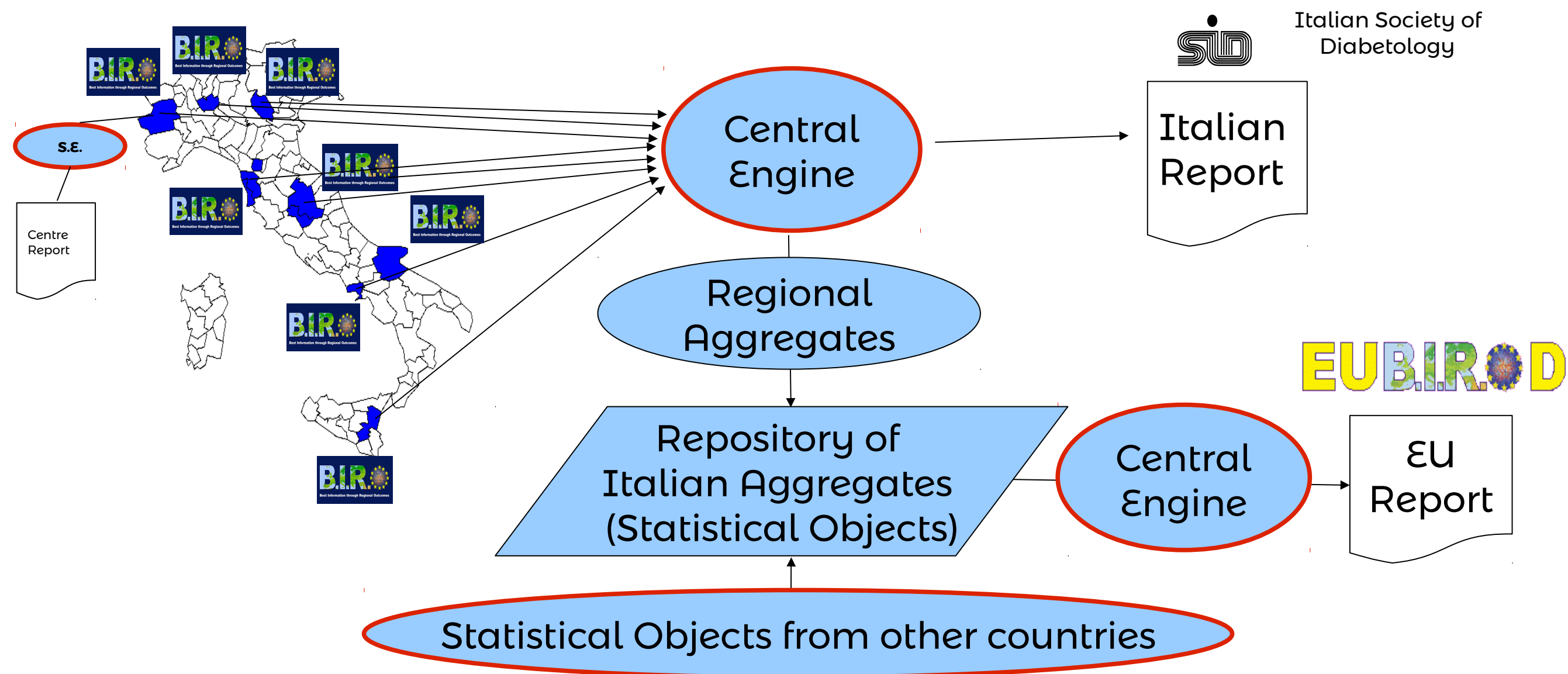
Local field name: tipoDiabetesInt

BIRO category	Expression	Local value	BIRO Value
Type 1	if is custom text	1	1
Type 2	if is custom text	2	2
Other Types	if is custom text	0	3

Previous Finish

# Applying BIRO in the EUBIROD project: National decentralised automated reporting

ITALY: BIRO installed in N=8 centres; S.E.=Statistical Engine  
DATABASES OF INDIVIDUAL RECORDS STAY WITH THE ORIGINAL DATA CUSTODIAN



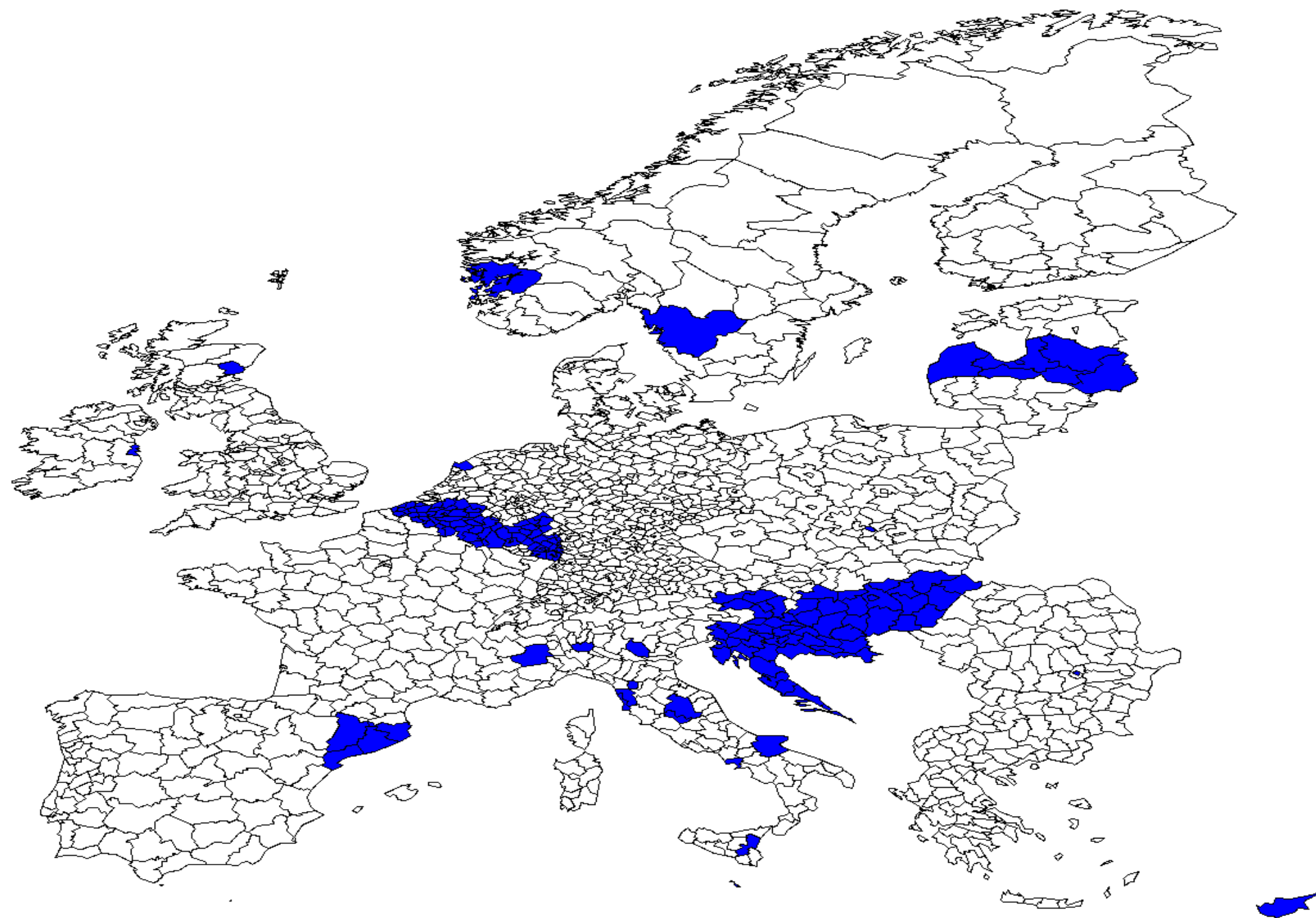
# EUBIROD Report (2012)

8/2/2012: New BIRO  
Release 2.1.12

15/2/2012: Collection of  
statistical objects closed

21/2/2012: EU Draft Report internally available  
(N=79 indicators)

