

Interpret a data visualization

DFND project # 1

Malaria Deaths in Africa 2000 – 2014

The following is a data interpretation to highlight some information that is (in my opinion) would be the most important throughout the study mentioned above.

Four (4) major countries have been chosen according to their huge average deaths per year.

The four countries are at the top of others in terms of Malaria Deaths, **Kenya** ranked # 1 followed by **Democratic republic of the Congo**, ranked # 2 (will be referred here as Congo) then **Angola**, ranked # 3 and finally **United republic of Tanzania**, ranked # 4 (will be referred here as Tanzania).

Although deaths per year is the key number for the comparison made between African countries, further insights would be needed to understand the latest situation (would be year 2014 in this study) such as development of infection and Malaria control.

Hypothesis

In Countries with high average of Malaria deaths the risk of infection increases.

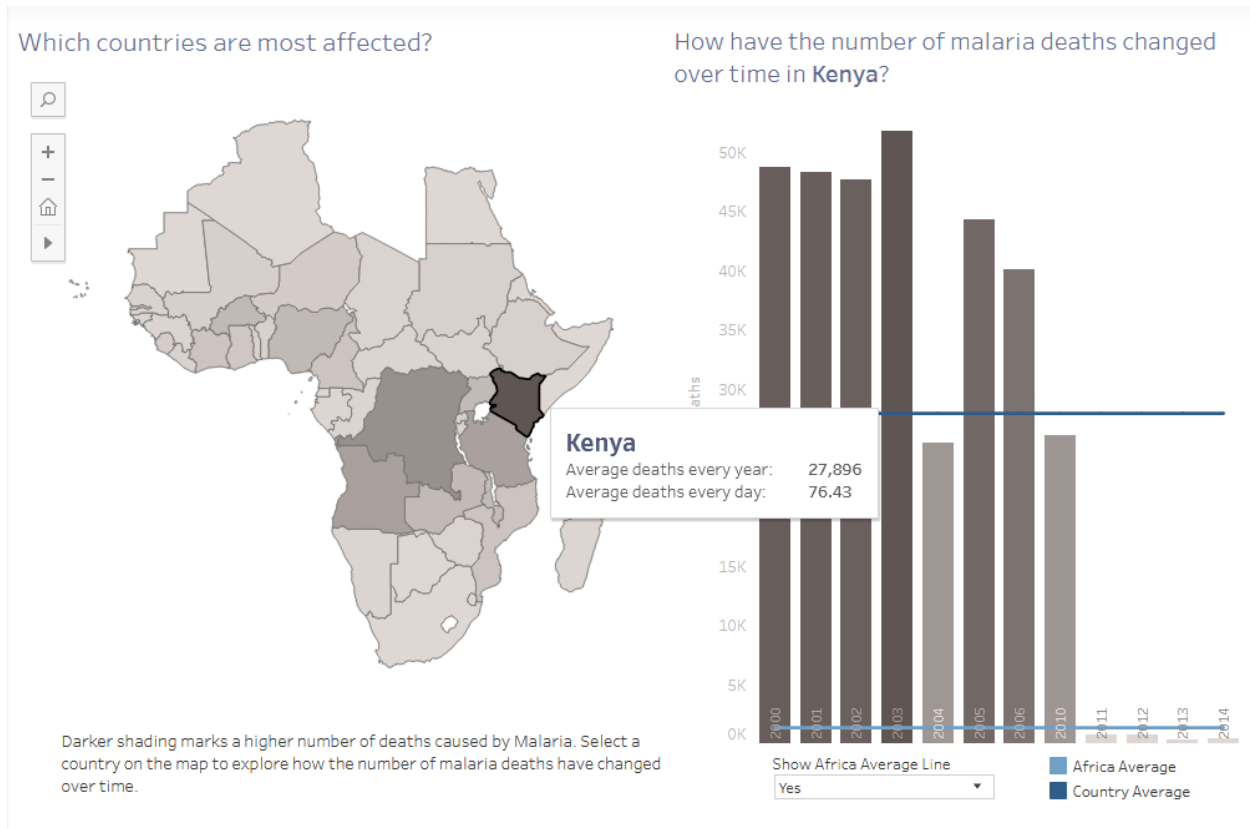
We will categorize the above countries into 3 categories in terms of Risk of Malaria Infection.

Those levels would be:

- 1- High Risk level
- 2- Medium Risk level
- 3- Low Risk level

Important to mention: not all African countries are included in this study. Libya , Tunisia and Morocco are excluded.

1- Kenya



- Average Deaths per year is 27,896
- Average deaths per day is 76,43
- Year 2003 showed highest deaths among all other years with more than 50,000 persons passed away.
- Decline in deaths occurred in 2004 to reach half deaths in 2003 and record nearly 25000.
- Deaths declining have been sat back in 2005; again an increasing occurred during this year to almost record 44,000 and 40,000 for years 2005 and 2006 respectively.
- Deaths declined in year 2010 to reach nearly the same deaths level as of 2004 (a tiny increase compared to 2004 has shown in the graph).
- 2013 is the best year ever for Kenya with deaths bellow the Africa Average.

