

# **Epidemiology of childhood TB**

## **Global and European perspectives**

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**WHO - HQ**

# Outline

- Overview of epidemiology of TB
- Availability of childhood TB data at WHO
- Age-sex distribution of notified TB cases
- Challenges to the estimation of childhood TB burden

# Impact and outcome targets

## 1. Outcome targets, DOTS (WHA\*, Stop TB Partnership)

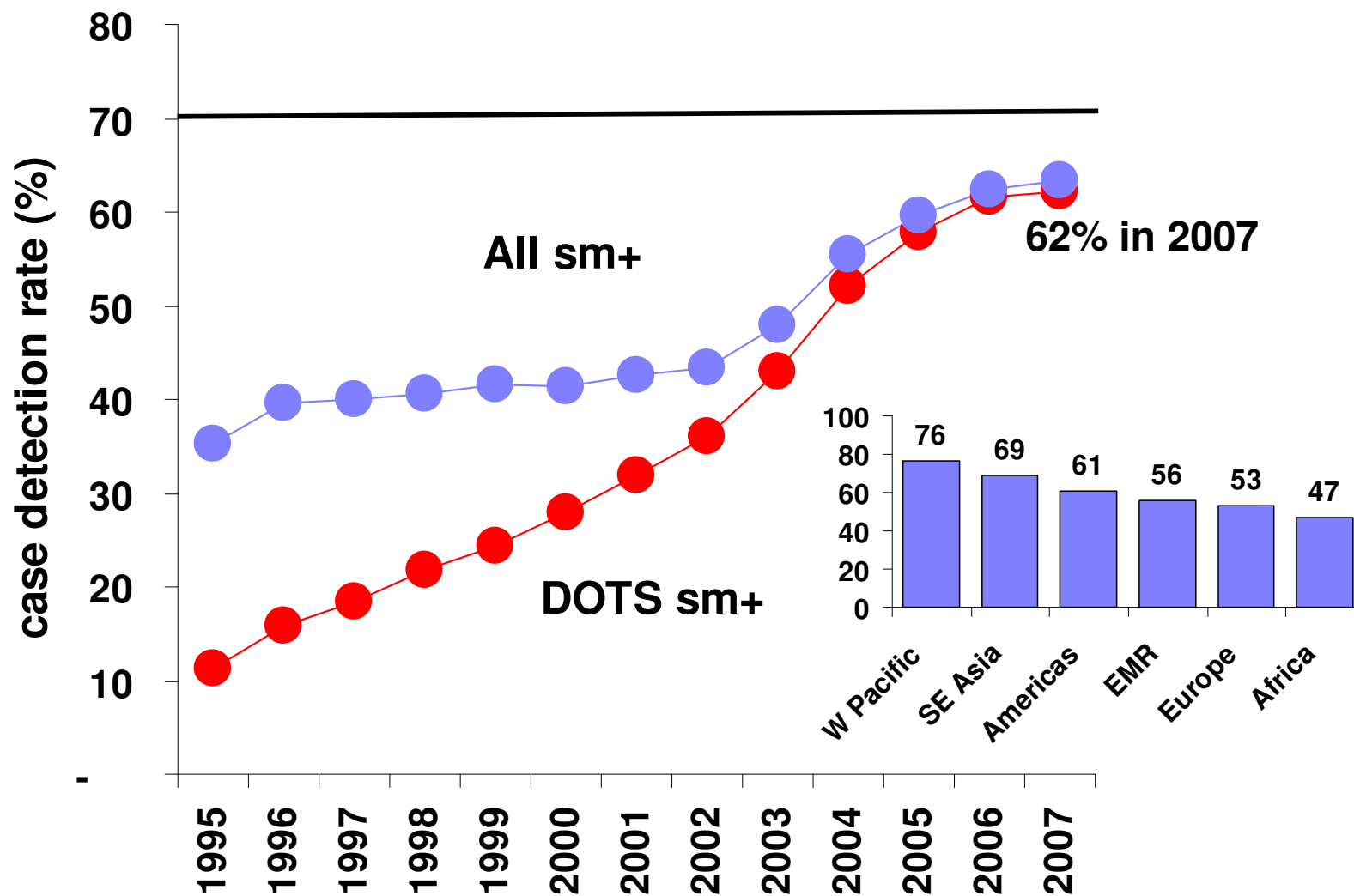
- Detect  $\geq 70\%$  of new sputum smear-positive (SS+) cases
- Successfully treat 85% of detected new SS+ cases

## 2. Impact targets (MDGs, Stop TB Partnership)

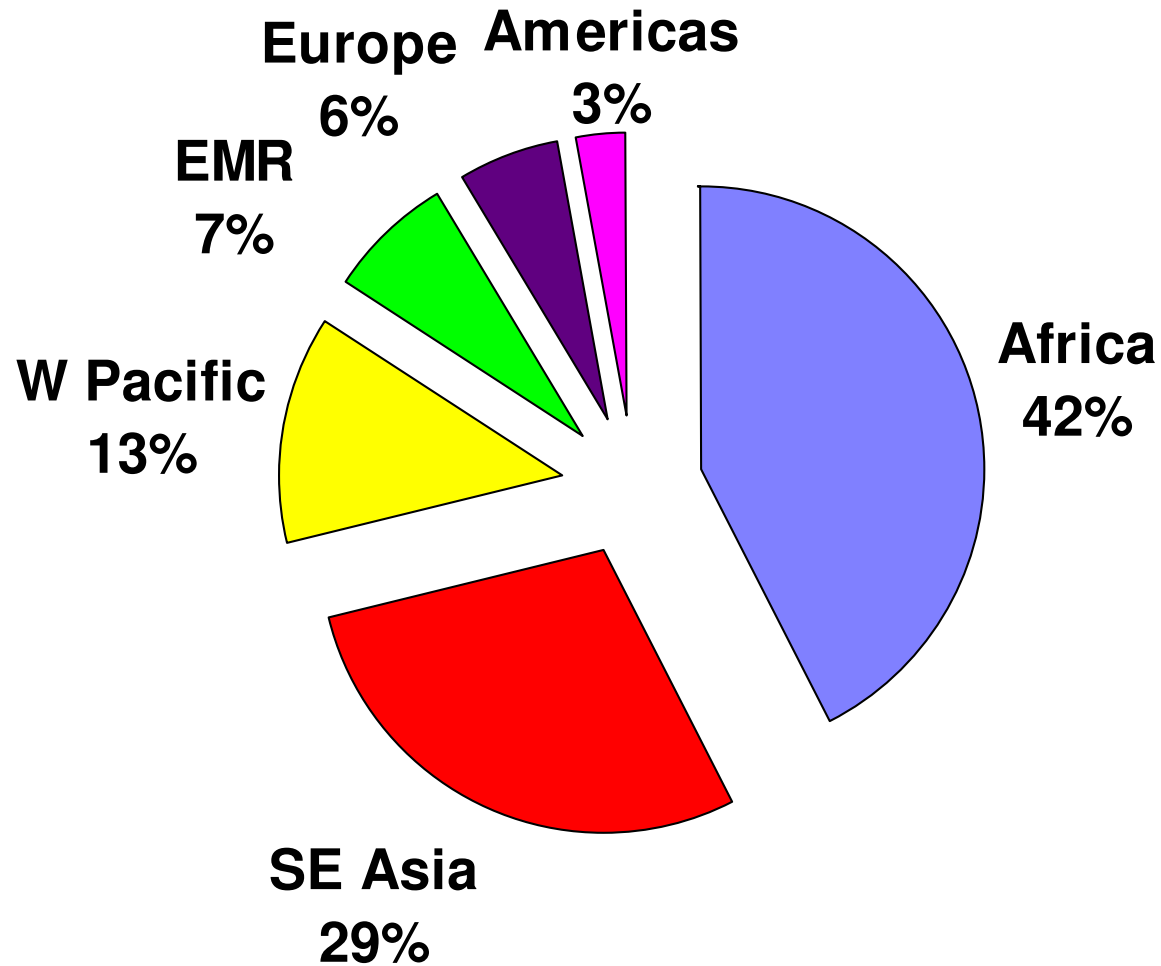
- Halt and reverse incidence by 2015 (MDG 6)
- Halve cases and deaths by 2015 vs. 1990 baseline

*\* World Health Assembly*

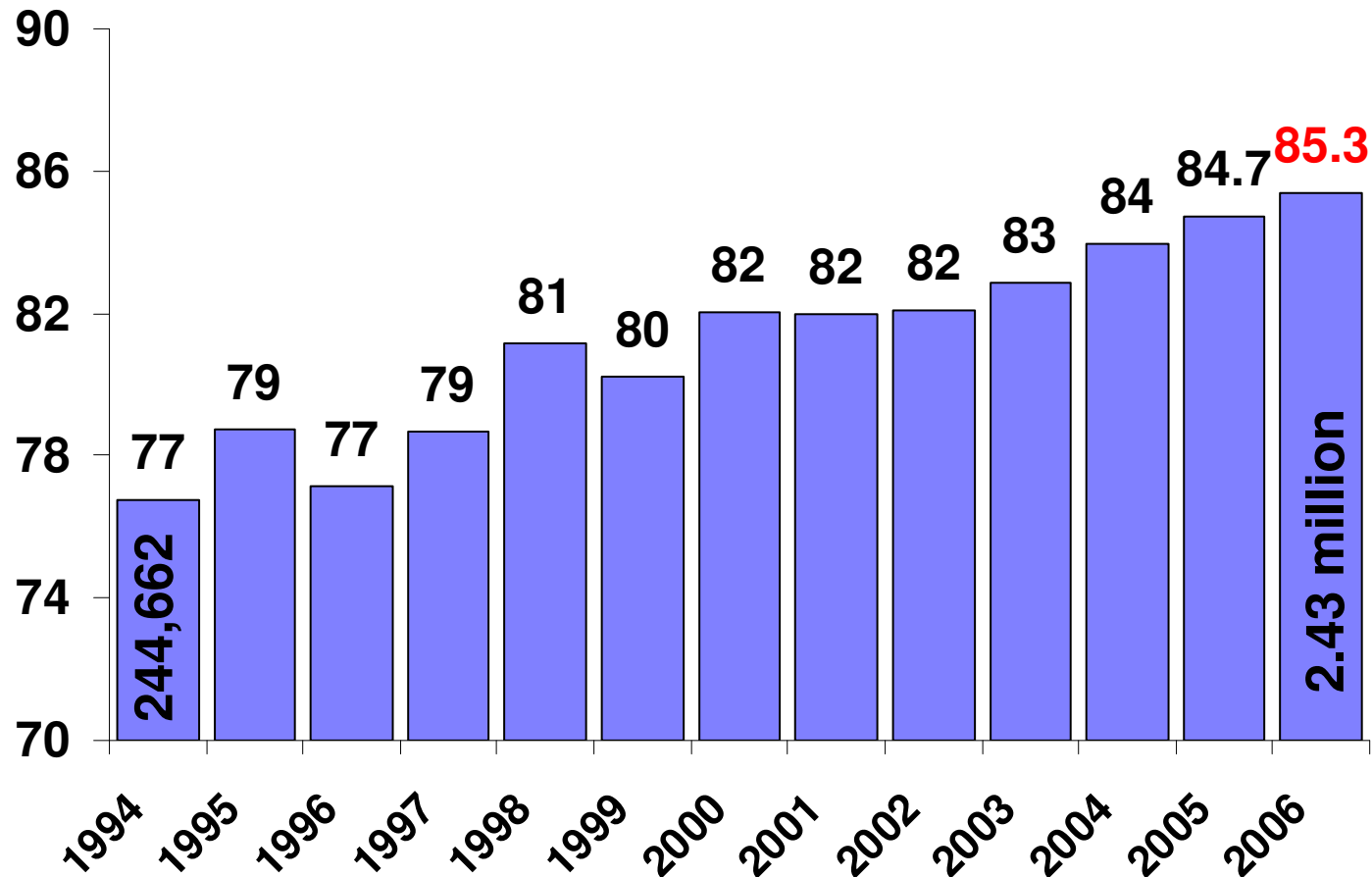
# Progress in case detection is stagnating



