Consistency of time series in cause-specific mortality over the ICD-10 period

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Recent Trends and Future Uncertainties in Longevity
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Background

The cause-specific mortality trends can be disrupted due to:

ICD-revisions

ICD-updates within the same revision

New tools to certify/select CoDs

Changes in the systems of collecting information on CoD

Manipulations of CoD statistics

Introducing specific practices in some areas of the country

New tools/Changing approaches to the CoD investigation

Changes in medical knowledge about specific diseases

Updates within ICD-10 revision

"…WHO should endorse the concept of an **updating process between revisions** and give consideration as to how an effective updating mechanism could be put in place"

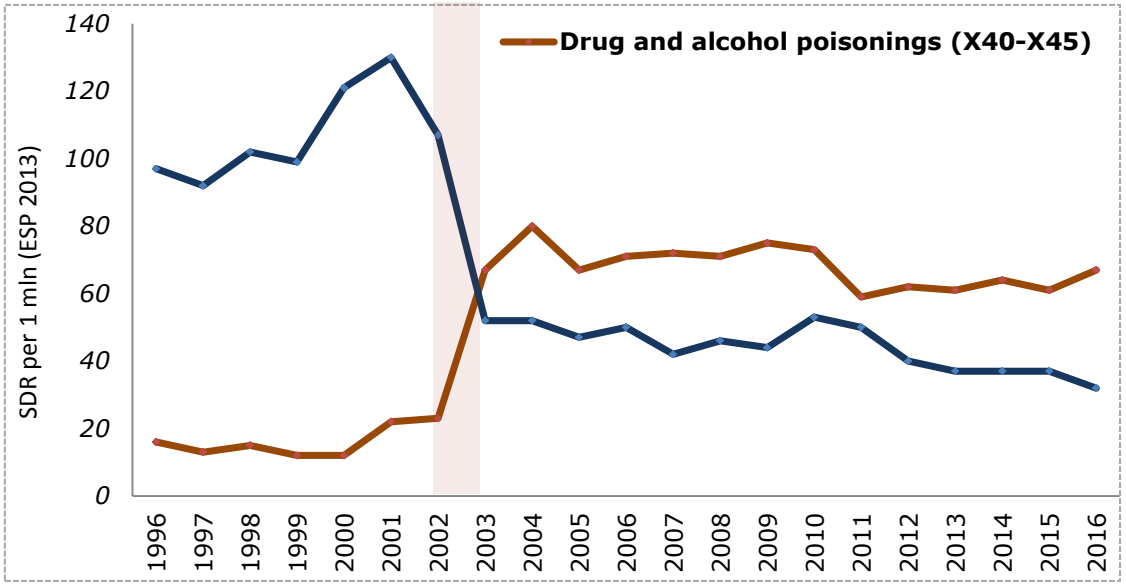
International Conference for the Tenth Revision of the ICD, Geneva 1989

ICD-10 was endorsed in 1990. The three volumes were published between 1992 and 1994. WHO members started to adopt the new classification since 1994

The first updates of the ICD-10 were approved in 1996. Since then the updates are introduced annually

Countries implement the updates on their own schedule

Drug overdoses in Norway



Mental and behavioural disorders due to psychoactive substance use (F10-F19)

.0 Acute intoxication

A condition that follows the administration of a psych disturbances are directly related to the acute pharma trauma, inhalation of vomitus, delirium, coma, convu

Acute drunkenness (in alcoholism)

"Bad trips" (drugs)

Drunkenness NOS

Pathological intoxication

Trance and possession disorders in psychoactive sub

Excl.: intoxication meaning poisoning (T36-T50)

