

MDA 720 Capstone Project

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Background

The NHL is one of the four major professional sports leagues in the United States, yet it lags in popularity, revenue, and exposure when compared to the other major sports. A side-by-side analysis of these leagues would express a discrepancy in fan engagement and market exposure. There are a ton of initiatives and changes that the NHL can make to improve these numbers and move forward in a progressive manner to compete with the other professional leagues. The sports sector possesses a built-in audience and huge market within the entertainment industry, but it takes innovation, tweaking and fine-tuning to capture a target audience and grow the popularity of the sport. The ability to take advantage of trends and capitalize on player and team marketing is key when improving the metrics previously mentioned.

The data used in this project includes individual player statistics, league attendance numbers, player demographic breakdowns, and both player and team popularity metrics. I wanted to provide a granular and comprehensive scope to show how certain metrics are currently in a great state while others are in a very poor state. The purpose being to supply an in-depth look at where the NHL stands and give a detailed proposal on how to improve and fix the areas that are lacking.

Included is a statistical dive of the top players to express the presence of young talent in the league, an analysis of player and team popularities both within the NHL and compared to other leagues, and a display of the overall attendance numbers and change in attendance to determine if the sport has an issue with fan engagement. These combined metrics will provide enough information to create a revenue focused marketing plan. A good portion of the insights are inferential but will be explained thoroughly.

Objective/Goals

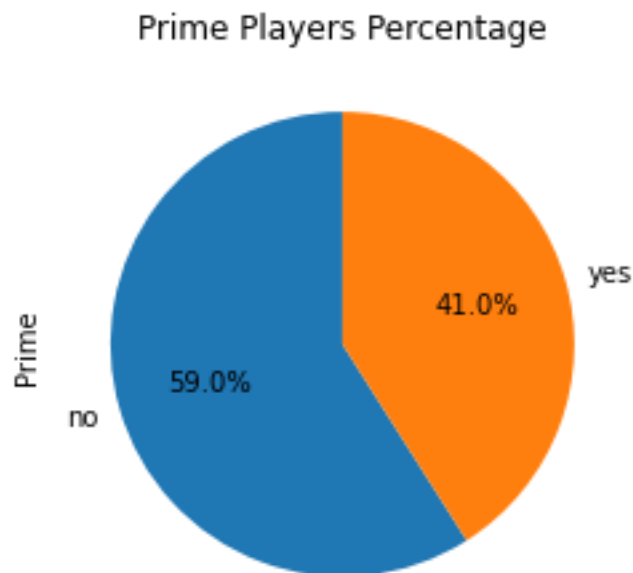
The main goal of this project is to perform an analysis of several key metrics to create a revenue focused marketing plan for the NHL to improve fan engagement, market exposure, and profitability. Like any industry, one of the main purposes if not the main purpose is to make money and since the NHL is a business, it's no different. It's of vital importance to make sure you provide a good service/product and have a great marketing strategy to captivate your target audience. With sports, this means you must have talented players, competitive teams, and competent executives to put a good product on the ice. Also, you must partner with the right sponsors, have personable ambassadors, keep track of social trends, promote games and players, and make sure the league has proper coverage for viewing options. The NHL has some of these areas covered but lacks in others. It has the potential to explode and become far more

competitive with football, baseball, and basketball. Two specific objectives for this project include determining which players and teams are the most prevalent in the NHL and what regions have the largest fanbases. This is incredibly useful information because it allows you to look at specific players, teams and regions through a microscope and see what is being done that's working so you can replicate and fine-tune across the league.

