

Abstract Submitted
for the TSS21 Meeting of
The American Physical Society

Applications of an approach for comparing student populations using item response curves¹ PAUL WALTER, St. Edward's University, ED NUHFER, California State University (retired), CONNOR RICHARDSON, TREVOR SMITH, Rowan University, CRISEL SUAREZ, Vanderbilt University — We report on three separate cases applying a metric to compare two populations' item response curves (IRCs). Each IRC plots the percentage of students selecting a particular answer choice on an item as a function of their overall score on the concept inventory. First, we compare the IRCs of different demographic groups using data from the Science Literacy Concept Inventory. Next, we use the metric to compare American and Japanese students' IRCs used in Ishimoto, Davenport, and Wittmann (2017) for the Force and Motion Conceptual Evaluation. We also compare the IRCs of each group to the IRCs of a separate American data set. Lastly, we compare the pre-instruction IRCs to the post-instruction IRCs for a matched data set of students completing the Force Concept Inventory. The metric is a measure of the IRCs' similarity, and we have used it to identify items that may exhibit bias or demonstrate differences between populations.

¹A portion of this work was supported by NSF DUE-1836470.

Paul Walter
St. Edward's University

Date submitted: 01 Mar 2021

Electronic form version 1.4