This wasn't specified in the older versions of the ICD-10 Manual

ICD update adopted by Norway in 2003

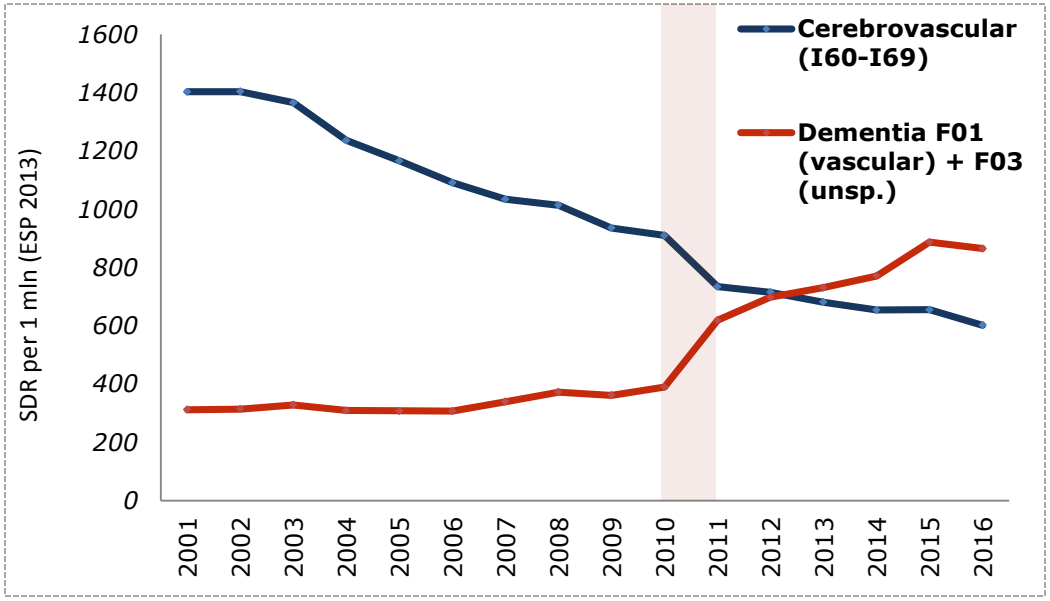
Page 66	**4.1.12 Summary of linkages by code number** ***Table 2. Summary of codes not to be used in underlying cause mortality coding*** Codes not to be used for underlying cause Mortality coding (code to item in parentheses; If no code is indicated, code to R99)	MRG 0116	October 2002	Major	January 2006
Add list of codes to existing table	F10.0 (code to X45, X65, X85, or Y15) F11.0 (code to X42, X62, X85, or Y12) F12.0 (code to X42, X62, X85, or Y12) F13.0 (code to X41, X61, X85, or Y11) F14.0 (code to X42, X62, X85, or Y12) F15.0 (code to X41, X61, X85, or Y11) F16.0 (code to X42, X62, X85, or Y12) F17.0 (code to X49, X69, X89, or Y19) F18.0 (code to X46, X66, X89, or Y16) F19.0 (code to X40-X49, X60-X69, X85-X90, or Y10-Y19)				

Source: WHO; Christian L. Ellingsen, personal communication

Senile Dementia vs Cerebrovascular dis. in England and Wales

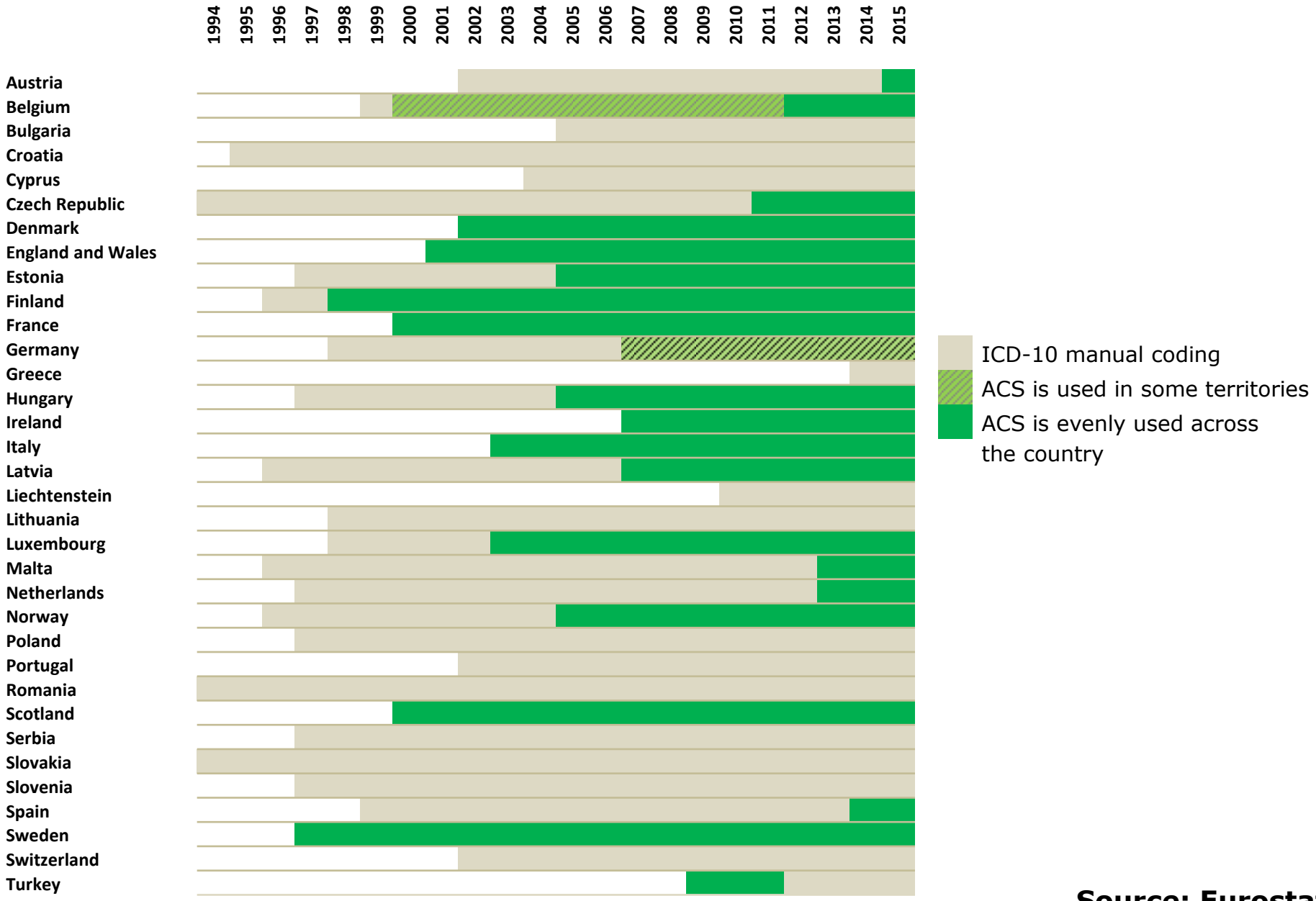
Page 56 Add text	**4.1.11 Notes for use in underlying cause mortality coding** I60-I69 Cerebrovascular diseases *when reported as the originating antecedent cause of* conditions in: F01-F03, code **F01**	MRG 0151	October 2003	Minor	January 2005

