



ESIP Usability Cluster Monthly Meeting: **Eye Tracking and Heat Mapping**

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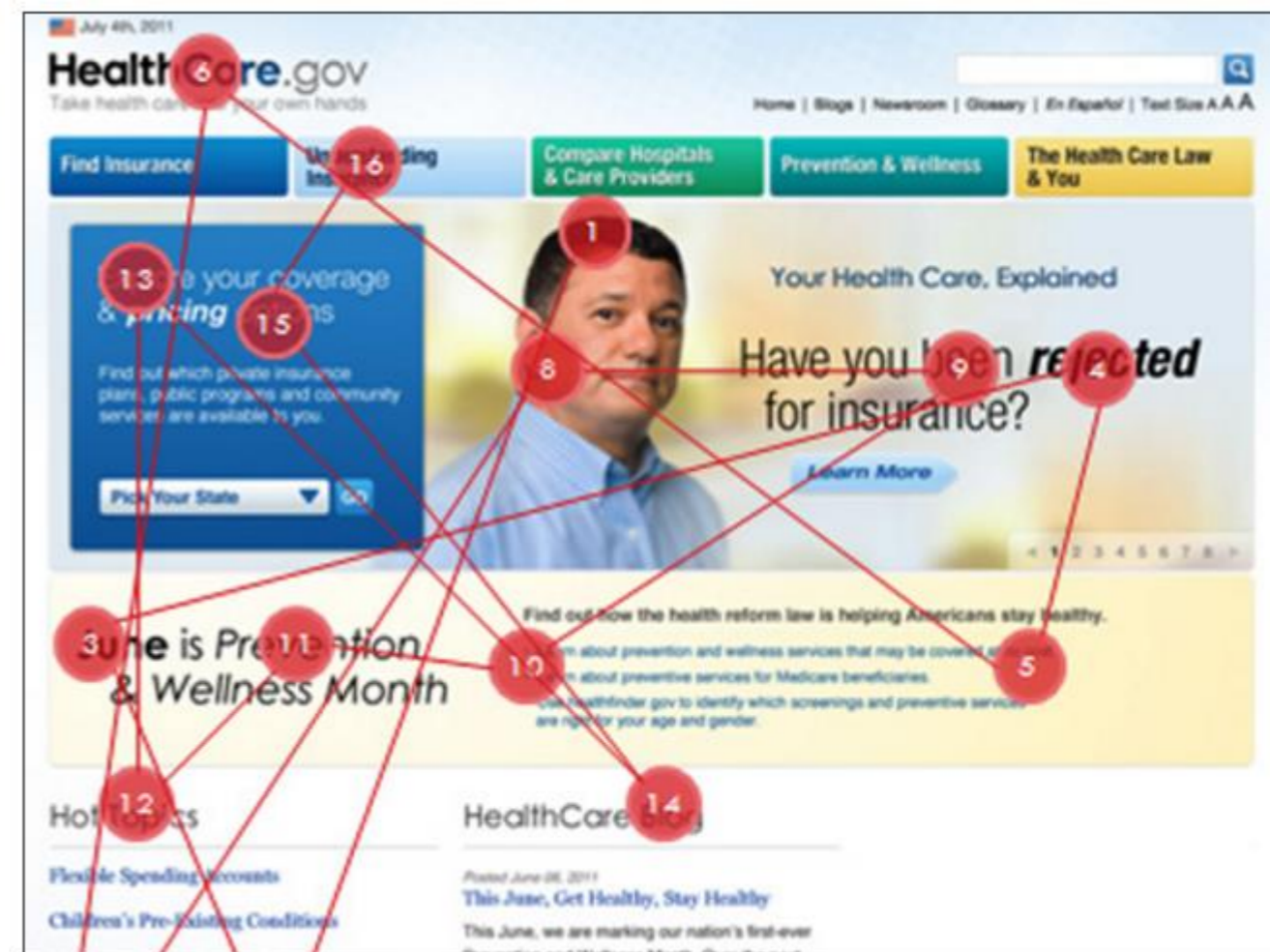
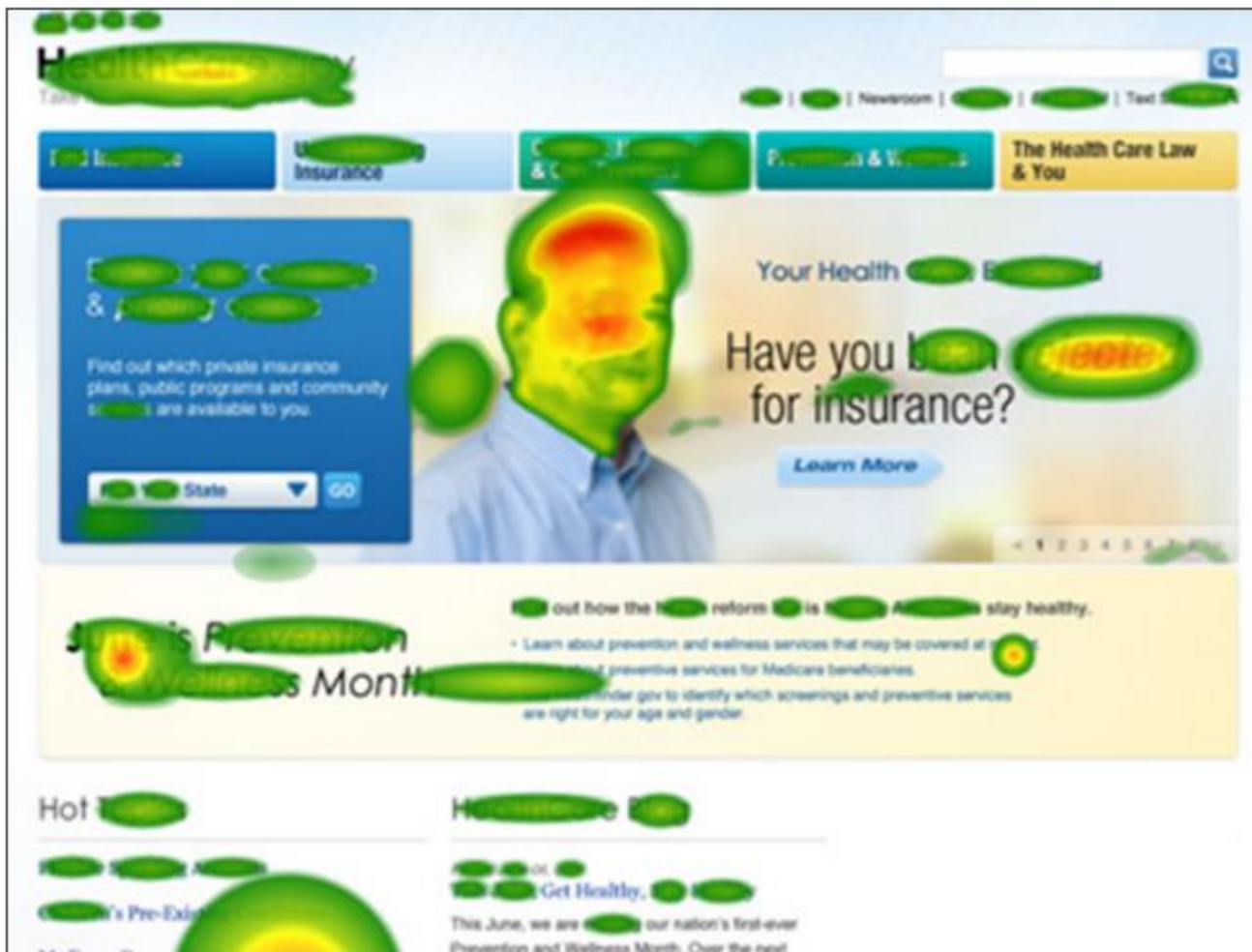
National Center for Atmospheric Research



