

# Health information systems: an introduction for health information professionals



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Improving people's health through research and information



#### Presentation

- Definitions
- Requirements
- Types of information systems available in Ireland
  - Population data
  - Mortality data
  - Morbidity data
- International examples



# High-quality health information lies at the heart of all good decisions concerning health.

#### What is health information?

National Health Information Strategy (2004)

"Any information used to help make an informed health-related decision or to inform oneself of health-related issues..."

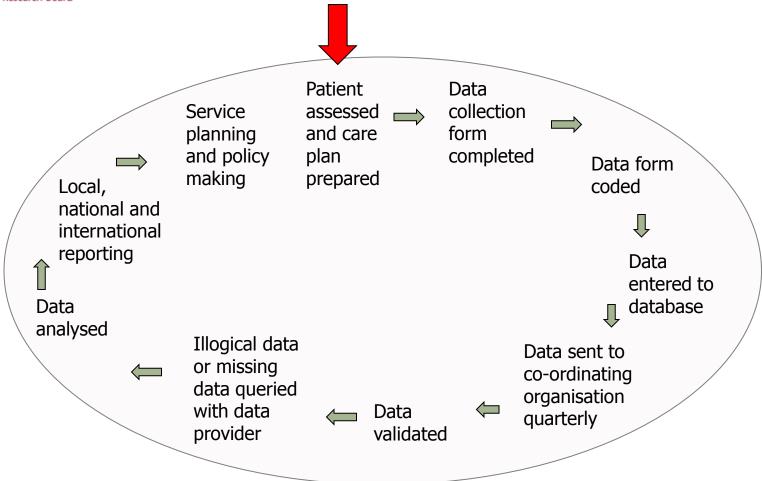


### What is a health information system?

"the <u>ongoing, systematic</u> collection, analysis, interpretation, and dissemination of data regarding a health-related event to support decision-making in management, policy formulation and to facilitate research."



# What is the data flow for a health information system





# What are the requirements of an information system?

- Fit-for-purpose
- Complete
- Accurate
- Flexible
- Relevant
- Timely
- Comparable



What improves the completeness and usefulness of an information system?



#### Electronic health record

 is the term used to describe the amalgamation of all the useful clinical information that has been collected and stored by different people in different locations about a patient from birth to death



#### Unique identifier

Assigned to an electronic or paper individal health record

Premits matching across information systems, datasets or registries

- Avoid duplication and over-estimation
- Allows accurate prevalence and incidence calculations
- Allows us to link risk factors and outcomes such as alcohol consumption and liver disease

#### Privacy

Data protection



#### Minimum dataset

- Set of data elements agreed for mandatory collection and reporting at a national level and at international levels
  - Age, gender, post code, level of education completed, occupation, date of incident
  - Case definition using international classifications
    - Agreed measures defined for cardiovalcular diseases, diabetes, congenital malformations, drug situation....



#### International Classification of Disease (ICD)

- World Health Organization
- 10<sup>th</sup> Version (ICD-10) http://apps.who.int/classifications/apps/icd/icd10online/
- Alphanumeric coding scheme
  - 1 letter followed by 3 numbers
  - To 1 decimal point



#### **Certain infectious and parasitic diseases (A00-B99)**

#### **Intestinal infectious diseases (A00–A09)**

- A00 Cholera
- A01 Typhoid and paratyphoid fevers
- A02 Other salmonella infections
- A03 Shigellosis
  - A03.0 Shigellosis due to *Shigella dysenteriae* 
    - Group A shigellosis [Shiga-Kruse dysentery]
  - A03.1 Shigellosis due to Shigella flexneri
    - Group B shigellosis
  - A03.2 Shigellosis due to Shigella boydii
    - Group C shigellosis
  - A03.3 Shigellosis due to Shigella sonnei
    - Group D shigellosis

# Common health-related information systems in Ireland

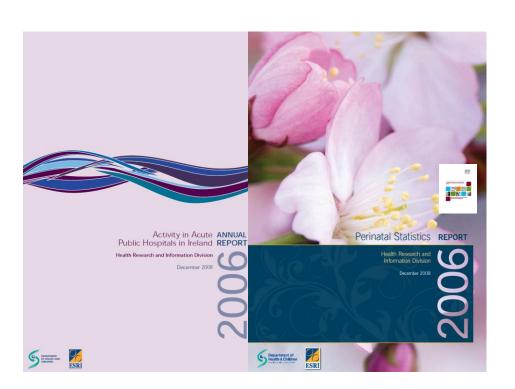
- Census <a href="http://www.cso.ie/px/">http://www.cso.ie/px/</a>
- Birth and perinatal records <a href="http://www.cso.ie/statistics/bthsdthsmarriages.htm">http://www.esri.ie/health information/nprs/</a>
- General mortality register
  <a href="http://www.cso.ie/px/pxeirestat/database/eirestat/Births%20Deaths%20and%20Marriages/Births%20Deaths%20and%20Marriages.asp">http://www.cso.ie/px/pxeirestat/database/eirestat/Births%20Deaths%20and%20Marriages/Births%20Deaths%20and%20Marriages.asp</a>
- Acute hospital inpatient information register <a href="http://www.esri.ie/health\_information/hipe/">http://www.esri.ie/health\_information/hipe/</a>
- Register on treatment for cancer <a href="http://www.ncri.ie/data.cgi/index.shtml">http://www.ncri.ie/data.cgi/index.shtml</a>
- Register on treatment for people with mental health problems http://www.hrb.ie/health-information-in-house-research/mental-health/information-systems/npirs-national-psychiatric-in-patient-reporting-system/
- Register on treatment for problem alcohol and drug use <a href="http://www.hrb.ie/health-information-in-house-research/alcohol-drugs/ndtrs/">http://www.hrb.ie/health-information-in-house-research/alcohol-drugs/ndtrs/</a>
- Register on persons receiving or in need of services for disabilities
   <a href="http://www.hrb.ie/health-information-in-house-research/disability/">http://www.hrb.ie/health-information-in-house-research/disability/</a>



