



НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ
УНИВЕРСИТЕТ

*Recent Trends and Future Uncertainties in Longevity
The 5th Human Mortality Database Symposium*

THE DRAMATIC INCREASE IN HIV/AIDS MORTALITY IN RUSSIA. WHAT DO VITAL STATISTICS TELL US?

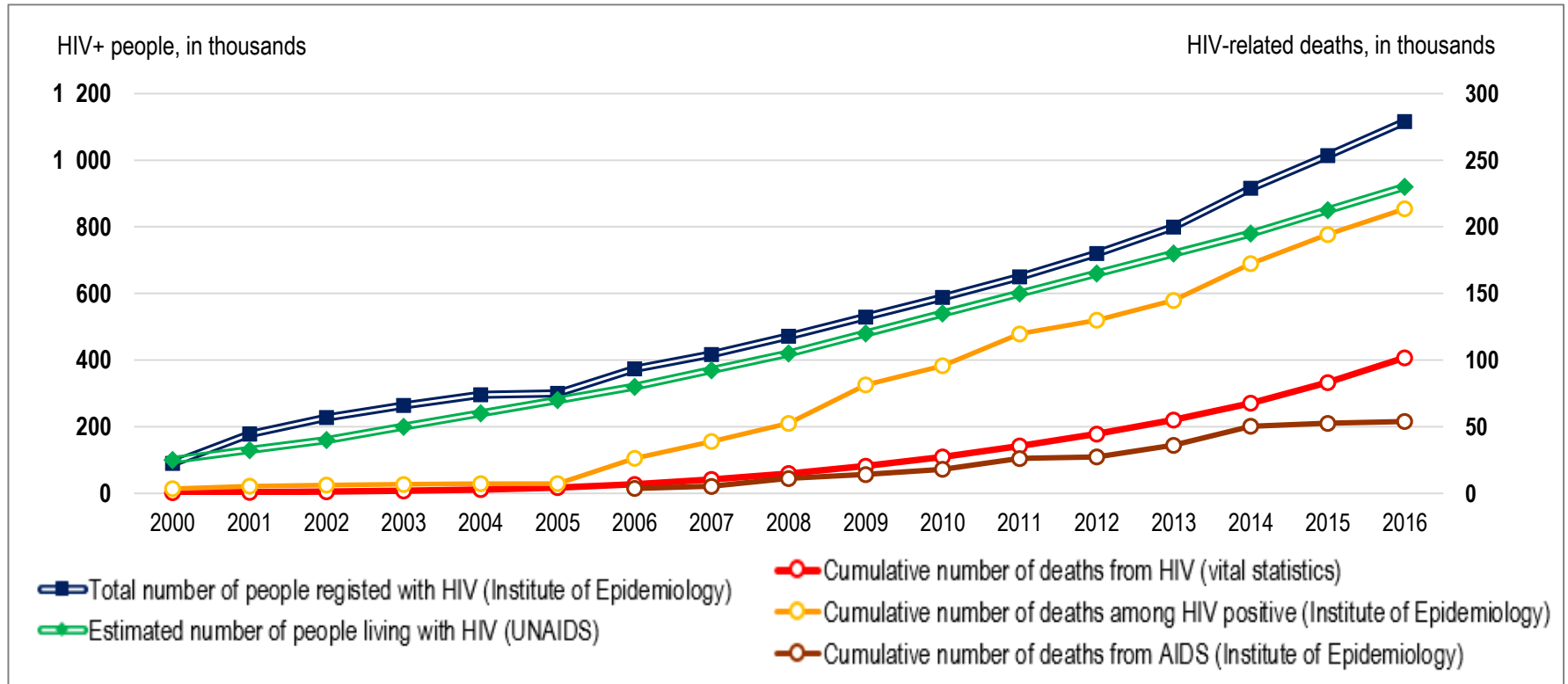
Sergey Timonin, Evgeny Andreev, and Vladimir Shkolnikov

Berlin, 14.05.2019



- Motivation for the study
- Data and methods
- HIV/AIDS mortality in Russia in an international perspective
- Period and cohort trends in HIV/AIDS mortality in Russia
- Regional patterns of the «HIV epidemic» diffusion
- Discussion

Trends in the number of ever registered HIV+ people (left axis) and HIV-related deaths (right axis) in Russia





Motivation for the study (2)

