- **Messaging.** What is the message you are trying to communicate with the narrative visualization?

We all pay taxes. There are four taxation entities – Individuals in the US, Corporations in the US, Import Tariffs on Goods coming into the US and Foreign Entities like expats.

The question we want to answer is, what is the share of federal taxes for the taxation entities & has it changed over time? How will the share of taxes look in the future ?

Narrative Structure. Which structure was your narrative visualization designed to follow (martini glass, interactive slide show or drop-down story)?

I used an interactive slide show for my narrative visualization. This is a hybrid structure

- 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.)

The visualization is an author directed path of individual but connected scenes for various decades starting from the 1970's. It represents a progressive timeline from the past to the future.

At each scene, the user can:

1) Explore Context Information about that decade.

2) Explore an analysis of the tax contributions for the decade.

3) Drill down into the tax numbers in billions of dollars using a mouse over animation.

4) Explore a visualization that demonstrates the share of each tax entity for that decade.

- **Visual Structure.** What visual structure is used for each scene?

There are multiple parts of the visual structure for each scene

1) An animated SVG with a force layout and 3D spheres that represent the proportions of the contributions of each taxable entity to the tax for the year.

2) Annotations that show the sphere for each SVG

3) A mouse hover that shows the raw numbers in billions of dollars for each tax entity

4) A right panel that displays the Analysis and Historical Context for the scene

5) A prominent text that shows the user the Scene decade they are in (e.g. The Past – 1960's)

6) Highlighted & raised buttons for navigation act as accordance's.

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

1) The analysis and historical context prepare the background for the scene

2) Annotations and directed lines direct the user to the entities that are represented as spheres in the visual.

3) The user can mouse hover over the spheres to drill down into raw tax numbers in billions of USD.

- How does it highlight to urge the viewer to focus on the important parts of the data in each scene?

  1) Annotations are used to direct the user eye to the tax proportions

  2) Font Sizes, Heading Tags are used to accentuate important sections

  3) A large font (xx-large) is used to prominently display the scene decade.

  4) I have use minimal colors and neutral colors. I have used colors sparingly only to accentuate when required.

- How does it help the viewer transition to other scenes, to understand how the data connects to the data in other scenes?

  A large font (xx-large) is used to prominently display the scene decade. This helps the user stand the time context of the scene.

  I toyed with the idea of bread crumbs on each scene one. However the buttons also provide a breadcrumb for the user to see the past and future scenes.

  The historical context grounds the user into the timeline of the current scene

- **Scenes.** What are the scenes of your narrative visualization? How are the scenes ordered, and why

  1) The scenes of the narrative visualization represent tax decades

  2) The scenes are ordered in time order from the past, into the present and the future.

  3) There are five scenes one each for 1960’s, 1980’s, 2000’s, 2018’s, 2030’s

- **Annotations.** What template was followed for the annotations, and why that template? How are the annotations used to support the messaging? Do the annotations change within a single scene, and if so, how and why

  There are two types of annotations used

  1) “Static” annotation that direct the user to the appropriate visual sphere for the tax entity. These do not change in content but change in position from scene to scene. These are built using the SVG line tag. We could easily update the text to have tax information from the scene if required.

  2) A hover over annotation that tells the user the raw contributions in billions of dollars. This is done with mouse over on the tax entity sphere.

- **Parameters.** What are the parameters of the narrative visualization? What are the states of the narrative visualization? How are the parameters used to define the state and each scene?

Each scene has a corresponding state. There are 5 states for 5 scenes. The states form a “linear” state machine. There are multiple parameters used

These are some of the parameters of the state

1) The scene year
2) Tax Details like categories, values
3) Scene Text
4) Analysis Text
5) Historical Context Text

I use only one SVG tag which is created and destroyed for each scene. These are triggered by mouse clicks on the time line buttons.

- **Triggers.** What are the triggers that connect user actions to changes of state in the narrative visualization? What affordances are provided to the user to communicate to them what options are available to them in the narrative visualization?

These are some of the triggers:

1) Buttons that are lined up in a logical yearly sequence. These trigger the change in scene. The affordances are raised buttons that give a visual prompt to the user to click

2) 3D spheres created by using SVG gradients. These triggers are a mouse over to additional tax details. There are annotations that point the user towards the 3d sphere.