

S02 Project: Integration of Analysis Methods and Development of Analysis Plan



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Presentation and discussion

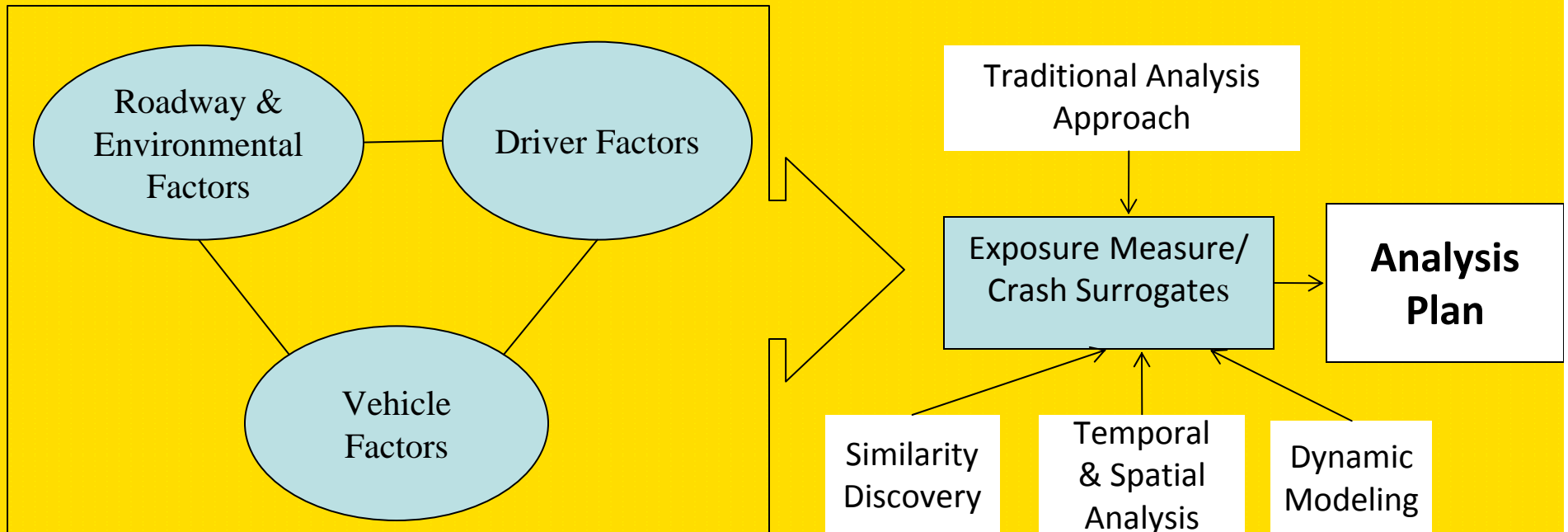
- S02 project
 - Current status
 - Next steps
- Discussion on critical issues for the development of work plans for (S08)

Objectives of S02

- Produce a set of analysis plans for the in-vehicle field studies that account for
 - the data collection systems (S05)
 - the data systems design
 - analytical methods (from S01)

Driver-Vehicle-Roadway Factors and Interactions

Systems-Based Approach to Analysis Plan Development

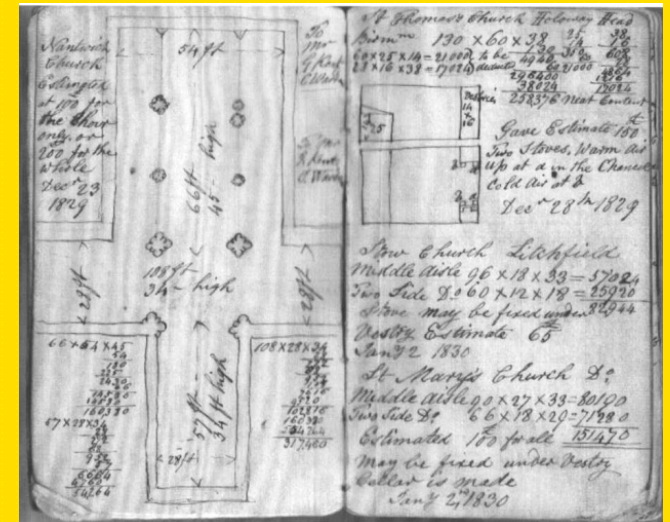


Primary outcome

- Work plans that encompass a set of high priority safety-related research questions
- Related to safety consequences such as
 - Intersection conflicts, roadway departure events
- As influenced by
 - Driver, roadway, environmental, and vehicle factors