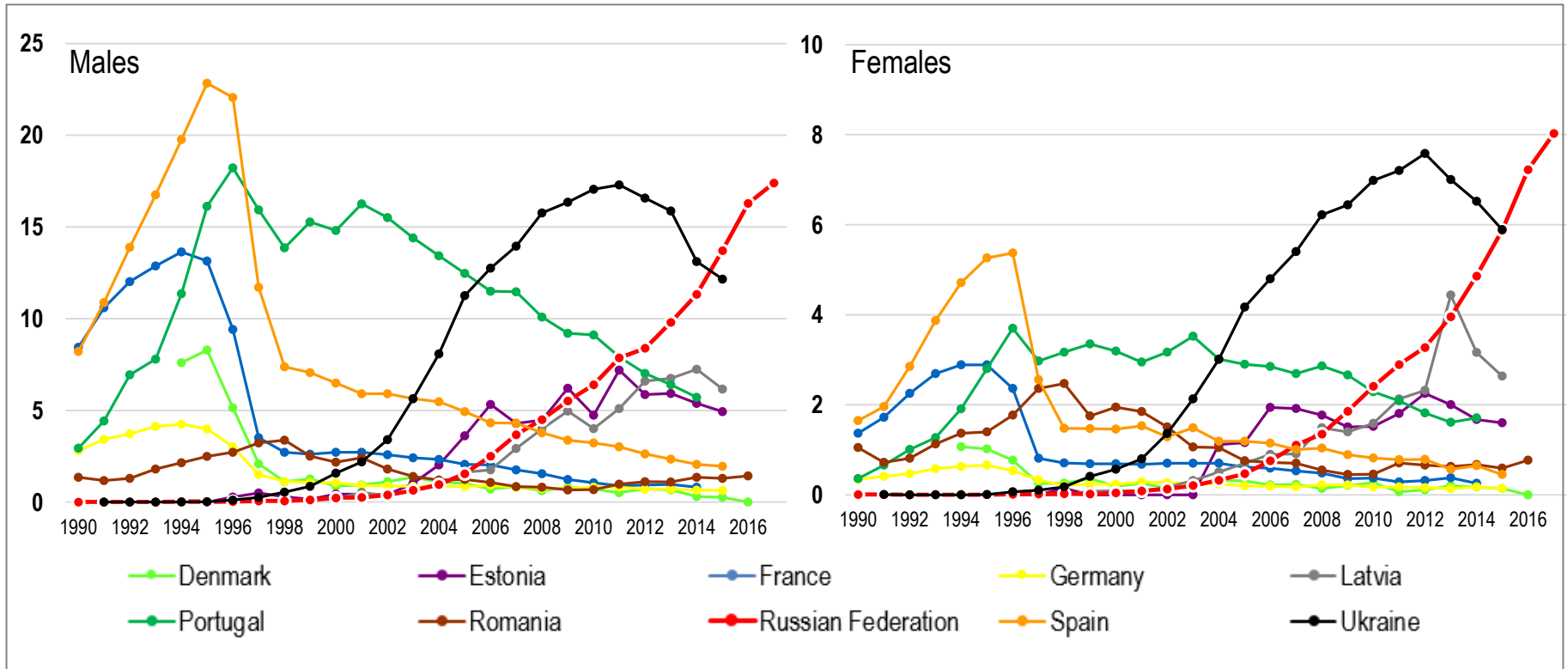
- After several decades of negative trends in mortality in Russia, life expectancy has been finally increasing since 2004...
- But death rates at middle ages are still higher than a **half a century ago**, particularly among males aged 35-40 years
- Nowadays this is, to a larger extent, a results of upward trends in HIV mortality in Russia
- Aside from the demographic losses due to premature mortality, HIV generates a huge burden of disease with more than 3% of infected males aged 30-39 [Pokrovsky 2017]
- The patterns in Russia differ substantially from those observed in other developed countries

- Medical data on HIV+ population are very scarce and limited to the absolute numbers of new cases and deaths among the registered patients. Moreover, the way these data are collected is not transparent
- We rely on vital statistics based on the underlying cause of death from the medical death certificates
- It includes information on cause of death by age, sex, and region from 1991 to 2017.
- For the purposes of international comparisons we mainly use raw data or standardized death rates from WHO mortality database and European health for all database