# 71% of "missing" cases in Africa and SE Asia in 2007

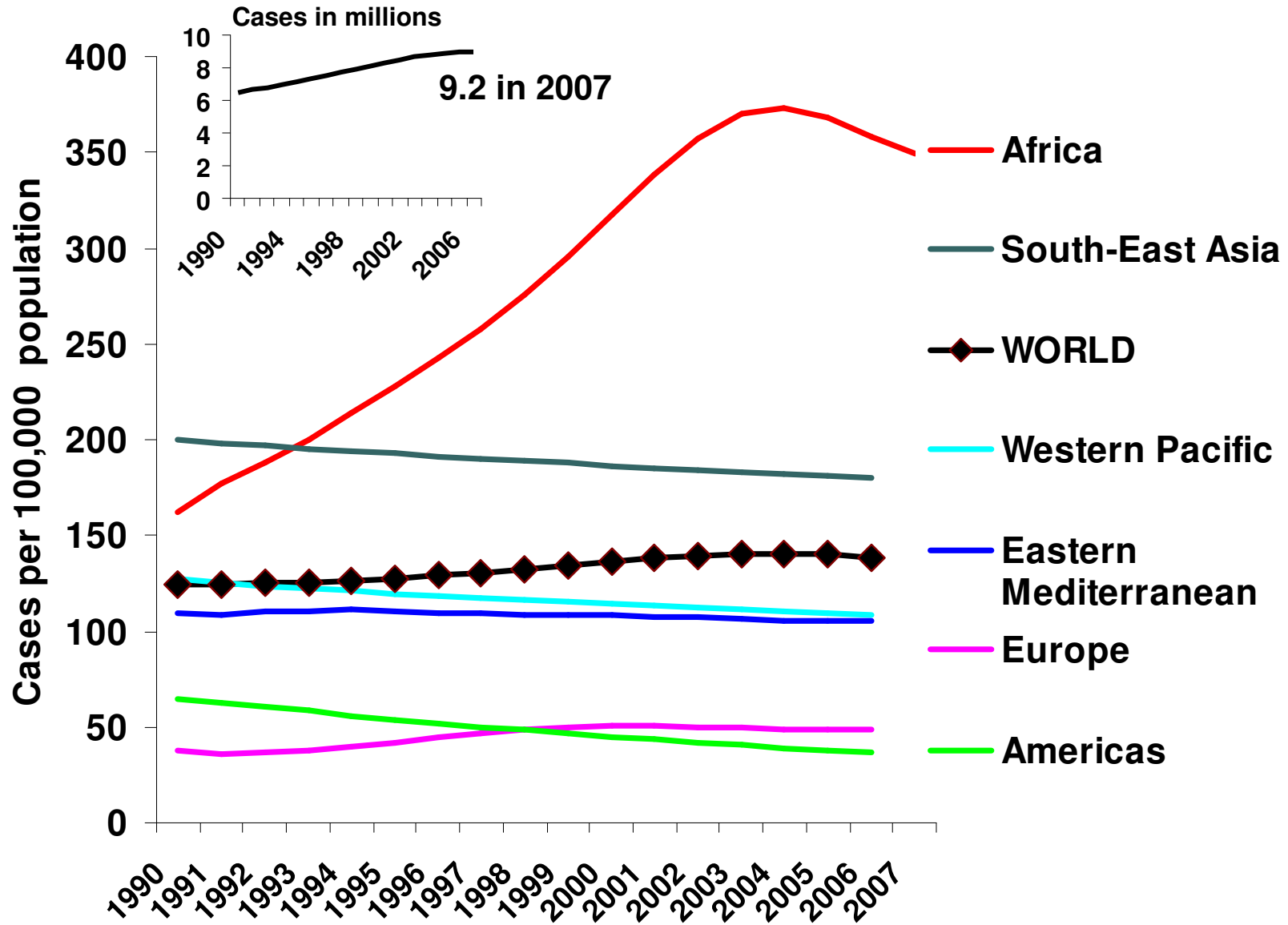


# Treatment success target reached globally

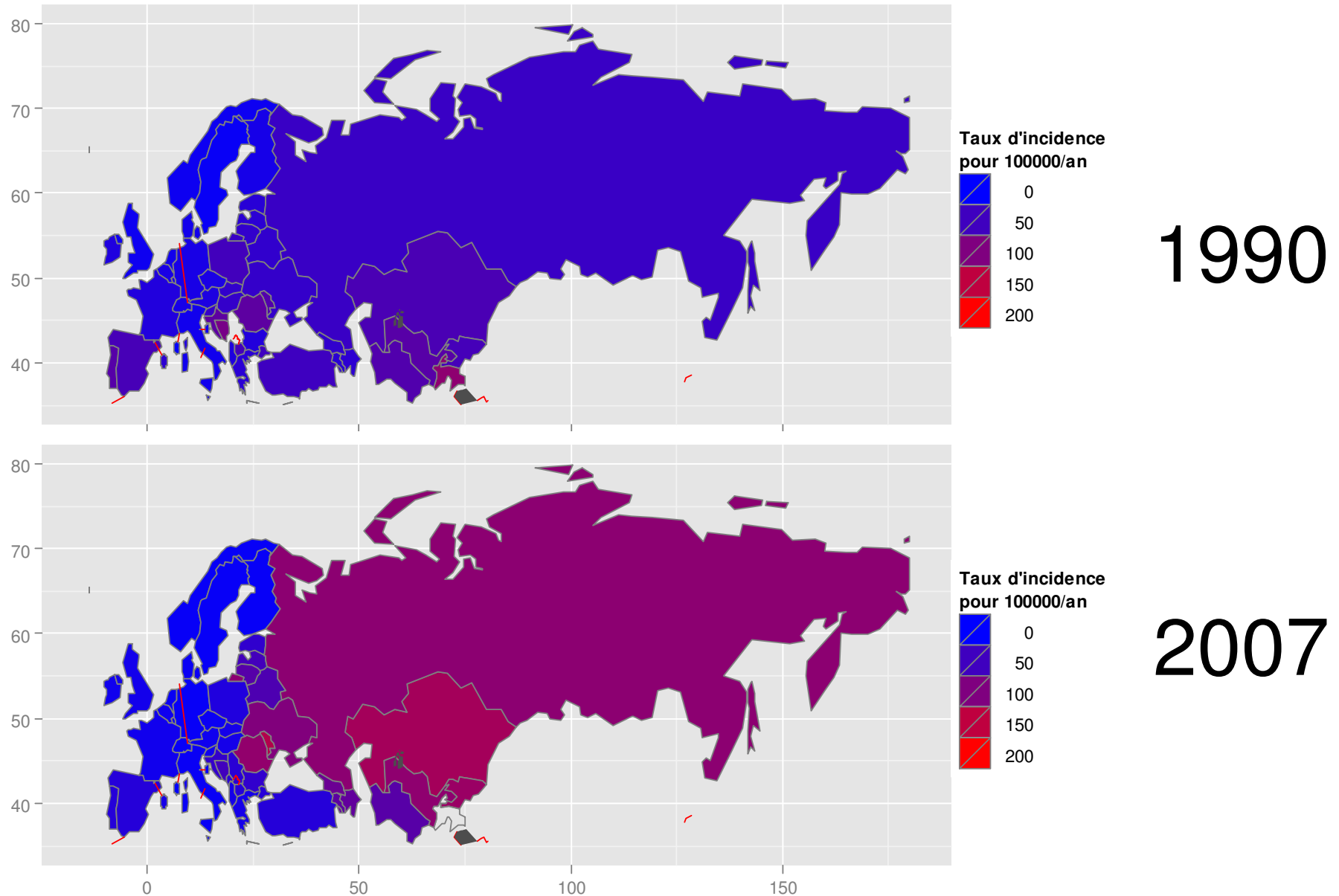


Europe: 70%, Africa: 77%, Americas: 78%

# Incidence rates falling slowly

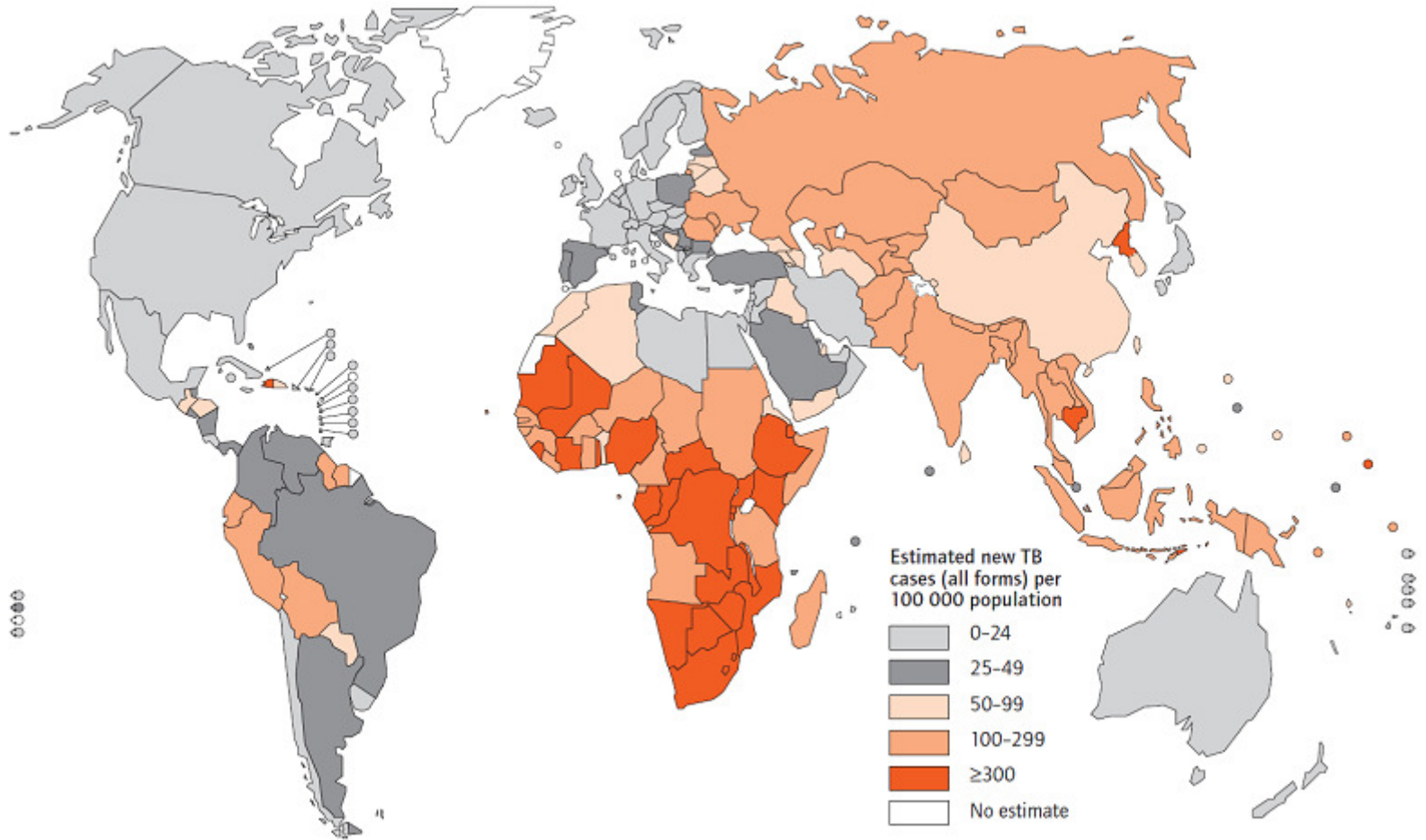


# Increase in estimated TB incidence in Eastern Europe (1990-2007)



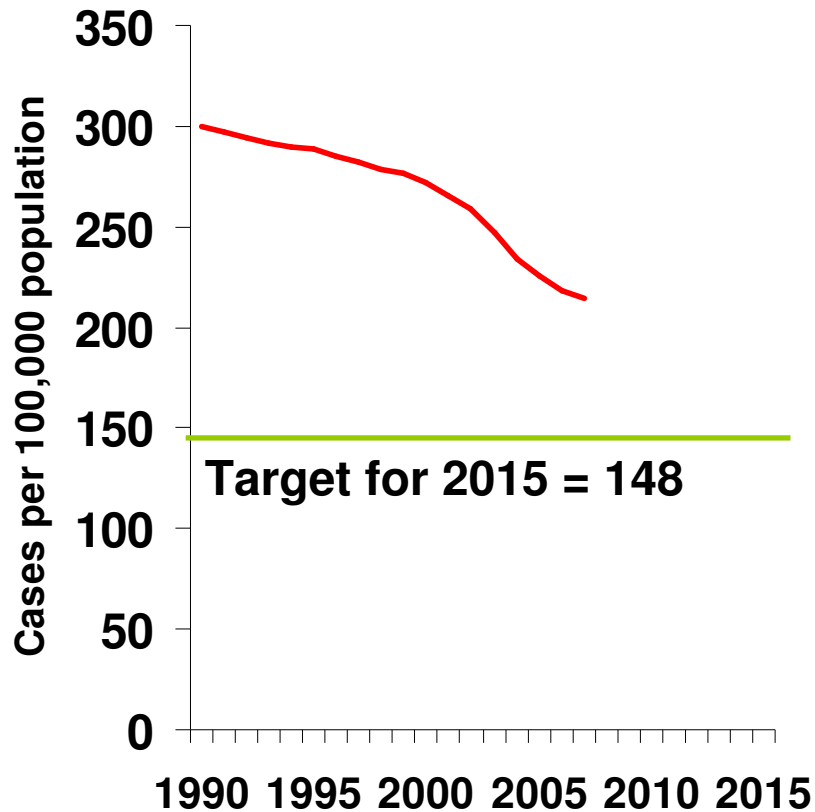


