

Appendix - Journal

This journal includes the content listed the requirements for the Week 5: Session 5-1 assignment (Finalise Project Brief).

Weeks 1&2 - Initial project idea

For first 2 weeks I had a different project brief but due to uncertainty in timeline for getting data I decided to change brief at the end of week 2 as I wanted to prioritise time on implementing general learnings from course.

I now have some ideas for this initial project brief following learnings from week 3 lectures on geographic and temporal data, exploring some of the geographic tools on VisBrowser and from asking other people on the course about tools they know so plan so I plan to go back to this project idea after the course if I do manage to get the data.

Outcome: created new project brief.

Week 2 - New project brief and task

I came up with new brief at end of week 2 (so didn't get feedback via assignment 1).

Big question: How do Scottish Local Authorities compare in percentage of adults who are close (less than 5 minute walk) to green or blue space? How has it changed from 2013 to 2018.

Target users: Government/council planners or environmental departments.

Purpose: Use and proximity of green space has shown to be important for mental health, with the being even more important during the COVID-19 pandemic and travel restrictions and lockdowns.

Audience consideration: want precise figures to be seen. Many values for different LAs are close together and giving an 'overall' idea would not be the aim as council/government will be interested in detail.

Want to show: value at 2 points in time and direction of change between 2 time points.

Explanatory: want to tell story/guide users and communicate what is in data - not leave it to them to find story. I have some experience in user driven visualisations and purposely avoided this with an aim to learn more.

Week 2 - Sketching

Sketched out 7 options for consideration (attached at end of this journal i.e. assignment 2). Listed a few and why decided against based on task and end users:

- **Line chart** - cluttered as many LAs and changes over time often small and not what wanted to focus on.
- **Bar charts changing over time** - harder to compare with many side by side bar charts, and many LAs so could be quite a lot of ink in each chart.
- **Map** - harder to see exact figures (and this was important given the audience) and over time and felt where the LAs where is not critical to answer big question.
- **Illustration/embellishment** (icon bar chart where bars were trees) - felt maybe not appropriate for the audience.

I think before starting this course I would have been drawn to doing a map (as a default of it being geographic data) or the line chart (as a default of being data over time) but from learning about visual variables, the lectures in weeks 1 & 2 and coming back to what the goal of the visual was I decided to go for design ?? Because I felt it fit the more precise/analytical end users.

Outcome: decided upon rough design number 3.

Encoding

- **Hue and arrow direction** both encode the direction of change between 2013 and 2018. Means if colour blind still have visual variable to show this aspect of the data.
- **Position** of the start of the arrow encodes the value at 2013.
- **Length of bar** encodes the size of change between 2013 and 2018.
- **Position** of the end of the arrow encodes the value at 2018.

Further work/questions

Also considered at this point what future questions may want to explore or think users may ask from this initial visual:

- How the values change over time period 2013 to 2018 (e.g. are they constantly increasing or decreasing or fluctuating)?
- How many people are in each LA - take into account population (and/or population density) of each LA?
- Geographic element - where are the LAs that have high and low values?

Week 3 - Tutorial feedback

In this week's tutorial got feedback on my chosen design sketch from the group.

Arrow

Originally had a range chart and asked group what thought of line arrow mid way. Group feedback that arrow was helpful (and perhaps stronger than the hue encoding alone) and suggestion of arrow at end of line to reduce number of points along the line.

Outcome: based on tutorial group feedback decided to change from circle markers at start and end with midway arrow to line with arrow as head. This design was submitted as assignment 3 (attached at end of the journal).

