1.Basic Information:

Project Title: NBA 2019 – 2020, a season to be remembered

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2.Background Information

Because of the COVID pandemic, 2020 has been a challenge year for the whole world. As an NBA basketball fan for more than 15 years, I can't help but notice the NBA league has also experience unpreceded challenges during the year 2020. Starting with the death of former NBA commissioner David Stern who passed away on Jan 1 at the age of 77, former Laker super star Kobe Bryant was killed along with his 13-year-old daughter Giana and 7 others in a helicopter crash. After months of suspension of the NBA season due to COVID, the NBA finally reopens and ended after 355 days, the longest in NBA history. Thus, I would like to use some data visualization to provide an overview and some highlights of this unforgettable season.

2.Objective

The main objective of this project is to tell the story of 2019-2020 NBA season trough statistical visualization on both NBA teams and players. Through this project, the user will have a better understanding of this memorable season. Below are some of the detailed objectives:

1. Users can get an overview of what has happened during the preseasons in 2019, major changes of key personnel for different teams. Potential championship contenders.
2. Users can have a clear understanding of the championship contender team by viewing the team statistics and key players on the team.
3. Viewers can get an understanding of the team performances during both regular seasons and playoffs.

4. In mourning for Kobe's tragic event, viewer can get an overview of Kobe's career as 20-year Laker through stats from his career over all the years.

3.Data
My main data source will be from NBA Official States data base via NBA API and also from statista.com. and https://www.basketball-reference.com/. The data collected will mainly focus on the 2019-2020 NBA season.

4. Data Processing

There are several data processing and cleaning involved during this process. The data scraped from the website will be in JSON format and will be processed and converted into several CSV files. The data will mainly focus on players stats and team stats during the 2019-2020 season. For certain players such as Kobe, we might need more data to be able to cover his entire career.

Must Have Features:

The whole visualization will be presented to the audience using several pages (Please see the drawing in the end). The following pages will be:

Page1: The cover page, with the title name: a season to remember

Page2: Introductory page. Including the trade made in 2019 off season, Antony Davis to Lakers forming a formidable dule with the King James, Kawhi Leonard to the LA Clippers, the Brooklyn nets signing Kevin Durant. There will be three bar charts comparing the three main players that are playing for a new team. Antony Davis, Kawhi Leonard, and Kevin Durant. Objectives 1 and 2 will be met through this page.

Page3: Regular Season, bar chart race that shows how many wins did each team get during the course of the regular season and each team's standing at a specific time point. Bar charts are split to two conferences, the east and the west.
Part of objective number 3 will be met through this page.

Page4: Playoff Team statistics, and player leaders. Represented using bar charts. Part of objective number 3 will be met.

Page5: Kobe Bryant's death, the day the NBA world stood still. Kobe and his personal achievements. Possibly some graphs to show his career statistics. Objective 4 will be met using this part.

Optional Features:

Page6: Bracket Layout representing the NBA Playoffs. Objective 3 can be met by this page.

Project Schedule:

Mar 31	Project Proposal
Apr 7	Revised Proposal after professor's feedback, Related work, related website, added a personal website to host the whole project
Apr 12	Alpha Release

	Basic layouts of all pages, learn and implement scrolling functionality. Have the three static images/ bar charts ready without implementation of any interaction. Also have appropriate legends and texts and include some appropriate images.
Apr 19	Finish page 1, 2(without interaction) and started working on page 3,4. Try to complete the scrolling effect between page 1 and 2 and add necessary images for the title page.
Apr 26	Finish page 4(without interaction) and start preparing for the presentation while continue working on user interactions. Page 3 Probably need some time since we've only done bar chart races with p5 but not d3. Hopefully it won't be that much of a difference.
May 10	Presentation day. Finish page 1, 2, 3, 4 with user interaction feature added, starts to work on page5, the Kobe exclusive page
May 17	Project Report Draft, Finish page 5, and any other additional features including a possible bracket layout for page6
May 19	Project Report, code cleaning and refactor, add user manual

Related Work:

1. Vishnu Bharadwaj, 10 Unique Visualization of the NBA, Jun 6, 2020
   https://towardsdatascience.com/10-unique-visualizations-of-the-nba-b981cfdb78bf

