ISP
WIV

WETENSCHAPPELIJK INSTITUUT
VOLKSGEZONDHEID
INSTITUT SCIENTIFIQUE
DE SANTÉ PUBLIQUE

MULTI-USE OF HEALTH INDICATORS

FOR PUBLIC POLICY

Prof. Dr. Herman Van Oyen

WIV-ISP | Rue Juliette Wytsmanstraat 14 | 1050 Brussels | Belgium
T +32 2 642 5031 | hvanoyen@wiv-isp.be| www.wiv-isp.be

.be

OBJECTIVES OF HEALTH INDICATORS

- Utility for policy :
  - Go beyond merely description
  - Understanding dynamics of population health for action
  - Maximising the performance of health system
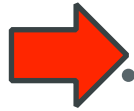
- Supportive to (transferability to policy):
  - Set priorities
  - Develop policy goals
  - Benchmark
  - Assess impact of policy
  - Improving health, wellbeing and health care
  - ….

- **Health literate public health institute**

OVERVIEW

- Care trajectories in primary care

- From Registries towards cohorts

- Surveys linkage to administrative data

- Important changes in data source structures

Do the national care trajectories diabetes and chronic kidney disease in Belgium improve the quality of care?

ISP
WIV

- Aim
  - Facilitate self-management & planned pro-active multidisciplinary care (GP, specialist, other care providers)
  - GP central role
  - Optimize quality of care
- 2 chronic conditions:
  - Diabetes type 2 (DM2) (start: 01/09/2009)
  - Chronic kidney disease (CKD) (start 01/06/2009)
- Contract between patient – GP – specialist
- Support by local multidisciplinary networks (LMN)
  - Enhance collaboration between care providers at local level
- Incentives and obligations for patient and GP/specialist

.be

Care trajectory (CT) & process indicators

CT program increases the frequency of monitoring of numerous parameters

Evolution of HbA1c measurement before and after the official start of the DM2 CT programme (01/09/2009), compared to other groups of diabetes patients (IMA, 2006-2010)

Evolution >=3 HbA1c measurements per 12m
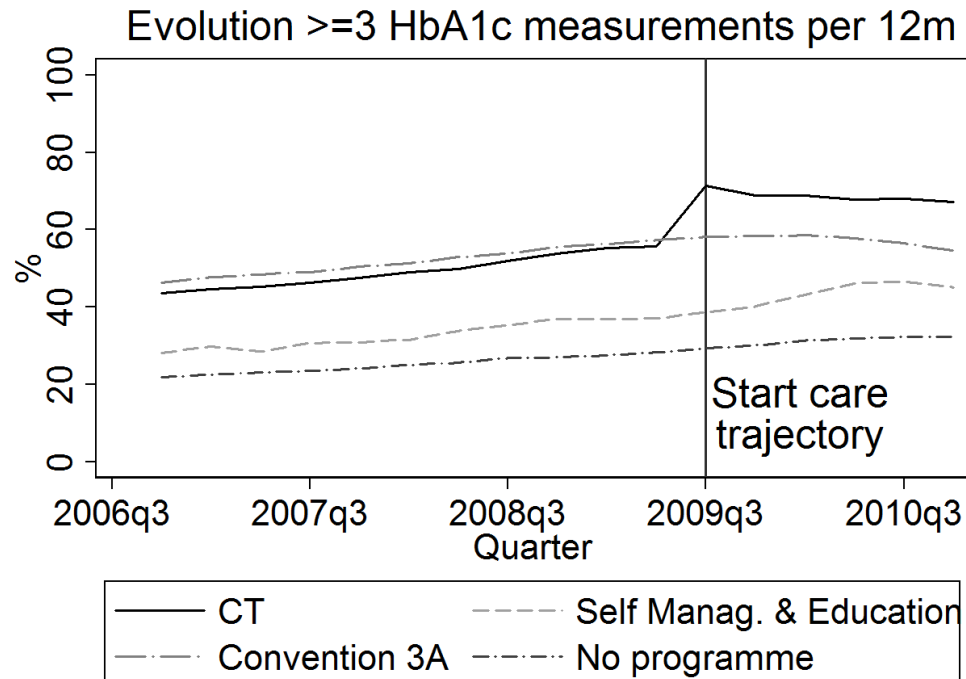
Care trajectory (CT) & process indicators

