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COUNTRY AND WHO REGIONAL TRENDS FOR HEPATITIS B VIRUS (HBV) MORTALITY, 1990-2019: AN ANALYSIS OF THE GLOBAL BURDEN OF DISEASE (GBD) STUDY

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Rochelle Obiekwe served as a Summer Research Fellow within the Coalition for Global Hepatitis Elimination (CGHE) at the Task Force for Global Health in Decatur, Georgia, USA. Her research at CGHE focused on the analysis of trends in HBV and HCV mortality for high-burden countries to inform stakeholders of the serious issue of viral hepatitis and contribute towards knowledge needed to accelerate hepatitis B and C elimination. Ms. Obiekwe is currently a second-year Master of Public Health in Epidemiology student and Global Health Certificate Candidate at the University of Georgia in Athens, Georgia, USA.



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I have no relevant financial relationships to disclose.

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Introduction

- Viral hepatitis is among the leading causes of death worldwide
- In 2016, the WHO set targets for HBV elimination, including a reduction in HBV-related mortality of 10% by 2020 and 65% by 2030
- The Global Burden of Disease Study (GBD) from the Institute of Health Metrics and Evaluation (IHME) is an important source for hepatitis mortality estimates to monitor progress towards elimination

Objective

Estimate global and country-level trends in HBV mortality for 1990-2019 and 2015-2019 to gauge progress towards HBV elimination goals

Methods

- Aggregate global and country-level mortality counts and rates for acute HBV, cirrhosis, and liver cancer attributable to HBV
 - GBD mortality for acute HBV, cirrhosis, and liver cancer attributable to HBV estimated using vital registration and verbal autopsy data, covariates, and the cause of death ensemble model (CODEm) as previously described¹
- Estimate global HBV mortality for 1990, 2000, 2015, and 2019
- Estimate percent change in national HBV death counts and mortality rates for the years 1990-2019 and 2015-2019
- Exclude countries with less than a 250,000 population or not recognized by the United Nations

