The below document details the creation of the Slideshow Narrative Visualisation titled **"Examining the differing trend towards a more urbanised society"**. In order to ensure that all questions were answered, the essay is formatted in a question and answer format.

Messaging

What is the message you are trying to communicate with the narrative visualization?
The purpose of this narrative visualisation is to provide the user with the ability to examine how individual countries, regions and the world as a whole is moving towards a more urbanised society. The message is that although most countries are becoming more urbanised, the way / speed in which they are doing so is highly dependent on the region that the country is located within.

Through the visualisation, the user is directed through three different years' worth of data so that they can observe how a specific country has changed over time.

Narrative Structure

Which structure was your narrative visualization designed to follow (martini glass, interactive slide show or drop-down story)?
The visualisation follows the interactive slide show technique.

How does your narrative visualization follow that structure? (All of these structures can include the opportunity to "drill-down" and explore. The difference is where that opportunity happens in the structure.)
Within this structure the user is brought through the three different scenes (years) in a pre-defined manner (i.e. 2005 to 2010 to 2015). They have the ability to move forward and back within the slideshow but not to jump to any scene that they would like (i.e. cannot go from 2005 to 2015). Within each scene the user is able to "drill-down" by hovering over any desired data points where additional information, such as the country name and the population number, is provided. This data is not available from the initial view and thus can be interpreted as fulfilling the drill-down requirement.

Visual Structure

What visual structure is used for each scene?
The visualisation provides a scatter plot of data points for all available countries within the dataset. The position of the data point is dependent on the urban population percentage and percentage growth, its size is dependent on the country's population and the colour is dependent on its region.

How does it ensure the viewer can understand the data and navigate the scene?

The labelled axis and the legend within the graph provide context to the user so that it should be easy for the user to understand the data. The navigation buttons directly above the graph allow the user to navigate through the scenes very simply ("Previous", "Next") and the highlighted year is quite dominant on the screen, ensuring the user knows which data they are currently examining. The scene also contains a Voronoi affordance to ensure the user discovers that there is a tooltip functionality available.

How does it highlight to urge the viewer to focus on the important parts of the data in each scene?
Annotations have been provided in each of the three scenes to highlight important / interesting areas of the graph to the user. These annotations highlight in a different colour to that used within the graph to ensure that there is not misrepresentation.

How does it help the viewer transition to other scenes, to understand how the data connects to the data in other scenes?
As specified above, the simple navigation buttons help the user to navigate between the various scenes in a predefined way (one step forward or back). The chart uses transitions which connects the data in one scene to that in the next. The data has been ordered according to the urban population and so this allows for a lot of movement on the screen without it becoming a jumbled mess.

Scenes

What are the scenes of your narrative visualization? How are the scenes ordered, and why?
The three scenes within this visualisation are the data on urban population for the three years 2005, 2010 & 2015. The scenes are ordered in chronological order from earliest (2005) to most recent (2015) to allow the user to easily see the change over time

Annotations

What template was followed for the annotations, and why that template?
The annotation template from Susie Lu (https://d3-annotation.susielu.com/) was used throughout the visualisation. These templates provide a very simple but aesthetically pleasing annotation. For each annotation, the colour red was used both for the text and lines to ensure that the annotation was clear and obvious without overlaying any colour used in the body of the graph. Further the highlighted area was also set as dashed to ensure that there would be no misrepresentation.

How are the annotations used to support the messaging?
The annotations provide the user with some brief interesting points about the data. Over the three scenes, three separate annotations are used to highlight areas dominated by countries from Europe, Sub-Saharan Africa and Middle East & North Africa. Each of these annotations shows that there is a definite region factor in the speed at which the countries are becoming urbanised.

Do the annotations change within a single scene, and if so, how and why?

The annotations do not change within a single scene. Each scene only has one annotation and the only difference between the three is the use of a rectangle instead of a circle on the third scene. This was required to better represent the data it was trying to highlight. The colour and the dashed line etc. was not changed.

Parameters

What are the parameters of the narrative visualization?
The visualisation has a number of different parameters. A parameter can be defined as anything that can be changed within the visualisation. Within this visualisation we have the following parameters:

1. The year which the data was recorded
2. The scene can also be seen as a parameter within the visualisation.
3. The tooltip, visible within each scene, is also a parameter.

What are the states of the narrative visualization?
1. There are three year states available within the data: Years 2005, 2010 and 2015.
2. There are three corresponding scenes for these years
3. The tooltip can be shown or hidden.

How are the parameters used to define the state and each scene?
Following the triggering of a move to the next scene by the user (using the available buttons) the scene number is updated which in turn updates the year parameter. The tooltip is hidden by default when the user moves to a new scene.

Triggers

What are the triggers that connect user actions to changes of state in the narrative visualization?
There are three triggers that the user can use to change the state of the narrative visualisation, namely:
- The "Previous" and "Next" buttons.
  - The interactive slideshow should not and does not allow the user to select scenes at random.
- And hovering over a data point in the graph
  - Hovering allows the user to deep-dive into a particular data point.

What affordances are provided to the user to communicate to them what options are available to them in the narrative visualization?

A Voronoi grid has been added to the graph to ensure that the user is informed of the available tooltips on any movement over the graph. Using this grid, the tooltip is shown on top of the nearest data point whenever the cursor is placed on the graph.