- 2014 shown a tiny increase from the previous year but still bellow the Africa Average with a quite margin.

Conclusion:

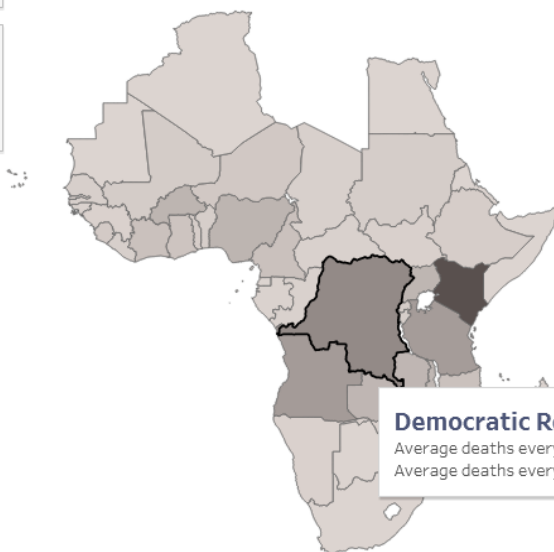
The average indicated the highest rate due to the high deaths during the first ten years from year 2000 to 2010. A significant decline has been occurred starting from the year 2011 to lower annual deaths bellow Africa average and it maintained bellow that average till the year 2014. Likely, there were measures and procedures have been taken by the Local authority to control spreading of disease.

Therefore, we can tell that Kenya is safer in terms of Malaria spreading compared to other countries who recorded smaller average deaths per year at the same time period. It can be categorized at **level 3**.

2- Congo

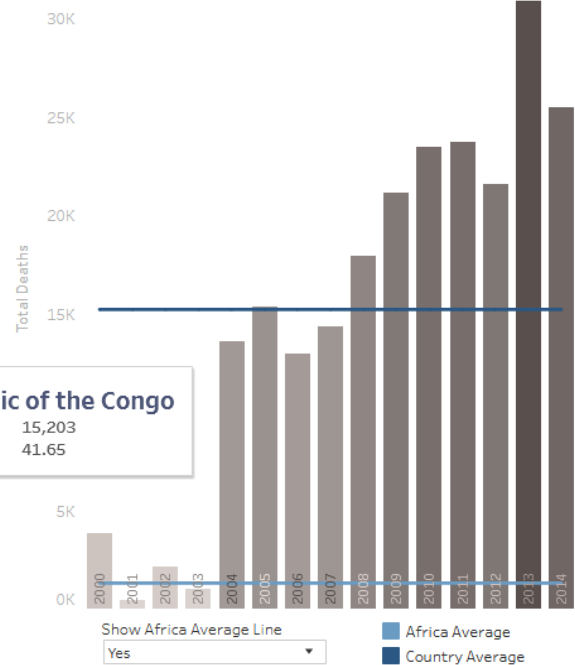
Malaria Deaths in Africa: 2000-2014

Which countries are most affected?



Darker shading marks a higher number of deaths caused by Malaria. Select a country on the map to explore how the number of malaria deaths have changed over time.

How have the number of malaria deaths changed over time in **Democratic Republic of the Congo**?