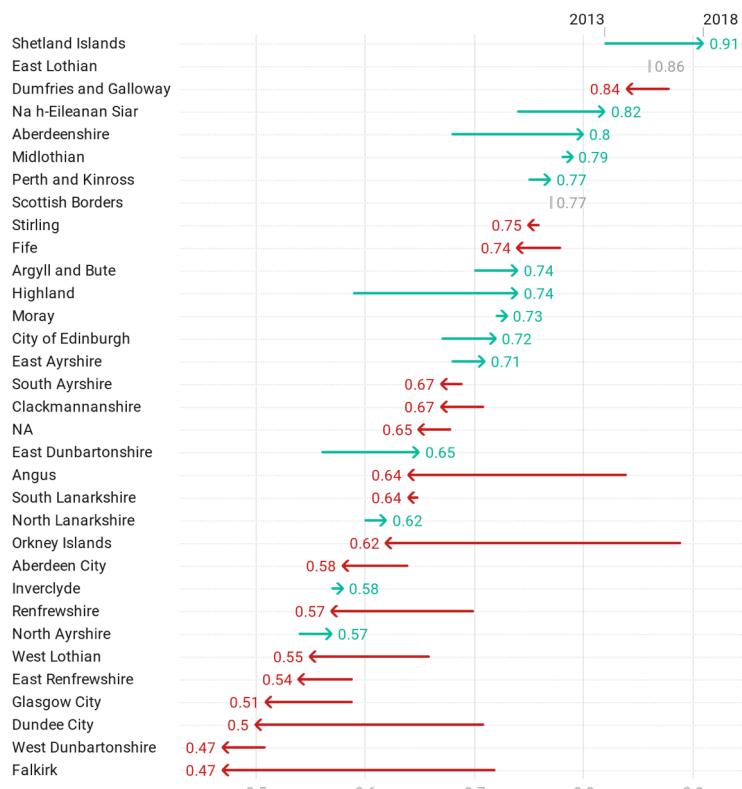
Week 3 - Visualisation tools testing

Once picked visual tested out in Datawrapper, Flourish and Data Illustrator (based on them being introduced in week 2 lectures, tutorials and looking on VisBrowser).

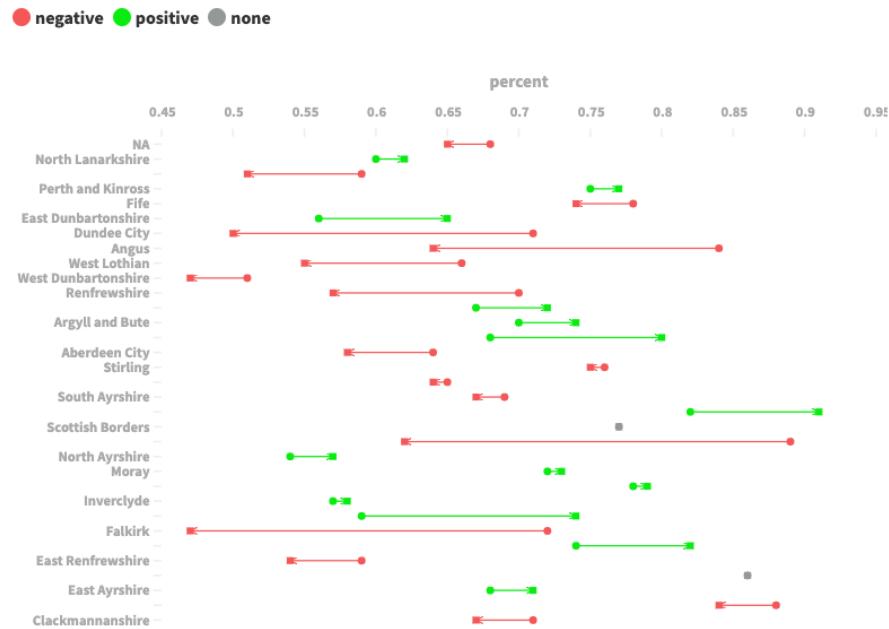
Below are screenshots of initial testing out each tool:

Datawrapper

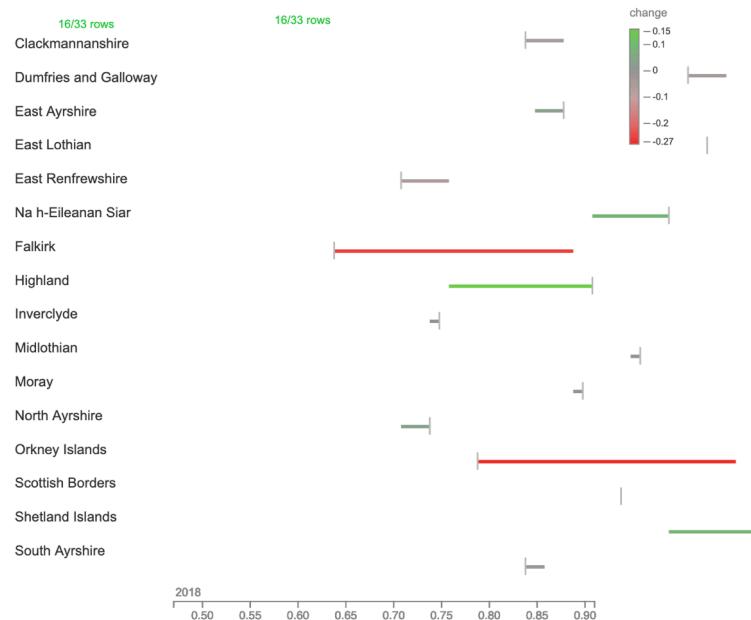
% of adults who are close to a green/blue space in 2013 and 2018 by Scottish Local Authority



