Evaluation of infant death registration in Kyrgyzstan: Lessons learned

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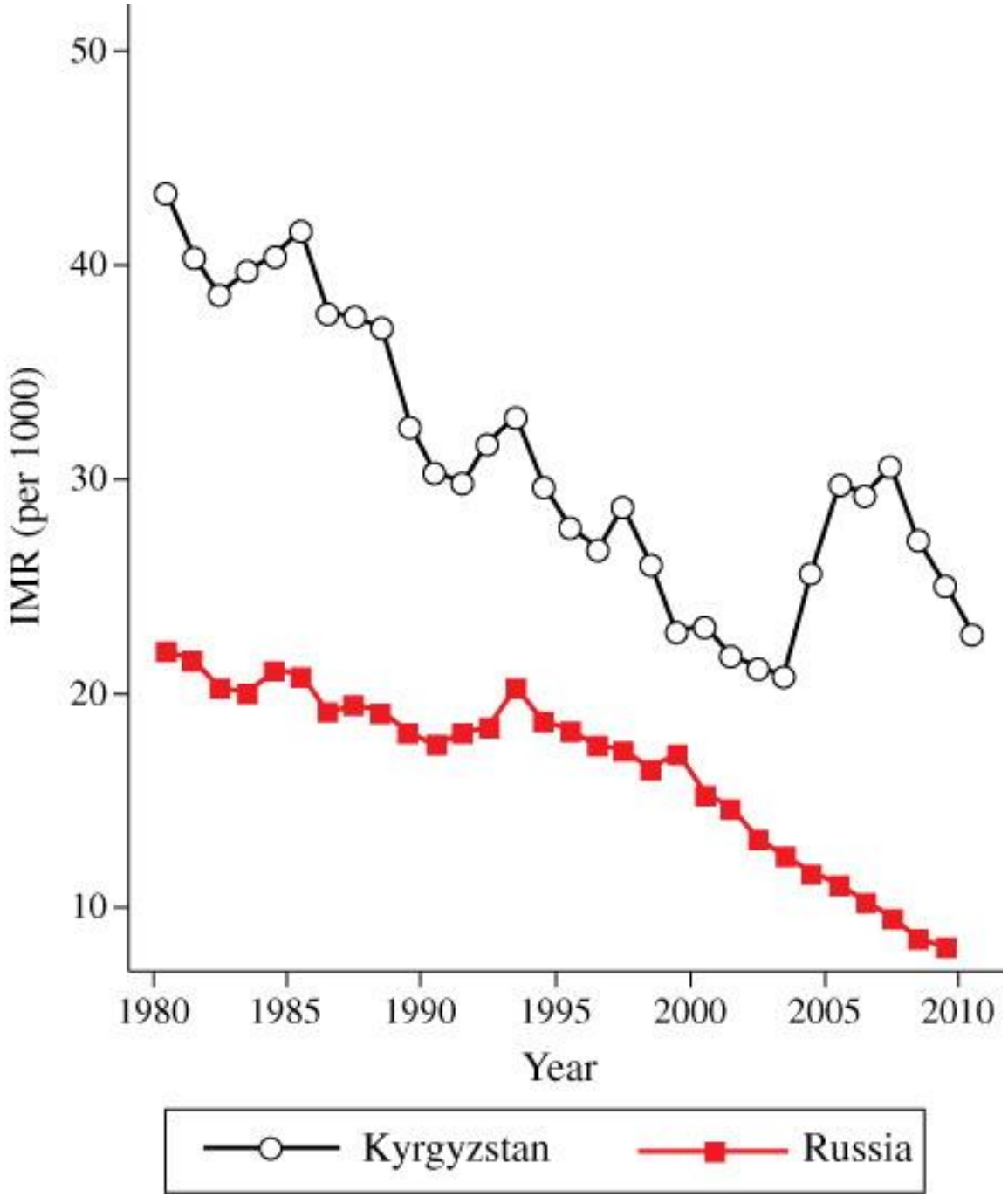
Background

- Study of infant mortality in Kyrgyzstan, in collaboration with National Statistical Committee (NSC) of the Kyrgyz Republic
- Main question: impact of the break-up of the Soviet Union on IMR patterns
- VR information indicated a continuation of prior declines in IMR after break-up (1991). Was this decline real or due to decrease in coverage?
- Use of all available sources, including detailed VR information
- Main purpose of the study was not to directly evaluate VR information, but as part of the study we identified problems with VR data and adjusted them
- Lessons learned with potential implications for other countries

