



Effect of Water and Sanitation On Child Health and Mortality

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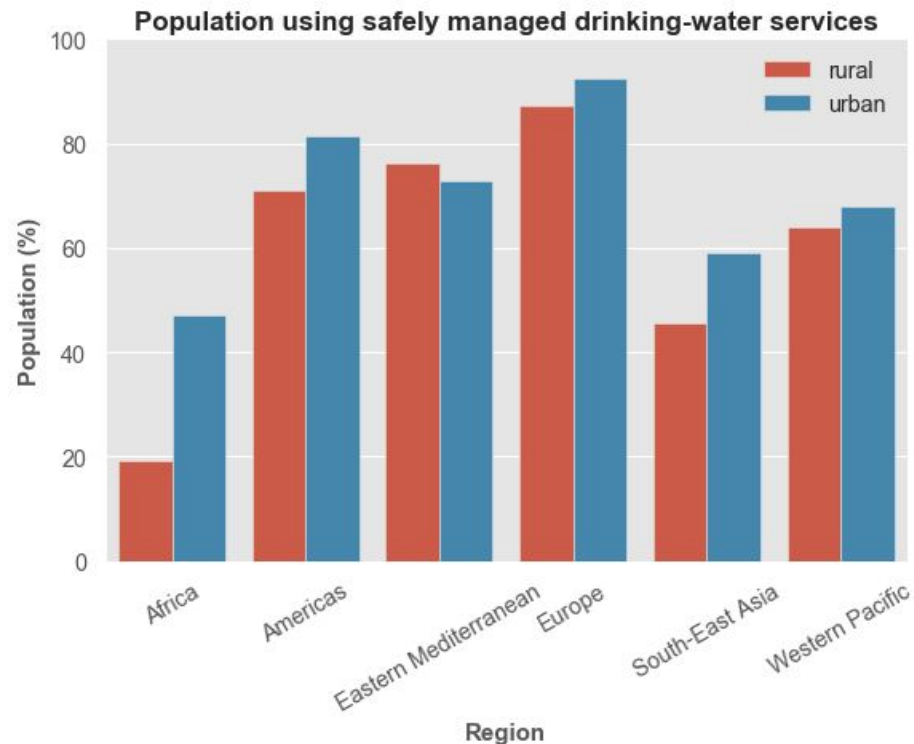
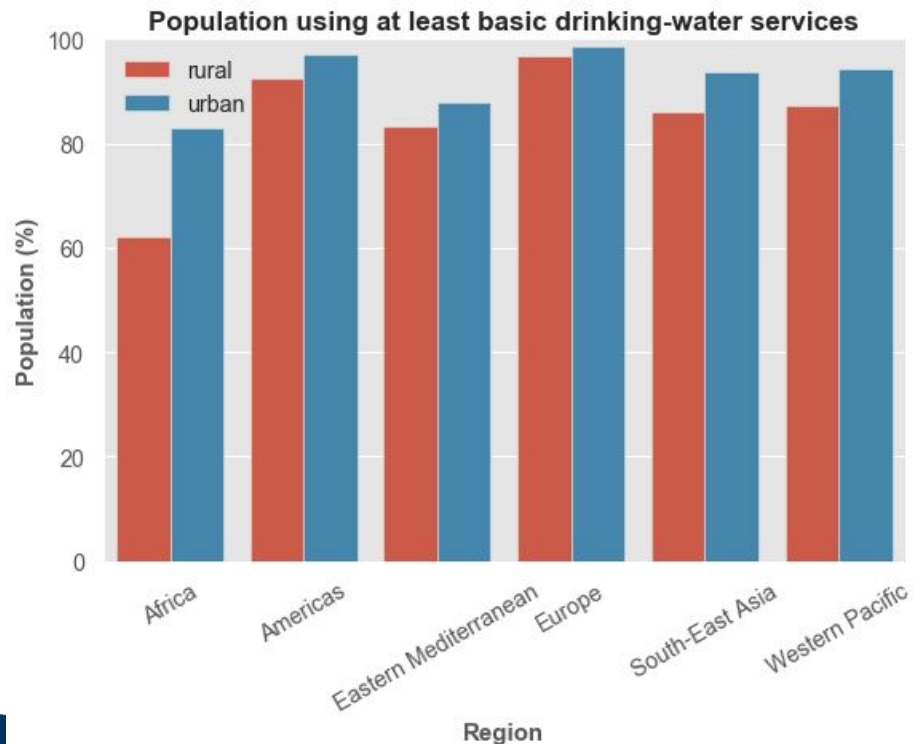
Objective

- **Question:** Have we achieved improvements in water and sanitation availability over the last two decades and have these advancements led to improvements in children health and mortality rate?
- **Hypothesis:** There will be a strong negative correlation between children mortality rate and malnutrition with water availability and safe sanitation practices.