# Estimated TB incidence rates, by country, 2007

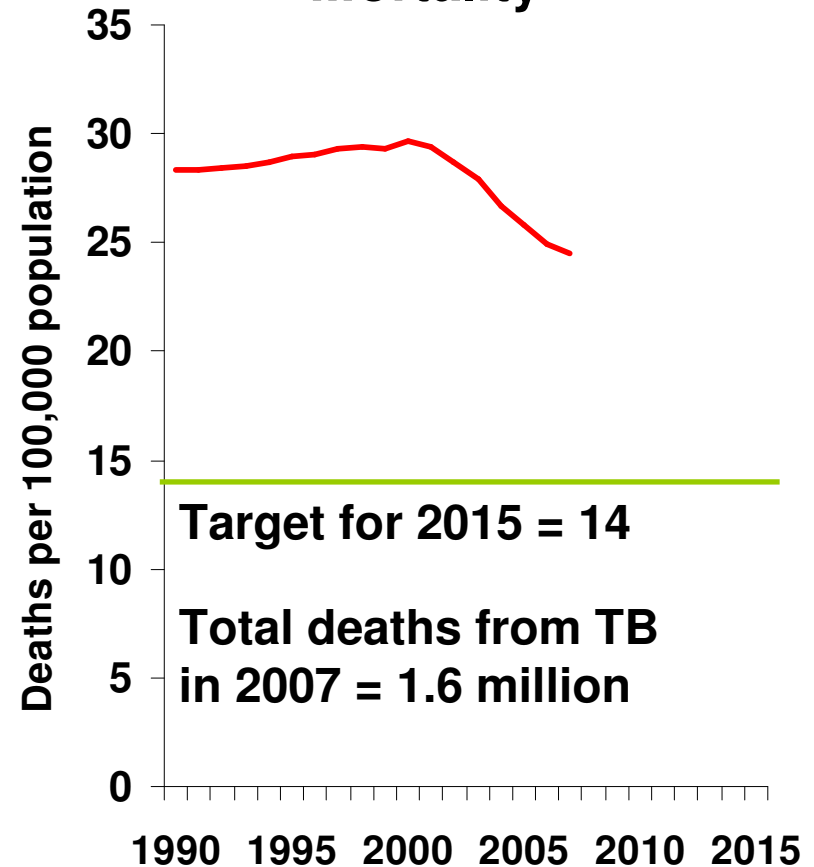


# TB prevalence and mortality

## Prevalence

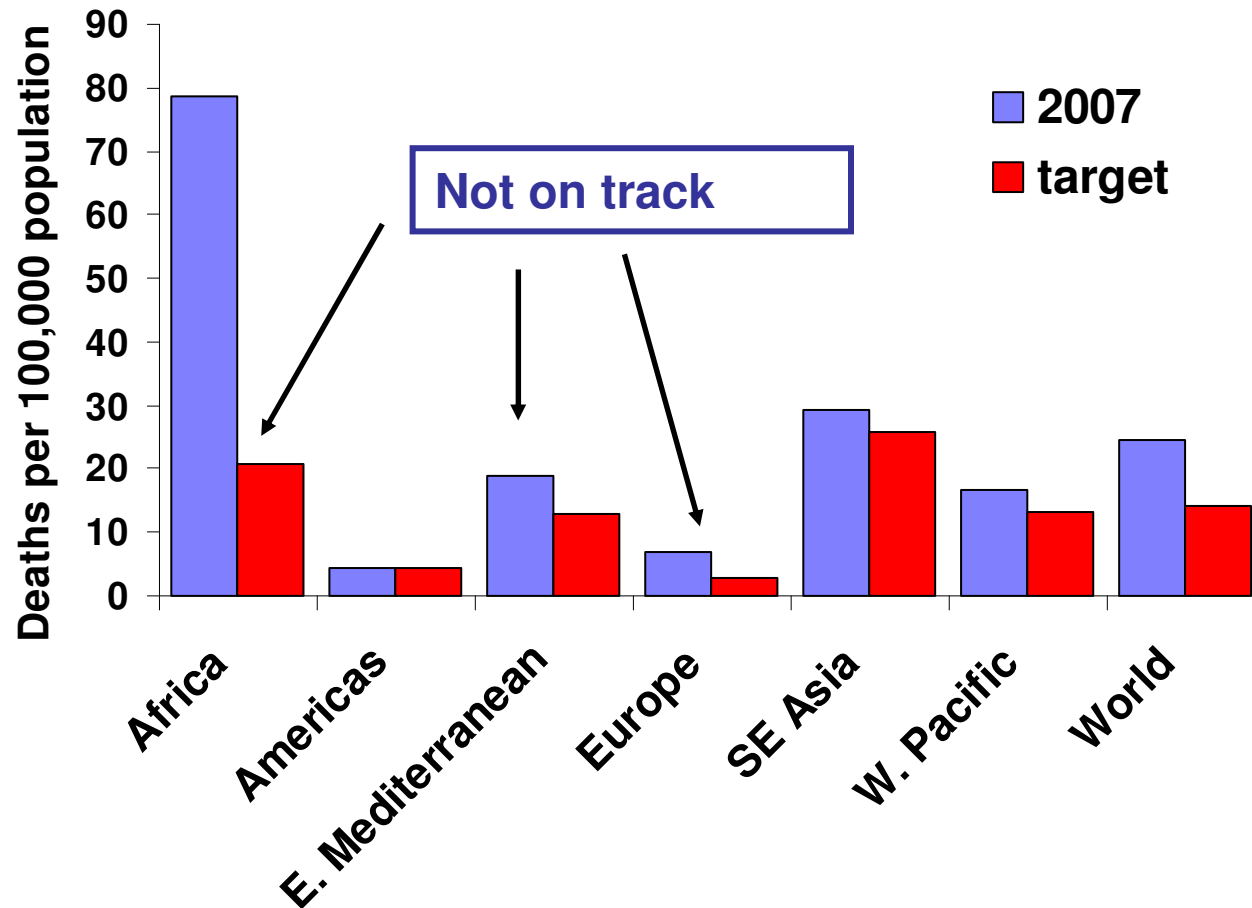


## Mortality



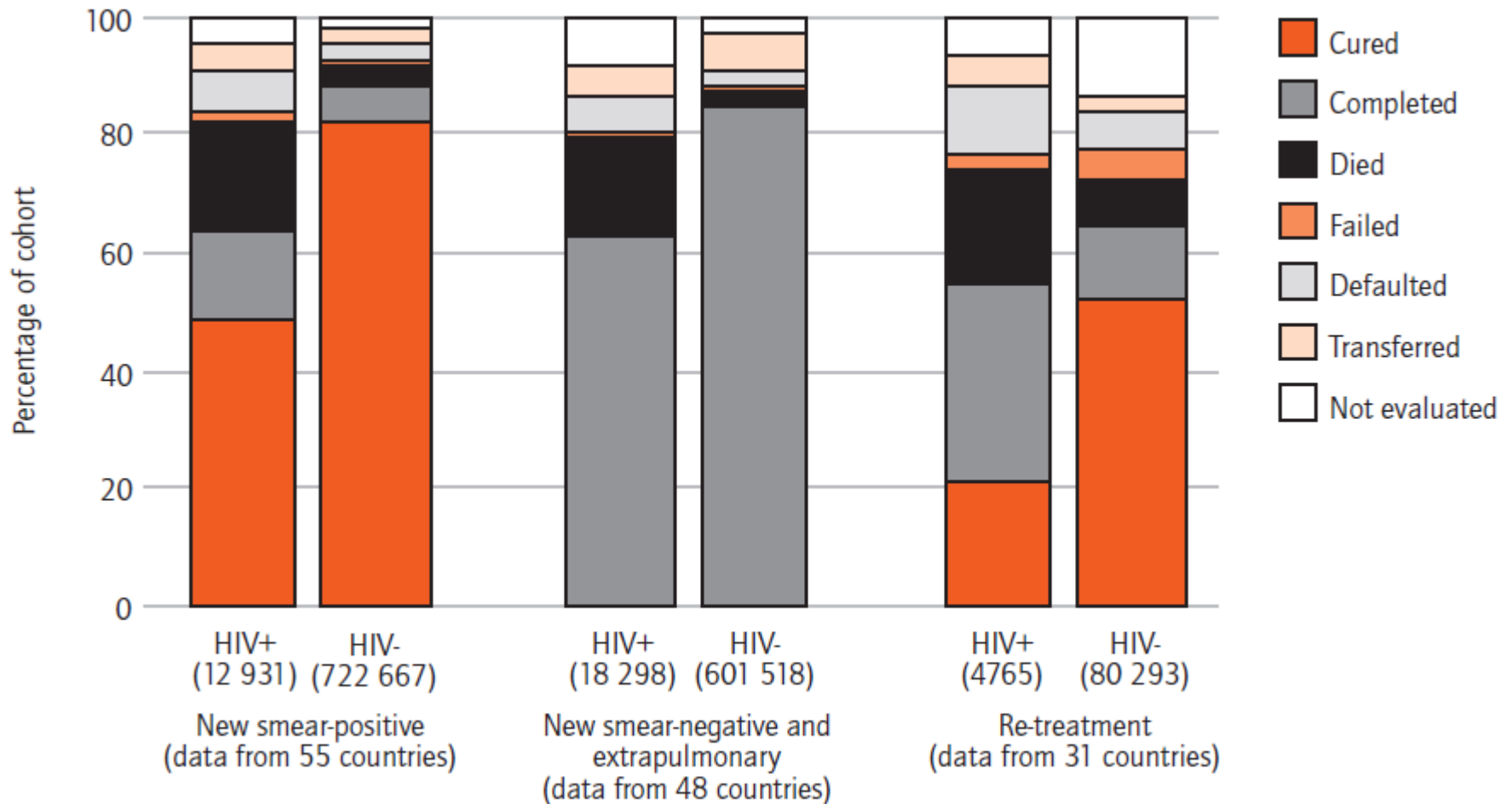
**Falling... but need to fall faster to reach targets**

# Reductions in mortality: 3 regions on track, 3 are not



Similar pattern for prevalence