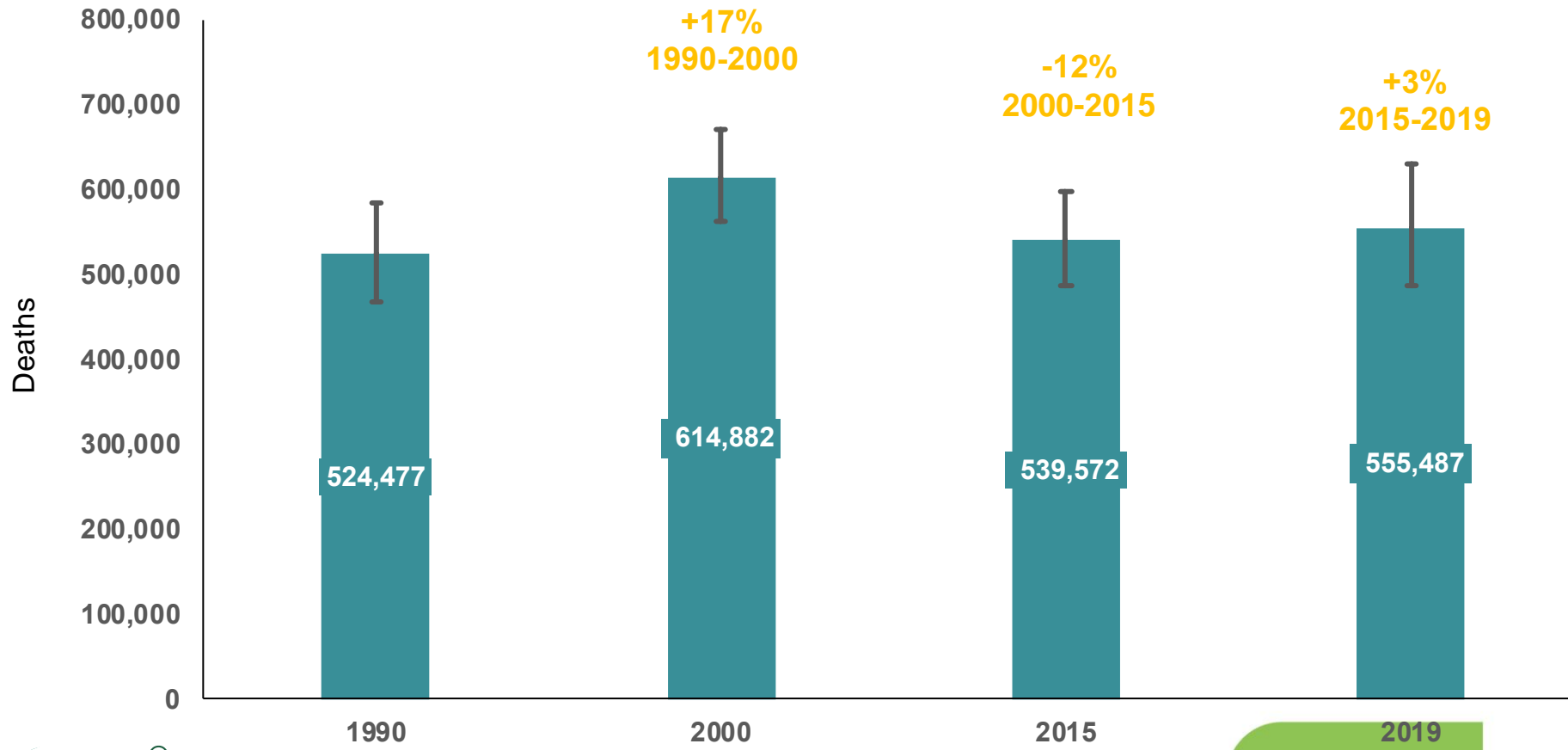
¹The Lancet. 8 Nov 2018;392:1789–858. doi: [http://dx.doi.org/10.1016/S0140-6736\(18\)32279-7](http://dx.doi.org/10.1016/S0140-6736(18)32279-7) .

