

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

**TECHNICAL REPORT
CSUTC-TR-07-02**



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

Nancy Grugle

OHIO DEPARTMENT OF TRANSPORTATION
QUARTERLY RESEARCH REPORT



For Quarter Ending September 30, 2007

Date Submitted October 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: \$49,661.90

% Funds Expended 81 % Work Done 48 % Time Expired 50 %

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 September 30, 2007, approximately 48% 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.

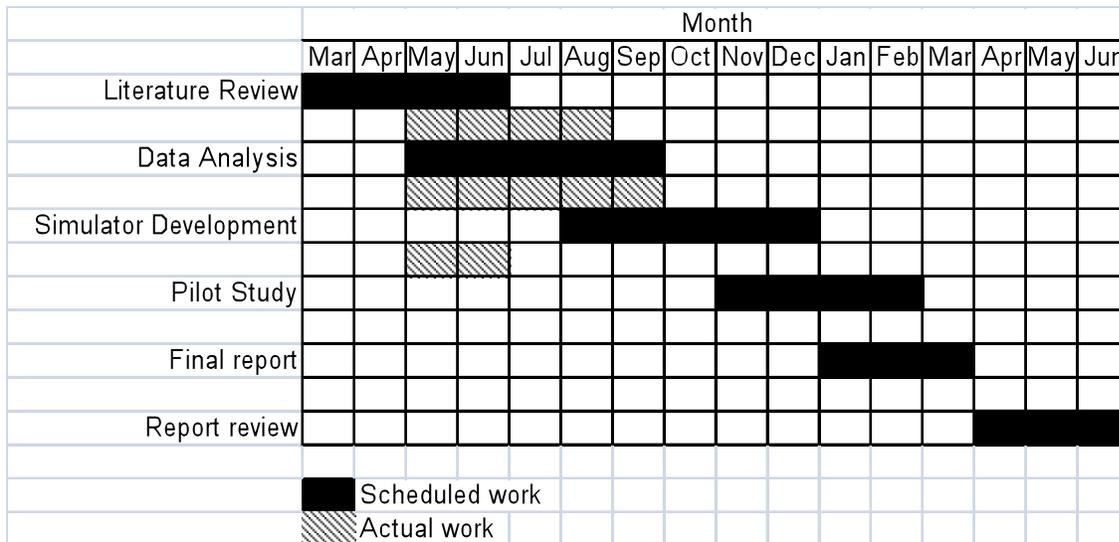


Figure 1. Schedule of research activities

Two research tasks were under development in the second quarter—literature review and data analysis. The literature review was completed in August. The data analysis is still underway as of September. The simulator development was not conducted in July, August, or September. Development will resume in October using the data analysis results.

Actual vs. Estimated Expenditures

Figure 2 shows actual vs. estimated expenditures for work completed during the first quarter. As of September 30, approximately 57% of the work was estimated to be completed according to the schedule shown in Figure 1.

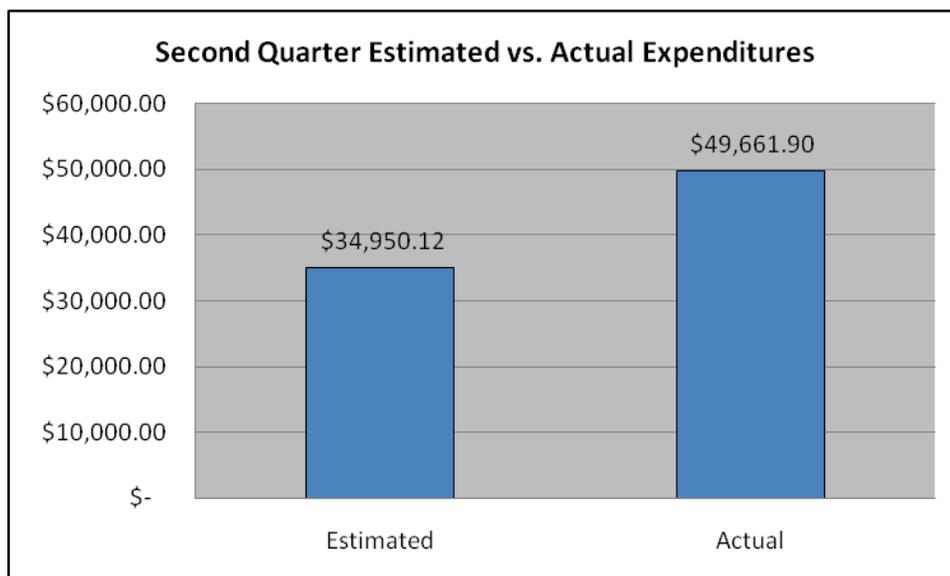


Figure 2. Estimated vs. Actual Expenditures

The estimated expenditures for September 30 were \$34,950.12 (calculated as 57% of total budget). The actual expenditures were \$49,661.90.

Percent Completion of Research

At the end of the second quarter, approximately 48% of the research as been completed

(See Figure 3).

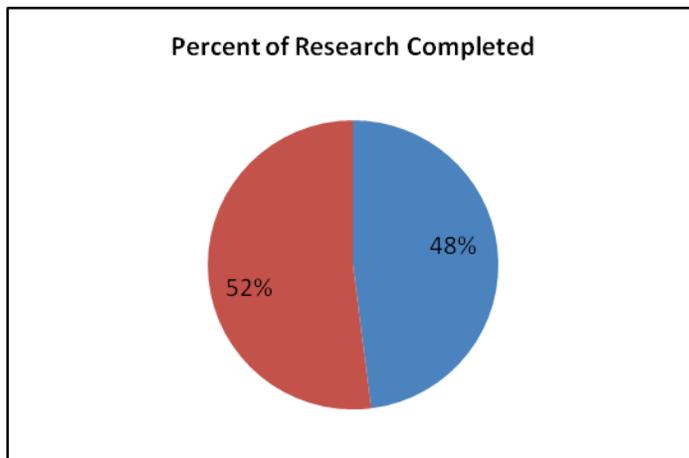


Figure 3. Percentage completion of research

Literature Review

The literature review has been completed.

Data Analysis

CSU received the first VTTI deliverable. The data includes an excel spreadsheet representing all the relevant variables associated with all 100-Car Study crashes, near-crashes, and incidents that occurred in a work zone. In addition, CSU's analysis of Ohio work zone crash data is approximately 85% 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:

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.

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.

Validation Study

The validation study will be developed and run based on the findings of the naturalistic data analysis. A qualitative validation analysis will be conducted.

Pilot Study

The pilot study will be developed based on collaboration with ODOT.

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.

A project meeting is scheduled for November 7, 2007 to discuss the proposed pilot study with Jennifer Gallagher.