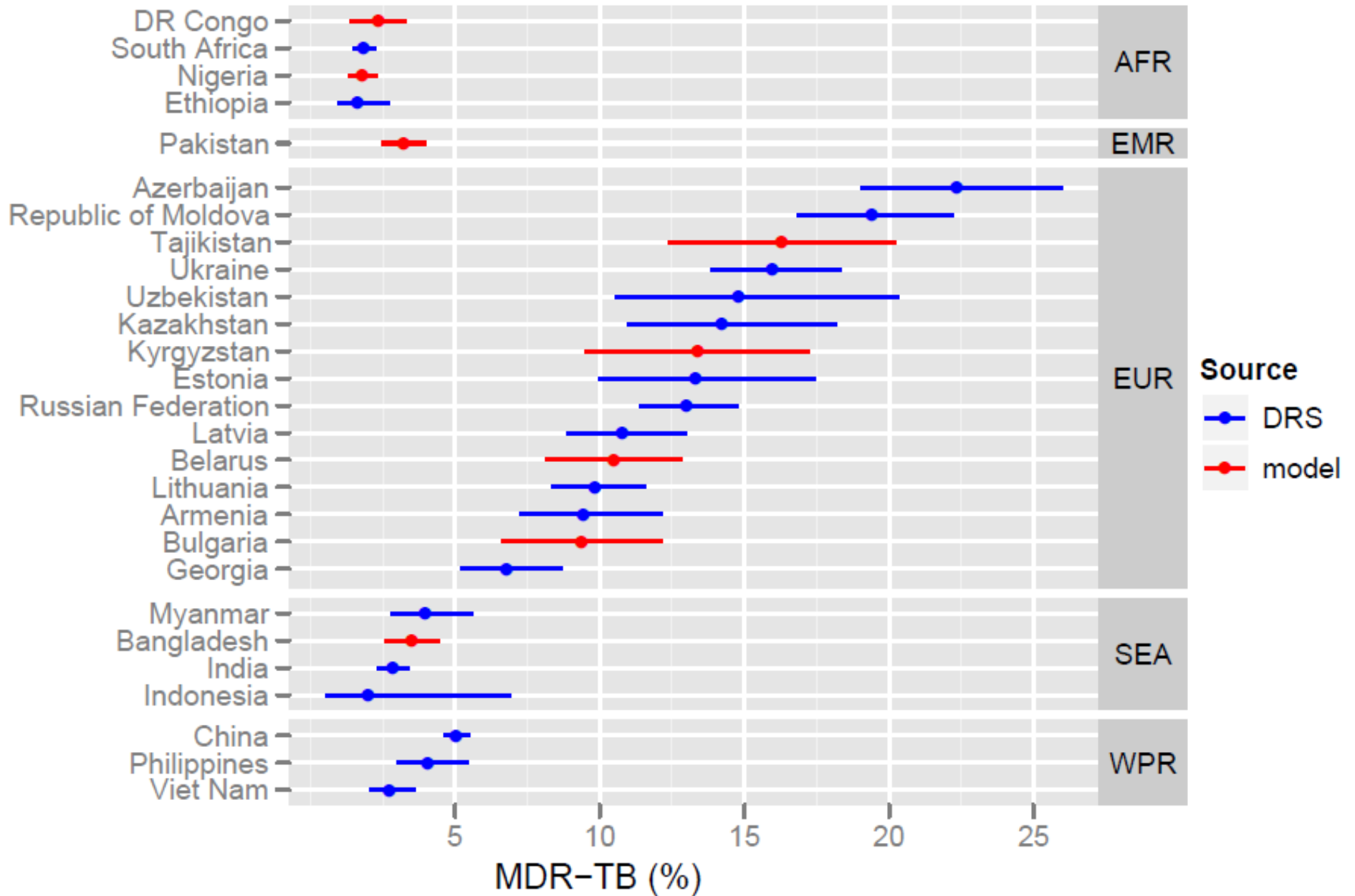
# Treatment outcome for HIV+ and HIV-, 2006 cohort.



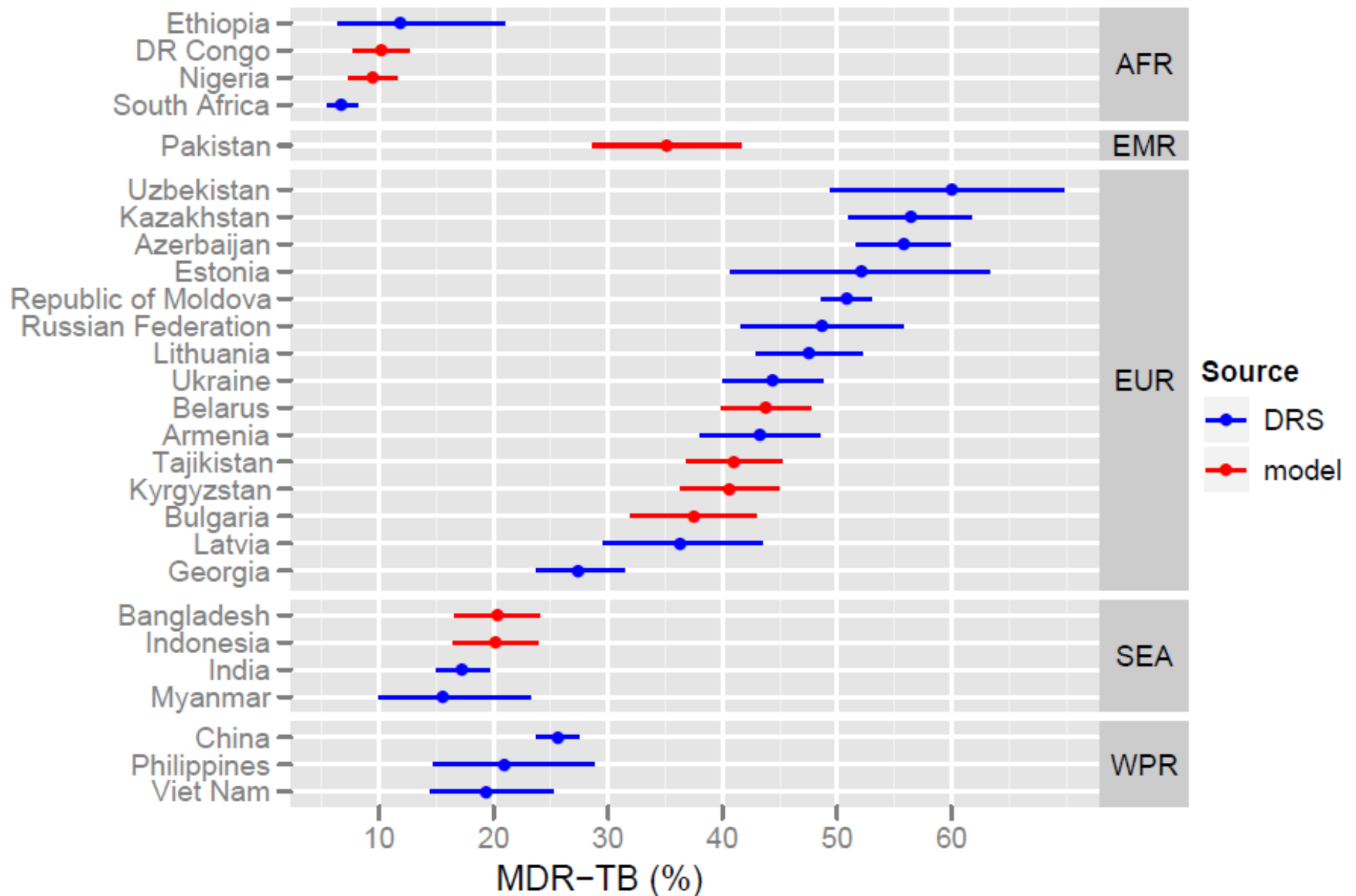
# TB/HIV summary

- 1.4m incident TB infected with HIV (15% of 9.3m)
- 63% of total TB/HIV estimated indirectly (104 countries) through the IRR method: need to scale up TB/HIV surveillance
- Impact of ART on IRR

