Global Burden of Disease (GBD) Study

Why is it important for Brazil?

Fatima Marinho, MD, MPH, PhD
Director of NCDs,Health Promotion, Information and Health Analysis
Ministry of Health - Brasil
GBD Brasil 2015 Project

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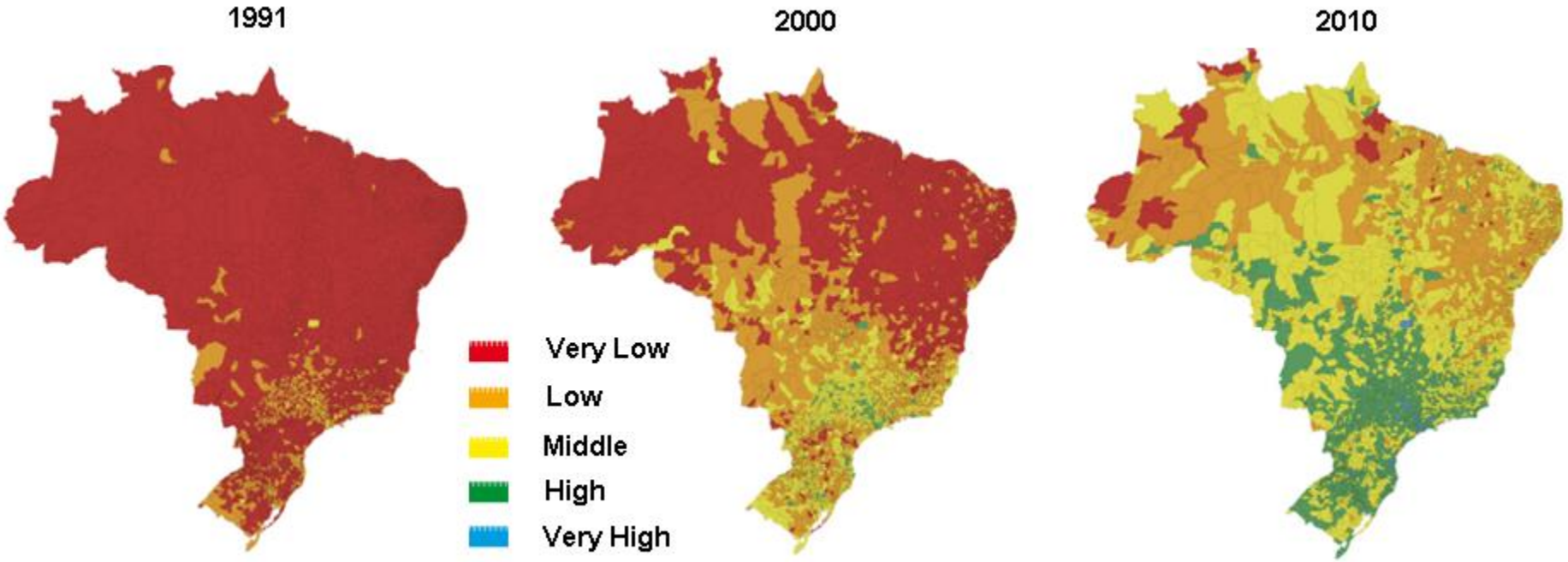
Brazil has been changing its socioeconomic profile quickly

