

Developing Guidelines for Public Health Infographic Design

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Arts & Humanities
Research Council



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Public Health data can be *complicated* and it is not always *designed to be compelling*.



".....We will increasingly use a wider range of production models such as documentaries, Massive Open Online Courses, or **infographics**. We should emphasise this is not content for content's sake. All activity will have a clear line of sight to behavioural outcomes and will use a test-learn-refine model to assess Return on Investment"

Key Questions

What is the **evidence base** for public health infographic effectiveness?

What aids the **appeal and cognition** of public health data?

What are the key messages required to guide **commissioning/** design?

We used a mixed methods approach:
systematic literature review, interviews,
public consultations, design outcomes

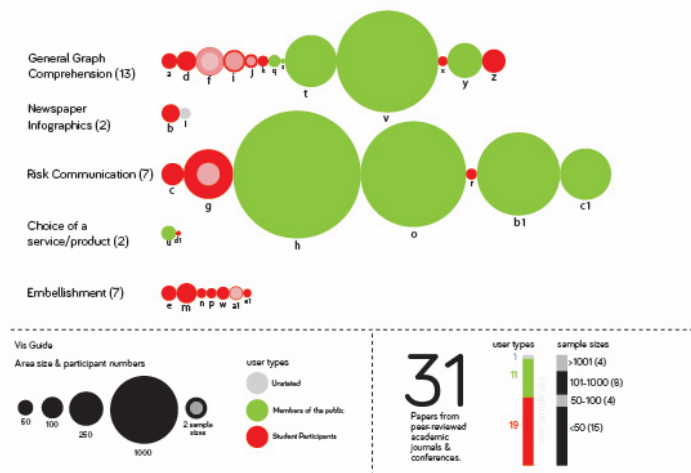
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Evaluating infographics with users

How many people are tested and who are they?

A visualisation of sample sizes & participant types used in 31 academic empirical research papers on graphs and infographics.



References (earliest to latest)

- a. Cleveland, W. S., & McGinnis, R. (1984). Graphical perception: Theory, experimentation, and application to the development of graphical methods. *Journal of the American statistical association*, 79(387), 531-554.
- b. Patterson, S., & O'Sullivan, H. (1992). Reader use and understanding of newspaper infographics. *Newspaper Research Journal*, 11(2), 28-41.
- c. Stone, E. B., Yates, J. P., & Pollack, A. M. (1996). Risk communication: Absolute versus relative expression of low-probability risks. *Organizational Behavior and Human Decision Processes*, 66, 387-404.
- d. Freedman, D. G., & Smith, L. D. (1990). The role of data and theory in covariate assessment: Implications for the theory-faithfulness of observation. *Journal of Moral and Behavior*, 17, 321-343.
- e. Sargent, M. (1998). The use or misuse of three-dimensional graphs to represent lower-dimensional data. *Behavior & Information Technology*, 15(1), 96-100.
- f. Gallet, M., & Huchard, K. J. (1995). Mapping conceptual to spatial relations in visual reasoning. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 21(1), 221.
- g. Stone, E. B., Yates, J. P., & Pollack, A. M. (1997). Effects of numerical and graphical displays on perceived risk-taking behavior. *Journal of Experimental Psychology: Applied*, 3, 247-258.
- h. Corral, N. A., & Kuhl, R. A. (1998). Evaluating risk communication: Examining target audience perceptions about four presentation formats for fish consumption health advisory information. *Risk Analysis*, 18(5), 645-659.
- i. Dicks, J., & Tversky, B. (1999). Bias and illusion: A study of graphic communication. *Memory & Cognition*, 27(6), 1075-1079.
- j. Shah, P., Mayer, K. E., & Gregory, M. (1998). Causal and knowledge construction: Signaling techniques for guiding the process of graph comprehension. *Journal of Educational Psychology*, 91, 690-702.
- k. Renshaw, J. A., Peake, L. E., Tyll, D., & Ward, R. D. (2004). Understanding visual influence in graph design through temporal and spatial eye movement characteristics: Interacting with computers. *1620*, 557-578.
- l. Huchard, K. J., & Huchard, K. (2002). The role of social design factors for newspaper reading behavior: an eye-tracking perspective. *London University Cognitive Studies*, 127, 10-16.
- m. Inbar, O., Tversky, B., & Kahneman, A. (2007, August). Misinformation in information visualization: attitudes toward maximizing the data-risk ratio. In *Proceedings of the 14th European conference on Cognitive ergonomics: recent insights* (pp. 185-188). ACM.
- n. Renshaw, J. A., Peake, L. E., Tyll, D., & Ward, R. D. (2004). Understanding visual influence in graph design through temporal and spatial eye movement characteristics: Interacting with computers. *1620*, 557-578.
- o. Huchard, K. J., & Huchard, K. (2002). The role of social design factors for newspaper reading behavior: an eye-tracking perspective. *London University Cognitive Studies*, 127, 10-16.
- p. Huchard, K. J., & Huchard, K. (2002). The role of social design factors for newspaper reading behavior: an eye-tracking perspective. *London University Cognitive Studies*, 127, 10-16.
- q. Huchard, K. J., & Huchard, K. (2002). The role of social design factors for newspaper reading behavior: an eye-tracking perspective. *London University Cognitive Studies*, 127, 10-16.
- r. Huchard, K. J., & Huchard, K. (2002). The role of social design factors for newspaper reading behavior: an eye-tracking perspective. *London University Cognitive Studies*, 127, 10-16.
- s. Huchard, K. J., & Huchard, K. (2002). The role of social design factors for newspaper reading behavior: an eye-tracking perspective. *London University Cognitive Studies*, 127, 10-16.
- t. Huchard, K. J., & Huchard, K. (2002). The role of social design factors for newspaper reading behavior: an eye-tracking perspective. *London University Cognitive Studies*, 127, 10-16.
- u. Huchard, K. J., & Huchard, K. (2002). The role of social design factors for newspaper reading behavior: an eye-tracking perspective. *London University Cognitive Studies*, 127, 10-16.
- v. Huchard, K. J., & Huchard, K. (2002). The role of social design factors for newspaper reading behavior: an eye-tracking perspective. *London University Cognitive Studies*, 127, 10-16.
- w. Huchard, K. J., & Huchard, K. (2002). The role of social design factors for newspaper reading behavior: an eye-tracking perspective. *London University Cognitive Studies*, 127, 10-16.
- x. Huchard, K. J., & Huchard, K. (2002). The role of social design factors for newspaper reading behavior: an eye-tracking perspective. *London University Cognitive Studies*, 127, 10-16.
- y. Huchard, K. J., & Huchard, K. (2002). The role of social design factors for newspaper reading behavior: an eye-tracking perspective. *London University Cognitive Studies*, 127, 10-16.
- z. Huchard, K. J., & Huchard, K. (2002). The role of social design factors for newspaper reading behavior: an eye-tracking perspective. *London University Cognitive Studies*, 127, 10-16.