Changes to Methodology GBD 2019

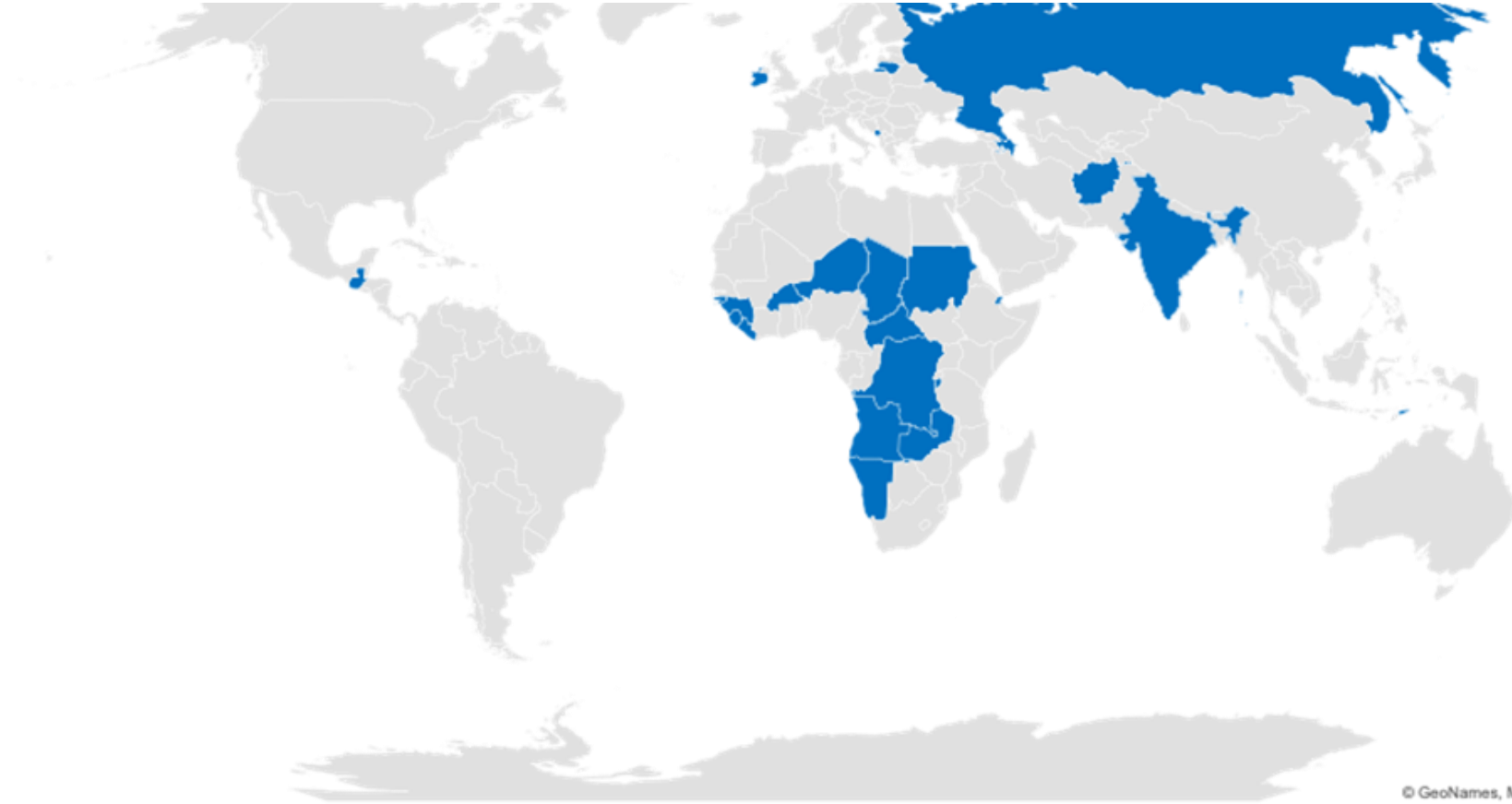
- Redistribution of ICD-10 code mapping
 - Code C22.9 malignant neoplasm of liver redistributed to “Liver cancer” or other primary cancers that metastasize to liver.
 - ICD codes redistributed proportionately to “cirrhosis and other chronic liver diseases” and “Acute hepatitis”
- Removal of prevalent cases from counterfactual model to improve HBsAg seroprevalence estimate
- Direct modeling of acute hepatitis B from vital registration