VR-based IMR Russia vs. Kyrgyzstan

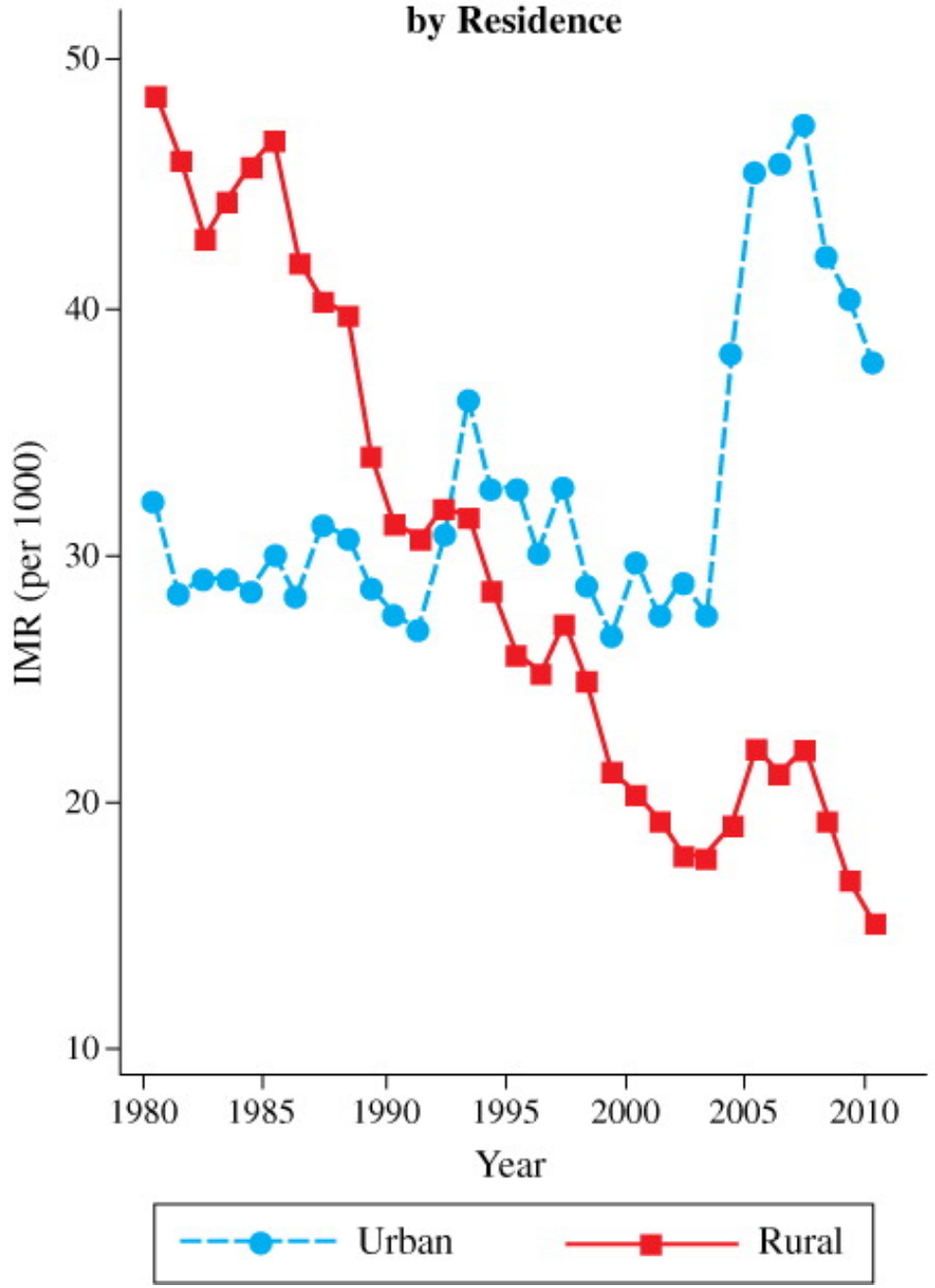


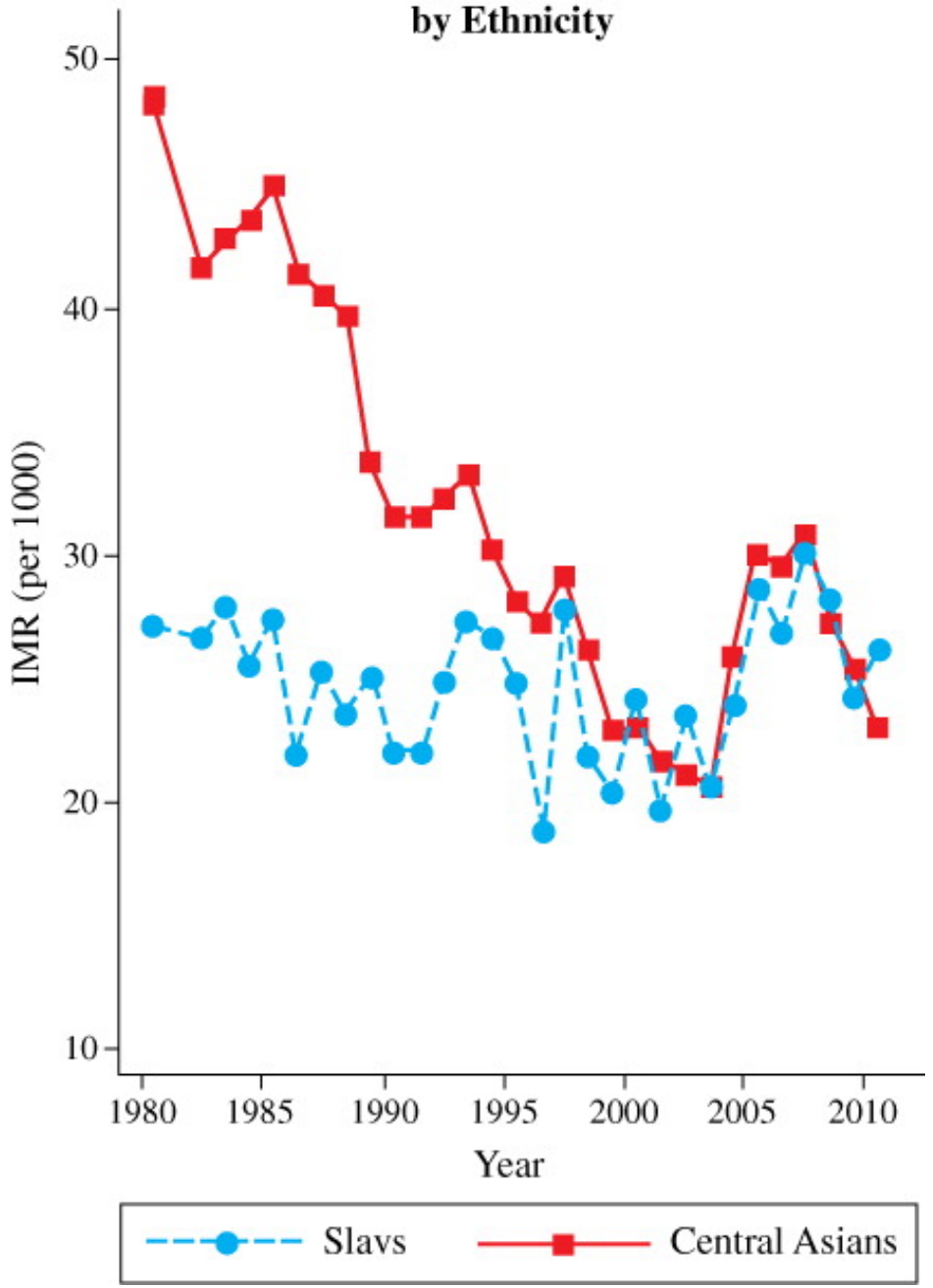
Sources of errors in VR infant mortality data in Kyrgyzstan