#### How does one access these data?



#### **Publications**

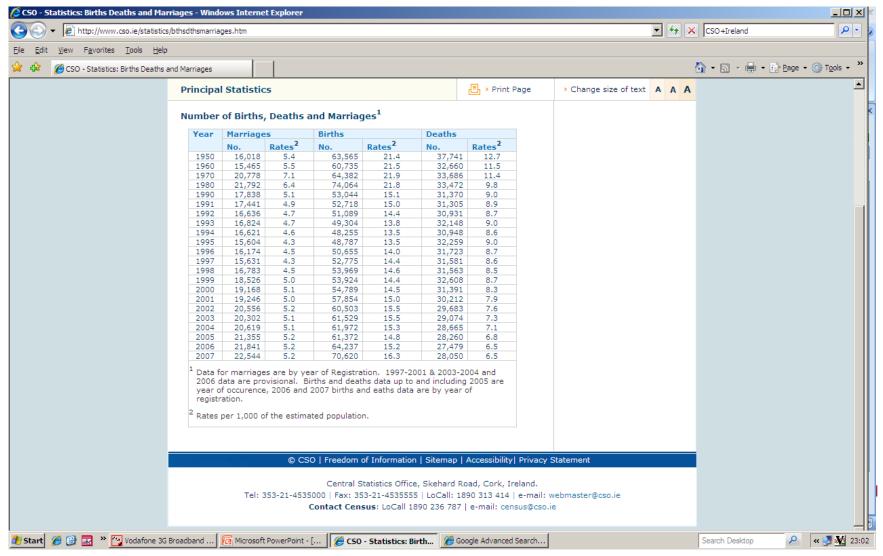


#### Census 2006





# Tables, for example, CSO vital statistics





#### Specific requests

#### **Service providers**

Analysis of the data collected is provided, on request, to treatment providers, managers and taskforce co-ordinators who participate in the NDTRS.

#### Researchers

For researchers and all others requesting tabular data, the following information must be included in their request:

The research question(s)

The method of analysis

The exact data and data format required

The composition of the research team including the principal investigator

The expected outcomes of the research (including the dissemination process)

If the request is considered valid and there is no doubt concerning violation of client confidentiality, the data will be released on the understanding that the data are used only for the purpose stated in the written request.

For access to data please contact:

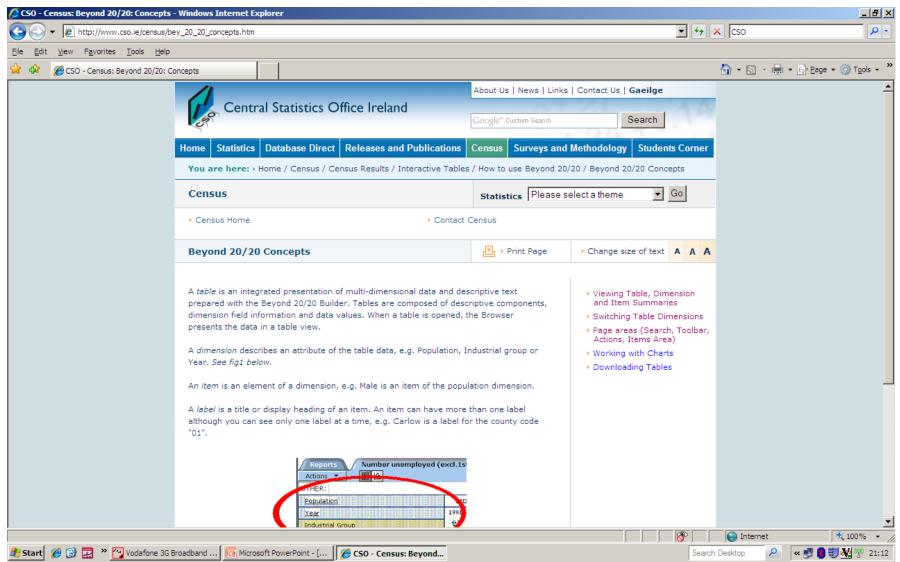
Suzi Lyons



#### Interactive tables



#### Instructions and explanatory notes



- HIPE
- NPRS
- HIPE & NPRS Reports
- Journal Articles
- Software Development
- Find it fast
- Latest news
- Useful Links
- Contacts

#### Terms & Conditions of use of Hospital In-Patient Enquiry (HIPE) Data

By downloading data, you agree to the terms of use as set out below. Any of the data published here may be freely used, but remains the property of the HIPE Unit, Health Research & Information Division, ESRI. To safeguard the integrity and confidentiality of the data, all users must agree to the following conditions:

- HIPE Data are not to be presented in either written or oral form that could directly or indirectly identify an individual patient, doctor or health care institution.
- HIPE Data should not be used to identify patients or to contact patients for the purposes of research or other purposes.
- Linking record level HIPE data with any other data source(s) is prohibited.
- Tables containing HIPE data should not be published where any individual cells contain 5 or less cases.
- · The responsibility for interpretation of the data lies fully with the data user.
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For information on the types of reports available and data definitions please see <u>definitions page</u>.

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Indicate acceptance by selecting the Accept button below. If you are not willing to be bound by all the conditions, click on the Decline button

Accept

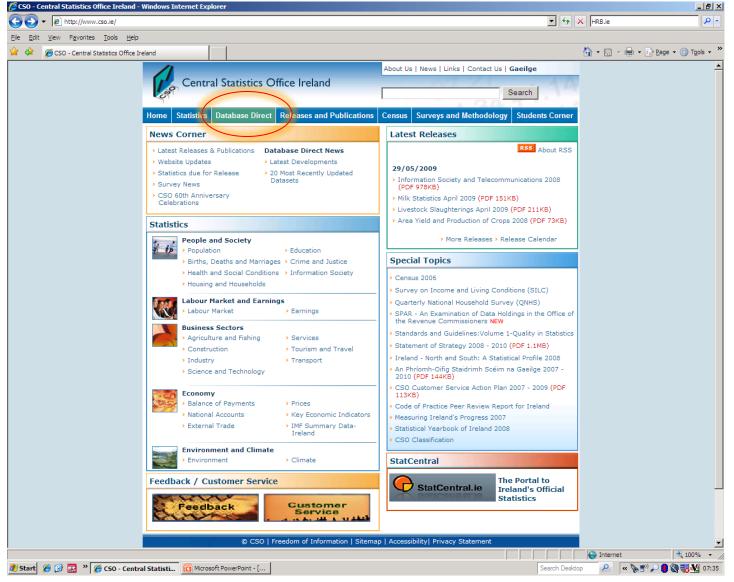
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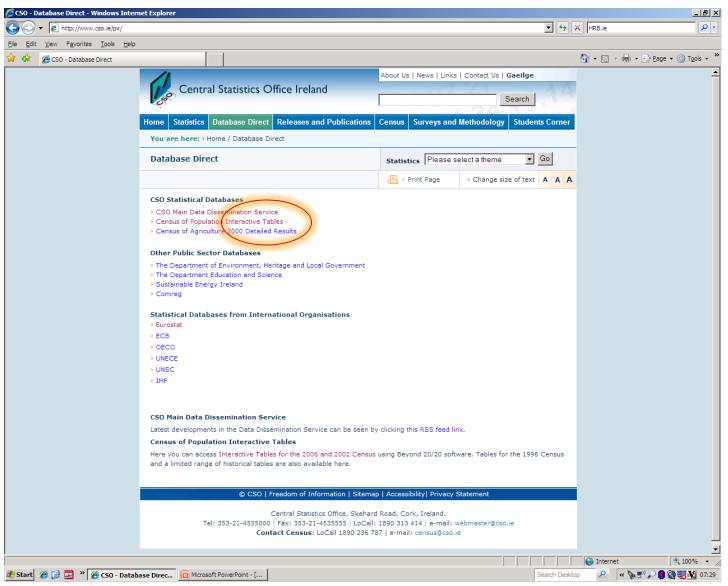
# Interactive tables

