

## School of Sustainable Engineering and the Built Environment

---



**De'Von Jennings, PhD, PE**  
University of California, Irvine

**Thursday, February 10, 2022**  
**3:15pm – 4:15pm (MST)**

**Hybrid Attendance Options:**  
**In-person: College Avenue Commons (CAVC) 333**  
**Virtual: <https://bit.ly/347Nyta>**

### **Developing Structural Equation Models for Commuter Rail while Analyzing Underlying Attitudes**

**ABSTRACT:** Structural Equation Modeling techniques were used and applied for estimating the service quality of the Caltrain Commuter Rail system. There were ridership factors that the passenger rated that came from the 2018 Caltrain Ridership Survey. The observed variables were the survey questions and responses. These responses were used to measure Caltrain user's satisfaction with the service quality. It was found that Caltrain's best quality of service was rated a 4.0 out of 5 for the weekend group and the lowest was 3.81 for the peak-time riders which is considered good quality for the weekday group but less than great quality for peak riders. Caltrain has better service times than other commuter rail systems. The quality of service was found by using the Structural Equation Modeling methods. SEM can be a tool to use for improving service quality and for planning for future additional services. In the long run, this could have cost savings because having information about riders' preferences can allow for Caltrain to focus on making specific improvements based on what is valued as important. This model can be modified to fit other transit service ridership surveys in many different regions or countries because most transit ridership customer surveys ask similar questions. This SEM quantifies data that would be difficult to measure which can be used for analyzing any type of transit

quality of service and understanding the preferences of the transit riders.

**BIOSKETCH:** De'Von Jennings received his Bachelor's in Civil Engineering from Arizona State University in 2016. He went on to receive his Ph.D. from University of California, Irvine in Civil Environmental Engineering (Transportation Systems Engineering) in 2022. He received the Dwight D. Eisenhower Transportation Fellowship in 2018, 2019, and 2021 and was a recipient of The National GEM Consortium GEM Fellowship and USDOT Pacific Southwestern Region 9 UTC Fellowship. He has presented multiple years at the Transportation Research Board Conference and has spent time as a guest researcher at the University of Alberta under the NSF-IRECEE program. His research interest is in travel forecasting, public transit, rail transit, transportation equity, and active transportation. In his free time, he loves to travel to experience different cultures and food and has been to 27 countries.

*All ASU health and safety protocols will be followed for in-person attendance in CAVC Room 333. **No registration is required for in-person attendance.** The live Zoom broadcast of this seminar is made possible by TOMNET, a Tier 1 University Transportation Center sponsored by the US Department of Transportation. **Please register at the link provided above for virtual/remote attendance.***