VR-based IMR levels too low due to following reasons:

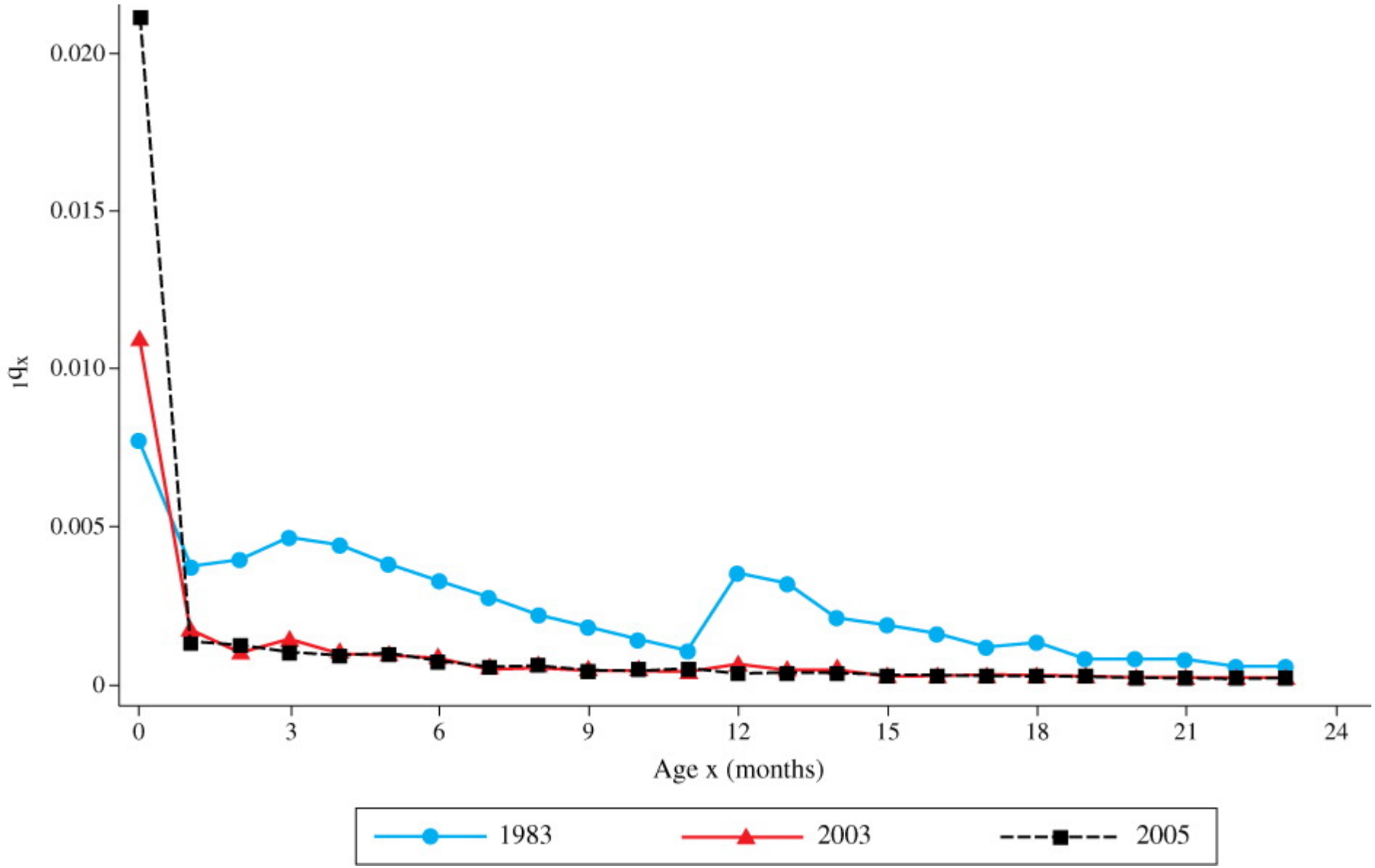
- Soviet vs. WHO definition of live births vs. stillbirths
- Undercount of deaths below age 1 (and corresponding births)
- Age misreporting of deaths (below age 1 vs. age 1 and above)
- Misattribution of urban/rural residence

VR-based IMR by subgroups in Kyrgyzstan





VR-based monthly probability of dying



Data sources

(1) Sample surveys (1997 DHS, 2006 MICS)

(2) 1989 and 1999 censuses

(3) Official vital registration data

- Sample surveys widely used, but drawbacks due to small sample sizes:
  - Difficult to detect short-term changes in IMR
  - Difficult to estimate trends for subgroups (urban/rural residence and ethnicity)

