COVID-19 Risk Score

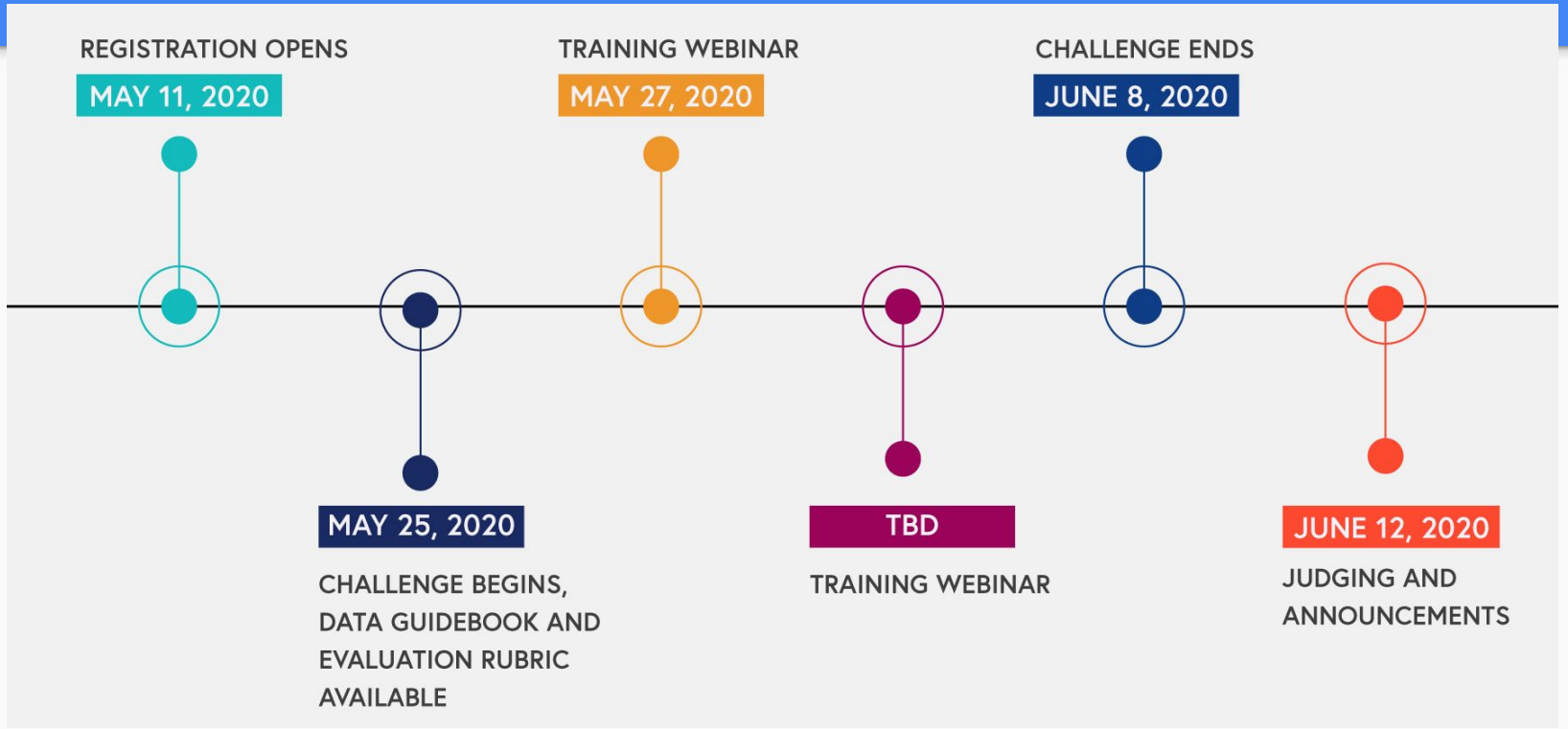
Project Description

Goal: calculate the risk of exposure to COVID-19 in and around the City of Los Angeles and to understanding issues that may increase or decrease COVID-19 exposure risks.

Framework: two-week challenge with source code, README and technical report submission

Evaluation: the projects will be reviewed by a panel of judges from the City of LA, LA County Department of Public Health, Chamber of Commerce, and academia.

Challenge timeline



Datasets

- LA county Covid-19 case count
- LA population density by zip code
- LA Google mobility report
- LA Mobility data by Descartes Lab
- Waze transportation data (waiting for access permission)
- Safegraph cell phone data (waiting for access permission)

Dataset features

- Infected, dead, recovered Covid-19 cases
- County level from Jan 26th to present
- Neighborhood Covid-19 cases on May 22nd
- Population density by Zip code
- Percent change in mobility (retail, grocery, parks, transit station, work)
- Traffic data by Waze
- Social-distancing-metrics & Stay-at-home metrics

Literature Survey

- The effect of human mobility and control measures on the COVID-19 epidemic in China
  - Looks at how population mobility changes before and after critical dates (e.g. national emergency, state emergency, shelter-in-place, etc.)
  - Can contrast between mobility and COVID-19 case growth rate
- Mapping county-level mobility pattern changes in the United States in response to COVID-19
  - Create maps to represent mobility changes
  - Considers mobility changes during different time periods of pandemic
- An interactive COVID-19 mobility impact and social distancing analysis platform
  - Example of platform created to analyze population mobility in each state/county in US
- RMDS COVID-19
  - Time-series LSMT model which rely on historical number of cases and other factors that have a potential impact on this issue to predict future trends
  - Epidemiological SIR model to simulate the development of the virus in different cities.

Preliminary Plan

Competition Timeline: May 25 ~ June 8

Data cleaning/ exploration: ~ May 27

- Combine the case count data across different levels: zip code, community level, long-lati level
- Define “Mobility”, “Exposure”, “Risk Score”

Model building: ~ June 6th

- Current ideas: time series forecasting, geospatial modeling
- To be worked on based on literature survey

Evaluation: ~ June 6th

- To be worked on based on literature survey

Technical report writing: June 6 ~ June 8

Questions or comments?

New members are welcomed!