

UNIVERSITY TRANSPORTATION CENTER FOR

RAILWAY SAFETY



Constantine Tarawneh, Ph.D., UTCRS Director

RailwaySafety.utpa.edu

- UTC Railway Safety Consortium Institutions
- Educational and Outreach Activities
- Professional Development Activities
- Research Efforts
- Benefits and Impacts



Consortium Institutions

- University of Texas-Pan American (UTPA-Lead)
 - Research Focus: Mechanical Components Safety
- Texas A&M University (TAMU)
 - Research Focus: Railway Infrastructure Safety
- University of Nebraska-Lincoln (UNL)
 - Research Focus: Railway Operations Safety

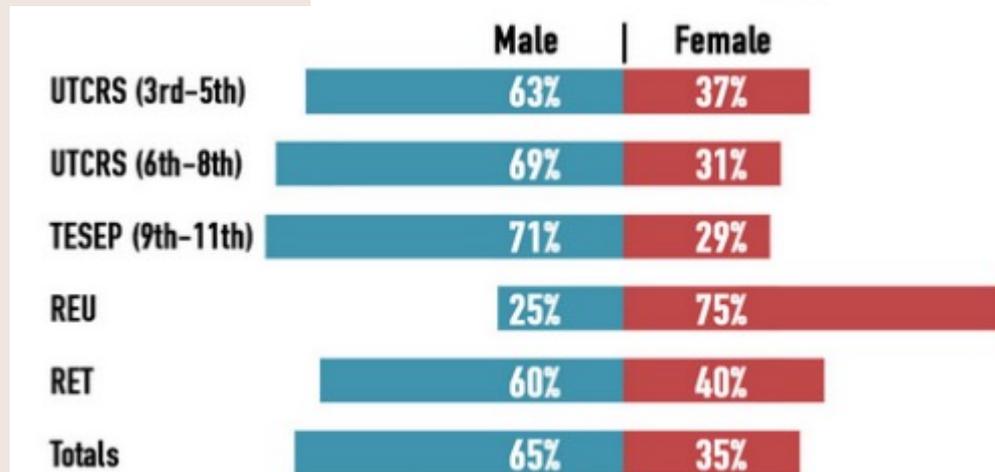
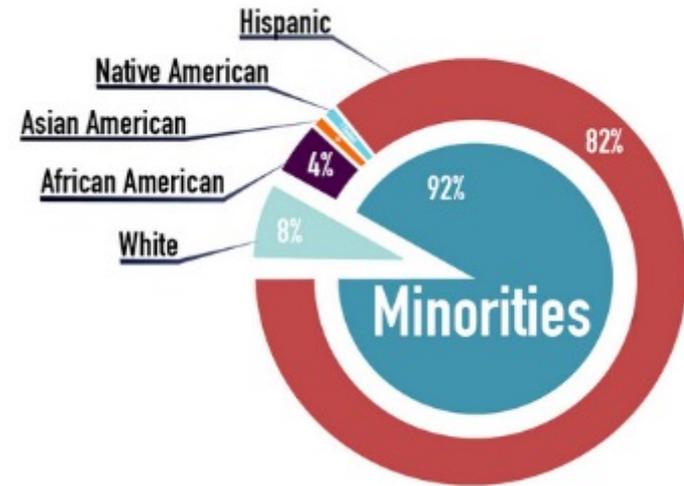
UTCRS Summer Camp

- Summer 2014: the camps served **700 students** (300 elementary, 300 middle school, and 100 high school students) from over 130 schools representing 26 school districts in the Rio Grande Valley (RGV).
- Summer 2015: committed camp enrollment is **900 students** (400 elementary, 400 middle school, and 100 high school), again distributed among RGV school districts.



Benefits and Impacts

- A major goal of the UTC for Railway Safety is to encourage students from groups traditionally underrepresented in transportation to consider careers in transportation-related fields. The summer camps supported this goal as there were approximately 700 camp participants, of which over 80 percent were Hispanic and over 35 percent were female.



