Safer by Design (SBD)

Texas Department of Transportation

April 25, 2025

Doyeon Kim, P.E.

- Transportation Engineer
- Highway Safety & Operations (HSO) – Project Deliver Section
- Design Division

What projects are eligible for the Safer By Design Tool

The Safer By Design Urban and Rural Tool is designed to evaluate the safety performance of transportation projects.

- The SBD Urban and Rural Tool is applicable to all projects for safety score analysis
- Even exempted projects can benefit from this tool to evaluate their safety score. For projects that involve modifying road segments, intersections, or traffic signals, the SBD Tool must be used for safety analysis.

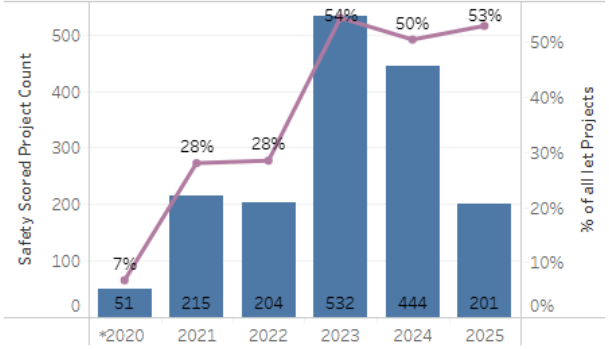
Segment	Intersection	Exempt
• Added Capacity/Mobility • Major Rehab/Widening • Passing Lane Super 2 • Bridge Replacements • Bridge widening/ major rehab (On-System) • Seal Coats/Overlays • Full depth spot rehab • Category 8 Widening Project • Sidewalk/Shared Use Path/Bike Path Project • On-system Locally Let Project • Category 8 Widening Project	• Seal Coats/Overlays • Full depth spot rehab • Traffic signal project • Urban Frontage road intersections • Sidewalk/ADA project • Shared Use Path/Bike Path Project	• Replacing existing signs/striping • Interstate, freeways, Frontage road • Bridge maintenance/Repair • Off system Bridge replacement • Off system locally let projects • Border Infrastructure • Category HSIP non widening • ITS only project • Railroad intersection

Safer By Design Summary Dashboard

Safer by Design - Summary

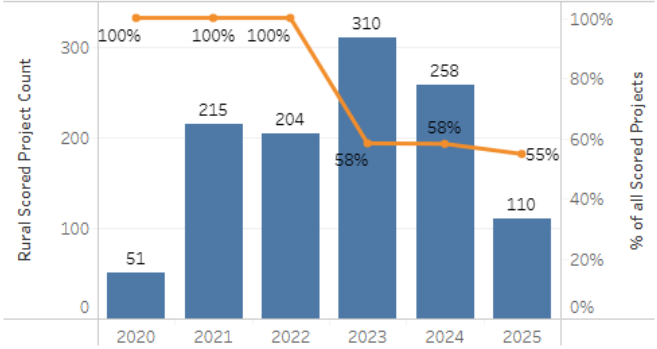
All

1,647 Total Safety Projects
Average Final Score: 77
Average Initial Score: 70
Average Safety Score Change: 6
Average Estimated Additional Time (mo.): 42
Total Estimated Additional Cost ($): $58,261,413,551



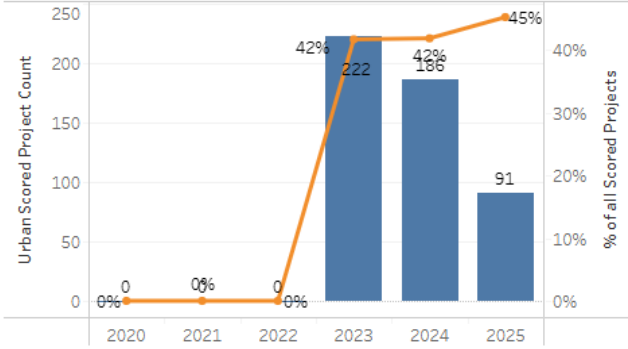
Rural

1,148 Total Projects
Average Final Score: 79
Average Initial Score: 71
Average Safety Score Change: 8
Average Estimated Additional Time (mo.): 44
Total Estimated Additional Cost ($): $49,791,883,321



Urban**

499 Total Projects
Average Final Score: 72
Average Initial Score: 69
Average Safety Score Change: 3
Average Estimated Additional Time (mo.): 36
Total Estimated Additional Cost ($): $8,469,530,230