http://www.cso.ie/

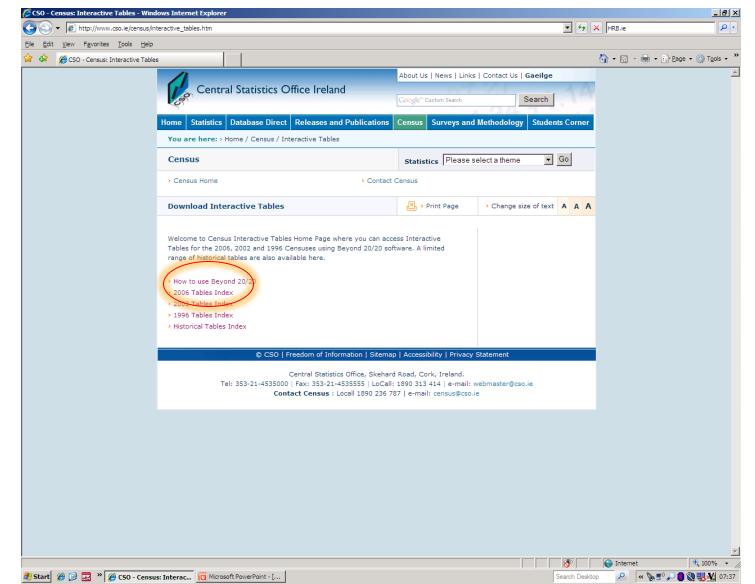




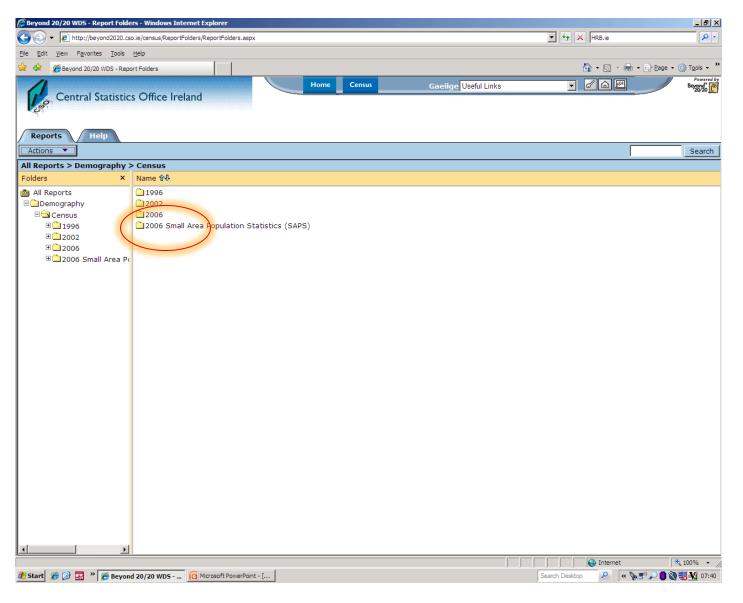




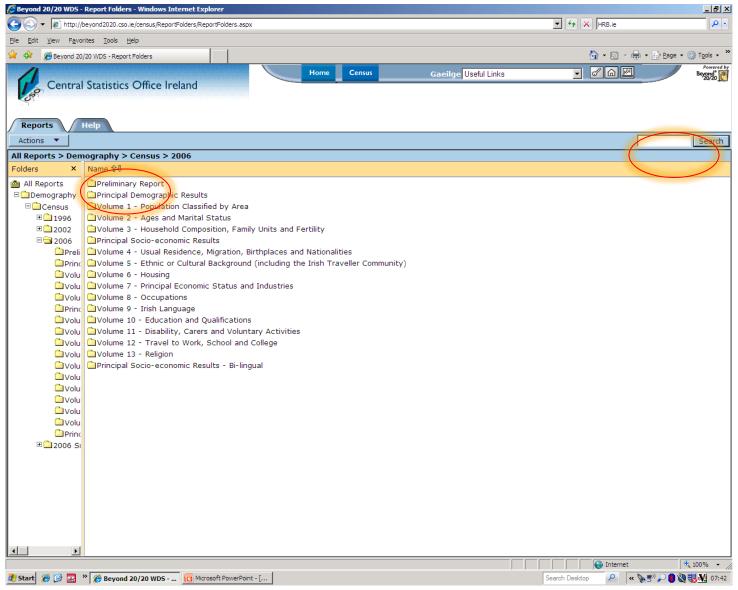




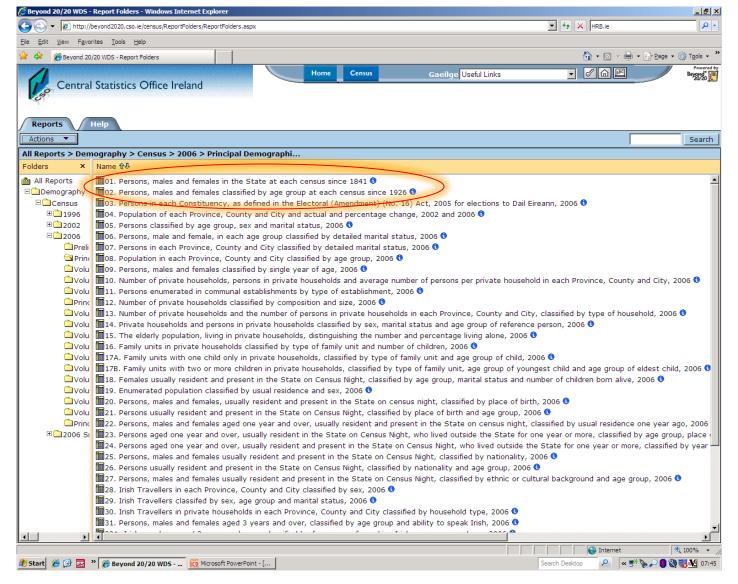




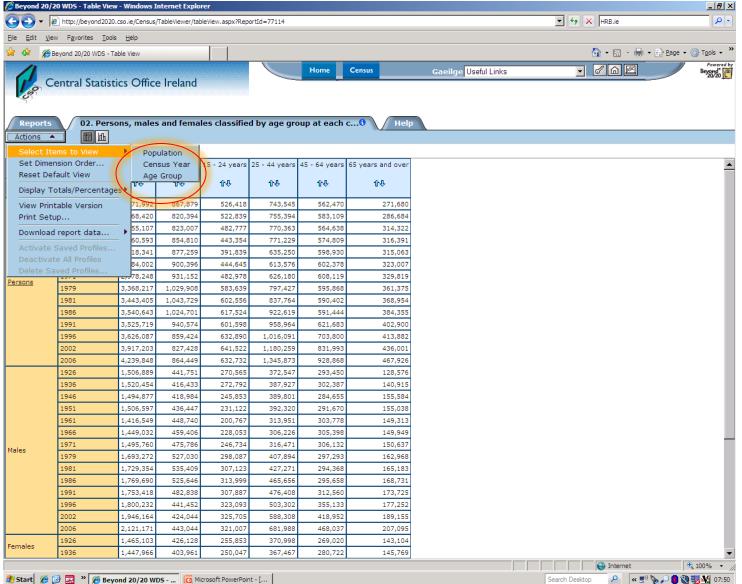




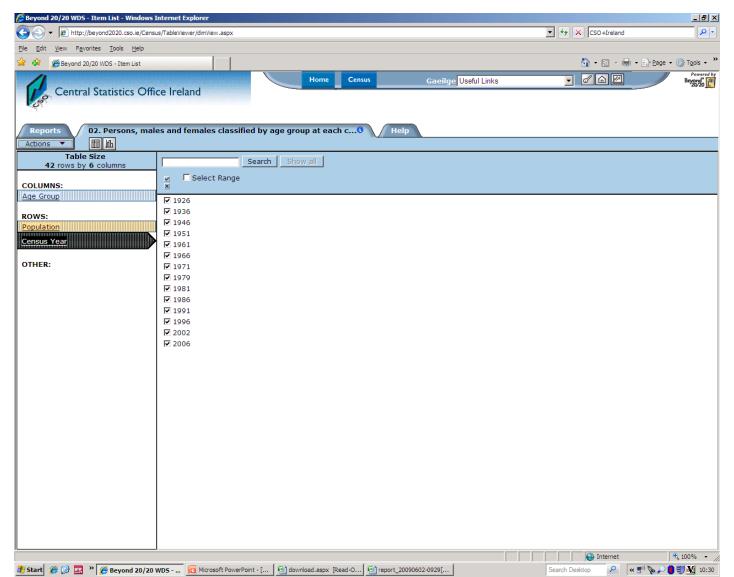