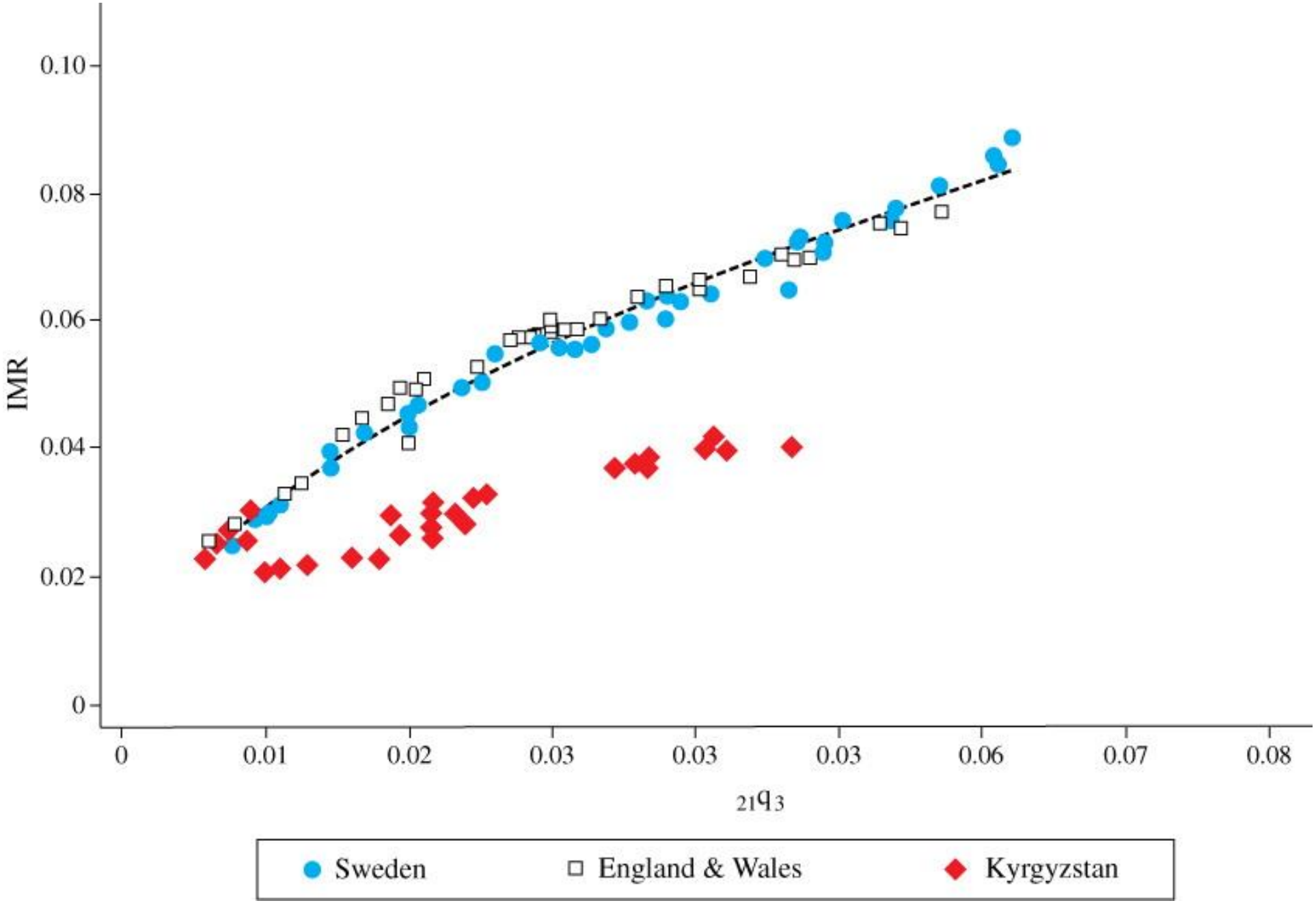
Correction using vital registration data

- Information on deaths by month of age
- Unpublished information obtained from NSC
- Calculation of 21q3 – the probability that a child who survived to age 3.0 months will die before age 24.0 months