Data Collection & Extraction

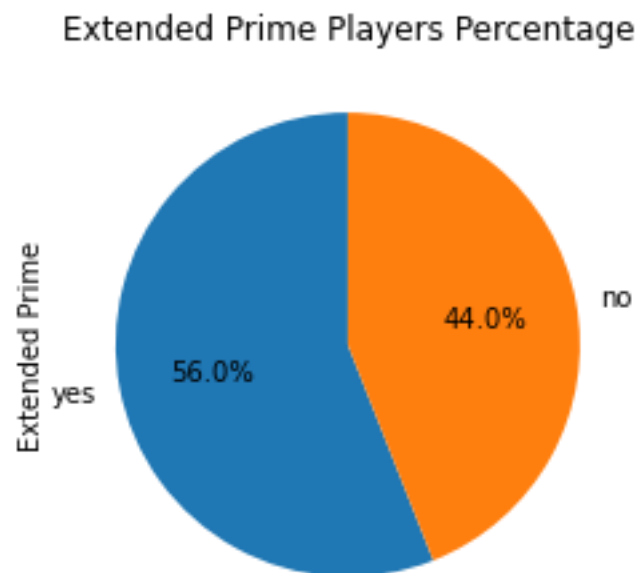
The data used in this project came from a variety of reputable hockey related websites. Two statistical datasets were combined into one data frame to make the manipulation easier. Several graphs and charts were scraped to visualize various key metrics. Lastly, Google Trends was utilized to display the web search frequency and web traffic for the purposes of a comparative analysis. All the data including the statistics, graphs/charts and google trends were imported using the necessary libraries and manipulated for maximum clarity. Several images and charts were enlarged to make the information easier to see. Some of the stats were imported as csv files and some were imported as xlsx files. JPEG and PNG files were scraped to assist with visualizations.

Data Exploration/Data Visualization

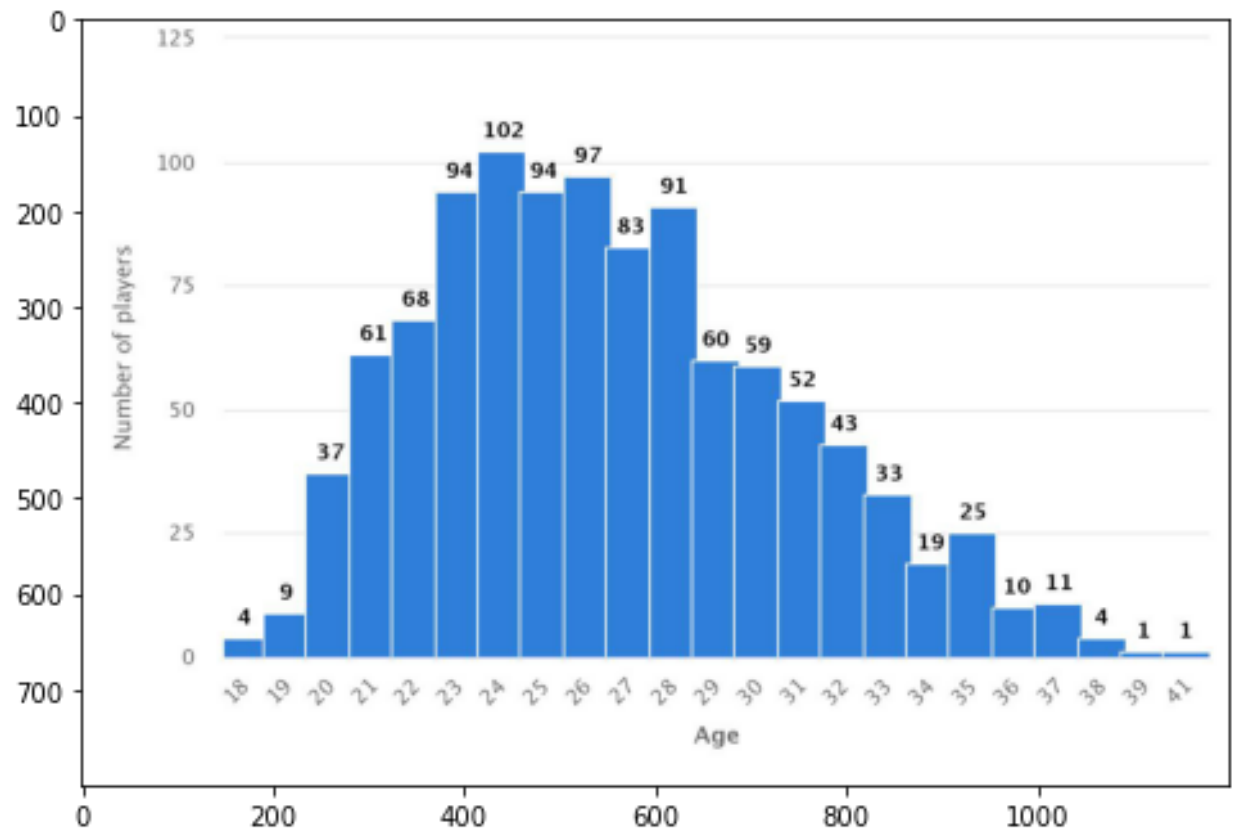


This chart shows the percentage of the top 100 players in the league that are under the age of 28. This is classified within this project as players in their prime. It's important for any league to have a plethora of young talent because it