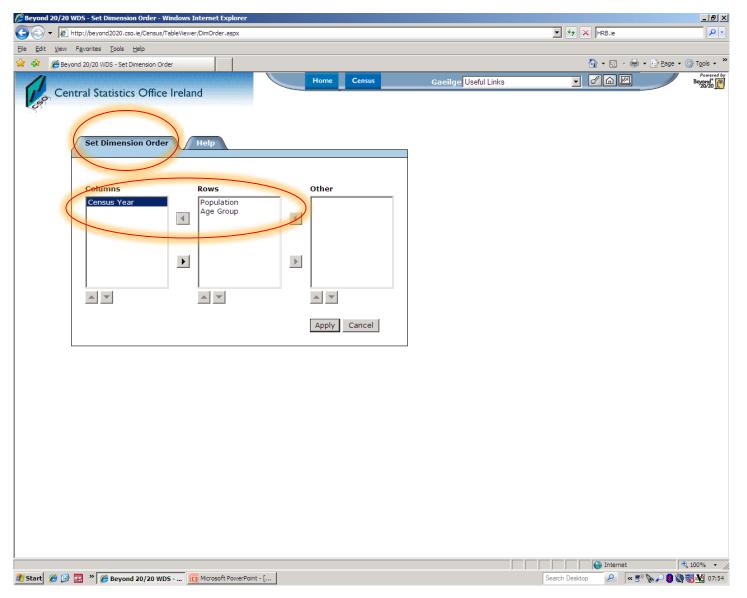




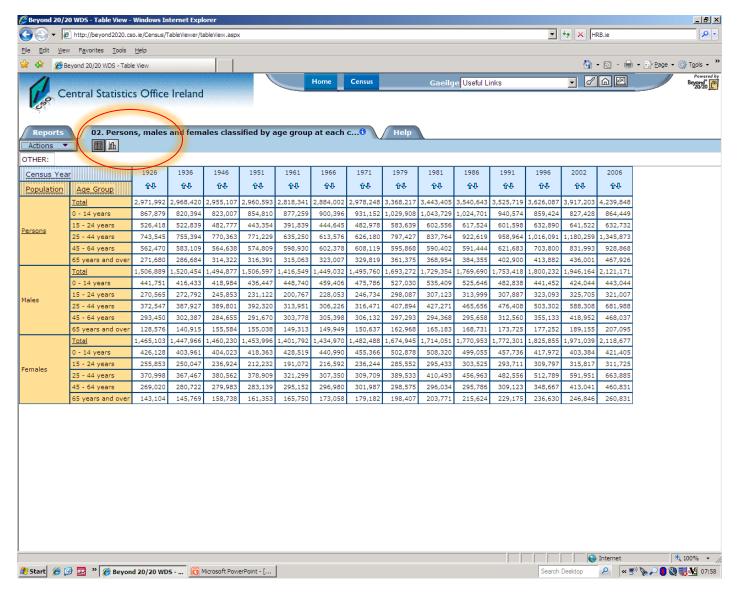




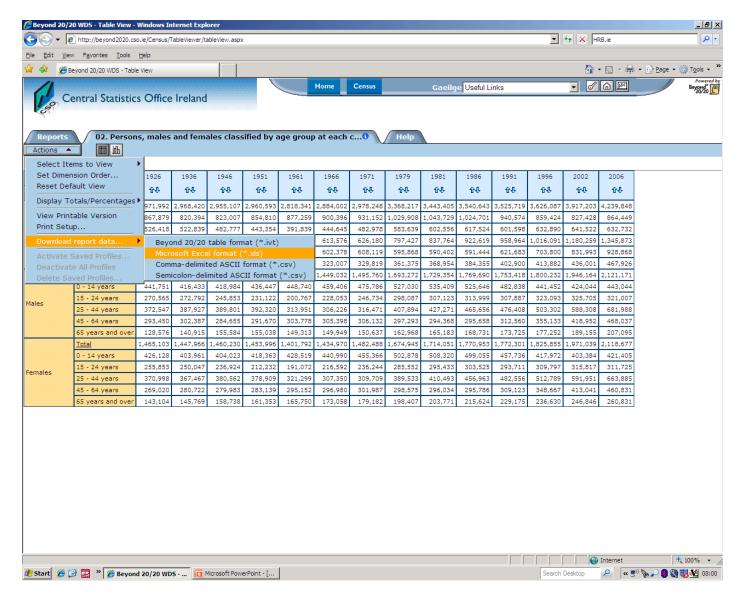






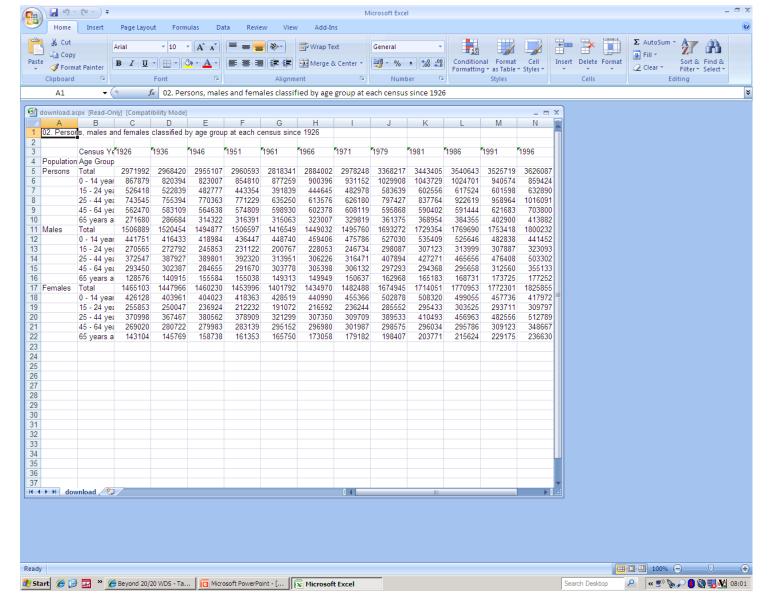








### Download

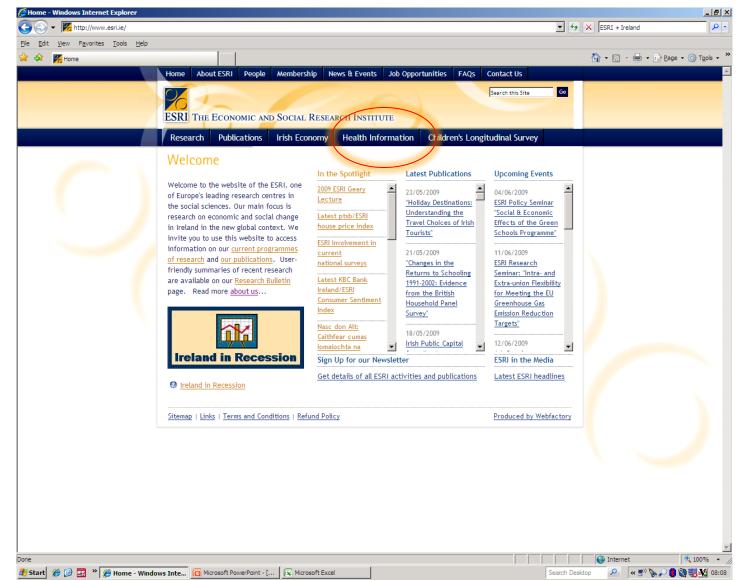




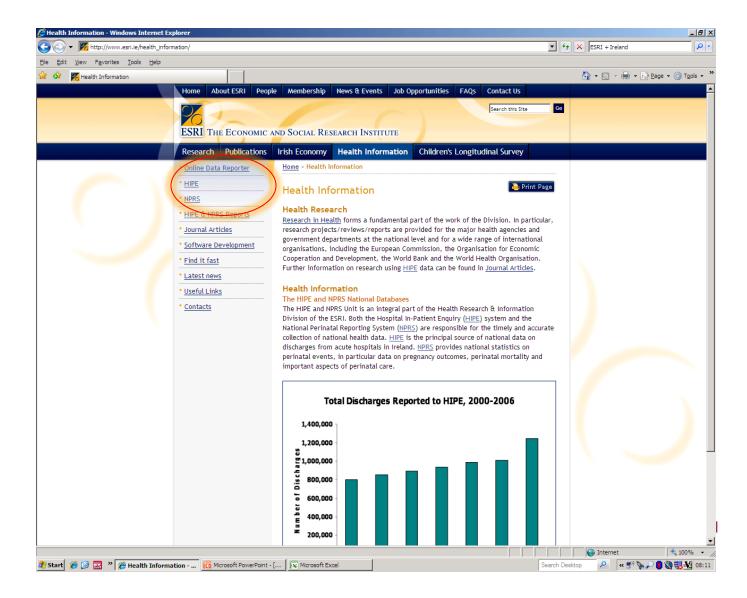
