

European monitoring of excess mortality for public health action

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This project has received funding from the European Union,
in the framework of the Public Health Programme



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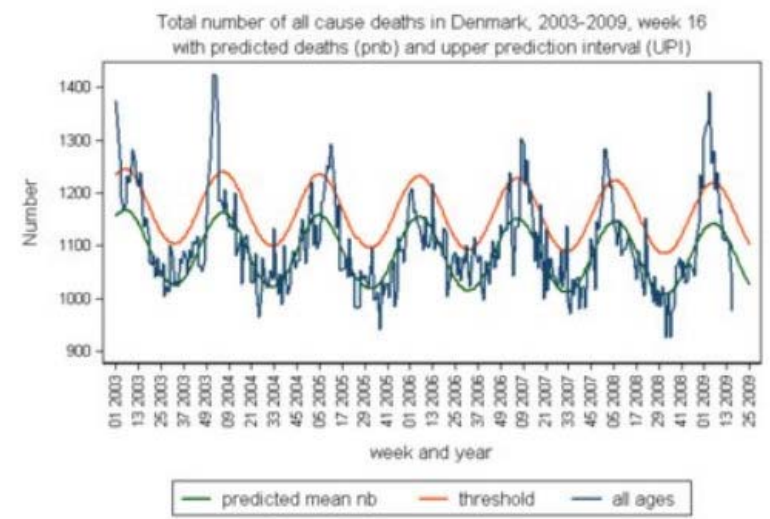
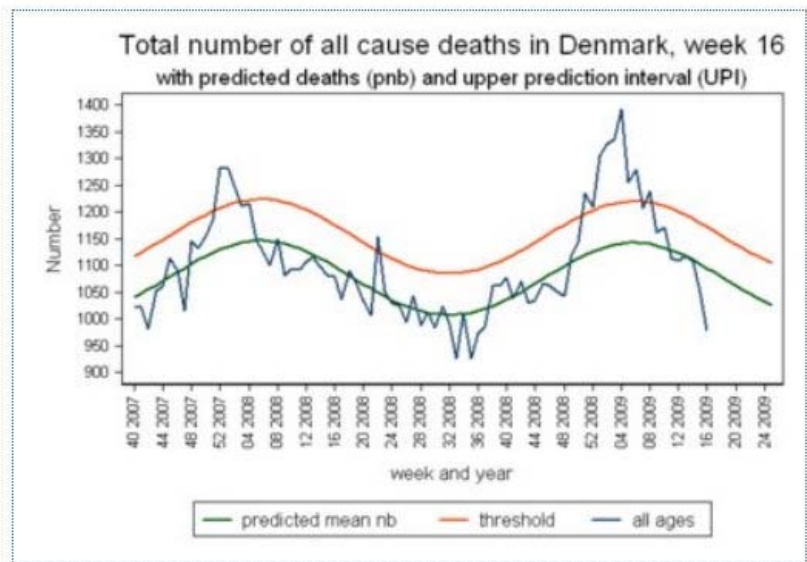
Danish Mortality Monitor

Navigation

- Danish Mortality Monitor - Test site
- Winter season 2008/2009
- Sitemap
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[Danish Mortality Monitor - Test site](#) > [Winter season 2008/2009](#) >

week 16 2009



Monitoring = Surveillance

Principle: Observed – expected deaths = excess deaths

Why mortality monitoring?

- Timely detection and measuring of excess all-cause deaths
 - Add-on to seasonal influenza surveillance
 - Measure of severity and burden
 - **Monitor excess deaths in a pandemic**
 - **Impact on population groups**
 - **Monitor progression**
 - Impact of heat waves
 - Control rumours

European added value of a common approach

- Compare excess mortality in different populations
- Complex methodology
- Hard to explain differing or opposing findings if different methods are used

EURO-MOMO project

- Feb 2008 – Jan 2011
- Funded under Commission's Community Public Health Programme
- Health threat strand
- Priority area: Capacity to deal with a pandemic influenza and tackle particular health threats

EURO-MOMO partners

Country	Acromym
Associated partners	
Belgium	IPH Brussels
Denmark	SSI Copenhagen
Finland	KTL Helsinki
France	InVS Paris
Germany	HLPUG Dillenburg
Greece	UPatras Patras
Iceland	ICE Reykjavik
Ireland	HPSC Dublin
Italy	ISS Rome
Netherlands	RIVM Bilthoven
Norway	NIPH Oslo
Portugal	INSA Lisboa
Slovenia	IVZ Ljubljana
Spain	ISCIII Madrid
Sweden	SMI Stockholm
Sweden	SoS Stockholm
UK	HPA Collindale
Collaborating partners	
Czech Republik	NIPH Prague
Estonia	HPI Tallin
Germany	RKI Berlin
Swiss	BAG Bern
Slovakia	ROPH Banska Bystrica
Israel	Israel CDC
Scotand	HPS Glasgow

21 European countries,
24 partners

- Area size: From large to smaller
- Population size: From large to smaller
- Population density: From densely populated to sparsely populated
- Location: From North to South and from West to East

- Project Hub: SSI Copenhagen
 - Leader: Kåre Mølbak
 - Coordinator: Anne Mazick

General objective

- To design a routine PH mortality monitoring system aimed at detecting and measuring
- on a “real-time” basis
- excess number of deaths related to influenza and to other infectious or non-infectious public health threats with a severe impact.
- across participating European Countries.

