

# Public Health Infographic Design for the *public* – the evidence base

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Structure: Looking Back > Evidence Base > Facing Forward



1913. Municipal Parade New York

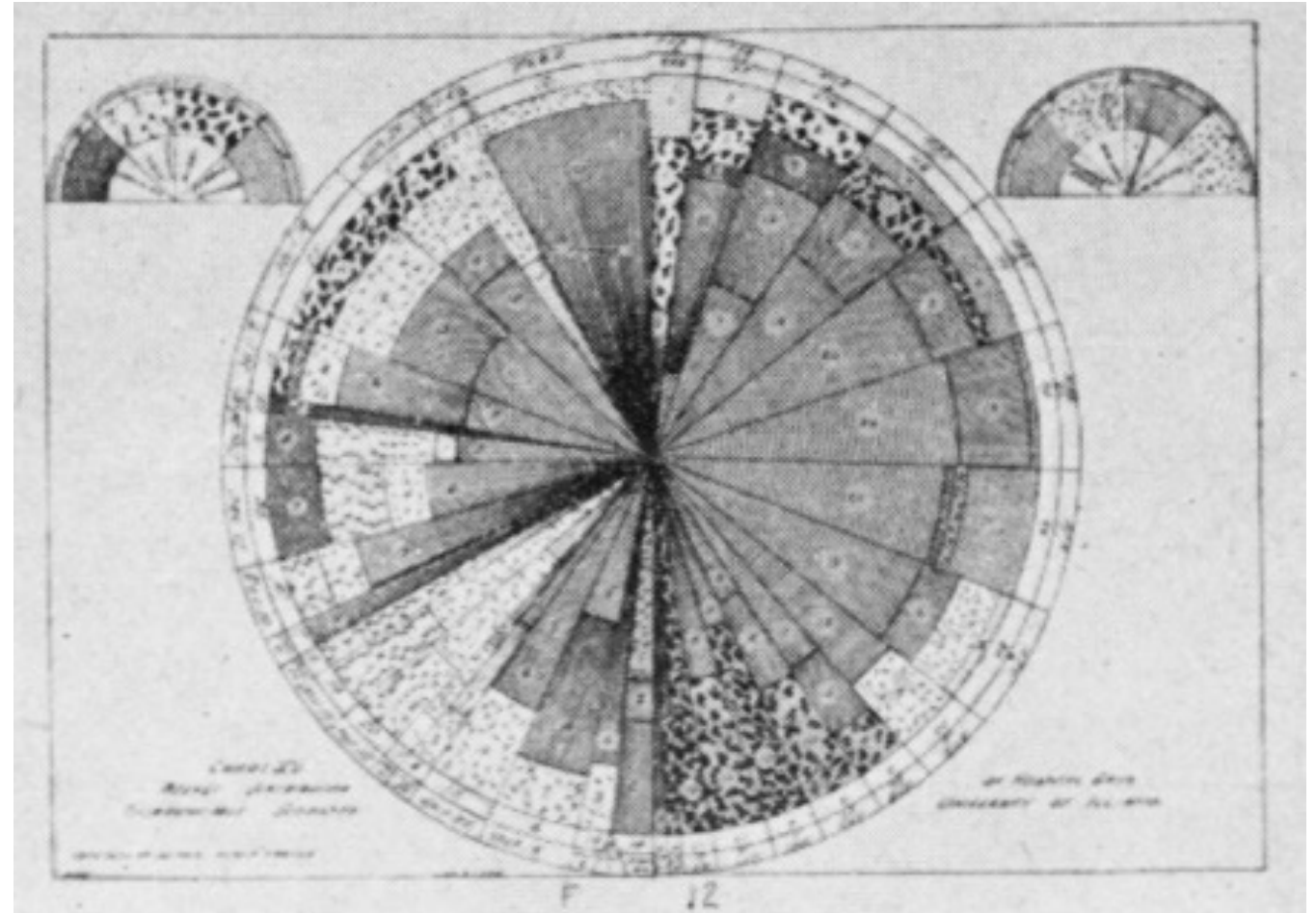
“...the Health Department, in particular, made excellent use of graphic methods, showing in most convincing manner how the death rate is being reduced by modern methods of sanitation and nursing” – Willard Brinton, 1914