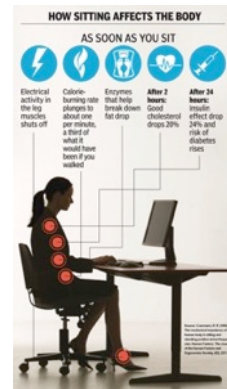
It was difficult to find studies that focus on public health infographics.

Houts, P. S., Doak, C. C., Doak, L. G., & Loscalzo, M. J. (2006). The role of pictures in improving health communication: a review of research on attention, comprehension, recall, and adherence. *Patient education and counseling*, 61(2), 173-190.

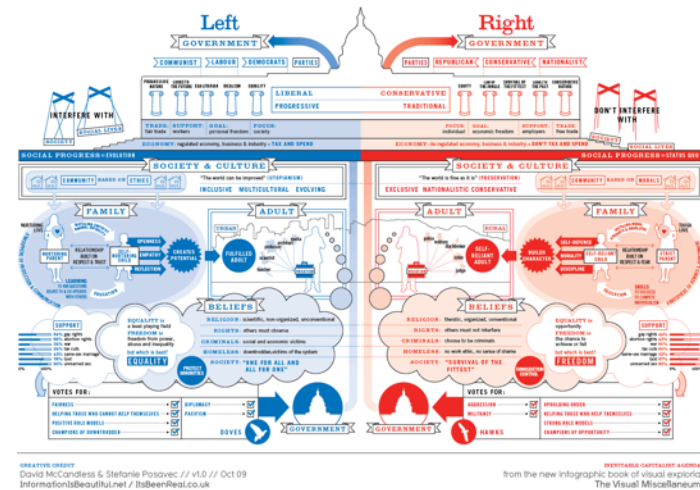
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Zikmund-Fisher, B. J., Wittenman, H. O., Dickson, M., Fuhrel-Forbis, A., Kahn, V. C., Exe, N. L., ... & Fagerlin, A. (2014). Blocks, Ovals, or People? Icon Type Affects Risk Perceptions and Recall of Pictographs. *Medical Decision Making*, 34(4), 443-453.