Flourish



Data illustrator



Week 3 - Mapping requirements to tools

Had more difficulty with creating the arrows in Data Illustrator - felt would be good if wanted to have embellishment or required more customisable aspects but felt Flourish and Data wrapper met most of requirements and given time constraints and skill level Data Illustrator attempt did not look as professional. Plan to try Data Illustrator to create visualisation of the same data but for a different audience (wider public) in the future.

	Flourish	Datawrapper
Arrow shape	Yes	Yes
Point at 2013 value	Yes but also at 2018, not wanted - No	No
Divergent colour scale based on size of change	Yes	No
Categorical colour change based on positive and negative change	Yes	Yes
Data label with 2018 value and/or change value only	No (and badly aligned sitting on top of arrow)	Yes
Legend	Yes for colour, no for arrow	Yes for colour and arrow (but not customisation)
Story telling	Yes, stories with sleek transitions and annotations	No

Decided to change use of hue

- Had planned on having diverging colour depending on the scale of change but felt it over emphasised large changes (learnings from lectures on colour and time) because they are already a long bar and then coupled with high colour saturation draws attention. Also perhaps redundant as length already shows this.
- Hue works better for ordinal rather than quantitative (based on colour lectures).
- Used colour from ColourBrewer (colour lectures) to get the red, grey and green.

Outcome: decided to change from diverging colour scale to categorical.

Gridlines

Had planned to have no gridlines so as to maximise data ink ratio. But on viewing without the horizontal gridlines and reflecting on reading from lecture 2.1

Can keep if supports display of data that reduces audiences effort to read but reduce salience (visible enough do to job but not so competes for attention).

Outcome: decided to keep light horizontal gridlines to aid user follow which arrow corresponds to which LA in the y-axis (as sometimes large gap between variable and the axis).

I think before starting this course I would have been drawn to use Flourish because of its sleek story telling transitions but from learning about visual variables and mapping out requirements as part of assignment 2 I decided to go for Datawrapper as I felt it more aligned with the goal and the end users.

Outcome: decided to use Datawrapper as tool.

Week 4 - Project 1-2-1

Raised the following topics in project 1-2-1: colourblindness, axis truncation, gridlines and tools to embed the Datawrapper output into for presentation.

Colourblindness

Options discussed:

- To have a button to switch between red/green and colourblind friendly option
- Instead of using colour could use encoding such as a full line for positive change and dashed line for negative change (which would remove need for the colour).

Decided because the arrow does show the direction of change the colour is almost an 'extra' (potentially redundant) encoding but feel does aid in readability.

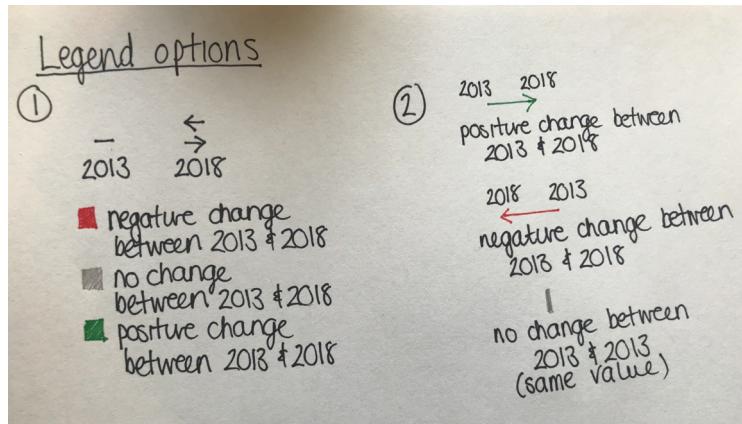
Outcome: kept as is, but plan on adding into future work to add a colourblind friendly colour scheme as an option (user would be able to toggle between the colour schemes).