Health services coverage has improved during the last 10 years

Health Data has improved

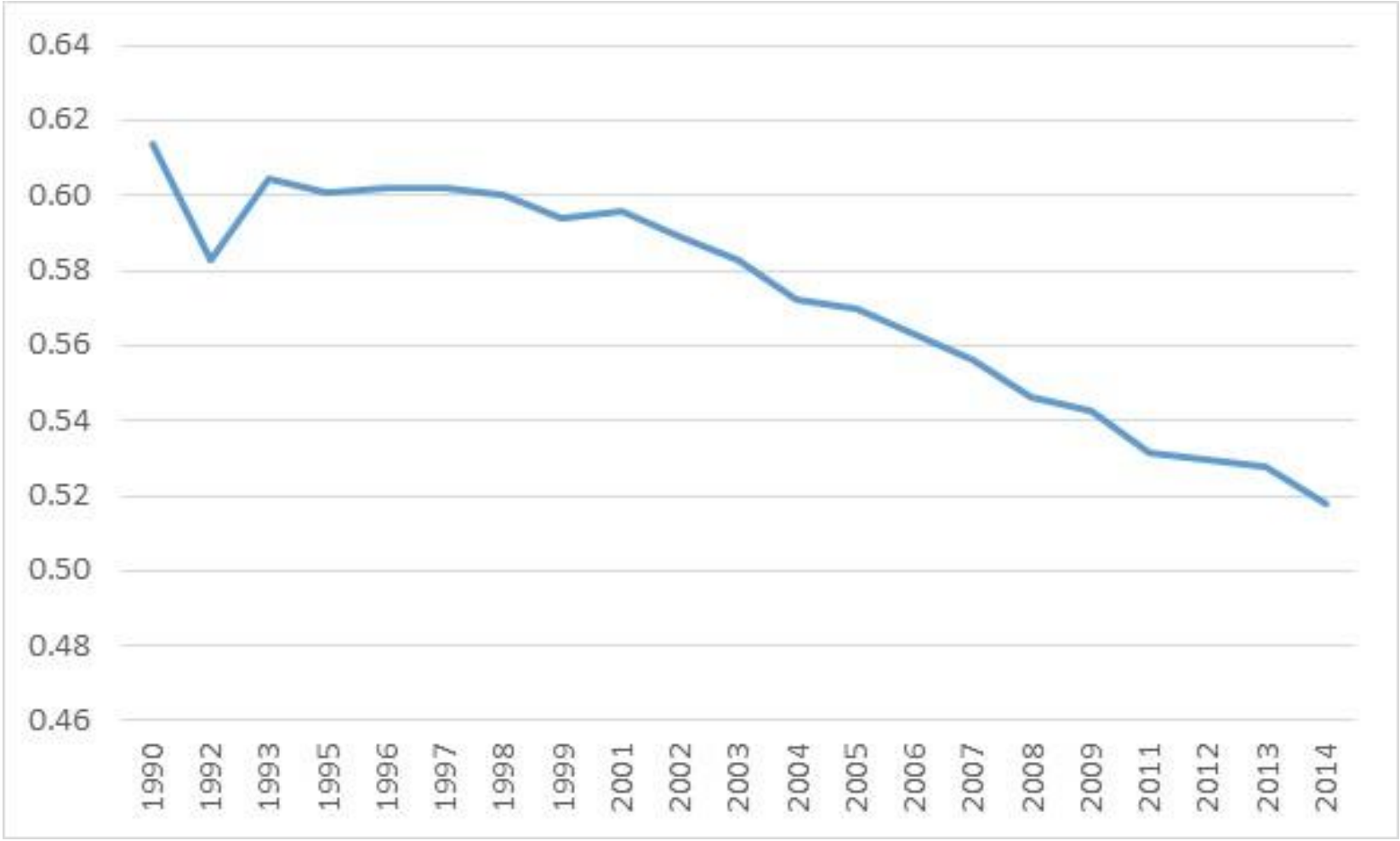
Human Development Index

Figure: Human Development Index of Brazilian Municipalities, 1991-2010.



Income Inequality

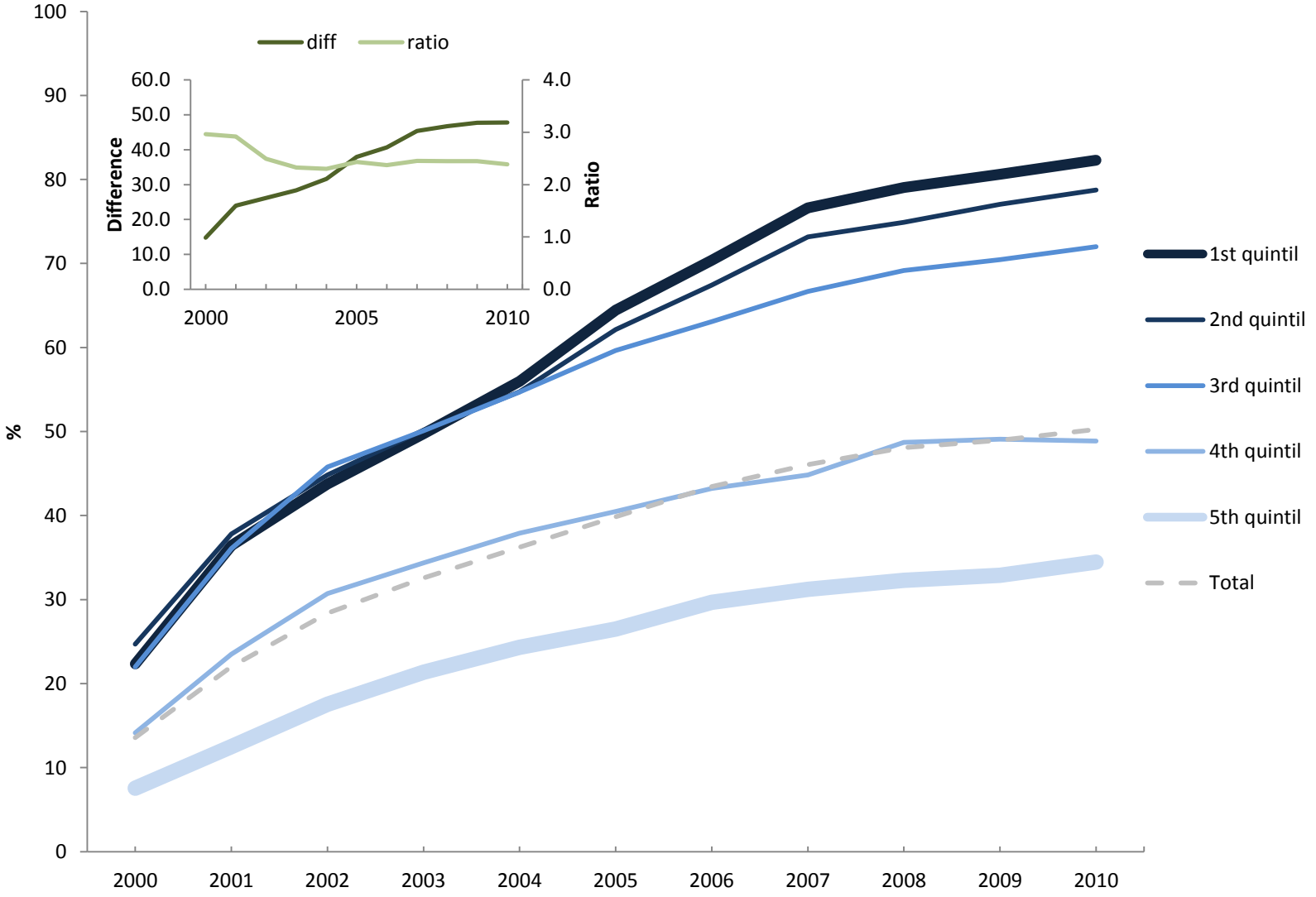
Trend in income inequality measured by Gini index in Brazil , 1990-2014