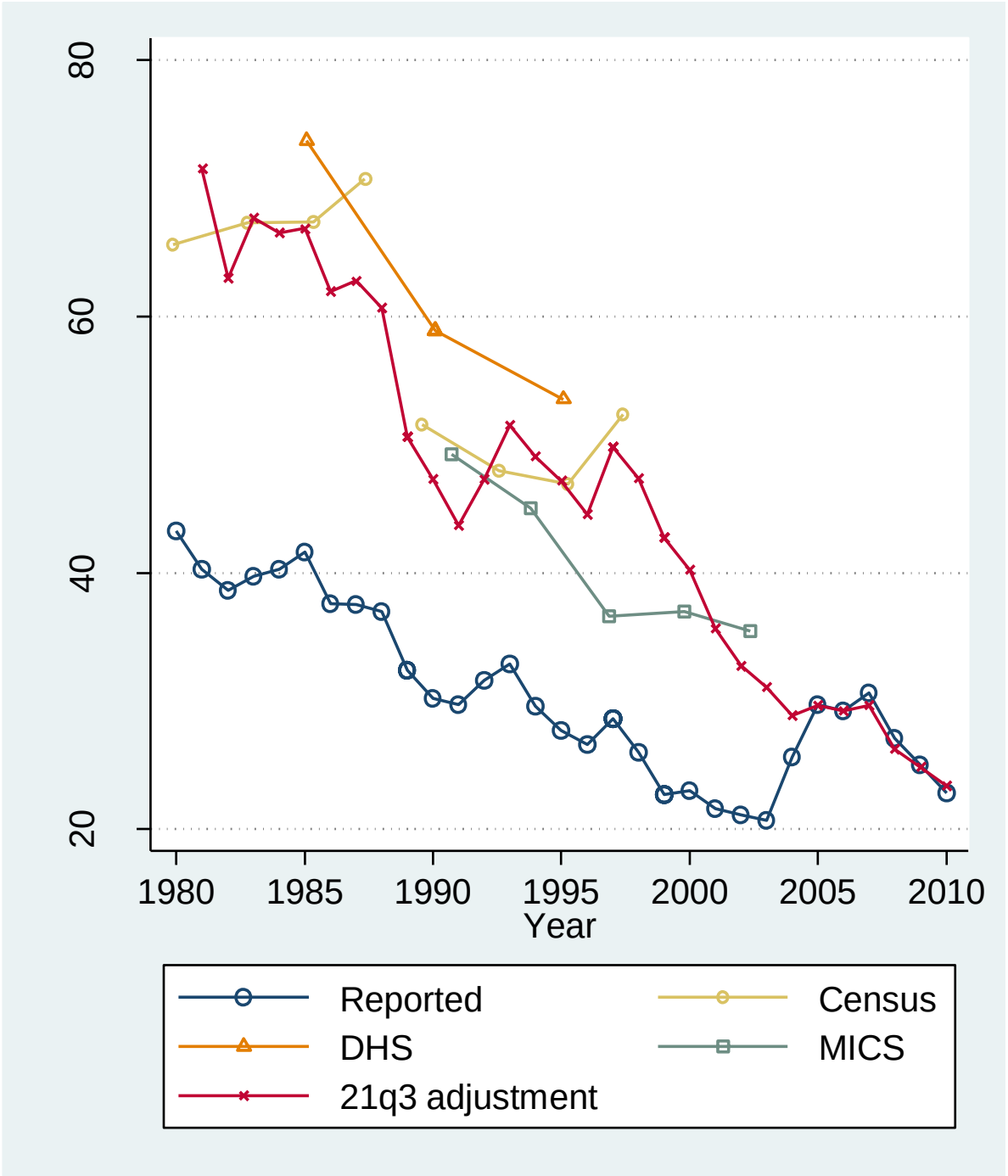
Approach using 21q3

- Reported 21q3 unaffected by:
  - Definition of a live birth vs. stillbirth
  - Undercount of deaths below 3.0 months and their corresponding births
  - Age misreporting within ages 3.0-24.0 months
- Reported 21q3 still affected by:
  - Undercount of deaths between ages 3.0-24.0 months
- Strong relationship between 21q3 and IMR
  - Use of relationship to adjust IMR on the basis of reported 21q3

Relationship between IMR and $_{21}q_3$



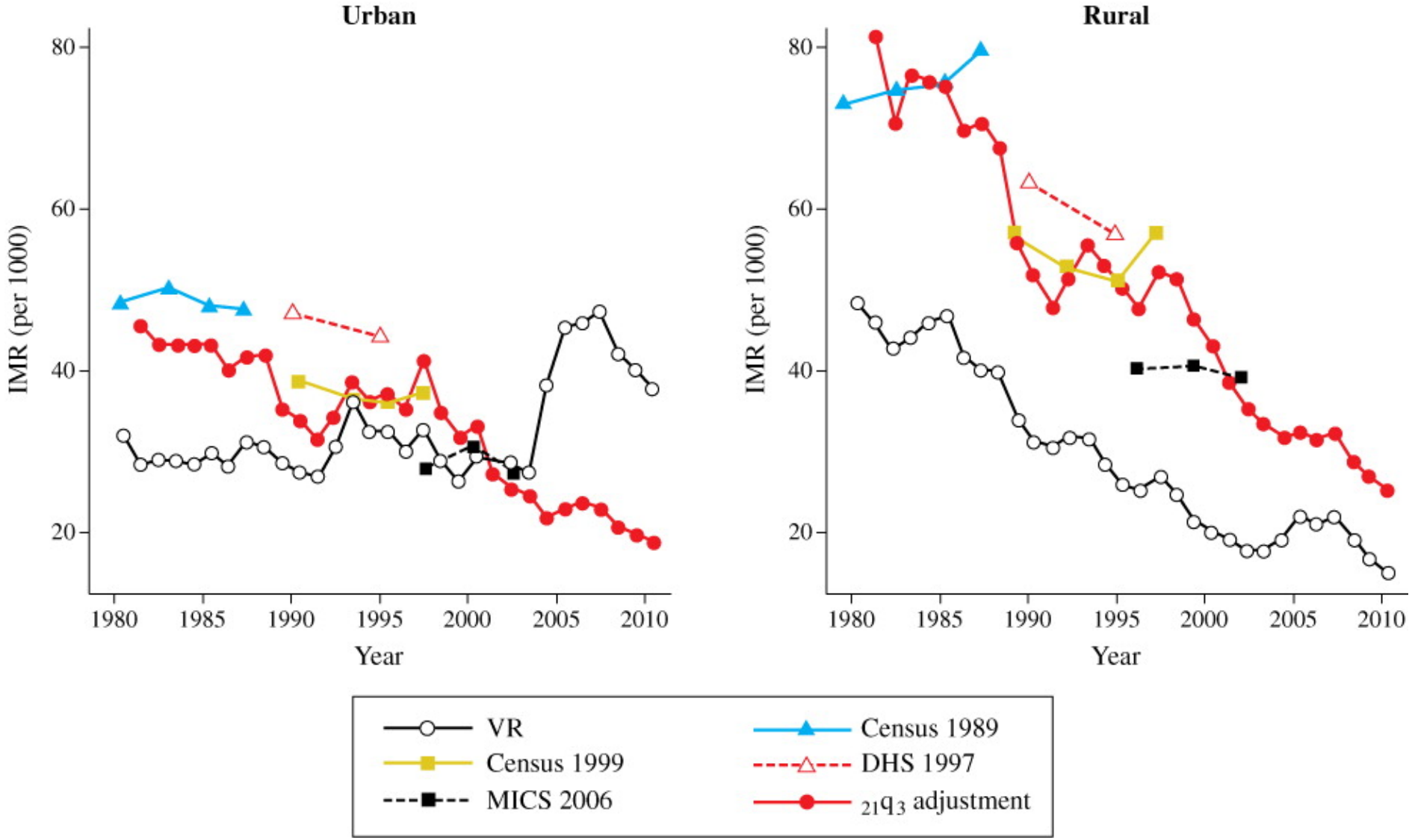
IMR, Kyrgyzstan



Findings

- Large underestimation of infant mortality in reported data (confirms and extends DHS results)
- Deterioration of quality in the 1990s, improvements in recent years
- IMR abruptly stalls in 1991-1999
- Reported decline spurious, due to deterioration of VR quality after 1991
- IMR resumes its decline after 1999