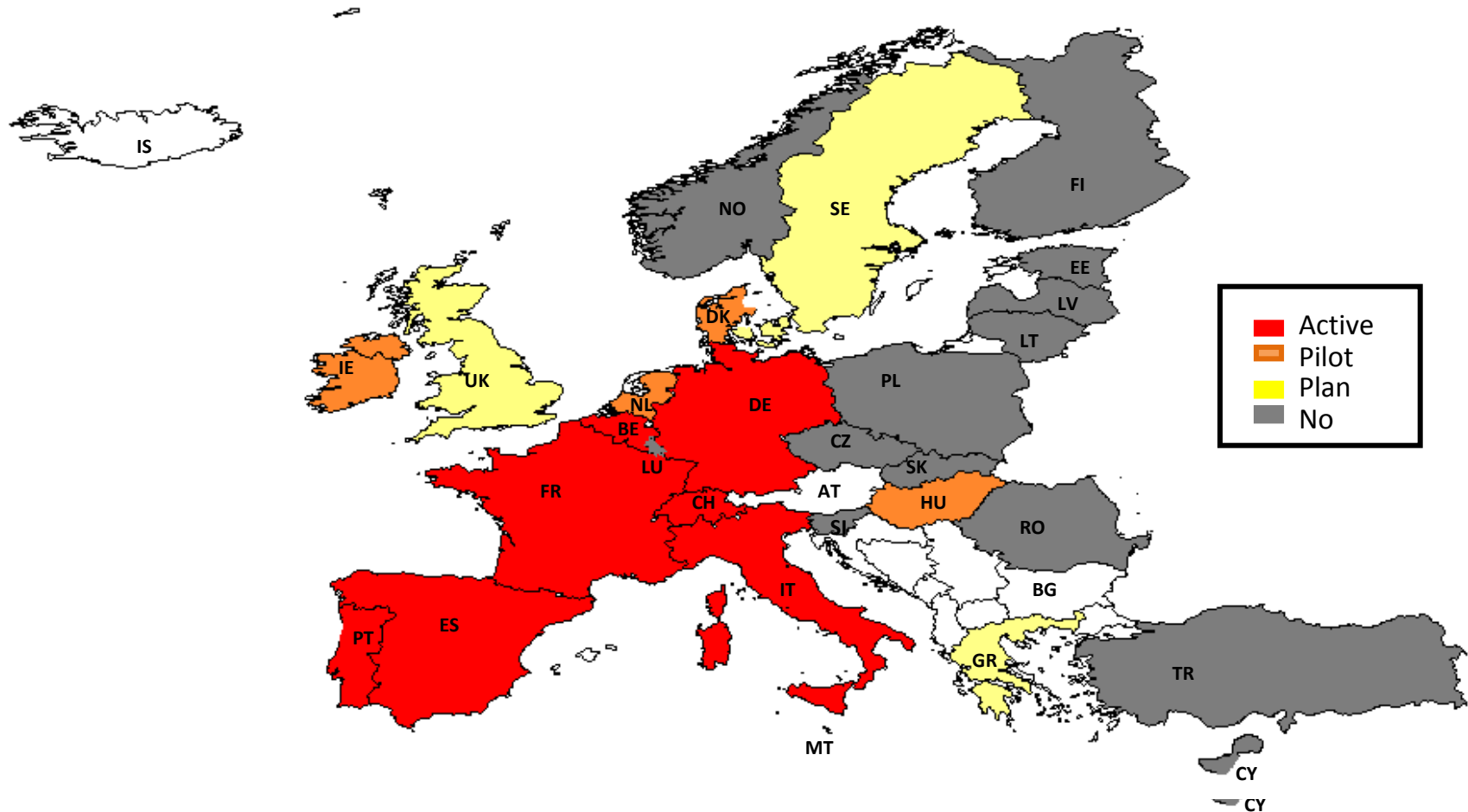
Key outputs

- Robust, simple consensus model (s)
 - Weekly, all cause death by age groups
 - Countries can complicate as much as they want
 - Piloted and ready-to-implement
 - Applicable all over Europe
- Demonstrate the usefulness of mortality monitoring
- Facilitate mortality monitoring to spread to many, if not all member states.

Main actions

- Inventory of existing and planned activities
- Definition of minimal requirement for a mortality monitoring system
- Understanding crude mortality: analysis of retrospective data
- Identification of a uniform analytical approach
- Piloting a consensus system for real-time mortality monitoring in several European countries