Legend

Discussed that default legend in Datawrapper is perhaps not so clear because for increasing or decreasing LAs the arrow changes direction and so 2018 moves to be on the left or right of 2013.



Lecturer raised following 2 ideas



Decided upon option 2.

Outcome: used Sketch to create Legend.



Truncated axis

Discussed that not truncated axes shows the true possible ranges each value can take (0 to 100%) but that with it being truncated can more easily see the differences.

Options:

1. Option to toggle between 0-100% and the truncated axis (40-90%).
2. Only have truncated axis but clearly highlight it has been truncated.

Outcome: decided to ensure that truncation is clear decided on ability toggle between the 2 axes.

Week 5 - Final implementation

Circle marker at 2013

From initial design planned on adding circles to mark 2013 point (not available in Datawrapper but planned to add using Sketch) like below:



However when had version of the visual with full axis range of 0 to 100% caused small changes to look as follows:

..... ➤ +1%

Which felt the circle marker for it to sit accurately then would mask the arrow. So decided that because allowing user ability to see version of visual with full axis range to not have circle markers for 2013, as felt showing the visual with the full range was more important to be supportive of task and truthful.

Outcome: decided against circle marker for 2013

Brief update

Upon consideration felt final visual better showed the differences between 2013 and 2018 values (original brief was how authorities compared and then a secondary question of how they changed between these dates). Therefore decided to updated brief (big question) to reflect visual better supported this task.

Updated big question: How does the change in percentage of adults who are within 5 minute walking distance of a green or blue space between 2013 and 2018 compare between Scottish Local Authorises?

Outcome: slight update of brief to focus on time change aspect.

Further adjustments in Sketch

Some additional customisation was done in Sketch to add axis labels, reduce size of text of the header, adjust axis marker ticks.

Implementation

Wanted to add an author driven aspect to the visual in that certain parts of the visual are highlighted to draw user to them and a text narrative added a message to each of the aspects (based on week 5 lessons on interactivity).

Will be providing the static version of the visual for final report also implemented an R markdown/shiny document to allow this author driven user journey of the visual (and to add background to the report).

Created each version of highlighted visual in both the zoomed in and zoomed out versions, and wrote R Shiny code to allow this interactivity.

Future work

The visualisation and my learning is ongoing and I look forward to exploring the following areas further to see if I can incorporate them into my visualisations or additional visualisations using the learning from the course:

- How the values change over time period 2013 to 2018 (e.g. are they constantly increasing or decreasing or fluctuating)?
- The population density of each LA and taking this into account.
- How rural/urban the LAs are.
- Geographic element - where are the LAs that have high and low changes? Are they close together?
- Has there been policy changes or schemes implemented in particular LAs over the time period which may affect the results?

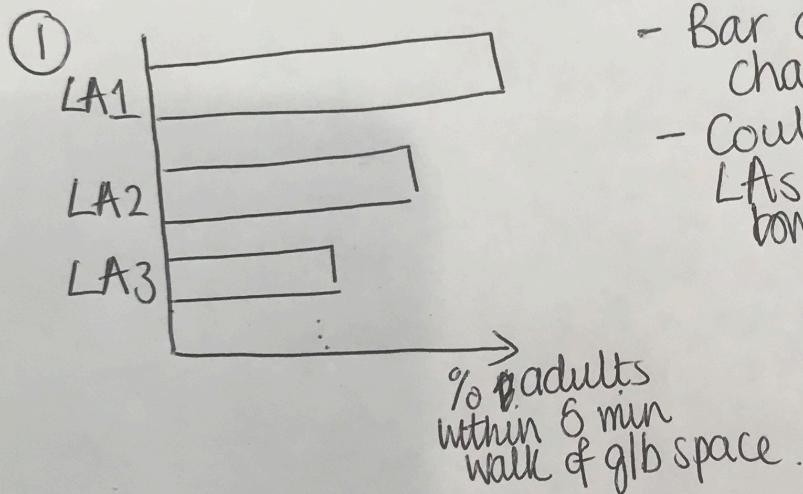
In the D3 tutorial it was advised that it can be good to try and recreate a simple chart when starting to learn D3 and so also hope to recreate this visual in D3 as a small project to learn D3.

