

Authors: **Katie Merklings, Hannah Dorman, and Nicolle Kinzel**

Department: Mathematics

Faculty Sponsors: Tiffany Kolba, Hui Gong

Title: *Statistical Analysis of Student Performance in Mathematics Courses*

Abstract:

We examined the effect of taking AP Calculus in high school on final letter grades in Calculus I, II, and III at Valparaiso University. The data used in our study was obtained from the registrar and included demographic information, entrance exam scores (ACT, SAT, AP, etc.), Valpo GPA for each semester, and final letter grades in all math courses from Spring 2008-Summer 2012.

We performed multiple statistical analyses, such as chi-square tests, two-sample t-tests, and multiple regressions, using the statistical software package R. Our results show that students who took AP Calculus in high school on average received higher final letter grades in Calculus I at Valpo, even after controlling for differences in ACT/SAT math scores. In Calculus II and Calculus III at Valpo, students who passed out of the previous calculus course due to AP credit on average performed better or at least approximately the same as students who took the previous calculus course at Valpo, again after controlling for other confounding factors.

About the Authors:

Katie, Hannah, and Nicolle are Mathematics and Education double majors, as well as part of the VU MSEED program. They are rising sophomores and are interested in pursuing careers as high school mathematics teachers. By analyzing the factors that influence student performance in college mathematics courses, they will be better able to prepare their future students for success in college.