Mortality Surveillance Systems in Europe



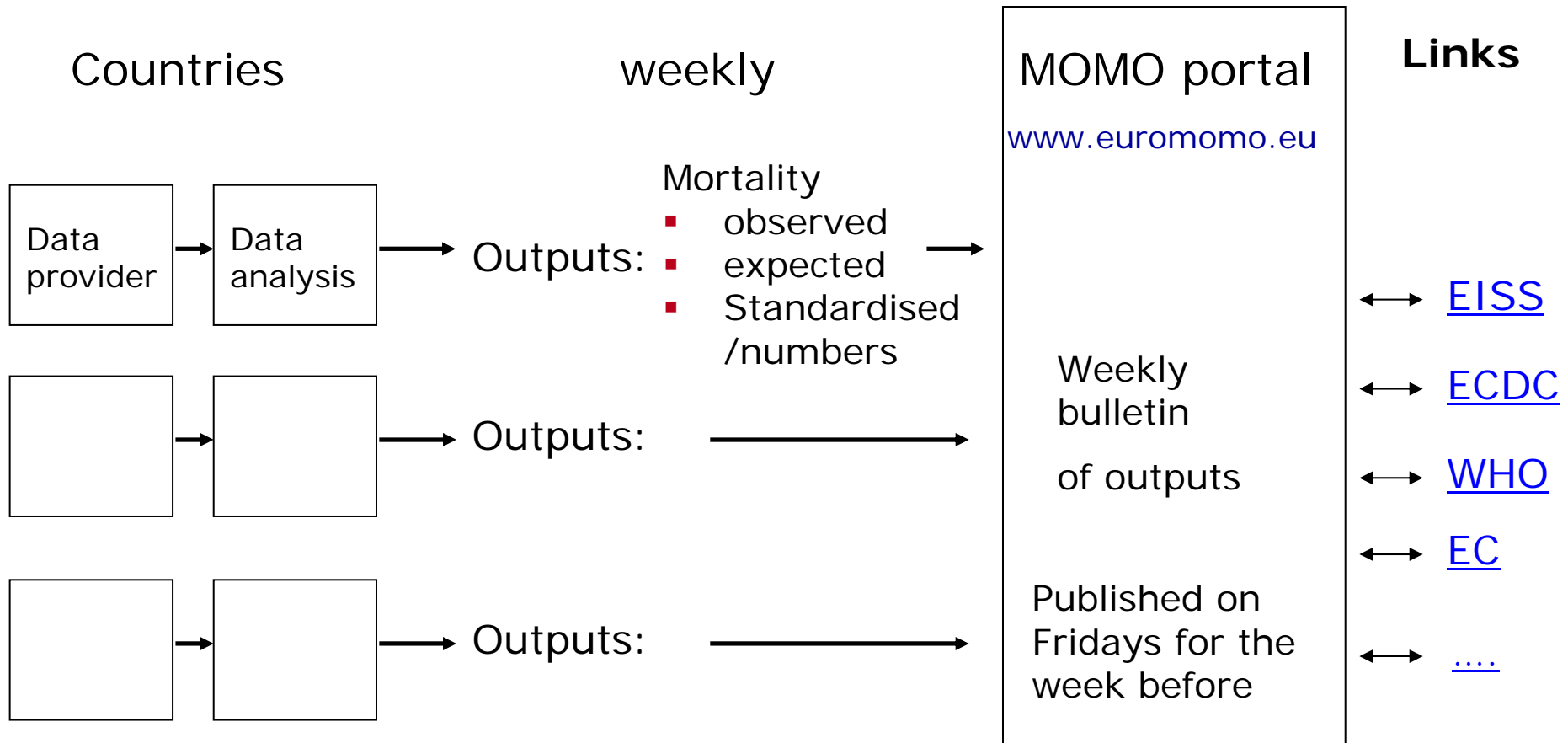
Influenza A(H1N1)v

- Acceleration of EuroMOMO pilot
 - Starting “emergency” mortality monitoring in Europe
 - A ready-to-implement package available in June
 - Simple system, evaluation and refinement “on-the-go”
- Ireland, Spain, France, Belgium, Denmark and Israel first countries to implement

Ready-to-implement EuroMOMO package

- Minimum data input specifications
- Robust, simple regression model
 - Available in Stata and in other languages as required (SAS, R, SPSS,)
 - Countries to analyse own data using common model
- Output specification
 - National and European outputs
- Technical support from the project hub

European monitor: country model



Requirements for data input

- Two objectives
 1. Early detection
 2. Measuring impact

- For objective 1:
 - Adjustment for delay: requires individual data (date of death, date of registration)

- Weekly all-cause mortality data
 - Total
 - by age group
 - By region (additional)

- 3 years historical data

- Risk assessment capability

EuroMOMO Algorithm

- Cyclical Poisson regression model
 - Terms for trend and season
- Fitted on weekly all-cause mortality during spring and autumn to exclude winter outbreaks
- Reference period: last 3-5 years (minus last 12 weeks)
- Adjustment for delay

Outputs

- Many indicators possible
 - Standardized mortality for comparison across Europe, e.g.
 - Standard variations (z-score) from the baseline
 - Real numbers
- Age-groups (years):
 - <1, 1-4, 5-14, 14-44, 45-64, 65-74, 75-84, 85+
 - EISS age groups: 0-4, 5-14, 15-64, 65+
- Regional mortality