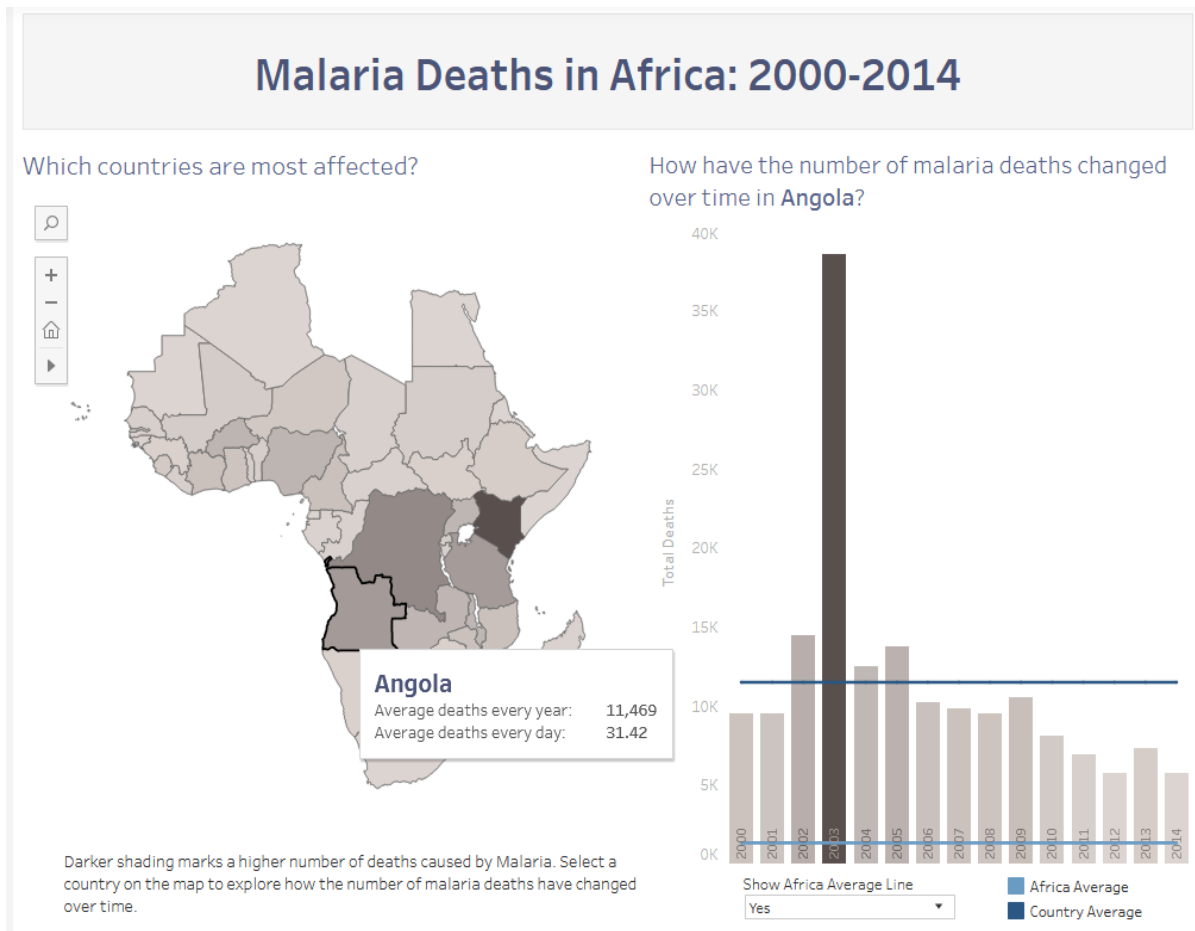


- Average Deaths per year is 15,203
- Average deaths per day is 41,65
- It clearly showed that year 2001 was the best year ever for Congo with deaths reported nearly 1/3 of the Africa average.
- Year 2003 was right below the Africa average, then a sudden, significant and continuous increasing started in year 2004 which slightly exceeded the country average (15,203/year) for the first time.
- The graph is right skewed, indicated that Malaria has been continuously increasing over time to reach its highest level in the year 2013 reported a little bit more than 30,000.
- Year 2014 showed decline in deaths to reach almost 25,000 but the problem persisted. The annual deaths remained over the country average and Africa average by nearly 10,000 and 24,000 respectively.

Conclusion

This information would rank Congo as a high risky country in terms of Malaria infection. Precautions should be applied; more measures and disease control procedures should be taken by the local authority. It can be categorized in **level 1**.