England and Wales adopted that update in 2011 when a new version of ACS software was installed. Bridge coding on an 11% sample of death certificates was performed [*ONS, 2011*].



Source: WHO

Introducing Automated Coding System (ACS)

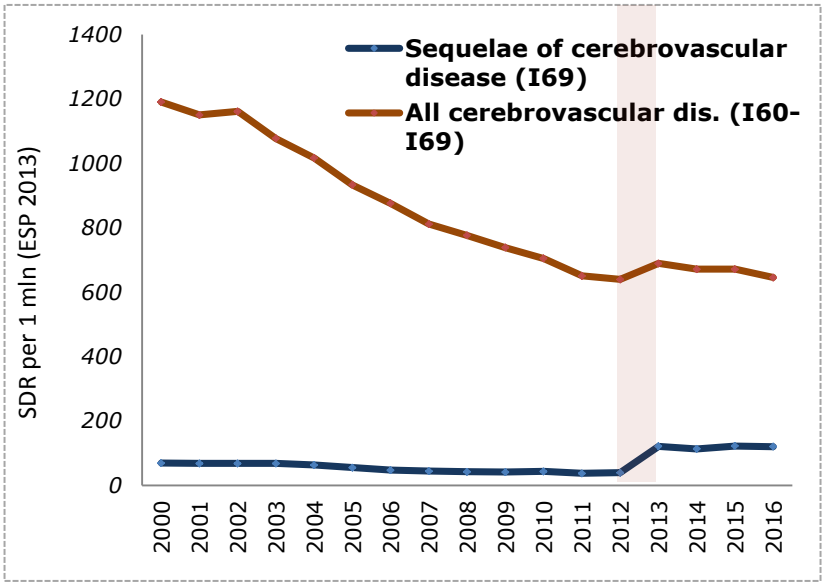


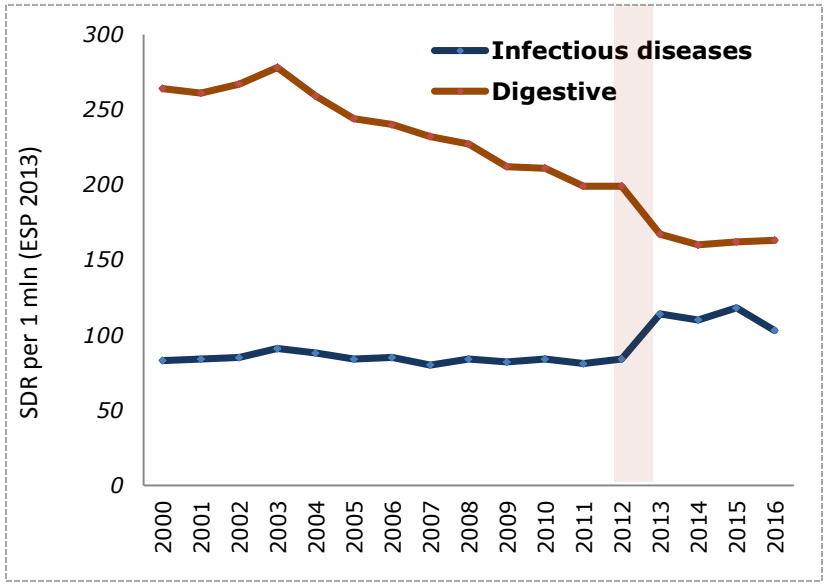
Source: Eurostat

ACS improves the consistency of CoD data

Introducing ACS

Case of Netherlands

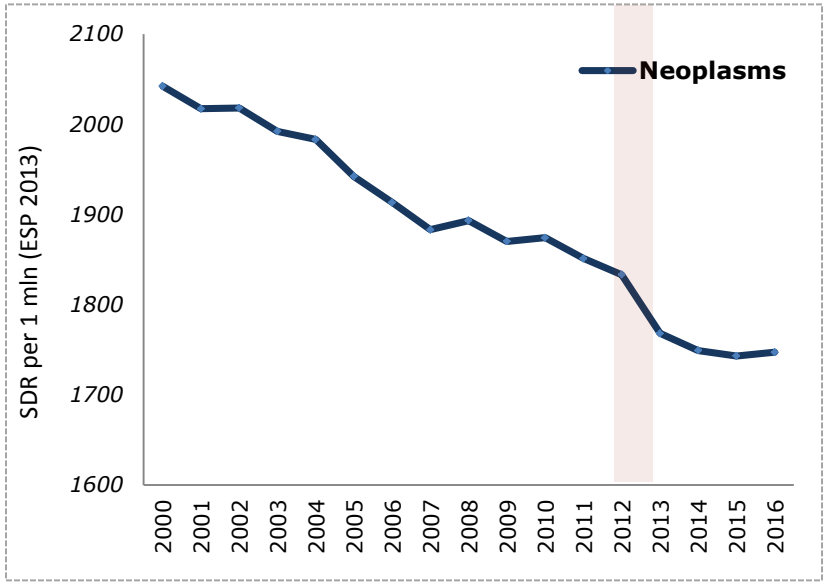