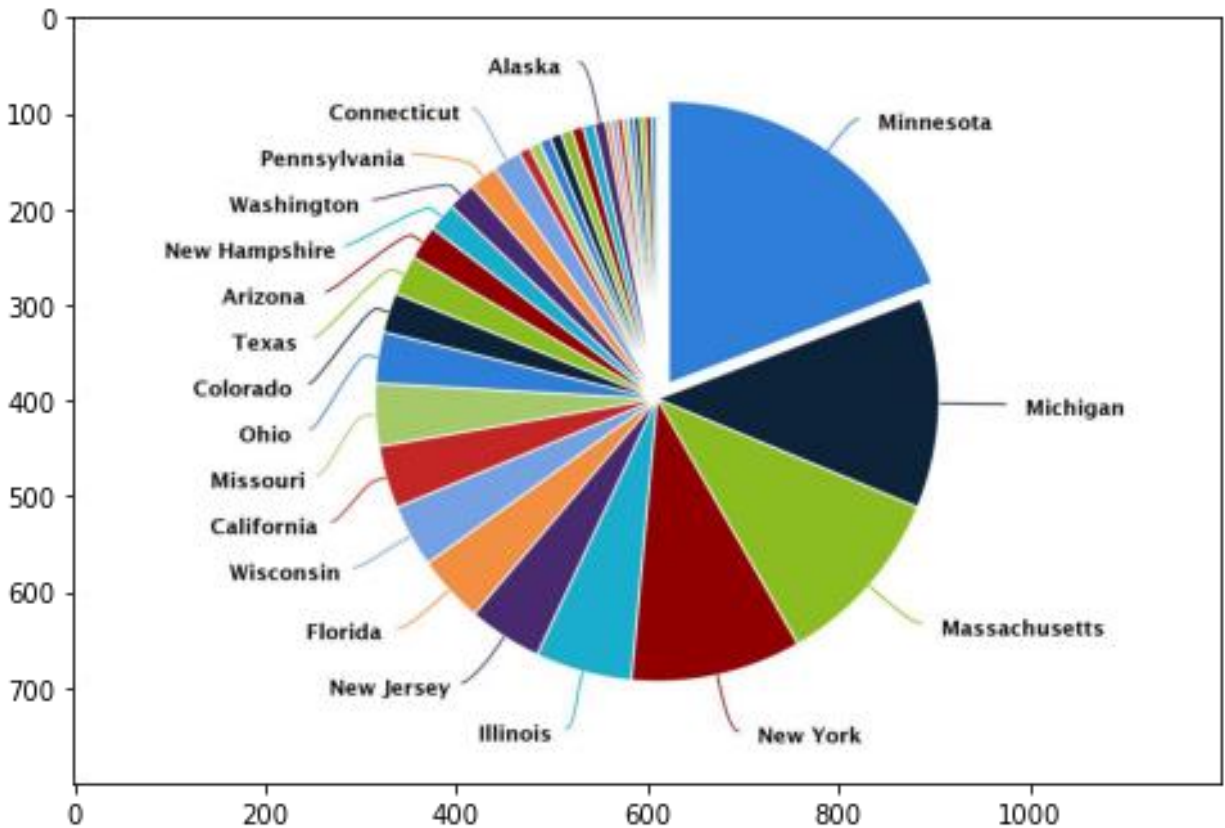
enables fans to watch a player's entire career when they are performing at their peak. Tracking and viewing a player's entire career is essential for fans as it captivates attention and enables you to follow storylines for many years. While to the naked eye, this chart might seem negative, but it's actually very good. Having nearly half of the top 100 players in the league under the age of 28 is a huge asset and expresses there is a vast quantity of young superstars in the sport.