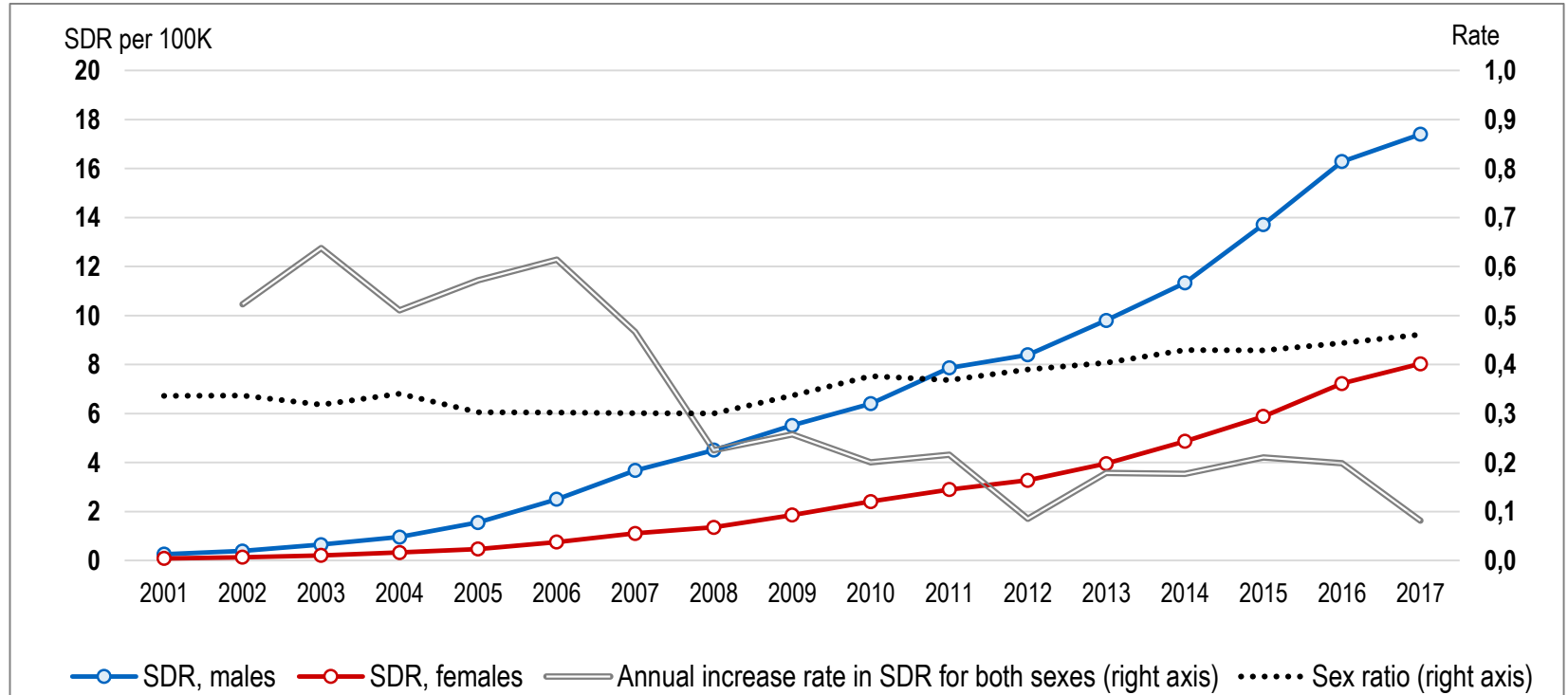
HIV/AIDS mortality in Russia in an international context

Trends in standardized death rates in Russia and other developed countries, per 100,000