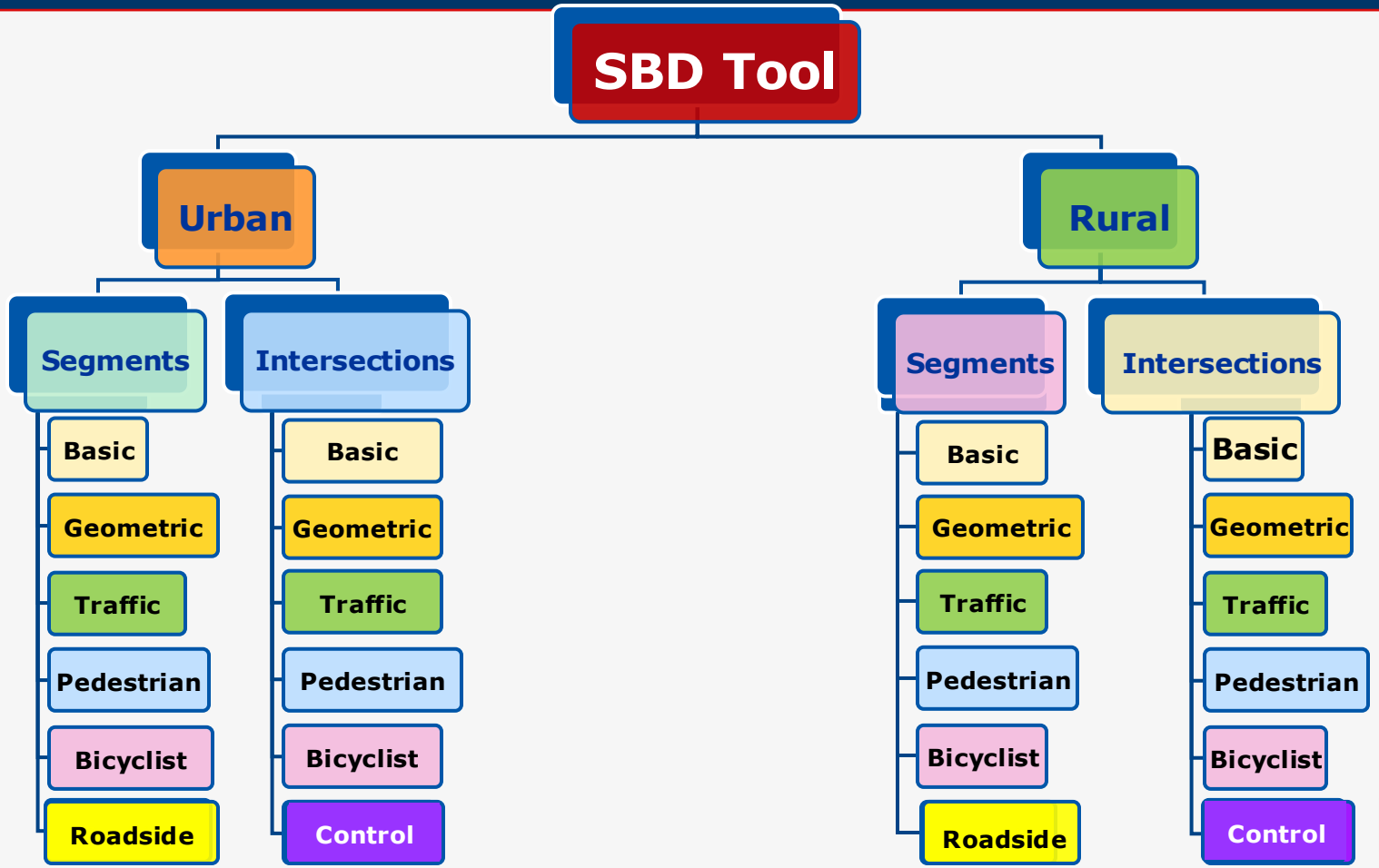


Source: https://tableau-txdot/#/views/SaferbyDesign/Summary?:iid=1

Ragab Mousa, P.E., PTOE

- Transportation Engineer
- Highway Safety & Operations (HSO) – Project Delivery
- Design Division