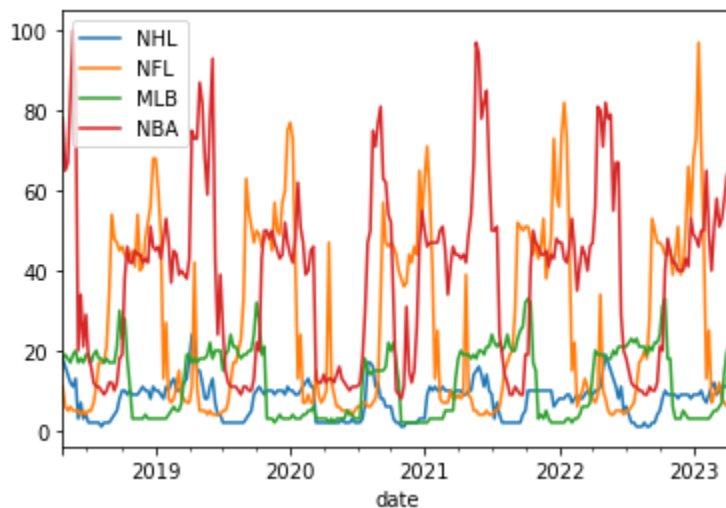
This chart visualizes the percentage of top 100 players that fit within the category of extended prime. It includes players between the ages of 23 and 30. It varies per sport, but in hockey, a player usually starts their peak around 26-27 and carries it for roughly 4-5 years. As you can see, 56% of players in the top 100 fit into this category. It's a staggering number and proves the quality of the talent across the league. This emphasizes the element of having a good product/service. Now there is more that goes into that of course, but with a majority of the top 100 players being in this age range, it stresses the NHL is in a great place talent wise and has a bright future.



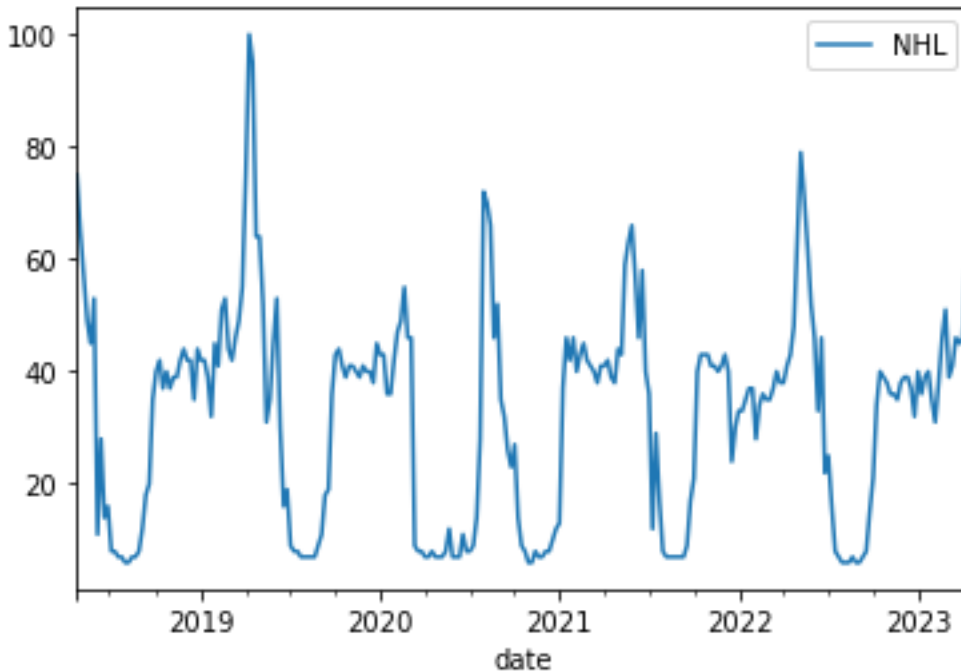
This visualization supplements the argument that the NHL has a bright future. It displays the number of players in the entire league by each age. As you can see, it's steady from 23 to 28 and has a steep consistent decline from 28 to 34. The league has enough superstar veterans to carry the legacy of the previous generation and pass the torch to the new upswing of young stars.



