

**Cleveland State University
Transportation Center
Fenn College of Engineering**

**TECHNICAL REPORT
CSUTC-TR-07-01**



**Demonstration of Innovative Techniques for Work Zone
Safety Data Analysis (Quarterly Report)**

Nancy Grugle

OHIO DEPARTMENT OF TRANSPORTATION
QUARTERLY RESEARCH REPORT



For Quarter Ending June 30, 2007

Date Submitted July 24, 2007

Project Title: Demonstration of Innovative Techniques for Work Zone Safety Data Analysis
Research Agency: Cleveland State University
Principal Investigator(s): Nancy Grugle

State Job No.: 134332

Agreement No.: 21457

Pooled Fund Study No. (if applicable): _____

Project Start Date: May 1, 2007 Contract Funds Approved: \$ 61,316

Project Completion Date: July 1, 2008 Spent To Date: \$18,865.86

% Funds Expended 30% % Work Done 28 % Time Expired 25%

List the Technical Liaisons and other individuals who should receive copies of this report: Monique Evans, Jennifer Gallagher, Omar Abu-Hajar, Karen Pannell, Jill Martindale, Vicky Fout

SUMMARY OF PROGRESS FOR QUARTER:

Schedule of Research Activities

As of June 30, 2007, approximately 28% of the research has been completed. Figure 1 shows the proposed time schedule for each research task and the actual schedule of work completed on each task to date.

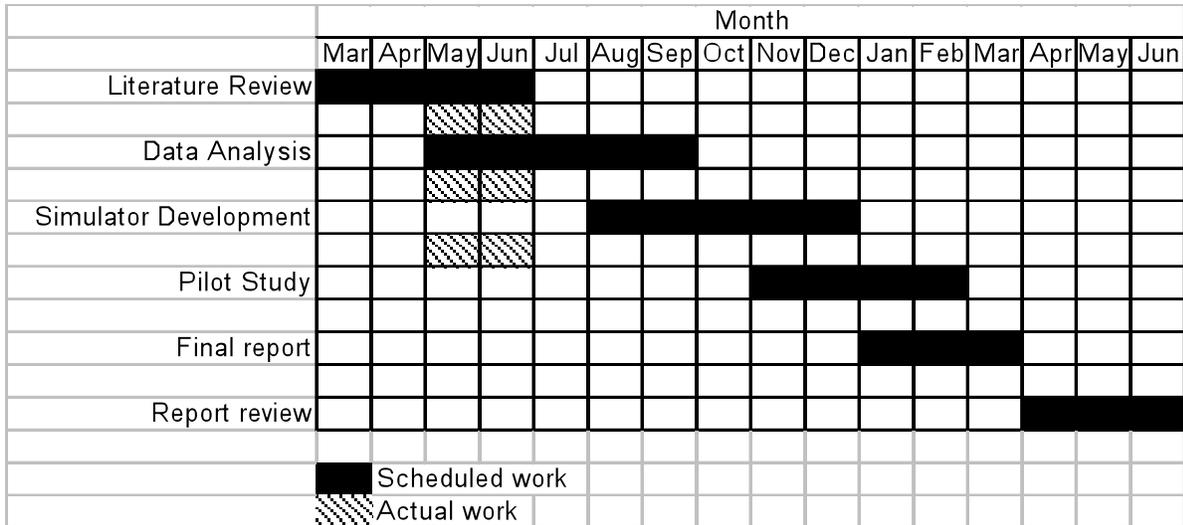


Figure 1. Schedule of research activities

Due to administrative delays in processing the contract, the OPREP project started in May. Three research tasks were started in the first quarter—literature review, data analysis, and simulator development. The schedule of tasks was revised to accommodate the administrative delay. The literature review started in May rather than March. The data analysis started in May as scheduled. Simulator development started in May rather than waiting until August to ensure the original contract completion date can be met.

