**Project Title** - Impact of Web and Social Media data on Tourism

**Background**: The tourism industry thrives on information. The enormous new big data repositories of information can provide traveller, policymakers and other participants in tourism industry with the data-driven evidence needed to make decisions. Travellers during different stages of travel (prior to, during and post travel) leave different digital traces behind on the Web when using mobile technologies. These web and social media data sources can be used to understand the trends and make predictions in tourism industry.

**Problem Statement**: Design a digital support system to

* Analyze selected web & social media data about two most popular tourist attractions of Singapore namely, Universal Studios, Singapore and Gardens by the Bay.
* Use these finding to predict number of tourists visiting two identified attractions in next three months.

**Business Benefit**: This digital support system will benefit following two major participants in tourism industry.

* Traveller:
  + Get consolidated information about a tourist attraction which will help him in making informed decision.
  + Compare tourist attractions which will help him to plan his travel.
* Administrators:
  + Review negative feedback from travellers and take corrective steps to improve travellers overall experience.
  + Prediction of number of tourist visiting a particular attraction will help administrator to implement flexible ticket pricing, promotions, adequate security arrangements and other logistic operations.

**Solution Overview**

Considering the enormity of activities on Web & Social Media, I propose phased approach for this project. The initial scope for the project(Phase-1) is detailed below. The objective is to have live, usable system at the end of phase-1 which can be upgraded with additional features in subsequent phases.

* Data Sources:
  + Attractions:
    - Universal Studios, Singapore
    - Gardens by the Bay
  + Attraction Review Sites
    - TripAdvisor
  + Web Searches
    - Google Trend data on web searches for above two attractions
  + Social Media data
    - Twitter data for above two transactions.
  + Tourist Data
    - Monthly tourist data
    - Hotel Booking Data
* Data Collection:
  + Web and social media data will be collected either by using API provided or by scraping following website.
    - https://www.tripadvisor.com.sg/
    - https://www.google.com.sg/trends/
    - https://twitter.com/
  + Tourist data will be collected from following Singapore government sites. These agencies provide data in excel format.
    - https://www.stb.gov.sg/
    - http://www.singstat.gov.sg/statistics/browse-by-theme/tourism-tables
* Data Analysis - TripAdvisor Reviews
  + I propose to collect following data from each TripAdvisor review of selected attraction.
    - Attraction - Name of the attraction
    - Attraction Type - Attraction type e.g. Theme Park, Gardens, Nature & Park
    - Review Month - YearMonth (YYYYMM) when review is recorded
    - Visit Month - YearMonth (YYYYMM) of actual visit
    - Reviewer Rating - On the scale of 1 to 5 where 1 = Terrible and 5 = Excellent
    - Reviewer Level - On the scale of 1 to 10
    - Reason for Poor Rating - Extract reason from Text &/or Long Text. Broadly divided into five categories; expensive, long queue, ongoing maintenance, staff and others.
    - Reviewer Type - Five categories of Reviewers; family, couples, solo, business and friends.
    - Text - High level review description.
    - Long Text - Detailed review text.

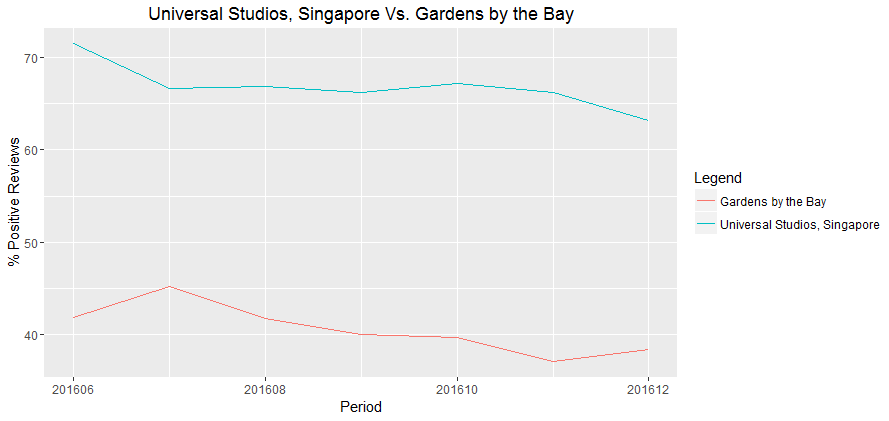
Please find attached sample file. This file contains mock data and not the actual data from TripAdvisor.