Source: IPEA

Family Health Program Coverage

Trends in municipal Family Health Program coverage according to quintiles of municipal HDI.



Data Source: SIAB

Note: The small graph refers absolute difference and rate ratio between the richer and the poorer quintiles.

The GBD 2015 Project in Brazil: a partnership among the Ministry of Health (MoH) and academics

- Close collaboration between the Brazil GBD team (MoH and universities) with IHME on the GBD2015 analysis to have better estimates for Brazil and Brazilian states:
  - **Brasil data sent to IHME by the MoH;**
  - **New population estimates for states by age and sex in 1970-2000 (UFMG and UFRN team)**
  - IHME estimates of all cause mortality (mortality envelope-to correct undercount of deaths) and causes of death were discussed with Brazilian researchers in several meetings.

- MoH financed a **Brazilian network** with two main objectives:
  - producing results to integrate health indicators – what is segmented and vertical
  - create knowledge and expertise among academics to contribute in expanding human resources capacity for GBD analysis and **create critical resources for informed policy making.**

The GBD 2015 Project in Brazil: Organization of the Brazil GBD network

- May2014: agreement proposal between the MoH and IHME
- October2014: Workshop in Brasília (IHME, UK and Mexico researchers, Brazilian researchers)
- November2014: GBD Brasil Project approved in UFMG
- April2015: Workshop in Belo Horizonte (Cedeplar/UFMF) with Prof. Haidong Wang/IHME
- June2015: Funding from the MoH to UFMG
- July-Aug2015: Launching of the GBD Brasil Network and workshops in several cities with Prof Mohsen Naghavi/IHME
- Sep2015May2016: Evaluation of IHME estimates (all cause mortality and causes of death), and workshops to disseminate the GBD study
- June-Aug2016: Workshops and meetings in several cities; training courses in Belo Horizonte (UFMG)
- Sept2016: Workshop to define Brazil GBD articles with Prof Mohsen Naghavi/IHME and collaborators

The GBD 2015 study in Brazil

- First comparison of health loss among Brazilian States using standardized GBD metrics to compare health situation with other countries;

- Data errors and miscoding are corrected, such as undercount of deaths (incompleteness) and underlying cause of deaths registered as garbage codes in the information system.

- By now 78 collaborators from Universities

Mortality according GBD groups Brazil 2000 - 2015

GBD groups	Adjusted rate by age		
	2000	2015	variación %
GBD mortality	983,0	786,2	-20,0
Group I - Infecciosas, maternas, neonatal e desnutrição	133,3	93,9	-29,6
Group II - Non-communicable diseases	754,2	611,2	-19,0
Group III - Causa Externa	95,5	81,1	-15,0