**13 Days from Software Release  
to Online Publication of the results !**

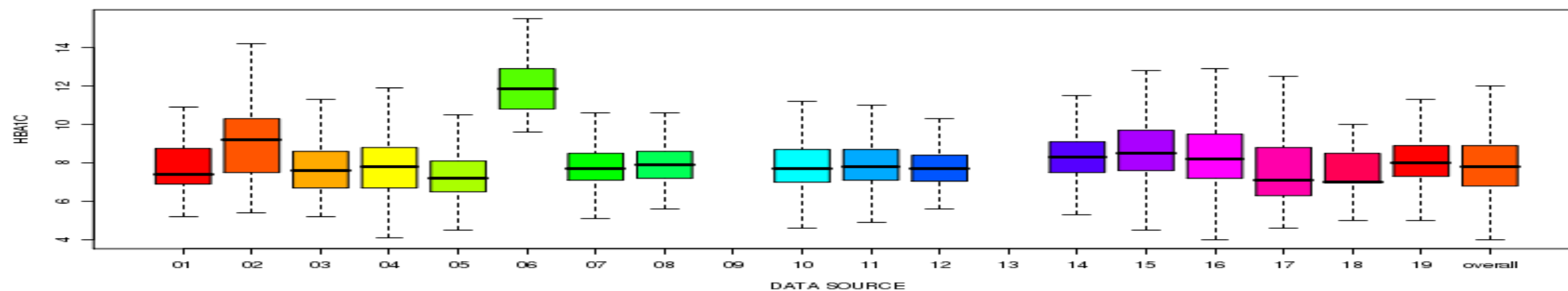


# Glycated Haemoglobin (HbA1c)

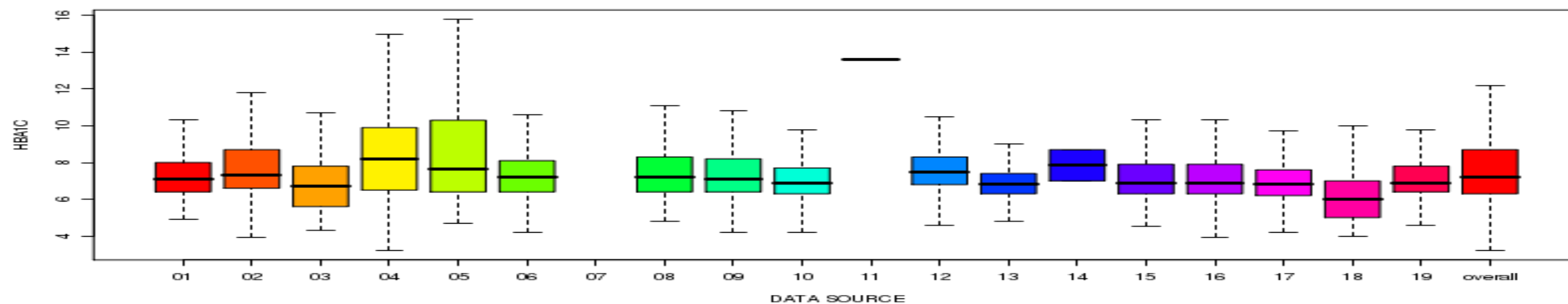
n=168,948

EUBIROD Diabetes Report 2010

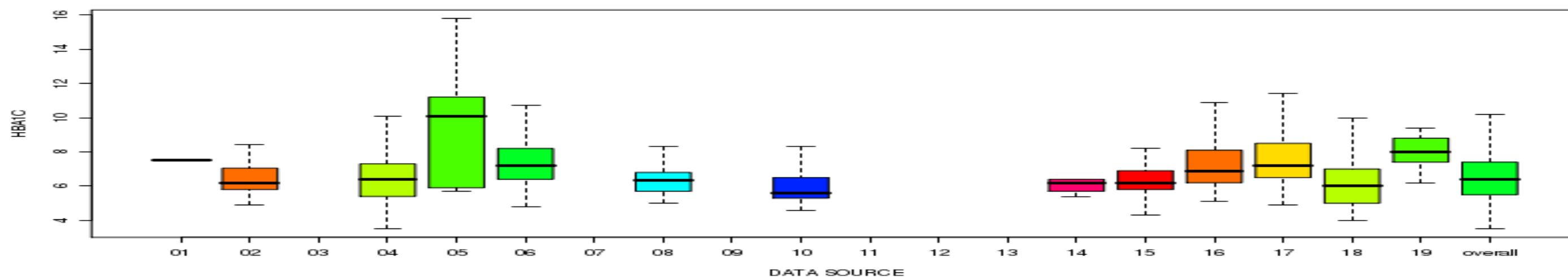
## Type 1



## Type 2



## Other Type



- Large project on Health Information in Europe (2015-2017). Consortium and workpackages based on existing networks. Coordinator: Institute of Public Health Belgium

- Task 8.2:

Main aim: *'to maintain and strengthen the implementation of population based registries for chronic diseases through the standardization of methodologies for producing standardized EU-wide indicators, taking selected clinical conditions as test cases for a new 'platform for population based registries'.*

- Specific objective: **the provision of privacy-enhanced open source software for statistical analysis, data exchange, and automated calculation of indicators, locally and at EU level, based on the BIRO experience.**

# Definitions of the EU Joint Action PARENT on “Patient Registries”

A patient registry is “... an organized system that collects, analyses, and disseminates the data and information on a group of people defined by a particular disease, condition, exposure, or health-related service, and that serves a predetermined scientific, clinical or/and public health (policy) purposes”

Disease or condition registries “...are defined by patients having the same diagnosis, such as cystic fibrosis or heart failure, or the same group of conditions such as disability.”

A Population Registry “... is a registry that intends to cover all residents in a given geographic area within a given time period. The coverage of the specific registry may, however, be incomplete, but it is nevertheless a population registry if the aim is to include all the individuals in the target population. A population is defined by geographical boundaries, but usually only residents (or citizens) within a given time period are included in the definition.”.



# Definitions of the EU Joint Action PARENT on “Patient Registries”

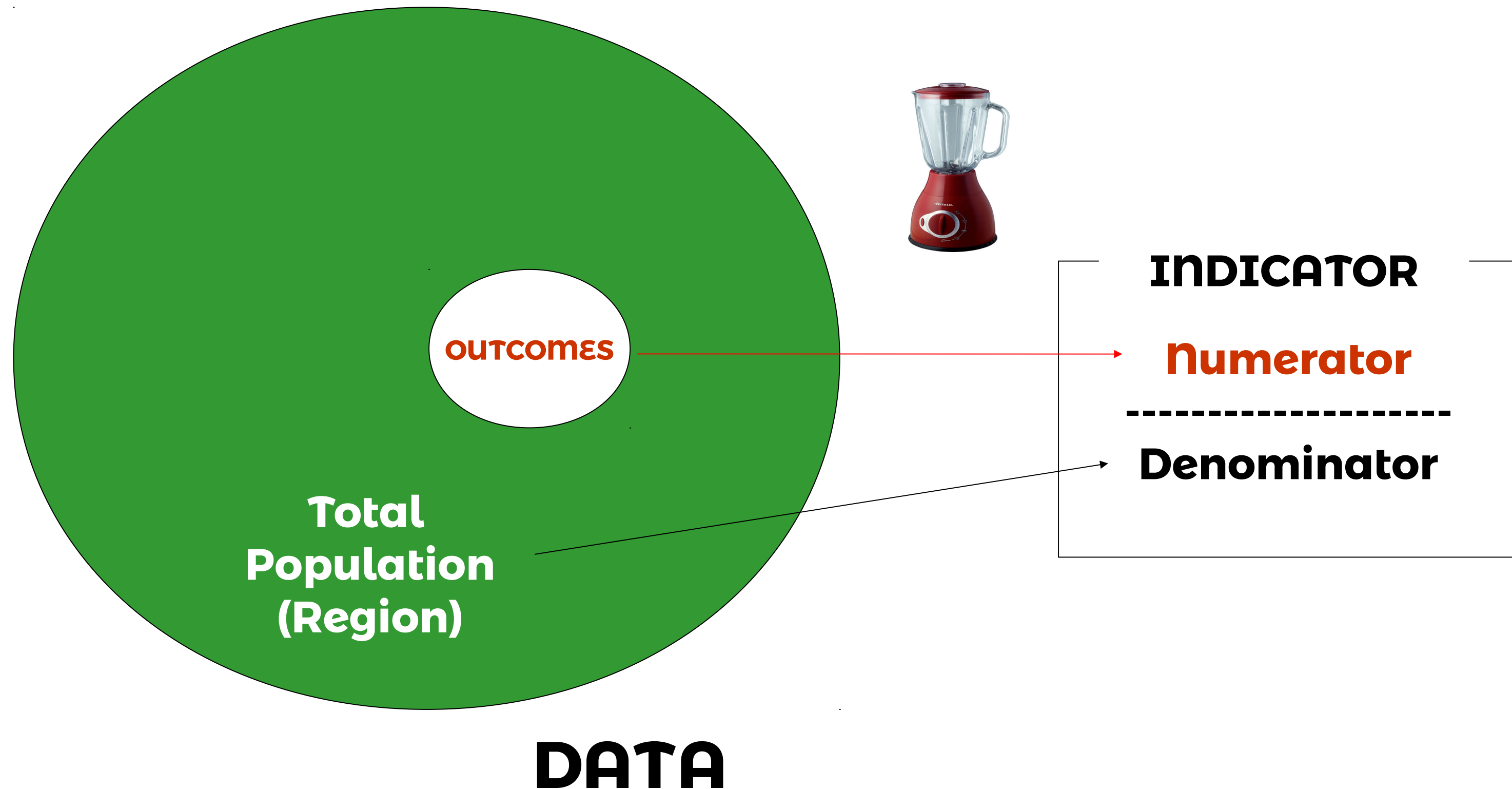
**A Population-based registry should be used** “...when all persons with a given trait, exposure or event, are intended to be included in the registry. If the registry includes everyone in the population (even the oldest), it becomes a population registry. Intention rather than performance defines the terms. A population-based disease registry aims at including everyone with the disease in the population, be it self-reported, clinically diagnosed or detected at screening. Population and population-based registries may be further classified as of good or bad quality depending on coverage or other characteristics”.