W.W. Peter's exhibitions in China, c.1920s

“Suspended from the ceiling is a rack. A curtain opens and a box, which is high up near the rack, drops down. As it falls pictured skulls appear one under the other. The first skull has its profile toward the audience, the second one is turned a little more forward, the third one still more forward, and so on until the last one faces the audience.” – W.W. Peter

“The use of clear but unusual graphical representations which will arrest his [the public’s] attention and make him think are both justifiable and worthy of use.”

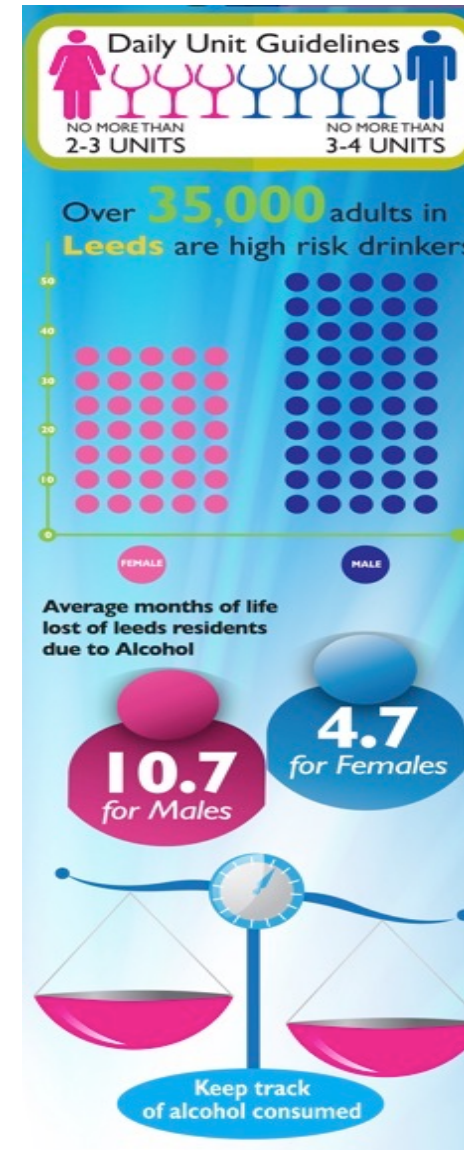


Larsen, H. T. (1924). GRAPHS IN PUBLIC HEALTH REPORTS. *American Journal of Public Health*, 14(7), 585-591.



Today, there is still some way to go in terms of designing effective public health infographics.

Collaboration with designers is vital (but with the right people...) but learning some simple design principles will help.