Global HBV-Related Death Counts Remained Similar from 1990-2019

Global HBV-Related Deaths, 1990, 2000, 2015, and 2019



25 Countries are on Track to Meet 2020 WHO Mortality Target for HBV



56% AFRO, 20% EURO, 8% EMRO, 8% SEARO, 4% PAHO

*% changes for all countries may not be statistically significant at 95% level

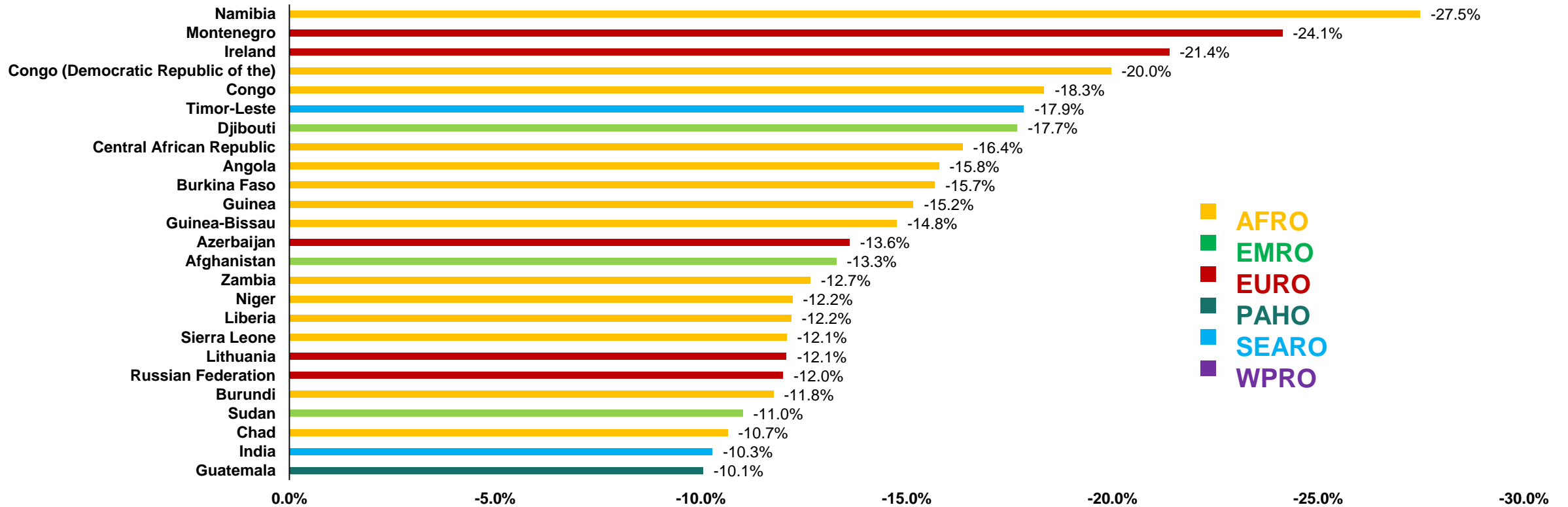
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25 Countries are on Track to Meet 2020 WHO Mortality Target Based on Decline in Death Rate