In 2013, Netherlands switched to automated coding. Before coding was done manually.

Bridge coding study was performed

[*Harteloh, 2017; 2018*]



Source: WHO

Changes in the system of collecting CoD data

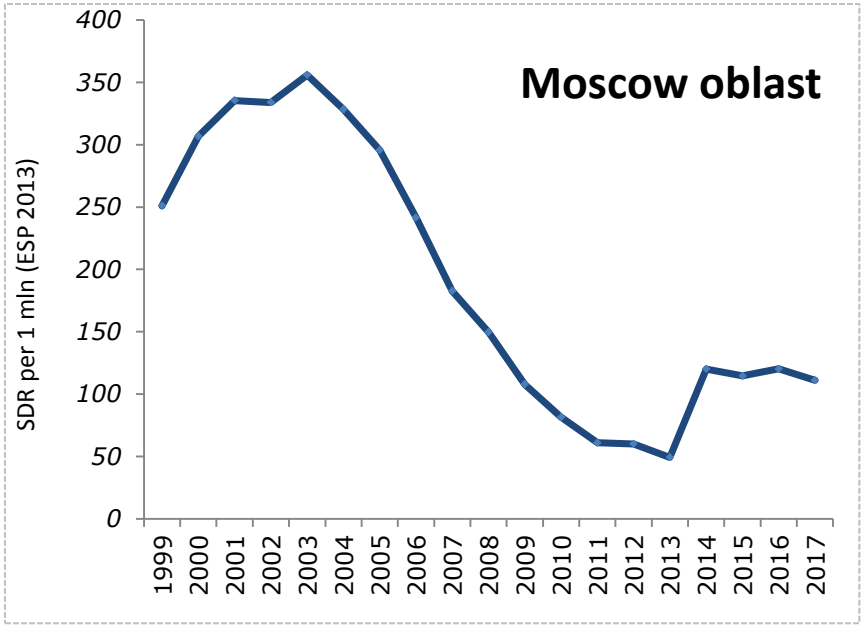
Case of Alcohol poisonings in two regions of Russia

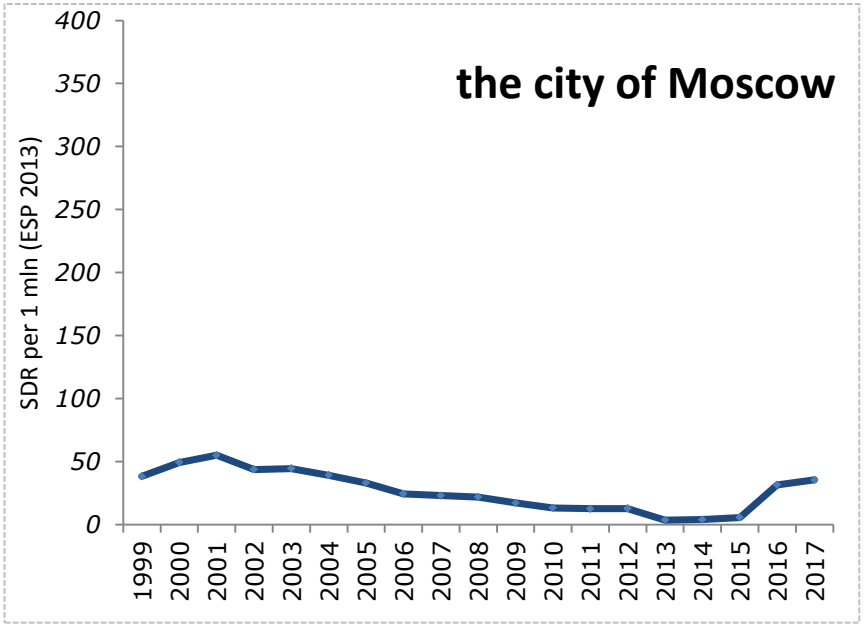
An agreement on replacing initial death certificates with the corrected ones in statistics