# Why do we need a population-based disease register?

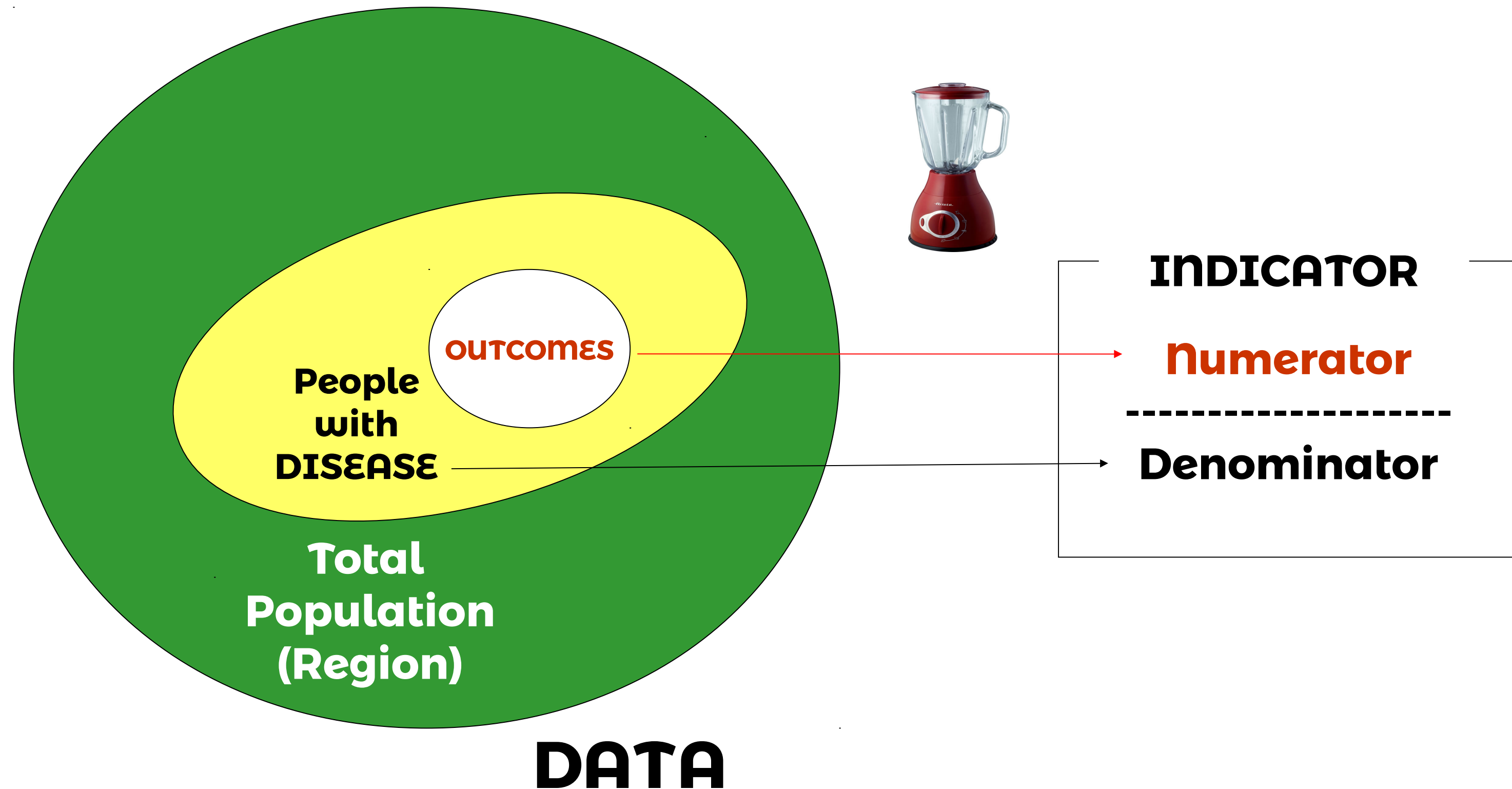




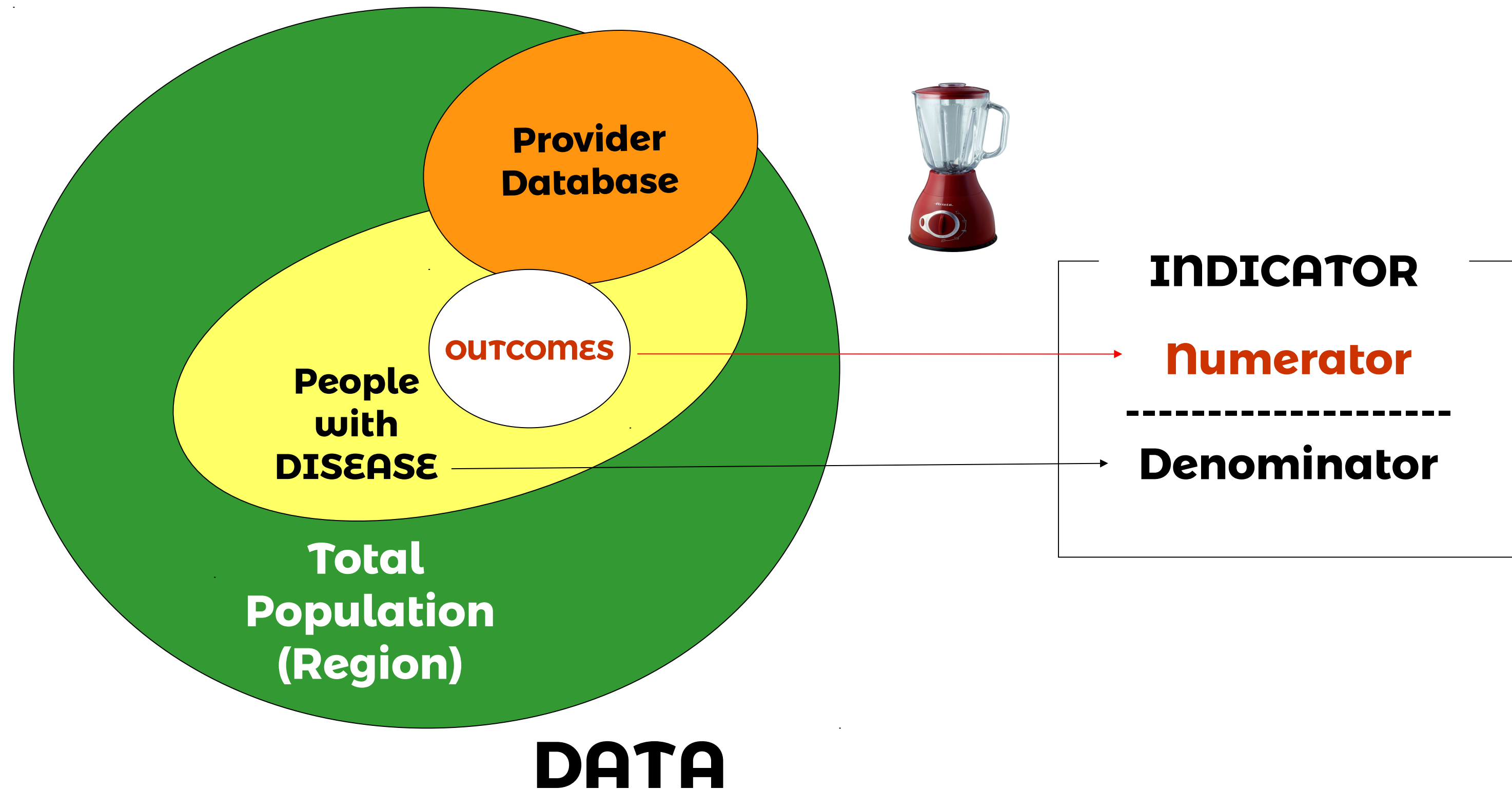
# THIS IS A POPULATION-BASED REGISTER



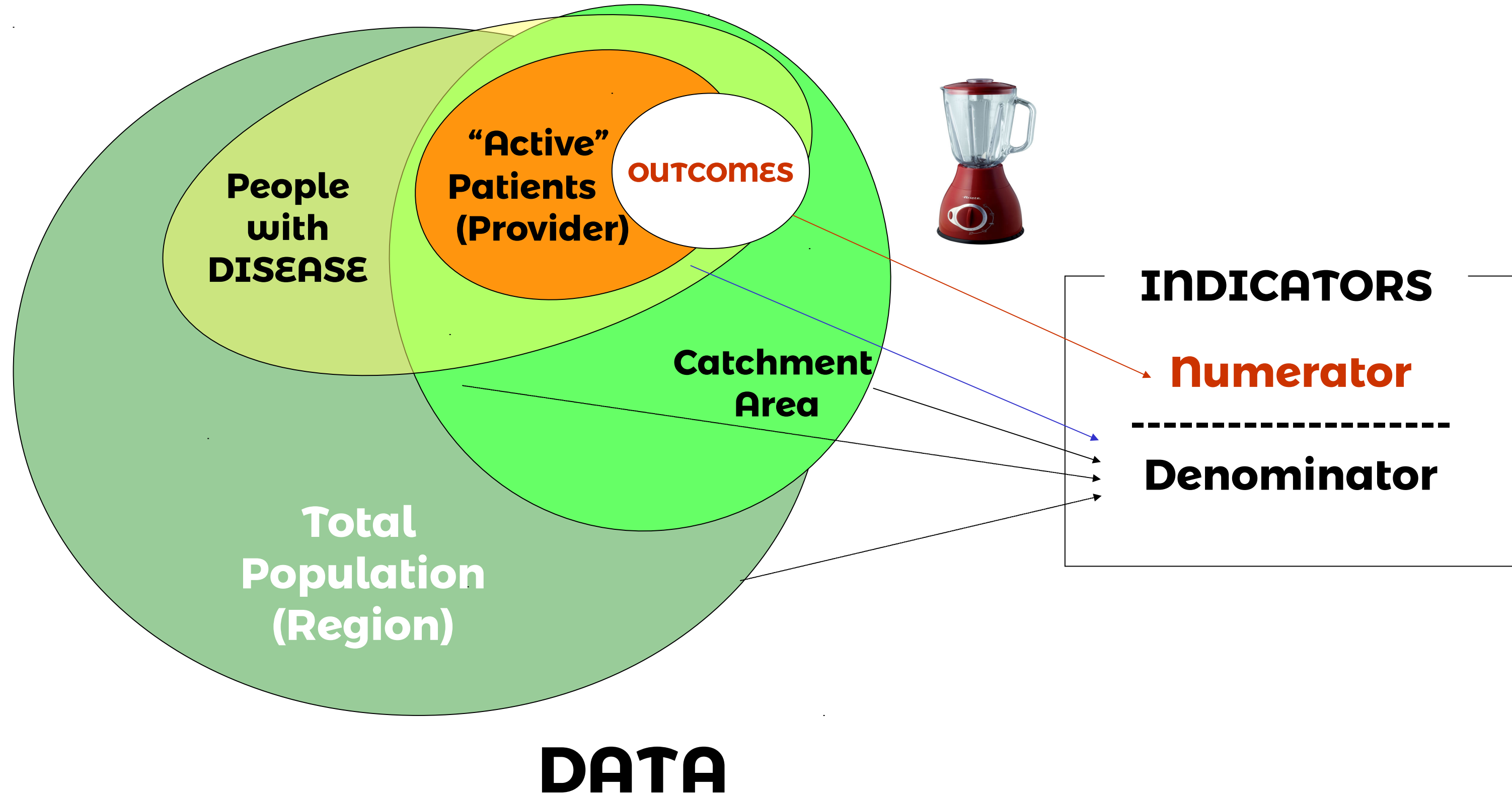
# THIS IS POPULATION-BASED DISEASE REGISTER



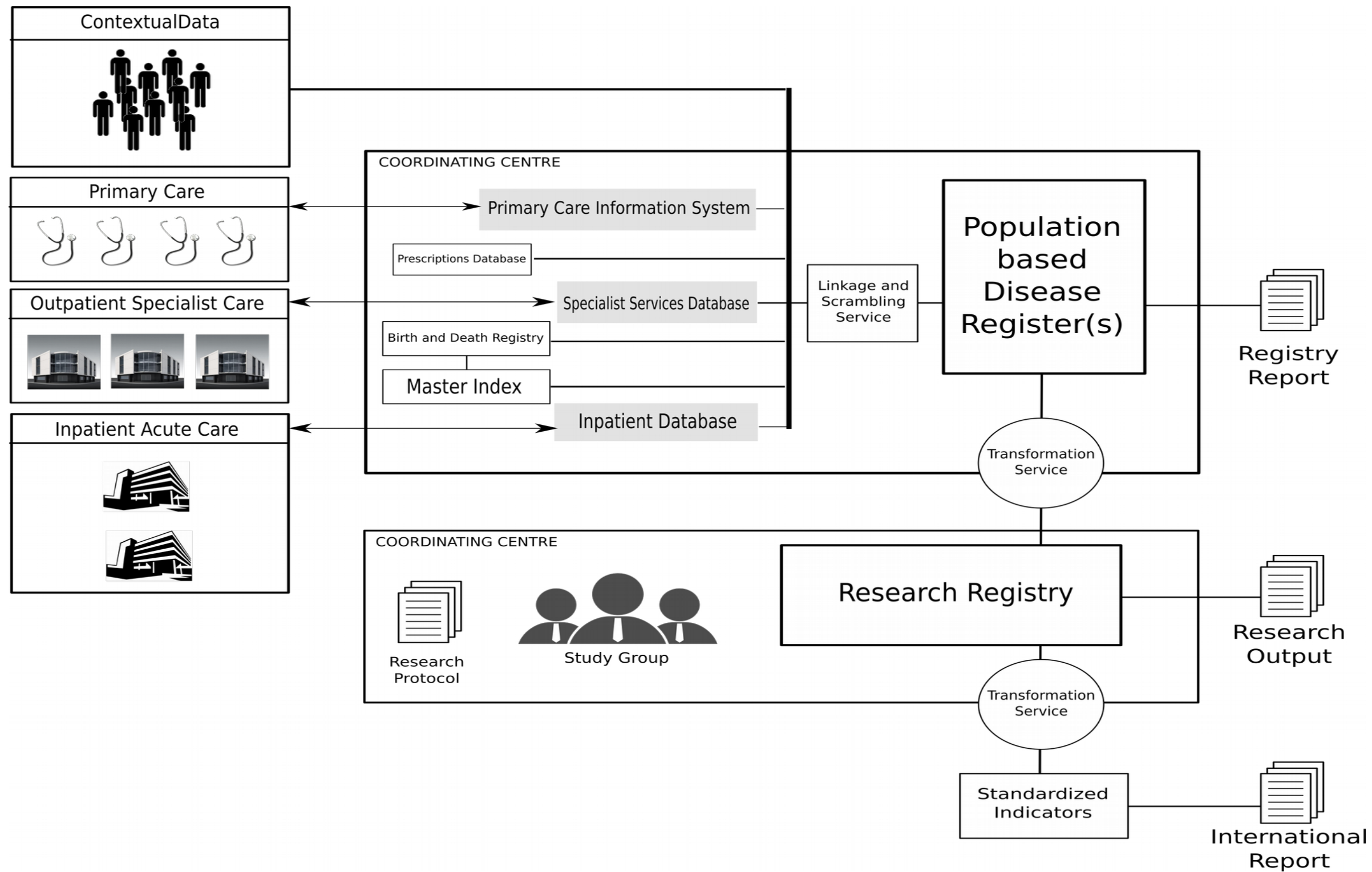
# THIS IS A POPULATION-BASED DISEASE REGISTER LINKED TO A PROVIDER DATA SOURCE



# PROVIDER-BASED DISEASE REGISTER



# Structure of population-based disease register



# T8.2 Action 1. Survey of diabetes data sources in Europe

**Instrument:** Questionnaire including structured items on: Description; Scope of information; Governance; Technical Infrastructure; Outputs.