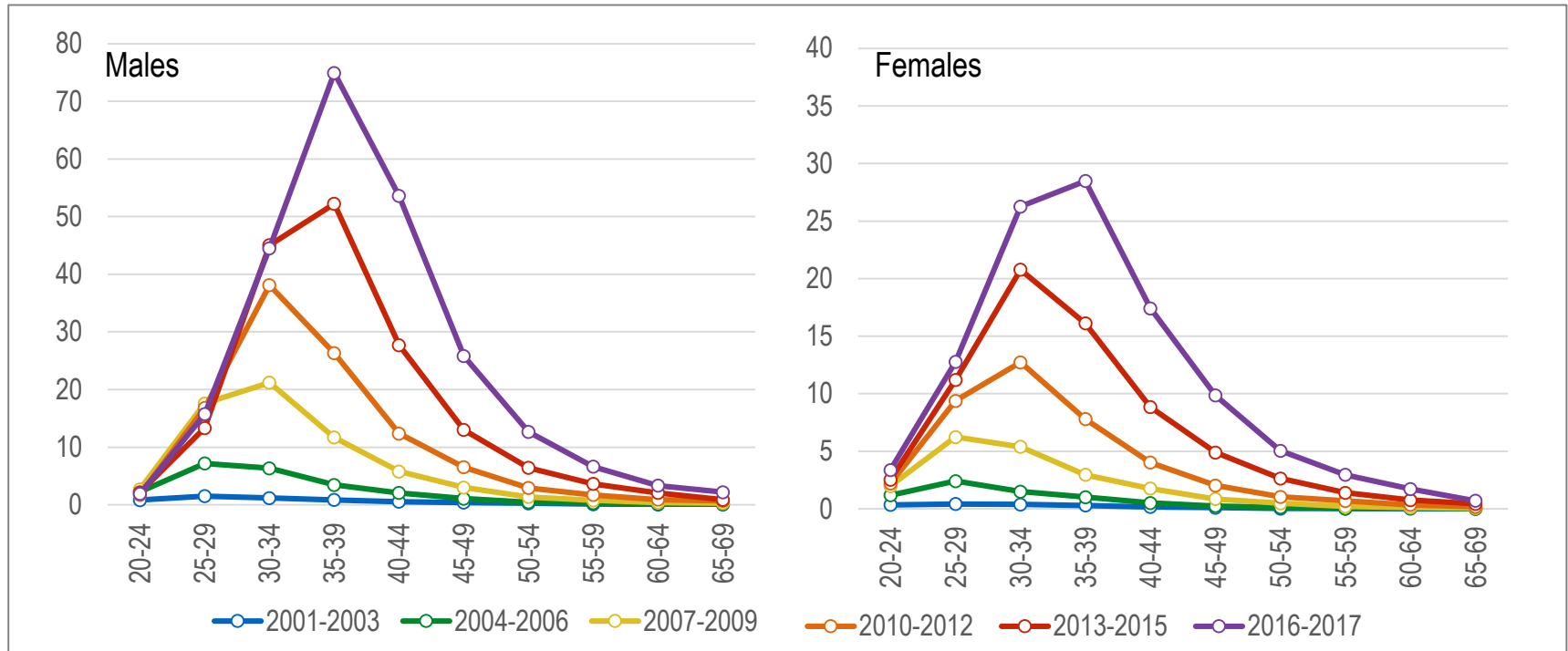


Source: European Health for All database; WHO mortality database; Rosstat

Changes in standardized death rates (per 100K), annual rate of mortality increase, and female-male mortality ratio in Russia



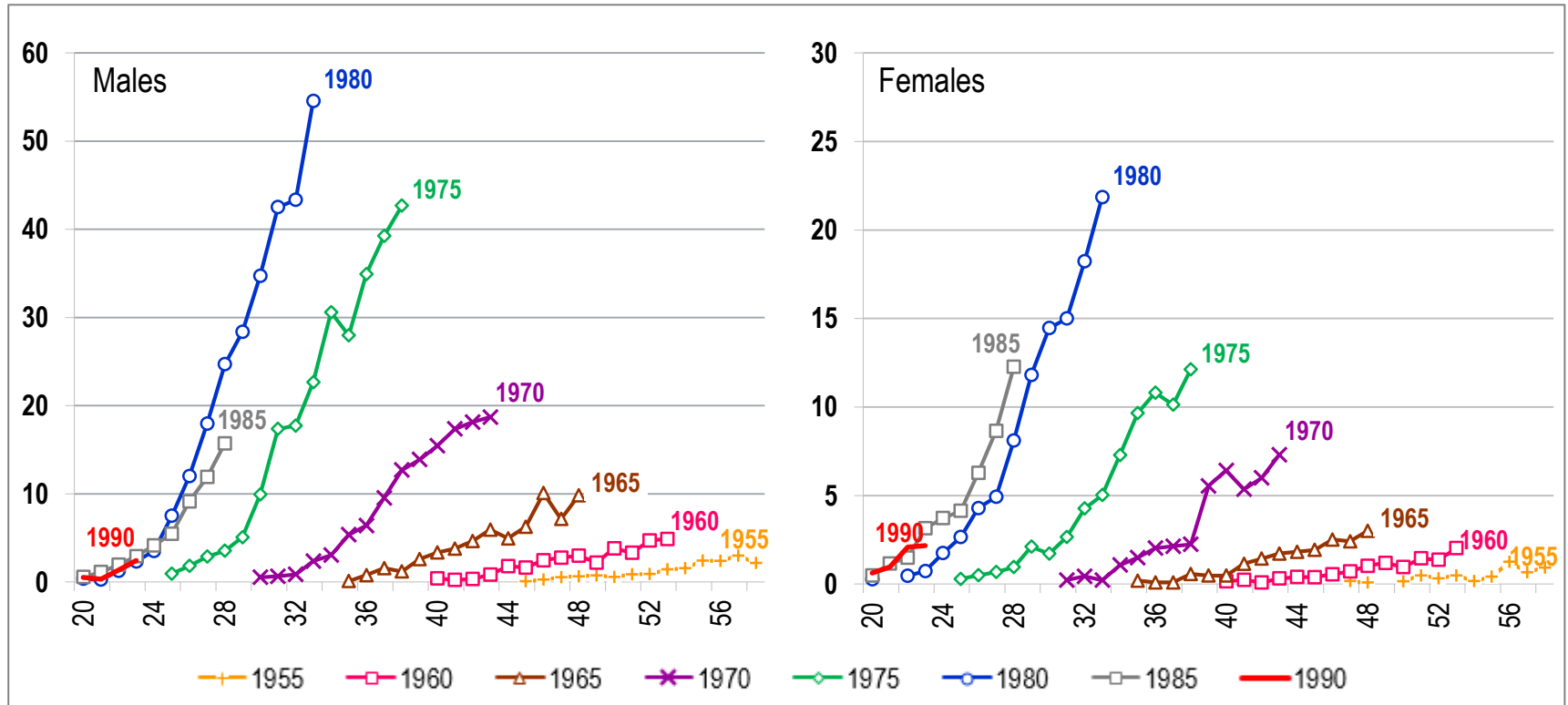
Changes of the age-specific mortality profile in Russia