Actual vs. Estimated Expenditures

Figure 2 shows actual vs. estimated expenditures for work completed during the first quarter. As of June 30, approximately 28% of the work was estimated to be completed according to the schedule shown in Figure 1.

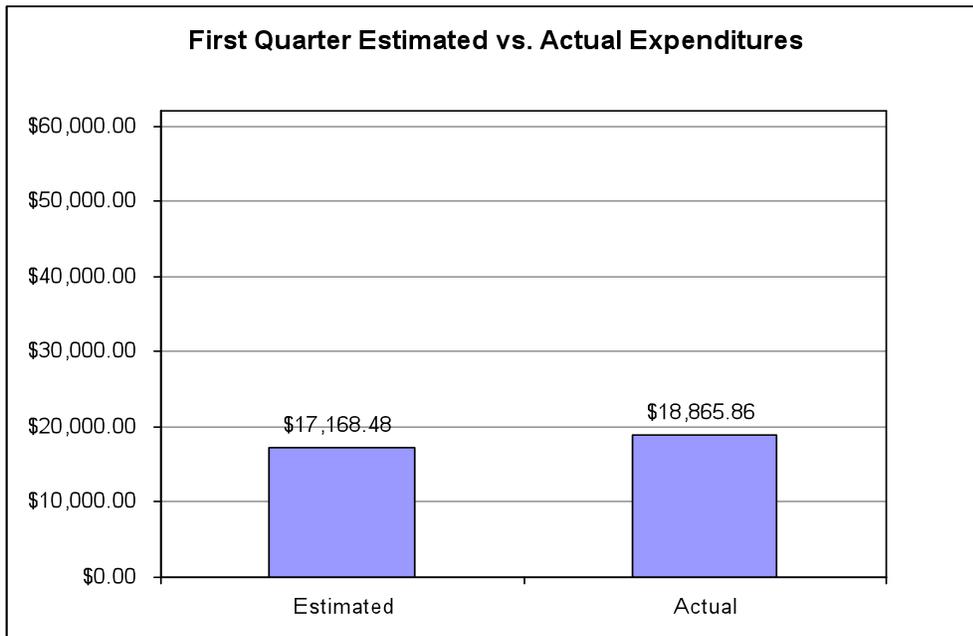


Figure 2. Actual vs. Estimated Expenditures

The estimated expenditures for June 30 were \$17,168.48 (calculated as 28% of total

budget). The actual expenditures were \$18,865.86.

Percent Completion of Research

At the end of the first quarter, approximately 28% of the research as been completed (See Figure 3).