Eye Tracking

- Dawson, Neil. (2014, August 18). *Eye Tracking: What Is It For And When To Use It*. Retrieve from <http://usabilitygeek.com/what-is-eye-tracking-when-to-use-it/>
- Leggett, David (2010, January 19). *A Brief History of Eye-Tracking*. Retrieve from <http://www.uxbooth.com/articles/a-brief-history-of-eye-tracking/>

Eye Tracking Examples



Usability.gov. (n.d.). *Eye Tracking*. Retrieve from <https://www.usability.gov/how-to-and-tools/methods/eye-tracking.html>



Eye Tracking

- Eye tracking can help determine what parts of a page are getting attention or being looked at (and not), which elements of the page are actually read, and how much time was spent on each part.
 - A reader scans several words, pauses a moment to comprehend them, and then scans again.
- In general, eye tracking obtains its information by following the movement of the eyes.
 - Remote versus mobile
- “Seeing is believing”.

Eye Tracking - Limitations

- **There are uncertainties involved:**
 - The result does not indicate if the users have consciously decided to look at specific areas.
 - The result also does not reveal the possibility that the users might have noticed specific areas through peripheral vision.
 - The testing environment might affect the users' focal attention.
 - Additional physical differences between the users might also impact the effectiveness of the tests.
- **Eye tracking results demonstrate *what* the users are looking at but do not explain *why*.**
- **Depending on the tools/software selected, using eye tracking as a usability evaluation technique could be more costly than the other evaluation options.**

Eye Tracking – Sample Tools

- eyeworks - <http://www.eyetracking.com/>
- Tobii - <http://www.tobii.com/>
- SensoMotoric Instruments - <http://www.eyetracking-glasses.com/>
- IMOTIONS - <https://imotions.com/>



Tobii Pro Glasses 2
Tobii. (n.d.). Retrieve from <http://www.tobii.com>



Tobii Pro Spectrum



Heat Mapping

- Hergul, Sezgin. (n.d.). *Understanding Simple Heat Maps for Smarter UI Design*. Retrieved from <https://www.uxpin.com/studio/blog/understanding-simple-heat-maps-smarter-ui-design/>
- Sonberg, Jaan M. (n.d.). *19 Things We Can Learn from Numerous Heatmap Tests*. Retrieved from <http://conversionxl.com/19-things-we-can-learn-from-numerous-heatmap-tests/>

Heat Mapping Example



Jones, Brandon. (2012, March 7). *Understanding the F-Layout in Web Design*. Retrieve from <https://webdesign.tutsplus.com/articles/understanding-the-f-layout-in-web-design--webdesign-687>

Heat Mapping

- Heat mapping is a graphical representation of where users are selecting on a web interface.
- Like eye tracking, it can help determine what parts of a page are getting attention, which elements of the page are actually selected, and how frequently the elements are being selected.
- Heat mapping obtains its information by counting the mouse movements.
 - Warmer the color, more popular the element.
- Relatively cheaper to implement as compared to eye tracking.

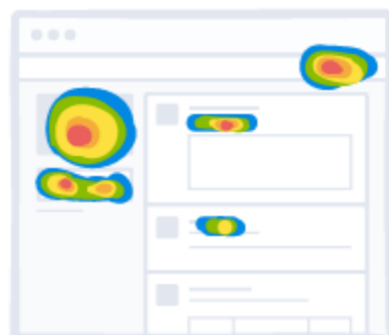


Heat Mapping - Continued

- Heat mapping results could help in developing design guidelines to accommodate user's interaction patterns.
 - Examples:
 - People spend more time looking at the left side of your page.
 - People read your content in an F-shaped pattern.
 - Abandon automatic image carousels and banners for better clickthrough rates.
- Heat mapping results also demonstrate **what** the users are selecting at but do not explain **why**.
 - Hover map might be able to show where the activities stop.

Heat Mapping – Sample Tools

- Crazy Egg - <https://www.crazyegg.com/>
- Heatmap - <https://heatmap.me/>
- ClickHeat - <https://www.dugwood.com/clickheat/index.html>
- Clecktale - <https://www.clicktale.com/solutions/features/heatmaps/>



Crazyegg. (n.d.). Retrieve from <https://www.crazyegg.com>

