Marvel vs DC:

Group Members:

Gaurav Keswani (gk368)

Peimin Zhong(pz88)

Skylar Carfi (swc74)

The Story:

Since the early 1900's, Marvel and DC have had a rivalry, stemming from the comic book pages and now transcending onto the big screen. Movies such as The Dark Knight (DC) and The Avengers (Marvel) have broken box office records, showing that film adaptations of comic book super heroes – even obscure ones – are truly a force to be reckoned with.

Although DC entered the comic book and movie scene before Marvel, it is often said that Marvel is beating the former on both fronts. Being avid fans of super hero movies, we set out on a journey to discover if this is actually true.

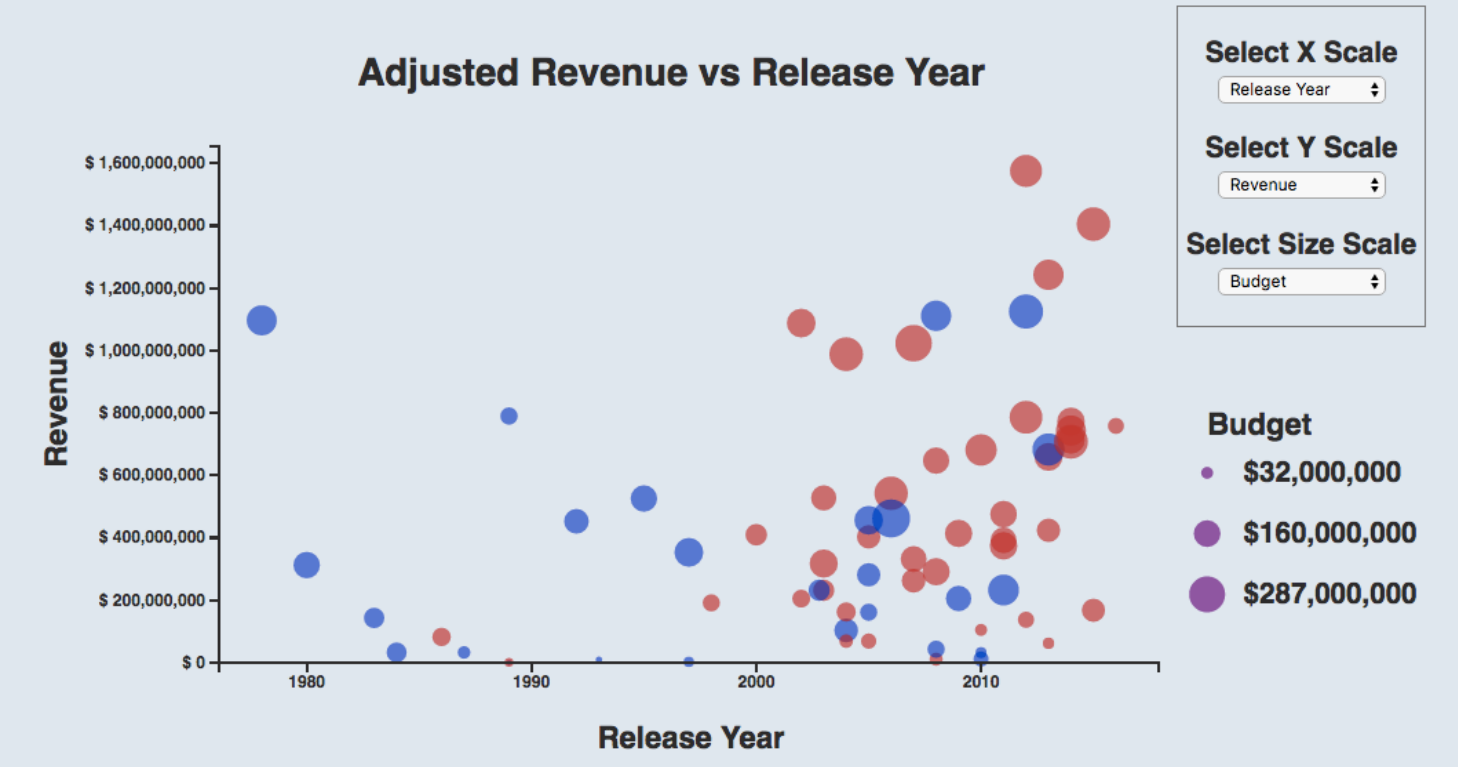
Data Collection:

The data for the 3 visualizations was collected from a multitude of sources:

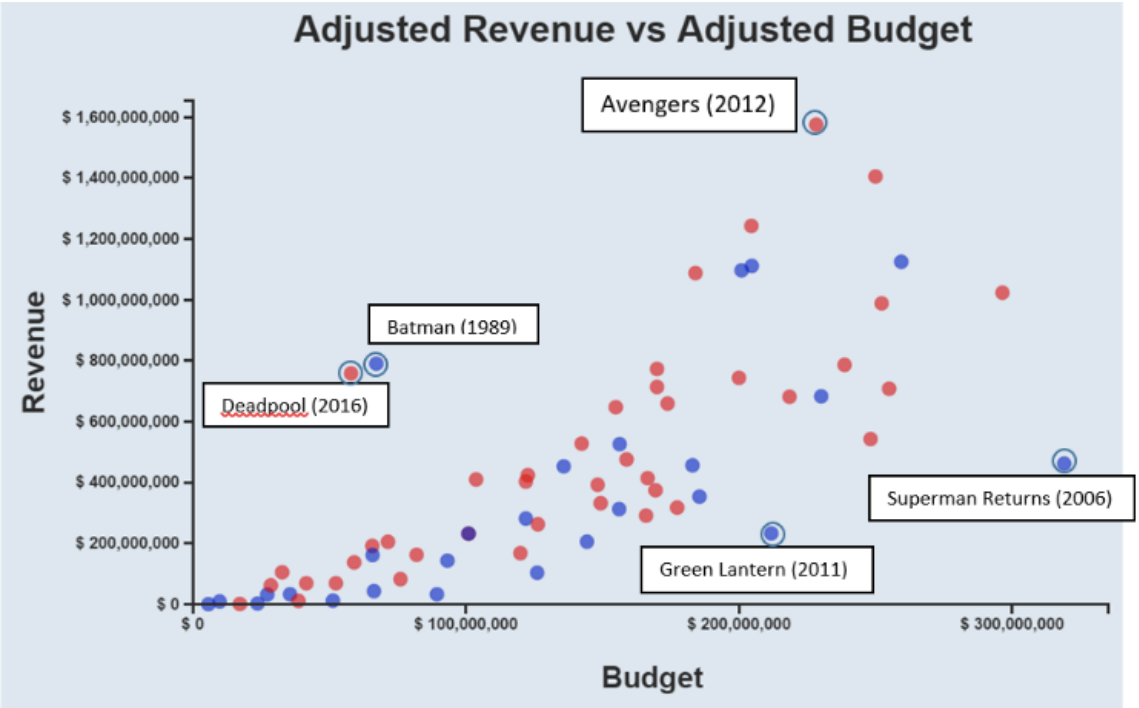
1. Foreign Revenue and Movie Budgets: http://www.boxofficemojo.com
   - ~70 movies (40 Marvel, 30 DC)
   - Data Fields: Adjusted Revenue, Budget, Revenue by Country
   - We calculated adjusted budget for older movies for better comparison with current day budgets using average inflation rates.
2. Character information and IMDB ratings: http://imdb.com
3. Rotten Tomatoes rating: http://www.rottentomatoes.com
4. Comic Book appearances of characters: https://github.com/fivethirtyeight/data/tree/master/comic-characters
5. For those characters, whose data wasn't in the above data set, we looked them up on the DC and Marvel Wiki.

Visualizations:

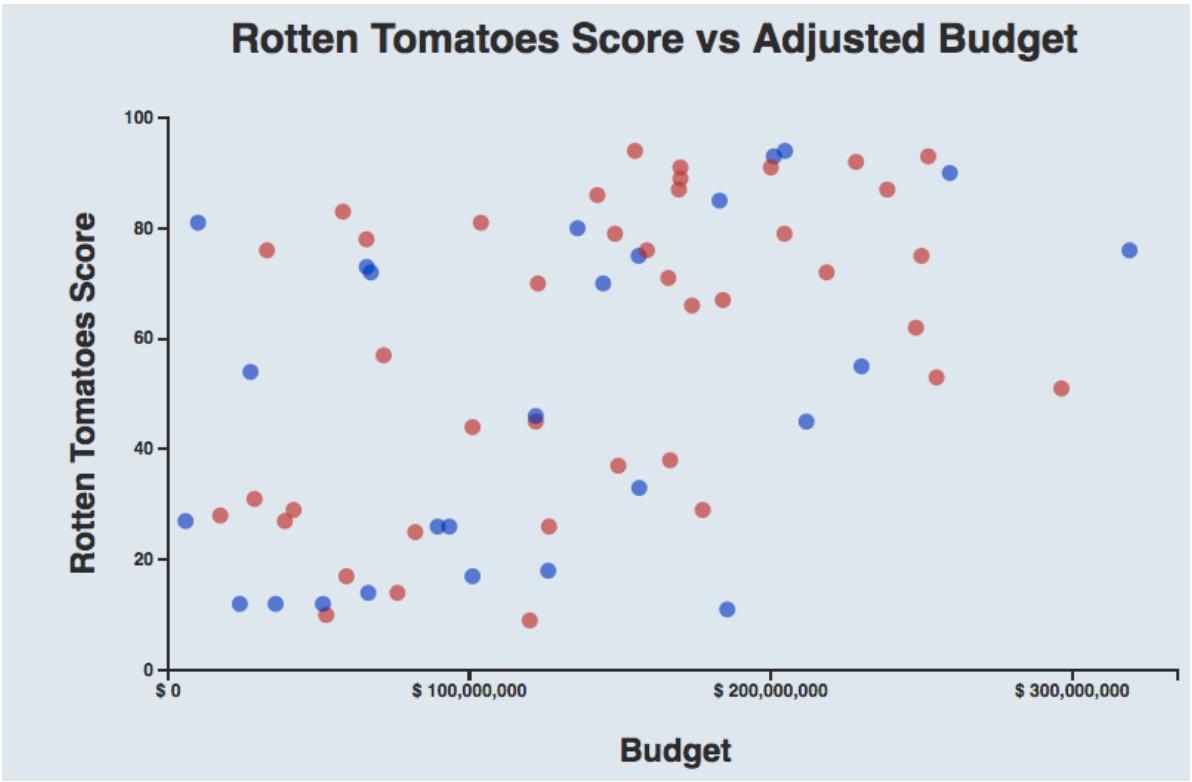
1. **Scatter plot of Marvel and DC Movie Data:**
   - We wanted to start our project with an overview of Marvel and DC movies.
   - We chose to show Release year on the x-axis, and Adjusted Revenue (calculated by box-office mojo) on the y-axis. We used a size scale to show the Budget of the movies, also adjusted for time.
   - From this view, the user can see the history of these two franchises in hollywood in the most intuitive way.