(link to - <https://github.com/tejascphadnis/visitsingapore/blob/master/Reviews.csv>).

Please find attached R code used for data analysis and plotting graphs.

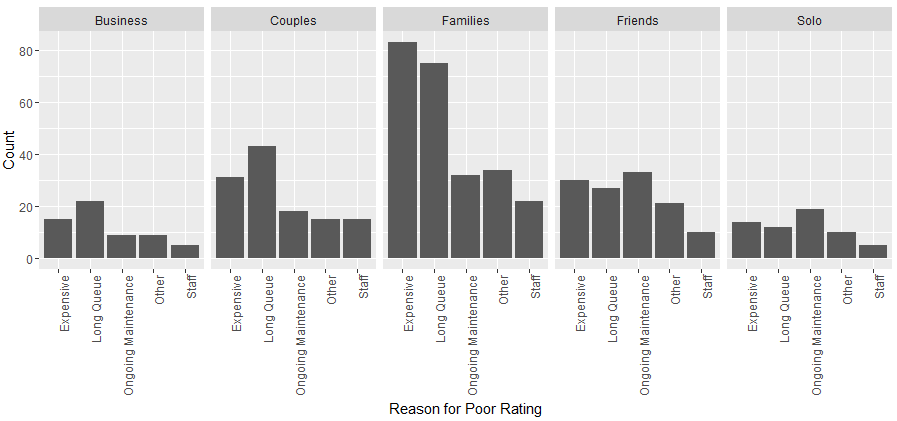
(link - <https://github.com/tejascphadnis/visitsingapore/blob/master/Reviews.R>)

* + Inferences from Data Analysis
    - % Positive Reviews for Universal Studios, Singapore and Gardens by the Bay



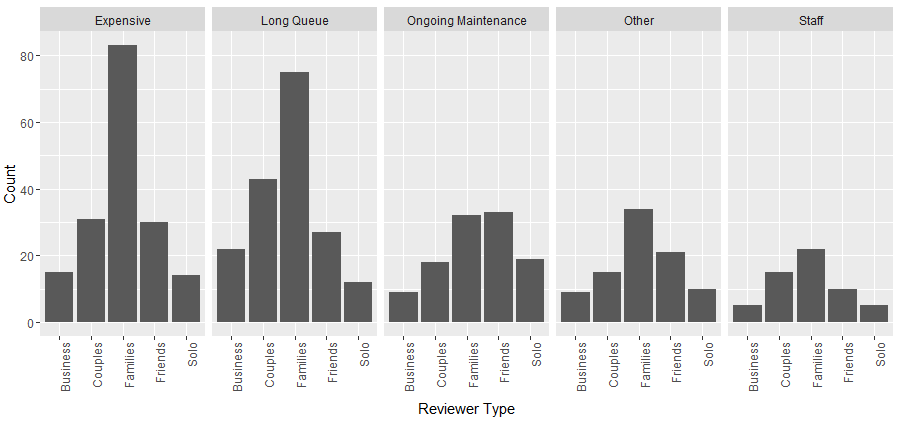
(Graph 1 : <https://github.com/tejascphadnis/visitsingapore/blob/master/Graphs_Latest.docx> )

* + - * Universal Studios, Singapore receives significantly more positive reviews than Gardens by the Bay.
      * % Positive Reviews for both the attractions is reducing over the period of six months.
    - Reviewer Type and Reason for Poor rating analysis.



(Graph 2: <https://github.com/tejascphadnis/visitsingapore/blob/master/Graphs_Latest.docx> )

* + - * Tourists travelling with "Families" register high number of negative reviews followed by "Couples".



(Graph3 : <https://github.com/tejascphadnis/visitsingapore/blob/master/Graphs_Latest.docx>)

* + - * "Expensive" is the main reason for "Families" to provide negative reviews.
      * "Long Queue" is the main reason for "Couples" and "Business" tourist to provide negative reviews.
      * "Friends" and "Solo" travellers find non-working rides (Ongoing Maintenance) as the main reason for providing negative reviews.

**Sub-sequent phases:**

I propose following data sources to be added in subsequent phases.

Data Sources:

* + Attractions:
    - Singapore Zoo
    - Night Safari
    - Jurong Bird Park
  + Web Searches
    - Google popular times info about eateries (like McDonalds) in the vicinity of attraction might indicate number of travellers visiting attraction.
  + Social Media data
    - Facebook
    - Flickr / Instagram
  + Blogging Sites
  + Transaction Data
    - Airline Booking
    - Tour online booking