# The 7 G.R.A.P.H.I.C. Principles

**G**et to know your audience

**R**estrict Colour

**A**lign Elements

**P**rioritise Parts

**H**ighlight the Heading

**I**nvest in Imagery

**C**hoose Charts Carefully

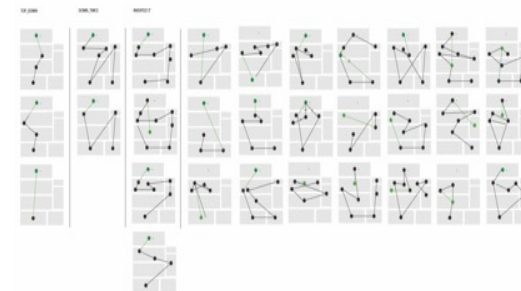
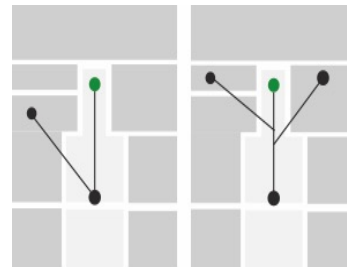
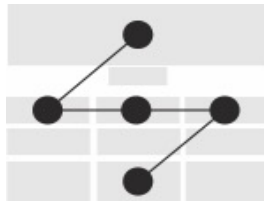
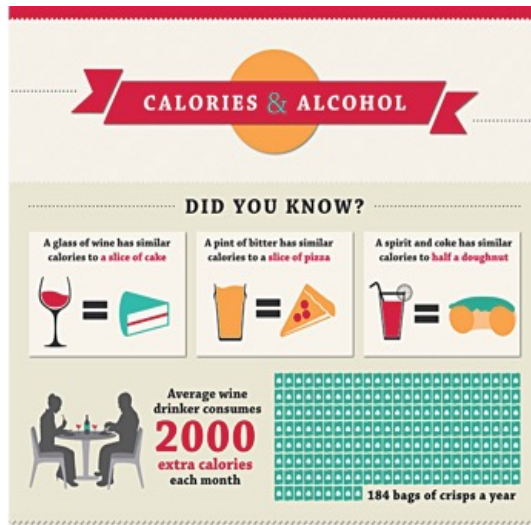
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# How infographics can attract attention?

Jahan et al found that fewer words can attract more social media attention (Light text (covering < 50% of the infographic) showed a significant statistical association with the number of replies ( $p = .007$ ), number of likes ( $p = .003$ ) and number of retweets ( $p = .018$ ).)

Jahan, S., Al-Saigul, A. M., & Alharbi, A. M. (2021). Assessment of health education infographics in Saudi Arabia. *Health Education Journal*, 80(1), 3-15.

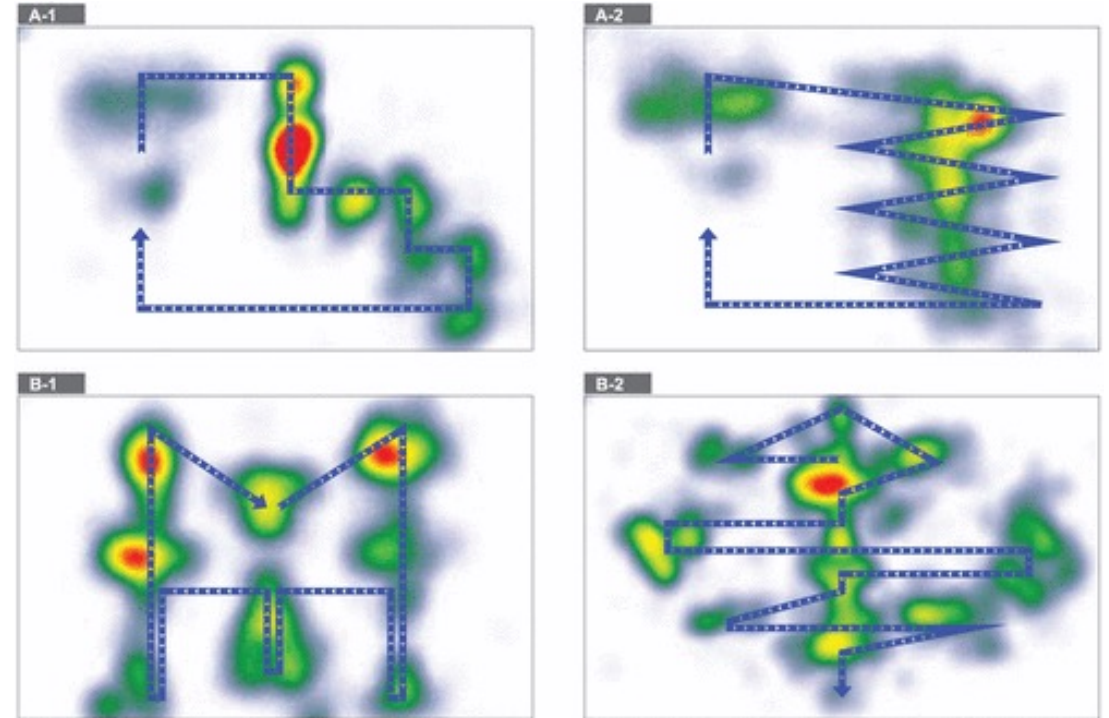
# Layout can make a big difference to information attention.