**Data collection system:** REDCap open source research server, hosted in Slovenia

**Timeframe:** August-September 2017

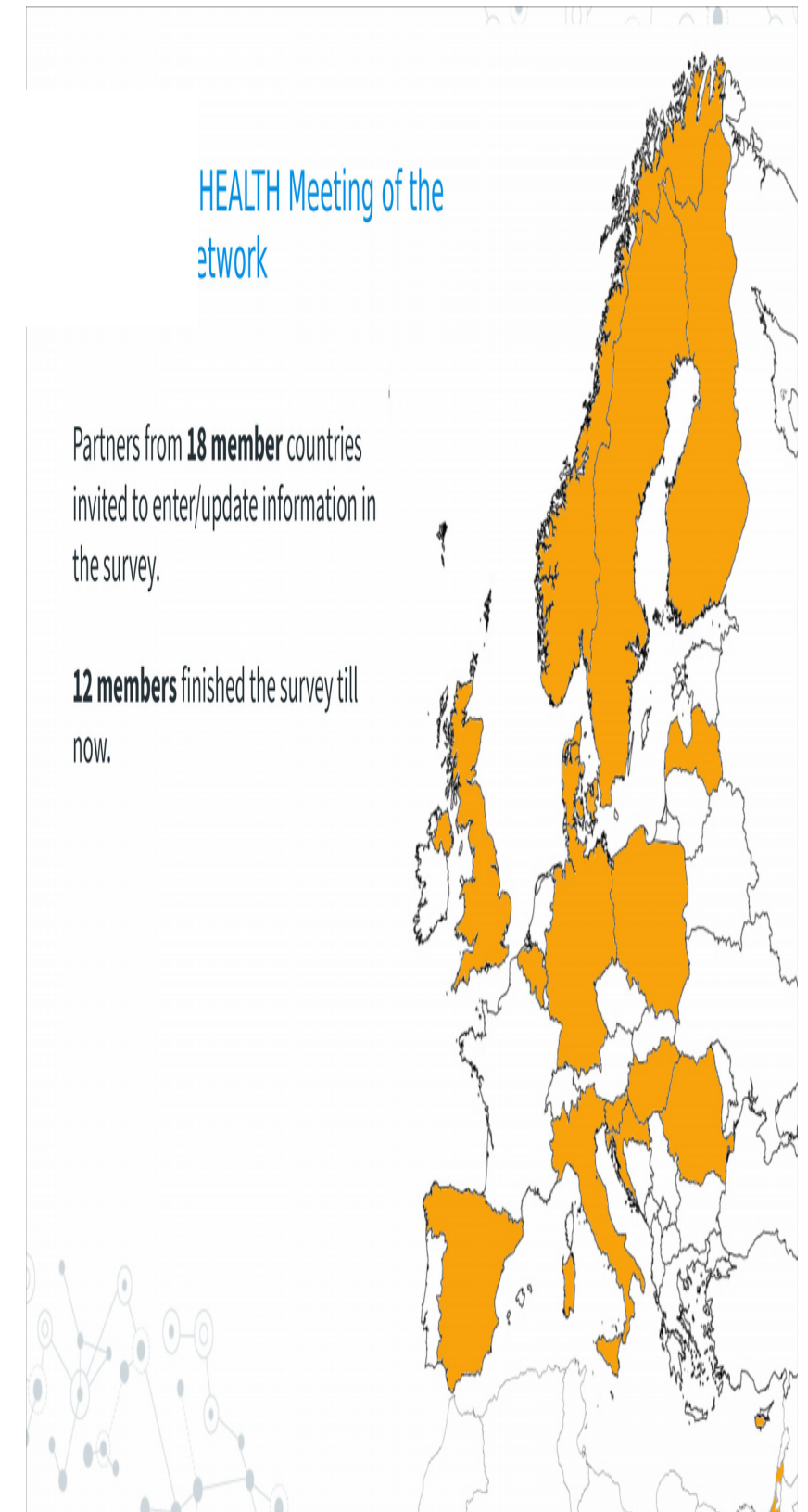
## Preliminary Taxonomy

A. Population-based Registers. Croatia, Sweden, UK-Scotland

B. National Audits and surveillance systems. Belgium, Germany, UK-England

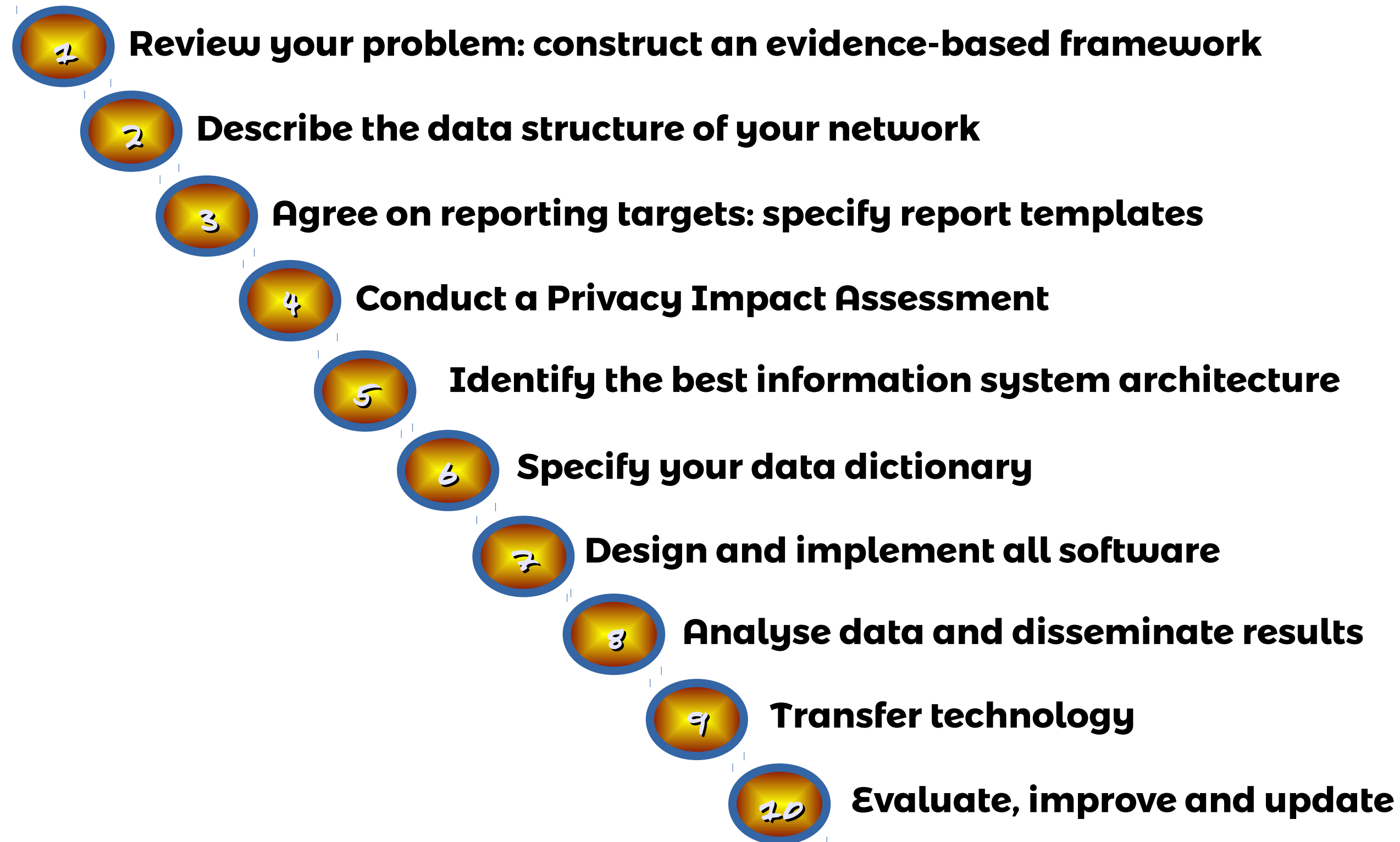
C. National databases for quality indicators. Israel, Latvia