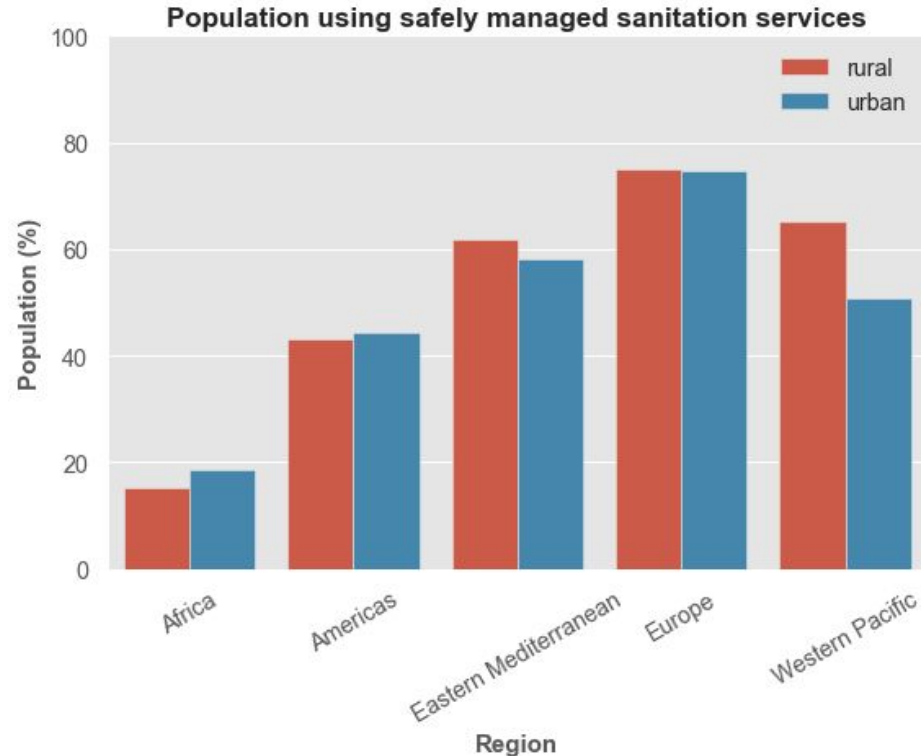
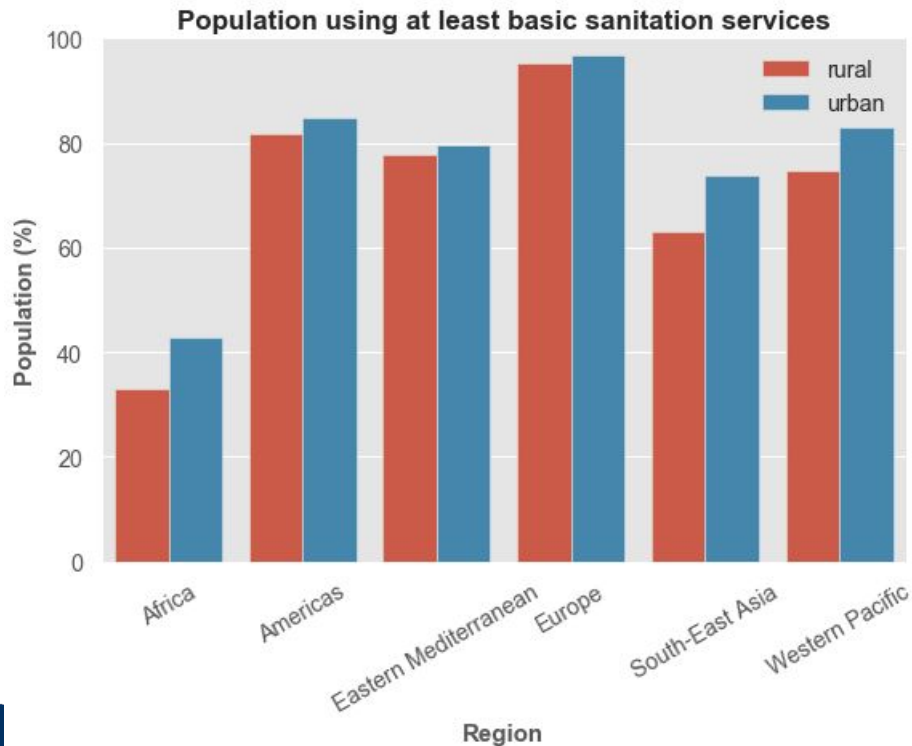
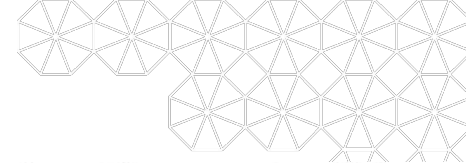
- World Health Organization (WHO)
- Potential Causes:
 - Drinking water availability
 - Sanitation services
- Impacts:
 - Child malnutrition
 - Mortality rates
 - Diseases (Malaria)
- Data Analysis Assumptions:
 - Averaged the data across years
 - NaN values 'not available data'

		Type	Area	1 st variable	Tim eline	
2 nd variables	Water	basic	rural	per country only	2000-2017	
			urban			
		safe	rural			
			urban			
	Sanitation	basic	rural			
			urban			
		safe	rural			
			urban			
	Outcome 1	Children health measured by weight (stunted, underweight, overweight)			per country and WHO region	1983-2018
		Mortality rate (children < 5 years and neonatal)				1990-2018
Malaria incident rate			2010-2017			