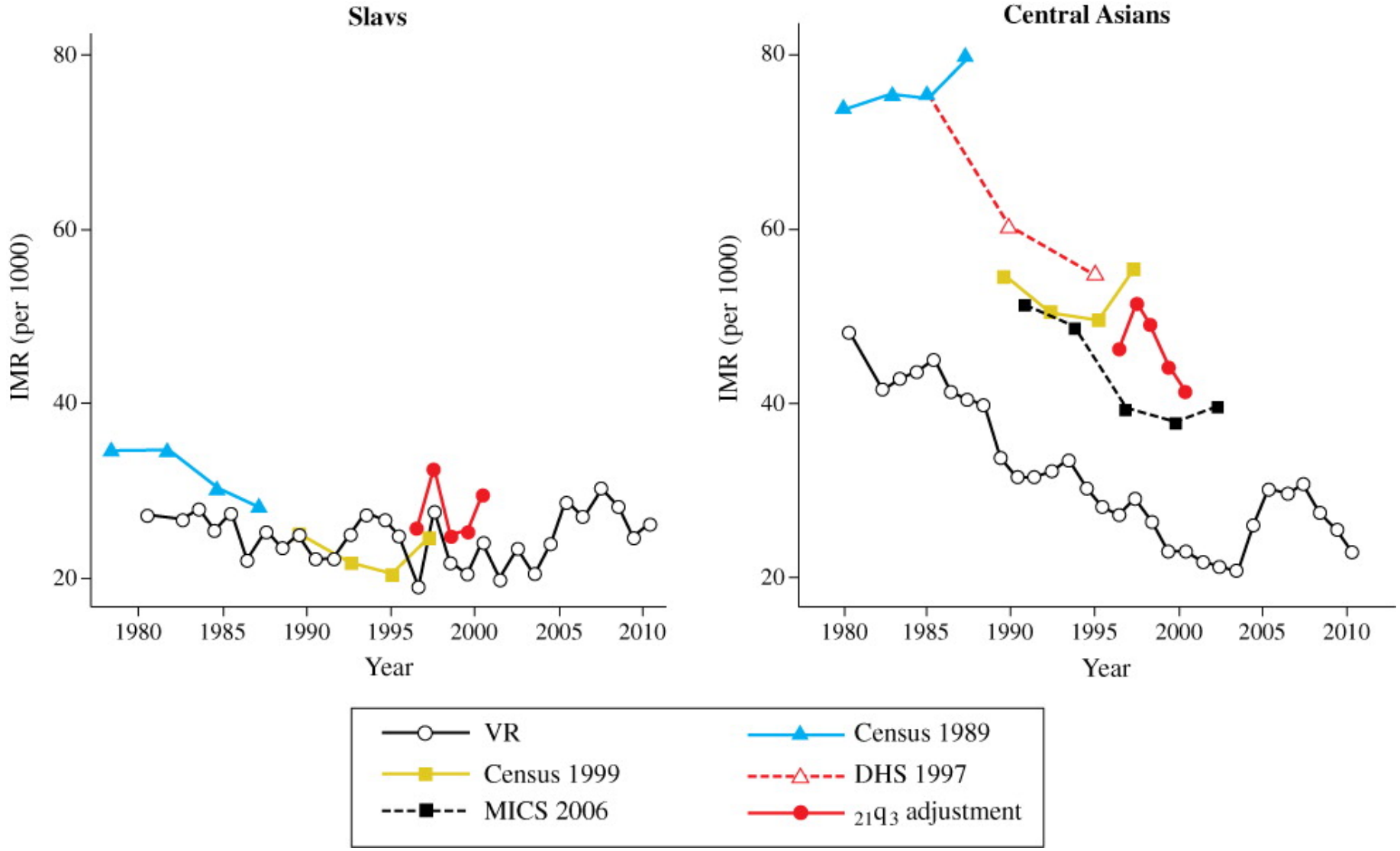
IMR, Kyrgyzstan, by residence



Findings

- No mortality advantage in rural areas
- Cross-over spurious, due to larger underestimation in rural areas
  - Larger undercount in rural areas
  - Up to 40% of actual rural deaths are misattributed to urban areas
- IMR stagnation in the 1990s visible both in urban and rural areas