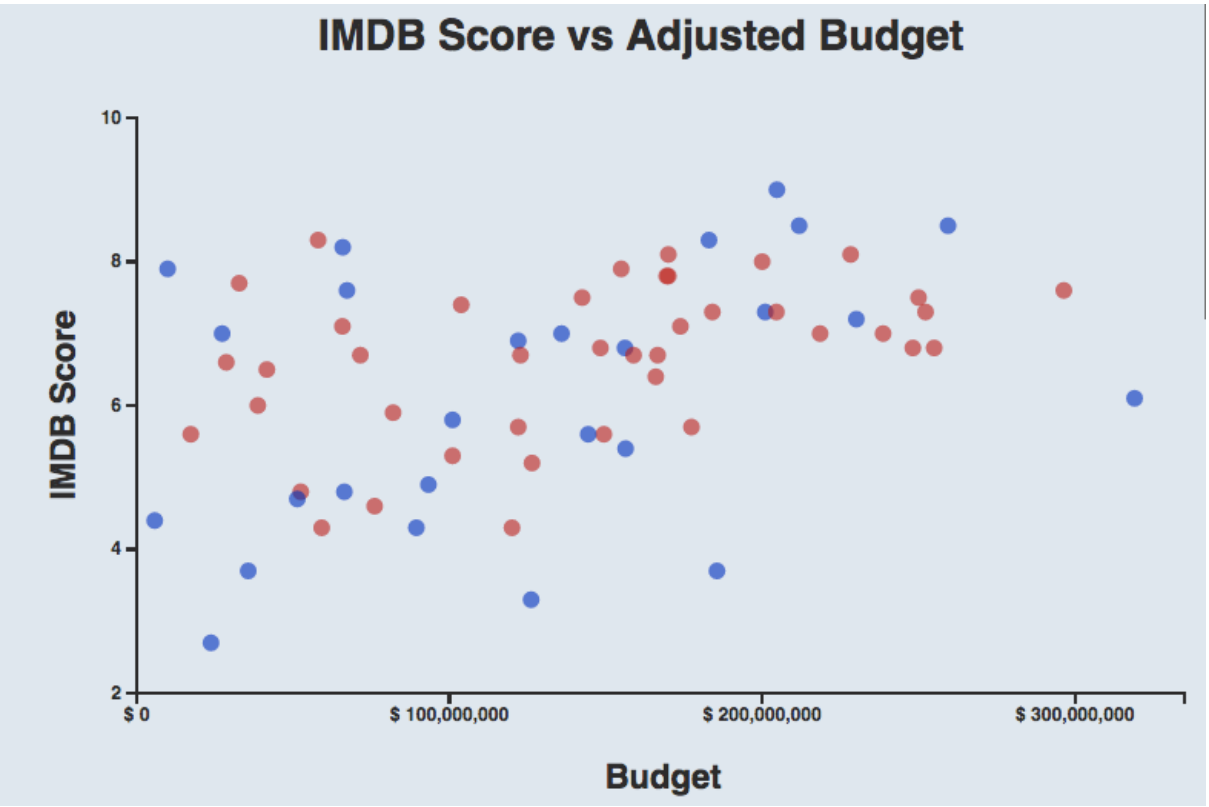


- However, there are other useful angles to view this data from. We allow the user to interact with the chart, changing x-scales among the choices: Release Year, Revenue, Budget, IMDB score, Rotten Tomatoes Score.
- The y-scale and size scale have the same options except for Release year. You can also choose no size scale.
- Playing with the chart, we expect the user to find that the difference between Marvel and DC is not as clear as one might think on the whole. What is clear is that Superhero movies overall have done pretty well, and are gaining popularity over time.
- A plot of revenue vs budget shows an accelerating return rate as the budget increases. Marvel seems to have done a better job producing more, high budget movies in recent years and benefitted greatly from this trend.



- The plot above shows that that large majority of movies show a consistent trend, with neither DC or Marvel dominating. Marvel's success with Avengers in 2012 even seems to fit this trend.
- One could argue that the greatest successes would be measured by ratio of revenue to budget. In that case, Marvel and DC both have 1 huge success in Dead pool, and Batman respectively. However, we note that Dead pool is a very recent success, while Batman is one of DC's oldest films.
- Finally, when a superhero movie is a major flop, people take notice. DC has produced two poor performing movies in recent memory
- There is a plethora of interesting discoveries to be made in this plot. One more is that once a film budget surpasses $200,000,000 there is a significant jump in minimum scores for both Rotten Tomatoes and IMDB, with IMDB being especially rewarding a large budget.