SBD Structure & Required Input Data



SBD Scores and Charts of Marginal Safety

START OF INTERSECTION 1

		Existing Design	Standard Design	Design 1	Design 2	Optimal Design
Intersection 1	Score	57	70	81	-	100
	Crash (per year)	TOT: 2.657 F&I: - PDO: - PED: 0.040	TOT: 1.282 F&I: - PDO: - PED: 0.043	TOT: 1.194 F&I: - PDO: - PED: 0.016	TOT: - F&I: - PDO: - PED: -	TOT: 0.835 F&I: - PDO: - PED: 0.009

TOT = Total, F&I = Fatal and Injury, PDO = Property Damage Only, PED = Pedestrian

SBD Scores and Charts of Marginal Safety

START OF INTERSECTION 1

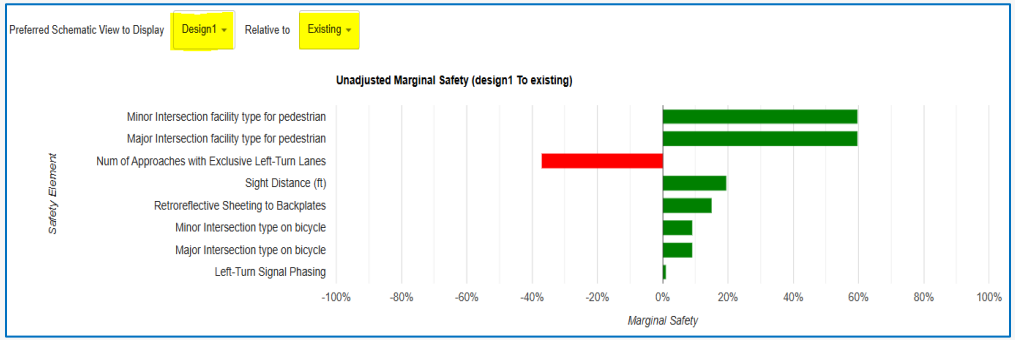
Intersection		Existing Design	Standard Design
1	Score	57	70
	Crash (per year)	TOT: 2.657 F&I: - PDO: - PED: 0.040	TOT: 1.282 F&I: - PDO: - PED: 0.043

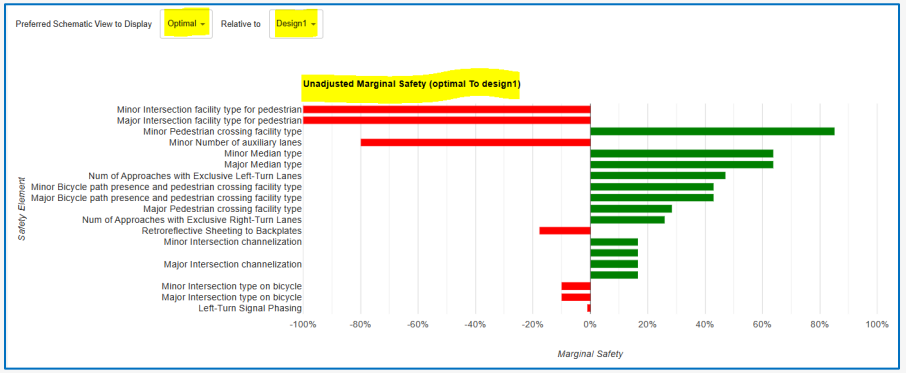
TOT = Total, F&I = Fatal and Injury, PDO = Property Damage Only, PED = Pedestrian

SBD Scores and Charts of Marginal Safety

Design	Design 1	Design 2	Optimal Design
	81	-	100
2	TOT: 1.194 F&I: - PDO: - PED: 0.016	TOT: - F&I: - PDO: - PED: -	TOT: 0.835 F&I: - PDO: - PED: 0.009
3			