In 2014, in Moscow oblast

In 2016, in the city of Moscow

Mortality from alcohol poisonings

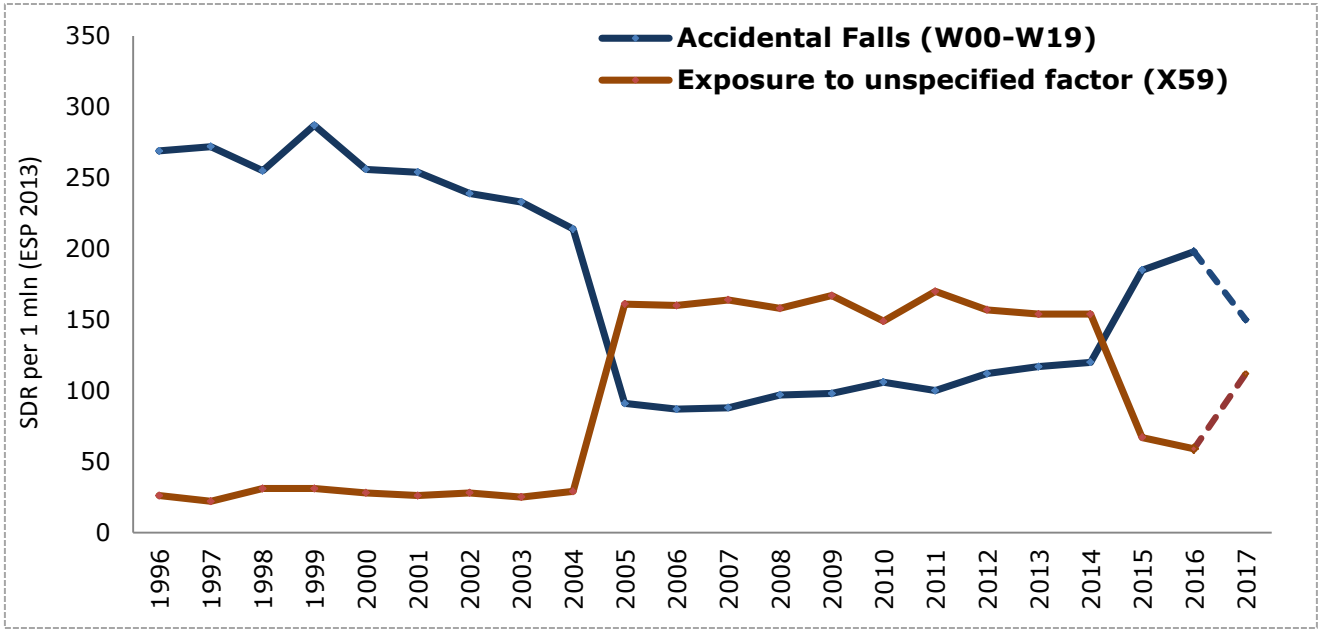




Source: RusFMDB

Changes in the system of collecting CoD data

Case of Accidental falls in Norway



Before 2004: unspecified femur fractures are coded as falls

Since 2005: … as exposures to unspecified factor

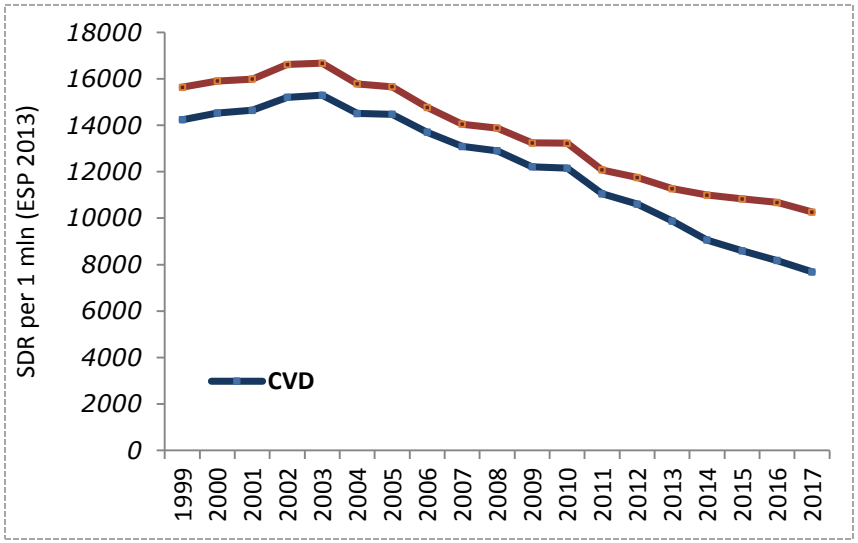
In 2015-2016: querying the certifying doctors about the circumstances