# Interactive tables

http://www.esri.ie/

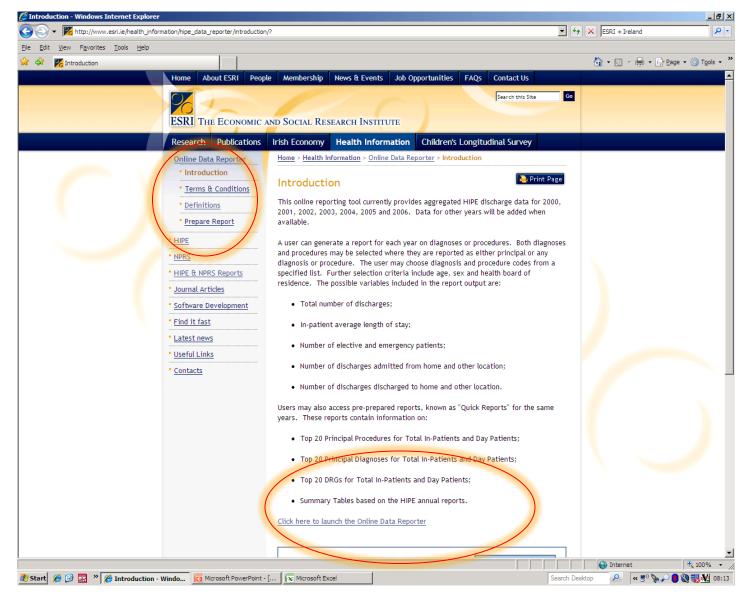




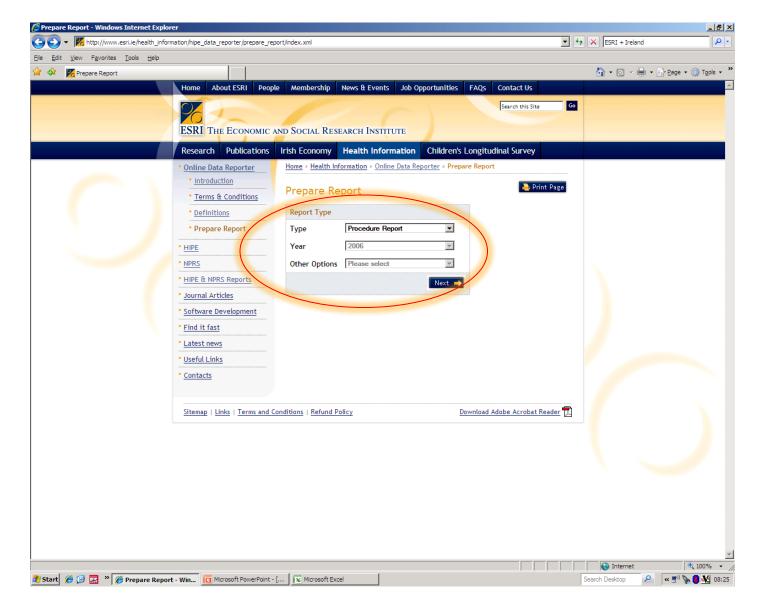




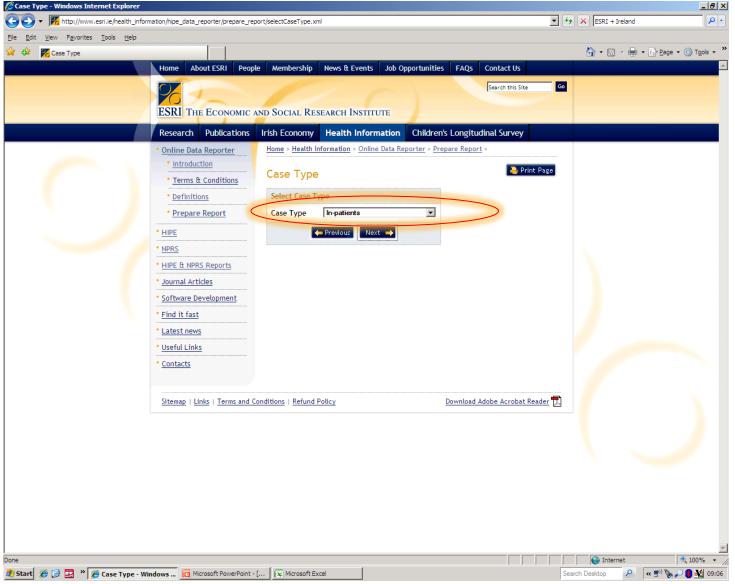




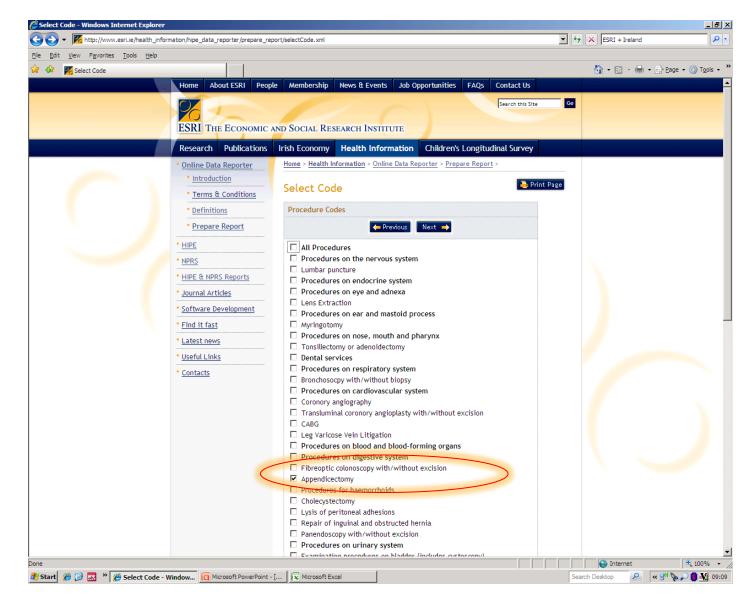




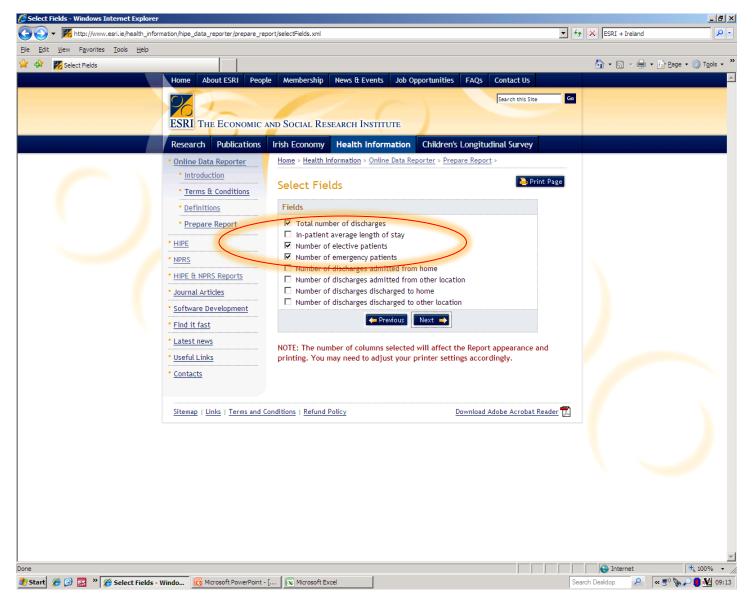