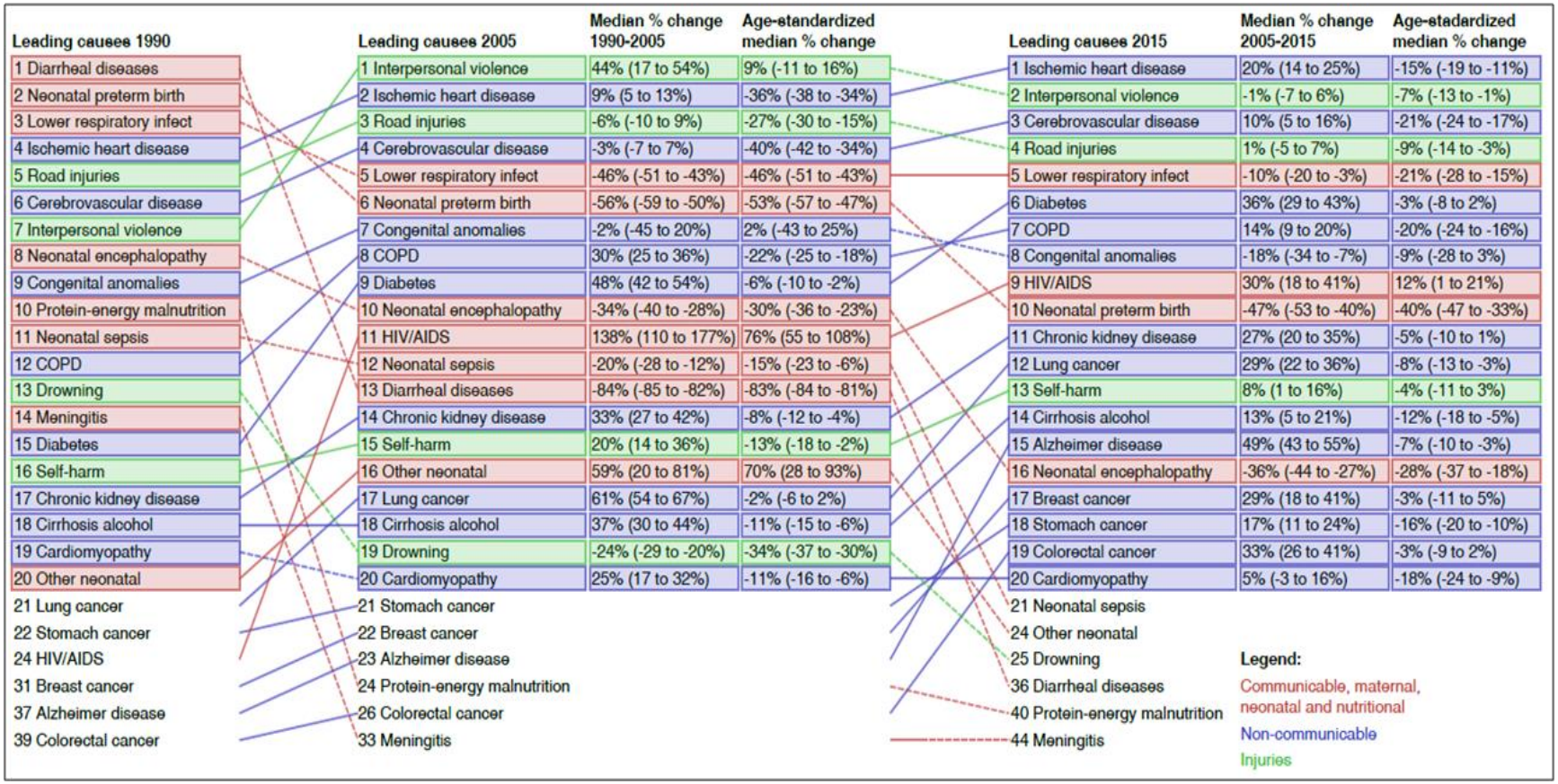
The contribution of the GBD study to track health conditions in Brasil: Premature deaths

- Years of life lost (YLLs) is one of the most important metric used in the GBD study.

- Data in Figure (arrow diagram) indicate that the epidemiologic transition took place in Brazil during the last 25 years. Diarrheal diseases, from Group 1 of communicable, maternal, newborn, and nutritional conditions, was the leading cause of premature deaths in 1990, and dropped to the 13th place in 2005 and 36th in 2015.

- Cardiovascular diseases and injuries are leading causes in 2005 and 2015. But the maintenance of the top five COD from 2005 to 2015 is an indicator of important challenges to the health system, although the age-standardized YLL rates have declined during the period.

Figure-Leading 20 causes of YLLs with median percent change and age-standardized median percent change, all ages, both sexes. Brazil, 1990, 2005, and 2015.