# How can infographics aid comprehension?

A Zig-Zag layout can aid comprehension (Majooni et al, 2018).

"In this study, the Zigzag layout A-2 had the lowest amount of blinks rate and pupillary dilation and highest amount of correct answers and accordingly achieves highest efficiency rate."



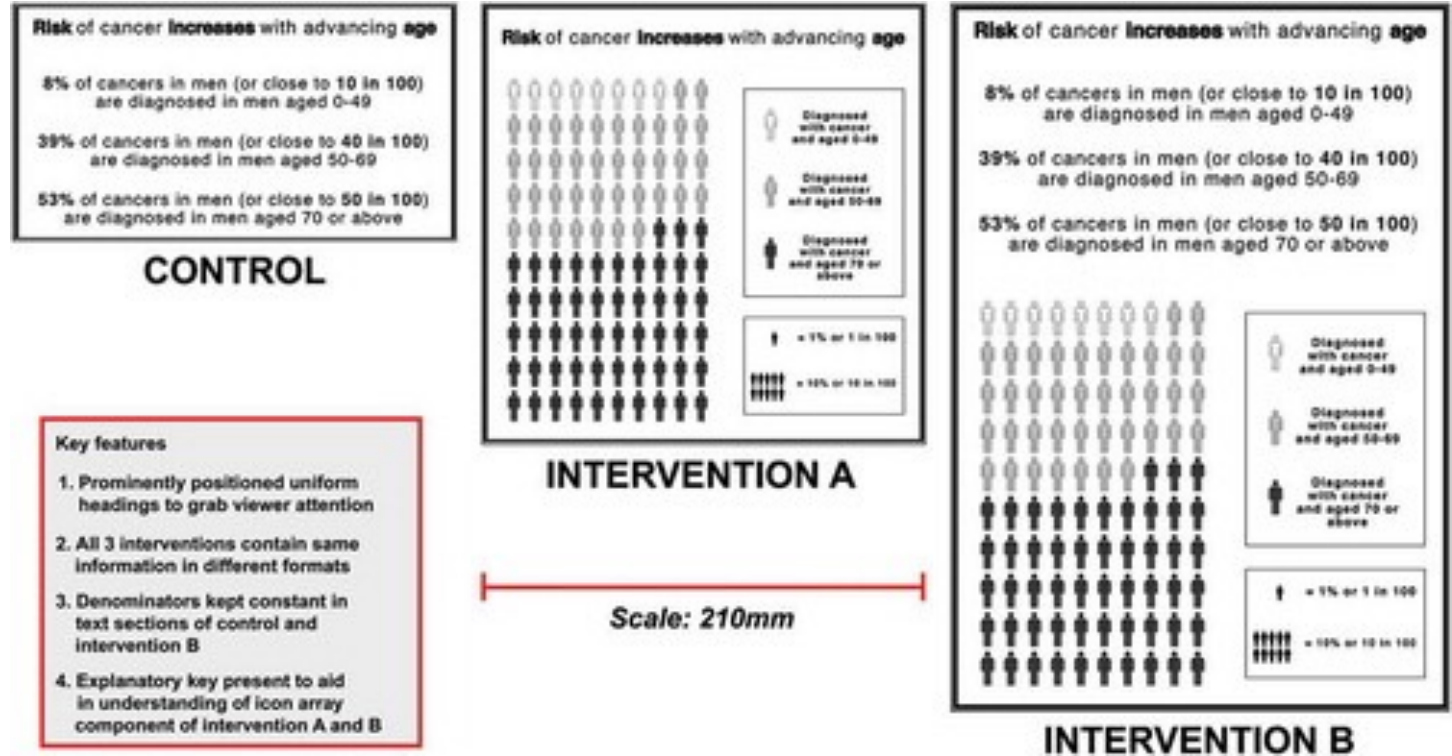
Majooni, A., Masood, M., & Akhavan, A. (2018). An eye-tracking study on the effect of infographic structures on viewer's comprehension and cognitive load. *Information Visualization*, 17(3), 257-266.