CT programme improves certain clinical and biological outcome parameters

Evolution of HbA1c value by <u>CT DM2</u> patients by start year (2009, 2010, 2011) of the CT DM2, central pillar, 2008-2011
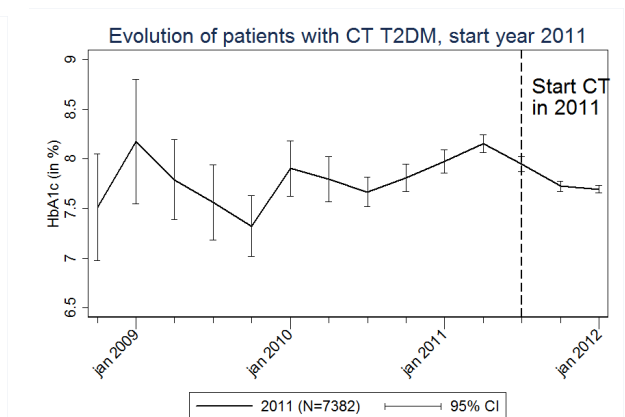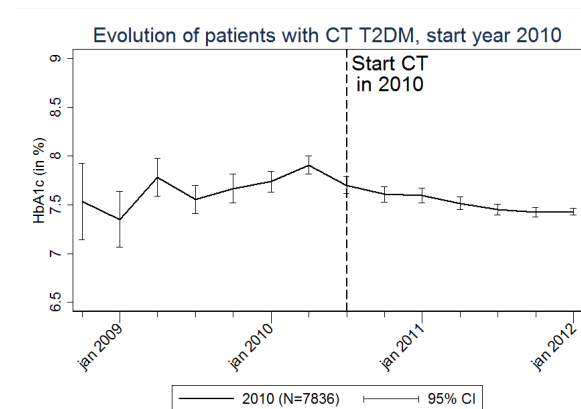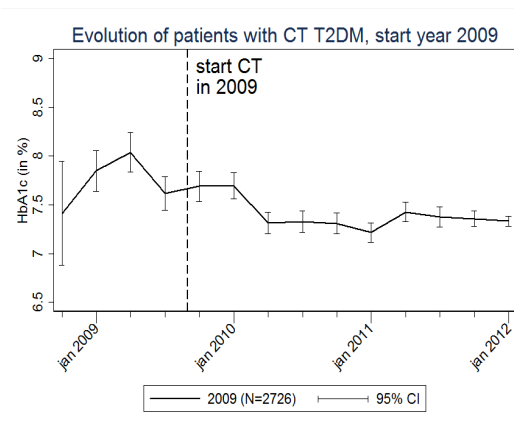
From registry to registry-cohort: HIV cohort

- Surveillance of new HIV diagnoses initially focused on new HIV diagnoses, AIDS and death reports

- In Belgium HIV surveillance by WIV-ISP since 1985
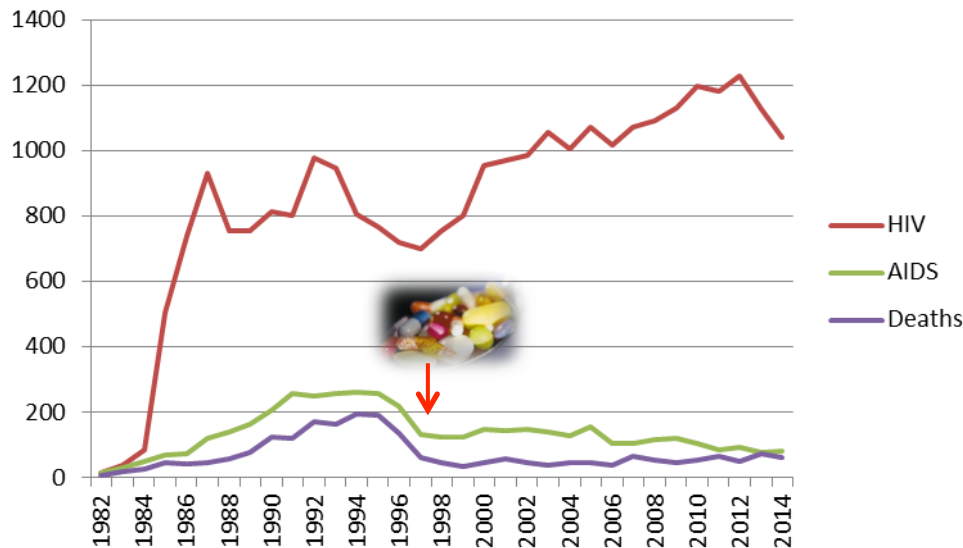
- New diagnoses: 1039 in 2014
- Reduction in nr of deaths

➢ Increase in nr of PLHIV

➢ Need to monitor the outcomes of the HIV-infected people

➢ **A cohort of the HIV-infected patients in medical care was initiated in 2006 (limited to mortality and lab information (CD4)**