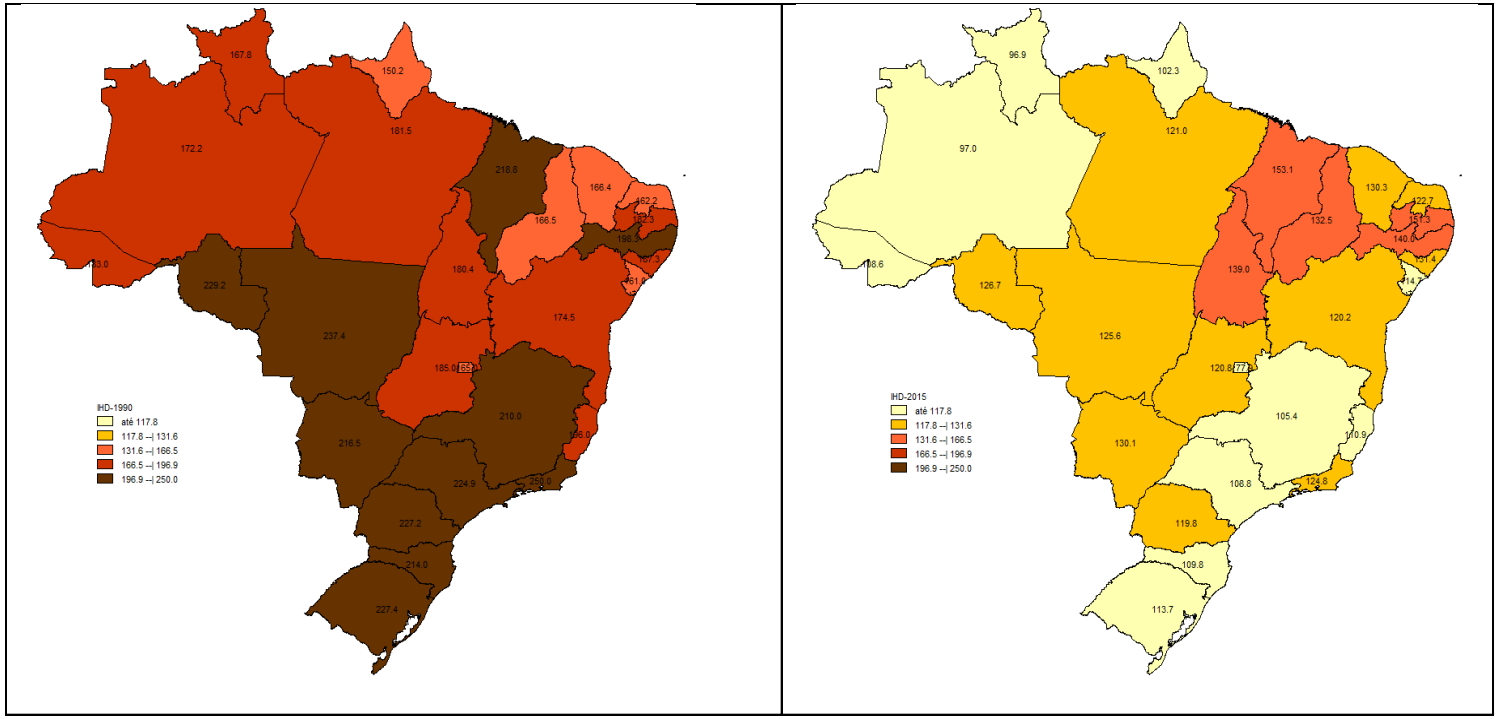


Source: Cause of death GBD Brazil Network and IHME team-Article to be submmited to publication

The contribution of the GBD study to track health conditions in Brasil

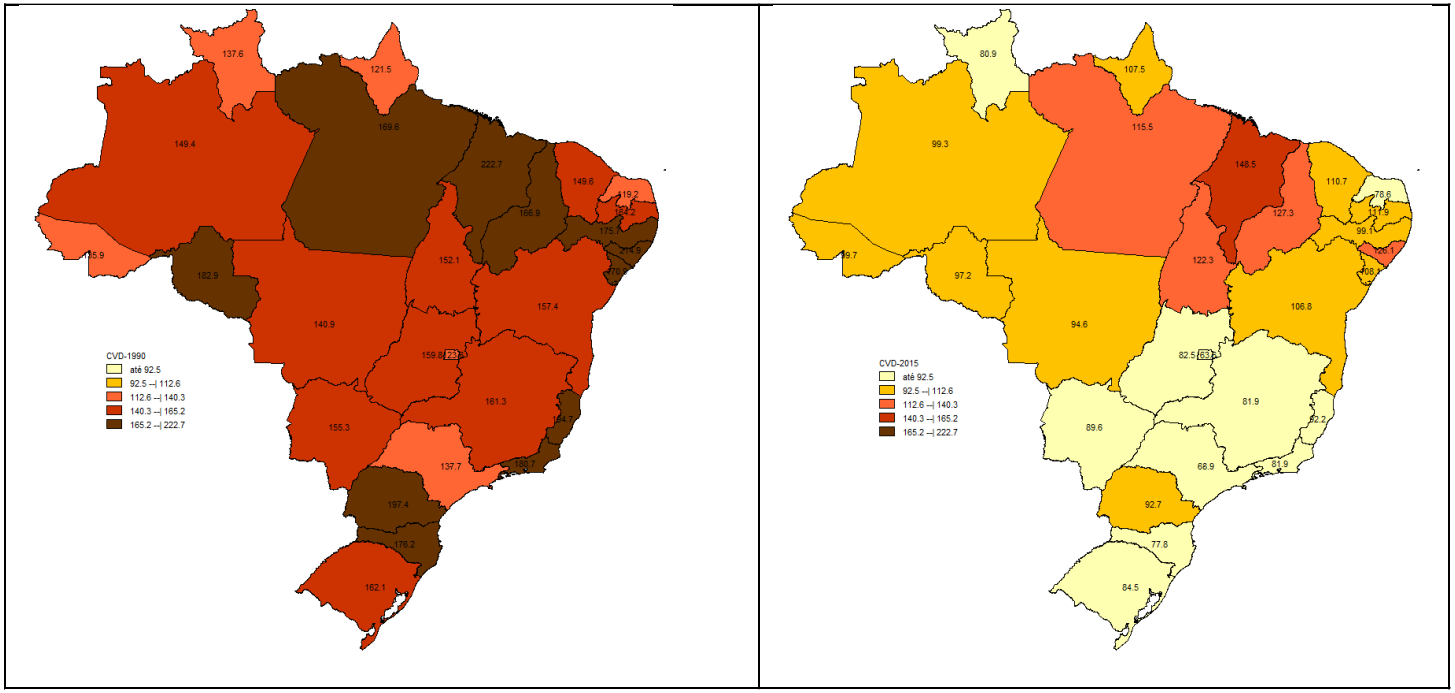
- Demographic shifts: new challenges for health system;
- NCDs were responsible for 76% of all deaths in Brazil in 2015;
- Ischemic heart disease and cerebrovascular disease are the first and second leading causes of death;
- Although mortality rates decreased over the period 1990 and 2015, there are important differences in risks among states;
- The results of the GBD 2015 study demonstrate higher risks in the less developed states of the Northeast region after correction of information bias (undercount of deaths and misclassification).

Figure-Age-standardized rates (per 100,000) for Ischemic heart disease, both sexes, in Brazilian states, 1990 and 2015.



Source: Cause of death Brazil Collaborators-Article to be submmited

Figure -Age-standardized rates (per 100,000) for Cerebrovascular disease, both sexes, in Brazilian states, 1990 and 2015.