2. Kush Nijhawan, Ian Proulx, and John Reyna, A Simple Visualization Tool for NBA Statistics
   https://web.stanford.edu/class/archive/cs/cs448b/cs448b.1166/cgi-bin/wiki/images/c/c1/448b_paper_nijhawan_proulx_reyna.pdf

3. Feng Zheng, Jiaxin Lyu, Zhixiang Yang, Sishi Hao, The Boston Celtic from 2016 – 2017 NBA
   https://oliver2121.github.io/17S_DataVisFinal/

4. Peter Beshai Buckets: Visualizing NBA Shot Data
   https://www.cs.ubc.ca/~tmm/courses/547-14/projects/peter/proposal.pdf

5. Daniel Gutierrez, December 12, 2015, Visualization of the Week: Steph Curry's NBA Performance
6. https://insidebigdata.com/2015/12/12/visualization-of-the-week-steph-currys-nba-performance/

7. Zini Zhu, Baoying Yuan, Alark Joshi, University of San Francisco, Leave A Legacy 2020 Los Angeles Lakes NBA championship Journey

   https://zinizhu.github.io/leavealegacy/

8. Stephen Chu, Information Visualization in the NBA: The Shot Chart: http://vis.berkeley.edu/courses/cs294-10-sp10/wiki/images/archive/a/a2/20100511091342!Stephen_Chu_-_Information_Visualization_in_the_NBA_-_The_Shot_Chart_16.pdf

9. Tica Lin, How are top NBA players connected to each other, July 17, 2018 http://ticalin.com/viz-blog/nba-players-network

Title and Cover Page
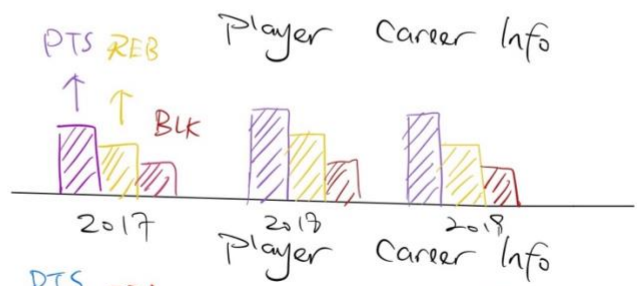
NBA 2019-2020
A Season to remember

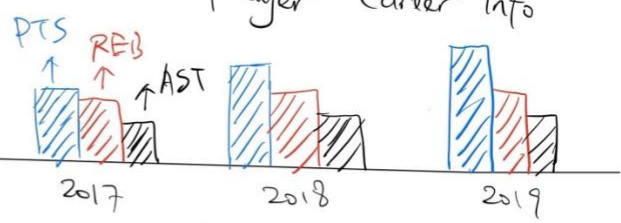   Brief Introduction of some key features of this special season.

