Collaborative Sciences Center for ROAD SAFETY

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Bringing Development Review into Safe Systems

Jesse Saginor

Florida Atlantic University

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R35 Project Team

- UNC Department of City and Regional Planning
  - Tabitha Combs
- UNC Highway Safety Research Center
  - Seth LaJeunesse
  - Wesley Kumfer
- FAU Department of Urban and Regional Planning
  - Eric Dumbaugh
  - Jesse Saginor

Overview

- Research Questions
  1. How is road user safety reflected in contemporary TIA practice?
  2. What barriers exist to making safety an integral outcome of development review?
  3. What gaps exist in conventional TIA that allow for introduction of safety-related outcomes?
- Analysis
  - Grounded theory analysis of interviews and transcripts → Matrix analysis → Causal loop diagramming
- Interpretation
  - Systems archetypes framework
- Developing the SafeTIA approach

Background

- TIA is a common tool for evaluating and mitigating congestion impacts of new land development across the southeast, but with known drawbacks, e.g.,…
  - Discourages infill development
  - Assumes & entrenches car dependency
  - Pits cars against other modes
  - Feeds development==congestion sentiment

- Lots of energy is going into modernizing TIA (yay) but…
- …recent research on evolution in development review practices: safety is rarely discussed as either a consideration in TIA or motivation for adopting new practices (boo)

Combs, McDonald, & Leimenstoll (2020) https://doi.org/10.1177/0739456X20908928
Combs & McDonald (2021) https://www.jstor.org/stable/48646176