# How can infographics aid comprehension?

A well designed Icon Array can also improve comprehension (McCrorie et al, 2018)

“Participants who viewed an infographic were more likely to know the correct association between cancer risk and old age compared with those viewing text information (risk ratio = 3.0, 95% confidence interval 0.82–10.90). Participants had limited understanding of the phrases “cancer incidence” and “cancer prevalence” but good understanding of the phrases “cancer risk factor” and “cancer stage.” Possession of good numerical skills appears to be a key determinant of ability to extract meaning from statistical information provided; regardless of format. Initial results suggest icon array infographics may be more effective communication mediums than text”



# Value of Co-Creation

## **The importance of co-design/tailoring in the process of creating the infographic**

Harrison involved their patients in the design of infographics about gestational diabetes – those that saw the co-designed infographic + usual information improved their knowledge by 12% and saw improved self-efficacy (improved by 2.5 units)

Van Hecke et al (2020) used co-design to improve infographics about AMR. Eight EBIs (evidence based Infographics) were tested in a national survey of parents ( $n = 998$ ). EBIs improved knowledge by more than a third across the board

Arcia, A., George, M., Lor, M., Mangal, S., & Bruzzese, J. M. (2019). Design and comprehension testing of tailored asthma control infographics for adults with persistent asthma. *Applied clinical informatics*, 10(04), 643-654.

Harrison, A. L., Taylor, N. F., Frawley, H. C., & Shields, N. (2020). A consumer co-created infographic improves short-term knowledge about physical activity and self-efficacy to exercise in women with gestational diabetes mellitus: a randomised trial. *Journal of Physiotherapy*, 66(4), 243-248.

Van Hecke, O., Lee, J. J., Butler, C. C., Moore, M., & Tonkin-Crine, S. (2020). Using evidence-based infographics to increase parents' understanding about antibiotic use and antibiotic resistance: a proof-of-concept study. *JAC-Antimicrobial Resistance*, 2(4), dlaa102.

# How can infographics aid recall?

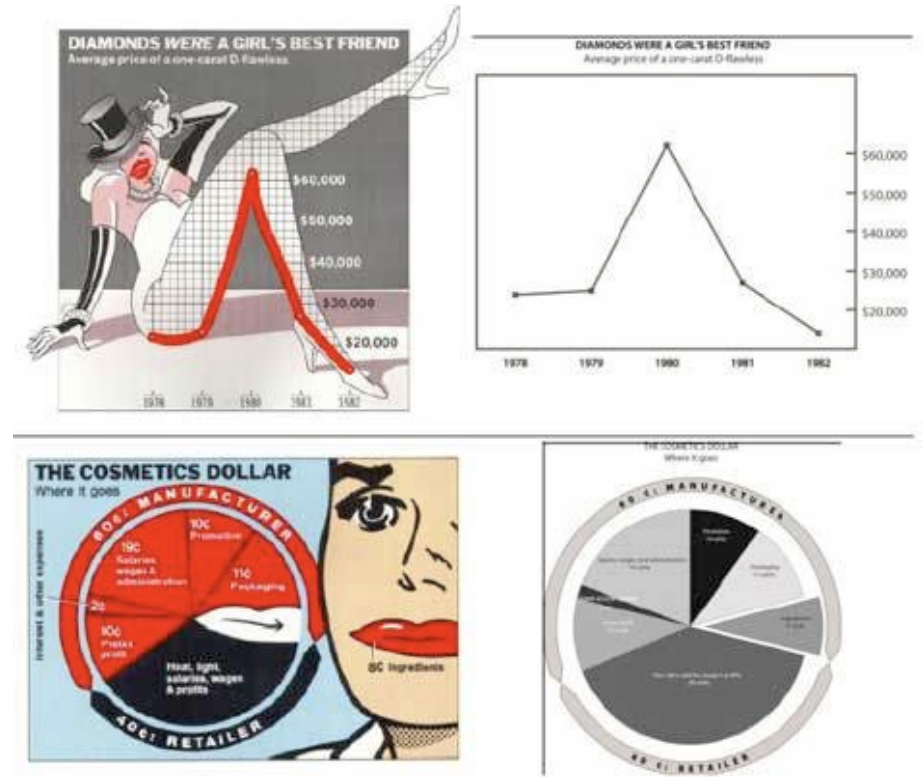
Embellishment aided long term recall of facts (Bateman et al, 2010).