Percent Change in Death Rate 2015-2019

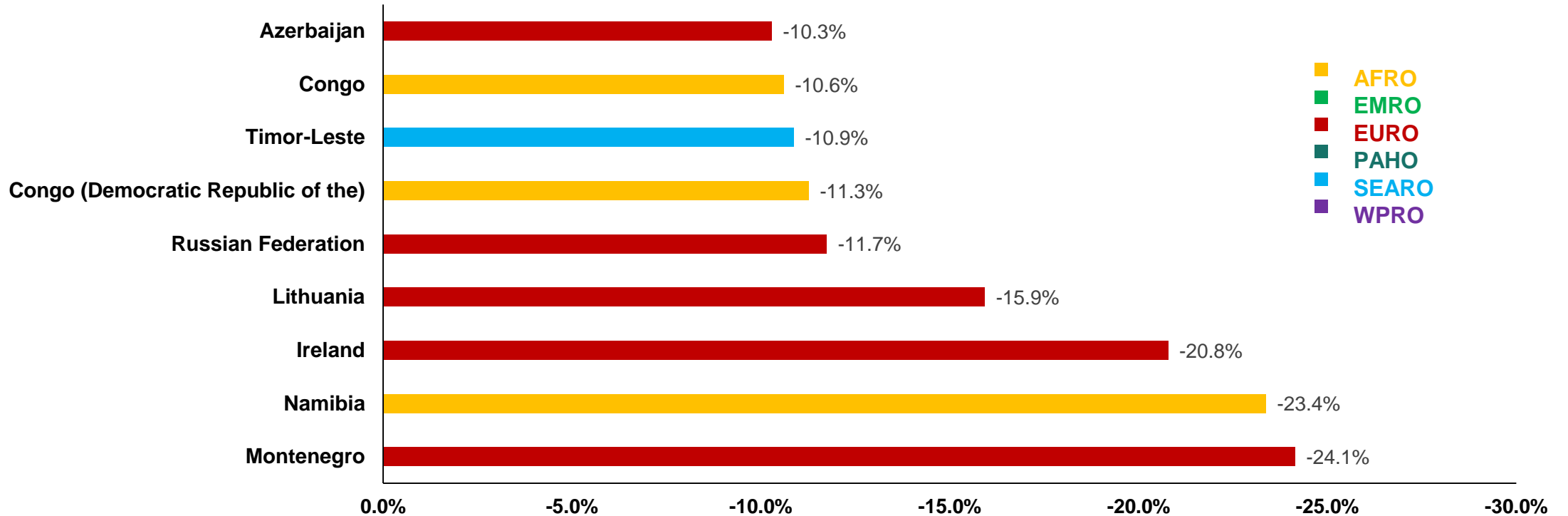


56% EURO, 33% AFRO, 11% SEARO

*% changes for all countries may not be statistically significant at 95% level

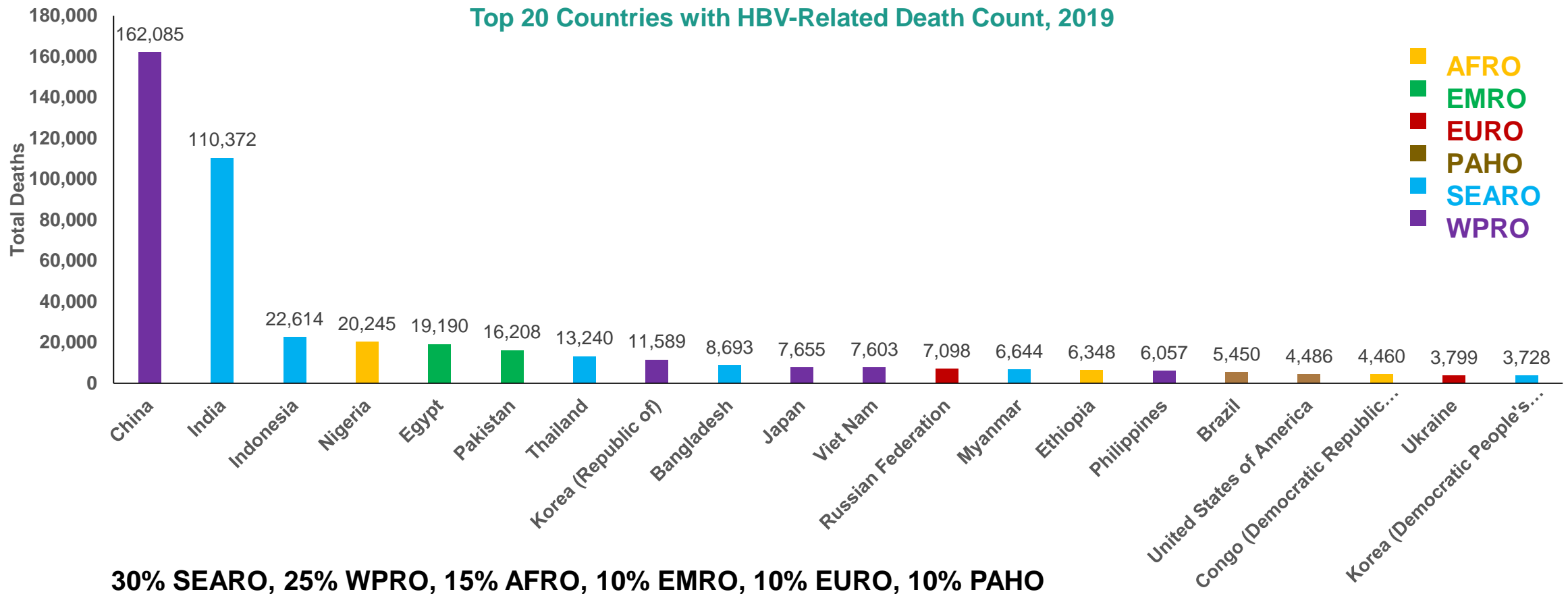
9 Countries are on Track to Meet the 2020 WHO Mortality Target Based on Decline in HBV-Related Death Count