Since 2001, average age at death from HIV has increased by 9.0 years (31.0-->40.0) for males, and 9.0 years (29.0-->38.5) for females

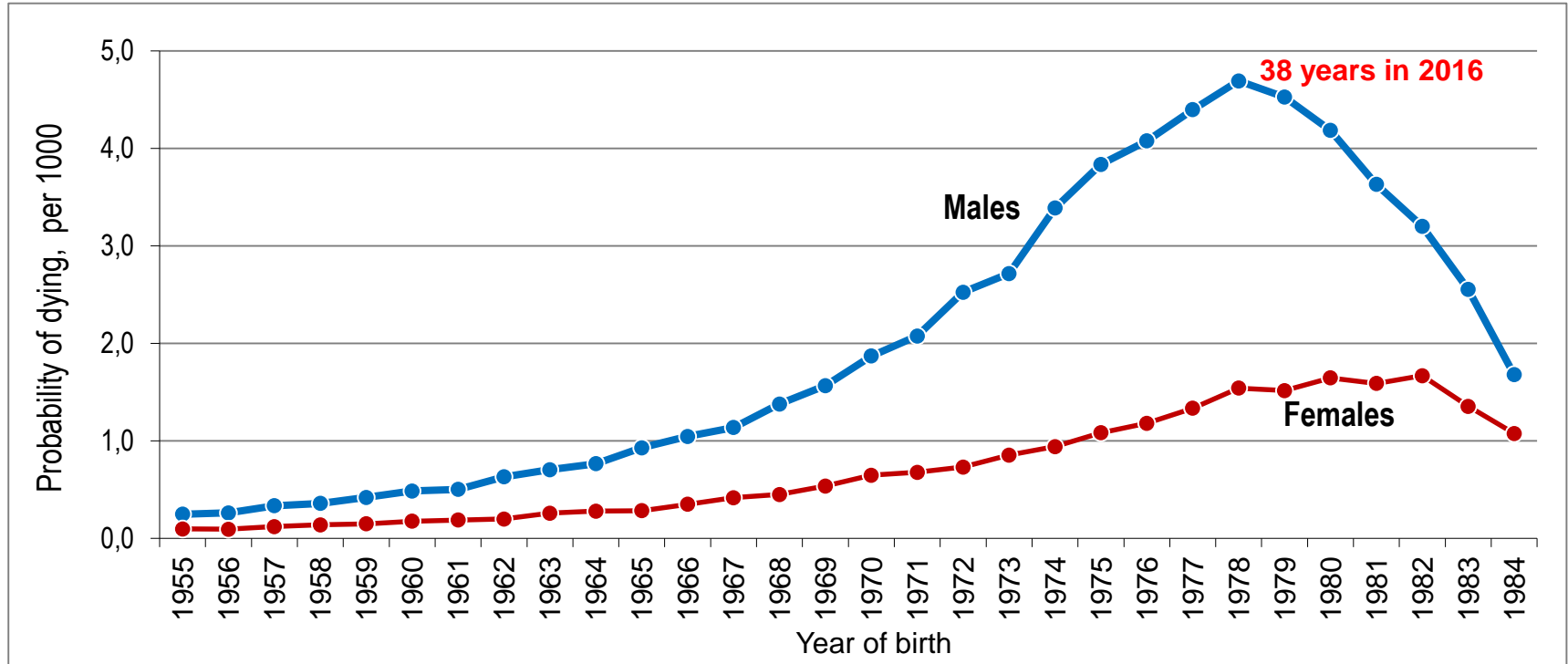


Mortality in cohorts born between 1955 and 1990



Mortality in cohorts born between 1955 and 1985

Probability of dying from HIV in cohorts born after 1955
(from 2000 onwards)