Phase I: Develop Work Plans

1. Review products of S01, S05 and S09 project outcomes
 - PSU, ISU, UMTRI, UNC, UMN
2. Contribute to symposium
3. Frame and prioritize research questions
4. Develop work plans for Phase II



Our planned approach

- Frame and prioritize research questions using an interdisciplinary, systems perspective
- Iterate and refine research questions

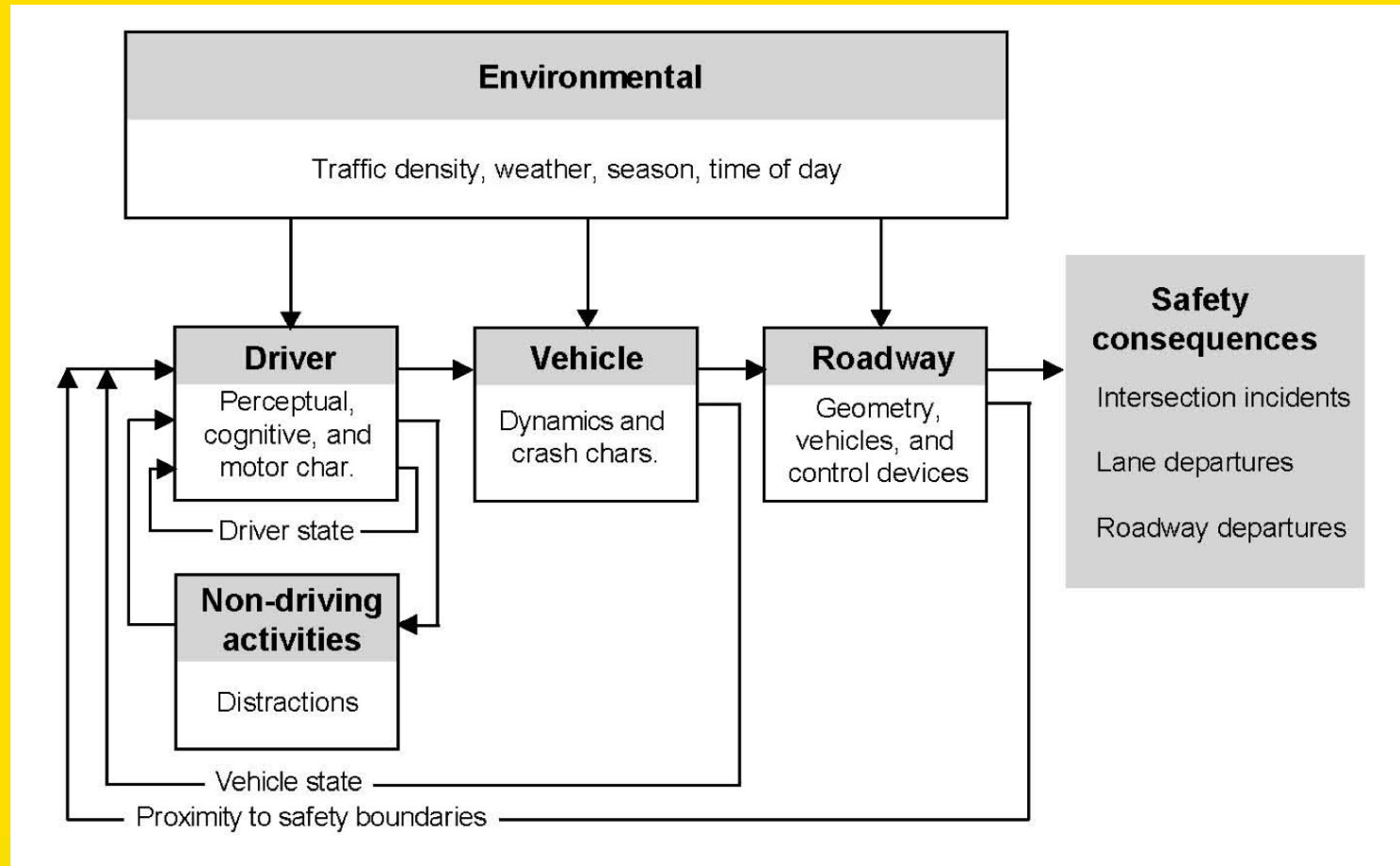
Frame and prioritize research questions

- Goal: extend and refine contractor and committee research questions (ongoing)
 - Many questions focus on road departure crashes
 - Build on kinematic events (e.g., running off the road)
 - Increase information on intersection conflicts

Frame and prioritize research questions (cont.)