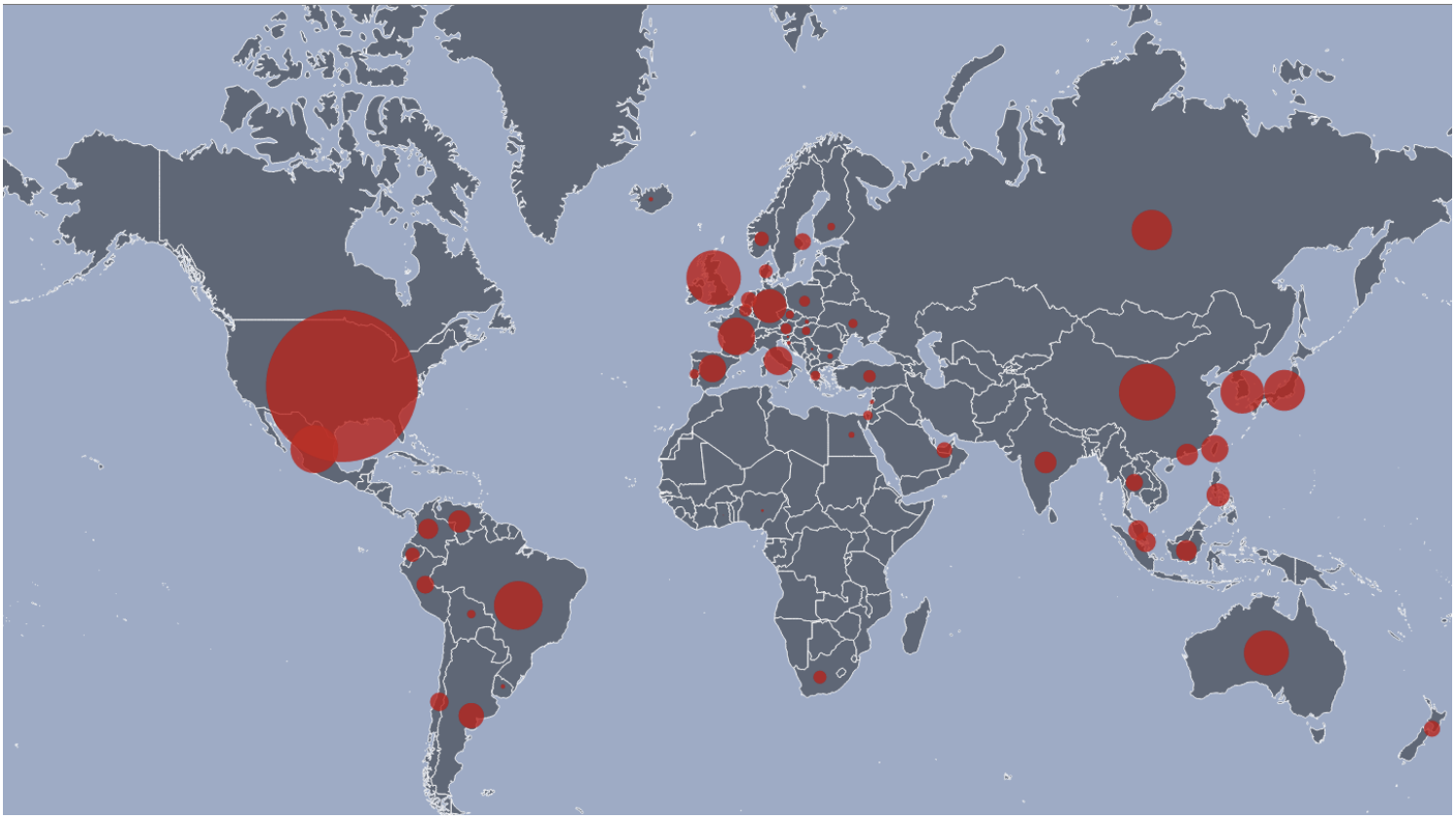




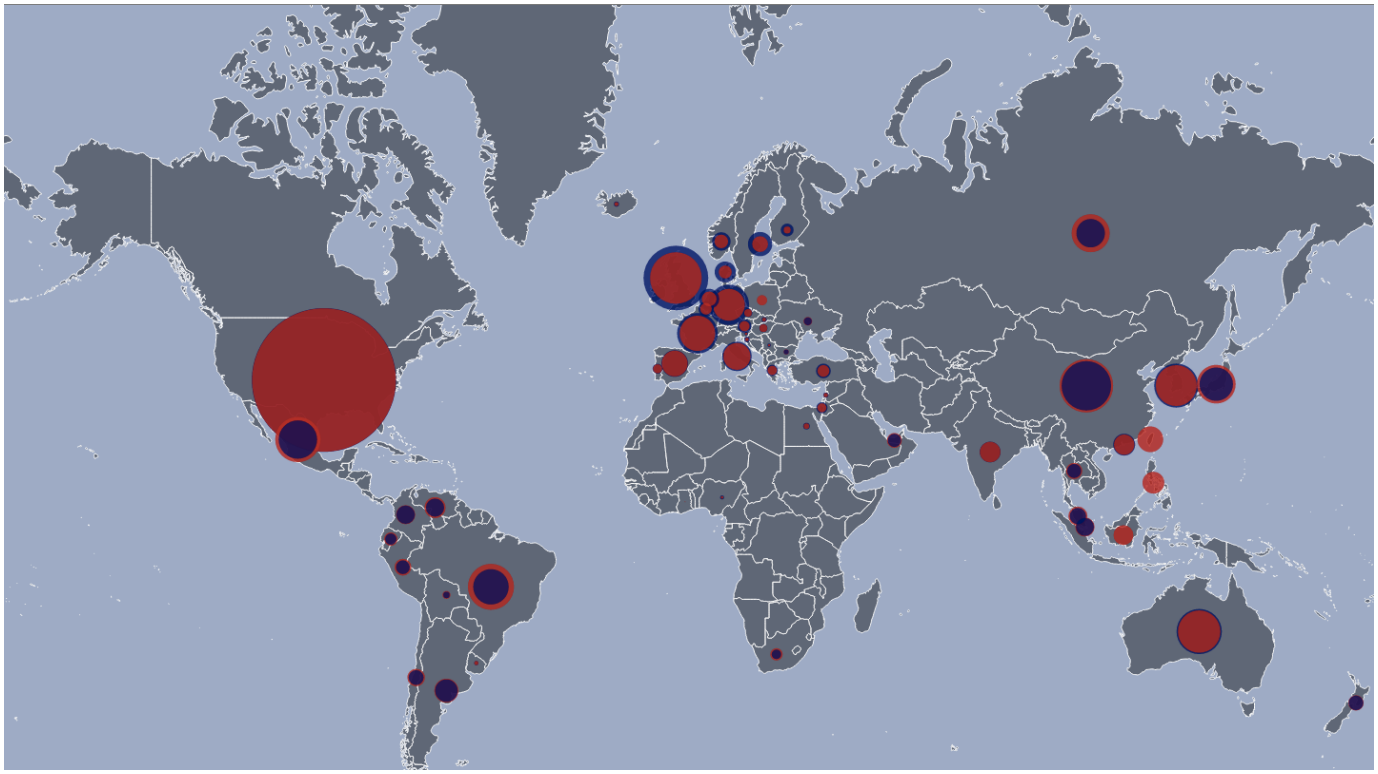
More details about the Scatter plot:

- Hovering: when the user hovers over a movie circle, a tip is shown that displays the movie title, year release, and then each unique field shown on the axes or size scale. For example, if budget is selected for all three scales, then this will only be displayed once.
- Clicking: When a user clicks a movie, the page scrolls automatically to the map and displays international revenues for this move. The user can select both a DC and Marvel movie for comparison.
- Scales: Linear Scales were used for each variable when plotted on x or y axis. For the size scale, area of the circle is proportional to the variable used.

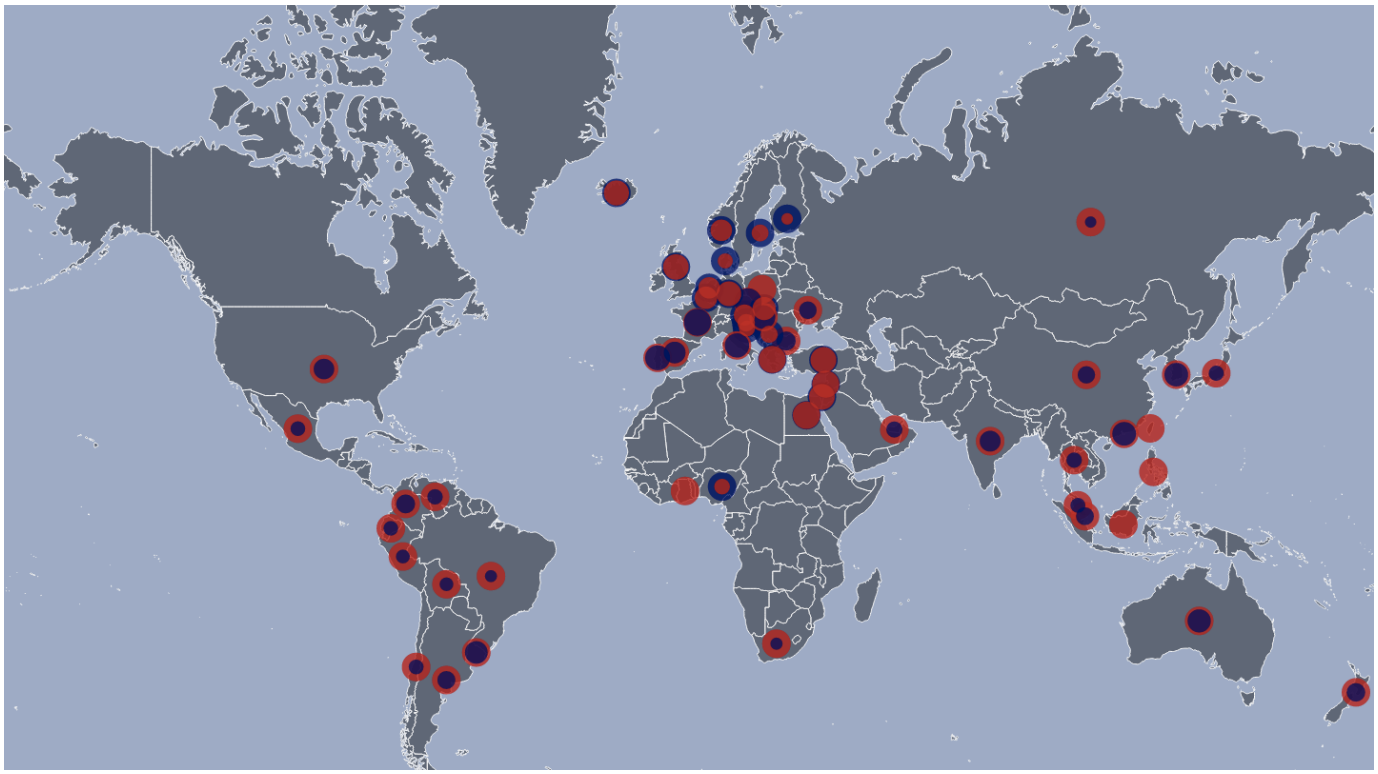
2. **DC vs Marvel worldwide revenue analysis**- The worldwide revenue analysis can be done in three ways -
    A. Single Movie Absolute Revenue Analysis:
        - One can either look at the revenue of a single DC or Marvel movie to look for revenue hotspots around the world
        - The area of a bubble is directly proportional to the ratio of revenue made in that country and overall movie revenue
        - Here's an analysis of how the Avenger's did around the world:



    B. DC vs Marvel Absolute Revenue Analysis:
        - We can gain more insight by comparing how DC and Marvel are doing against each other in different parts of the world
        - The area of a bubble is still directly proportional to the ratio of revenue made in that country and overall movie revenue
        - A red bubble being bigger than the blue bubble doesn't necessarily mean that Marvel's movie did better than DC's movie in the particular country. What it does mean is that the revenue in that country contributed to a much larger part of Marvel's overall revenue than DC's for the movies in question.
        - Here's an analysis of how Marvel's "Avengers" did vs DC's "The Dark Knight":



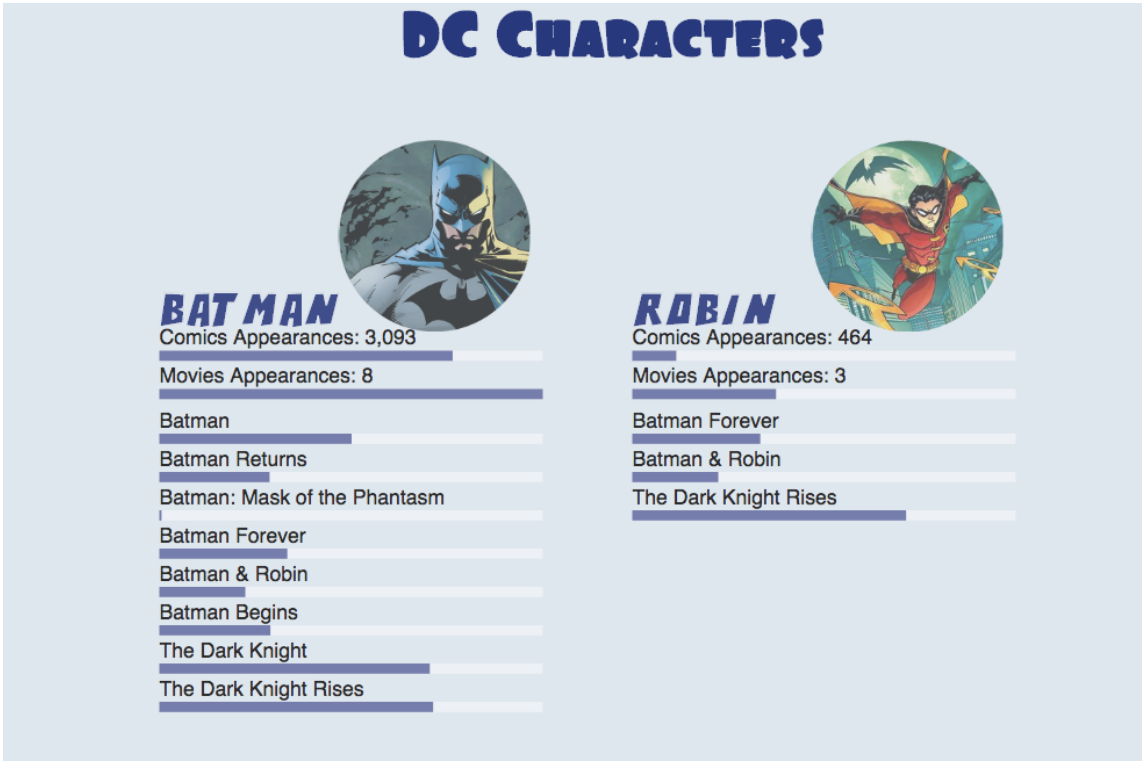
C. DC vs Marvel Relative Revenue Analysis:
   - Since the above comparison told us which country was more important to which franchise, one can toggle the switch above the world map to see who actually did better overall in each country
   - This option gives a constant area outer bubble to the better performer out of DC and Marvel in each country and calculates the area of the inner bubble depending on how well the other performed with respect to the better performer
   - Here's an analysis of how Marvel's "Avengers" did vs DC's "The Dark Knight"