Source: Cause of death Brazil Collaborators-Article to be submmited

The contribution of the GBD study to track health conditions in Brasil: DALY

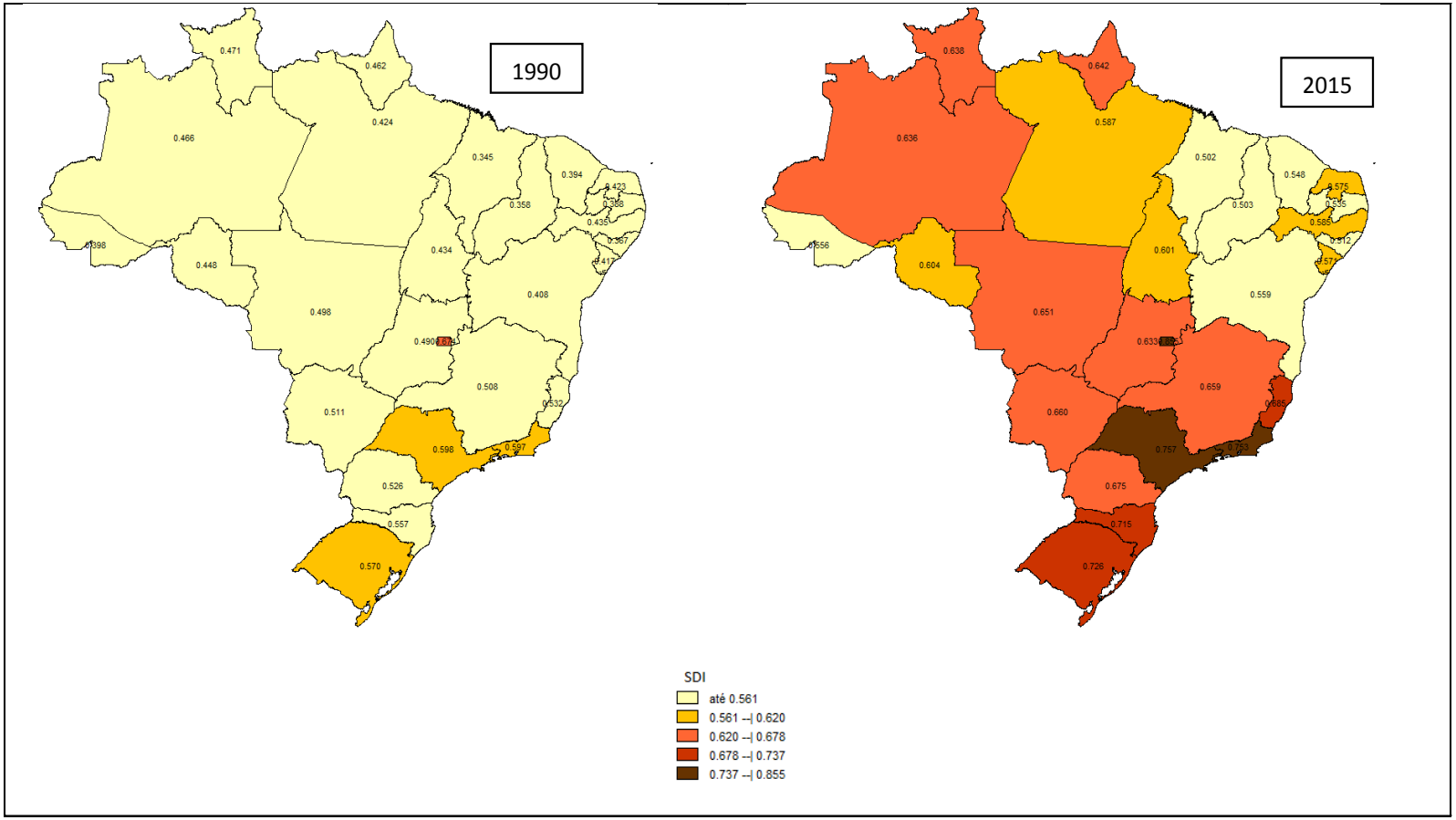
The GBD 2015 study in Brazil: burden of disease associated with levels of national development

- Important development of the GBD2015 study: the Socio-demographic index (SDI)- constructed for each country/subnational region based on the geometric mean of three indicators:
  - income per capita (lag dependent income per capita),
  - average years of schooling among populations aged 15 or older,
  - total fertility rate .

- Countries and subnational areas were classified according to SDIs quintiles
- Expected death rates by age-sex-cause calculated on SDI level.