D. Different types and levels of data sources. Cyprus, Hungary, Israel, Italy, Malta, Poland, Romania, Slovenia



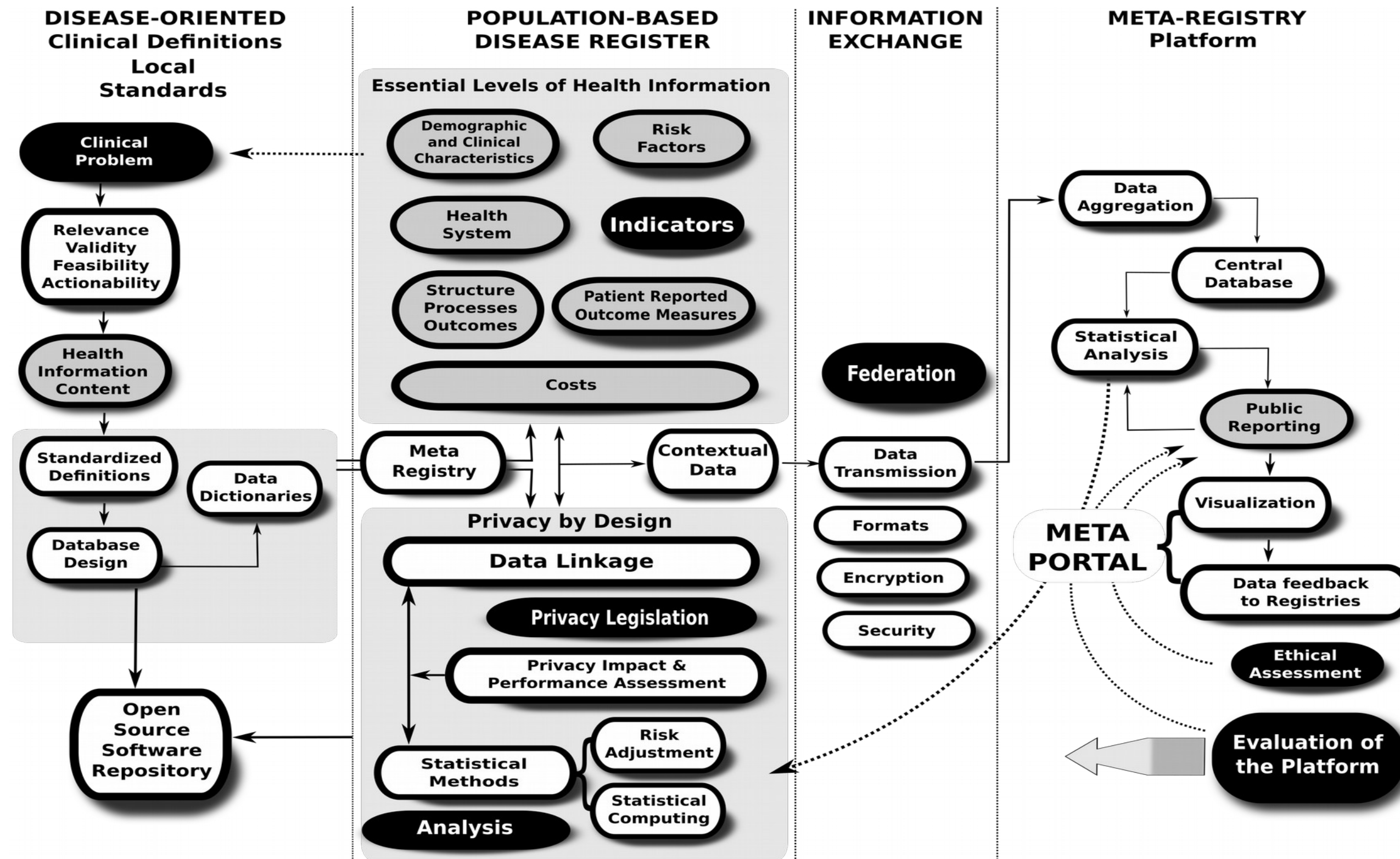


## T8.2 Action 2. Generalisation of the BIRO approach



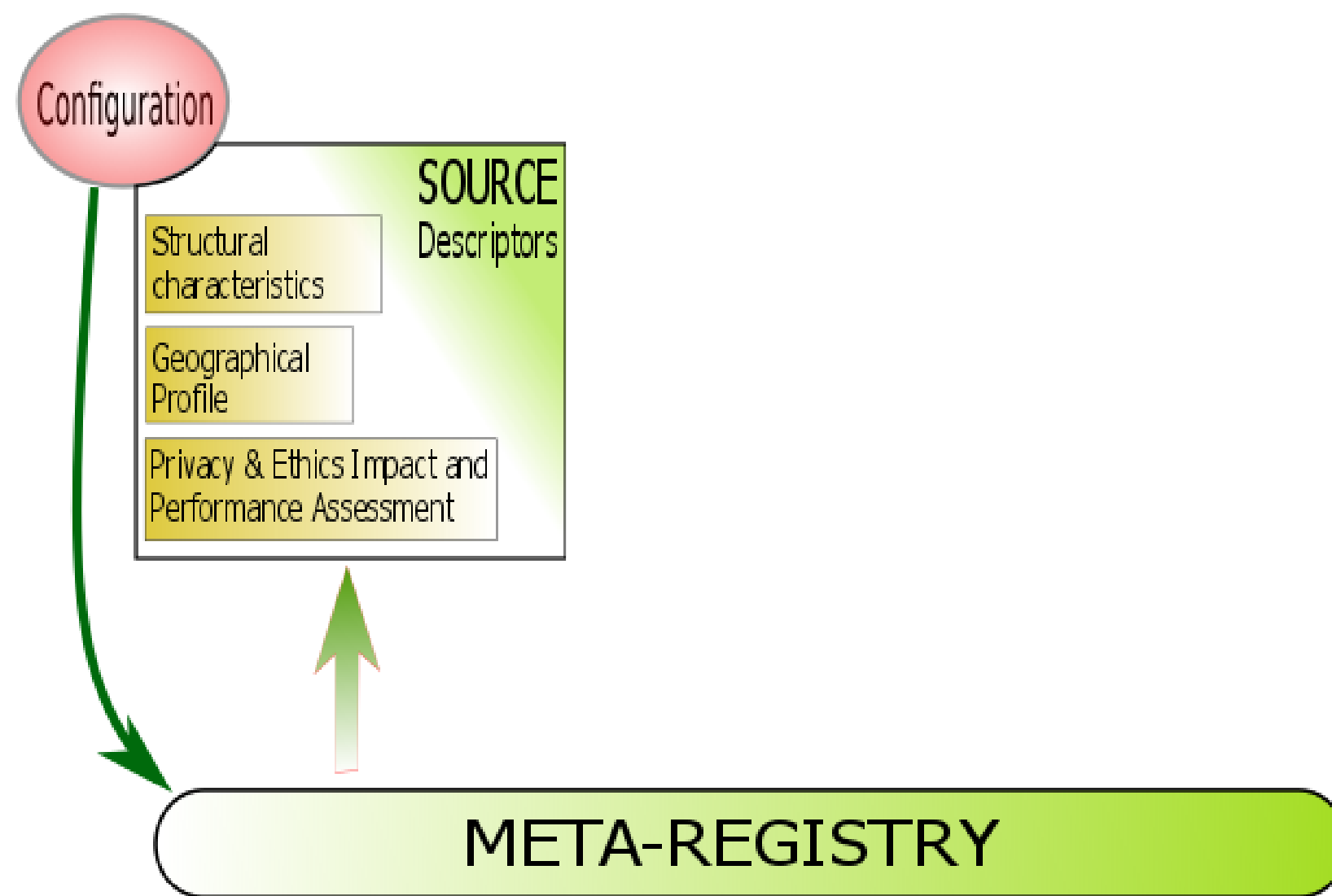
# Essential levels of health information for chronic diseases

ADAPTED FROM: Carinci F, Essential levels of health information in Europe:  
an action plan for a coherent and sustainable infrastructure, Health Policy, 2015 Apr;119(4):530-8. Nov 28.