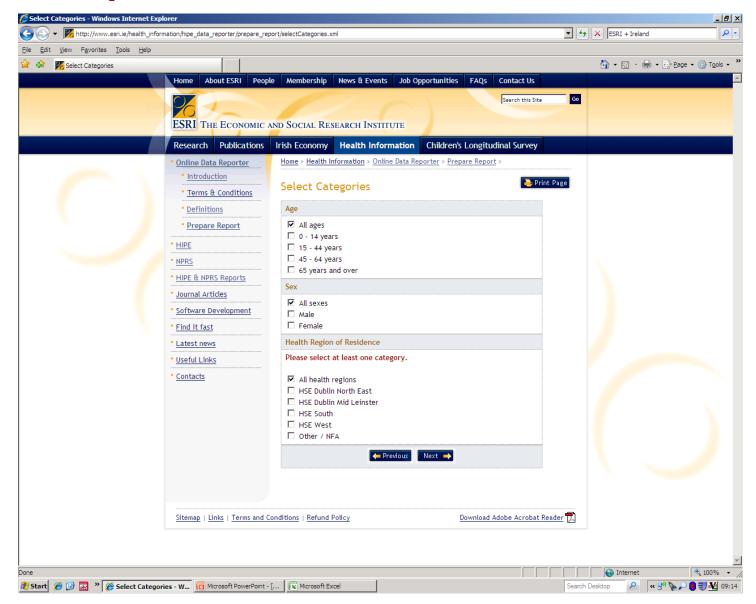




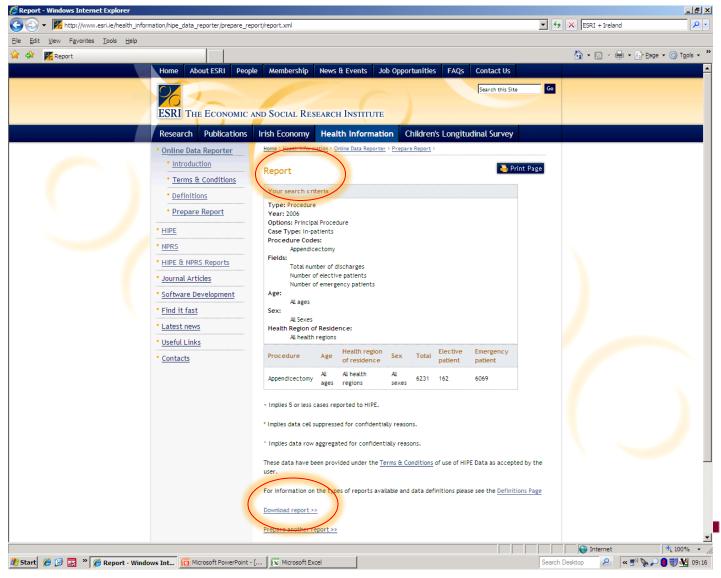




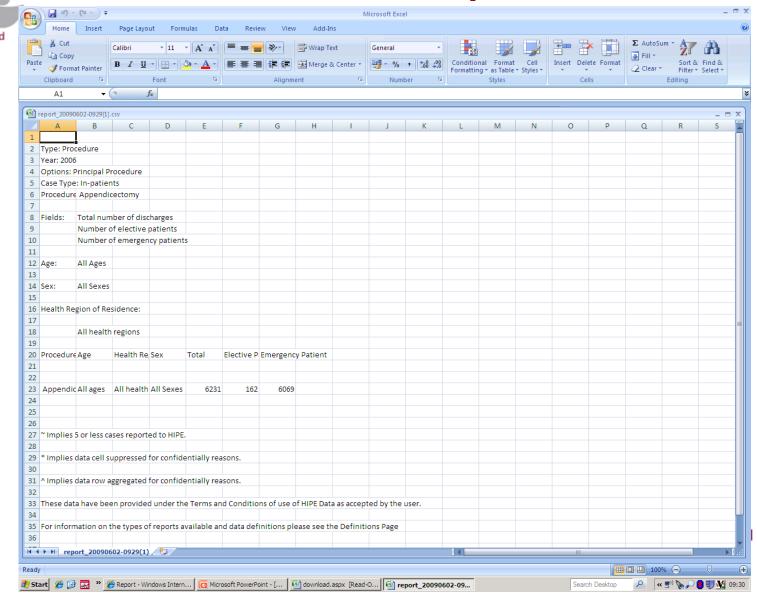








Down loaded report





#### International databases

#### **Eurostat**

 http://epp.eurostat.ec.europa.eu/portal/page/portal/ eurostat/home