The Belgian HIV Cohort

Objectives

- To consolidate the HIV/AIDS surveillance

- To identify issues and opportunities to improve the delivery of services to PLWHA across the continuum of care

➢ In order to contribute to a more effective response to the HIV/AIDS epidemic in Belgium

Organization: Data collected from

- **8 AIDS Reference Laboratories:** Nr and socio-demographic   characteristics of all HIV patients in care in Belgium

- **11 AIDS Reference Centres:** ART, immunological evolution, causes of death and other clinical data, PROMS & PREMS

ISP
WIV

.be

Number of HIV patients in medical care and proportion on ART per year of follow-up
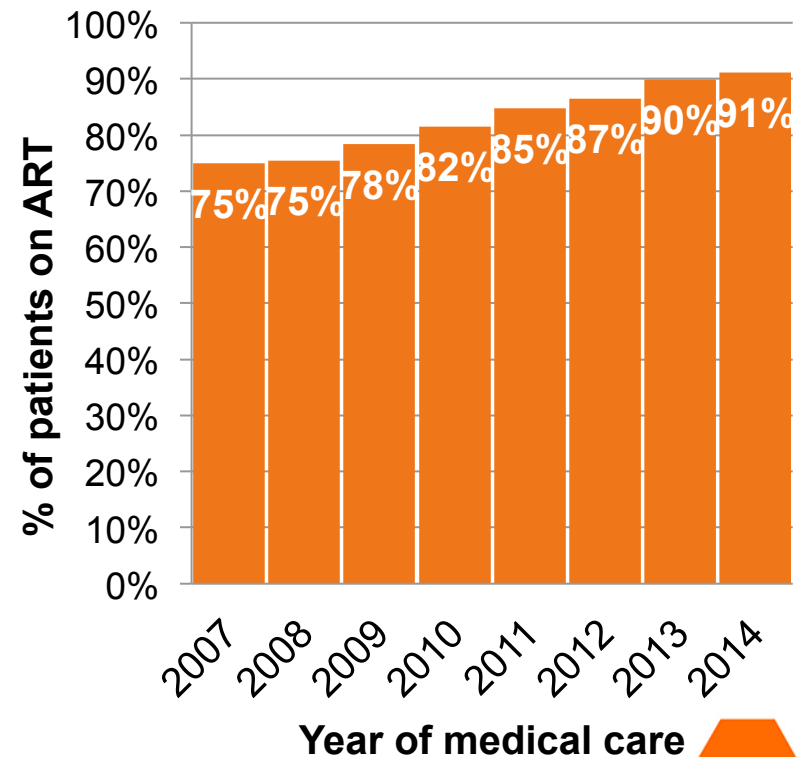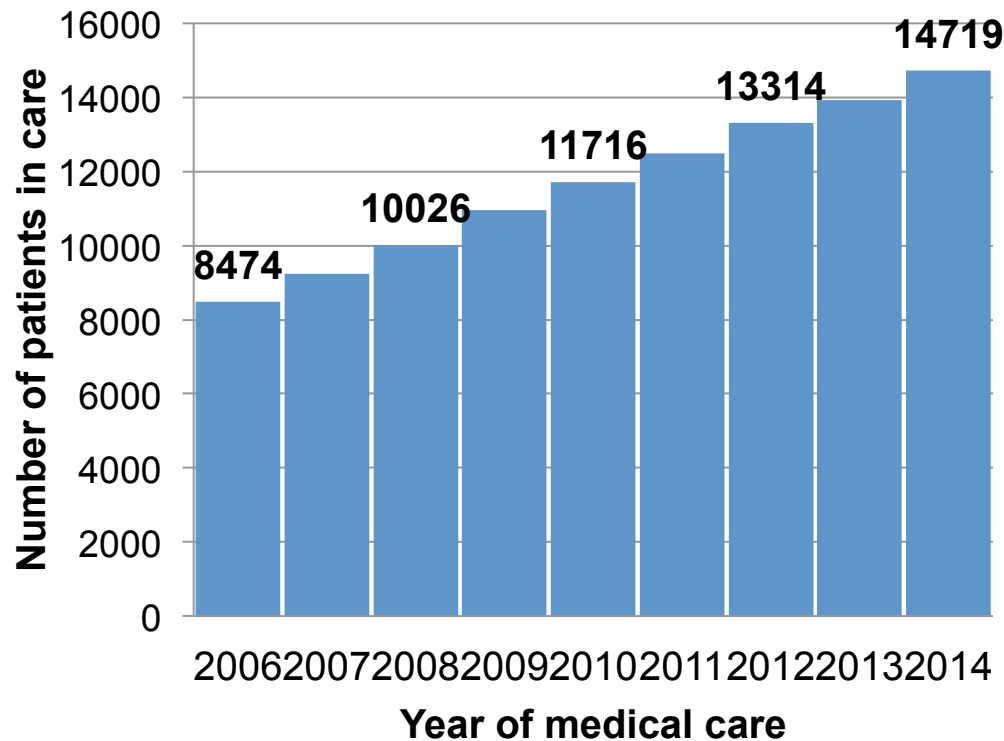
Survey and administrative data