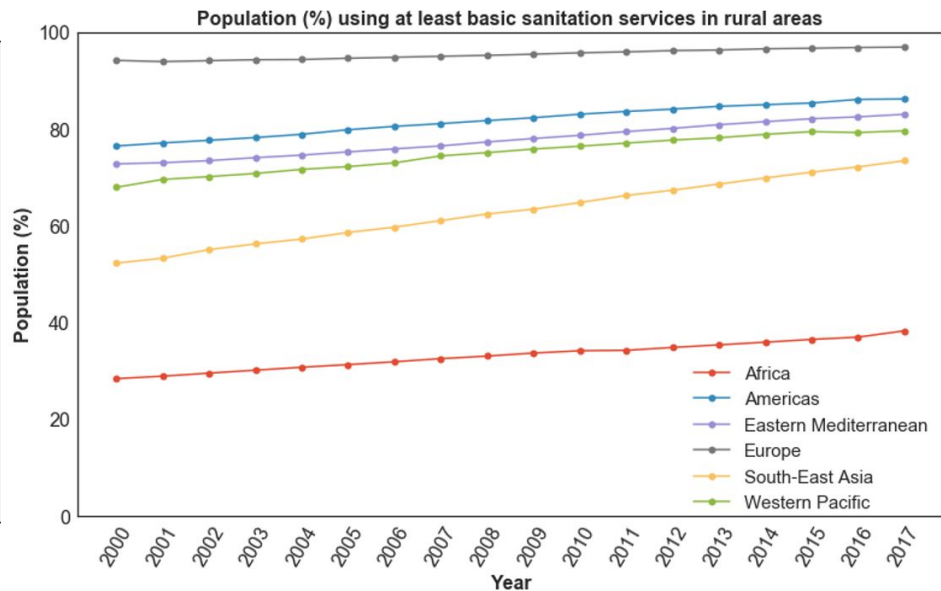
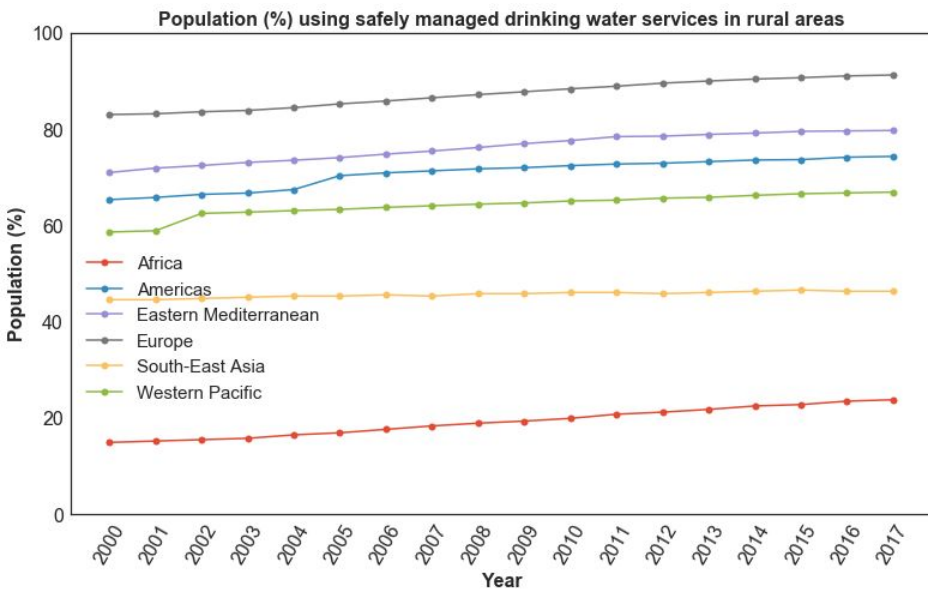
Drinking water availability (2000-2017)



Sanitation Services (2000-2017)

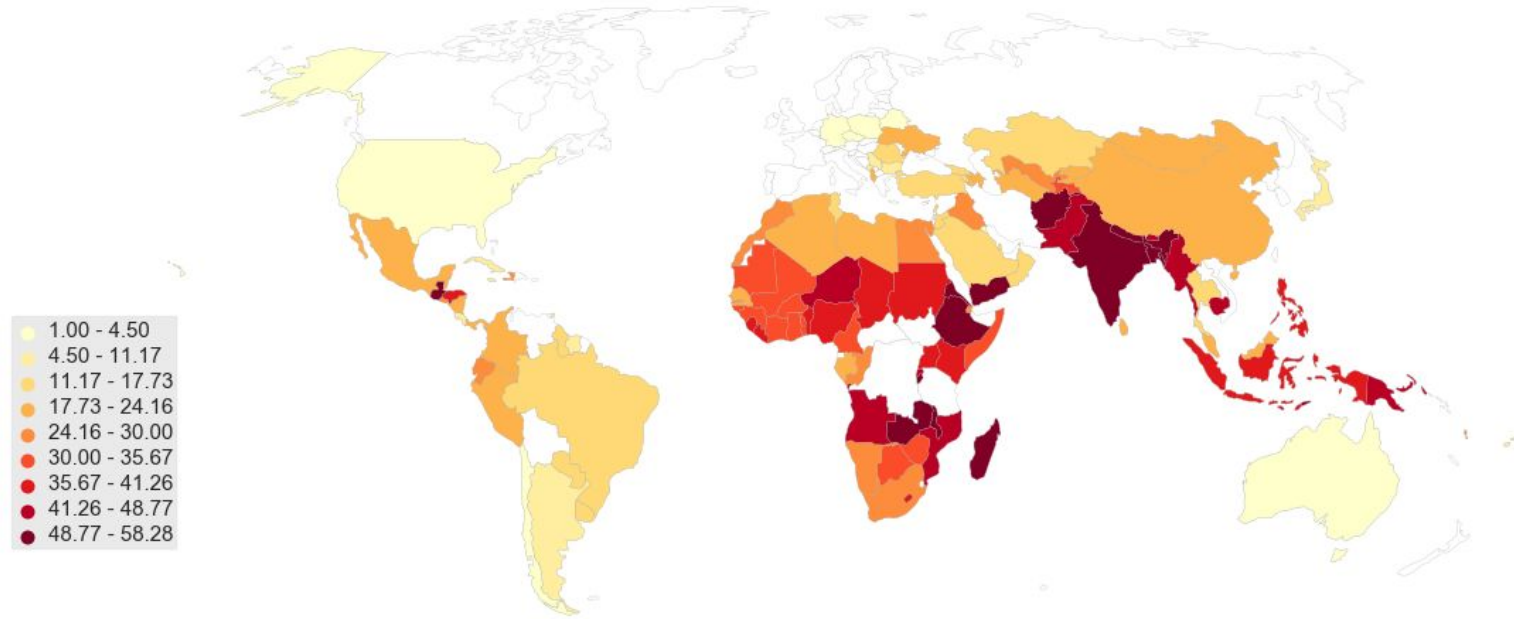


Drinking Water and Sanitation Trends



Child malnutrition

Children aged <5 years stunted (% per country)