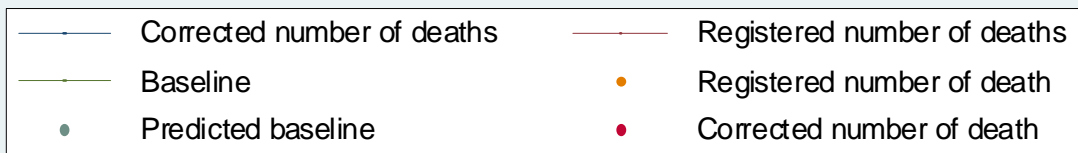
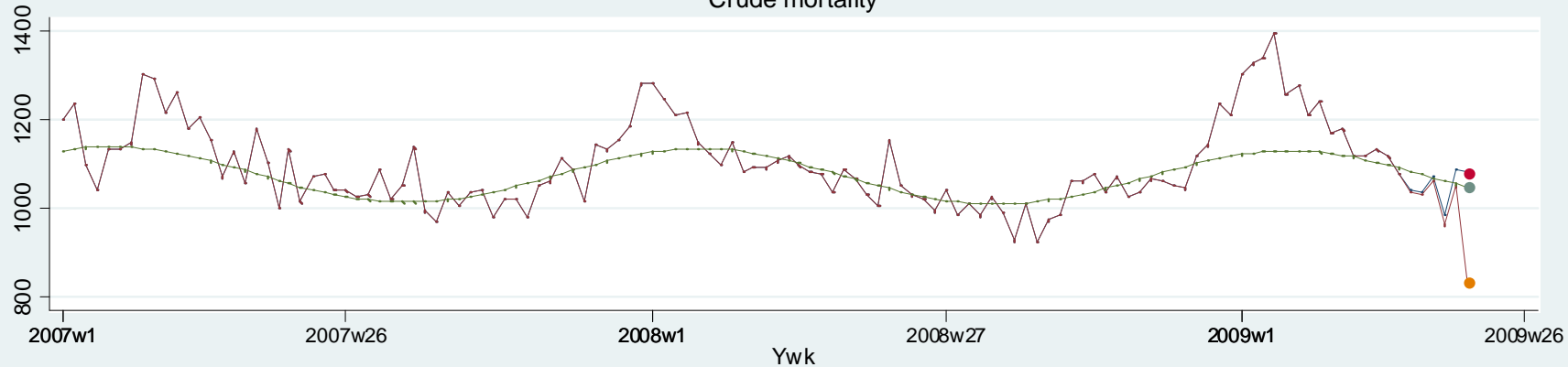
- According to National and European user needs

First outputs on on www.euromomo.eu

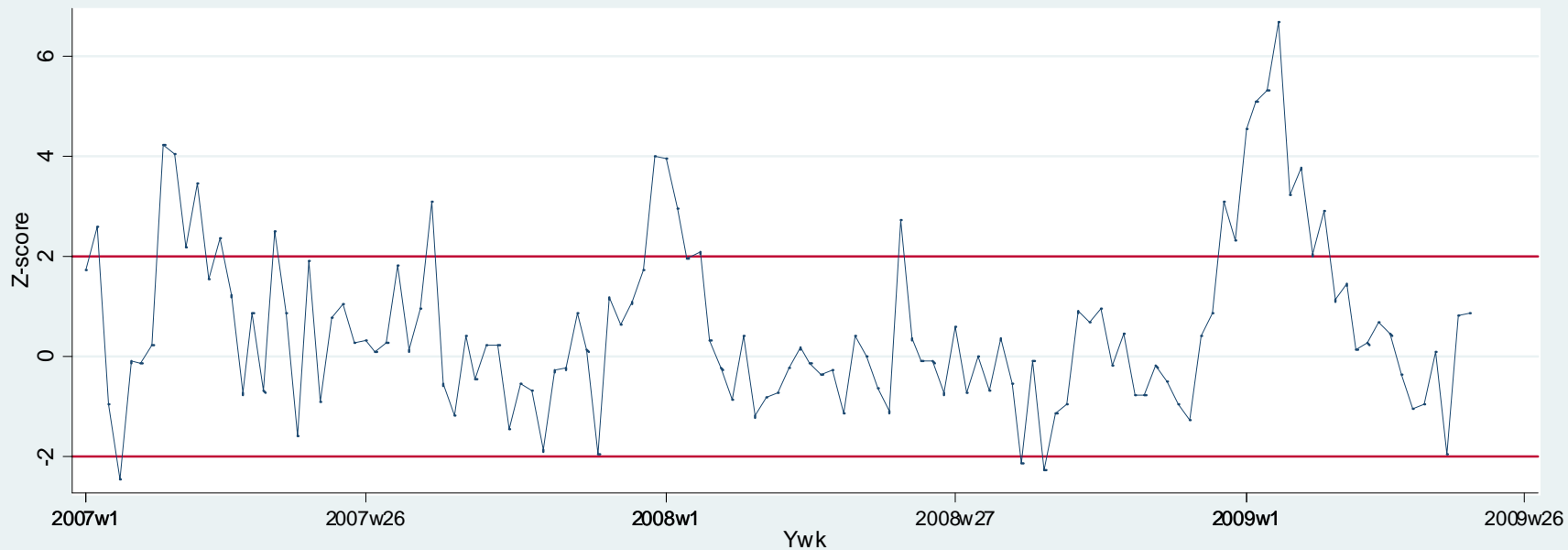
- Start during June
- Building database at SSI for European outputs
 - TESSy, EISS platform compatibility
- Weekly update, e.g. every Friday for previous week = simultaneous with Influenza Bulletin of ECDC/WHO Europe
- Weekly peer reviewed bulletin
- Standard indicators on the public website (z-score)
- Mortality numbers on the restricted website
- Access to restricted website:
 - Pilot countries
 - MOMO partners
 - ECDC
 - WHO Europe
-

