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Two-Year College Mathematics Instructors' Conceptions of Variation

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by

Monica Graciela Gandhini Dabos

Committee in charge:

Professor Mary Betsy Brenner, Co-Chair

Dr. Dawn Homes, Lecturer, Co-Chair

Professor Yukari Okamoto

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ABSTRACT

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Statistics education researchers are urging teachers of statistics to help students develop a more sophisticated understanding of variation, since variation is the core of statistics. However, little research has been done into the conceptions of variation held by instructors of statistics. This is of particular importance at the community college level because there was a 60% increase in enrollment in introductory statistics courses in a recent five-year period. Moreover, at the community college level only 2% of full-time instructors and 2% of part-time instructors have a degree in statistics. This exploratory study was designed to map the conceptions of variation held by two-year college mathematics instructors. A total of 52 instructors from 33 different California community colleges responded to a survey designed to reveal instructors' conception of variation. All of the instructors had a degree in mathematics – seven of them also had a degree in statistics. Instructors had varied statistics teaching experience: 23 of them had never taught statistics and 29 had taught statistics often. The results of the study indicated that there was a difference in the type of responses; however, their educational background or their statistics

teaching experience did not highlight the difference. The results indicate that some instructors readily acknowledge variability and others do not. A tendency to focus only on the center of the distribution seemed to prevail, and very few instructors gave explanations integrating different aspects of the distribution. The majority focused on the center or on the range. Another salient characteristic of the results of this study was instructors' lack of consideration for context when making decisions about variability in the data. Moreover, this study revealed that instructors were not consistent throughout the survey items. In some cases, instructors predicted variability, but their justifications lacked the appropriate reasoning to support their predictions. This study has opened the gate and laid the groundwork for understanding conceptions of variation held by two-year college instructors. The results indicate that more in-depth investigation needs to take place if the goal is for students to develop a sophisticated conception of variation.