How the Philadelphia 76ers Win Off the Court Using Machine Learning from DataRobot

Forward-looking professional sports franchises are increasingly relying on analytics. Taking a data-driven approach both on the sports side and on the business side has led to unprecedented success for franchises who have invested in data, and perhaps no professional sports team represents this analytically optimized revolution more than the Philadelphia 76ers of the National Basketball Association (NBA).

This organizational mindset and emphasis on data was a huge part of what attracted Braden Moore to become Director of Analytics for Harris Blitzer Sports & Entertainment (HBSE), the parent company that owns the 76ers, among other sports and entertainment franchises. “The organization, from the C-suite down to the newest sales rep, is analytically focused and always looking to use data to make decisions,” said Braden. “The 76ers are really strong on this front. We use data to make decisions on every single opportunity we can.”

We were able to extract value from our modeling process, but DataRobot really helped us hit that inflection point where it went from something we valued and something we did to really blowing it out of the water.

Braden Moore
76ers Director of Analytics

Company Info:
Name: Philadelphia 76ers
Location: Philadelphia, USA
Industry: Sports & Entertainment

The Philadelphia 76ers are a professional basketball team in the National Basketball Association (NBA). They are owned by Harris Blitzer Sports & Entertainment (HBSE), who also own the New Jersey Devils of the National Hockey League, among other sports and entertainment properties. The 76ers are considered a rising powerhouse in the NBA and are one of the most popular teams among fans in Philadelphia and around the world.
Having data be such an integral part of the overall organizational process on the business side means that the Philadelphia 76ers Analytics Team is constantly looking for ways to be more efficient with its work and make its data-driven process more dynamic. In that pursuit, the 76ers Analytics Team turned to DataRobot to help the team improve its modeling process for season ticket renewals.

**Why Season Tickets Matter to NBA Franchises**

To understand the magnitude of this season tickets renewals project for the franchise, it’s helpful to understand the recent history of the basketball team. In the early 2010s, the 76ers didn’t experience a lot of success on the court, despite the young roster’s work ethic and energy level. The team had talented players on its roster, but those players had to go through growing pains to learn how to win at the NBA level, and unfortunately those growing pains led to several tough years for the team…and its fans.

“We didn’t have control over what was happening on the court,” said Braden. “Our ambitious goals were evaluated based on the success of the business side, not the basketball team.”

The business side of the organization had to learn to be more effective and efficient with its own processes for selling both individual game tickets as well as season ticket packages and renewals. Eventually, the basketball team developed into a powerhouse, as well as one of the most popular teams in the league. Both factors coalesced to produce what Braden describes as “unprecedented success” on the business side of the organization.

Over the past four seasons, the 76ers grew its season ticket base by four times to the point where they are now the No. 1 team in the NBA in new full season tickets. The challenge for the 76ers Analytics Team now becomes how to retain those customers and keep the fans that they had worked so hard to obtain during the lean years.

That’s where building models through DataRobot’s automated machine learning platform comes in.

“‘The organization, from the C-suite down to the newest sales rep, is analytically focused and always looking to use data to make decisions.’

— Braden Moore

Ben Simmons and Joel Embiid are two of the most talented young players in the NBA today.

**Data Science at a Data-Driven Organization**

For years, the business side of the 76ers was doing data science and simple modeling and regression exercises, but the team didn’t have any true machine learning process in place. There wasn’t a living, breathing model or tool that could learn as time goes on and more data comes in. Because the 76ers didn’t have any such machine learning process or tool
in place, the 76ers Analytics Team had to do a lot of work in the offseason to produce a model that was static, rather than dynamic.

The vertical that benefited most from DataRobot’s models was the season ticket renewal sales team. The retention team was comprised of sales reps, each of whom managed hundreds of high-value season ticket holders’ accounts. At the end of every season, this team is responsible for reaching out to all season ticket holders to secure a renewal for the upcoming season. Naturally, somebody has to be the first call and somebody has to be the last. What the 76ers Analytics Team wants to do by building predictive models in DataRobot is help the retention team better prioritize their calls and optimize its retention process.

With accurate predictive models on the likelihood of an individual season ticket holder to renew their package or not, the 76ers Analytics Team helped the sales renewal team optimize its process. They could better prioritize their time by focusing more diligently on higher-risk accounts.

The goal of having a dynamic, predictive machine learning model is to turn the renewal process from a one-time-a-year occurrence into a year-round retention process. Renewal invoices may only go out once a year, but the job of retention can be worked on throughout the season. Machine learning models built in DataRobot allow the 76ers Analytics Team to track, measure, and analyze 12 months a year and surface at-risk accounts or identify factors that matter most in renewal. “We want to start noticing accounts that might have problems earlier in their process, so every call they’re making throughout the season becomes another data point for the model and insights that can really make a difference,” explained Braden.

“With something like DataRobot, it takes so much less work to port something over to a different side of the business.”

— Braden Moore

The Future of the Machine Learning Process

With accurate models for predicting season ticket renewals in place, the 76ers Analytics Team wants to expand machine learning capabilities and predictive modeling to other parts of the business. For example, there is a great opportunity to build predictive models in DataRobot that can help the 76ers improve their lead scoring and target fans with better offers.

“As we get new fans coming to our games and engaging with our brand digitally, we want to figure out which ones are the highest quality potential customers,” said Braden. “We can weed those out so that the sales team is as efficient as possible with their outreach to try and sell them ticket packages.”
With hundreds of data points on customer attributes and behaviors, the 76ers Analytics Team wants to build models that can accurately predict what types of ticket packages each individual fan would be most interested in. Knowing that a fan is likely to opt for a VIP partial season-ticket plan rather than an entry-level full season-ticket plan can make a big difference to the sales and marketing teams.

Since the 76ers are under the Harris Blitzer Sports & Entertainment umbrella that includes other sports franchises, there is also an opportunity for the 76ers Analytics Team to scale its work and translate it to other parts of the HBSE organization. That starts with bringing DataRobot and what they learned working on the 76ers season ticket models over to the New Jersey Devils of the National Hockey League (NHL).

“While the sports may differ, there are a lot of the same frameworks in terms of what’s needed and what you can predict,” explained Braden. “With something like DataRobot, it takes so much less work to port something over to a different side of the business.

“If we work on something with the 76ers and we want to do something similar for the Devils, it becomes so much faster with DataRobot to get up and running,” continued Braden. “And DataRobot uses data from the Devils ticket holders to build models that are right for their NHL fan base, instead of reusing the 76ers NBA models. Our team can build the right models for each and every situation.”