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UNIVERSITY OF PITTSBURGH
The DIETRICH School of
Arts & Sciences

Data-Driven Decision-Making in Sports



Undergraduate Mathematics
Seminar

Department of Mathematics
Sam Ventura, Director of Hockey
Research, Pittsburgh Penguins

Date: November 8, 2018

Time: 4:00 to 5:00pm

Location: 152 Chevron Hall

In his book *Moneyball*, author Michael Lewis writes, "People ... operate with beliefs and biases. To the extent you can eliminate both and replace them with data, you gain a clear advantage." Through the use of data analysis, data visualization, and other modern statistical tools, professional sports teams can gain competitive advantages over their opponents. We discuss examples of how data can be leveraged to drive decision-making in football and hockey, and we overview models for player evaluation in these sports.

Sam Ventura is the Director of Hockey Research for the Pittsburgh Penguins and an affiliated faculty member at Carnegie Mellon University's Department of Statistics & Data Science. Prior to that, he was a professor of Statistics at CMU, where he also received his PhD (Statistics, 2015), MS (Statistics, 2011), and BS (Computational Finance and Statistics, 2010). He served as an assistant coach for Carnegie Mellon's ice hockey team and as faculty advisor to the CMU Sports Analytics Club from 2015-17, and he is an associate editor for the *Journal of Quantitative Analysis in Sports*. His academic research focused on clustering, prediction, record linkage, synthetic data, infectious diseases, and sports (particularly hockey and football). Sam has co-authored multiple R packages for open-source data collection and analysis, including `nhlscrapr`, `nflscrapR`, and `spew`. Along with Andrew Thomas, Sam co-founded war-on-ice.com, a website providing modern hockey statistics and salary cap information for NHL players and teams. He co-organized the Pittsburgh Hockey Analytics Workshop at Carnegie Mellon in 2014 and the Carnegie Mellon Sports Analytics Conference in 2017 and 2018. Sam grew up in Swissvale, PA and is a graduate of Woodland Hills High School.