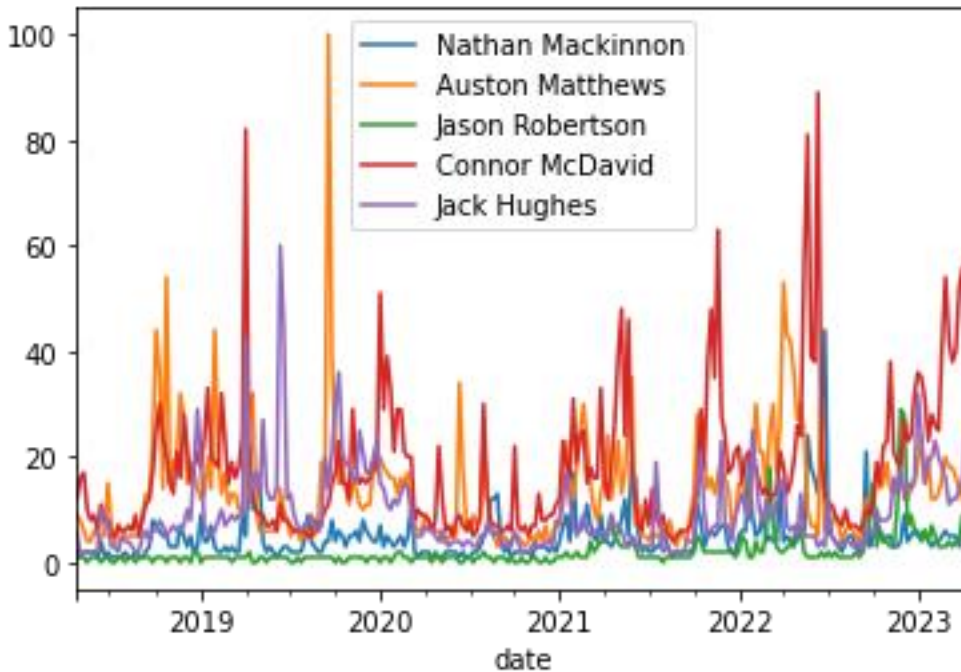
This pie chart shows the breakdown of how many current NHL players come from each state. This is a good tool because it expresses which areas within the United States contribute the most to hockey development. Additionally, it shows what states could be vital options for any future expansion franchises and potential franchise relocations. With two recent expansions occurring within the past 5 years, that isn't likely, however, relocation is a real possibility and has been discussed in recent years.



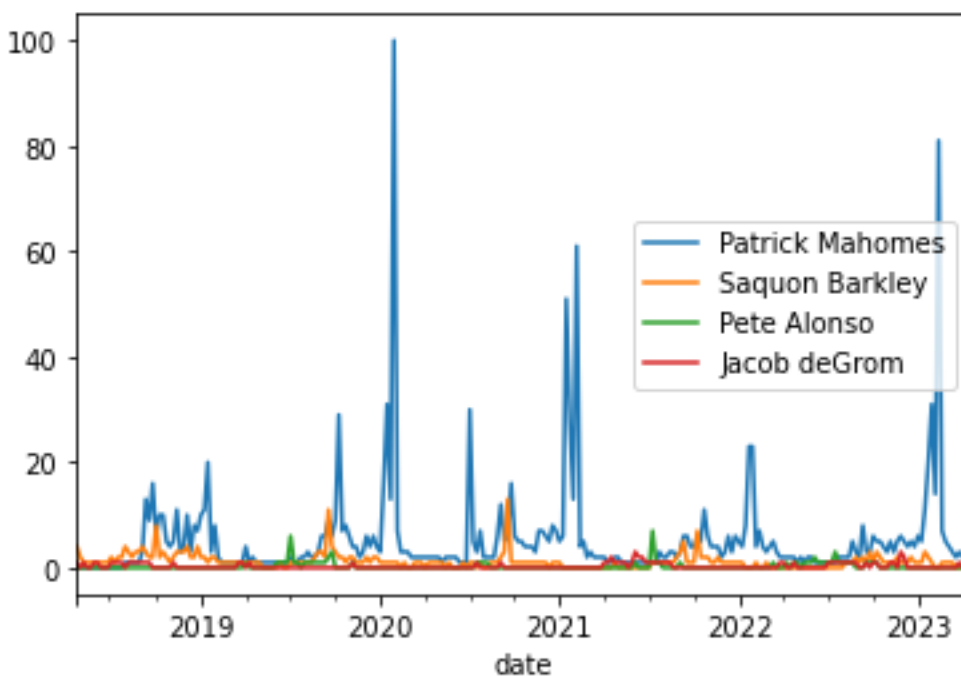
This google trend chart shows the web search history for all 4 major sports over the past 5 years.