Assignment 2 (SO801944)

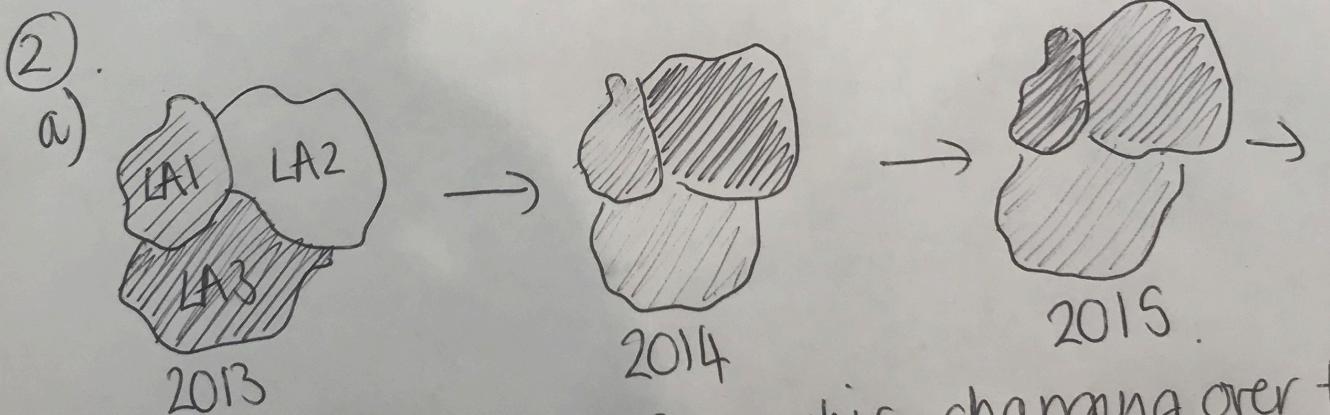
General: For any visual would call out points / marks of interest via repeating visual with parts highlighted (for pre-attentiveness) and annotation or breaking down visual & highlight. Want to guide users so don't have to find insights themselves.

Data

- LA : Local Authority.
- Year: 2013 - 2018
- % of adults within 5 mins walking from green/blue space.
- % of adults aware of how far nearest green/blue space is.

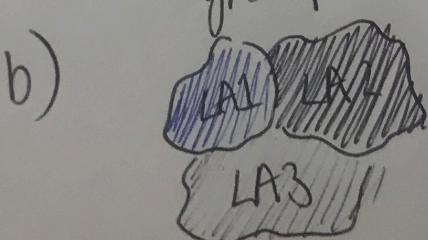


- Bar chart race to show change over time highlighting
- Could show race for certain LAs which have highest/bowest change over time etc.



Legend:

- 0%
- 100%
- % people < 5mins from glb space.



- Geographic changing over time
- Using hue to encode

need to consider
choice of 2 colours
(averaging)

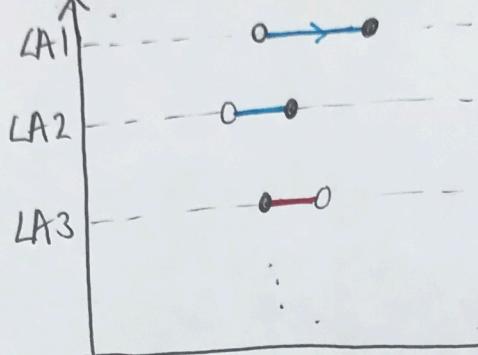
decrease
in % of
adults

increase
in % of
adults

whether ~~weather~~ %
of adults ~~choose~~
within 5 min walk
of glb space increases
or decreases between
2013 and 2018.

SO801944

(3)



O = 2013
● = 2018



need to consider

colour

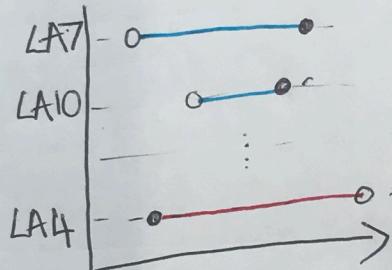
(perhaps arrow to highlight direction: ~~red~~)

positive change of % adults
= +~~red~~ % adults
negative change of % adults
= ~~blue~~ % adults

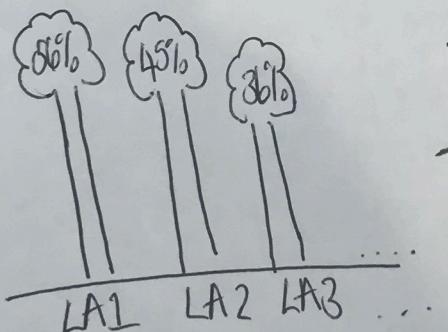
% adults
within 8 min walk
of glb space.