Percent Change in Death Counts 2015-2019

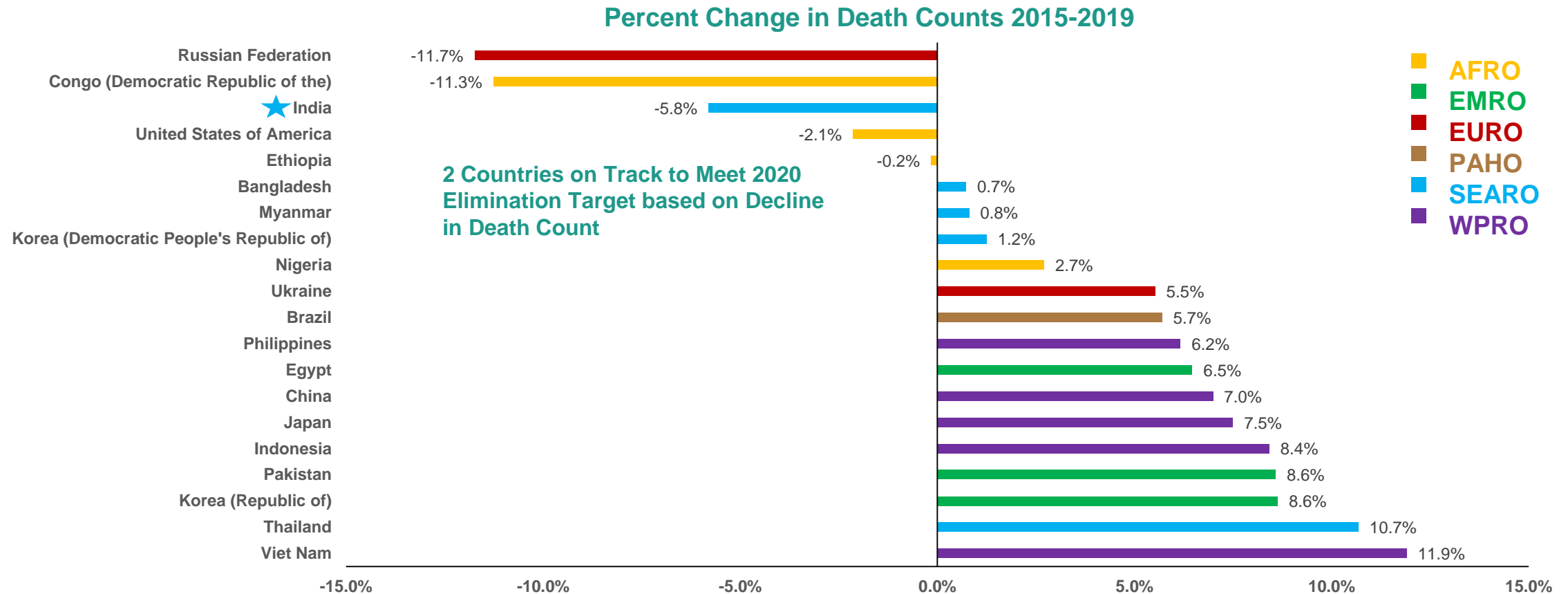


*% changes for all countries may not be statistically significant at 95% level

20 Countries with Highest HBV-related Death