Invisible Cities – Air Quality

Group Project Report

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**Introduction**

Our project visualisation educates our website visitors about the levels of air pollution in major cities and the consequences for the people that live there. The global scientific measurements that make up a city’s air quality index are linked to simple cartoon depictions to draw viewers in for an instinctive response. The goal is to produce a reaction in anyone who looks at this information – that we must do more to provide clean air in urban environments anywhere in the world.

**Early decisions**

Different topics were discussed at first. Our team had ideas such as displaying information about transport or green spaces within a city, but interests were divided until we explored linking these topics together and discovered the idea of air quality. Once this became our theme we discovered that it was a more passionate topic – all of us live in cities and we have all had direct experience of breathing clean and polluted air.

Visually our aims were more diverse. At first we wanted a 3D spinning globe, 3D streets displaying airborne particles blown by the wind past a family, live pollution information displayed on screen from air monitoring stations around the world, satellite maps of pollutant levels where there were no monitoring stations, and childish cartoon faces for website visitors to form a lasting memory.

**Interactivity**

Spinning globe – hover to get country statistics. The fraction of a country’s GDP earned by industry is provided by the CIA website

World map – clicking on the major cities with a square icon instead of a circle icon provides the extra information available for them. The pop-up information includes a coloured cartoon face for instant identification.

Sliding bar for history of air pollution incidents and authorities’ responses

Click on cities – bar graphs, click to get into history

**Static**

Powerful image

Street level

Extra information

**Styling**

Brown and grey-blue indicates pollution. These colours match the tones in Chai Jing’s “Under The Dome” documentary about pollution in China, displaying grey urban skies in outdoor scenes, subdued blue lighting on stage in a dimly-lit theatre and a brown and beige cartoon explaining how pollutants enter our bloodstream.

The cartoon faces were hand-drawn to add a more natural look and emphasize that air pollution readings affect real lives. They link numerical measurements to the effect that polluted air has on someone’s health and life-expectancy.

There are different shapes for some cities, square markers attract the viewer’s attention that more information is available.

We selected the same colour index to indicate air quality as used on existing websites. Initial red tones failed to provide enough difference, changed to a tone that went from purple to gold – a wider colour spectrum and a changing shade

We provided cartoon faces for maximum impact. A person’s response “generalises equally well to upright cartoon faces as to human or cat faces despite their very different low-level image properties” (Tong, Nakayama, Moscovitch, Weinrib & Kanwisher, 2000) and we wanted to make sure our website was memorable. This contrasts with many other air quality websites which have plenty of information but do not create the same immediacy and memories for the viewer.

**Technologies**

Used GitHub, Webstorm to work together – inexperience caused issues

Displayed on netlify

planetary.js was dropped in favour of Mike Bostock’s D3 globe

API readings from air pollution monitoring stations – single source gathers, different delays depending on cities, over two hundred

GIMP

Satellite data from the Copernicus project for related readings – leaf area index, ozone

CSS, JS,

website tools

Python modules shapely

**Challenges and solutions**

GitHub teamwork

API

Copernicus

Sliding webpage

Storing data

**Conclusion**

**References**

Frank Tong, Ken Nakayama, Morris Moscovitch, Oren Weinrib & Nancy Kanwisher (2000) RESPONSE PROPERTIES OF THE HUMAN FUSIFORM FACE AREA, Cognitive Neuropsychology, 17:1-3, 257-280, DOI: [10.1080/026432900380607](https://doi.org/10.1080/026432900380607)

https://www.cia.gov

**Bibliography**

*sample references*

*in-text (Vey, Lough and Baczynska, 2019)*

*(Muldoon et al., 2007)*

*Full list*

*Anstead, N. and O’Loughlin, B. (2011). The Emerging Viewertariat and BBC Question Time. The International Journal of Press/Politics, 16(4), pp.440-462.*

*European Council, [online] Available at:* [*https://www.consilium.europa.eu/en/european-council/president/*](https://www.consilium.europa.eu/en/european-council/president/) *[Accessed 20 April 2019]*

*Loader, B. and Mercea, D. (2011). NETWORKING DEMOCRACY?. Information, Communication & Society, 14(6), pp.757-769.*

*Muldoon, O., Trew, K., Todd, J., Rougier, N. and McLaughlin, K. (2007). Religious and National Identity after the Belfast Good Friday Agreement. Political Psychology, 28(1), pp.89-103.*

**Notes for display**

Globe – background, point data for cities

2D map – subset

Unity – everything

Map – storyboard to focus on different areas

Historical slider bar

Industrial percentage per country for the spinning globe.