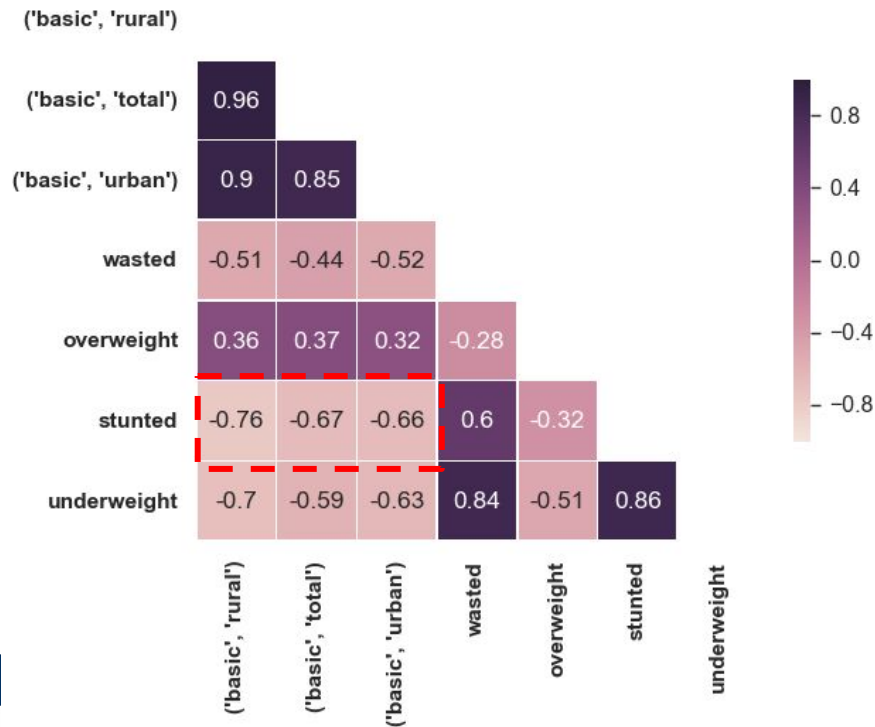


% Stunted per country

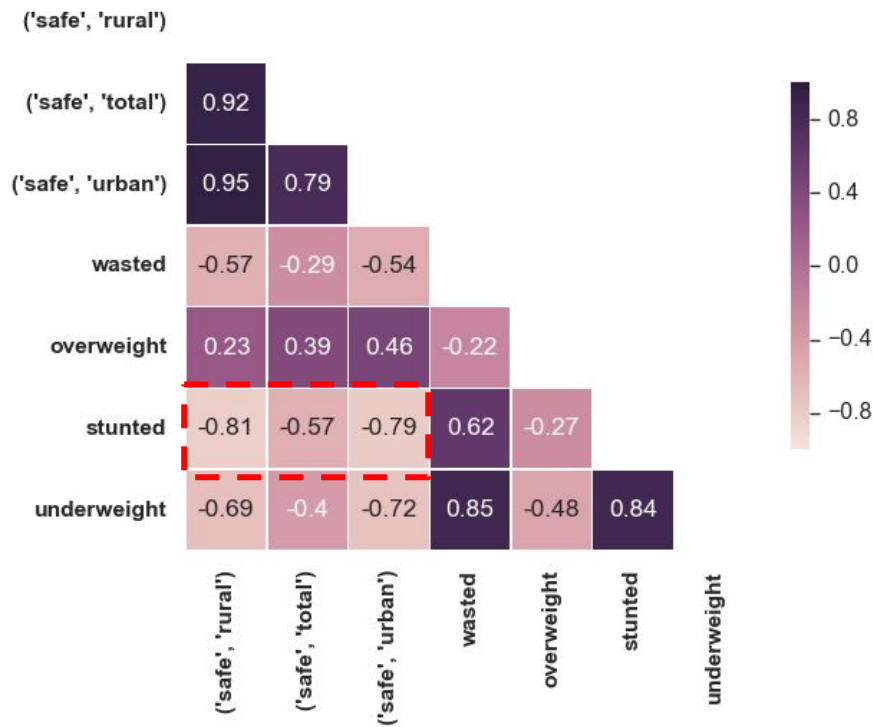
NOTE: countries with no data available are shown in plain white color

Malnutrition and drinking water (2000-2017)