#### **WHO**

http://www.who.int/research/en/

**ECDC** (European Centre for Disease Prevention and Control)

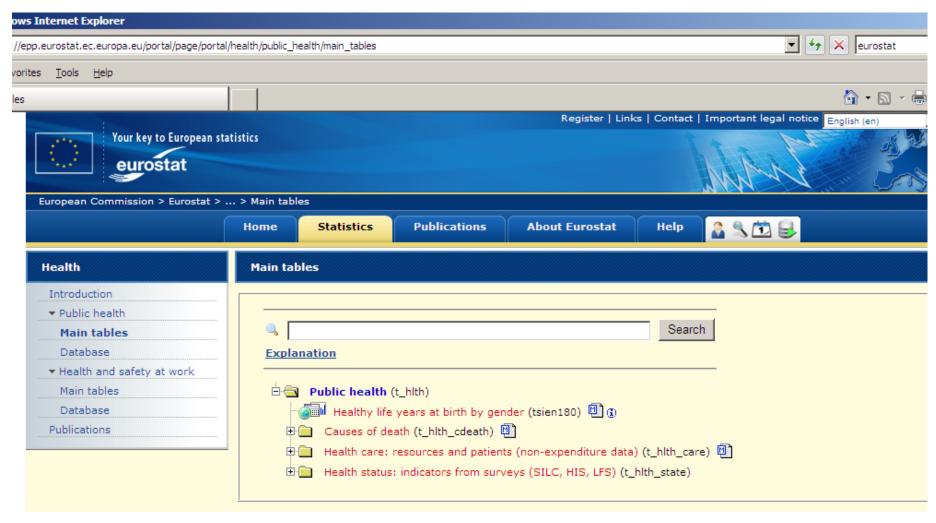
http://ecdc.europa.eu/

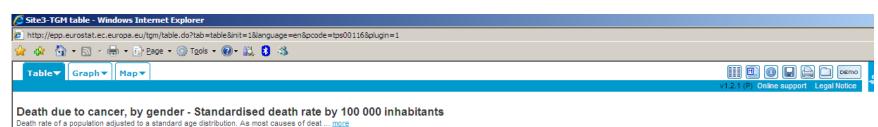
EMCDDA (European Monitoring Centre for Drugs and Drug Addiction)