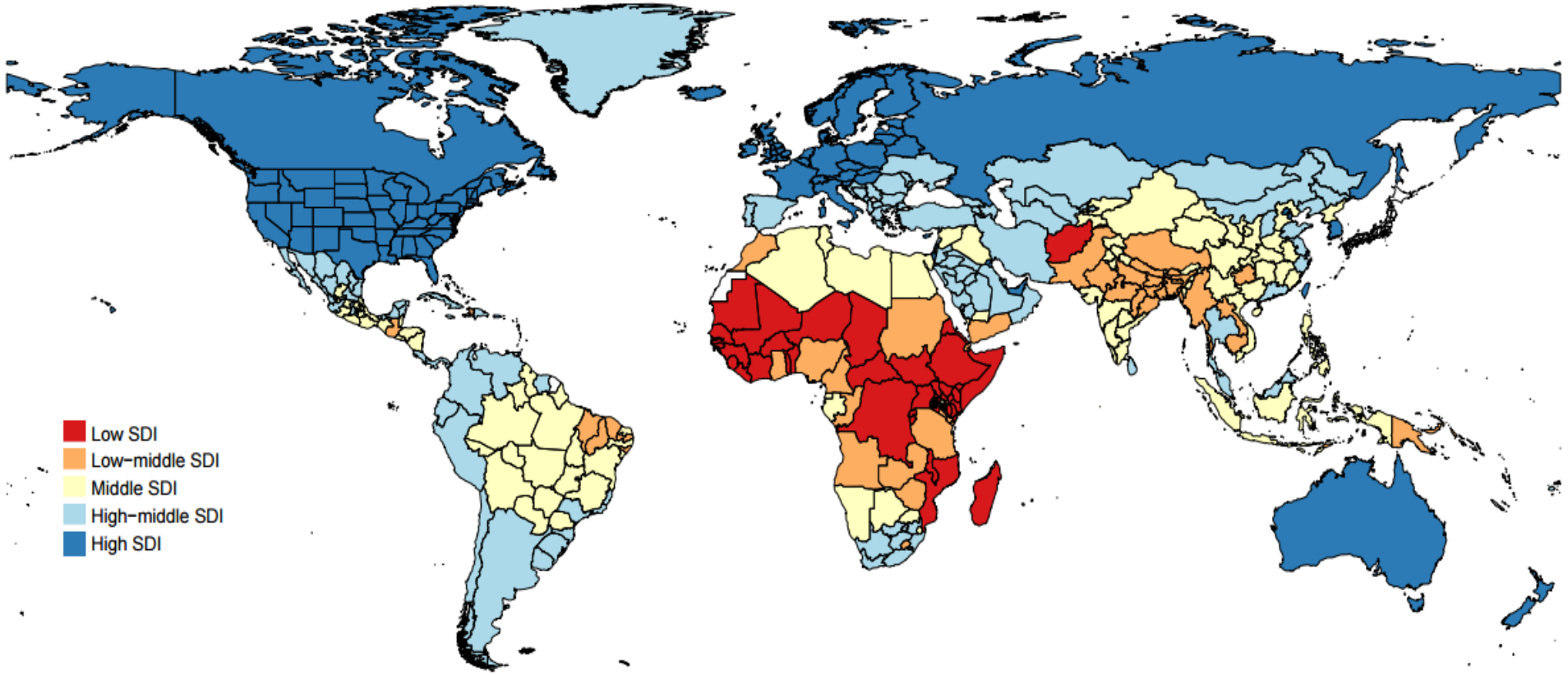
Source: GBD 2015 Mortality and Causes of Death Collaborators. Global,…Lancet 2106; 388:1459-544)

Socio-Demographic Index (SDI) based on the GBD 2015 study in Brazilian states in 1990 and 2015



Source: Cause of death Brazil Collaborators-Article to be submmited

Quintiles of Socio-demographic index (SDI) by GBD geographies, 2015



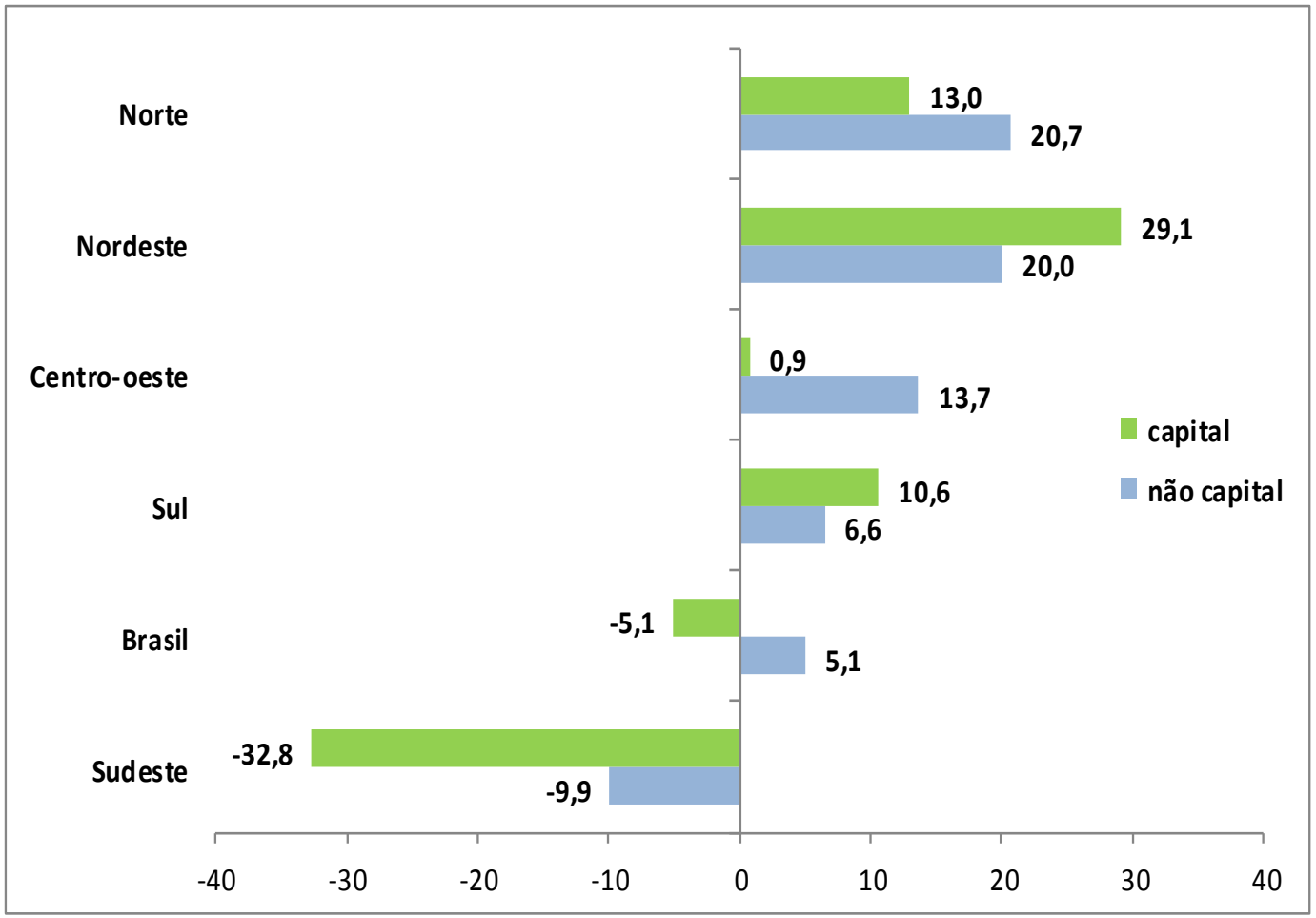
Source: GBD 2015 Mortality and Causes of Death Collaborators. Global,…Lancet 2106; 388:1459-544)

