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**Together yet separate: students' associating amounts of change in quantities involved in rate of change.**

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Summary: This paper extends work about quantitative reasoning related to covarying quantities involved in rate of change. It reports a multiple case study of three students' reasoning about quantities involved in rate of change when working on tasks incorporating multiple representations of covarying quantities. When interpreting relationships between associated amounts, students identified sections (e.g., an interval on a graph) in which they could make comparisons between amounts of change in quantities. Although such reasoning is useful for interpreting a Cartesian graph as a representation of covarying quantities, it does not foster attention to variation in the intensity of change in covarying quantities (e.g., a decreasing increase). Focusing on the kinds of relationships students make between amounts of change in covarying quantities might provide further insight into how students could develop a robust understanding of rate of change.

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