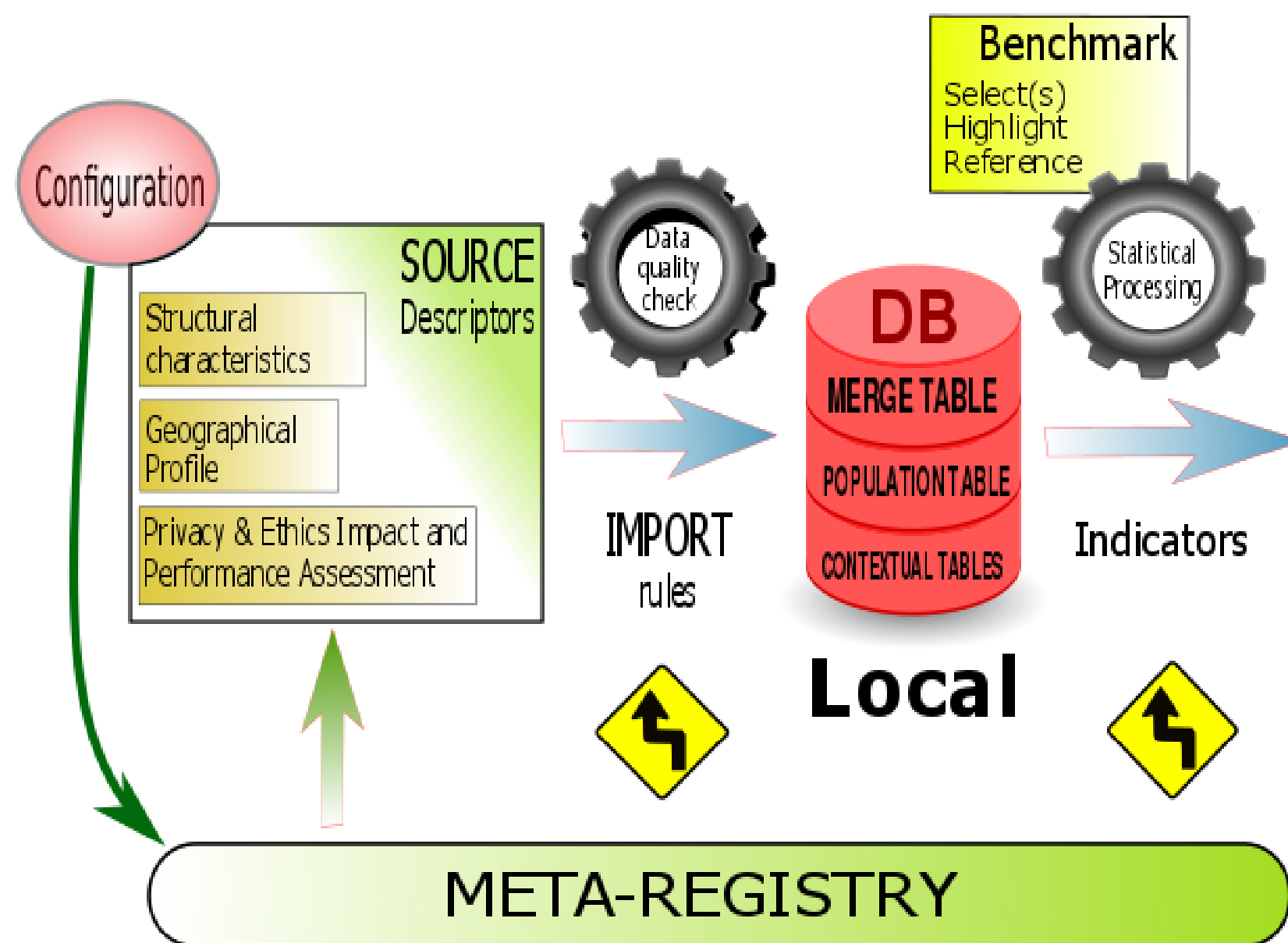




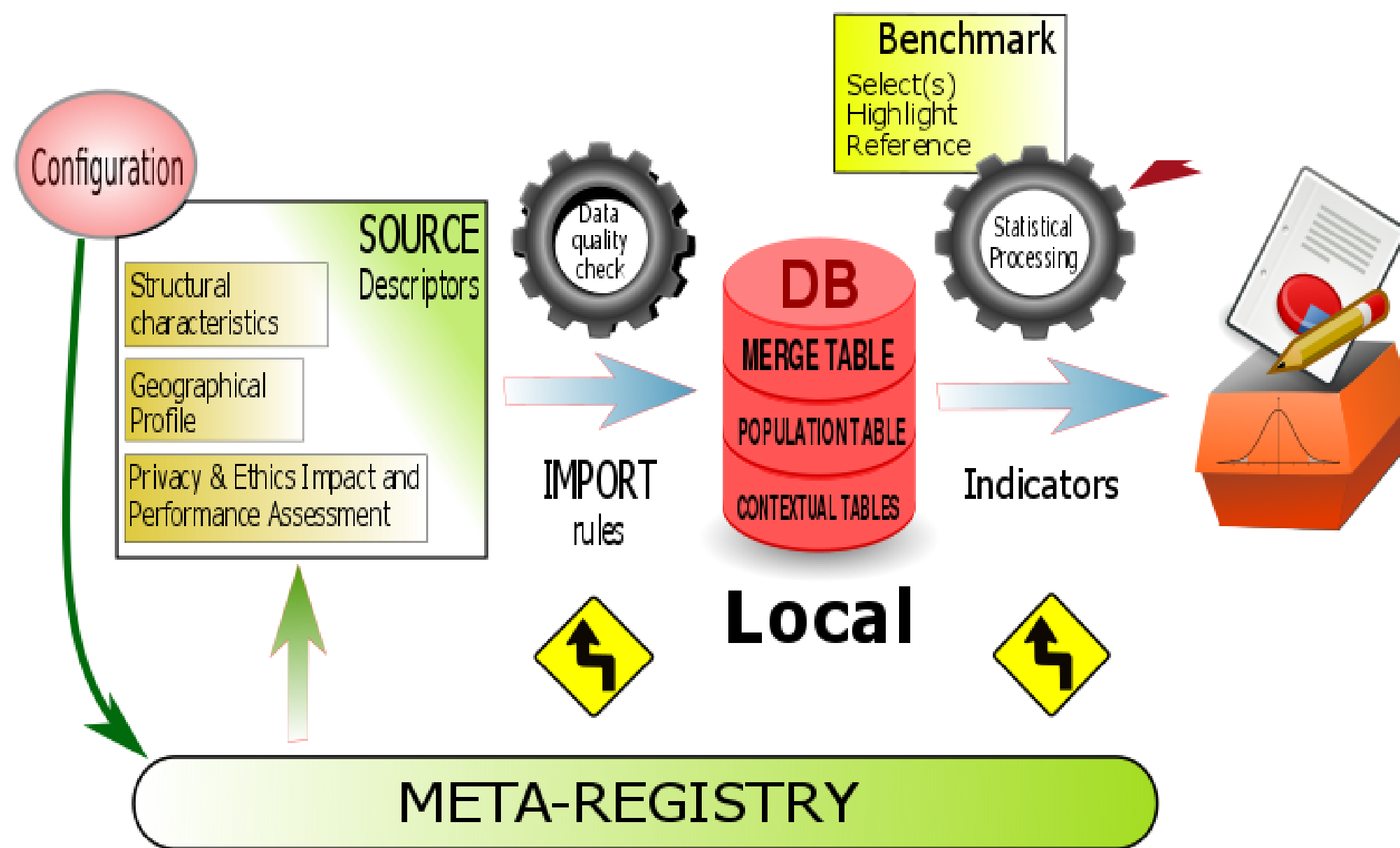
# General Platform for population-based data