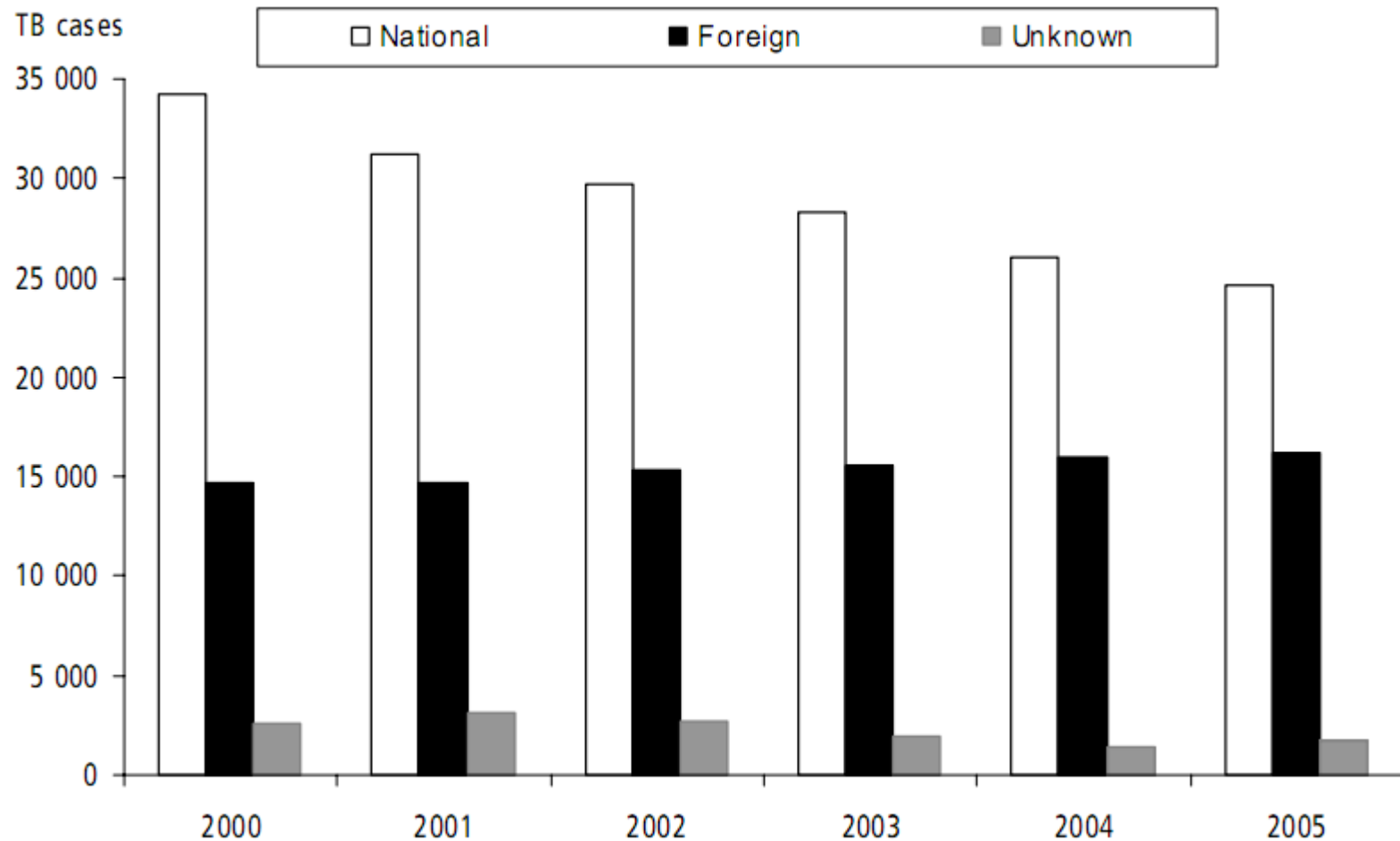
# MDR in new, 27 priority countries



# MDR in re-tx, 27 priority countries



# Increasing % of migrants among new TB cases in Western Europe



\* 24 countries (excluding Andorra, Bulgaria, Cyprus, Greece, Luxembourg, Monaco, Poland, Romania, San Marino, Spain)

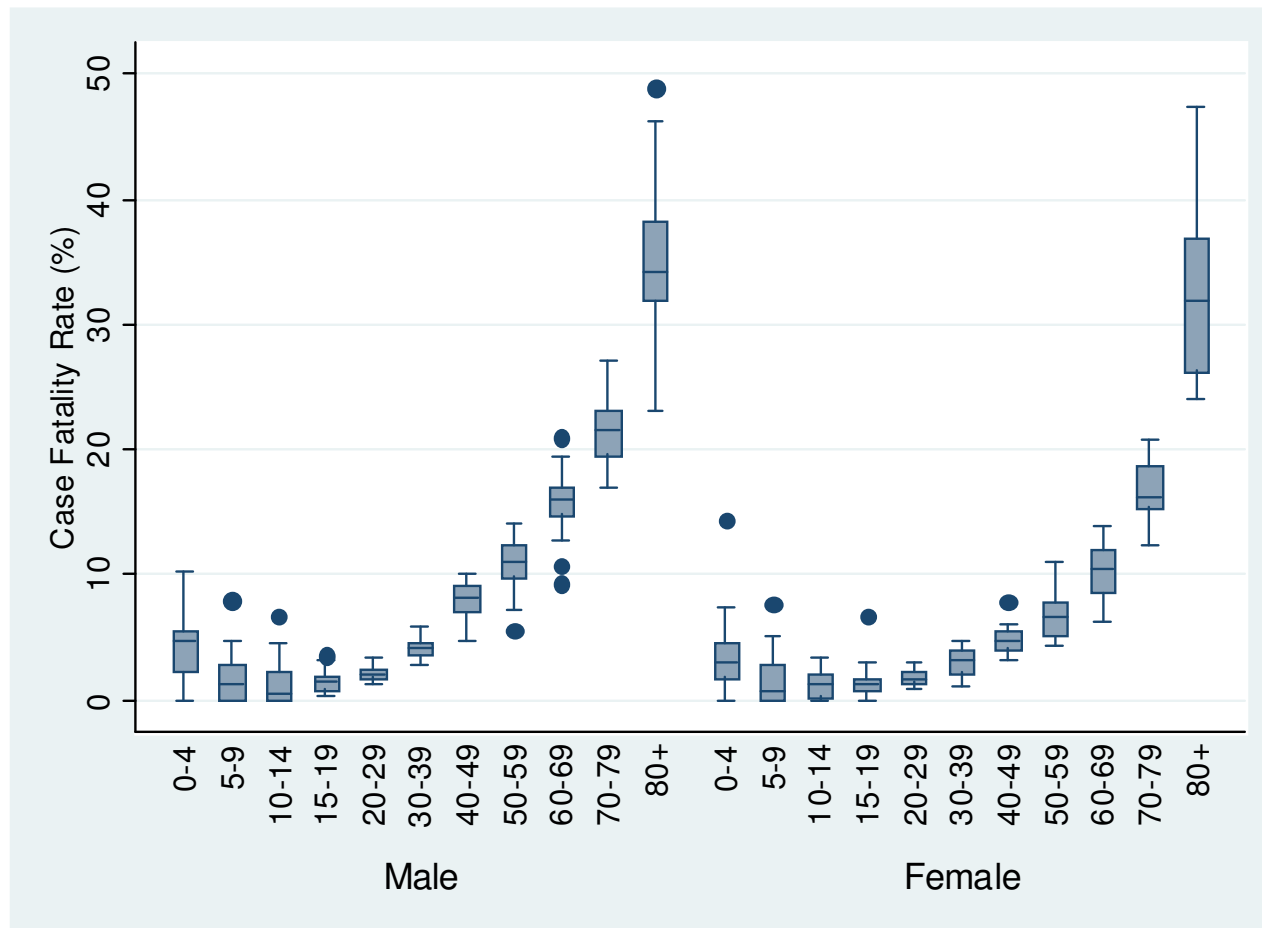
Source: EuroTB 2007: [http://ecdc.europa.eu/documents/pdf/EuroTB\\_report.pdf](http://ecdc.europa.eu/documents/pdf/EuroTB_report.pdf)



# Childhood TB



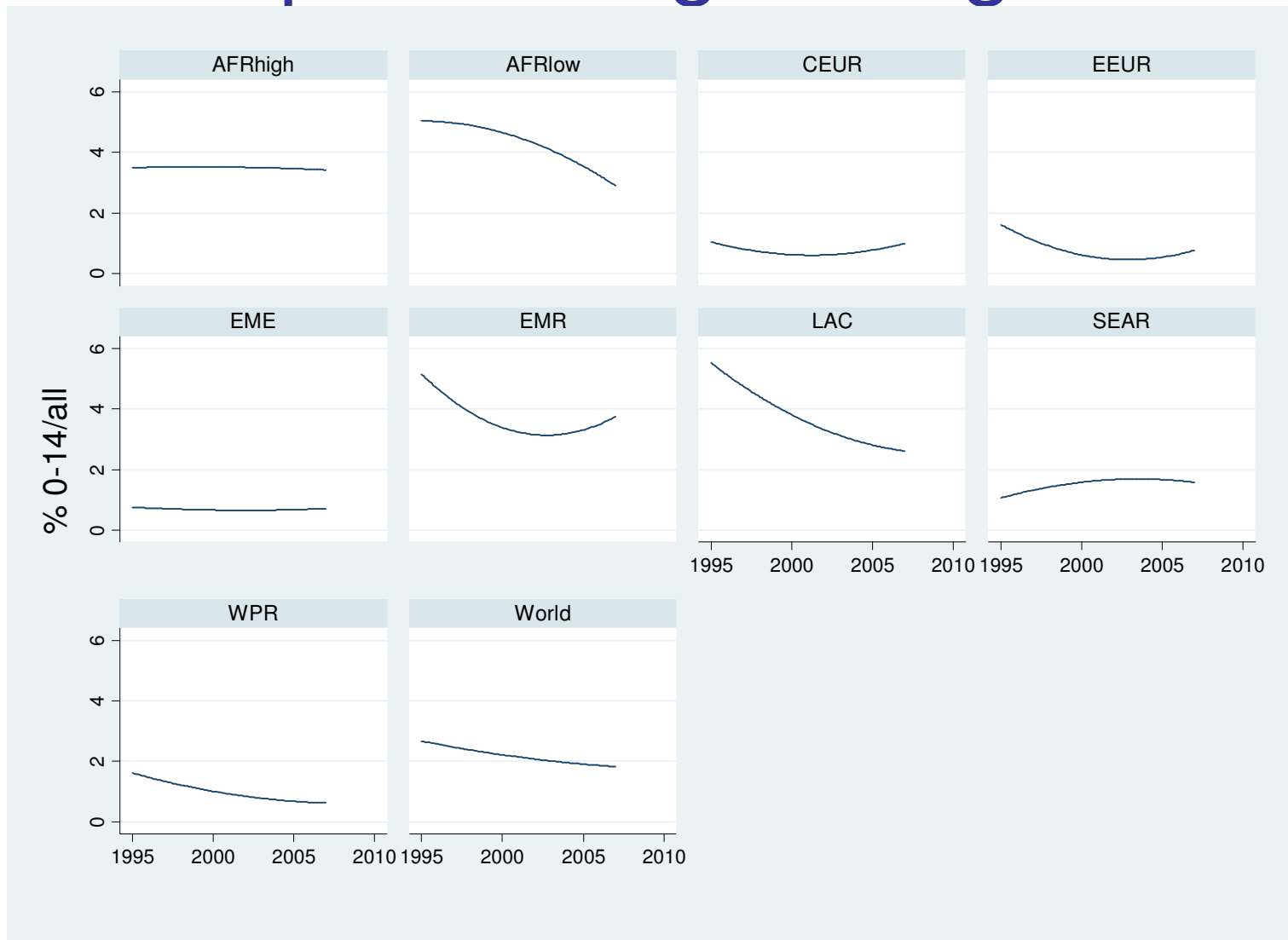
# TB CFR for each of the 27 Brazilian states, by sex and age group