Mortality in Denmark, year 2009 week 22

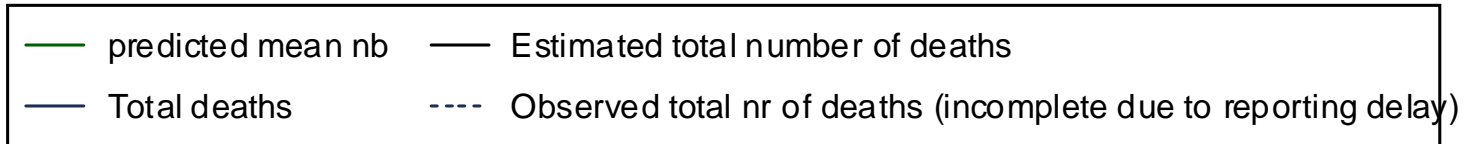
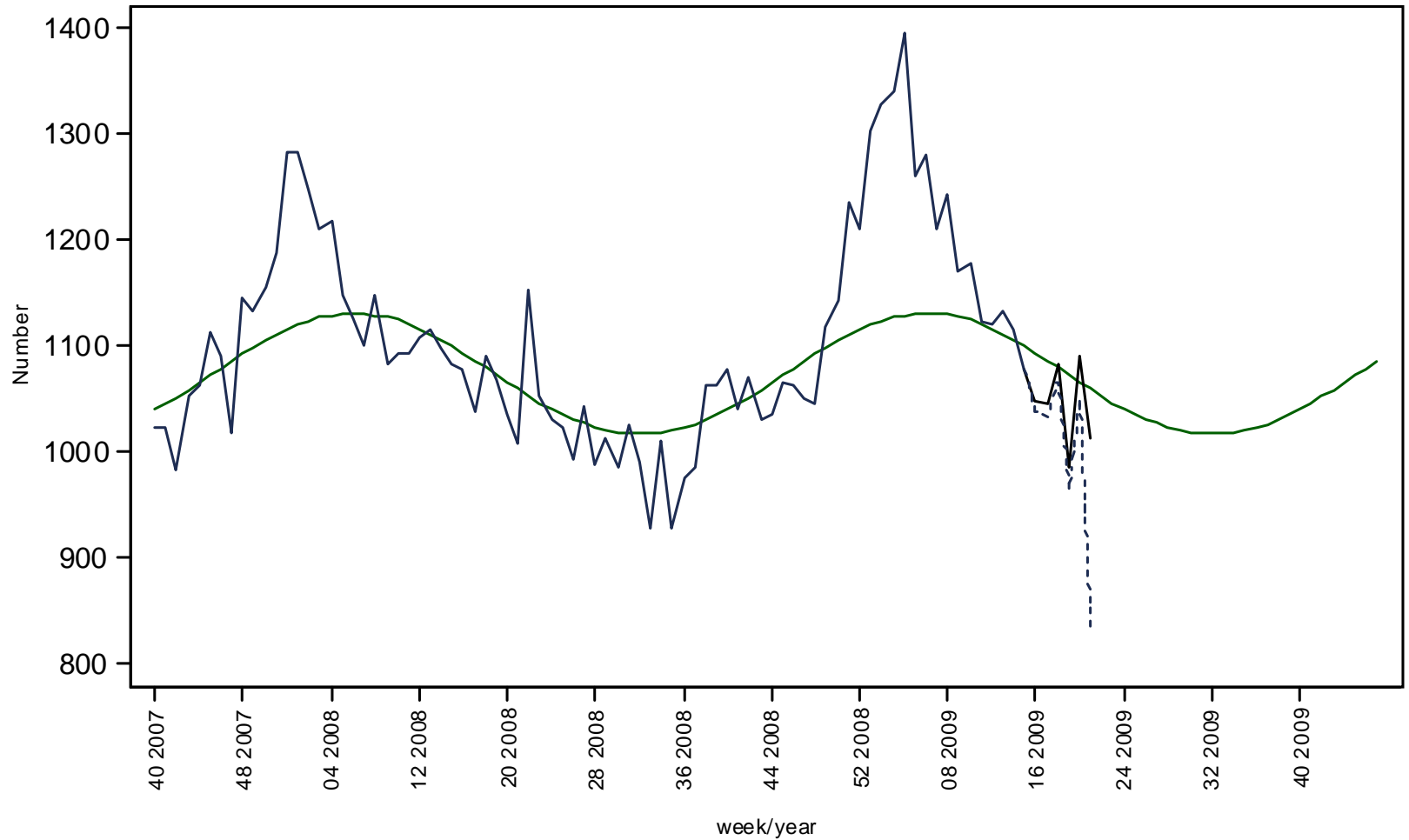
Crude mortality



Standardised deviation from the baseline



Weekly number of total deaths, Denmark, 2003 – week 22 2009



European output specifications

- Dialog with national and European MOMO system users
- Agree on most useful indicators and outputs
- Publication and data protection issues, public and restricted
- Start simple, refine according to needs
- Frequent evaluations
- Definitions needed, e.g.
 - Definition of excess, flagging, cumulative mortality for measuring impact
 - Age groups

Timeline

- Sept 09: Evaluation workshop EuroMOMO
- Oct 09: Revised pilot system implemented in all pilot countries
- March/April 10: 3rd plenary meeting
- Sept 10: Europe-wide workshop
 - Targeted at data providers and the end users of EuroMOMO
 - Share results, transfer knowledge
 - Detail future of MOMO in Europe