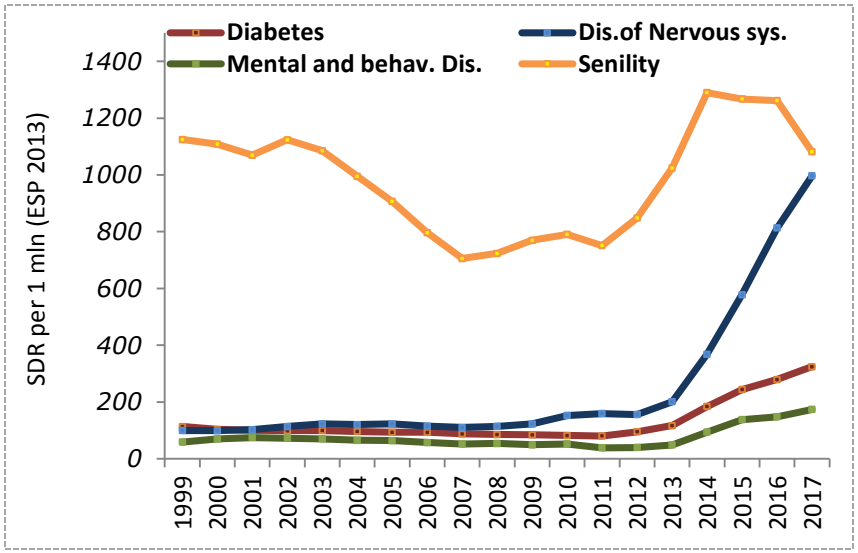
In 2017: that practice stopped due to the lack of resources

Source: WHO; Christian L. Ellingsen, personal communication

Manipulations of CoD statistics

Exchange between CVD, Senility and other CoDs in Russia





May, 2012
(in 2011, CDR from CVD was 753.0 per 100 000

УКАЗ

ПРЕЗИДЕНТА РОССИЙСКОЙ ФЕДЕРАЦИИ

О совершенствовании государственной политики в сфере здравоохранения

В целях дальнейшего совершенствования государственной политики в сфере здравоохранения, направленной на сохранение и укрепление здоровья граждан Российской Федерации, увеличение продолжительности их жизни, п о с т а н о в л я ю:

1. Правительству Российской Федерации:

а) обеспечить к 2018 году:

снижение смертности от болезней системы кровообращения до 649,4 случая на 100 тыс. населения;

снижение смертности от новообразований (в том числе от

… reduction in mortality from circulatory diseases up to 649.4 cases per 100 thousand of population

до 7,5 на 1 тыс. родившихся живыми;

доведение объема производства отечественных лекарственных

Some solutions to overcome the problem

1. Bridge coding

Double-coding according to both old and new systems

The comparability ratios can be used to reconstruct the trend

2. Reconstruction

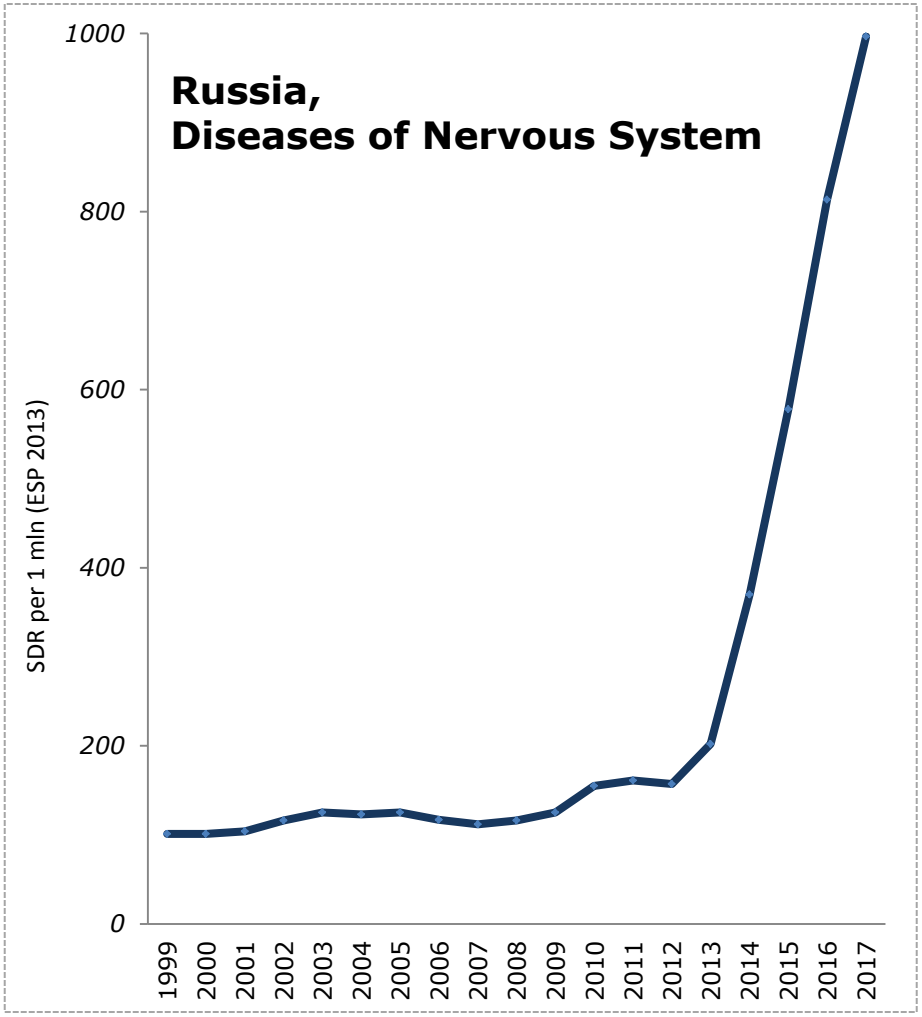
Vallin and Meslé, 1988; Meslé and Vallin, 1996