Count Represented 81% of Global HBV Deaths in 2019



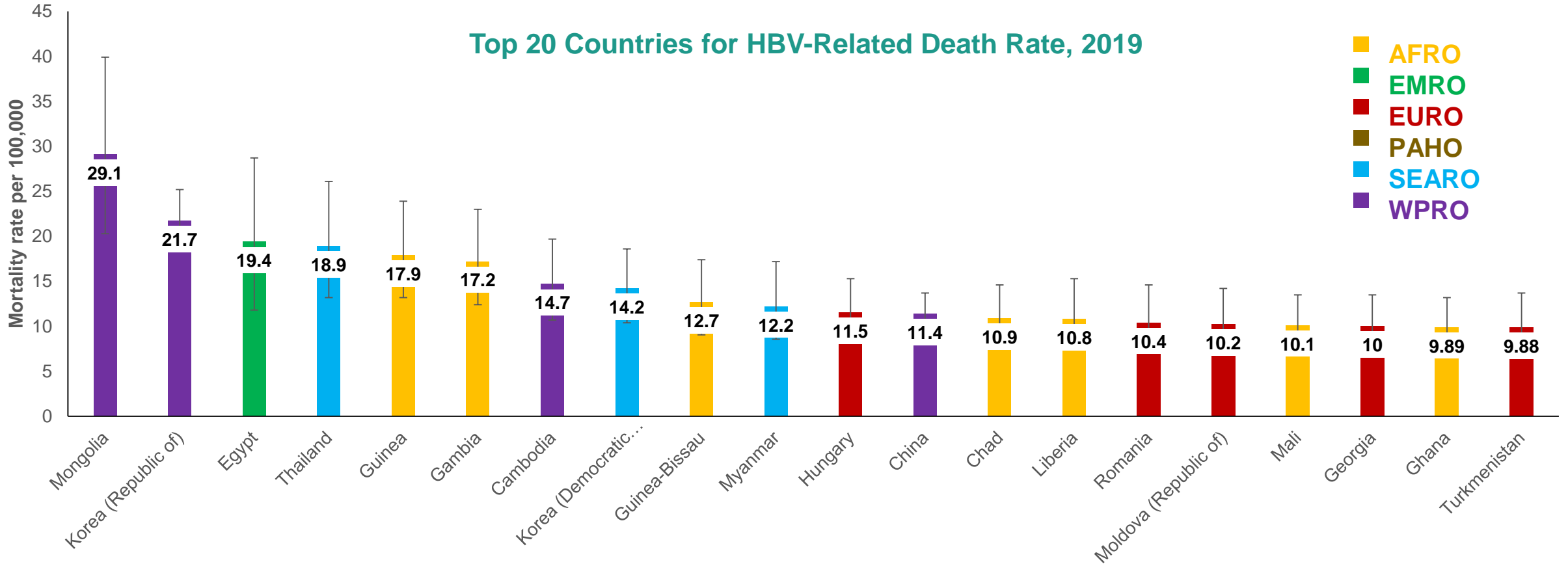
Majority of Top 20 Countries for Highest HBV-Related Death Count Have Seen Increases in HBV Death Counts since 2015