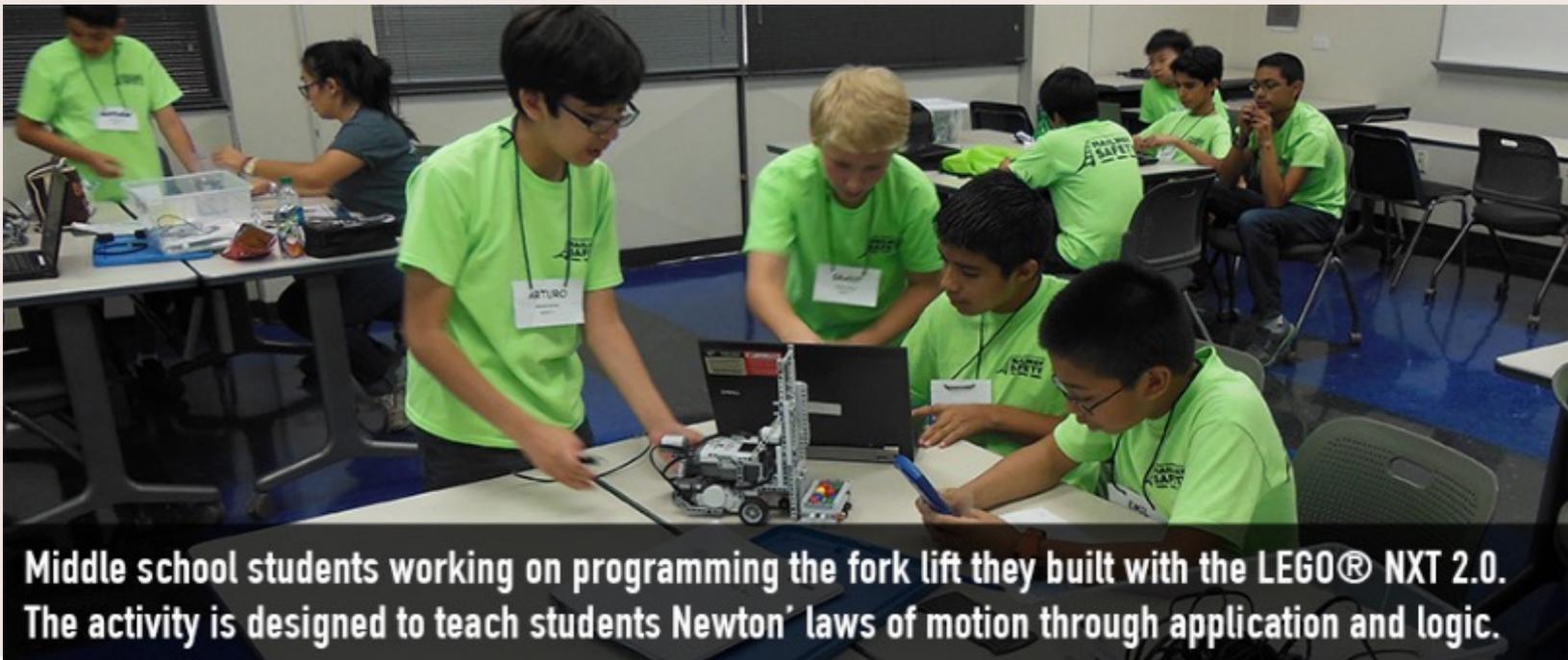
Elementary Students

- 3rd-5th grade students took part in inquiry-based activities to learn about science and engineering concepts in relation to transportation safety.
- Students designed and built a magnetic levitation train system to explore dynamic motion concepts and safety measures to prevent collisions.



Middle School

- 6th-8th grade students learned about transportation engineering and railway safety through project-based curriculum focused on robotics.
- Students built and programmed various types of vehicular robots designed to obey traffic lights and railway safety signs and signals.



Middle school students working on programming the fork lift they built with the LEGO® NXT 2.0. The activity is designed to teach students Newton' laws of motion through application and logic.

High School

- 9th-12th grade students took part in a number of challenging competitions that included designing and programming an efficient vehicular robot as part of collaborations with TexPREP and an NSF-STEP grant.



Research Experience for Teachers (RETs)

- In 2014: 66 K-12 STEM Teachers
- In 2015: 80 K-12 STEM Teachers



Research Experience for Undergraduates (REUs)

- In 2014: 8 students
(2 men, 6 women)
- In 2015: 12 students
selected (4 men, 8
women)
- All historically
underrepresented



Research Activity

- Research Covers all aspects of railway safety: physical systems; operations and planning; and human factors
- 18 Projects to date
- 30 Bachelor's
- 15 Master's
- 9 Doctoral



Questions