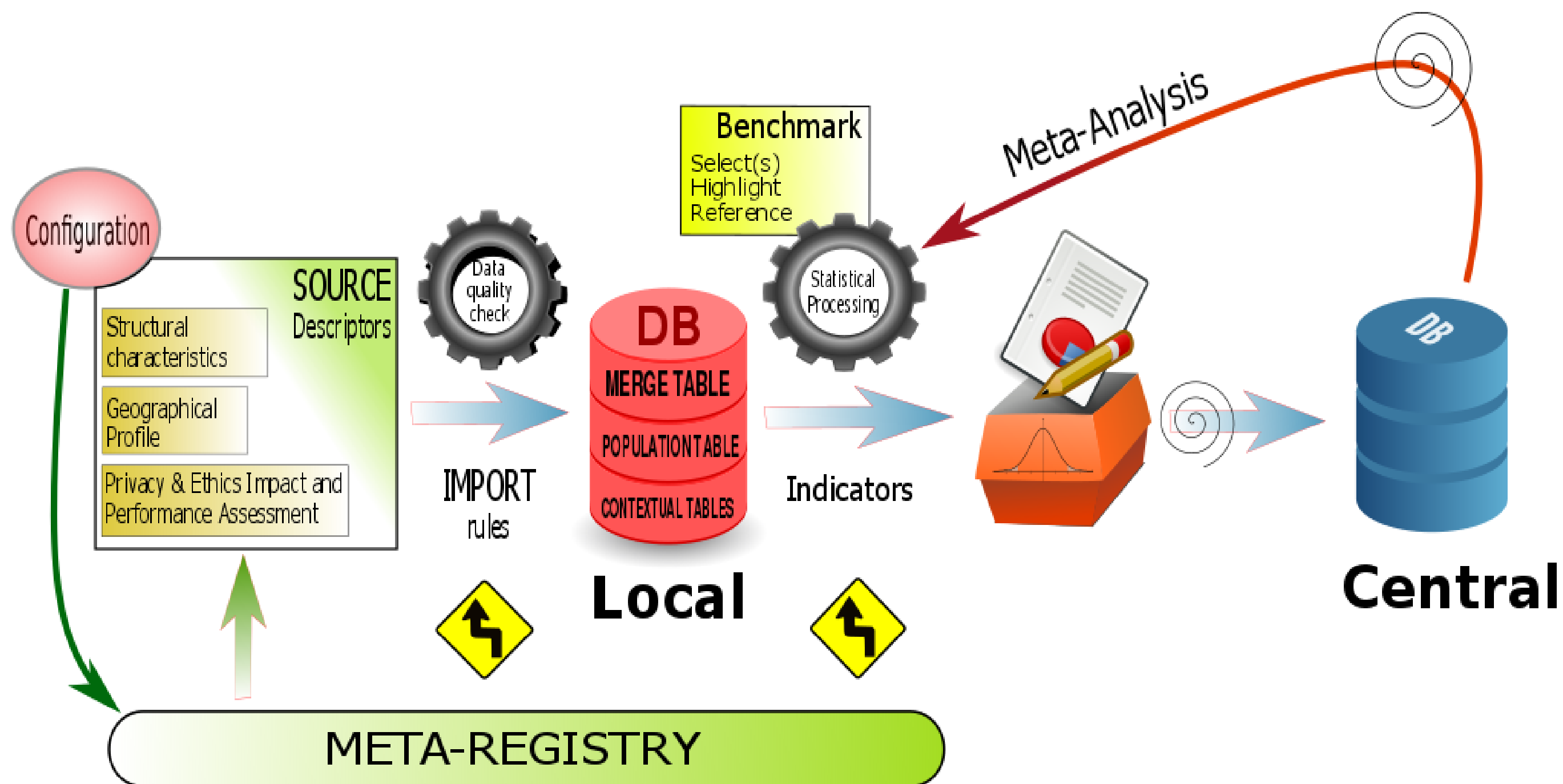
# General Platform for population-based data



# General Platform for population-based data

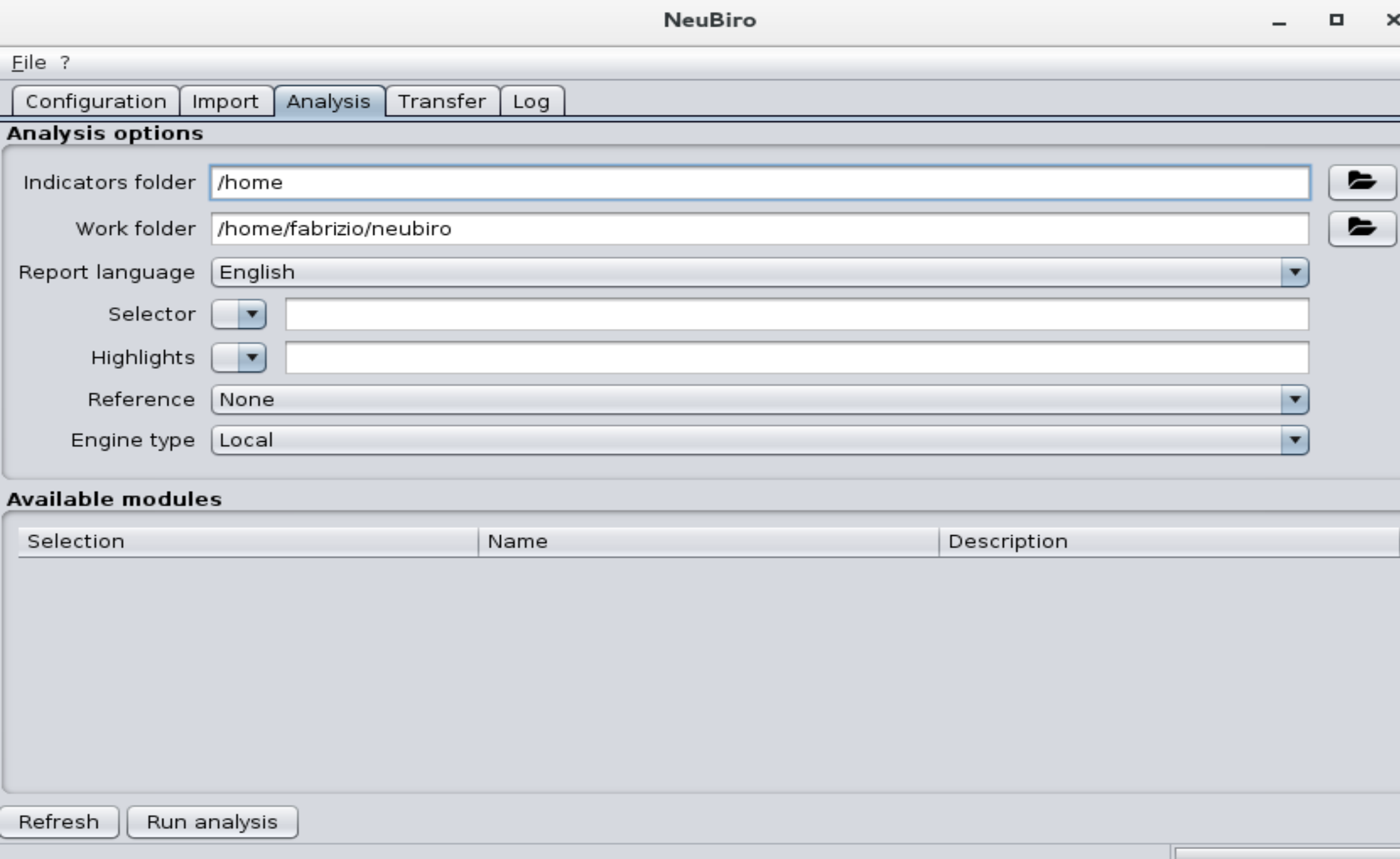


# General Platform for population-based data



# T8.2 Action 3. Software Development: NeuBIRO

<https://github.com/eubirodnetwork/neubiro>



The screenshot shows the NeuBiro application window with the 'Analysis' tab selected. The 'Analysis options' section contains several configuration fields: 'Indicators folder' set to '/home', 'Work folder' set to '/home/fabrizio/neubiro', 'Report language' set to 'English', 'Selector' and 'Highlights' as empty dropdowns, 'Reference' set to 'None', and 'Engine type' set to 'Local'. Below this is an 'Available modules' section with a table that has columns for 'Selection', 'Name', and 'Description', but it is currently empty. At the bottom are 'Refresh' and 'Run analysis' buttons.

NeuBiro

File ?

Configuration Import Analysis Transfer Log

**Analysis options**

Indicators folder /home

Work folder /home/fabrizio/neubiro

Report language English

Selector

Highlights

Reference None

Engine type Local

**Available modules**

Selection	Name	Description
-----------	------	-------------

Refresh Run analysis

## T8.2 Action 4. Road test (5 countries)



### Test Data Analysis using NeuBIRO *user experiences*

Iztok Štrotl, U. Ljubljana

#### BiroBox vs NeuBiro

##### ⊙ **Neubiro**

##### **-> customization and simplification**

- Custom field mappings
- Simplified design
- Custom validation rules
- Custom easy to use indicators



# User experiences

## Analysis of local sample

- ⊙ 1,146 patients, 2,564 events
- ⊙ Duration of setup and analysis on old laptop:  
**... less than 4 minutes ...**

### 2.1.1 Type of Diabetes by Age

Type of Diabetes	Age													
	<15		[15-45)		[45-55)		[55,65)		[65-75)		>=75			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Type 1	0	-	114	74.0	48	33.3	21	7.2	9	3.0	1	0.5	193	17.5
Type 2	0	-	31	20.1	85	59.0	245	83.9	269	90.9	205	94.0	835	75.6
Other	0	-	9	5.8	11	7.6	26	8.9	18	6.1	12	5.5	76	6.9
TOTAL	0	0.0	154	14.0	144	13.0	292	26.0	296	27.0	218	20.0	1,104	100.0

## Analysis of local sample

- ⊙ **Simple and fast to:**
  - install
  - change to new version
- ⊙ **Simply added/changed:**
  - changed default indicators
  - added erase rules (e.g. wrong codes for TYPE\_DM)
  - new indicators (e.g. LDL < 1.8)
- ⊙ **Just loved Gitlab version control**
  - transparent changes and communication

# User experiences

## Importing of new fields

### ⦿ Bariatric surgery import field

```
// BIRO REF: BIRO0XX – Bariatric surgery
'BARIATRIC' {
  type = "smallint"
}
```

## Creating new indicators

LDL Cholesterol	N	%
Valid	344	29.6
Missing	817	70.4
TOTAL	1,161	100.0

Table 2.2.3.7 LDL Cholesterol by Type of Diabetes

### 2.2.3.4 LDL Cholesterol by Type of Diabetes

LDL Cholesterol	Type of Diabetes									
	Type 1		Type 2		Other					
	N	%	N	%	N	%	N	%	N	%
<1.8	11	19.3	84	33.2	7	33.3	104	30.2		
>=1.8	46	80.7	169	66.8	14	66.7	240	69.8		
TOTAL	57	17.0	253	74.0	21	6.0	344	100.0		

Table 2.2.3.7 LDL Cholesterol by Type of Diabetes






Long lasting implementation for NCDs?