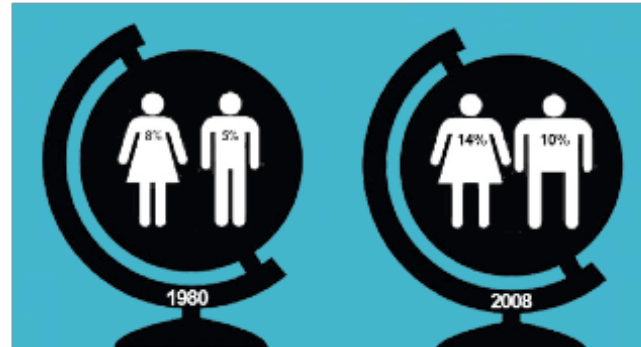
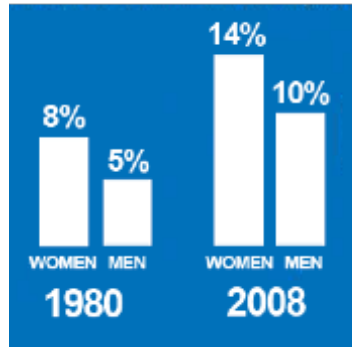


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Many people don't like Maths and make a negative *association* with graphs and school.

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“Bar charts are boring
- you’ve got to look for
longer”

Male, 46

“Charts...I don’t
understand them
properly”

Female, 33

“Graphs don’t
do anything
for me”

Male, 28

“Bar charts are
so boring”

Female, 24

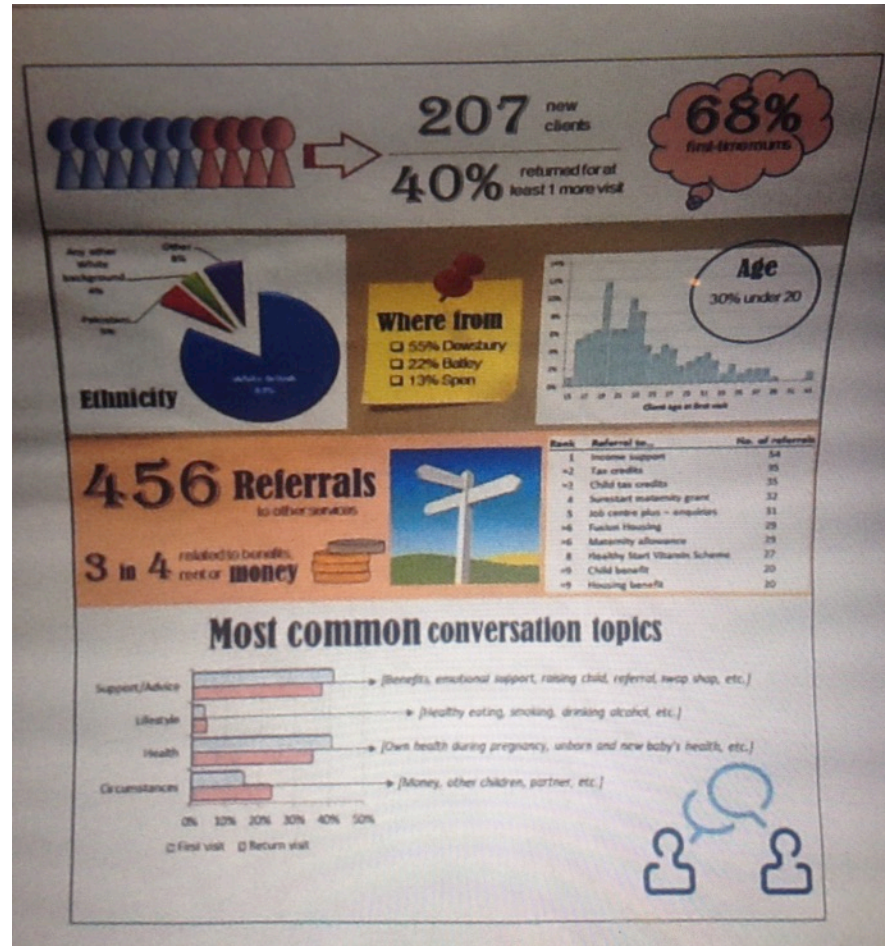
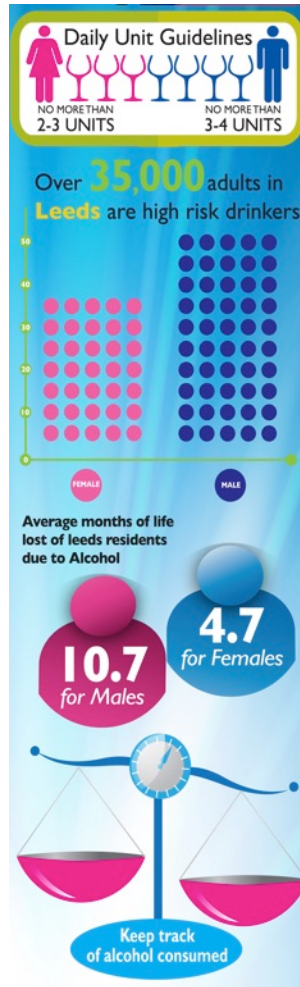
“Charts are ok if
you’re really into
graphs and charts.
They can be
overwhelming”

Female, 33

Galesic, M., & Garcia-
Retamero, R. (2011). Graph
Literacy A Cross-Cultural
Comparison. Medical
Decision Making, 31(3),
444-457

Collaboration is vital (but with the right people!)

