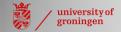


# Workshop of the EAPS Health, Morbidity and Mortality Working Group "Improving mortality forecasts" – 31 August 2016, Mainz

Discussion & Brainstorm session



#### Discussion and brainstorm session

Topics discussions (each 30 minutes)

- Including additional (epidemiologic) evidence when forecasting (reporter: Nikoletta Vidra)
- Coherent forecasting (reporter: Lenny Stoeldraijer)
- Forecasts using the age at death distribution instead of (log) age-specific mortality rates (reporter: Sergi Trias Llimos)
- Probablistic forecasting (reporter: Anastasios Bardoutsos)

15.30-16.00 Summary of the discussion based on reports



Coen van Duin

#### Proposed groups of participants for afternoon discussion

Alyson van Raalte



| Group A               | Group B                     | Group C              | Group D                    |
|-----------------------|-----------------------------|----------------------|----------------------------|
| Jon Anson             | Lajos Balint                | Sam Hyun Yoo         | Gbemisola Adetoro          |
| Tommy Bengtsson       | Ugofilippo Basellini        | Ilya Kashnitsky      | Michael Boissonneault      |
| Heather Booth         | Marie-Pier Bergeron Boucher | Kamellia Lillova     | Edviges Coelho             |
| Giancarlo Camarda     | Agnieszka Fihel             | Vera Graovac Matassi | Viorela Diaconu            |
| Vladimir Canudas Romo | Alla Ivanova                | Ross McMillan        | Klára Hulíková             |
| Marianne Frank Hansen | Søren Kjærgaard             | Anthony Medford      | Ahbab Mohammad Fazle Rabbi |
| Örjan Hemström        | Melissa C.B.S.Lima          | Tamara Sabgayda      | Nanditia Sankia            |
| Fanny Janssen         | Indera Literato             | Jeroen Spijker       | Victoria Semyonova         |
| Giampaolo Lanzieri    | Michael Mühlichen           | Sergey Timonin       | Pia Wohland                |
| Roland Rau            | Laszlo Nemeth               |                      |                            |
| Valentin Rousson      | Sarahi Rueda Salazar        |                      |                            |





- Group A: convergence; age-at death distribution; epidemiologic info; probabilistic
- Group B: age-at death distribution;
   epidemiologic info; probabilistic; convergence
- Group C: epidemiologic info; probabilistic; convergence; age-at death distribution
- Group D: probabilistic; convergence; age-at death distribution; epidemiologic info



#### Some teasers (1)

- Coherent Forecasts: are highly dependent on the selection of within-group populations. The trend for the within-group populations should be "cleaned" from lifestyle "epidemics".
- Including (epidemiologic) evidence: is actually more about excluding. To identify the most robust long-term trend to base the projections on, we should first exclude the effects of determinants with very irregular trends.



#### Some teasers (2)

- Mortality projections using the patterns in the age-at-death distribution (compression, delay) are an improvement over the Lee-Carter framework
- Probabilistic: have the tendency to ignore the effect of explicit assumptions, such as the calibration period and the within-the group populations



### Key messages Convergence

- How to choose the within-group population? Optimal group is country specific
- Epidemics are still there, even if you take the average
- Not only pooling, but also alignment is important (or some smoothing)
- Errors are homogenous for the whole group: important for coherent forecasts
- How can we clean the group? Differences in epidemic development around the world, very different between countries
- A lot of countries give enough heterogeneity



#### Key messages Probabilistic forecasts

- Assumption on fitting period does not depend on the calibration technique.
- Prior knowledge vs Expert knowledge.
- Projection intervals and higher uncertainty.
- Give more weight in recent years.
- Sensitivity of parameters in fitting period.



### Key messages Epidemiologic info

- Instead of removing evidence with irregular trends, include variables with regular trends
- Dummy variables as policy effects, legislations(include)
- Counterfactual analysis: exclude causes of death from the analysis(e.g. smoking, drinking, smoking+ drinking)
- Consider epidemics relevant for countries, e.g. HIV in Africa
- At what a threshold is an epidemic important and predictable?
- Include epid. Information (covariates) in disease-specific models is OK, but for all-cause mortality not. In the latter case we need to exclude epidemics
- Medical care/ SES improvements should be considered differently (not excluded)



## Key messages Forecasts using other measures

- Compression-delay
- Model mortality before, and after the mode age at death (or even using a large number of groups)
- Using other indicators: e0, e0 rates, age at which RLE=15, or RLE at modal age-at-death
- In model with multiple parameters:
  - Correlation between them
  - More sensible to the time period used?