

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

**TECHNICAL REPORT
CSUTC-TR-08-04**



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

Stephen F. Duffy

**OHIO DEPARTMENT OF TRANSPORTATION
QUARTERLY RESEARCH REPORT**



For Quarter Ending June 30, 2008

Date Submitted October 7, 2008

Project Title: Demonstration of Innovative Techniques for Work Zone Safety Data Analysis
Research Agency: Cleveland State University
Principal Investigator(s): Stephen F. Duffy

State Job No.: 134332

Agreement No.: 21457

Pooled Fund Study No. (if applicable): _____

Project Start Date:	<u>May 1, 2007</u>
Contract Funds Approved:	<u>\$61,316 (\$62,683 - CSU match)</u>
Project Completion Date:	<u>July 1, 2009 (revised)</u>
Spent To Date:	<u>\$57,141.86 (\$51,634 - CSU match)</u>
% Funds Expended	<u>93% (82% - CSU match)</u>
Work Done	<u>73%</u>
Time Expired	<u>52%</u>

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, 2008, approximately 73% 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.

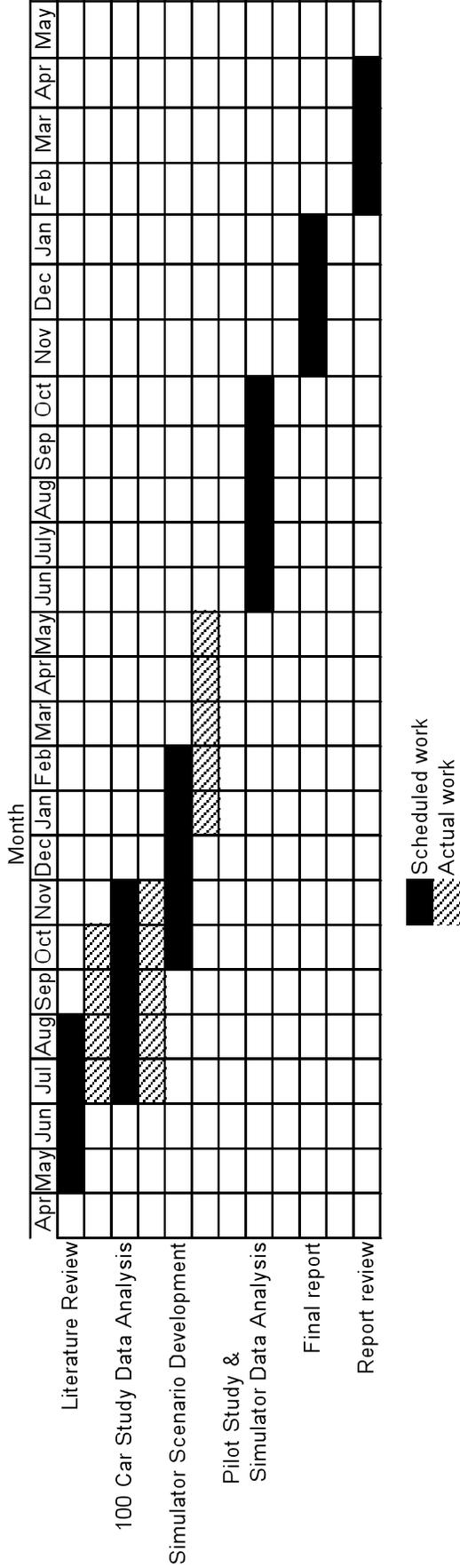


Figure 1. Schedule of research activities

During the fifth quarter, development of the simulator scenarios were completed.

Actual vs. Estimated Expenditures

Figure 2 shows actual vs. estimated expenditures for work completed during the fifth quarter. As of June 30, 2008 approximately 73% of the proposed work was estimated to be completed according to the schedule shown in Figure 1 and the work time schedule provided in the original proposal.

