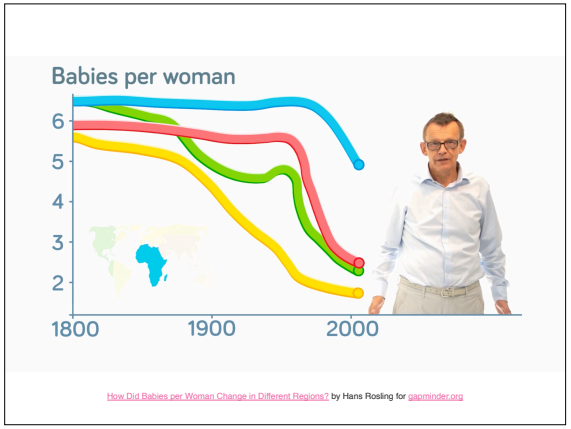


Excellent example how animation can be used effectively.

Technique for storing the animation: Animation could well be stored as attributes and then rendered by web page, for example, D3 using SVG for rendering. With Hans Rosling narrating, this is clearly a video file encoding individual frames.

How many items are animated?
- Very small number of animated items, only 4 lines.

What are the animated channels and marks?
- Only for line marks, length of line is animated

Are data visualisation principles applied correctly?
- Principles for line chart idioms are applied. E.g. vertical axis starts with 0, colour hue for categories, position for attribute size, dotted lines for projection.

What type of change is the animation showing?
- Temporal animation, used for storytelling

What techniques are used to reduce cognitive load?
- All elements remain visible, so no short term memory needed to remember what was presented previously.

What aspects rely on short-term working memory?
- viewer is not required to remember what has been presented previously, but can still see it → the viewer can use short term memory to process other information

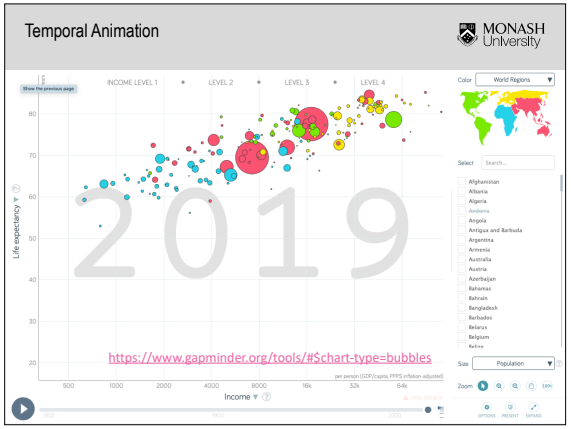
Is change blindness an issue?
- Change blindness (inability to see changes in an animated scene) is not an issue, because the narrator guides the viewer to the relevant animated objects.
- One object after the other is animated to reduce change blindness: the viewer only needs to focus on a single object

Is the visualisation guiding user attention and focus?
- User attention is directed by narrator, who replaces annotations.

Do you think the main message is made permanent in long term memory?
- Probably yes, but we can only speculate.

Do you think the cognitive load is too high, high, about right or low?
- about right

Overall: good use of animation?
- Engaging and captivating due to narrator.



Technique
- Rendered by web browser, could be using SVG for rendering. Animation is computed from table datasets.

How many items are animated?
- Large number of items, across long time span

What are the animated channels and marks?
- Position and size are animated channels.

Are data visualisation principles applied correctly?
- Correct color hue for categories, and area-proportional symbols.
- Good interface.
- Vertical axis of life expectancy is not intersecting axis at 0.

What type of change is the animation showing?
- Time.

What techniques are used to reduce cognitive load?
- Reduced cognitive load with trace options (select country in list and move time slider).
- Tracing reduces short term memory load

What aspects rely on short-term working memory?
- Past positions and circles of marks, unless tracing is enabled.

Is change blindness an issue?
- Yes, there is a huge amount of information. It is likely that viewers will miss important changes.
  An alternative option with narration by Hans Rosling: https://www.gapminder.org/answers/how-does-income-relate-to-life-expectancy/

Is the visualisation guiding user attention and focus?
- No guidance with annotations or other graphical elements. The user can select and “trace” objects of interest. This is an exploratory tool.

Overall: good use of animation?
- Animation is not the main tool for this visualisation. It is only one option among many to explore rich and complex datasets.