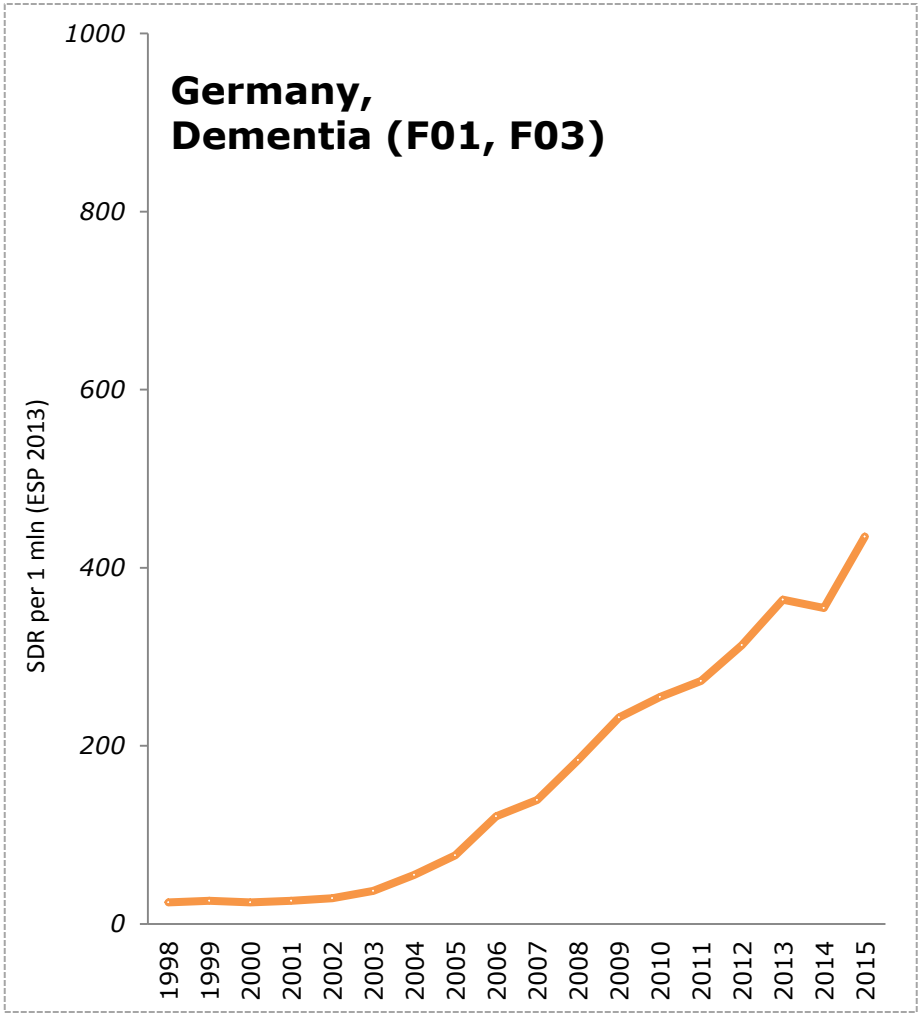
Painstaking comparison between old (before changes) and new (after changes) data

Mostly known for performing reconstruction between different ICD-classifications

Also can be used to overcome the problem of trends inconsistencies caused by other changes