# Availability of childhood TB data at WHO

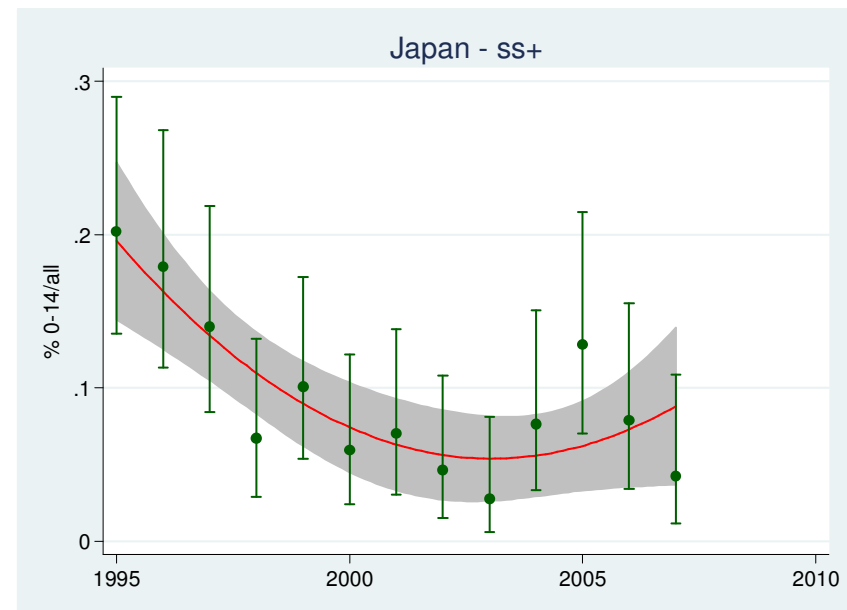
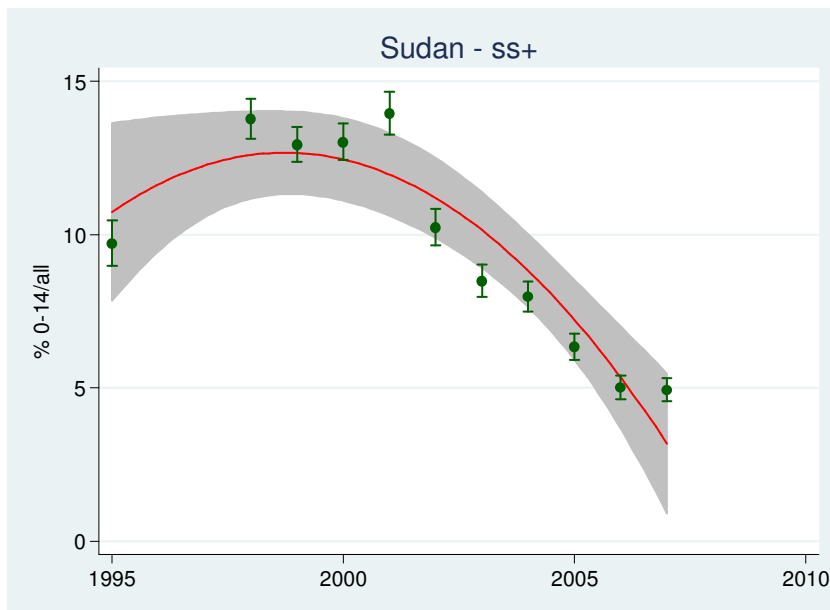
- **Smear+ cases: 0-14**
  - 1995: 55% countries, 74% of global burden
  - 2007: 69% countries, 98% of global burden
- **Smear- and extrapulmonary: 0-14**
  - 2006: 51% countries, 30% of global burden
  - 2007: 52% countries, 38% of global burden
- **Cases: 0-4, 5-14**
  - 2006: 36% countries, 22% of global burden
  - 2007: 41% countries, 25% of global burden

# Smear + notification - % 0-14/all 9 epidemiological regions



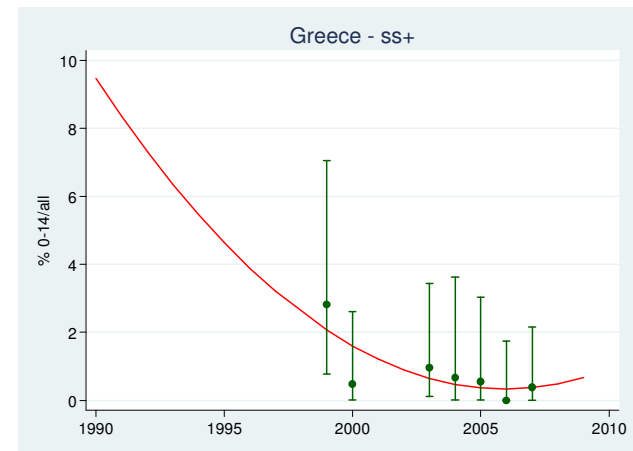
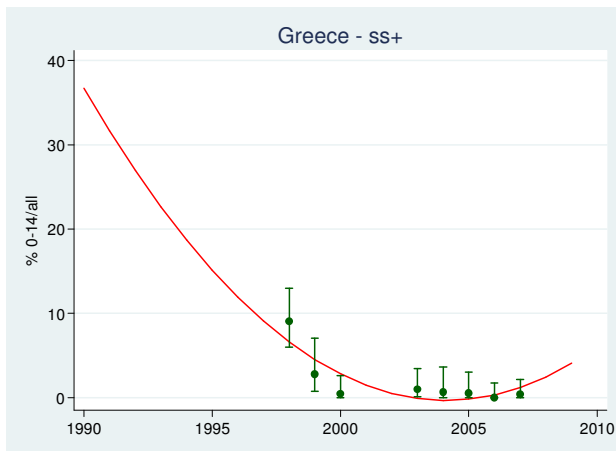
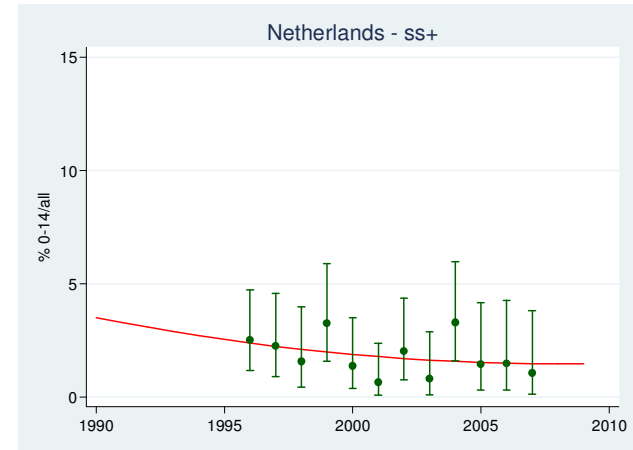
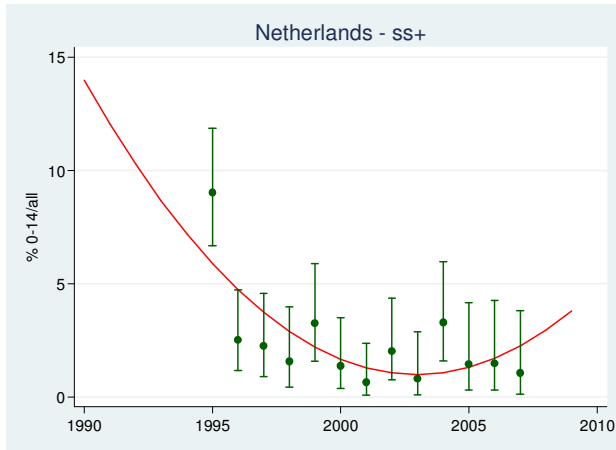
# Smear + notification - % 0-14/all