GALI (Global activity limitation indicator)

For at least the past 6 months, to what extent have you been limited because of a health problem in activities people usually do? Would you say you have been…

severely limited / limited but not severely or / not limited at all?

Measure of disability :

Participation => reflects best ICF

Health part of the Healthy Life Years, a disability free life expectancy

=> Health policy : Active and Healthy Ageing

=> Other :   EU-economic strategy : Lisbon agreement

United Nation Convention on the Rights of People with Disabilities

.be

GALI / HLY and policy

- Monitoring: trends over time / benchmarking
  - Country reports in local language
  - Interpretation guide
    => Sufficient to enhance health literacy ???

- GALI => link survey data to health care use data

- HLY by smoking: link survey data to mortality

- HLY by social position: link of survey data to mortality (census, health interview survey, SILC)

Health Expectancy in Austria

JA:EHLEIS
EUROPEAN HEALTH & LIFE EXPECTANCY
INFORMATION SYSTEM

Health Expectancy in Germany

What is health expectancy?

H ealth expectancies were first developed to address whether or not longer life is being accompanied by ... in good health (the

To address this, the European Union has decided to include a small set of health expectancies among its European Community Health Indicators (ECHI) to provide summary measures of disability (i.e., activity limitation), chronic morbidity and perceived health. Therefore the Minimum European Health Module ... of 3 general questions covering ... into the

Esperanza de vida saludable en España

¿Qué es la esperanza...

Health Expec...

What is health e...

Latvijas...

Kas ir...
mūžs?

P aredzar
noskai
pieaugum
(saslimstī
(saslimst
ilgums
stāvokļ
dzīves

Kā
re

There
concep
expecta
activitie

How
expe

H eal
pop
allow dir
groups:
well as co

Health ex
Sullivan n
valid com
should be t

*Before the...
Expectancies...

Health Expectancy in Cyprus

ancy?

...ed to address
...ompanied by
...health (the
...bad health
...cies divide
...states of
...way they
...e lived.

To address this, the European Union has decided to include a small set of health expectancies among its European Community Health Indicators (ECHI) to provide summary measures of disability (i.e., activity limitation), chronic morbidity and perceived health. Therefore the Minimum European Health Module (MEHM), composed of 3 general questions covering these dimensions, has been introduced into the Statistics on Income and Living Conditions (SILC) to improve the comparability of health expectancies between countries.* In addition life expectancy without long term activity limitation, based on the disability question, was selected in 2004 to be one of the structural indicators for assessing the EU strategic goals (Lisbon strategy) under the name of **"Healthy Life Years" (HLY)**.

Further details on the MEHM, the European surveys and health expectancy calculation and interpretation can be found on www.eurohex.eu.

What is in this report?

This report is produced by the Joint Action European Health and Life Expectancy Information System (EHLEIS) as part of a country series. In each report we present:

● Life expectancies and Healthy Life Years (HLY) at age 65 for the country of interest and for the overall 25 European Union member states (EU25), using the SILC question on long term health related disability, known as the GALI (Global Activity Limitation Indicator), from 2006 to 2010. The wording of the question has been revised in 2008. When available, we provide previous HLY series based on the disability question of the 1995-2001 European Community Household Panel (ECHP);

● Health expectancies based on the two additional dimensions of health (chronic morbidity and self-perceived health) for the country of interest, based on activity limitation, chronic morbidity and perceived health (SILC 2010).

JA:EHLEIS
EUROPEAN HEALTH & LIFE EXPECTANCY
INFORMATION SYSTEM

Health Expectancy in United Kingdom

What is health expectancy?

H ealth expectancies were first developed to address whether or not longer life is being accompanied by an increase in the time lived in good health (the compression of morbidity scenario) or in bad health (expansion of morbidity). So health expectancies divide life expectancy into life spent in different states of health, from say good to bad health. In this way they add a dimension of quality to the quantity of life lived.

How is the effect of longer life measured?