Temporal + Subnational inconsistency

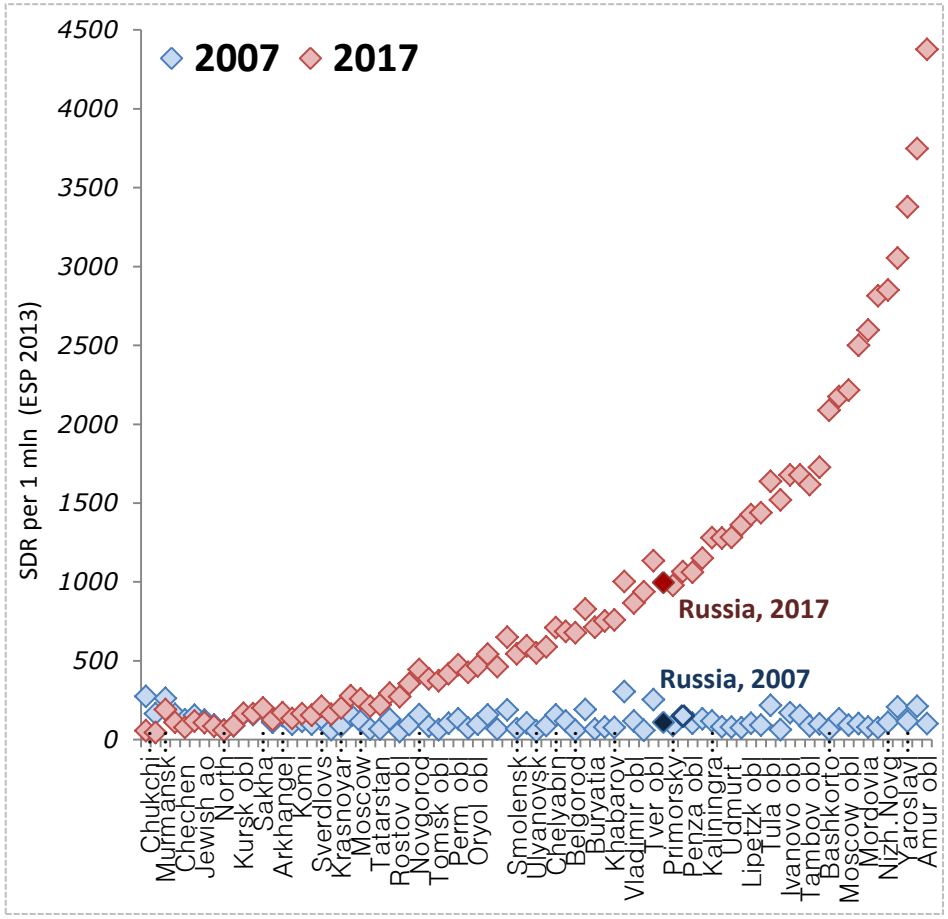




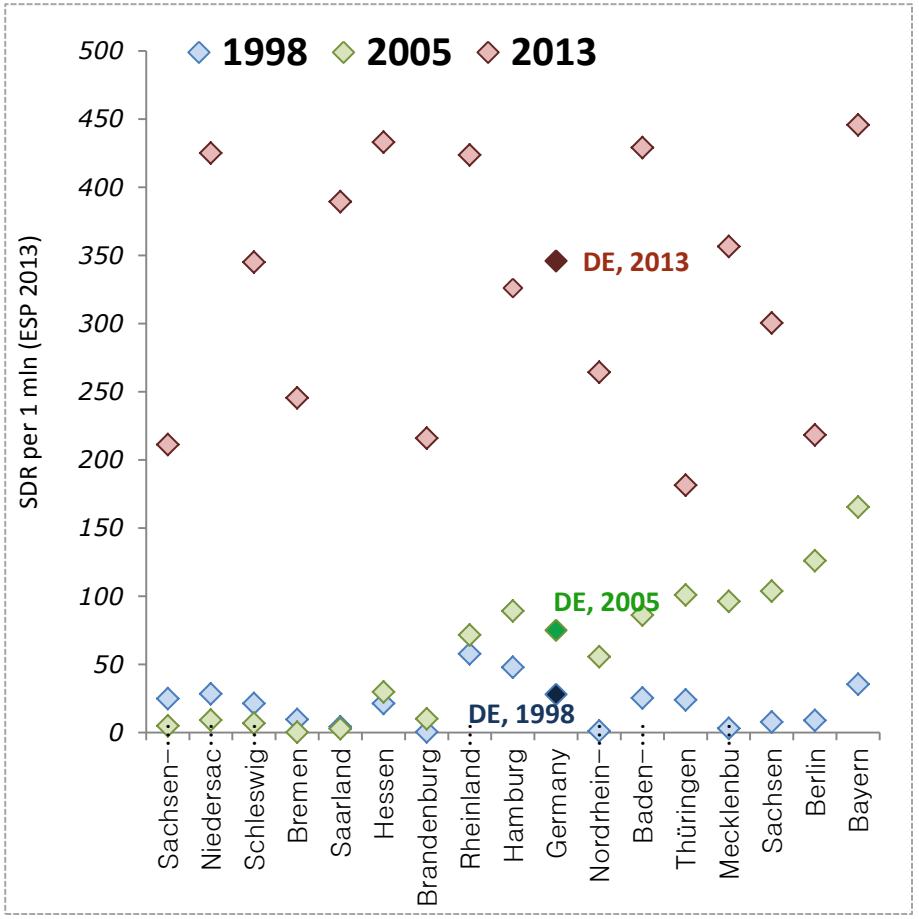
Source: RusFMDB; WHOMDB

Temporal + Subnational inconsistency

Change in mortality from **Diseases of Nervous System in Russia** between **2007** and **2017** **by regions**



Change in mortality from **Dementia in Germany** between **1998**, **2005** and **2013** **by lands**



Source: RusFMDB; Pavel Grigoriev, personal communication

Conclusion

The disruptions occur not only due to transition to a new classification but also **within the same classification**

The problem has, probably, **escalated within the ICD-10**

Improving the data quality and consistency may cause **disagreements in a short-run context**

The balance should be found

Simultaneous changes
→ to ensure subnational consistency
→ to enable further reconstruction

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THANK YOU

FOR YOUR ATTENTION!