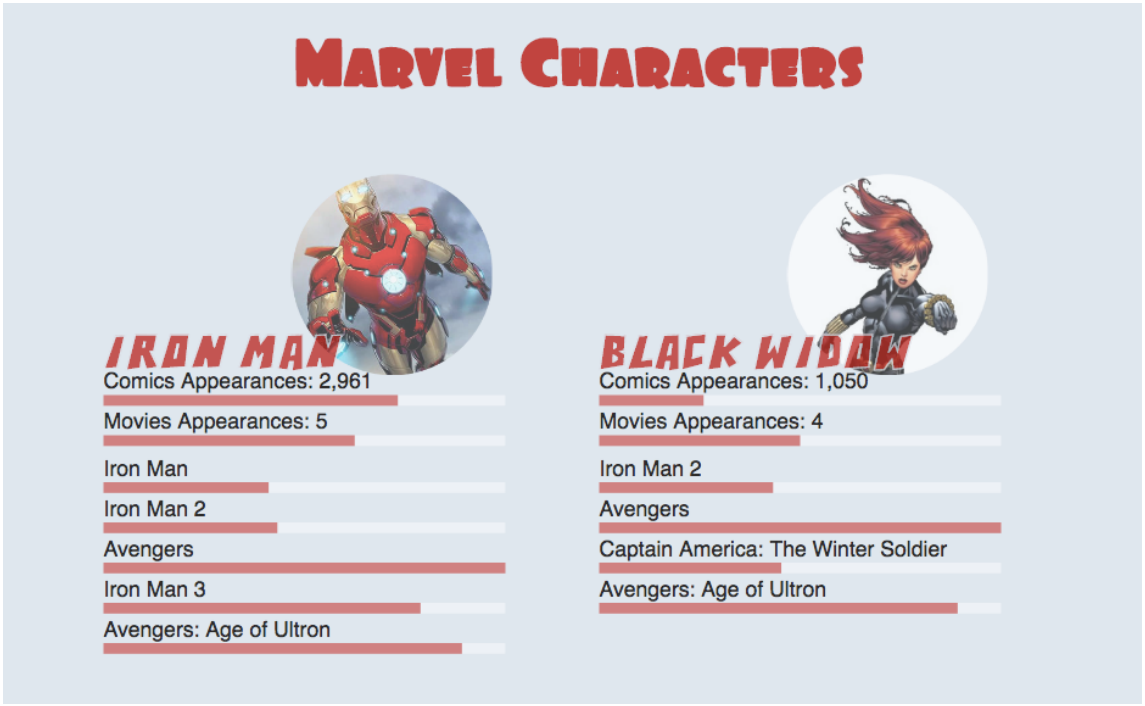


Most movie analysis of DC vs Marvel showed that while DC was doing better in the United States and some parts of Europe, Marvel was thoroughly dominating all of Asia, South America and most of Europe.

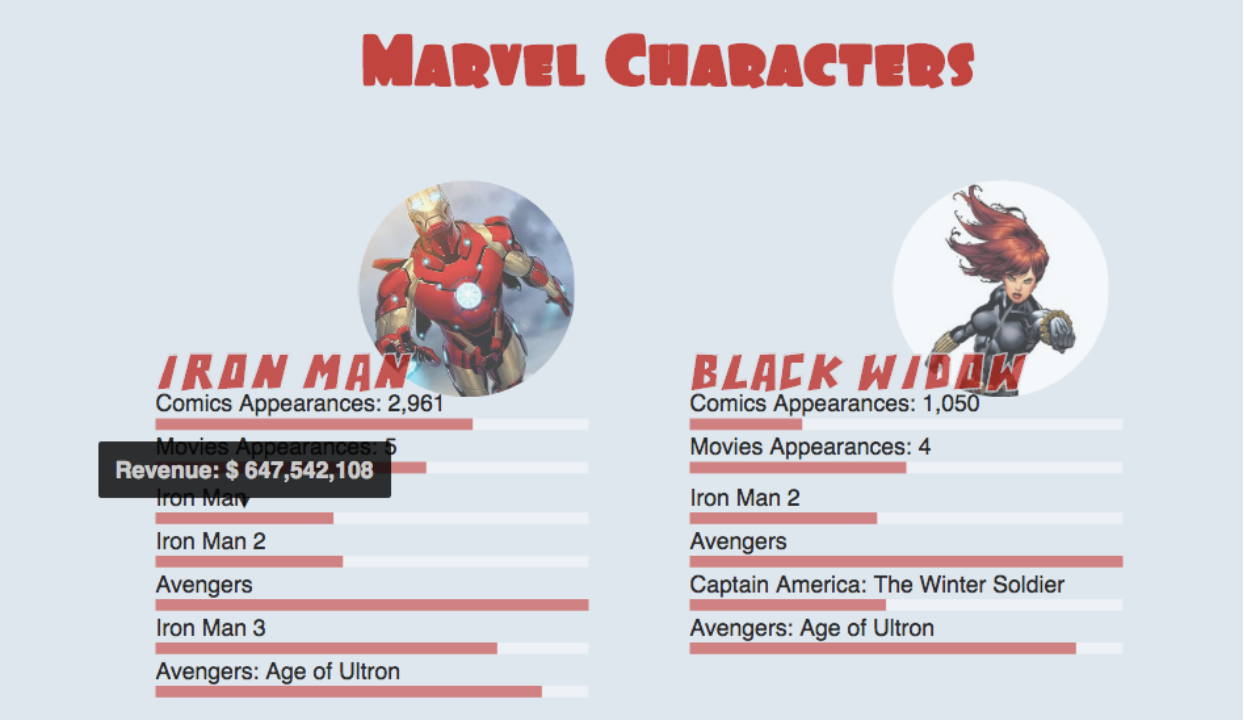
That being said, what is more important to note is that even in countries where DC movies are doing better than Marvel, the difference in revenue is marginal where as Marvel beats DC by significant margins in countries they are doing better in.