Practitioner Interviews and Developer Focus Groups

Practitioner Interviews

- n = 41 interviews
- pop. range: 13,000 to 1.1M

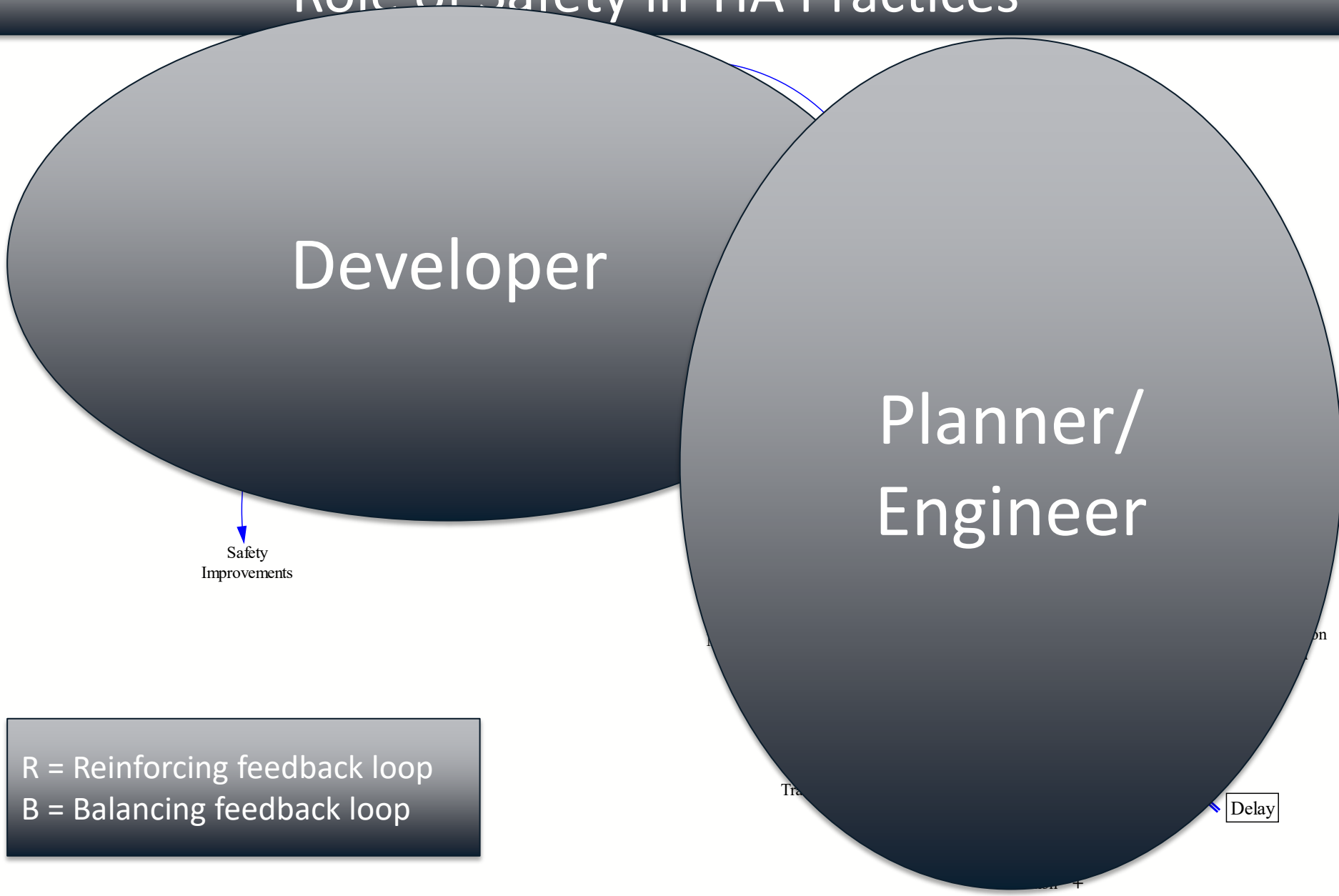
Developer Focus Groups

- n = 12 senior-level developers with hands-on experience
- Combined development portfolio in excess of $6B in southeast U.S.

Analysis of literature, interviews, and focus groups

- Themes from grounded theory & matrix analyses
  - Professional judgment is primary means of understanding ‘safety’
  - Pressure to address concerns (aka we address safety as instructed by local authorities)
  - Congestion mitigation is safety
  - More traffic means less safety
  - Frustrated drivers mean less safety
  - (Crash) History is our guide
  - Understanding Safety through Site Plan Review
  - Improving Safety through Site Plan Review

Role of Safety in TIA Practices



R = Reinforcing feedback loop
B = Balancing feedback loop

Results: 2 systems archetypes at play

1. Seeking the Wrong Goal

- Prior experience, engineering judgment, & crash history examination lead professionals & officials to equate congestion with danger, and therefore congestion mitigation with safety improvements

2. Fixes that Fail

- Mitigating congestion generates more traffic
- More traffic means less safety…but also more congestion & driver frustration
- Multiple factors push professionals to focus on the congestion

Findings & Discussion

- Road user safety not explicitly considered in TIA, but subsumed within congestion mitigation (which backfires)
- Entrenched practices/models/tools and prevailing belief systems prioritize LOS at the expense of safety

Developing “SafeTIA”

- Analysis: Site plan review is entry point for road user safety

- Developers’ perspective:
  - Lack of safety is bad business!
  - Openness to implementing evidence-backed safety countermeasures, but
  - *Ad hoc* layering of safety requirements on top of congestion mitigation obligations is unwelcome
- Clear standards and processes for assessing and addressing safety:
  - Lessen burdens on developers
  - Reduce the outsize influence of developer/regulator relationship history on safety outcomes
  - Circumvent the subjectivity of professional judgment
- Site plan review is a leverage point within developers’ purview for introducing, assessing, improving safety outcomes through land development