- Order ~~with~~ from highest to lowest by LA in 2018.
- Could then transform to order with ~~highest to largest positive to largest negative changes~~

eg.



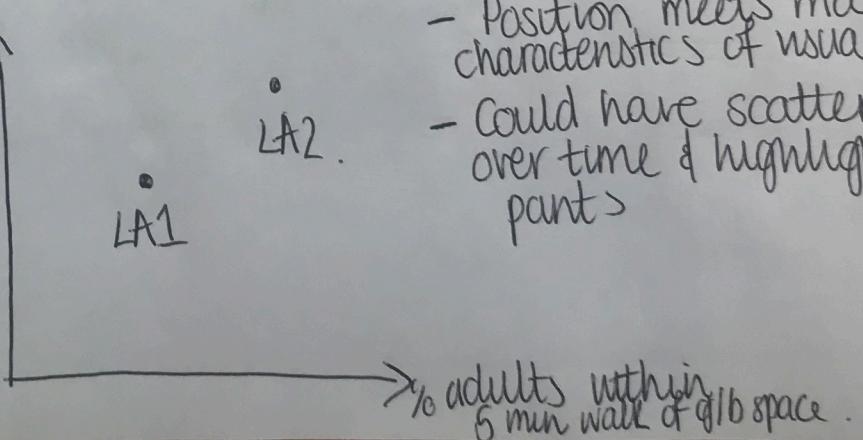
(4)



- Embellishment to increase memorability
- (Perhaps not for target users \Rightarrow wider audience?)
- (Misleading? Not all green spaces have trees and survey includes blue space).

(5)

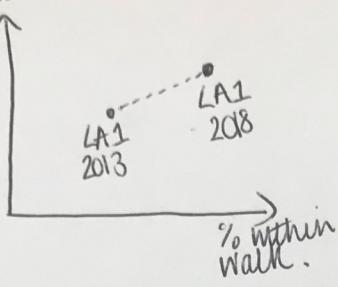
% adults aware
how far they are
from glb space



- Position meets many characteristics of usual variables
- Could have scatter changing over time & highlight key point

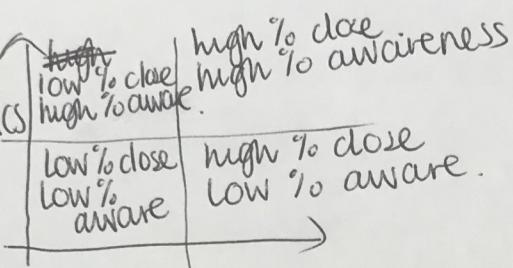
% adults within
5 min walk of glb space.

80801944
eg. % aware.