THIS IS UP TO  
NATIONAL GOVERNMENTS  
INTERNATIONAL ORGANIZATIONS  
.....  
AND RELEVANT ASSOCIATIONS

# Bridge Health Task 8.2 Deliverables




**BRIDGEHEALTH**  
Bridging Information and Data Generation  
for Evidence-based Health Policy and Research


**WP8**


**Platform for  
population-based registries**

**Task 2 – Deliverable 8.2**

**Blueprint of open source software platform  
for population-based chronic disease registries**







NeuBiro  
*Programmer's guide*

2017-09-14  
Version 0.7

NeuBiro  
*User's guide*

2017-09-14  
Version 0.7

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eubirodnetwork / neu biro

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Code Issues 0 Pull requests 0 Projects 0 Insights

Releases Tags

**Latest release**

0.7.1  
3e05e5

**v0.7.1**

stefanogualdi released this on 9 Oct · 4 commits to master since this release

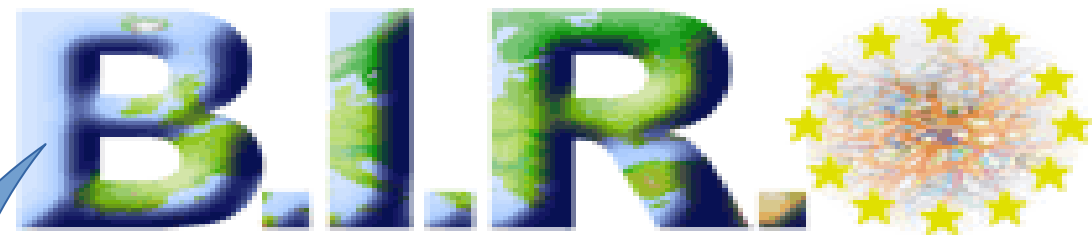
**Neubiro distribution**

Here you can download the binaries for the multiplatform installer containing:

- NeuBiro version 0.7.1
- NeuBiro user's guide
- NeuBiro programmer's guide
- BIRO System statistical package version 0.1.0

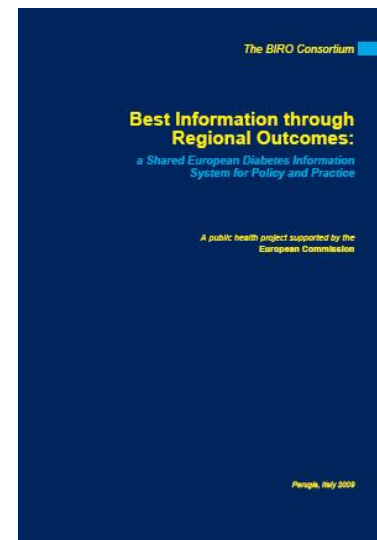
**Downloads**

neubiro-installer-0.7.1.jar	47 MB
programmersguide.pdf	1.02 MB
usersguide.pdf	620 KB
Source code (zip)	

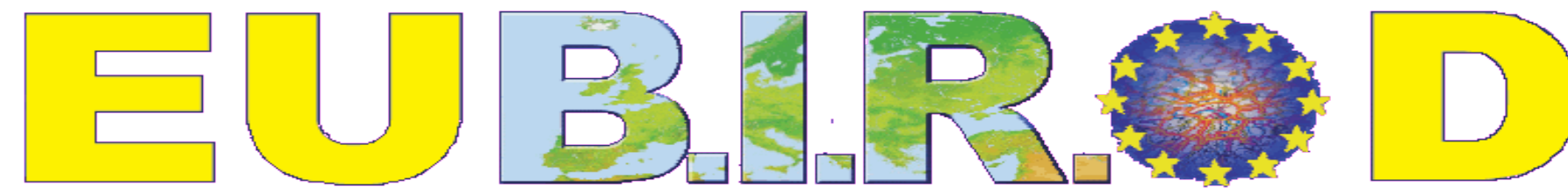


Best Information through Regional Outcomes

[www.biro-project.eu](http://www.biro-project.eu)



2005-2009

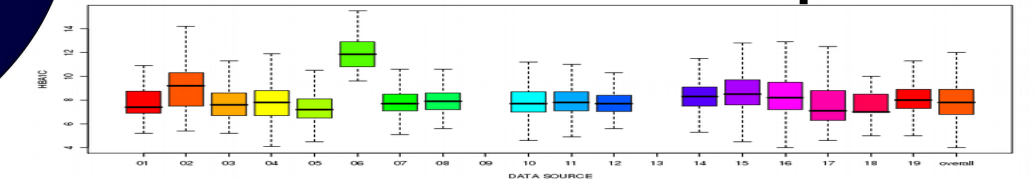


[www.eubirod.eu](http://www.eubirod.eu)

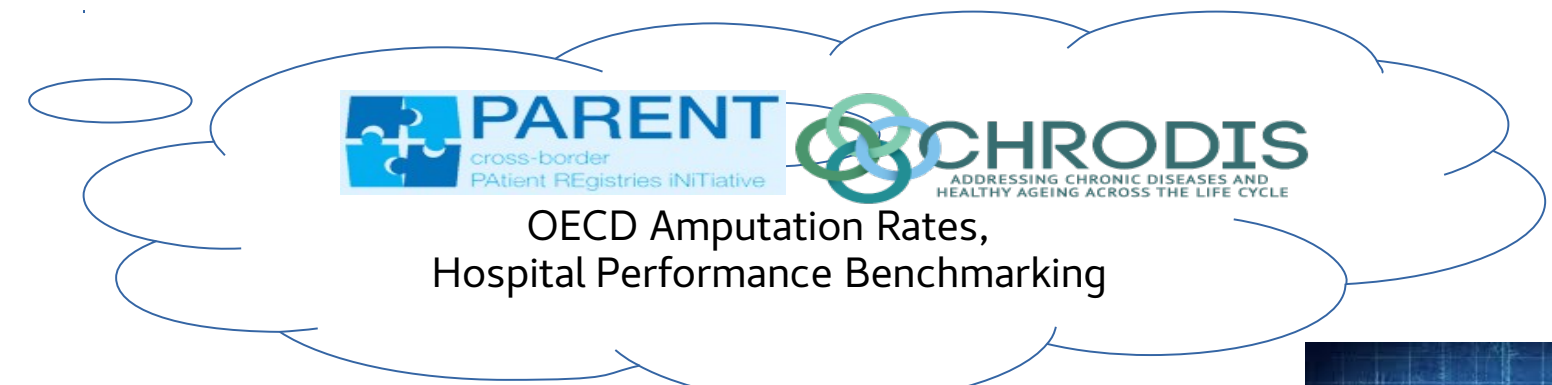
2012



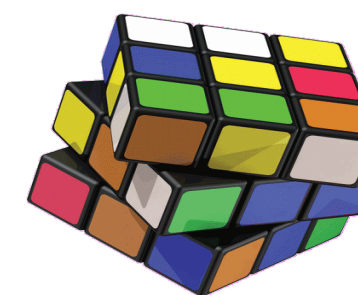
EUBIROD  
Diabetes Report



2016

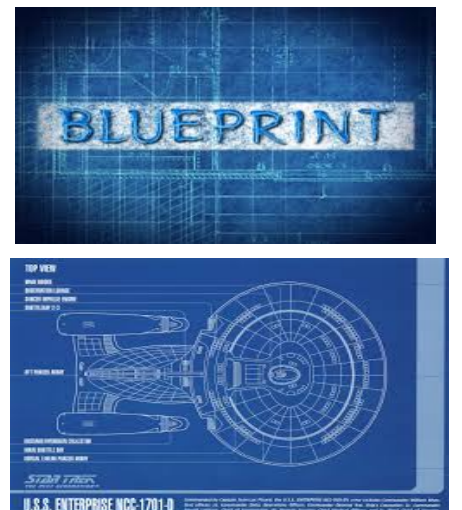


[www.bridge-health.eu](http://www.bridge-health.eu)



User

Technical





<http://www.hirs-research.eu/eubirod.html>

Joanneum Research, Austria  
International Diabetes Federation (IDF), Belgium  
Scientific Institute of Public Health, Belgium  
National Institute of Public Health, Croatia  
University of Zagreb, Croatia  
Ministry of Health, Cyprus  
Adult National Diabetes Register, Steno Centre, Denmark  
University of Debrecen, Hungary  
Ministry of Health, Israel  
Sereatrix, Italy  
Ministry of Health, Latvia  
University of Malta, Malta  
NOKLUS, Norway  
Silesian University of Technology, Poland  
Telemedica Consulting, Romania  
University of Ljubljana, Slovenia  
IDIBAPS, Spain  
Foundation for Care Information, The Netherlands  
University of Dundee, UK  
University of Surrey, UK

**Coordinating Centre**



- **Sharing:**
  - Information
  - Best practices
  - Tools
  - Methods
- **Creating Opportunities for:**
  - Targeted Research Partnerships
  - Direct Involvement with EU/International Organizations
- **Building together:**
  - Global platform for diabetes monitoring