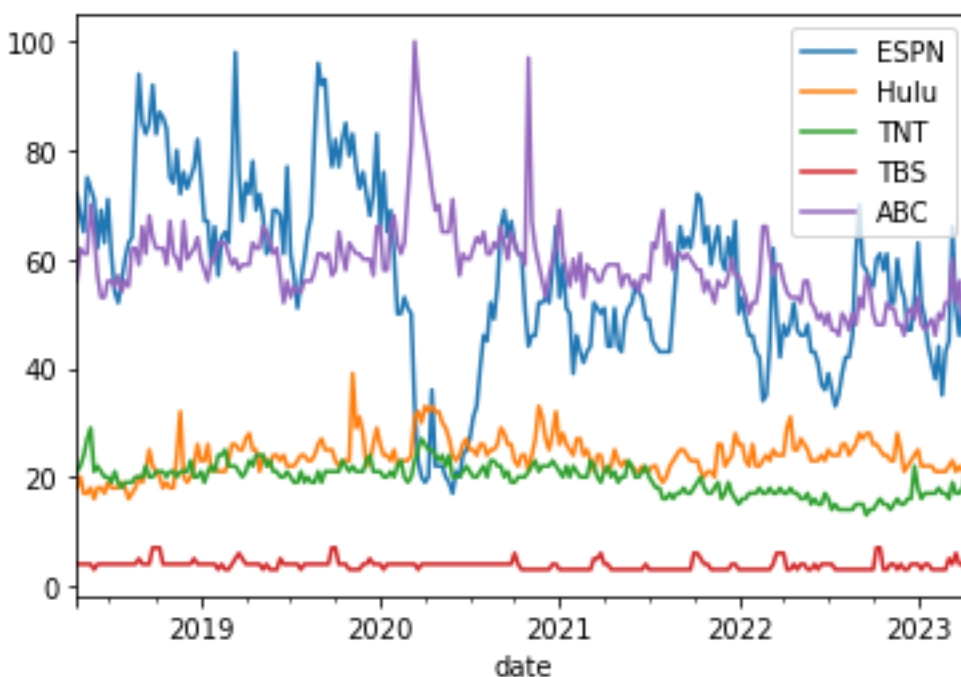
This google trend chart shows the web search history for the NHL only. In the previous chart, in a comparative measure, the NHL is towards the very bottom in terms of traffic. This is spot on as the NHL has the lowest attendance numbers and lowest degree of popularity in the United States. However, some things to notice include that every sport shows cyclical patterns that coincide with in-season and off-season times of the year, and when isolated, the NHL has remained steady. While it hasn't increased, it hasn't decreased so it allows for improvement if measures are taken quickly.



This shows the web search history for some of the most popular players in the league. When looking at this, it's a little crowded but easy to notice that most have massive peaks for short periods of time and remain casual the rest of the time. One interpretation for this could be the peaks occur during playoffs when national coverage exposes them more or perhaps a player hits a milestone. Regardless of the reason behind the peaks, the NHL needs to capitalize on the highs and find a way to roll it over into a gradual increase during the off-peak cycles.



This measures the same metric as the previous chart except it's for some of the most popular players in other leagues. Used as a comparative measure, you can see that apart from Patrick Mahomes, the players from the NHL chart perform slightly better. One reason for this could be that while hockey might have less fans overall than the other sports, the fans themselves are die-hard fanatics. Intensity and passion carry a significant weight when talking about the quality of a fanbase. Hockey fans have a cult-like passion and when that's the case, you can promote and build off that to increase the quantity of the overall fan base in addition to already having the quality.