IMR, Kyrgyzstan, by ethnicity



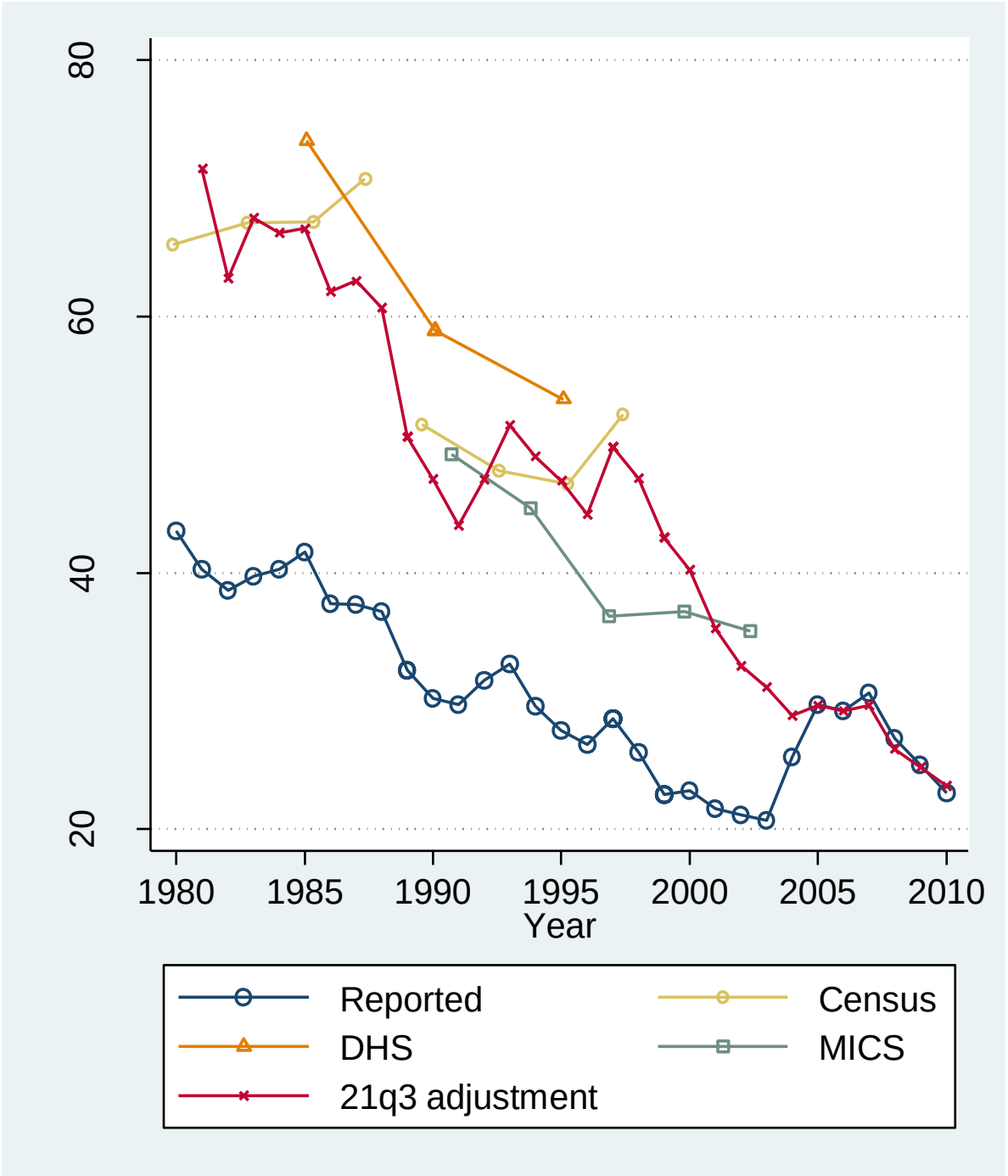
Findings

- No decrease in the gap between Slavs and Central Asians
- Central Asian ethnic groups (Kyrgyz, Uzbeks and Kazakhs) remain more at risk
- Larger underestimation among Central Asians

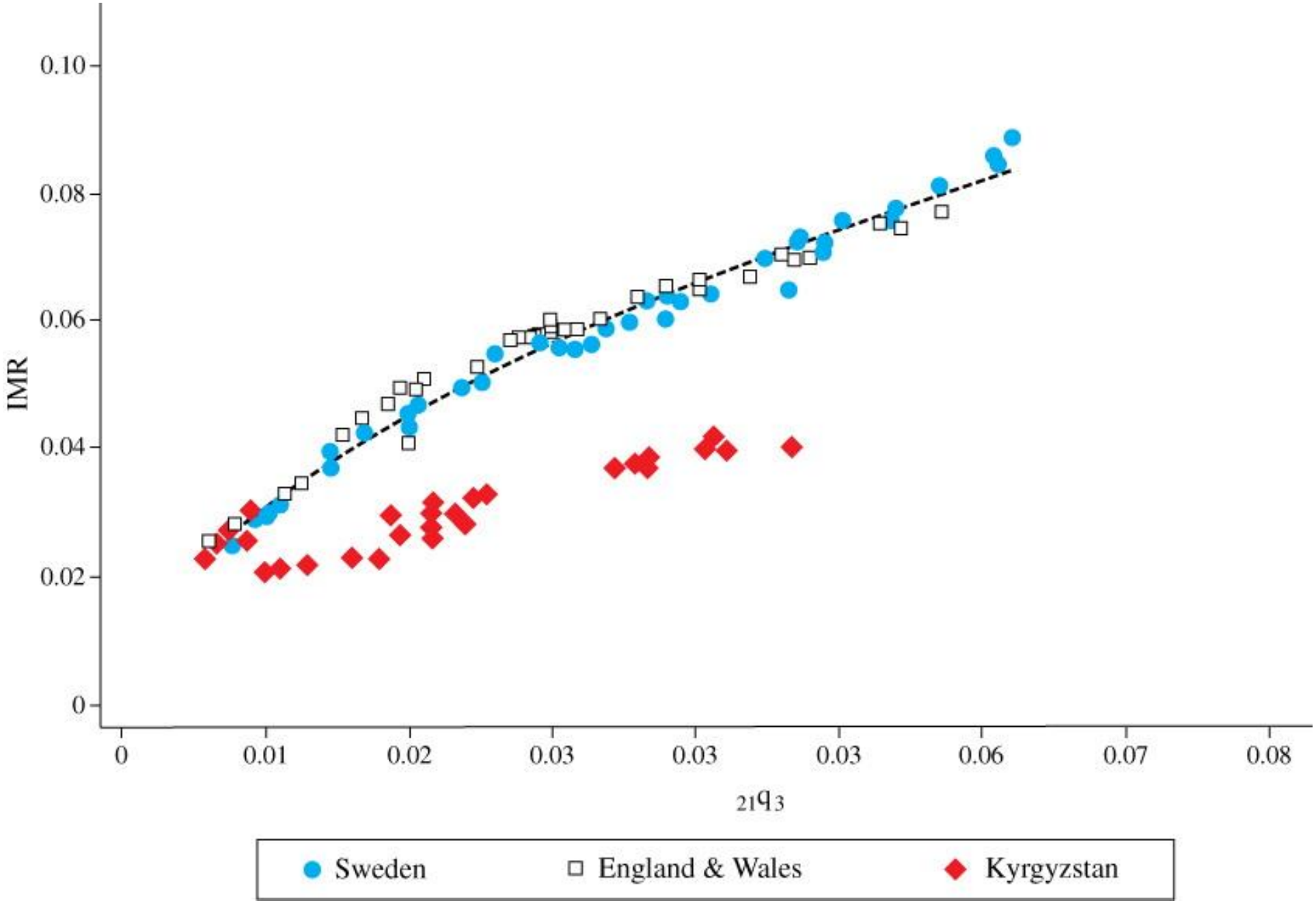
Impact of change of standard for classifying live births