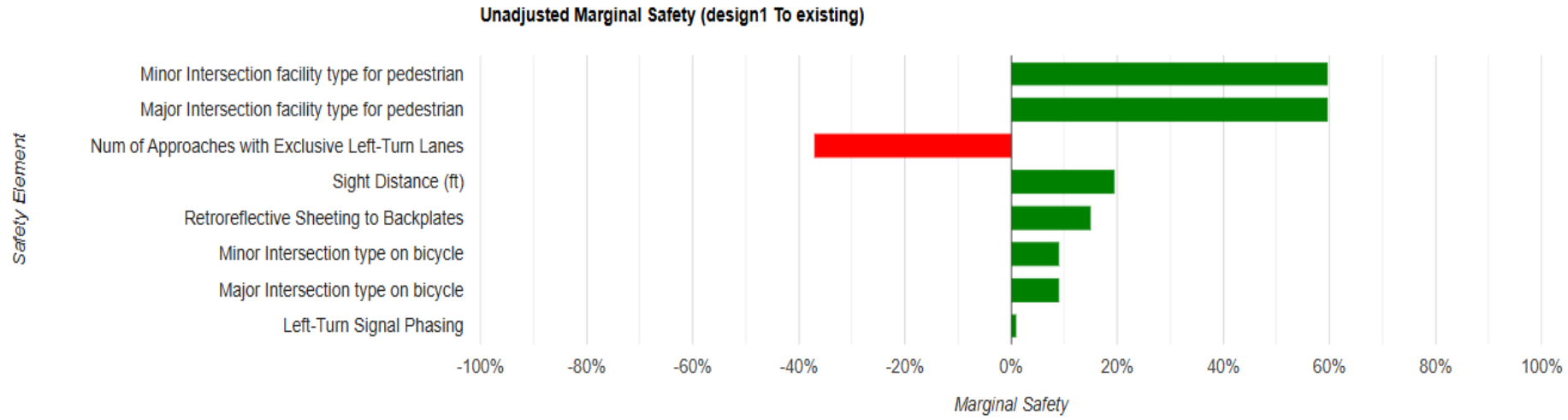
SBD Scores and Charts of Marginal Safety



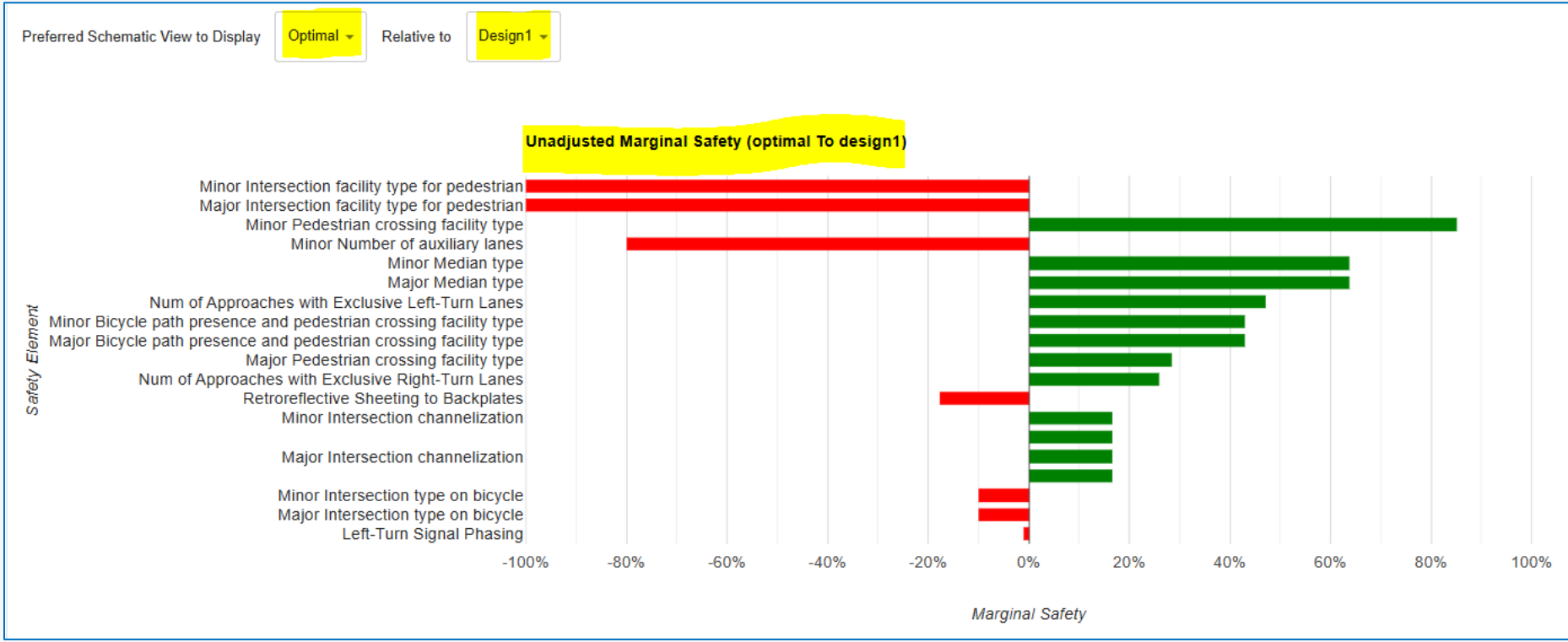


SBD Scores and Charts of Marginal Safety

Preferred Schematic View to Display: Design1 Relative to: Existing



SBD Scores and Charts of Marginal Safety



Edit and Print SBD Report

TxDOT Safer by Design (SBD) Tools

SBD Urban and Rural Tool

Last saved at Tue Feb 18 2025 09:16:13 GMT-0600 (Central Standard Time)