The final chart shows the traffic and web search history for the major networks that cover the NHL on television and app services. The reason to show this chart is because national coverage is an important element in growing the popularity of the sport. Availability and access to games, highlights and news is enormous and partnerships with the right networks make a world of difference in the growth and expansion of the sport. Easily seen, with the exception TBS, the other four networks and services that cover the NHL have large audiences based on the traffic. A positive outcome you can infer from this chart is that the coverage is solid, and it shares networks with most of the other major sports, however, it means there's competition for time slots and prime-time showings. There are good facets and negative facets to this point.

Data Analysis

The data manipulation, handling, and visualizations together provide a valuable and useful analysis of our target questions and insights into how to reach our objective. Since the objective of this project was to perform a comparative analysis of how the NHL compares to other sports and show what metrics the league is succeeding in and lacking in, we needed to hit several key factors. The first factor we explored was whether the NHL has enough young talent to be exciting and provide a competitive environment for sports fans. After the data manipulation and exploration, I can conclude that there is a significant amount of young talent in the league and it's easy to see the league is in a great spot in terms of having a good product/service. With more than half of the elite talent being in the age range of 23-30, both existing and new fans can go on journeys with their favorite players over the next decade by tracking and watching them. Sports fans love to do this as it makes them feel part of a community along with other fans who support the same players and teams. Some of the most popular young superstars include Nathan Mackinnon, Auston Matthews, Connor McDavid, David Pastranak, David Roberston, Matthew Tkachuk, and Jack Hughes.

Another metric we explored was league attendance over the past couple of years. This is an area that needs improvement. The league has seen somewhat of a standstill when it comes to attendance and ticket sales. It has seen a few declines and very little upswing in recent years. The two-expansion franchise launches, and several new arenas being opened have helped catapult a few franchises numbers but as a league it hasn't done much to increase across the board. Simply put, hockey arenas do have smaller capacities than the other major sports, however, they're not selling out and the growth isn't there. This is an issue that needs to be addressed.

Lastly, we used google trends to import charts to show the web traffic and popularity of certain players, networks, and the league itself. From the charts we gathered, one conclusion is that the NHL falls below the MLB, NFL, and NBA when it comes to quantity of searches. It's not necessarily an issue, but it raises the question of why people aren't searching for hockey related content as much as other sports. It's not a 1-to-1 correlation between searches and revenue, but it obviously is a contributing factor. On the other hand, when comparing the search history of players from the NHL versus the other leagues, it performed better internally. That's a good sign and leaves room for capitalization. Overall, the visualizations paint a picture that the NHL has the talent and competitive element on lock, a dedicated and cult-like fanbase and room for improvement. On the other side, it has an attendance issue, and trouble expanding on the already existing fanbase.

Conclusions & Recommendations

The first recommendation I would make is that the NHL needs to implement a new marketing approach by utilizing personable young superstars to promote the league via commercials and brand partnerships that draw attention to the sport. This is an approach that the NFL, MLB, and NBA all use. Fans love to see their favorite players on tv and want to buy the brands they are promoting and partnered with. Not only will this bring attention to the sport which will result in ticket sales, it will increase merchandise and apparel sales as well. This will move up the league's bottom line and increase revenue in a significant way. To this point, the league hasn't taken advantage of their young talent from a marketing standpoint.

The league did recently re-partner with ESPN which was a step in the right direction since it increased the number of channels that show games. However, every other sport already had pre-existing partnerships with ESPN so there's a lot of competition for prime-time slots and mainstream coverage on their app. An area that needs work when it comes to viewing is limiting the number of blackouts that occur on the streaming services the NHL is currently on. The other major sports almost never have this issue, but the NHL experiences a ton of blackouts which means certain games can't be viewed even though they're supposed to be.

Lastly, the league needs to increase their volume of promotion and research why certain franchises and regions have much larger fanbases than others, replicate and integrate the working methods across the sport to drive attendance up. States such as Minnesota, Michigan, New York, and Boston have enormous fan bases and continue to grow while other regions like the South and Midwest are stagnant and not expanding.

If the NHL implements all the above recommendations, the areas that aren't performing such as attendance, market exposure and overall revenue will all increase. Hockey has a truly dedicated and incredibly passionate fanbase already, and if they stress the areas they are succeeding in and gradually improve in the others, the sport of hockey can explode.

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