An action-led title aided recall better than any colour, image or tonal variation (e.g. use of humour)

These are both small scale studies and their findings conflict – so there are further research opportunities here.

Bateman, S., Mandryk, R. L., Gutwin, C., Genest, A., McDine, D., & Brooks, C. (2010, April). Useful junk?: the effects of visual embellishment on comprehension and memorability of charts. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 2573-2582). ACM.

Wansink, B., & Robbins, R. (2016). Which design components of nutrition infographics make them memorable and compelling?. *American journal of health behavior*, 40(6), 779-787.

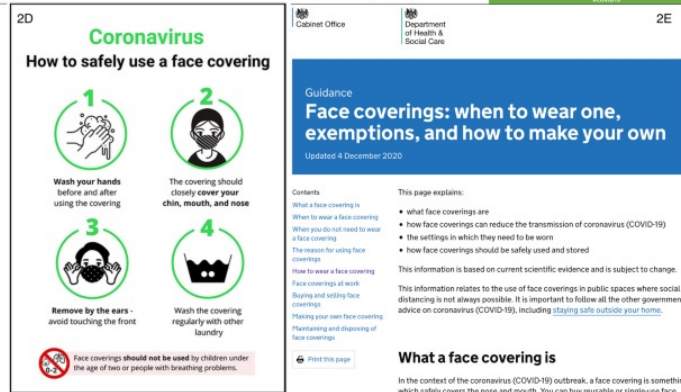


# How can infographics aid recall?



Egan et al (2021) showed how infographics, of various designs, had a more positive impact on recall of steps of mask wearing and correct way to wear them.

“Whereas 87.0% of the total cohort recalled that masks should cover the nose, only 53.1% recalled that it should cover the chin. The recall was particularly poor among participants that read the UK government text advice — 21% fewer participants recalling the covering-chin principle in the UK government text group compared to the BIT group.”



Egan, M., Acharya, A., Sounderajah, V., Xu, Y., Mottershaw, A., Phillips, R., ... & Darzi, A. (2021). Evaluating the effect of infographics on public recall, sentiment and willingness to use face masks during the COVID-19 pandemic: a randomised internet-based questionnaire study. *BMC public health*, 21(1), 1-10.



# Behavioural Change?

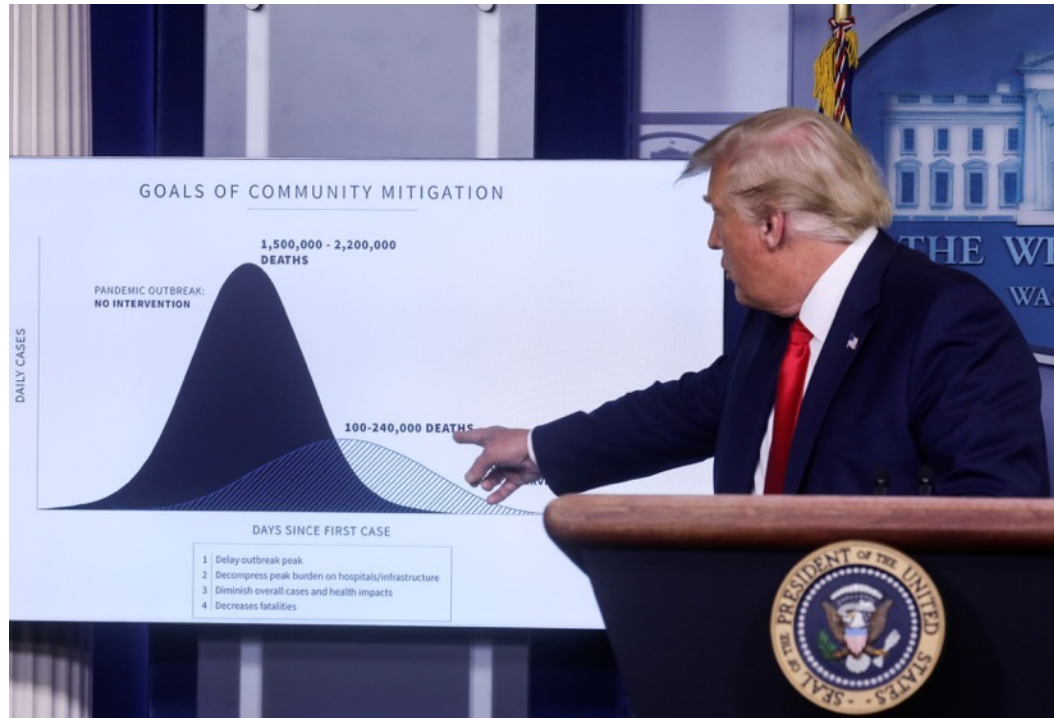
It's almost impossible to locate published studies proving that infographics have triggered a change in behaviour. Interventions tend to consist of multiple components.