## Big differences among countries

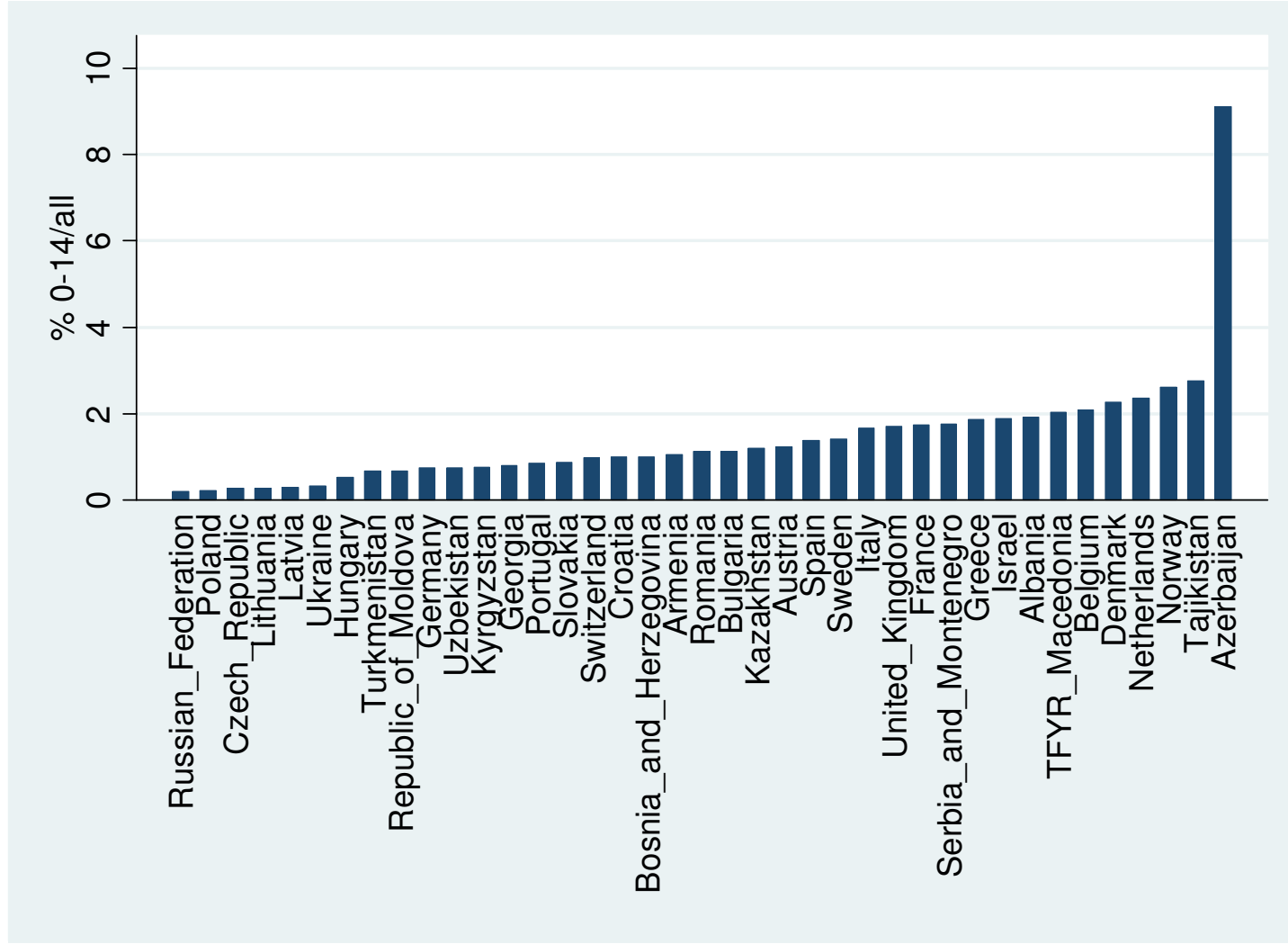


# Methodological issues

## Smear + notification - % 0-14/all

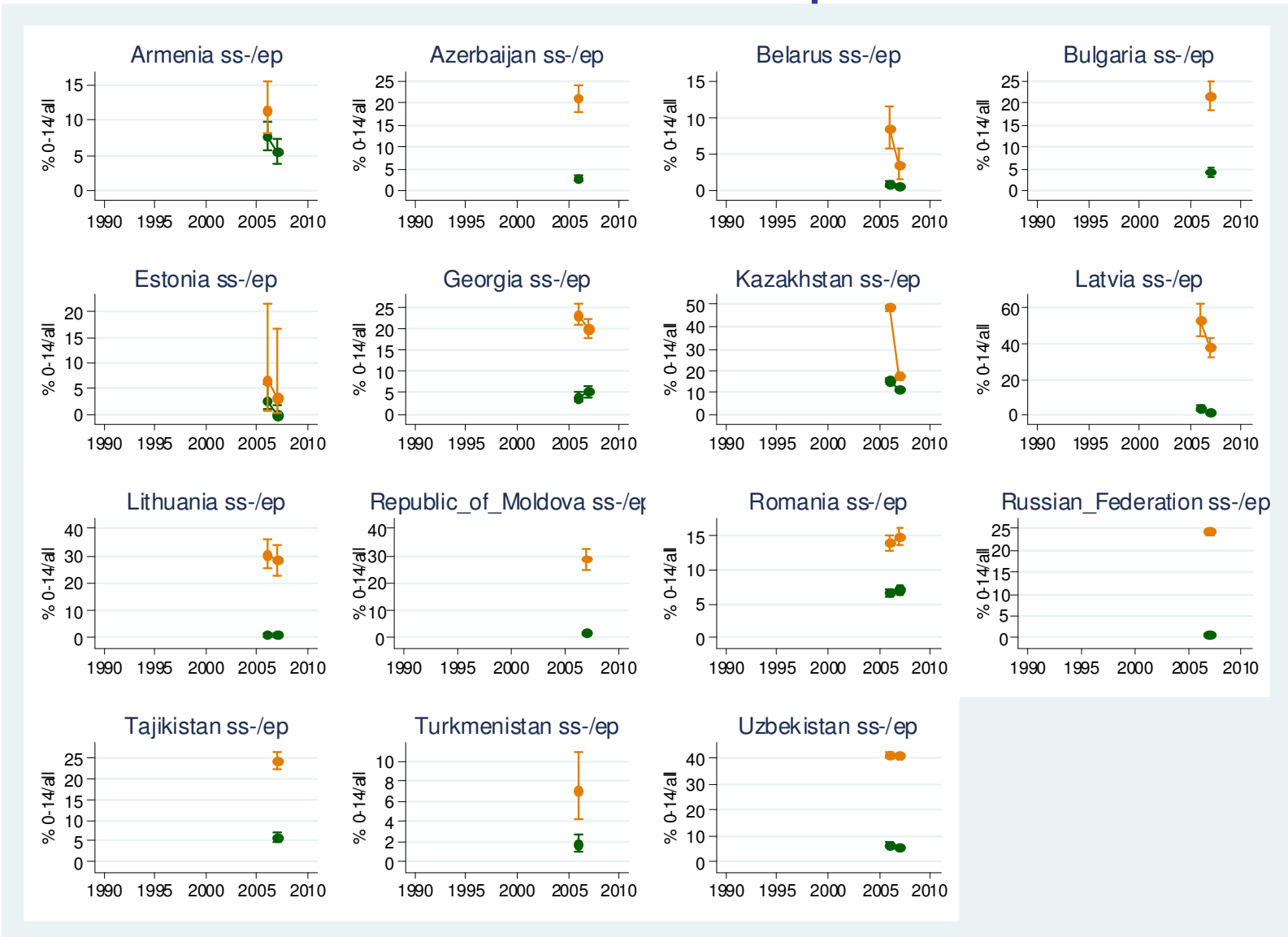


# Smear + notification - % 0-14/all

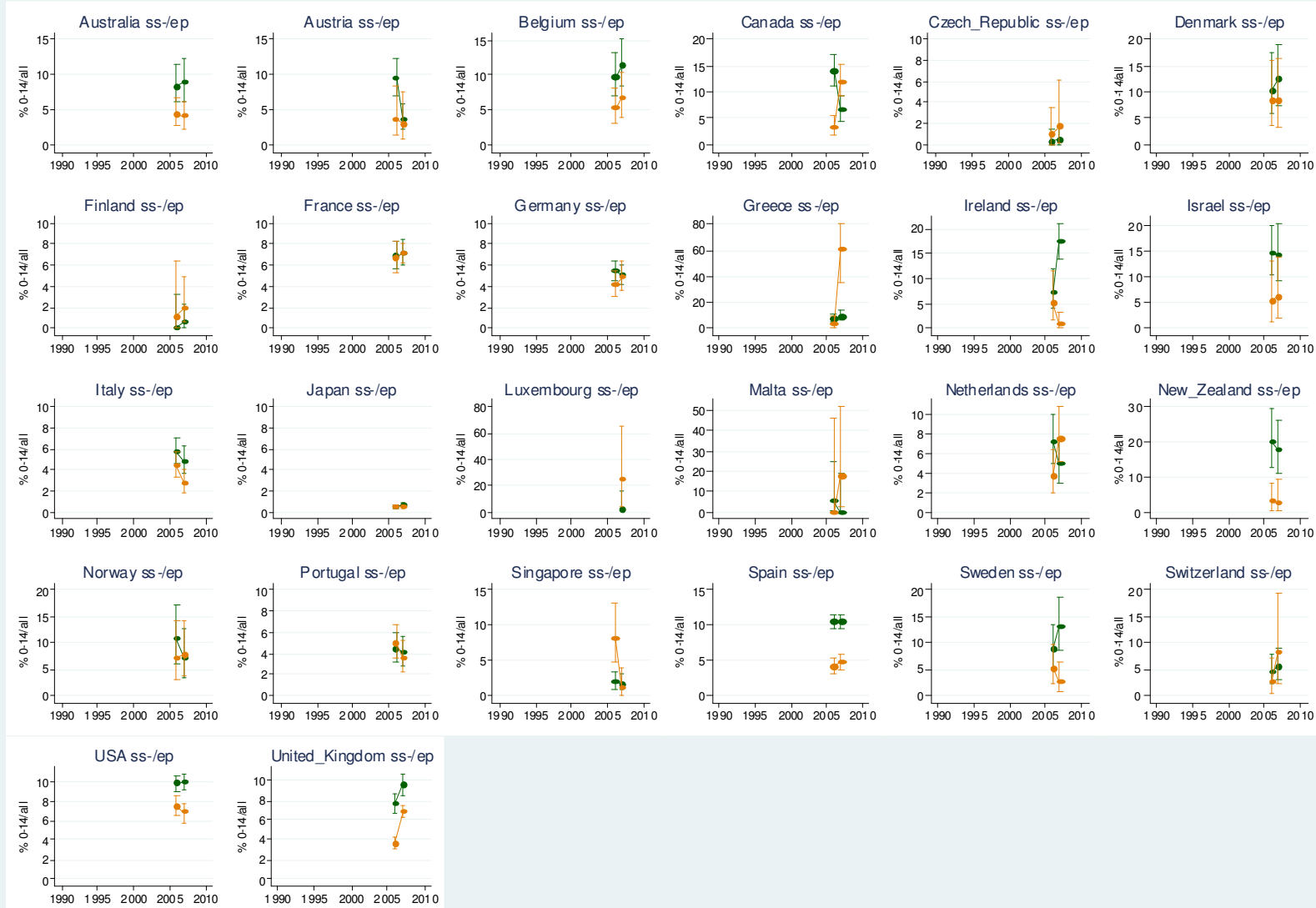




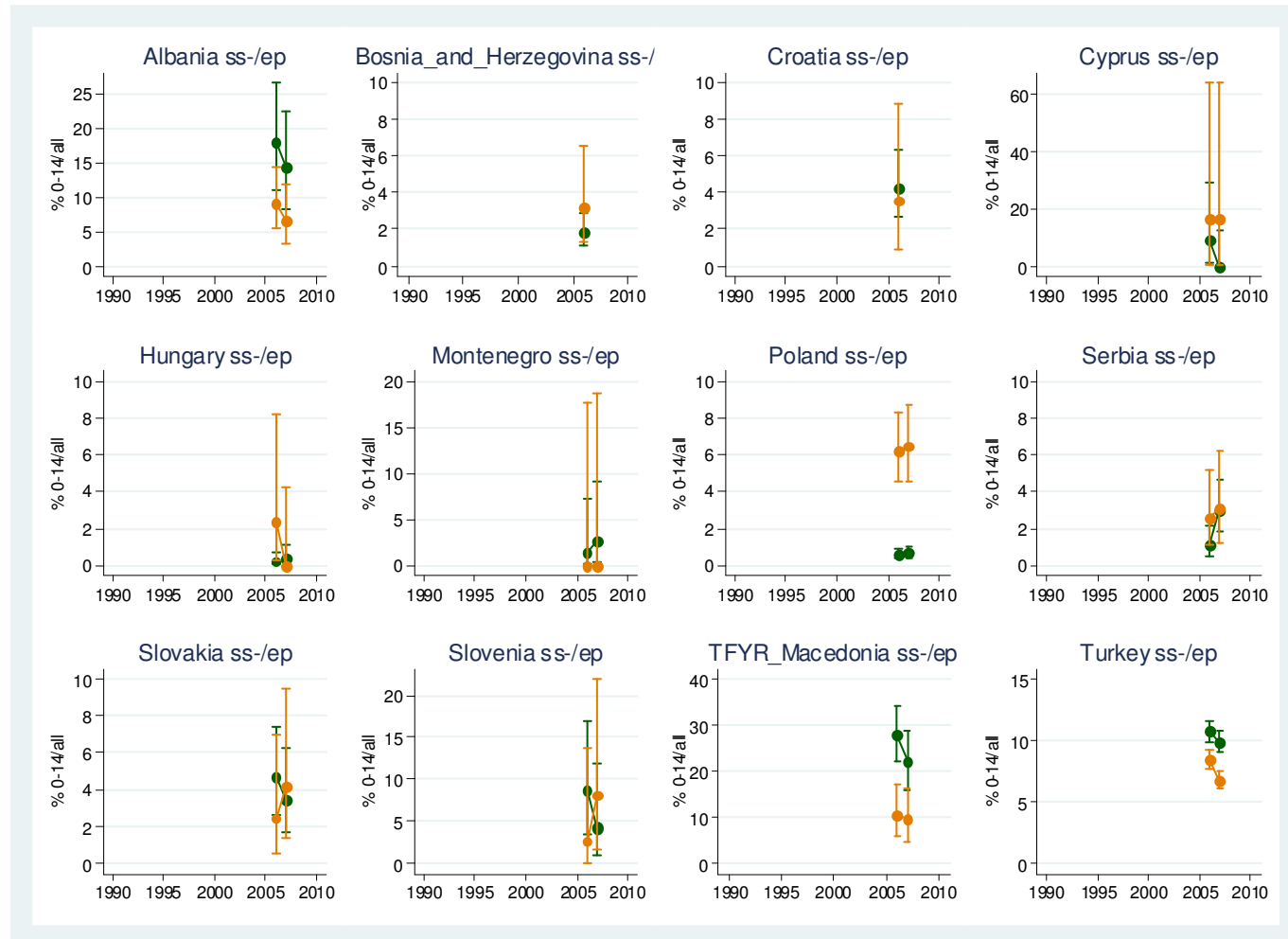
# Smear-neg and extra-pulmonary - % 0-14/all Eastern Europe