The general model of health transitions (WHO, 1984) shows the differences between life spent in different states: total survival, disability-free survival and survival without chronic disease. This leads naturally to life expectancy (the area under the 'mortality' curve), disability-free life expectancy (the area under the 'disability' curve) and life expectancy without chronic disease (the area under the 'morbidity' curve).

The general model of health transition (WHO, 1984) : observed mortality and hypothetical morbidity and disability survival curves for females, USA, 1980.

nʰ and rₐ⁰ are the number of years of autonomous life expected at birth and at age 60, respectively.
Mₐ** is the age to which 50% of females could expect to survive without loss of autonomy.

There are in fact as many health expectancies as concepts of health. The commonest health

To address this, the European Union has decided to include a small set of health expectancies among its European Community Health Indicators (ECHI) to provide summary measures of disability (i.e., activity limitation), chronic morbidity and perceived health. Therefore the Minimum European Health Module (MEHM), composed of 3 general questions covering these dimensions, has been introduced into the Statistics on Income and Living Conditions (SILC) to improve the comparability of health expectancies between countries.* In addition life expectancy without long term activity limitation, based on the disability question, was selected in 2004 to be one of the structural indicators for assessing the EU strategic goals (Lisbon strategy) under the name of **"Healthy Life Years" (HLY)**.

Further details on the MEHM, the European surveys and health expectancy calculation and interpretation can be found on www.eurohex.eu.

What is in this report?

This report is produced by the Joint Action European Health and Life Expectancy Information System (EHLEIS) as part of a country series. In each report we present:

● Life expectancies and Healthy Life Years (HLY) at age 65 for the country of interest and for the overall 25 European Union member states (EU25), using the SILC question on long term health related disability, known as the GALI (Global Activity Limitation Indicator), from 2005 to 2011. The wording of the question has been revised in 2008. When available, we provide previous HLY series based on the disability question of the 1995-2001 European Community Household Panel (ECHP);

● Health expectancies based on the two additional dimensions of health (chronic morbidity and self-perceived health) for the country of interest, based on SILC 2011;

Figure 1. Mean annual health expenses (in euro) in function...
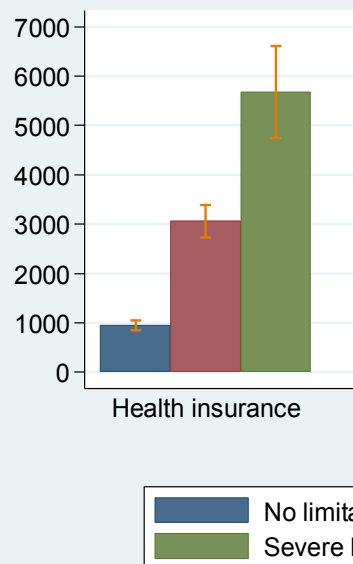

Health insurance

No limit...
Severe l...

Table 1 Cost ratios (CR) of health expenses by activity limitations and chronic conditions, adjusted for age, gender, education, income, nationality, household type and degree of urbanisation, in function of payment modalities*

	Covered by health insurance		Out of pocket	
	CR	95% CI	CR	95% CI
Activity limitations and chronic conditions combined				
No activity limitation - no chronic condition	1.00		1.00	
No activity limitation - chronic condition	2.24	(1.95-2.59)	2.07	(1.84-2.33)
Moderate activity limitation - no chronic condition	2.47	(1.74-3.50)	1.80	(1.34-2.41)
Moderate activity limitation - chronic condition	4.24	(3.49-5.16)	3.18	(2.73-3.71)
Severe activity limitation - no chronic condition	4.37	(2.34-8.16)	2.82	(1.66-4.79)
Severe activity limitation - chronic condition	7.37	(5.72-9.51)	4.14	(3.30-5.18)
Activity limitations adjusted for chronic conditions				
No limitation	1.00		1.00	
Moderate activity limitation	2.04	(1.73-2.41)	1.61	(1.41-1.84)
Severe activity limitation	3.49	(2.78-4.38)	2.12	(1.70-2.46)
Chronic condition adjusted for activity limitations				
No chronic disease	1.00		1.00	
At least one chronic disease	2.15	(1.88-2.46)	2.01	(1.80-2.24)

*Defined as: having suffered in the past 12 months from at least one of the following health problems: asthma, chronic bronchitis, myocardial infarction, coronary heart disease, hypertension, osteoarthritis, neck disorder, depression, peptic ulcer, problem large bowel, diabetes, thyroid problems, kidney problems except for kidney stones, cancer

HLY and social postion survey & mortality follow-up data

Table 4 Comparison of the life expectancy (LE) and healthy life years (HLY) calculated using mortality rates based on the Census 2001-2004, the HIS 2001-2010, and the SILC 2004-2009, males, aged 25 years, Belgium