3- Angola

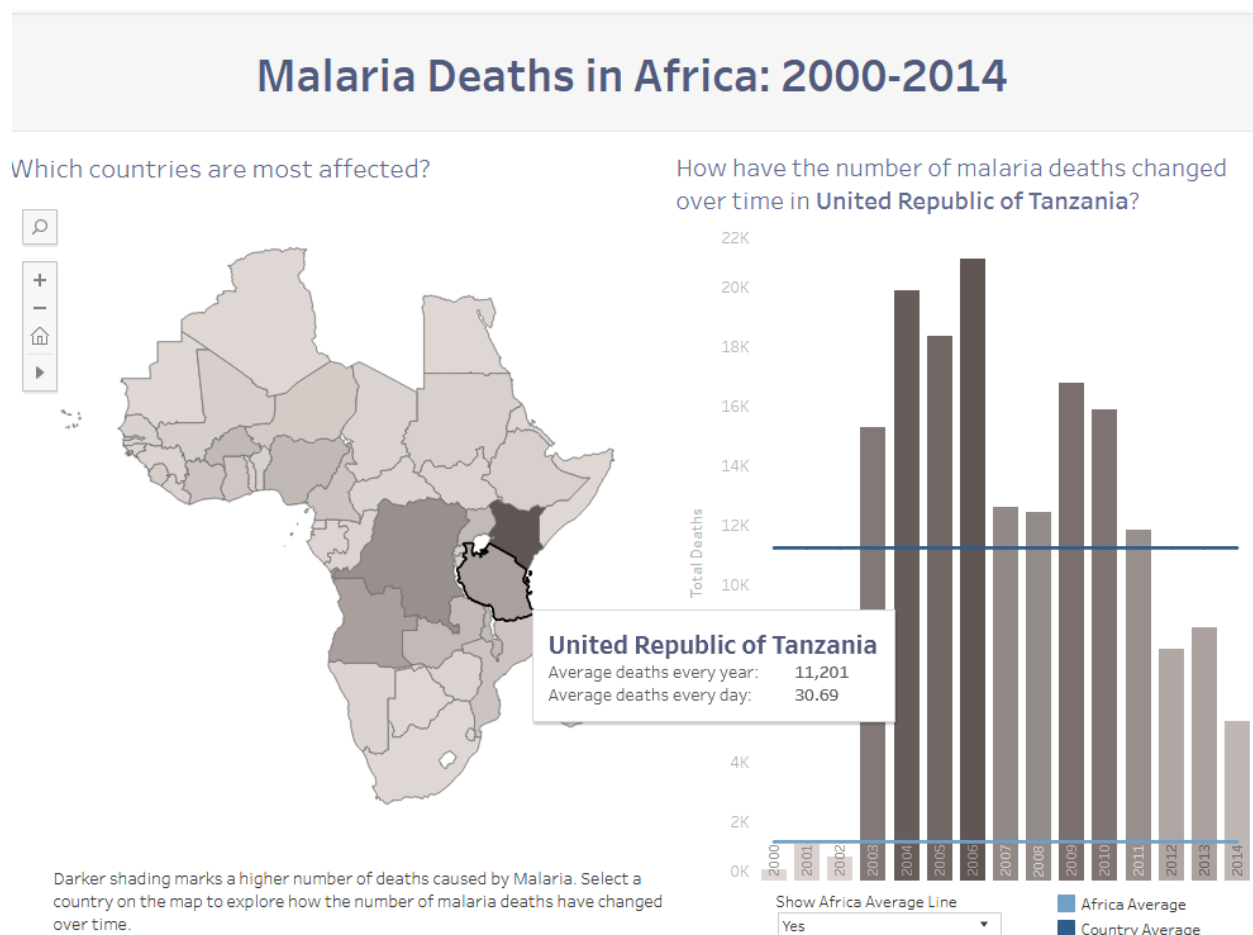


- Average Deaths per year is 11,469
- Average deaths per day is 31,42
- Deaths have been always below the Country average (11,469/year) from year 2000 to year 2014 with an exception from year 2002 to year 2005 when deaths exceeded that limit.
- Year 2003 stood out with a huge deaths increase to hit nearly 38,000 deaths.
- Year 2012 and 2014 stood out as minimum annual deaths almost exceeded 5,000 for both.

Conclusion

Although deaths are in decreasing sequences since year 2003 with an exception for years 2005, 2009, 2013 but the reported annual deaths still far from the Africa average. It can be categorized at level 2.

4- Tanzania



- Average Deaths per year is 11,201
- Average deaths per day is 30,69

- From year 2000 to year 2002 the annual deaths kept below the Africa average.
- Year 2003 was a turning point as the total annual deaths reached between 14,000 and 16,000.
- I noticed year 2003 was also a turning point for Angola, probably the infection came from Kenya as it recorded the best ever high deaths at the same year and it spread over Tanzania to cross Zambia and finally landed in Angola. (I didn't assume the infection came from Congo as the recorded deaths for that year was at minimum below Africa average).
- After year 2003 the deaths began to increase and reached its maximum in year 2006 to record annual deaths between 20,000 and 22,000. Deaths declined right after that year (with an exception for year 2013) to reach the minimum at 2014 but still between 4,000 and 6,000 deaths per year with a significant margin above the Africa average.

Conclusion

Although deaths are in decreasing sequences since the year 2009 with an exception for the year 2013 but the reported annual deaths still far from the Africa average. It can be categorized at **level 2**.

General Conclusion

Hypothesis were not confirmed, in countries with higher Malaria deaths average, infection Risks might be lower than other countries with lower deaths average. That exactly could be seen in Kenya as the last four years starting from 2011, the deaths have been lowered below the Africa average and we could currently categorize it at level 3 (low risk) whilst Congo which has much lower average of Malaria deaths than Kenya (less than half of deaths in Kenya) but has been currently categorized at level 1 (high risk) due to the rapid and continuous increase since year 2004 to 2013.

For other two countries Angola and Tanzania, although they reported less than half of Kenya's Average deaths but I couldn't categorize at level 3 (low risk) instead they have been categorized at level 2 (Medium Risk) due to the high annual deaths that is far from the Africa average (more than 5,000 a year).

Recommendations

For Congo, Angola and Tanzania strict precautions should be taken by travelers, measures and procedures should take place by local authority to fight disease and limit infections. That could be done by applying new regulations and learn from other countries who achieved success in that area.