Piloting a consensus system for mortality monitoring

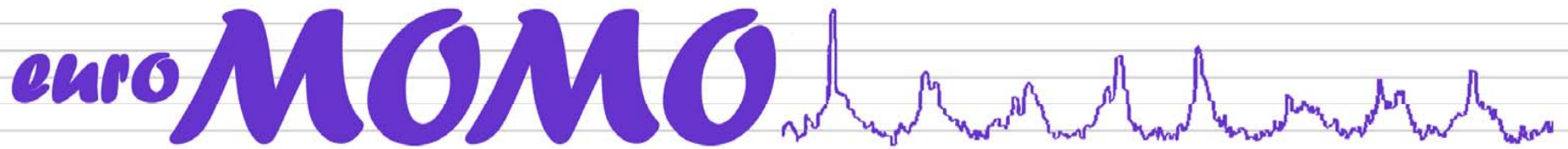
Pilot countries (12)

- Belgium
- Denmark
- France
- Ireland
- Norway
- Malta
- Portugal
- Scotland
- Slovenia
- Spain
- Sweden
- Switzerland

- Pilot regions of
 - Germany
 - Greece
 - Israel
- Possibly pilot countries
 - Estonia
 - The Netherlands
 - UK
- Pilot countries can join anytime
- Aim for at least 1 year pilot from 1 Oct 2009

Future after the project phase

- Sustainability at national level
 - Mortality monitoring systems to be sustained as part of their ordinary health monitoring and preparedness activities.
- Sustainability at the European level
 - future project, e.g. under ECDC or the Public Health Programme to coordinate national systems and the ongoing pooling of European data.
- Expansion to other countries (European region and beyond)
- Follow-on project(s) for the “beyond the scope” issues e.g. inclusion of influenza and temperature, daily reporting etc

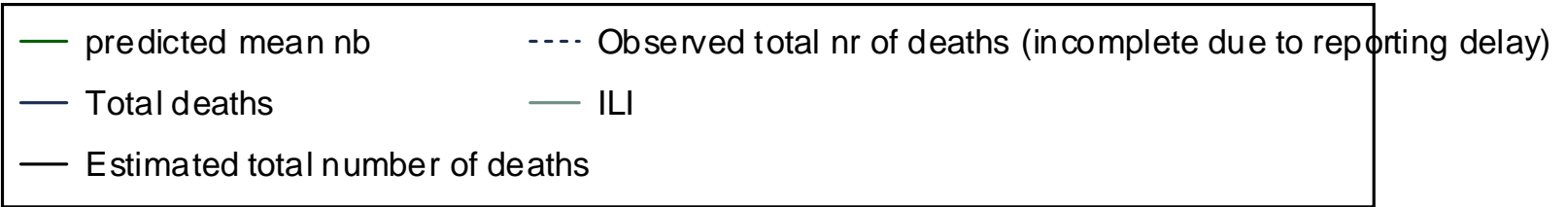
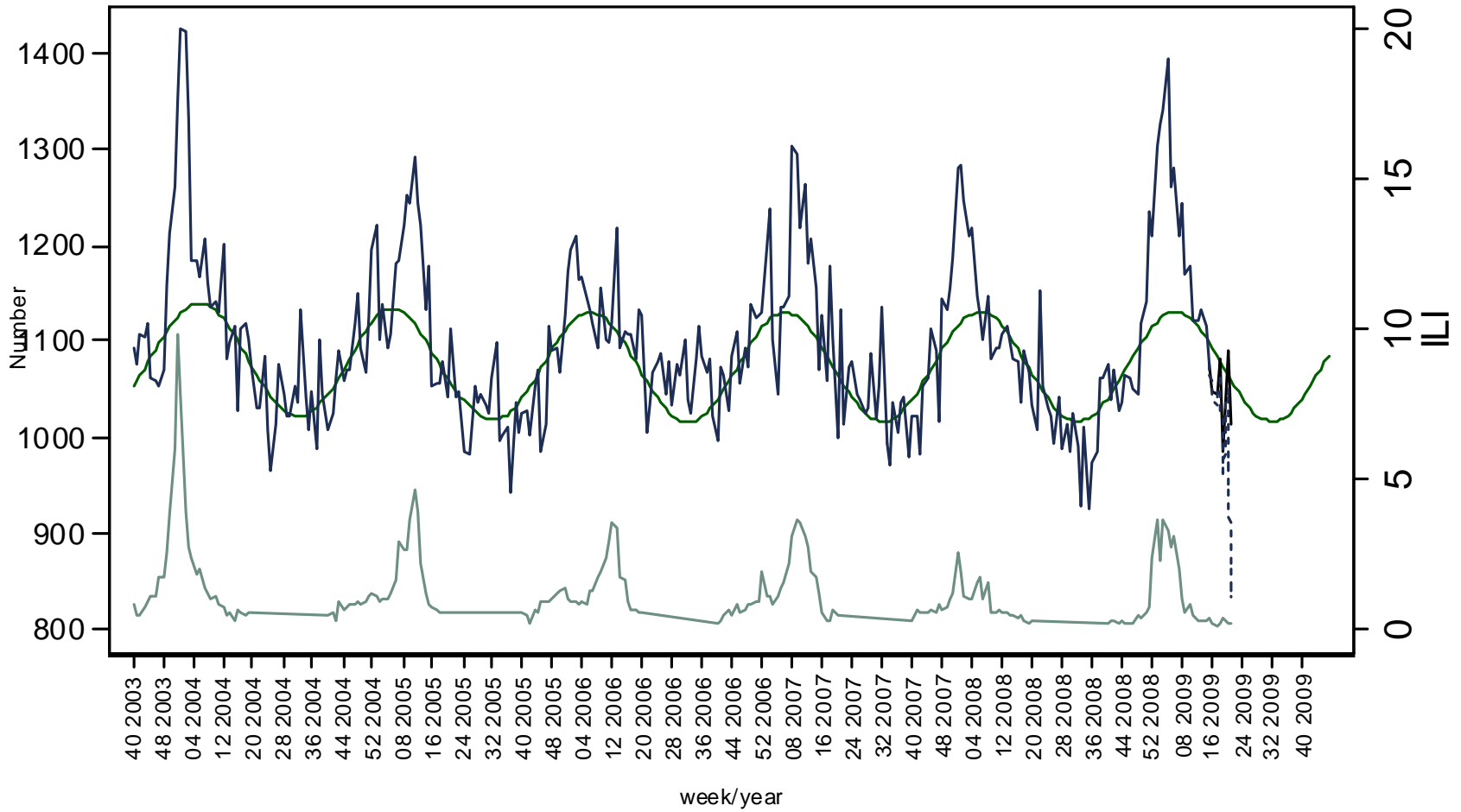