Males	Mortality HIS/Morbidity HIS			Mortality Census/Morbidity HIS			Diff HIS-Census	
Education	LE	HLY	HLY 95%	LE	HLY	HLY 95%		
			Confidence interval			Confidence interval	LE	HLY (p-value)
Primary education	46.7	34.0	30.4-37.5	49.5	35.5	33.5-37.6	-2.8	-1.6 (0.72)
Lower secondary	51.7	36.6	34.6-38.6	51.3	36.5	35.0-38.0	0.4	0.1 (0.96)
Higher secondary	54.3	43.1	41.1-45.1	52.5	41.8	40.4-43.2	1.8	1.3 (0.40)
Higher education	56.3	43.5	41.4-45.6	55.1	42.8	41.2-44.5	1.2	0.7 (0.72)
Difference highest-lowest (p-value)	9.6	9.5 (p < 0.05)		5.6	7.3 (p < 0.01)			

Source of data: mortality follow-up of the HIS 2001-2010 and mortality follow-up of the Census 2001-2004

Males	Mortality SILC/Morbidity SILC			Mortality Census/Morbidity SILC			Diff SILC-Census	
Education	LE	HLY	HLY 95%	LE	HLY	HLY 95%		
			Confidence interval			Confidence interval	LE	HLY (p-value)
Primary education	49.9	31.7	28.6-34.8	49.5	31.3	28.7-34.0	0.4	0.4 (0.94)
Lower secondary	50.7	34.2	31.2-37.2	51.3	34.7	32.8-36.6	-0.6	-0.5 (0.90)
Higher secondary	53.0	38.0	36.0-39.9	52.5	37.6	36.4-38.9	0.5	0.4 (0.82)
Higher education	58.1	44.7	42.4-47.1	55.1	42.6	41.2-44.1	3.0	2.1 (0.30)
Difference highest-lowest (p-value)	8.2	13.0 (p < 0.01)		5.6	11.3 (p < 0.01)			

Source of data: mortality follow-up of the SILC 2004-2009 and mortality follow-up of the Census 2001-2004

HLY and smoking survey & mortality follow-up data

Table 4 Disability Free Life Expectancy ($DFLE_{30}$), (Severe) Disability Life Expectancy ($DLE(\_S)_{30}$), Life Expectancy (LE_{30}) and the % of remaining life without disability (% $DFLE/LE_{30}$) at age 30 by smoking status, Health Interview Survey 1997 and 2001 and follow-up until respectively 31/12/2007 and 31/12/2010, Belgium