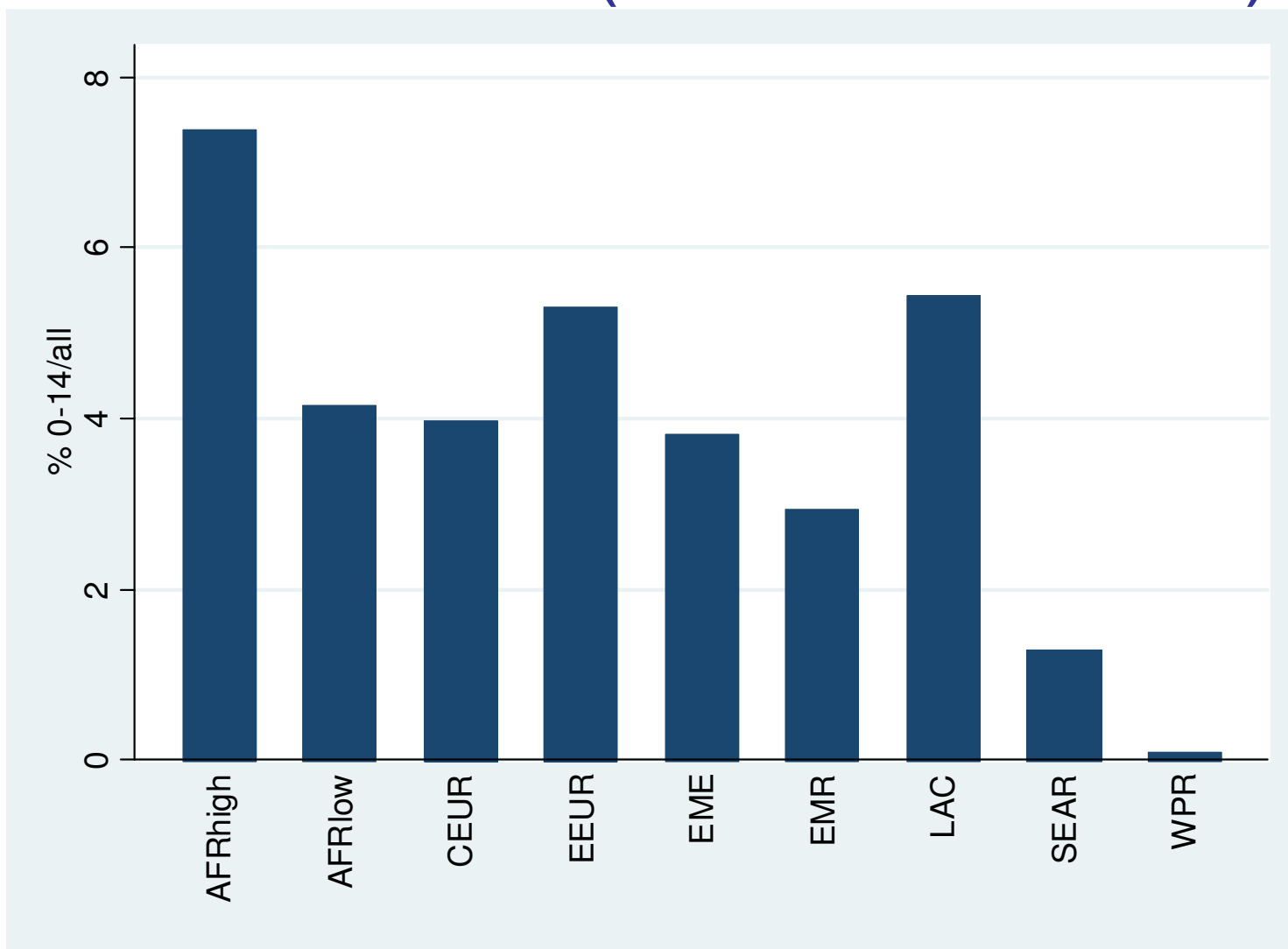
# Smear-neg and extra-pulmonary - % 0-14/all Established market economies



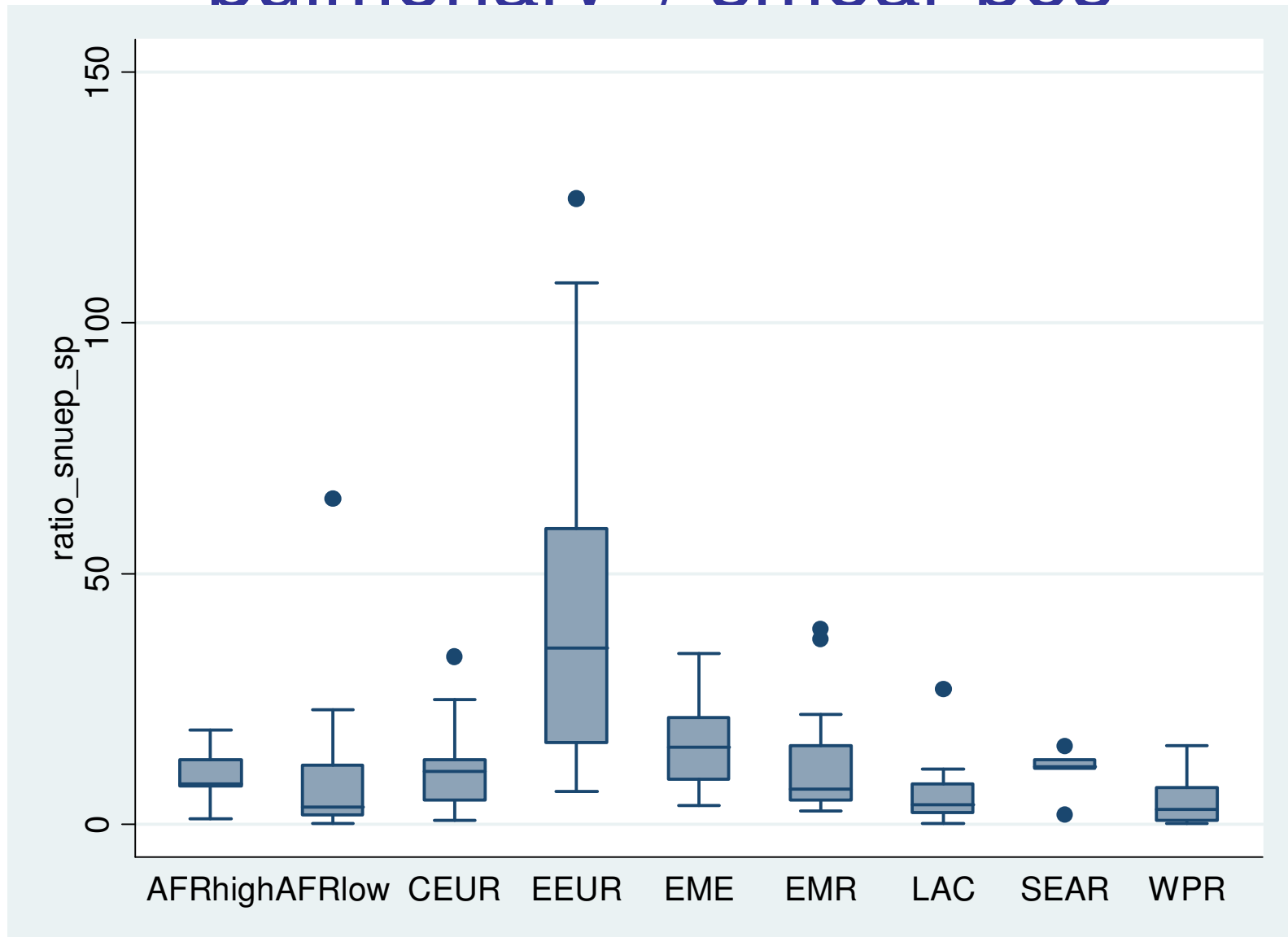
# Smear-neg and extra-pulmonary - % 0-14/all Central Europe



# Paediatric cases - % of total notifications (2006 and 2007)



# Uneven ratio smear neg and extra-pulmonary / smear pos



# Challenges to the estimation of childhood TB burden

- Lack of historical data for smear-neg and extra-pulmonary childhood TB cases
- ≠ policies or practices for collecting smear from children with pulmonary TB for sputum and culture examination
- ≠ case definitions for childhood TB: infection may be notified as disease
- ≠ case definitions for childhood TB clinical forms: smear-neg X extra-pulmonary cases
- Incomplete vital registration data

**Table 1** Estimated numbers of new cases, case rates in children, overall case rates (all ages), and the percentage of all TB estimated to occur among children in the 22 high-burden countries

Country	Children aged 0–14 years	% of TB occurring in children	Estimated TB case rates <15 years of age*	Estimated case rate†
Afghanistan	17 540	25.3	189	324
Bangladesh	33 166	10.2	61	236
Brazil	23 520	20.7	47	66
Cambodia	3 966	5.3	70	571
China	86 978	5.3	27	129
Democratic Republic of Congo	24 052	16.1	106	306
Ethiopia	28 675	16.1	95	272
India	185 233	10.2	53	179
Indonesia	15 691	2.7	23	263
Kenya	22 124	16.1	167	450
Mozambique	7 703	16.1	98	268
Myanmar	8 007	10.2	51	165
Nigeria	32 310	12.4	63	228
Pakistan	61 905	25.3	103	172
Philippines	12 167	5.3	43	304
Russian Federation	7 778	4.2	30	126
South Africa	35 449	16.1	237	501
Thailand	2 317	2.7	15	141
Uganda	12 099	16.1	103	320
United Republic of Tanzania	18 890	16.1	118	337
Vietnam	7 559	5.3	29	183
Zimbabwe	12 267	16.1	221	603
Total for the 22 high-burden countries	659 397	9.6		

\* Case rates per 100 000 children. United Nations population estimates used for denominator.

† Case rates per 100 000 population.

TB = tuberculosis.