SafeTIA overview

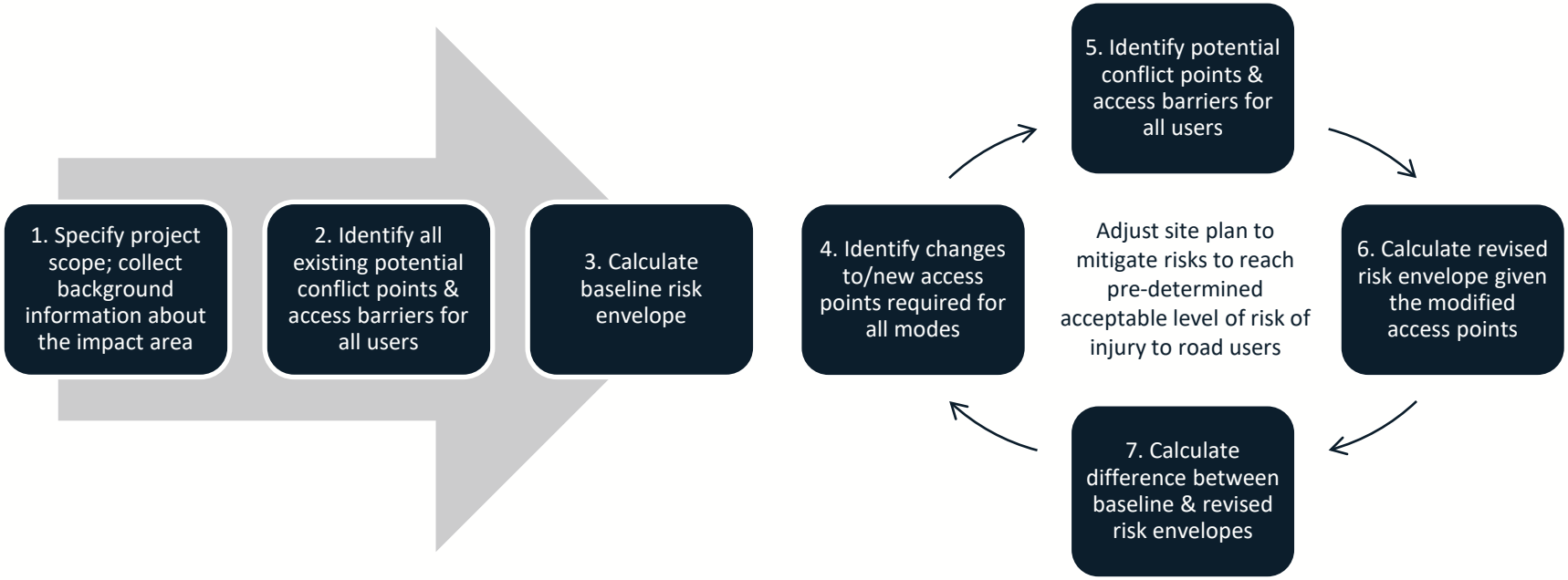
- Goals
  - Reduction in fatal/serious conflicts is core outcome measure
  - Complement, eventually replace conventional TIA
  - Focus on site plan to leverage developer agency & motivation

- Key parameters
  - Straightforward, standardizable, replicable
  - Backed by analytical frameworks derived from safe systems research
  - Focus on conflict risk reduction rather than crash remediation
  - Iterative and dynamic
  - Inclusive of full analytical footprints

- 'Acceptable risk' assumption
  - Local agencies have established an acceptable level of risk of roadway deaths and/or serious injuries and a timeline for meeting associated risk reduction goals.

SafeTIA stages

0. Establish acceptable level of risk
1. Project scoping and background
2. Evaluate proposed changes
3. Iterate & mitigate

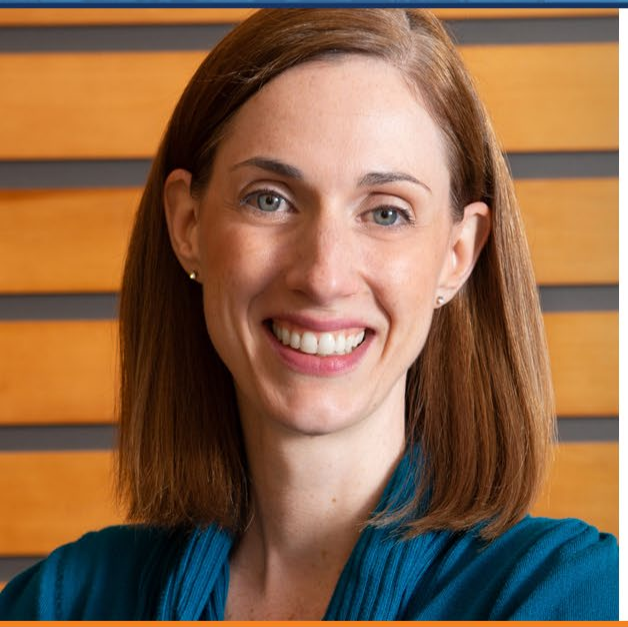


Next steps

- Disseminate SafeTIA framework (v1) for feedback
- Identify opportunities for demonstration projects to apply, evaluate, and refine future versions of SafeTIA

RESEARCH TO PRACTICE BYTES

Case studies from across the U.S. on using systems thinking tools to inform Safe System partnership, strategic planning, and research



PRESENTER: **Becky Naumann**

UNC INJURY PREVENTION RESEARCH CENTER

October 26, 2022

2:30-3:00 p.m. ET

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