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Thank you!

www.euromomo.eu

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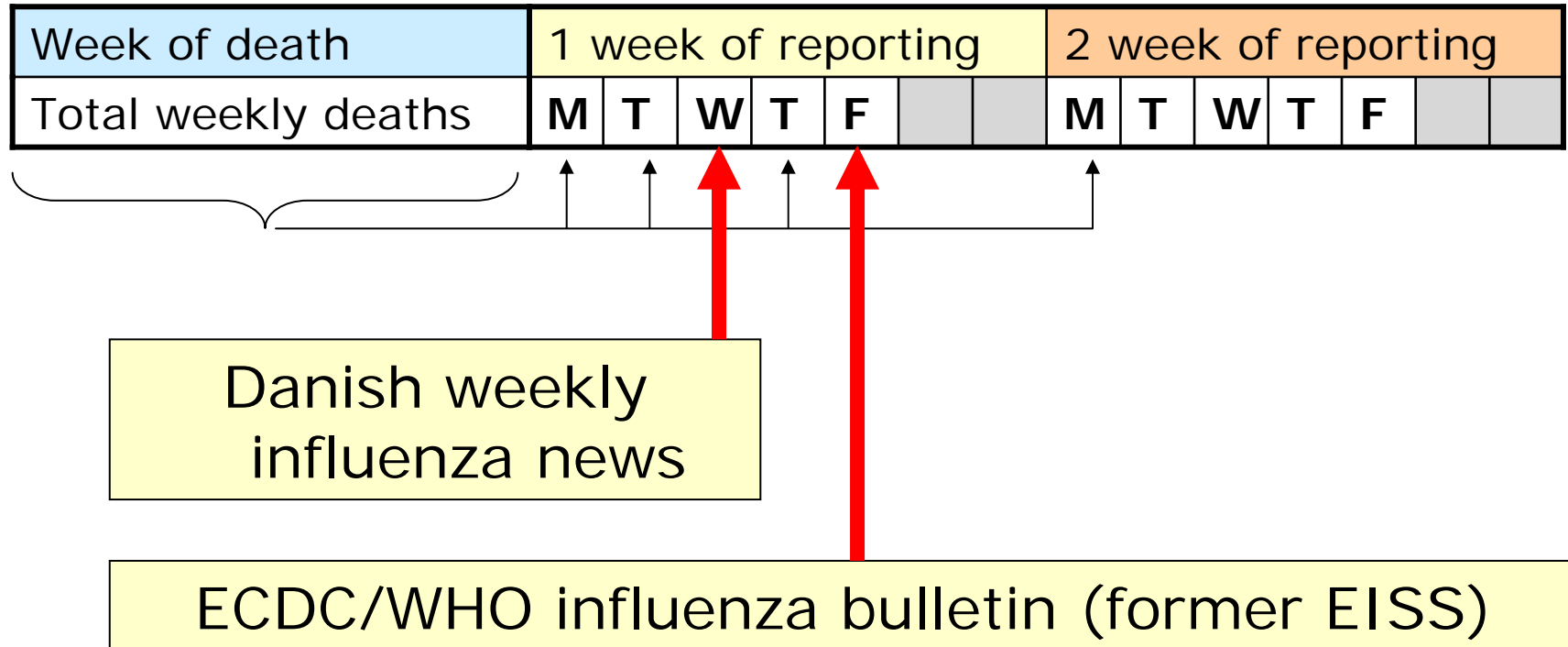
What is mortality monitoring?

- Ongoing systematic, timely collection, collation, analysis and interpretation of mortality data for public health, as well as the dissemination of information in order to take public health action

Basic principle:

Observed – expected deaths = excess deaths

Reporting delay



- To report in time aggregation Wednesday evening required
 - Approx 80% of death reporting completeness

EuroMOMO output: Indicators and format

- Maps: Weekly excess in pilot countries
 - Standardised intensity according to z-scores
 - Regional (NUTS 2) additional
- Graphs: Country all-cause mortality
 - Weekly observed deaths and baseline
 - Total, age specific mortality
 - By region (additional)
- Tables: Weekly updated country outputs
 - last 12 weeks: observed and delay adjusted weekly deaths
 - Number of deaths, excess deaths (define)
 - Standardized residuals, z-score
- Regular peer reviewed bulletin

The pilot

- 1 year start October 2009
- 7-10 countries
- Common algorithm
- Weekly all-cause mortality (total and excess) by age group
- Presentation of outputs on a restricted website
 - Graphs, tables, maps
 - Weekly peer reviewed bulletin
- Evaluation and recommendations