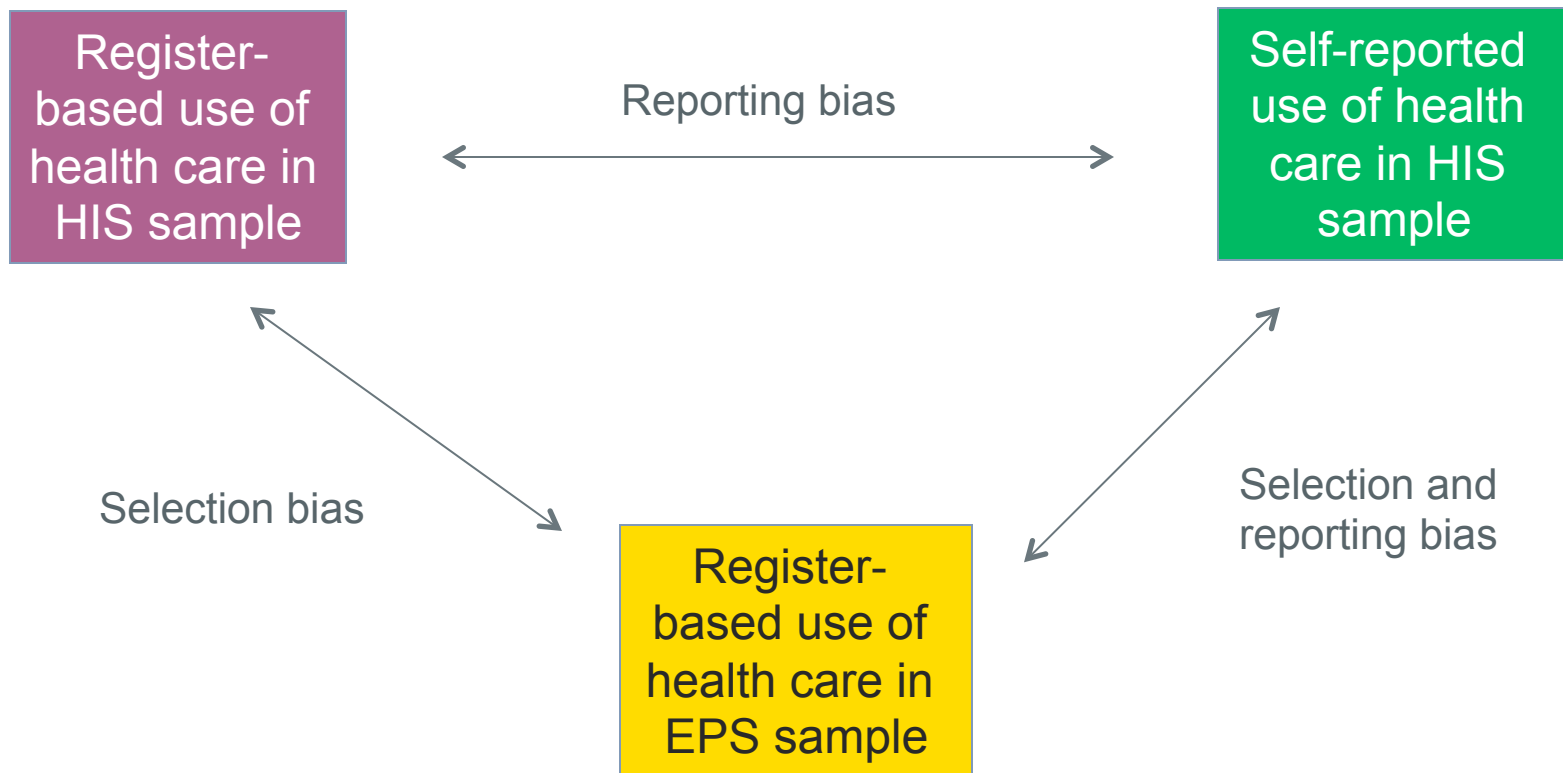| Smoking status	$DFLE_{30}$	DLE_{30}	DLE_S_{30}	LE_{30}	%$DFLE/LE_{30}$
Males					
Never smoker	38.30	12.89	3.00	51.19	74.82
	(36.86; 39.87)*	(11.46; 14.71)	(2.17; 4.14)	(49.62; 53.10)	(71.82; 77.38)
Ex-smoker	35.28	13.23	2.42	48.51	72.72
	(34.28; 36.27)	(12.34; 14.19)	(1.97; 2.87)	(47.33; 49.69)	(70.97; 74.39)
Smoker	31.50	11.82	1.73	43.32	72.72
	(30.47; 32.65)	(10.76; 12.95)	(1.29; 2.32)	(42.27; 44.56)	(70.54; 74.82)
Females					
Never smoker	36.99	19.21	5.51	56.20	65.82
	(36.06; 37.90)	(18.05; 20.65)	(4.78; 6.37)	(54.90; 57.71)	(63.95; 67.37)
Ex-smoker	34.09	19.52	4.53	53.60	63.59
	(32.75; 35.38)	(17.93; 21.45)	(3.55; 5.91)	(51.99; 55.73)	(61.05; 66.04)
Smoker	30.73	17.29	3.28	48.02	64.00
	(29.12; 32.59)	(15.36; 20.52)	(2.06; 5.60)	(46.31; 51.28)	(59.69; 67.43)

*: 95% confidence interval.

# Data sources: no single!!!

- **General population: surveys / cohorts**

- **Health care use:**
  - **Registries**
  - **Sentinel: clinicians / laboratories**
    - **=> HEALTH DATA.BE**

- **Administrative data (in and out of health care sector)**
  - **DRG**
  - **Health insurance data => PERMANENT SAMPLE (EPS (1/40))**
  - **Cross Road database of social security**
  - **…..**