Mortality from HIV/AIDS, both sexes, 2015-2017



- HIV mortality has the highest spatial variability among all the other causes of death in Russia;
- However, several clusters of elevated mortality that have been constantly expanding over time can be defined: Middle Volga and Ural region; South-West Siberia; Baikal region.
- “The lowest levels of consistency among the causes of death we investigated were found for AIDS. However, the high degree of variability of AIDS diagnoses cannot be regarded as a problem of coding accuracy only” [Danilova et al. 2016]

Mortality from HIV/AIDS, 2015-2017



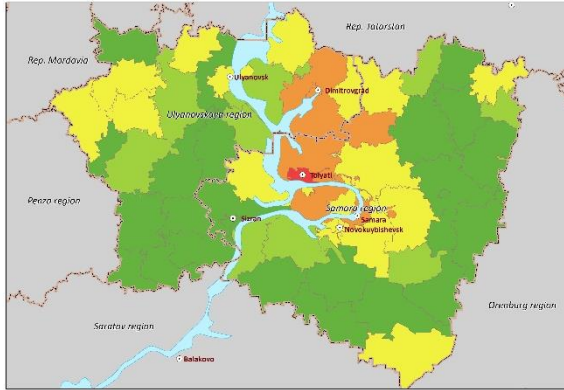
Map: Drug Trafficking Routes from Central Asia to the Russian Federation: Air Routes



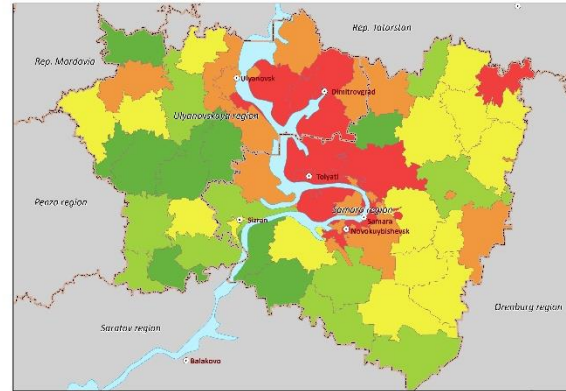
Map: Drug Trafficking Routes from Central Asia to the Russian Federation: Rail Roads