Correlation between children malnutrition & basic drinking water

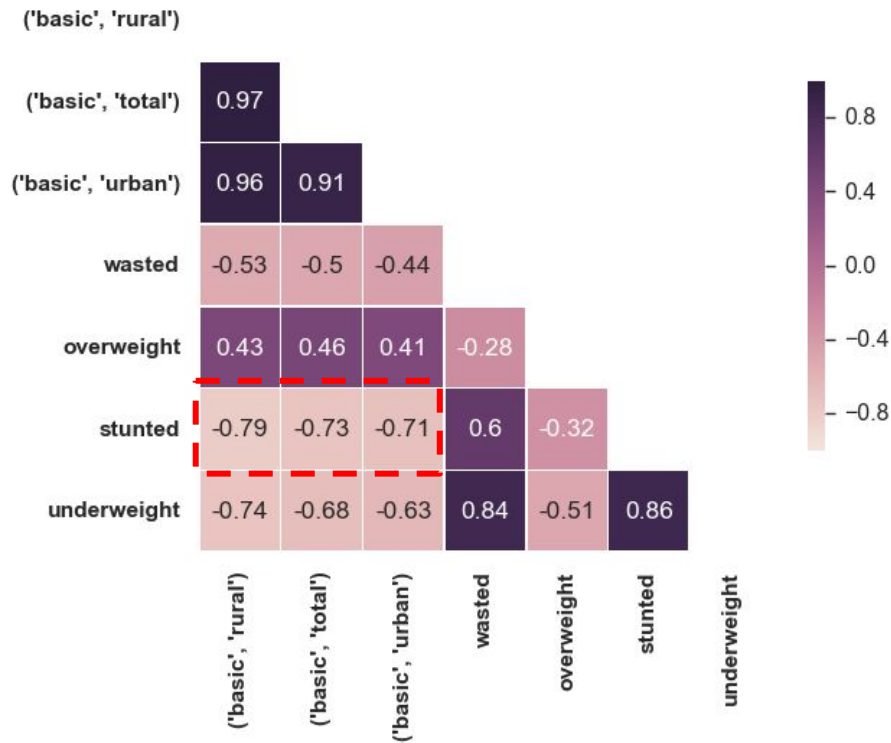


Correlation between children malnutrition & safely-managed drinking water

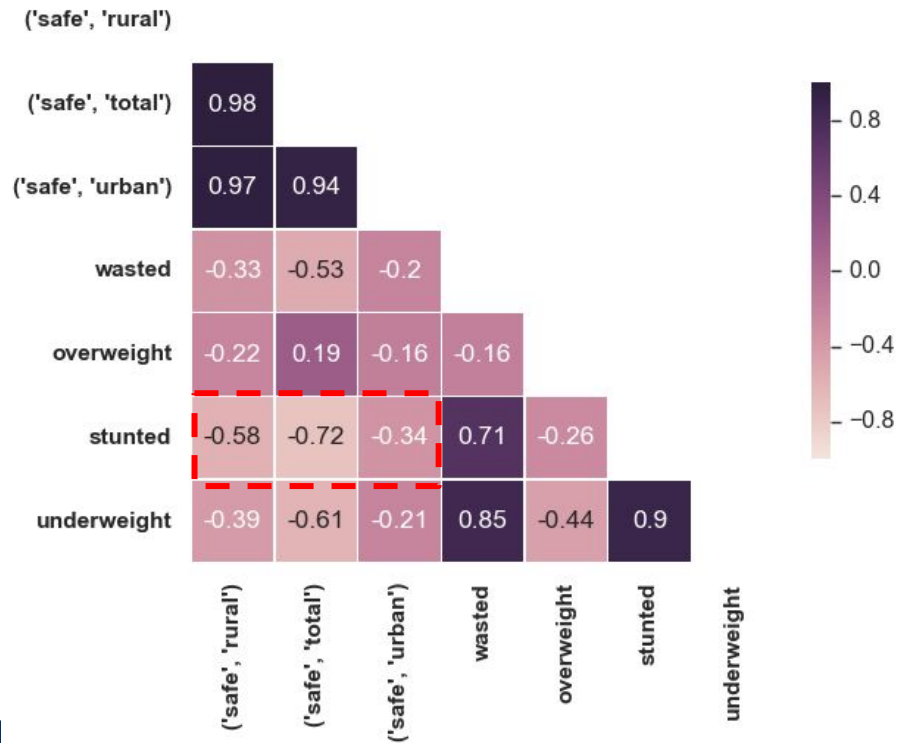


Malnutrition and sanitation services (2000-2017)

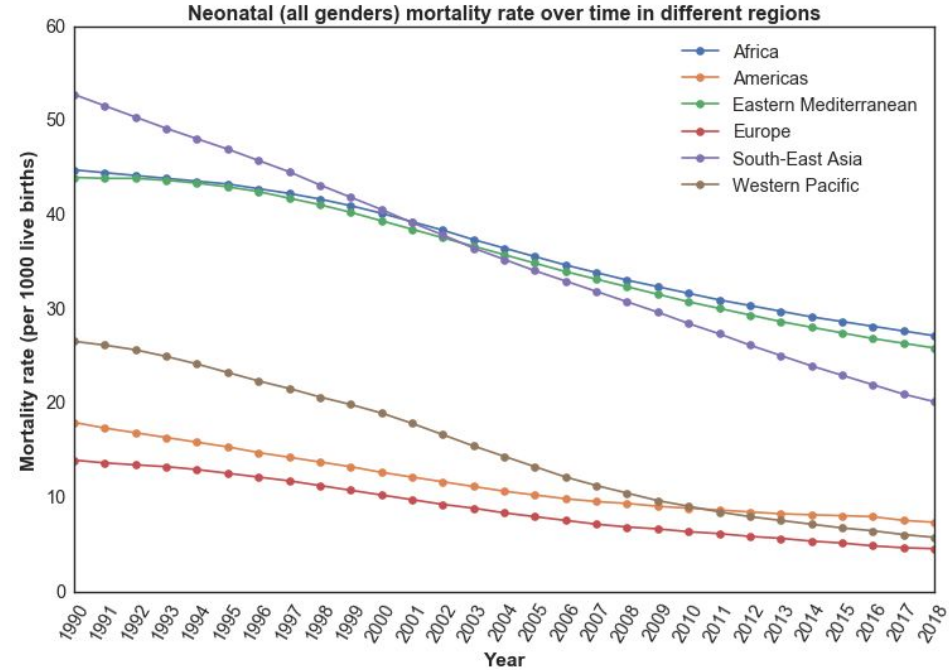
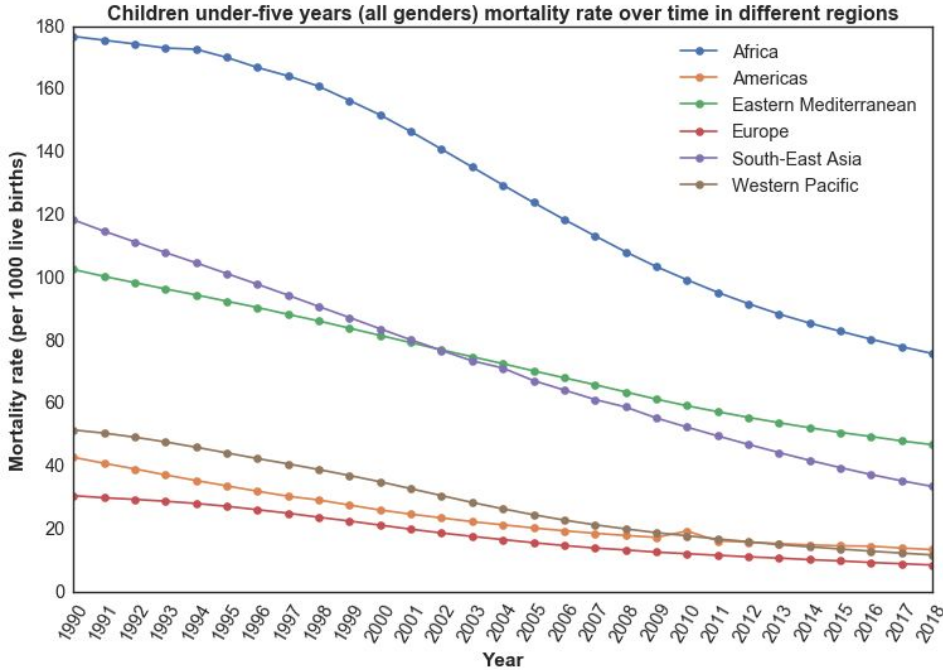
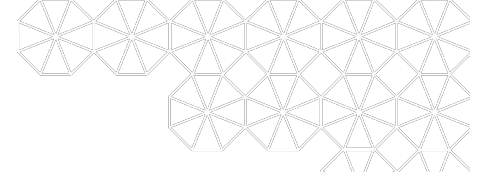
Correlation between children malnutrition & basic sanitation



