

RSC/Presidential Grant Report

Due September 30th of the ending year of the grant

Examples of previous grant reports can be found here: <https://gustavus.edu/kendallcenter/grant-opportunities/grant-examples.php>

First Name *

Laura

Last Name *

Boehm Vock

E-mail *

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Date *

MM DD YYYY

09 / 16 / 2020

Please select the grant for which you are submitting a report: *

- Research, Scholarship and Creativity
- Presidential Faculty-Student Collaboration

Presidential Faculty-Student Collaboration Grant Report Details

Please compose your answers offline and copy/paste into the appropriate text boxes. While answers inputted into this form should be available if you close the form and return in the same browser, we cannot guarantee that this function will work.

Please summarize the activities and outcomes of your grant. *

Offensive performance in baseball depends on a number of correlated factors: the pitches the batter faces, the batter's choice to swing, and the batter's hitting ability. Recently a renewed focus on the effect of plate discipline (the choices of whether or not to swing) on batter performance has emerged (Carleton, 2007, Paine, 2014, Lentzer, 2011). Plate discipline has traditionally been summarized as the proportion of pitches inside and outside of the strike zone a player swings at; however, there have been few metrics proposed to assess the effect of plate discipline directly on batters' outcomes. The goal of this project is to develop a metric for plate discipline which examines the effect of plate discipline on batting outcomes, not just for a single pitch, but considering which strategy is optimal over an entire at-bat.

Using a causal inference statistical framework, we are able to find a plate discipline strategy for each player that will optimize on-base percentage (OBP), slugging (SLG), or on-base plus slugging (OPS). A useful metric for comparing players is then the ratio of their observed OBP, SLG or OPS to the optimal. We examine trends related to this ratio. The results of the analysis have been summarized in a manuscript. All of the work has been completed by Ashley Neuenfeldt with guidance by Laura Boehm Vock.

Please explain how you accomplished the goals you set for yourself in your grant proposal. *

Ashley completed the analyses we were hoping for, and produced a solid draft of a manuscript, which were the goals for the summer.

Please summarize any outcomes (publications, revised syllabi, conference presentations, new research directions, etc.), and discuss your plans for continuing or expanding on your work in this project. *

Ashley Neuenfeldt will submit a paper to an undergraduate paper competition (USRESP) in December 2019. Laura Boehm Vock is working on revising and adding to the manuscript Ashley has written in order to submit it to a peer-reviewed academic journal, likely Journal of Quantitative Analysis in Sports. Because Ashley is studying abroad fall 2019, we were not able to directly work together on producing the manuscript, though Ashley, as a co-author, will continue to contribute as she is able. Unfortunately, the off campus conferences we had previously identified as possible venues for presentation occurred in the fall. We will continue to look for other opportunities in the spring. We had hoped that she would be able to present the work in Spring 2020 when she was back in the US, but then Covid happened.

Please discuss your collaboration with your student grantee. What was successful? What aspects of the relationship proved challenging? *

This was a very successful collaboration. Ashley worked very hard, was very organized and self-motivated. She produced quality work and asked very good questions to keep on track. We communicated very well and had regular meetings.

Each day, I asked Ashley to keep a log with answers to three questions: What did you do today? What work needs to be done next? What questions do you have or not fully understand? I think that keeping this log helped us both stay focused and work together well.

Please share any observations about anything else that was important to you and/or any problems you encountered during this grant project about which the Provost's Office should be aware. *

Thank you to the Provost's Office for their continued support of the Presidential grant and other faculty-student research opportunities.

Research, Scholarship and Creativity Grant Report Details

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E-Signature

E-Signature *

Laura Boehm Vock

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