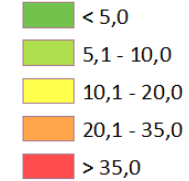
2009-2011



2012-2014

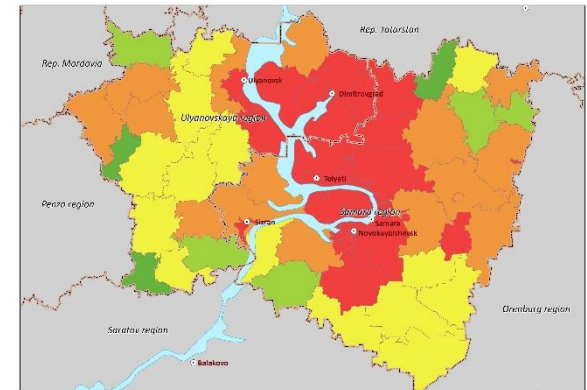


Standardized death rates from HIV,
both sexes, per 100,000

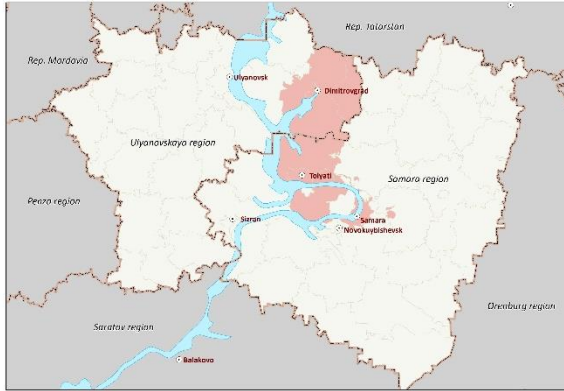


○ Major cities

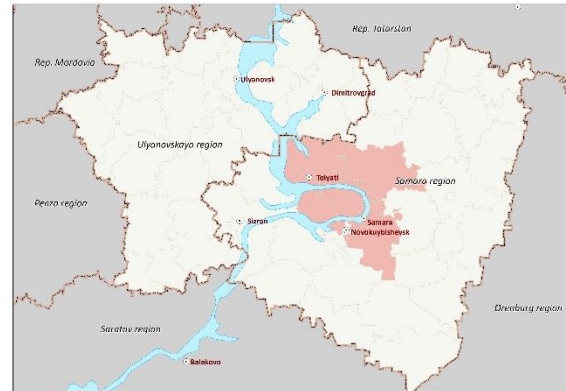
2015-2017



2009-2011



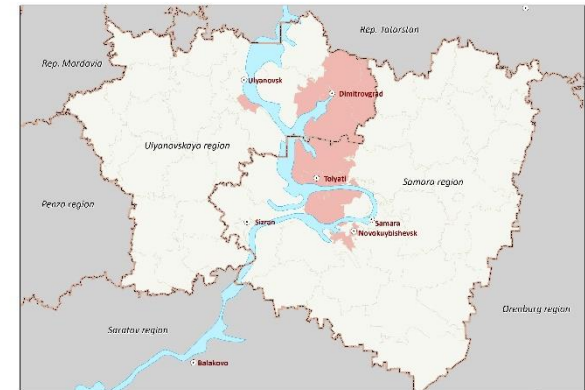
2012-2014



Cluster and Outlier Analysis
(Anselin Local Morans I)

- Not Significant
- High-High Cluster
- High-Low Outlier
- Low-High Outlier
- Low-Low Cluster