- Consider safety interventions and countermeasures
- Assess using available data
- Incorporate input from safety community
- Identify gaps or omissions

Conceptual framework



Consolidating Questions

1. Examine all research questions from from S01 reports
2. Find commonalities among the four contractors
3. Develop global research questions
4. Identify the explanatory variables (predictor) and responses desired for each research question

Example: From S01 Reports

- Actual question
 - Are drivers more likely to lane keep on roadways with edge line rumble strips? (ISU/UI)
 - Are there specific highway features that are associated with SVRD and specific driving control measures? (UMTRI)

Result: global question

- What environmental and roadway factors influence crash likelihood?



Example subset table

	Actual Research Question	Driver Factors	Non-driving activity	Vehicle Factors	Roadway Factors	Environmental Factors	Safety Consequence
	Are drivers more likely to lane keep on roadways with edge line rumble strips?			Vehicle heading, lateral and longitudinal acceleration, pitch, yaw, and roll rates, speed	Roadway attributes, number of lanes, type of pavement surface, lane width, shoulder type and width		Lane position (lane and roadway departures)
	Are there specific highway features that are associated with single vehicle road departure crashes and specific driving control performance measures?	Driving control performance measures			Isolated horizontal curves, sharp horizontal curves, sequences of horizontal curves, combinations of horizontal and vertical curves		Single vehicle crashes (ROR, lane departures)
Global Question: What environmental and roadway factors influence crash likelihood?							

Columns in Table

<ul style="list-style-type: none">• Global question	<ul style="list-style-type: none">• Driver factor	<ul style="list-style-type: none">• Outcome (Safety Consequence)
<ul style="list-style-type: none">• Report ID (e.g., ISU, PSU, VTTI, UMTRI)	<ul style="list-style-type: none">• Vehicle factors	<ul style="list-style-type: none">• Outcome (Non-safety consequence)
<ul style="list-style-type: none">• Actual research question	<ul style="list-style-type: none">• Roadway factors	<ul style="list-style-type: none">• Exposure measure
<ul style="list-style-type: none">• Page number in S01/S05 report	<ul style="list-style-type: none">• Environmental factors	<ul style="list-style-type: none">• Crash surrogate
<ul style="list-style-type: none">• Addtl Notes	<ul style="list-style-type: none">• Non-driving activity	<ul style="list-style-type: none">• Analysis tool

Consolidating S05 questions

- VTTI team came up with 392 questions
 - Grouped questions based on commonalities
 - Initial cut: 26 preliminary global questions
 - Identifying overlapping questions with S01 projects

Example S05 questions

- What is the influence of rumble strips in measured lane-keeping performance? (pg 119 :16)
- Are centerline rumble strips beneficial in improving lane keeping performance? (pg 119:17)
- Would rumble strips also be effective without the paved shoulder? (pg 120:22)

Resulting global question

- What impact do roadway countermeasures (e.g., rumble strips) have on lane-keeping performance?

Next steps, Phase I

- Identify overlapping questions
 - e.g., research questions on lane keeping identified by both S01 and S05
- Identify and fill in gaps with additional research questions
 - Organize by logical topic area (e.g., roadway versus driver)

Next steps-Phase II

- Identify analytical tools developed by SO1 and SO5 projects
 - Sample size
 - Issues in integrating spatial datasets
- Develop common terminology
 - ROR defined differently by different groups
- Analysis plans

Questions and comments

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Discussion questions

- What is the extent to which the proposed sample design and DAS support
 - analytical approaches?
 - research questions?

Discussion questions (cont.)

- What are the gaps in data or research questions and critical issues that must be resolved?
- What is the best way to prioritize, rate and weight questions
 - Many different interests (OEM, DOT, etc.)