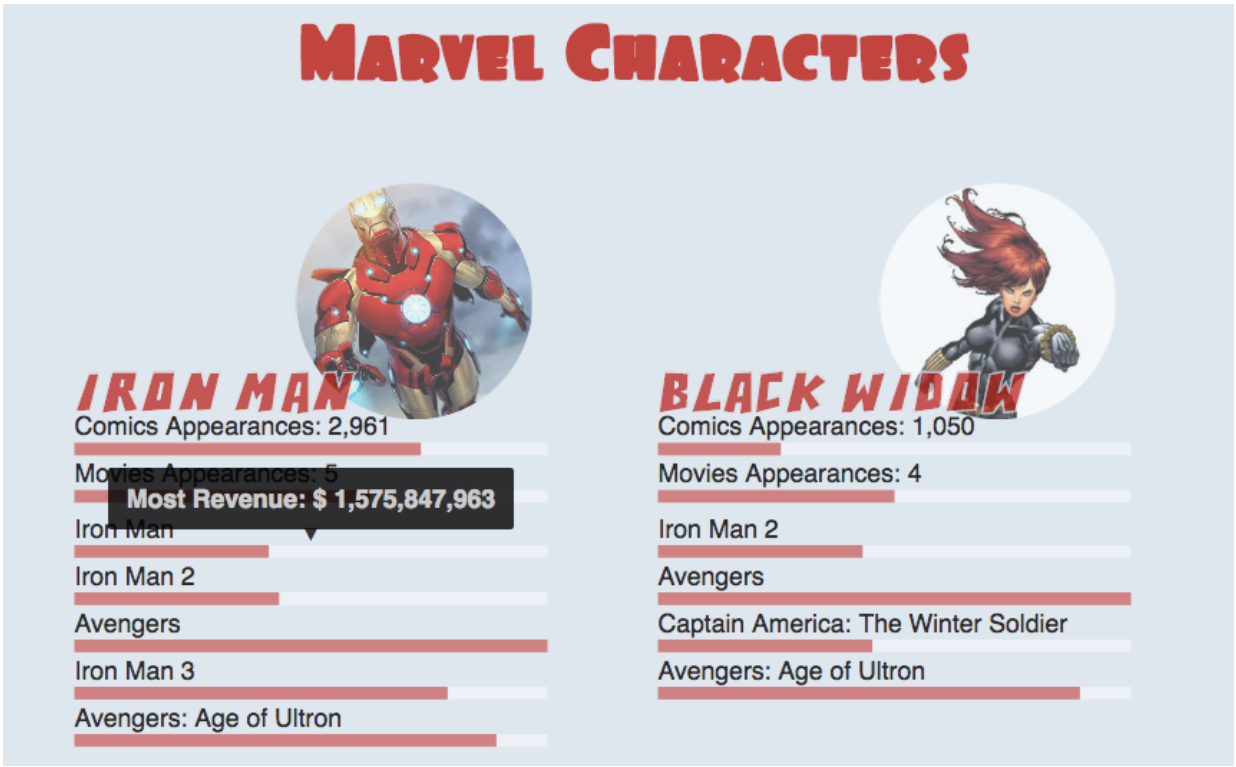
3. **Comic Book Character Analysis:**
    - Seeing that Marvel was comfortably beating DC on the silver screen, we thought it would be interesting to see if box office revenue's had any correlation with comic book popularity.
    - When a user clicks movie bubble's (red or/and blue) in the scatter plot, we display the characters of that movie at the bottom of the screen.
    - With the character information we allow the user to see the comic book popularity, movie appearances and how well each of the characters movies have done versus the highest grossing super hero film ever i.e. The Avengers.





- We use a bar chart to display the number of appearance of a character vs maximum appearance any Marvel or DC character, and adjusted revenue of their movies compared to the maximum adjusted revenue of any DC/Marvel movie i.e. The Avengers.
- The scale for bar chart is linear and we use color to distinguish DC and Marvel characters, where red is for Marvel and blue is for DC. The red/ blue bar shows the certain appearance or revenue the character makes, while the white bar on the bottom shows the maximum value so that the data is easy for visualizing.
- When user hovers over the bar, they can get exact information about the revenue each movie made and what was the highest revenue made by any movie





- The top comic characters of DC are Superman and Batman and this is very relevant to the movies they make as well since 14 out of 26 DC movies have been about these two characters . And although Batman wasn't a very famous character once upon a time, the last 3 movies have turned it around for this super hero.
- However, we noted that most of the other DC movie characters have not done well in movies even when they have quite a few appearances in comics
- More surprisingly, some of the popular DC comic characters like Green Arrow and Flash don't even have movies and we feel DC might be missing a trick here
- The characters in Marvel movies are more diverse than DC and their comic book popularity is quite evenly distributed between their top 5 characters.
- Each of the top characters has high appearances in movie and comics and not surprisingly, their movies have tended to better than DC's.
- Analyzing individual characters, we saw that although Spider Man was a much more famous comic book character, Iron Man is the revenue generating machine for Marvel and they have successfully tapped this resource.

After all the analysis, we thought that it was a combination of factors that have led to Marvel doing better than DC:

1. Marvel makes movies about a number of super heroes while 53% of DC's movies have been about Batman or Super Man
2. Recent Marvel movies have much higher budgets than DC and have generated much more revenue
3. Marvel characters are more famous in South America, Africa Asia and Europe while DC is more famous in North America. But since the masses are concentrated in Africa, Asia and South America, Marvel tends to do a lot better than its counterpart.

Additional Sources:

https://en.wikipedia.org/wiki/File:DC_Comics_logo.svg
https://commons.wikimedia.org/wiki/File:MarvelLogo.svg
http://flesler.blogspot.com/2007/10/jqueryscrollto.html
http://datamaps.github.io/