Correlation between children malnutrition & safely-managed sanitation

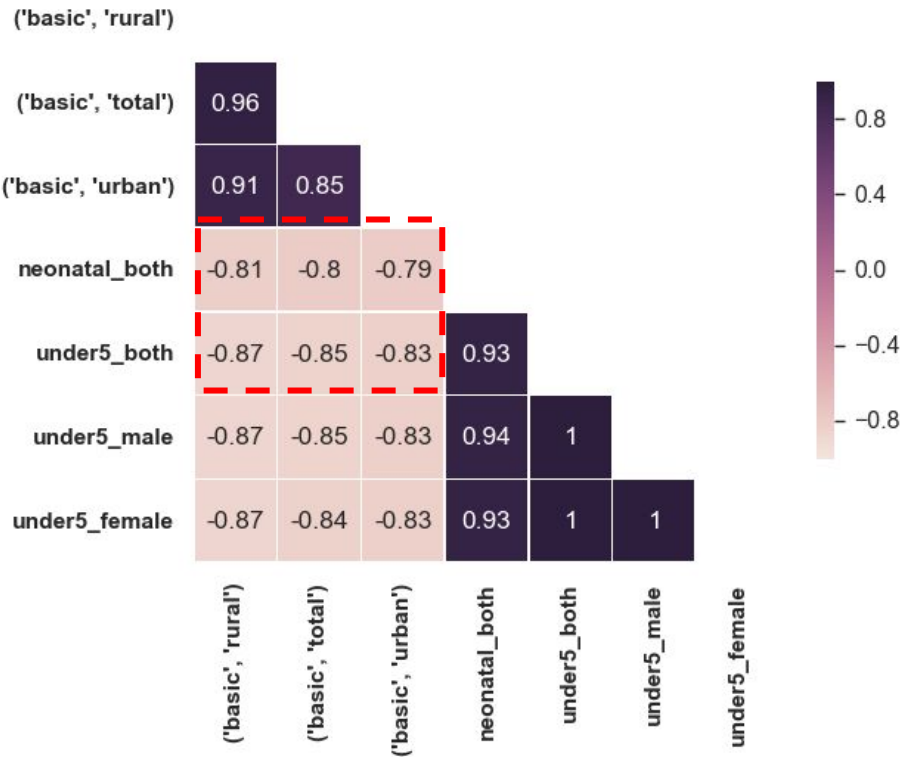


Mortality rates (1990-2018)

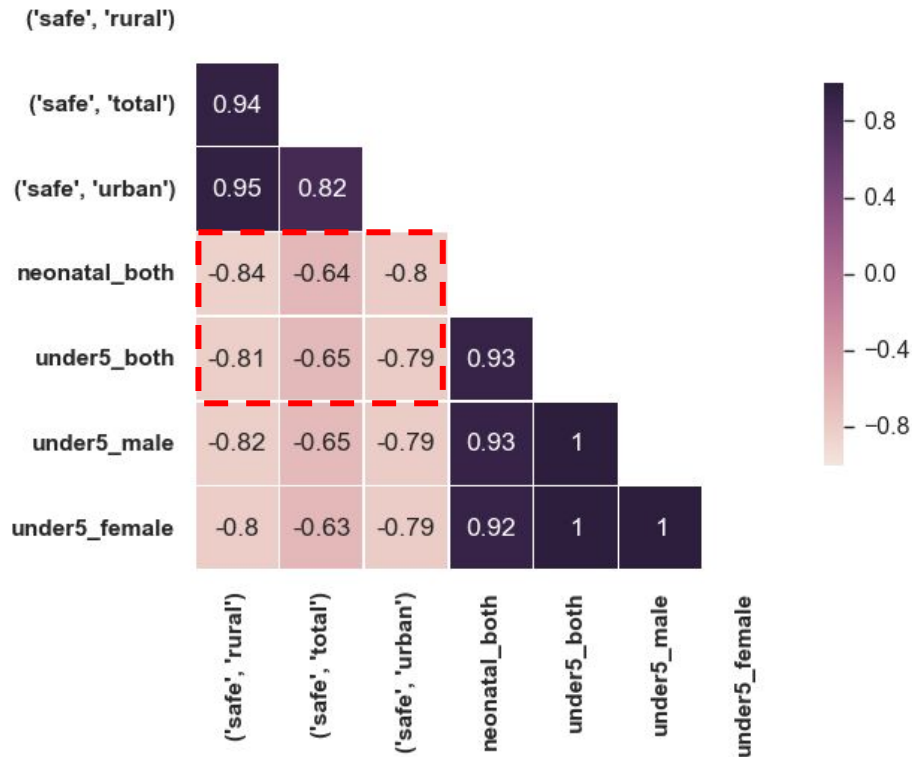


Child mortality and drinking water (2000-2017)