- Adoption of WHO standard in 2004
- 42% increase in reported IMR in 2003 – 2006
- 21q3-based IMR estimates should not be affected if premise is true

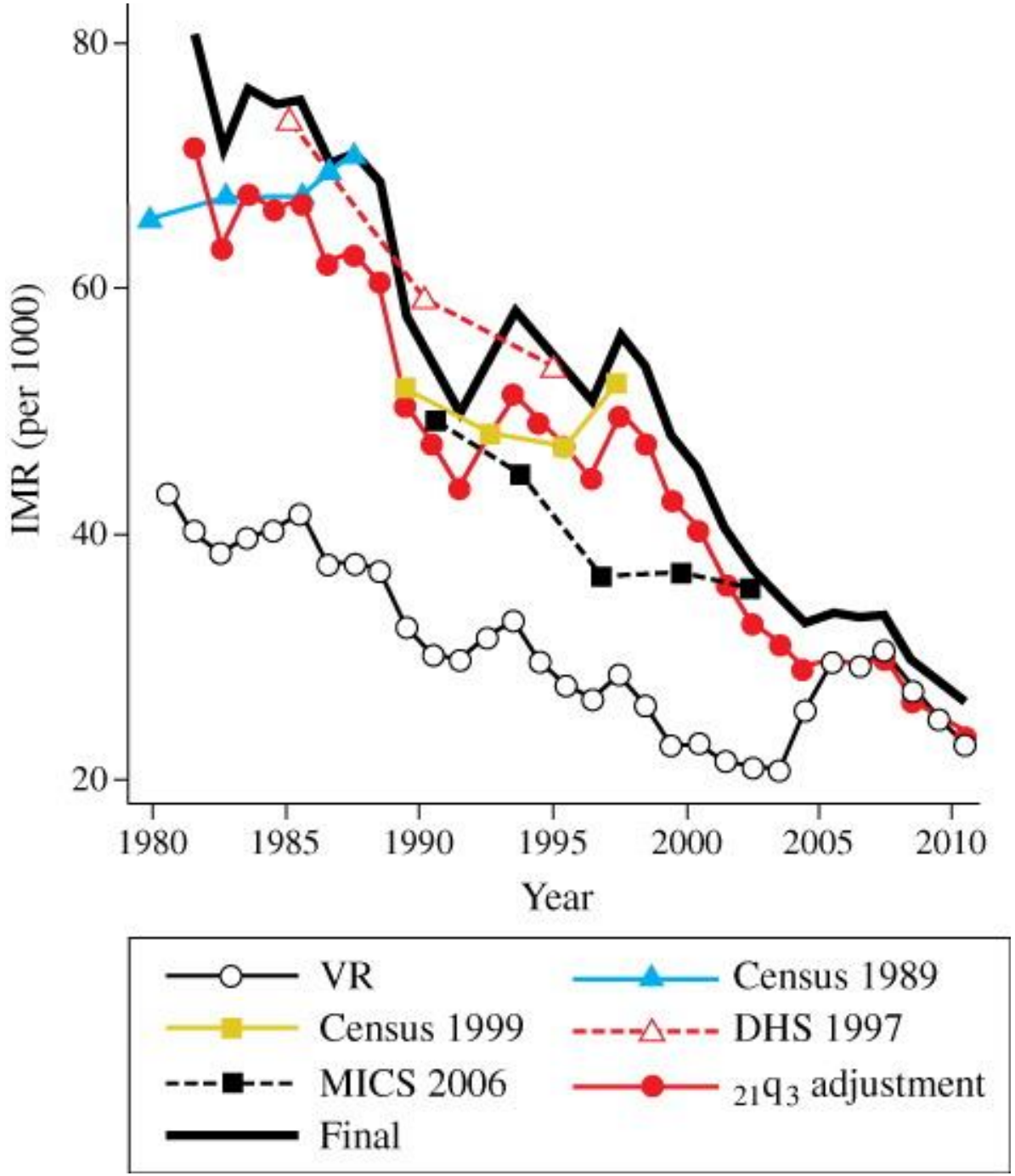
IMR, Kyrgyzstan



Relationship between IMR and $_{21}q_3$



IMR
Kyrgyzstan
Final adjustment



Main findings

- Contrary to what registration data indicate:
  - IMR abruptly stalled in Kyrgyzstan following the break-up of the Soviet Union
  - IMR remains higher in rural areas and among Central Asian ethnic groups
- Quality of VR data:
  - Deterioration in the 1990s (esp. in rural areas and among Central Asian ethnic groups)
  - Improvement since 2004
  - Reported IMR in 2010 still underestimated by about 11%

Lessons learned

- Poor quality of VR registration of infant deaths in Kyrgyzstan was not systematic but concentrated at some ages.
- Certain age ranges were of higher quality and could be used to adjust IMR using model age patterns. Approach reproduced direct/indirect estimates well for overlapping years.
- Advantages of VR adjustment vs. survey estimates
  - Detection of time patterns not apparent in survey information (stagnation of IMR following the break-up of the Soviet Union)
  - More up-to-date information (7 more years of data)
  - Estimation by sub-group
  - Adjustment based on locally-produced data; helped with strengthening CRVS

Remaining issues

- Model rudimentary, based on only two European populations
- Worked well in Kyrgyzstan where problems were concentrated at very young ages. How generalizable?
- Approach did not address uncertainty around adjusted estimates

Plans for future research and recommendations

- Expand model age patterns using a wider range of high-quality data
- Explore other entry points besides 21q3 that may be more relevant for other data circumstances
- Address uncertainty in adjusted estimates
- Examine which countries outside FSU region would most benefit from such an approach
- Encourage national statistical offices to publish more detailed age-specific information below age 5
- NIH R01 research proposal pending

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