As in Houts et al's influential literature review from 2006, 'adherence' triggered by seeing a 'picture' in health communication is hard to argue.

This clearly is the big research gap.

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.

# Value of Performance and Spectacle



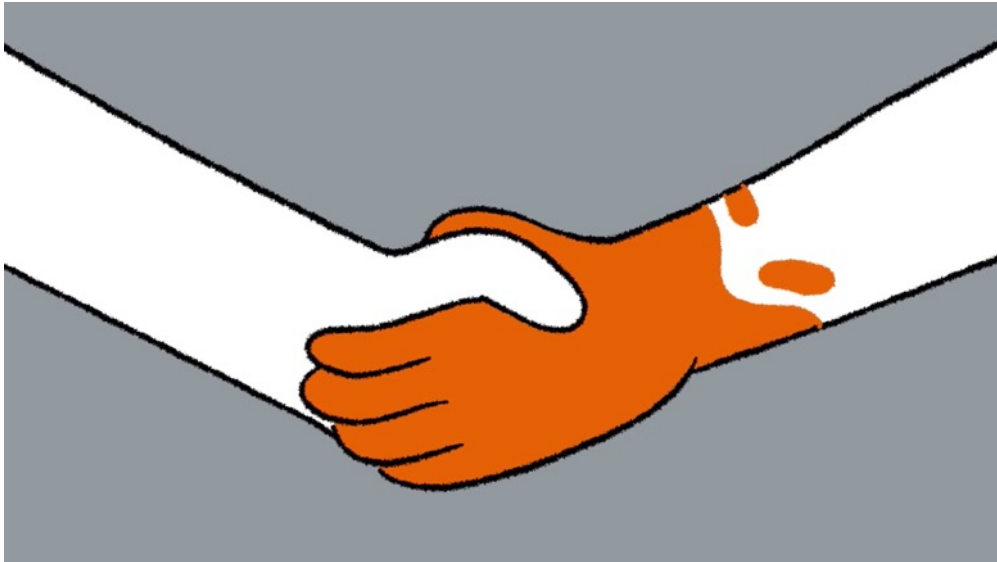
2020.  
Donald Trump talks us through a 'flattening the curve'  
diagram



1913. Municipal Parade New York

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# Value of Performance and Spectacle

