

# Comparison of Online Malaria Risk Tools

Philip S. Abrams, PhD

Talisman Limited, Vienna, VA



## Background

A key component in determining donor eligibility is determination of travel to malarial risk areas. The screener must then discover whether travel destinations were to locations with risk. The most common reference is the Yellow Book published by Centers for Disease Control and updated online. In the last 12 months, two online systems have become available that supplement the textual descriptions in the Yellow Book. Both systems are available free over the Internet. MalariaMaps.com<sup>1,2</sup> was developed by Talisman Limited and CDC's map<sup>3</sup> was developed at Centers for Disease Control.

## Methods

The two systems were compared using two different approaches: a feature comparison and a usability study. The feature comparison enumerates features of both systems using a feature matrix, resulting in an objective comparison of capabilities. The usability study asks human users to perform certain representative tasks using each system, followed by a survey reporting their experience. This is a more subjective approach addressing real-world ease of use issues.

Tasks performed were to determine malarial risk in three areas:

Task	Location
1	Tulum, Mexico
2	Limon City, Costa Rica
3	Punta Cana, Dominican Republic

## Results

The feature comparison (below) shows that both systems have similar features, but that they are realized quite differently.

Criterion	Malariamaps.com	CDC
Scope	Entire world	Entire world
Source data	Yellow Book 2008	Yellow Book 2008
Information displayed	1. Country risk info from Yellow Book 2. Malarial areas colored red 3. Safe areas within malarial areas annotated with green markers. 4. Additional detail displayed in sidebar by hovering or clicking on markers	1. Country or city risk info from Yellow Book 2. Administrative region 3. Prophylaxis information 4. Additional detail displayed in table below map clicking on markers
Graphics	1. Complete Google Maps views including satellite photos. For some area, detail down to streets and buildings. 2. Malarial areas are colored in red 3. Blue flag for each country 4. Non-risk places in malarial areas have green marker	1. Country maps with cities marked. No increasing detail with zooming 2. Malarial areas are colored in red. 3. Cities are marked as malarial or non-malarial
Searching	Search box for entry of city or country	Search box for entry of city or country. Progressive results of cities and countries are listed and can be selected.
Spell-checking	No	No
Zoom	Using zoom control on map.	Change cursor to zoom in or out. Click on map to zoom.
Pan	Grab map with mouse and move it	Switch cursor to hand. Grab map with mouse and move it.

The usability test was administered to 13 subjects. Subjects used both systems to determine malarial risks in 3 locations and then rated each system for ease of use. The results are shown below. 31% found malariamaps.com easiest to use overall, 38% found the CDC map easiest and 31% found ease of use the same.

Question	malariamaps.com	Same	CDC
1. When completing Task 1, which system was the easiest for you to use?	15%	23%	62%
2. When completing Task 2, which system was the easiest for you to use?	31%	23%	46%
3. When completing Task 3, which system was the easiest for you to use?	54%	31%	15%
4. Which system was easiest to use overall?	31%	31%	38%
5. Which system was fastest overall?	62%	8%	31%
6. Which system gave you the most useful information?	15%	31%	54%
7. Which system would you use in the future?	25%	33%	42%

62% found malariamaps.com to be fastest overall and 31% found CDC fastest overall. Both systems were able to complete all tasks. Neither system had knowledge of place names, such as resorts, other than established cities. In general users preferred the graphics and navigation of malariamaps.com and preferred the data display of the CDC map.

Users offered additional comments about both systems, which will be helpful to developers planning enhancements.

## Conclusions

Both systems are capable of researching malarial risk by geography. Both use the same base data. Suggestions for improvements in both systems can produce more usable products.

## References

1. <http://malariamaps.com>
2. An Interactive Map of Malarial Areas. P S Abrams and P D Cumming, Presented at AABB Annual Meeting 2007, Abstract A11-020B
3. <http://cdc-malaria.ncsa.uiuc.edu/cdc-malaria/Default.aspx>

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