1. From start to end, the season lasted for 355, the longest in NBA History.

2. The playoff games were held in a "bubble" with only virtual fans. Never happend before.

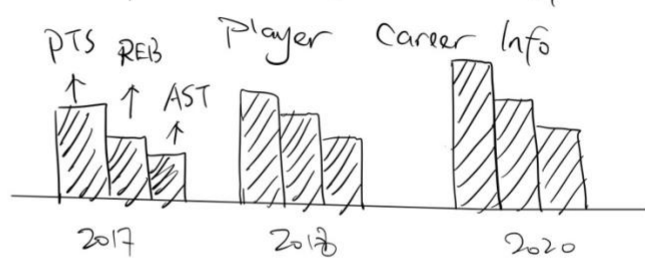3. The Death of Kobe Bryant.
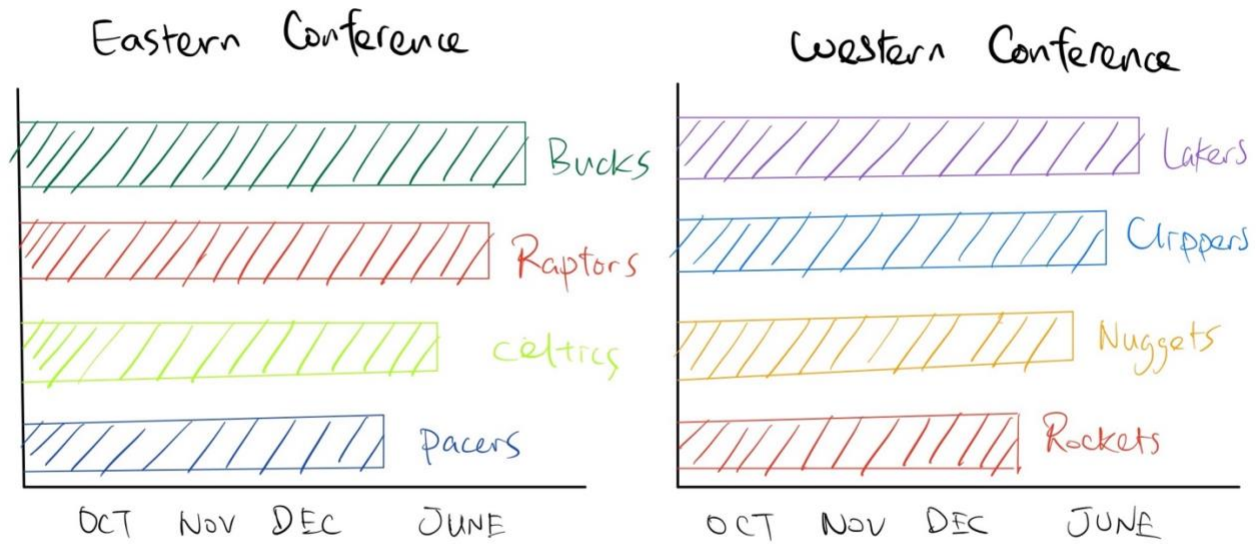
Some new faces

LA LAKERS Anthony Davis

PTS REB Player Career Info
↑ ↑ BLK
2017   2018   2018

LA CLIPPERS Kawhi Leonard

PTS REB ↑AST Player Career Info
↑ ↑
2017   2018   2019

Brooklyn nets Kevin Durant

PTS REB AST Player Career Info
↑ ↑ ↑
2017   2018   2020

Page 3   Regular Season Team Bar Chart Race

Eastern Conference

Bucks

Raptors

Celtics

Pacers

OCT   NOV   DEC   JUNE

Western Conference

Lakers

Clippers

Nuggets

Rockets

OCT   NOV   DEC   JUNE
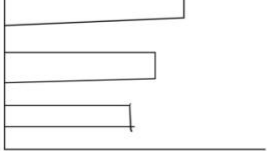
Page 4

Team Stats

Play-off

number of wins
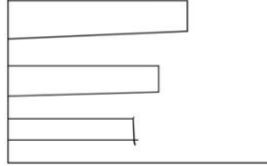
Field Goal Percentage

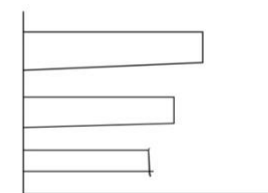### Average Points Score
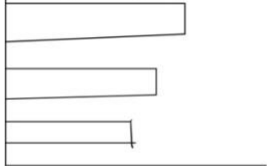
Player States

Scoring leader
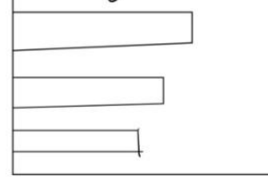
Rebound leader

Assist leader

Rembering Kobe Bryant

Points Per game

PTS

96-97 · 97-98 · 98-99 · 99-00 · 00-01 ← 20 years

tool tip

Rebounds Per Game

REB

96-97 · 97-98 · 98-99 · 99-00 · 00-01 ← 20 years

Assists Per game

PTS

96-97 · 97-98 · 98-99 · 99-00 · 00-01

20 years

Blocks Per Game

PTS

96-97 · 97-98 · 98-99 · 99-00 · 00-01

20 years

"Black mamba"

Years Kobe won the NBA Championship

"Shaq, Kobe era"

96 · 97 · 98 · 99 · 00 · 01 · 02 · 03 · 04 · 05 · 06 · 07 · 08 · 09 · 10 · 11 · 12