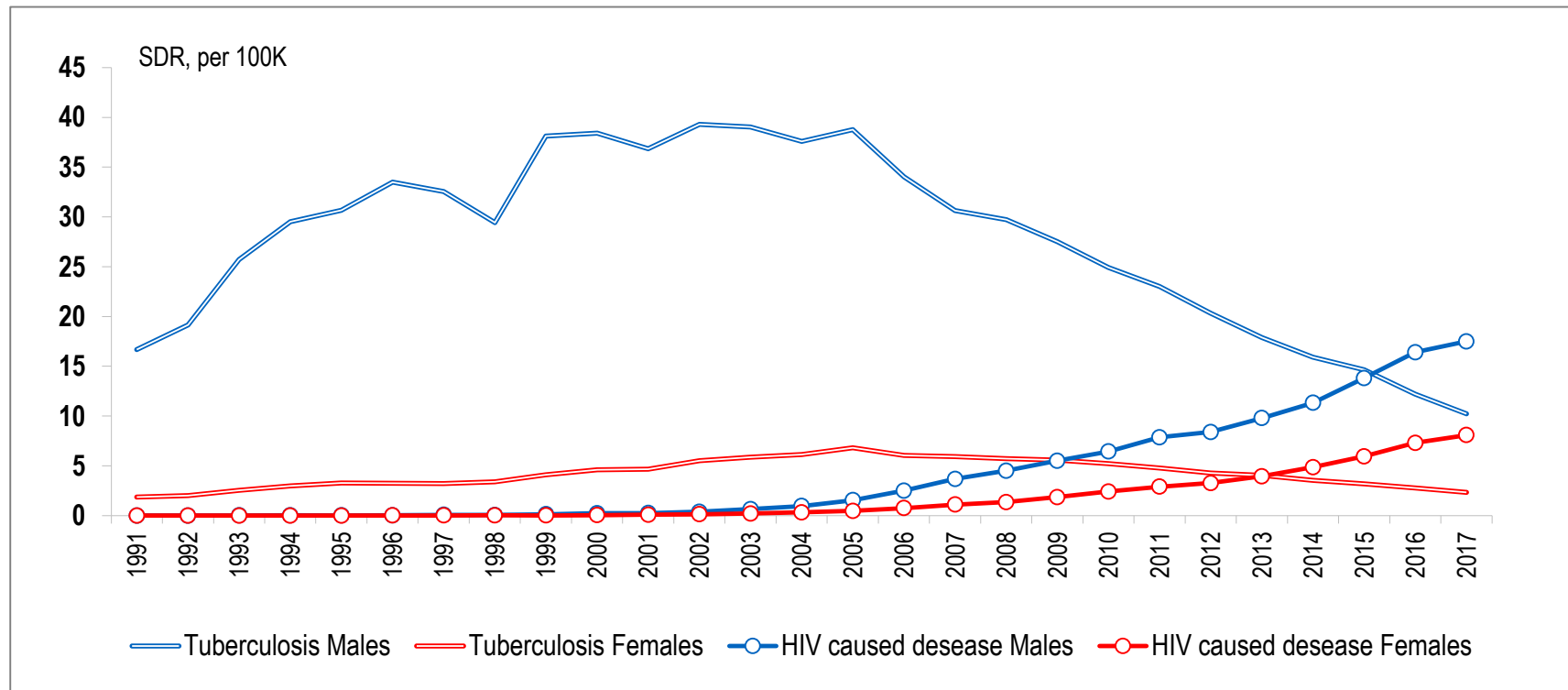
2015-2017





Discrepancies in the cause-of-death coding practices: HIV versus TB

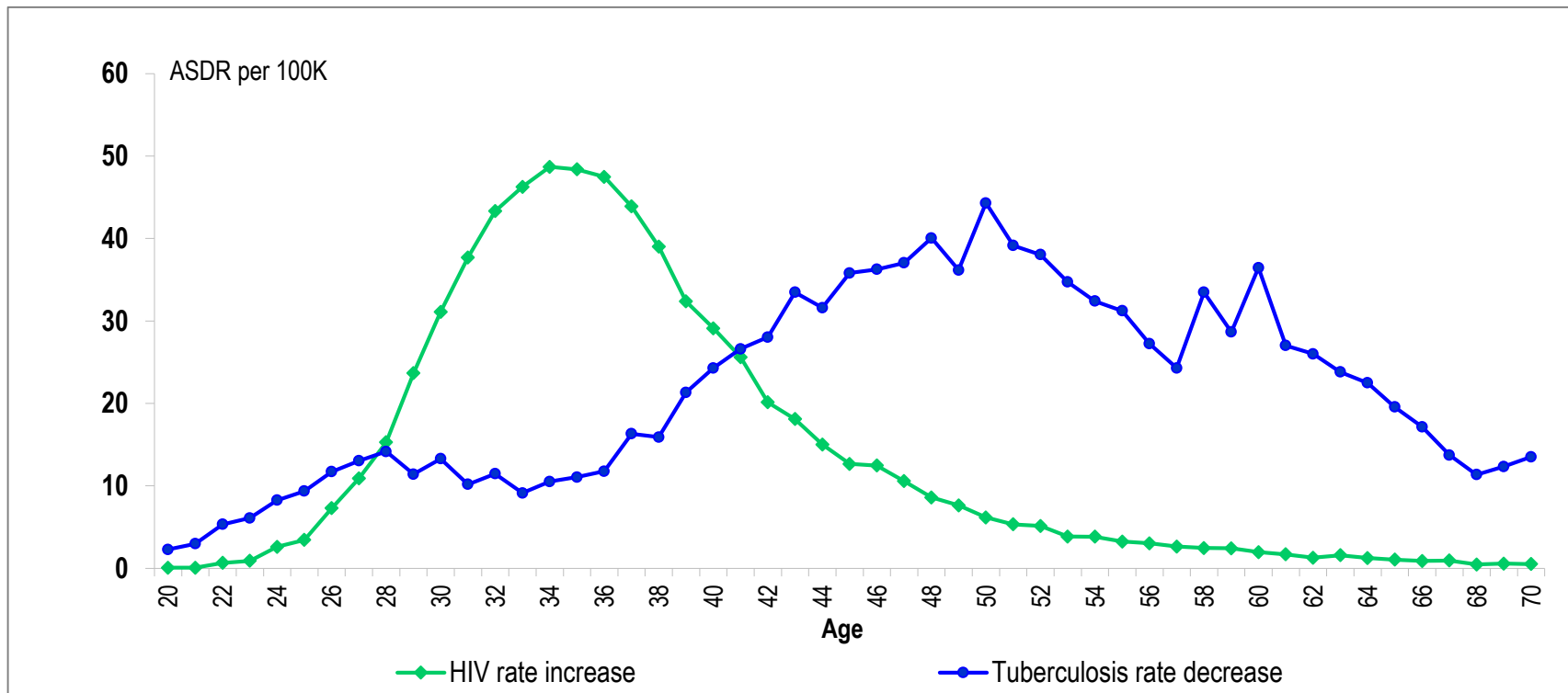
Changes in standardized death rates from HIV and TB





Discrepancies in the cause-of-death coding practices: HIV versus TB

Changes in the age-specific death rates from HIV and TB between 2001-05 and 2013-17
(increase for HIV and decrease for TB)



- In contrast to most of the developed and developing countries, the HIV epidemic in Russia started later in time and continues to expand significantly;
- There is clear cohort effect in HIV mortality;
- HIV mortality has a strong clustering in space. Started in big and middle-sized cities it subsequently spread to the neighboring territories;
- The reduction of HIV mortality would increase national life expectancy at birth by 0.36 and 0.23 years for males and females; for the most infected regions the gain would be more about 1.5 years for males and 1.0 year for females;
- The low coverage of antiretroviral therapy seems to be the crucial barrier in slowing down the HIV epidemics.



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MANY THANKS

Sergey Timonin
stimonin@hse.ru