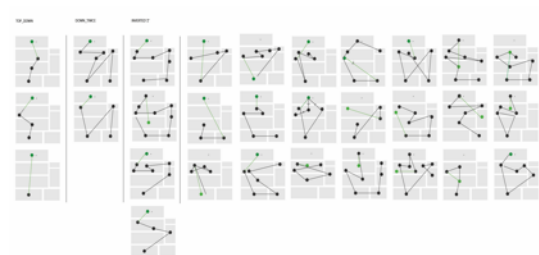
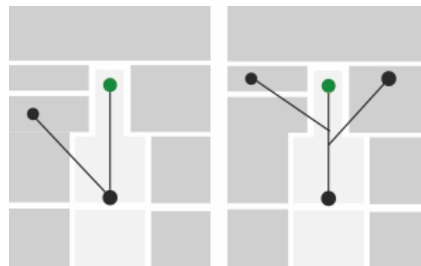
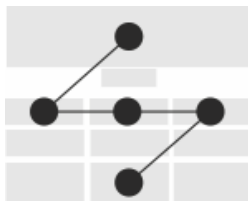
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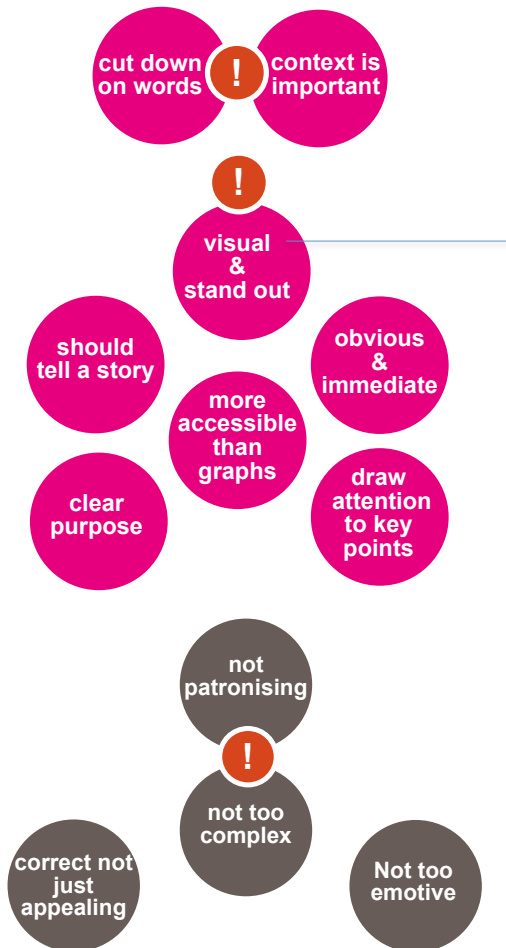
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Layout can make an big difference to information attention.

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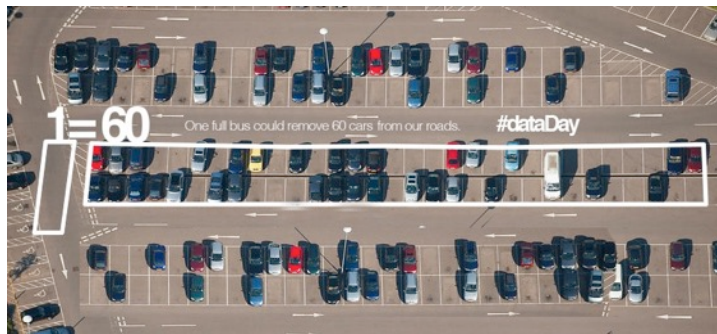
Public Health Professionals helped us stress the importance of audience.



"We've got a lot of same-ish infographics like the Guardian's do-nut charts and you see them again and again. They're still useful but they're **not arresting anymore**"

Public Health Professional,
Leeds, UK

Developing Guidelines for Public Health Infographic Design



Get to know your audience
Restrict Colour
Align Elements
Prioritise Parts
Highlight the Heading
Invest in Imagery
Choose Charts Carefully

So far...

www.visualisinghealth.com (over
2000 visitors since it went live
from all over the world)

Practical workshops given for a
number of Public Health
Departments across the UK and
public health trainee registrars
Consultancy for Drinkaware.co.uk

Any questions?

A copy of the guidelines is
free to download from:
www.visualisinghealth.com

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