Leading 10 causes of years of life lost (YLLs) with the ratio of observed YLLs to YLLs expected on the basis of Socio-Demographic Index in 2015.

	1	2	3	4	5	6	7	8	9	10
Argentina	IHD [0.86]	LRI [1.66]	Stroke [0.58]	Road Inj [0.82]	Congenital [1.11]	Lung C [0.87]	COPD [1.49]	Self Harm [0.83]	NN Preterm [1.32]	CKD [1.41]
Chile	IHD [0.55]	Stroke [0.65]	Self Harm [0.78]	Road Inj [0.85]	Stomach C [1.03]	LRI [0.71]	Congenital [1.12]	Lung C [0.53]	CKD [1.31]	COPD [0.95]
Uruguay	IHD [0.56]	Stroke [0.65]	Lung C [1.24]	COPD [1.27]	Self Harm [1.21]	LRI [0.83]	Road Inj [0.75]	Colorect C [1.24]	Congenital [0.88]	Breast C [1.39]
Mexico	IHD [0.62]	CKD [3.23]	Diabetes [2.7]	Violence [3.2]	Road Inj [0.78]	Congenital [1.09]	LRI [0.67]	Stroke [0.41]	NN Preterm [0.69]	Cirr Alc [3.0]
Brazil	IHD [0.69]	Violence [4.86]	Stroke [0.73]	Road Inj [0.99]	LRI [0.72]	Diabetes [1.03]	COPD [0.95]	Congenital [0.7]	HIV [0.32]	NN Preterm [0.52]
Paraguay	IHD [0.67]	Road Inj [0.93]	Stroke [0.8]	Congenital [0.82]	NN Preterm [0.6]	Violence [1.94]	LRI [0.57]	Diabetes [1.34]	CKD [1.22]	NN Enceph [0.58]

Source: GBD 2015 Mortality and Causes of Death Collaborators. Global,…Lancet 2106; 388:1459-544)

Homicídios cambio de la tasa/100 mil habitantes
Capital e no capital, por grandes regiones, Brasil, 2000 y 2014
(excluído impacto del crecimiento poblacional)



Fonte:
SIM/SVS/MS

Working with the GBD approach in Brazil: advances and challenges

1. Internal consistency of the GBD estimates and comparability are fundamental for analyzing the state of health in states, measuring disparities between states, and making comparisons with other countries.

2. Results of the GBD global are based on an enormous effort to correct information bias, such as undercount of deaths and misclassification due to garbage codes in cause of death analysis.

3. Data sources and results are available on the internet (raw data and estimates available in the Viztool), and detailed methods in Appendix.

4. Methods and data are improving from each sequential GBD, but GBD estimates are not directly comparable with those from older GBD studies.

5. A big challenge: the GBD study uses highly complex demographic and statistical methods, so it is difficult to have independent local replication of all results.

6. GBD results may support policy makers and other stakeholders to identify important gaps, measure successes and set new priorities. For example, the MoH is launching a project to investigate all GC (ill-defined R codes and others)

What is coming

- It is ready for submission all causes death paper by state
- A special publication with GBD results will be publish in Portuguese on Brazilian Journal of Epidemiology – in Portuguese
- More engagement of MoH technical programs
- Increase number of collaborators
- Estimates of Zica virus and Chikungunya burden

GBD Brasil 2015

Thank you!

fatima.marinho@saude.gov.br