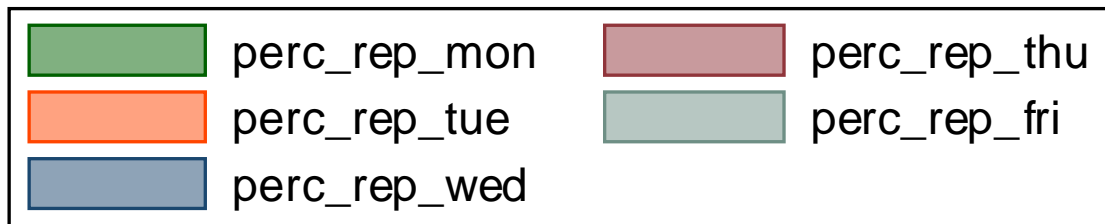
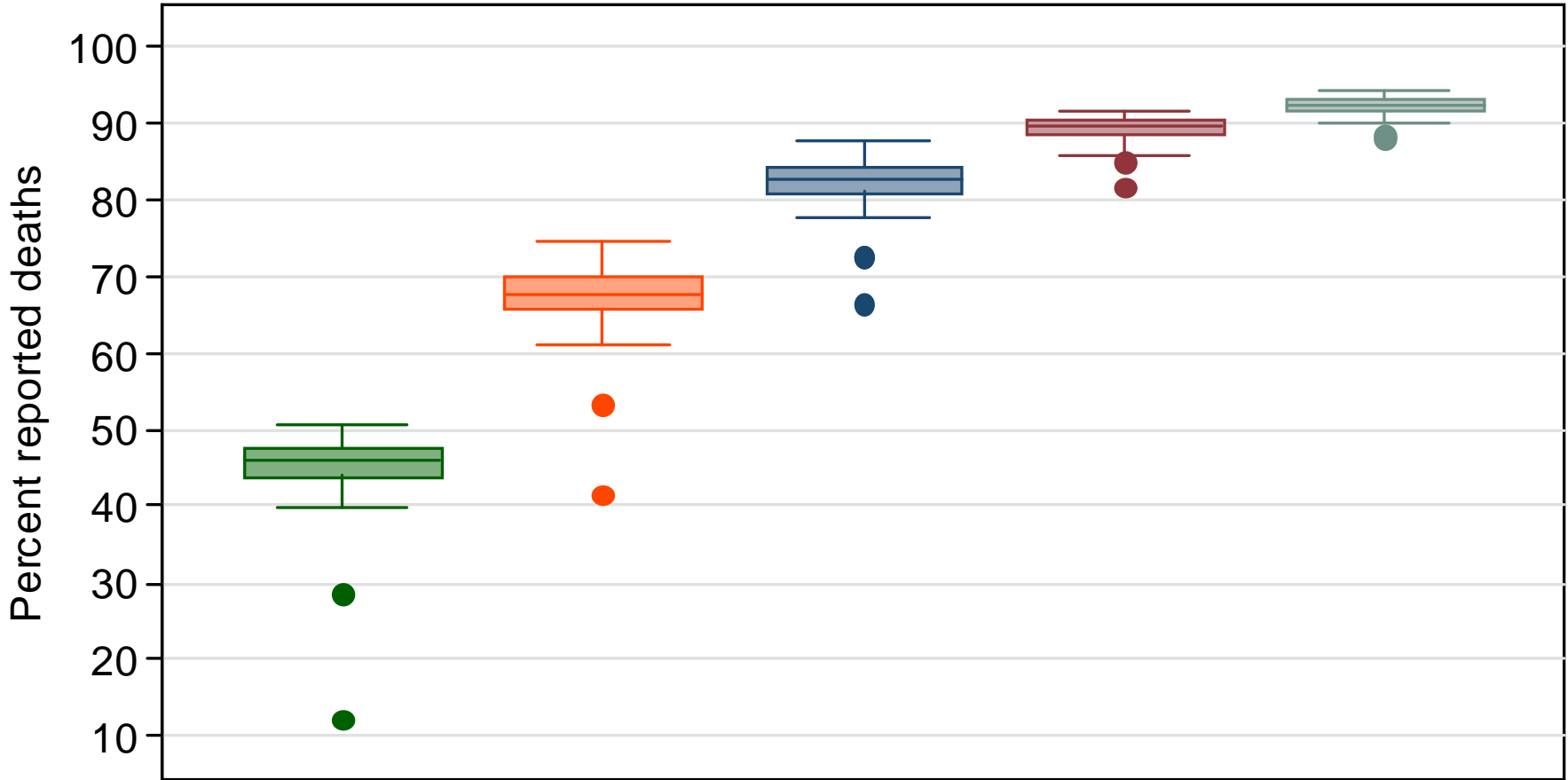
Key issues

- Access to timely mortality data
 - New use of mortality data
 - Pathways for data flow need to be established
 - Authorization to use incomplete, not quality assured data for monitoring
 - Free data access or with costs?
- Reporting delay
 - Aim: Report on deaths that took place in the week before
 - Statistical methods to adjust for incomplete reporting
 - Update database once more complete information available

Denmark: Delay in death reporting

Box plots of deaths reported in week 1 after death, by weekday

Median, quartiles, smallest & largest non-outlier observation



Weekly number of total deaths, Denmark, 2003 – week 22 2009