ISP
WIV

.be

Data validation using different sources

- HIS sample versus EPS sample
- Self-reported use versus register-based use

Register-based use of health care in HIS sample

Reporting bias

Self-reported use of health care in HIS sample

Selection bias

Register-based use of health care in EPS sample

Selection and reporting bias

Probability of contact with health service/ professional: selection vs reporting bias
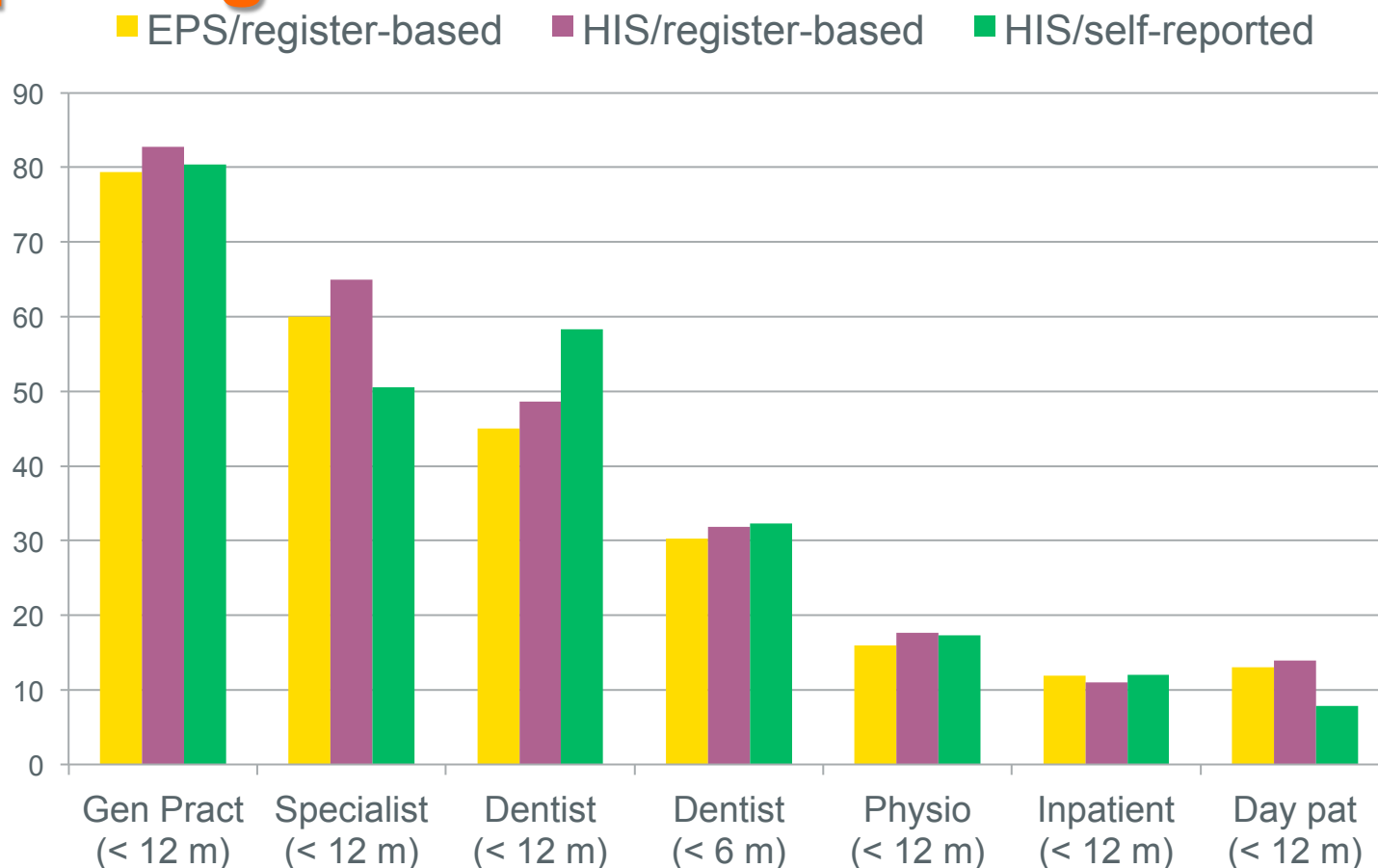
HEALTHDATA.BE:
Minimalisation registration burden,
Maximalisation Return On Information

- Legal framework

- **Facilitate data exchange** between healthcare professionals and researchers according to only once principle and re-use of data, in order to **increase public health knowledge** and to **adjust health care policy**, with **respect for privacy of patient, healthcare professional and medical confidentiality**.

- **Intergovernmental services** for both federal and community/ regional governments responsible for health and healthcare, and **private legal bodies** (indirectly);

- 2014-2017: **focus on uniformisation of 42 existing** registers managed by WIV-ISP and RIZIV.

ISP
WIV

.be

healthdata.be: the end-to-end process

healthdata.be

HD4DP

HD4RES

DATAWAREHOUSE (SAS)

HEALTHSTAT

0 Registration in Primary System

1 Data Captation

2 Secure Data Transfer

3 Data Monitoring

4 Data Validation

5 Data Storage

6 Analysis

7 BI-Reporting

Annotation & Correction Request

Data Collection
supported by healthdata.be

Data Management & BI-Reporting
supported by healthdata.be

healthdata.be
data we care for