EDIT PRINT NEW PROJECT SAVE

Project Level Inputs

Analyst Email: *	District: *	CCSJ Number: *	County/City: *
Ragab.Mousa@txdot.gov	Atlanta	1216-01-010	Cass

Highway Name: *	Area Type: *	Evaluation Date: *	Letting Date: *
Testing Rural Multi Segment	Rural	10/15/2024	10/15/2024

Project Category: *	Project Type: *	Number of Segments: *	Number of Intersections: *	From DFO: *	To DFO: *
3R	TxDOT Project	6	8	0	1

Project Management Page

COLUMNS FILTERS DENSITY EXPORT DELETE TRANSFER OWNERSHIP + NEW PROJECT SAVE CURRENT VIEW + CUSTOM VIEW (8)

CCSJ	Owner Email	District	Area	Highway	From	To	Last Update	Status	Existing	Design1	Design2	Edit	Submit
0000-000-002	Ragab.Mousa@tx...	Childress	Urban	IH 410	2	8	2024-12-09, 15:05	Pending					
1216-01-010	Ragab.Mousa@tx...	Atlanta	Rural	Testing 2L-Rural Segment SBD - FM ...	0	3.1	2025-02-10, 09:49	Pending		60.6			
0291-10-119	ragab.mousa@tx...	San Ant...	Urban	SH 16	8	16	2023-10-29, 11:36	Pending					
0291-10-119	ragab.mousa@tx...	San Ant...	Urban	SH 16	8	16	2023-10-29, 07:18	Pending					

Cynthia Garcia, P.E.

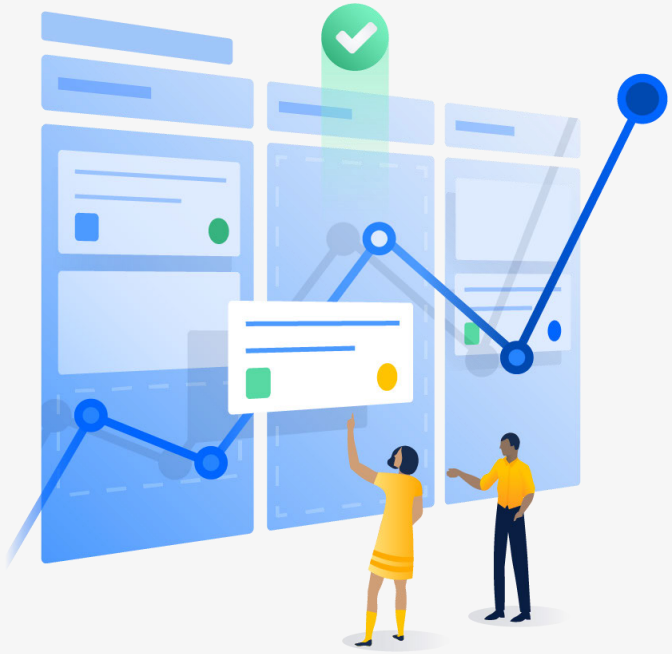
- Transportation Engineer
- Transportation, Planning, & Development (TP&D) - Design Section
- Laredo District

District Challenges

- Evaluation of Non-Freeway Resurfacing or Restoration Projects (2R)
- Data collection for the analysis
- Training personnel vs. One point of contact
- Keeping up with the latest evaluation tools
- Ideal project development phase for the analysis

Benefits

- User Friendly
- Visual representation of safety elements increasing safety score
- More than 1 design for multiple user evaluation
- Key elements and primary constraints



FAQs

- Question # 1:

Should statewide seal coat projects that include many segments and intersection with no difference between Design 1 and Existing scores be exempted?

FAQs

- Question # 2:

What should be done if the proposed Design 1 is less than the Existing score?

FAQs

- Question # 3:

How would you describe the ideal approach to using the safety scoring tool from the perspective of your district?

Questions?

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Ragab Mousa: Ragab.Mousa@txdot.gov
Cynthia Garcia: Cynthia.Garcia@txdot.gov