http://www.emcdda.europa.eu/html.cfm/index190E
 N.html



### Eurostat database





geo time	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
EU (27 countries)	÷	:	:	:	187.2 <sup>(p)</sup>	186.1 <sup>(p)</sup>	189.7 <sup>(p)</sup>	182.5 <sup>(p)</sup>	180.1 <sup>(p)</sup>	178.1 <sup>(p)</sup>	175.4 <sup>(p)</sup>	:
EU (25 countries)	:	:	:	205.5	188.0 <sup>(p)</sup>	186.7 <sup>(p)</sup>	190.4 <sup>(p)</sup>	182.7 <sup>(p)</sup>	180.2 <sup>(p)</sup>	177.8 <sup>(p)</sup>	175.0 <sup>(p)</sup>	:
EU (15 countries)	191.1	187.9	186.6	183.8	181.3 <sup>(p)</sup>	179.8 <sup>(p)</sup>	177.7 <sup>(p)</sup>	175.8 <sup>(p)</sup>	173.1 <sup>(p)</sup>	171.4 <sup>(p)</sup>	168.3 <sup>(p)</sup>	:
Euro area	189.3	186.2	185.2	204.5	180.2	178.6	:	:	:	:	:	
Belgium	206.0	205.3	200.4	193.4	:	:	:	:	:	:	:	:
Bulgaria	:	160.2	156.8	158.4	150.4	150.0	154.8	152.5	156.5	171.0	168.3	:
Czech Republic	243.6	241.7	238.8	237.3	238.0	233.2	233.7	234.1	229.9	217.4	212.5	203
Denmark	226.5	226.8	221.8	223.2	222.5	218.8	210.7	207.5	208.2	207.0	208.0	:
Germany	194.1	189.5	189.0	185.0	182.0	176.5	175.8	173.0	169.8	168.0	165.0	162
Estonia	204.0	206.0	208.7	197.0	202.4	197.3	200.6	194.5	198.1	196.9	198.9	192
Ireland	206.7	208.0	204.1	202.6	203.3	197.6	190.5	189.3	189.1	179.7	184.8	:
Greece	163.6	162.3	158.8	163.5	163.3	164.8	160.9	160.5	162.0	160.3	154.7	:
Spain	174.6	174.2	173.3	172.8	170.4	171.1	167.7	167.1	164.2	159.7	158.3	157
Italy	187.7	185.0	184.8	179.0	178.8	180.5	175.3	174.0	:	:	164.9	:
Cyprus	:	:	:	:	:	:	:	:	122.9	120.4	116.4	122
Latvia	196.4	194.2	198.0	199.2	191.9	197.6	193.3	193.9	193.2	193.8	199.7	193
Lithuania	200.3	195.5	198.0	195.1	195.5	198.5	196.0	193.6	194.9	194.7	195.4	196
Luxembourg	198.0	193.5	196.1	176.0	156.0	177.1	171.0	176.8	165.0	162.2	161.1	:
Hungary	278.0	277.2	275.9	284.5	273.0	265.6	262.3	263.8	260.8	237.4	239.9	240
Malta	186.4	176.6	180.4	178.1	171.0	162.1	163.7	157.5	151.8	145.3	156.2	155
Netherlands	207.9	204.6	202.3	203.9	198.5	194.7	193.9	191.0	191.2	189.5	186.5	183
Austria	184.5	182.3	178.2	176.4	174.1	169.2	170.8	172.5	170.7	165.8	161.9	157
Poland	213.6	:	:	211.9	215.7	216.5	216.5	214.4	213.8	211.3	210.1	208
Portugal	165.0	163.6	162.7	160.4	161.3	161.8	161.6	161.5	155.6	156.0	149.4	:
Romania	:	:	:	167.9	172.8	177.3	177.4	177.7	176.8	179.5	179.8	178
Slovenia	212.8	219.6	232.5	211.1	205.0	203.9	205.1	203.6	198.6	196.8	197.8	202
Slovakia	222.4	222.0	238.5	229.9	228.0	225.6	214.6	213.2	209.6	210.1	203.5	204
Finland	160.1	159.0	157.5	154.3	151.9	149.6	145.9	146.3	143.8	142.6	140.5	138
Sweden	160.3	163.3	160.1	157.9	157.1	157.9	154.9	155.5	155.7	154.6	152.3	:
United Kingdom	202.0	197.3	196.6	192.7	185.0	191.4	190.1	186.4	183.8	185.2	179.3	:
Croatia	:	:	:	:	222.3	211.0	213.3	214.3	210.4	212.6	209.8	209
Macedonia, the former Yugoslav Republic of	:	:	:	160.7	165.5	163.8	163.0	166.3	160.5	160.3	169.5	172
Iceland	204.4	200.8	180.1	186.2	175.1	165.5	167.3	159.8	160.2	159.3	:	:



#### WHO databases



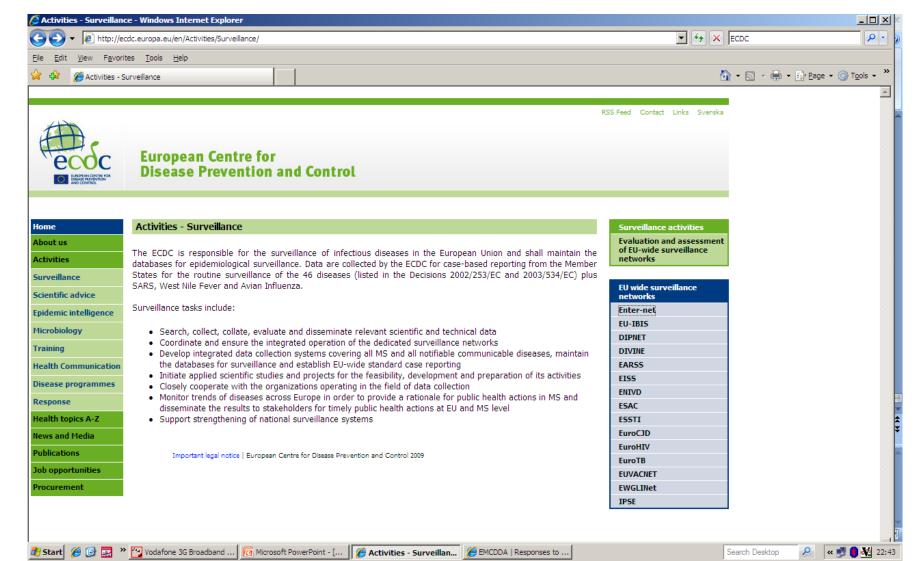


## Interactive tables

 http://www.who.int/research/en/search/ en/



### ECDC data sources





### Conclusions

Another source of health data

 Increasing availability and use of data through the web

 Important to read the documentation around interactive tables