Correlation between children mortality rate & basic drinking water

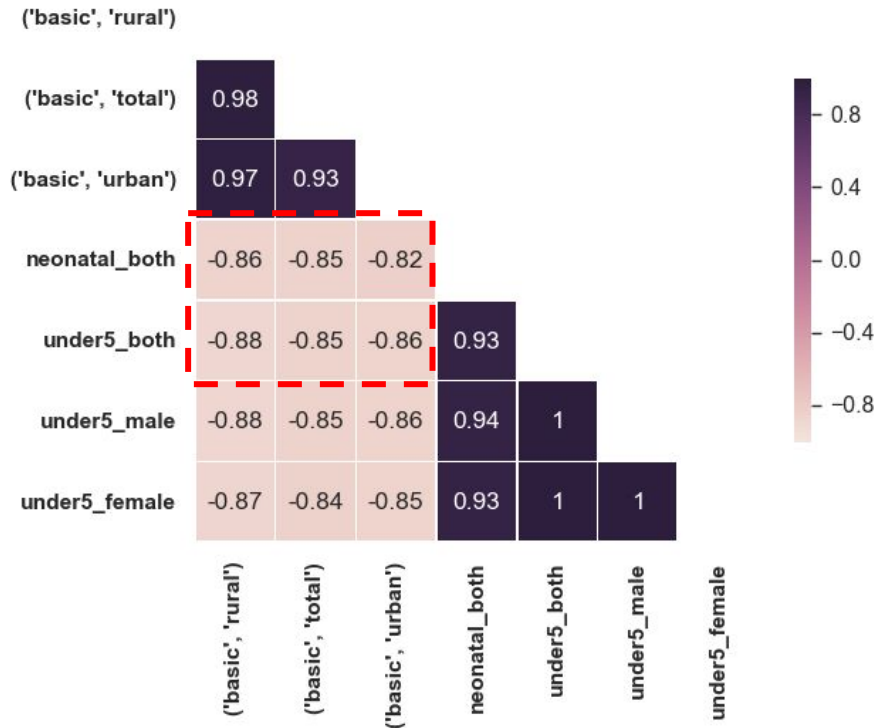


Correlation between children mortality rate & safely-managed drinking water

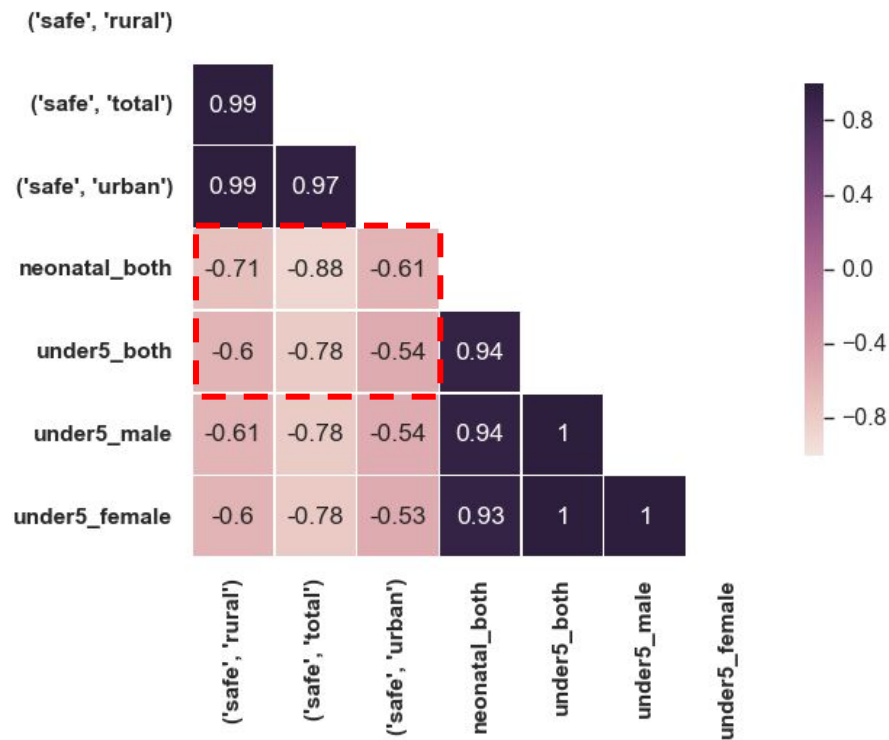


Child mortality and sanitation (2000-2017)

Correlation between children mortality rate & basic sanitation

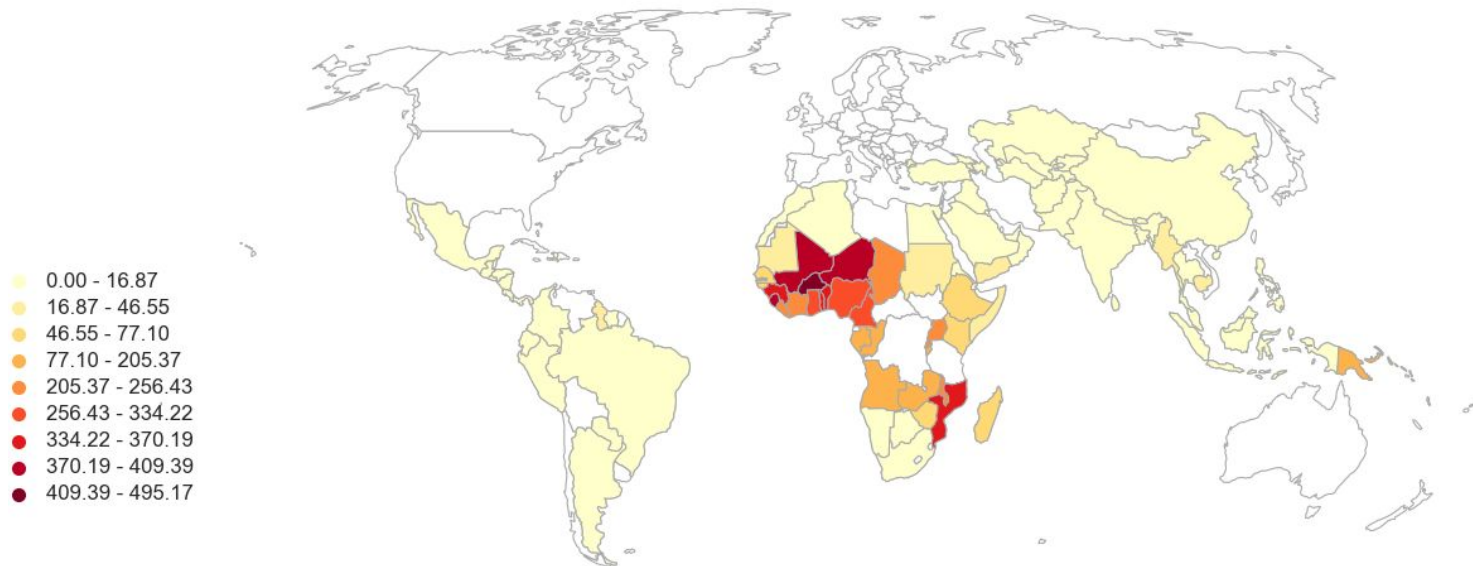


Correlation between neonatal/children mortality rate & safely-managed sanitation



Malaria incidents (2010-2017)

