

## Introduction/Business Problem

Mixed Martial Arts (MMA) is one of the most rapidly growing sports around the globe, which more and more fans have chosen to follow and participate in. The United States, being the battleground of UFC, Bellator and some other major MMA organizations, has become the Mecca for MMA fans. Being a close neighbor, Canada also has a solid ground for the development of MMA and owns the second largest market in North America. There are also a great number of talented fighters coming out of Canada. For example, the former UFC Welterweight and Middleweight World Champion, George St. Pierre, is from Montreal, Canada. He is not only one of the biggest stars in MMA history, but also a national hero in the eyes of Canadian MMA fans.

However, unlike national sports such as hockey and baseball, the market of MMA has been proven unbalanced even across the same nation. In the U.S., the biggest market for MMA clearly resides in cities like Las Vegas and New York. And since MMA promoters usually tour events around the country or even the world, they have to acquire the knowledge about which cities have the bigger markets, therefore are able to hold events that generate more revenue. Moreover, the difference in market size can lead to a uneven distribution of resources, including media coverage, training facilities, etc. For promoters, especially nonnative promoters, it is crucial to know and pick the right market for fight promotions; for MMA fans, knowing where the large market is can possibly affect their choice of living (if they have a choice); for upcoming fighters, it is even more important to understand this, since they intend to have access to the best and most abundant resources.

In Canada, the question about which city is the best ground for MMA has yet been answered. But fans have argued that either Toronto or Montreal should fill the place. In this project, I will deliver an comparative analysis on both cities to potentially determine which city has a bigger MMA market.

## Data Description

In order to determine which city between Montreal and Toronto has the biggest MMA market in Canada, the analysis needs to answer to following two questions:

1. Which city has more fans?
2. Which city has more MMA gyms?

Fisrt, to determine the fan base for each city, I chose to scrape data from Wikipedia with the table “List of past UFC events.” The data in this table showcased the past held events in both cities, including dates, their headline main events, attendance, etc. Through these data, one could determine which city had held more events in the past, had more average attendance, had the max attendance between the two, had the most fascinating fights. These results could be supporting factors to conclude which city has more MMA fans.

Second, to determine which city has more MMA-related business, hence gyms and training facilities, I acquired the Foursquare location data on both cities, and explored them to gain information such as which city has a higher amount of MMA gyms and which city has a higher average quality of gyms.

## **Assumptions**

- 1) Attendance to the events can correctly reflect local fan base. Unlike other sports where fans get to celebrate their home team in their own cities often, MMA fans have to travel all the time to support their favorite fighters. Therefore, I assume that the attendance of events reflect the city's passion for MMA instead of only one or two fighters (however, this assumption needs to be adjusted in later analysis).
- 2) All MMA gyms/training facilities are open to all levels of fighters. In order to know whether a city is ideal for upcoming MMA fighters, the training facilities need to be targeting different levels of fighters, such as professionals, semi-professionals, amateurs, kids, etc. Though very few gyms refuse to take in professional fighters, for the sake of accuracy, I still need to declare this assumption.
- 3) UFC can represents all MMA promotions. The data for events attendance came only from UFC events. Since UFC is by far the largest MMA promotion in the world without a close second, the assumption has been made that UFC events can be the test ground for MMA fan base.