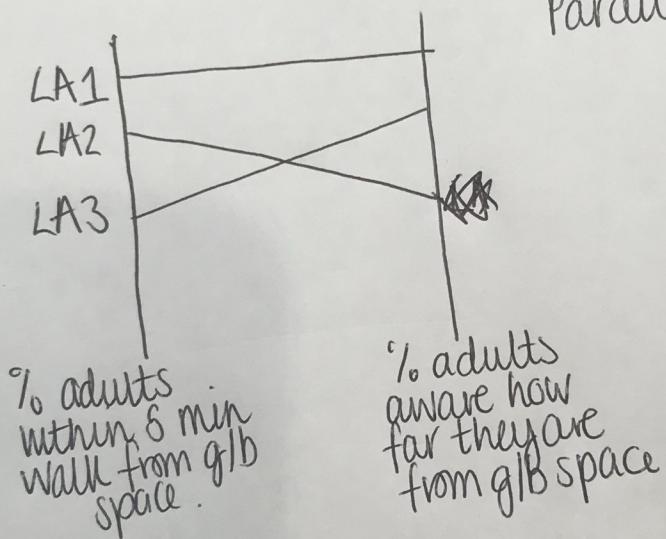


Show trial to show how LA has changed over time

Quadrant for characteristics

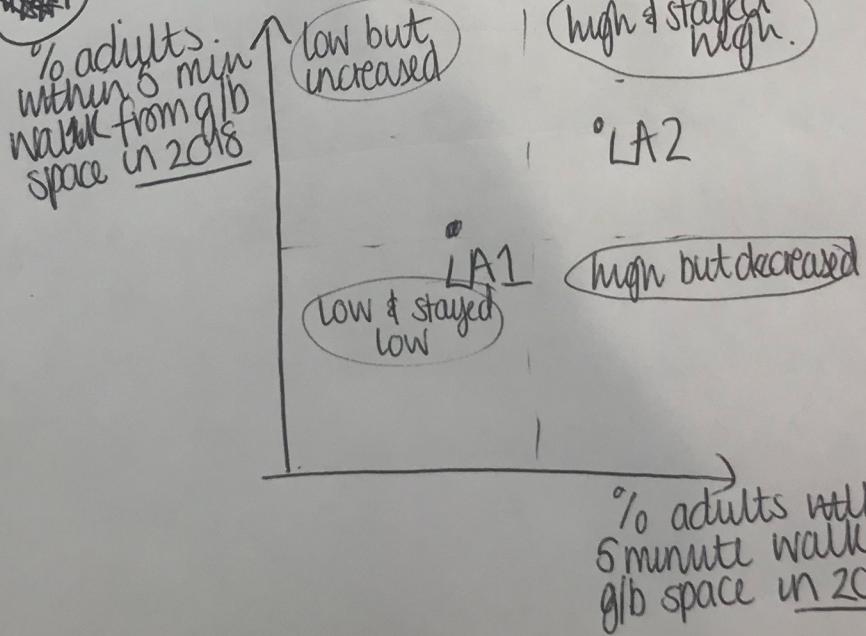


(6)



Parallel plot (change over time)

(7)



Unsure if ok to have same variable at 2 time points as the 2 axes on a scatterplot?

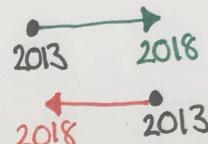
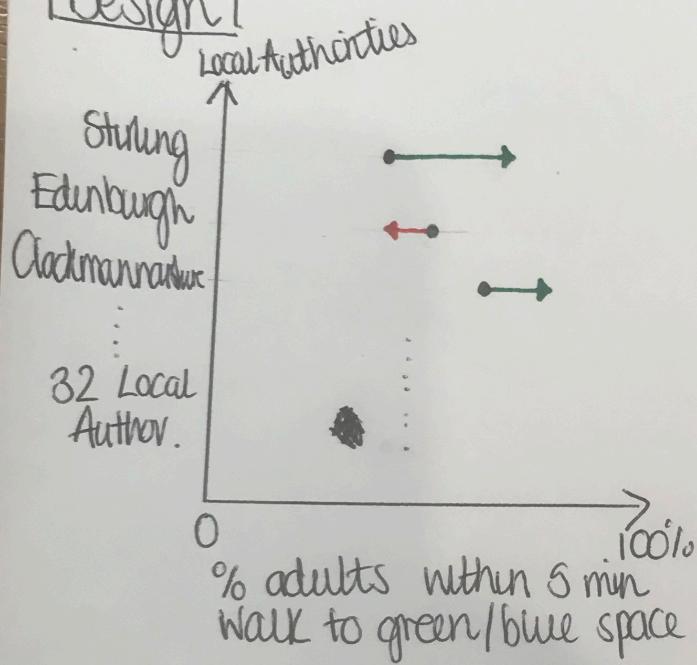
SO801944

Big question

How do Scottish Local Authorities compare in % adults who are close (less 5 minute walk) to green/blue space? How has it changed from 2013 to 2018?

~~Target users~~ Target users: Government/council planners or environmental departments

Design



Colour & direction of arrow
(since shape meets more
usual variable criteria) to show
direction of change.

Still to consider/decide

• order: ~~order by 2018 value~~
~~highest to lowest 2018 value~~.

- colours: considering ~~green~~ for positive change between 2013 to 2018, ~~red~~ for negative change & black/grey for no change.

- value: considering using ~~value~~ on arrows
~~so is a diverging colour scale depending~~
on how much positive/negative change.

e.g.

OR



- data labels: label of a value, either the percentage point change or the 2018 value.
e.g. 74% OR +4%