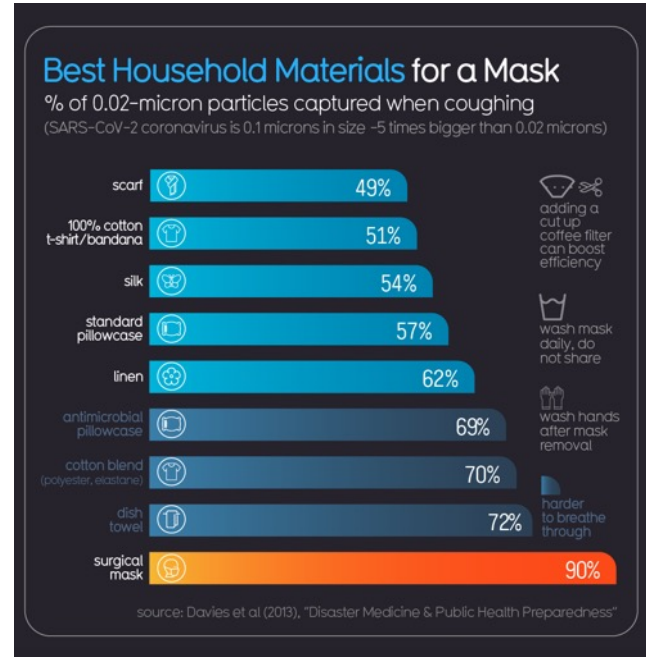
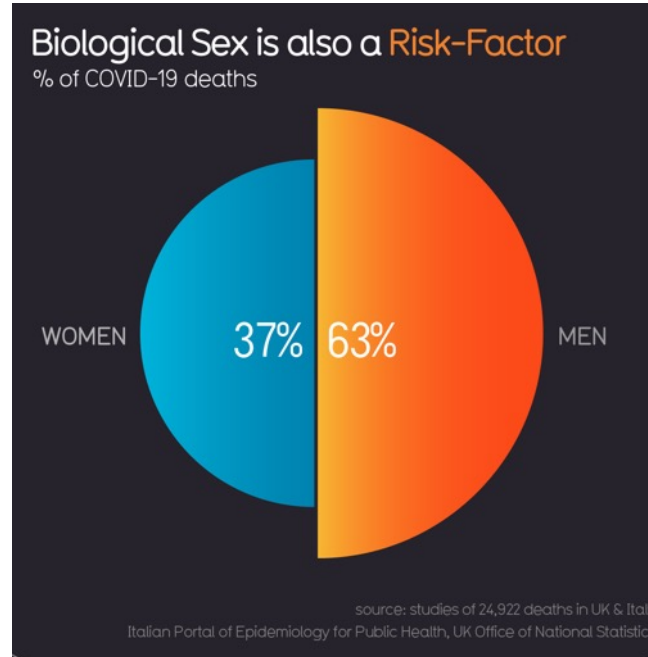


"We want to really engage them, make them stay in their seats," said the Stanford assistant professor of pediatrics and director of health education outreach, Maya Adam. "If we lose the audience, it's game over."

<https://scopeblog.stanford.edu/2020/04/29/animated-covid-19-prevention-video-goes-viral/>

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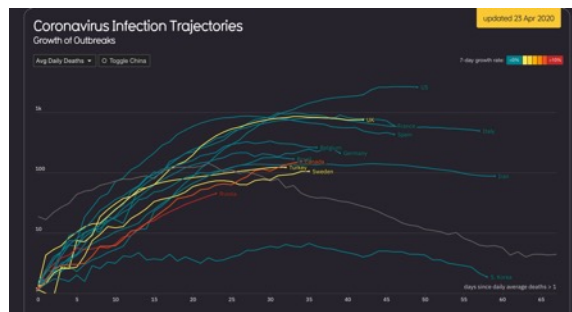
# Interaction and Visual Transitions



Shared over 2 million times on FB  
Free to share and interactive.

Interactivity allows you see 'the tree, the branches and the leaves' (Bertin, The Semiology of Graphics' 1967). Elegantly simple colour scheme, clear headings, subtle and serious use of image.

<https://informationisbeautiful.net/visualizations/covid-19-coronavirus-infographic-datapack/>





# In summary

There is good evidence to suggest that well designed infographics can have a beneficial effect on the public's cognition.

Research is still required to examine effects of embellishment and effects on behavioural change.

We can learn from historical examples, take influence from them and update them.

Collaboration is vital, both with the audience and designers. if we are to succeed.

Guidelines available at: [www.visualisinghealth.com](http://www.visualisinghealth.com)

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