*% changes for all countries may not be statistically significant at 95% level

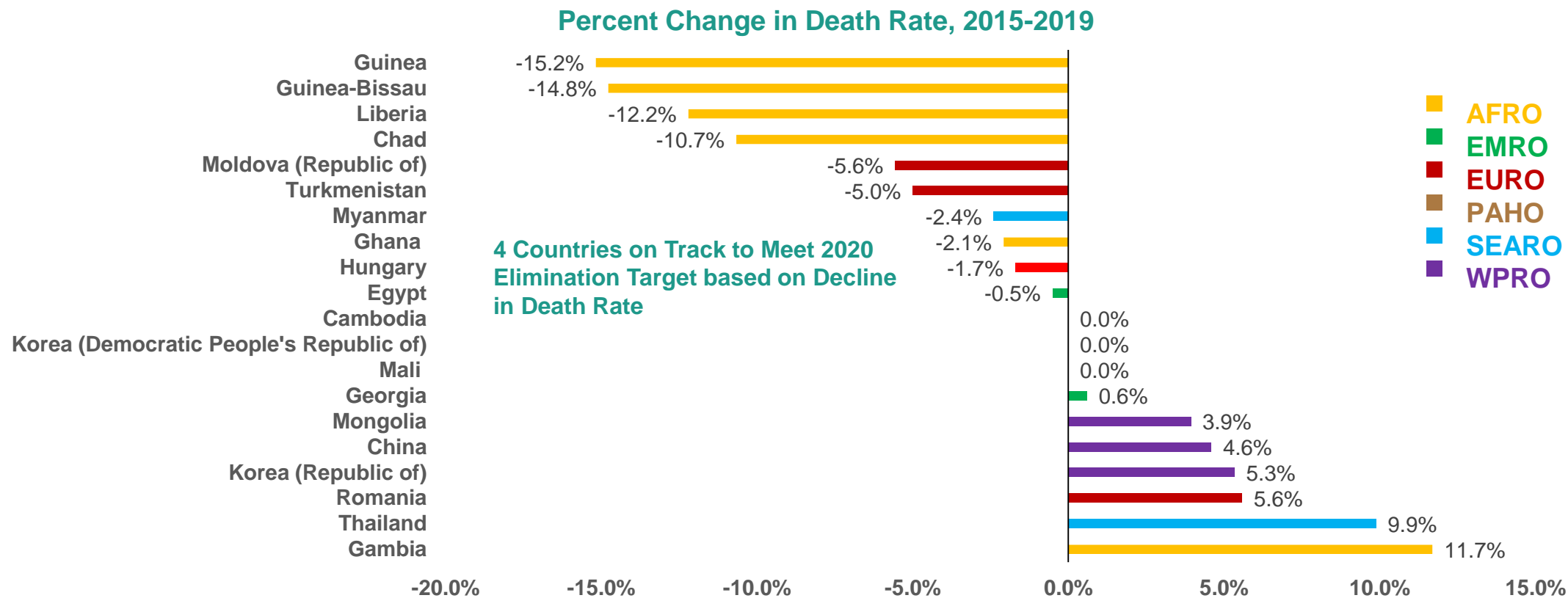
6 of Top 20 HBV-Related Death Count Countries Also Fall in Top 20 Countries for HBV-Related Death Rate

Top 20 Countries for HBV-Related Death Rate, 2019



35% AFRO, 25% EURO, 20% WPRO 15% SEARO, 5% EMRO

Declining Trend in Death Rate from 2015-2019 Estimated for 11 Countries in Top 20 for HBV-Related Death Rate



*% changes for all countries may not be statistically significant at 95% level

Limitations

- Limited variable quality of data to identify deaths from cirrhosis and liver cancer
- Lack of data to allow assignment of hepatitis B etiologies to cases of cirrhosis and liver cancer death
 - 10 of the 20 top-burden countries [by death counts] lacked primary data for modeling HBV-related mortality (median:1 source, range: 0-55)
- Methodological changes for GBD 2019 will require dissemination and familiarization among stakeholders

Key Takeaways

- 555,487 HBV-related deaths in 2019
- Mortality burden essentially unchanged from 2015-2019
- Data suggests 25 countries are on track to meet the 2020 target of a 10% reduction in HBV mortality
- 20 countries represent 81% of global HBV deaths; only 3 appear to be on track to meet the 2020 goals
- Analysis of both HBV death counts and rates help to more completely identify countries with large disease burdens of Hepatitis B infection.

Next Steps

- Disseminate new estimates to inform global policy development to improve vaccination programs and scale up HBV birth-dose, testing, treatment
 - IHME GBD 2019 released on October 15th
 - Coalition for Global Hepatitis Elimination includes GBD 2019 data on open-access country data dashboards, along with other sources at: www.globalhep.org
- Improve precision of country estimates
 - Develop relationships with national stakeholders to identify additional primary sources
 - Conduct follow-up studies or assessments to confirm mortality estimates

Thank you!

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