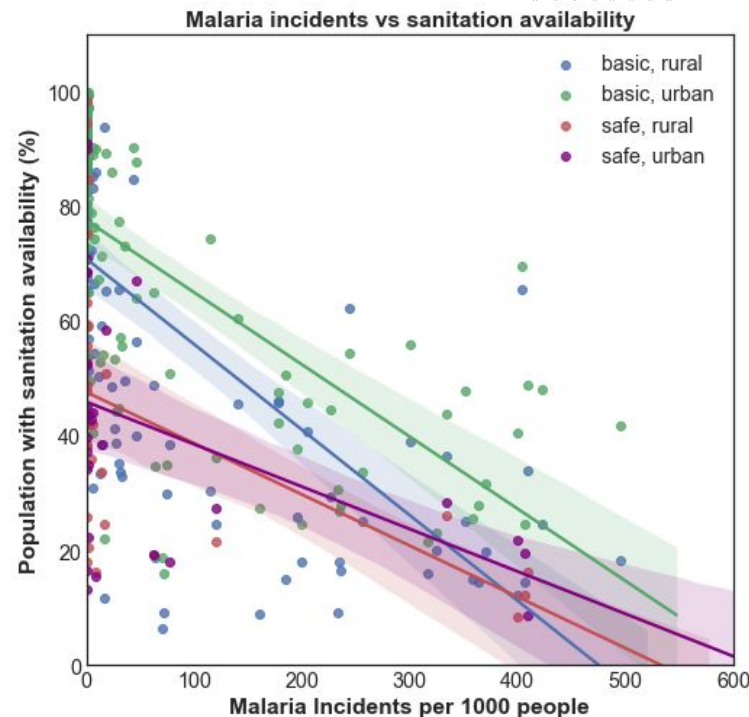
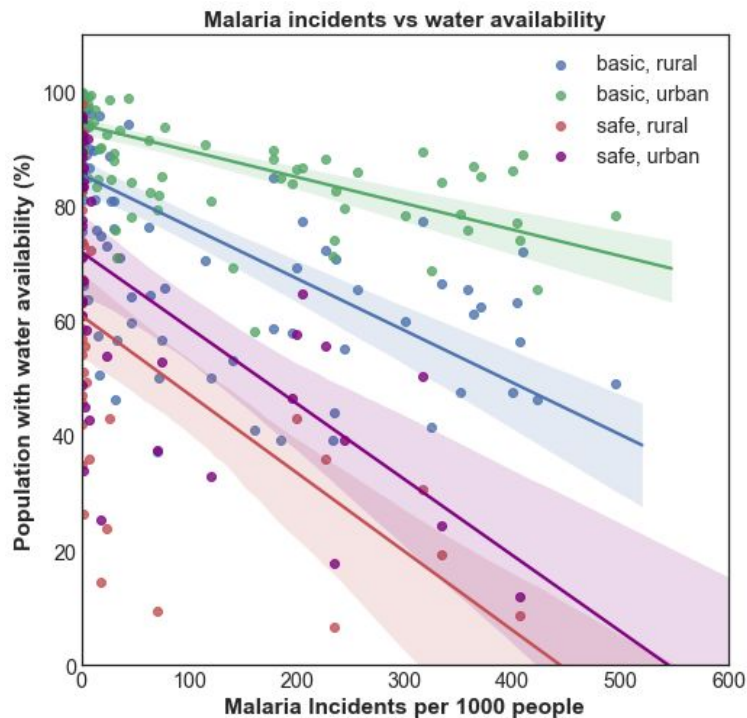
Incident of malaria per 1000 people (per country)



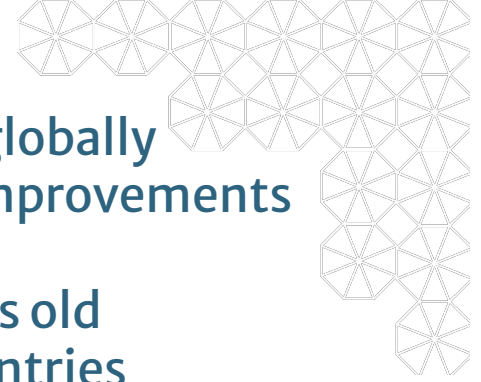
% Incident_per_1000 per country

NOTE: countries with no data available are shown in plain white color

Malaria incidents vs. water/sanitation (2000-2017)



Conclusions



- Water and sanitation availability has improved globally
 - Africa, Asia, and South America have seen improvements
 - Africa continues to trail
- Improved mortality rate of children under 5 years old
 - Africa, Asia, and Eastern Mediterranean countries
- Child Mortality rate improved with water and sanitation availability
- Malaria occurrences correlate to regions with lower water and sanitation availability
- Next Step would be addition investigation into other factors, such as Medical Availability

Continued improvement in safe drinking water and sanitation availability is required to improve child mortality rates in Africa, Asia and South America

Questions?

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Citations

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2. Fayehun O.A. Household Environmental Health Hazards and Child Survival in Sub-Saharan Africa. [(accessed on 15 May 2013)]. DHS Working papers, Demographic and Health Research 2010, No. 74
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