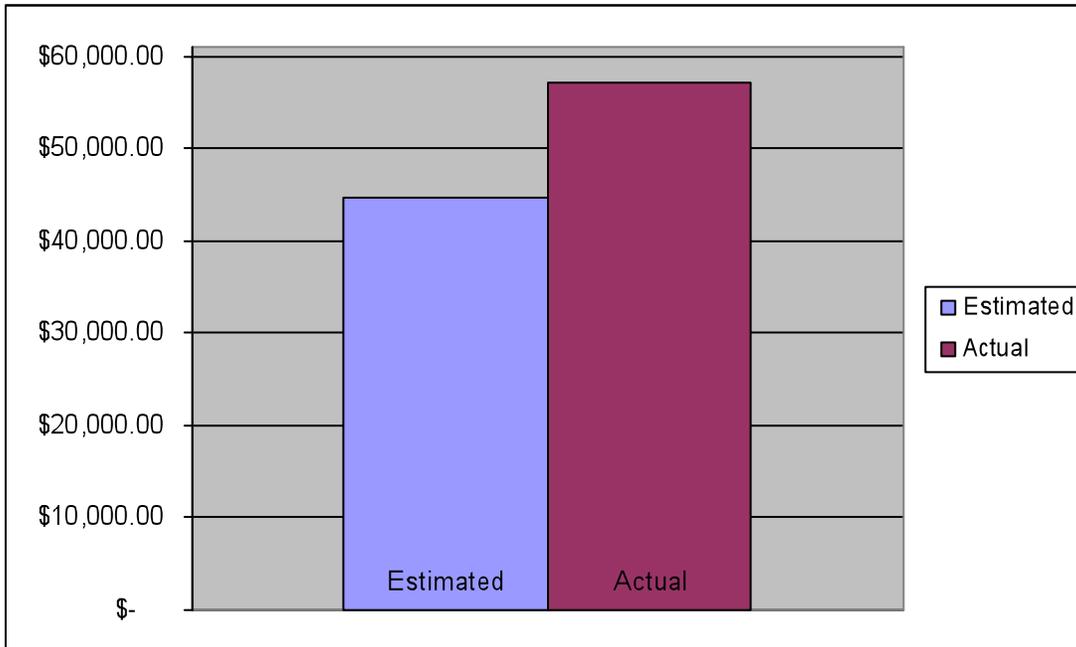


Figure 2. Estimated vs. Actual Expenditures

Estimated expenditures as of June 30 were \$44,737.00 (calculated as 73% of total budget). The actual expenditures were \$57,141.86.

Percent Completion of Research

At the end of the fifth quarter of this grant approximately 73% of the research as been completed.

Literature Review

The literature review has been completed and reported on in an earlier report.

100 Car Study Data Analysis

CSU received the VTTI deliverables. 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 complete.

Simulator Development

Scenario development began in January with the creation of virtual work zones in 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. Details of each of the scenarios were provided in the previous quarterly report. Work on developing the simulation scenarios is complete.

PROPOSED WORK FOR NEW QUARTER:*Validation Study*

The validation study would have been developed and conducted based on the findings obtained from the naturalistic data analysis in comparison to data obtained from the driving simulator. A qualitative validation analysis will not be conducted. Information regarding the work zone configuration for the Virginia Tech data was never archived making the validation study impossible to conduct.

Pilot Study

A revised pilot study was developed based on collaboration with ODOT. The pilot study was reported on in the last quarterly report. ODOT will conduct a site visit to discuss elements of the pilot study implemented into the reported scenarios. A total of 4 scenarios will be presented to study participants. Each scenario will contain 6 treatment combinations (3 on divided roads, 3 on undivided roads). The order in which treatment combinations appear in the scenario was counterbalanced to prevent confounding. The order in which scenarios are presented to each participant was also randomized. Treatment combinations were reported on in the last quarterly report.

The study will commence in the next quarter.

IMPLEMENTATION (if any): N/A**PROBLEMS & RECOMMENDED SOLUTIONS (if applicable):**

A contract extension of one year was requested and granted by Monique Evans on June 9, 2008. The extension was requested due to the delays associated with the IRB approval and the by the fact that the original PI, Professor Nancy Grugle has left CSU. As noted in the previous report, with the completion of the semester at CSU, obtaining subjects for the pilot study will be difficult. Therefore, the majority of the pilot study will have to be completed when school commences in the fall.

As to the departure of Professor Nancy Grugle, Professor Stephen Duffy has proposed to ODOT that he take over the grant as PI in order to finish the research. Professor Duffy reached out to Professor Deb McAvoy at Ohio University to help in completing the data analysis. A contract for Professor McAvoy's services was prepared and forwarded to Ohio University. This project will be finished as a joint collaboration with Ohio University.

EQUIPMENT PURCHASED (if any): N/A**CONTACTS & MEETINGS:**

A project meeting with ODOT personnel will be scheduled for sometime in the upcoming quarter to discuss details on how the grant will proceed to completion.