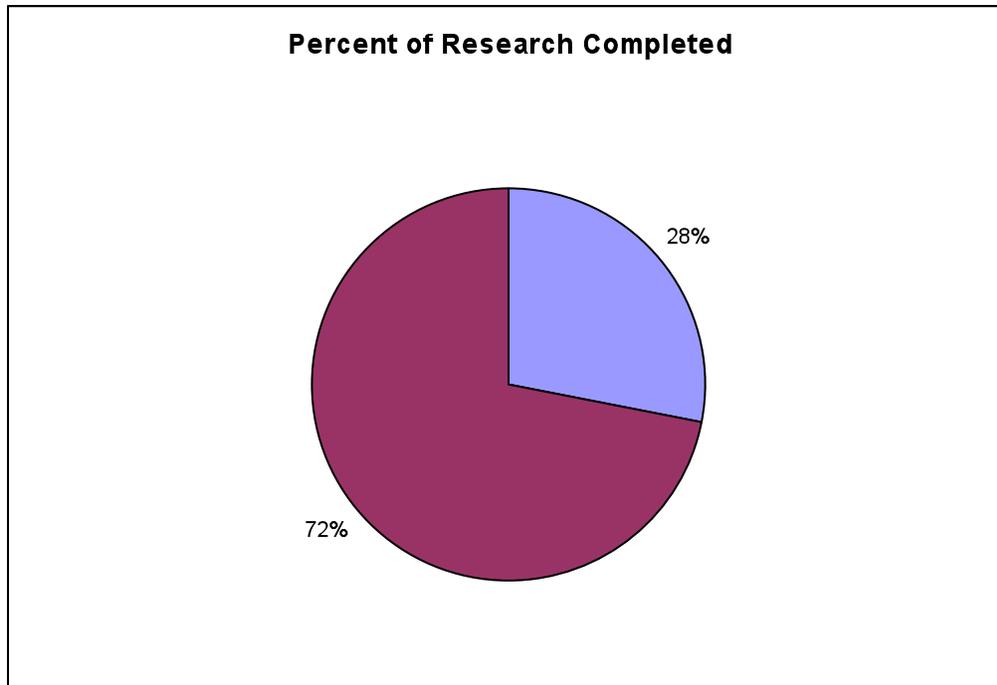


Figure 3. Percentage completion of research

Literature Review

The literature review is approximately 85% complete. A brief outline of topics covered in the literature review is as follows:

1. Introduction
2. Work zone crash causation
3. Gaps in work zone safety knowledge base
4. Alternative methods to investigate crash causation to address gaps in work zone safety knowledge
5. How this study will use alternative methods listed above to address gaps in work zone crash causation knowledge

Data Analysis

Researchers at VTTI have been working with software engineers to create a comprehensive list of all 100-Car Study crashes, near-crashes, and incidents that occurred in a work zone. Once this list has been created, an excel spreadsheet with all relevant variables will be delivered to researchers at CSU as the first deliverable. In addition, CSU's analysis of Ohio work zone crash data is approximately 60% complete.

Simulator Development

Simulator development began in May. Development to date has included the creation of virtual work zones in existing driving simulator scenarios. The work zones include traffic control devices and signs placed on the roadway in accordance with the Ohio MUTCD. These work zones will be used in the validation and pilot studies.

PROPOSED WORK FOR NEW QUARTER:

Literature Review

The literature review will be completed in the second quarter.

Data Analysis

In the next report period, VTTI researchers will work with software engineers to set up an SQL query using the GPS coordinates from each of the previously identified events in deliverable 1 to find when any of the vehicles in the 100-Car fleet passed through any of these construction zones.

CSU will compare the results of the initial VTTI 100 Car crash, near-crash, and incident data analysis with Ohio crash database statistics to determine if there are any discrepancies between what is reported to police on crash reports and the causes determined by direct observation of driver behavior.

Simulator Development

Simulator development will continue with programming of multiple driving scenarios that include and/or replicate the critical driving factors determined from the 100-car data analysis.

IMPLEMENTATION (if any): N/A

PROBLEMS & RECOMMENDED SOLUTIONS (if applicable):

The original contract start date was March 1, 2007. Administrative delays in processing the OPREP contract resulted in an actual work start date of May 5.

Additional administrative delays in processing the VTTI subcontract resulted in a delayed start to the 100-Car data analysis by VTTI researchers. The original due dates for the VTTI portion of the data analysis were July 1 for the first deliverable and July 30 for the second deliverable. Due to the delay, the first deliverable will be received by August 1 and the second deliverable will be received by mid-October.

As a result, the work time schedule and research task order was adjusted to accommodate the administrative delays and prevent downtime by CSU researchers. At this time, we do not expect the delays to result in a request to modify the original contract completion date.

EQUIPMENT PURCHASED (if any): N/A

CONTACTS & MEETINGS:

The project start-up meeting took place on May 9, 2007. A project status update was provided to the project technical liaison, Jennifer Gallagher, at the meeting.

A request for Ohio work zone crash data was sent via email to the Jennifer Gallagher on May 17. Emily Willis contacted CSU to complete the request on May 23 and the datasets were received via email on June 5.

A project status update was sent to Jennifer Gallagher via email on July 19.