TSMO PROJECT PRIORITIZATION AND SELECTION













OHIO DEPARTMENT OF TRANSPORTATION

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TSMO Capital Program Manager
Office of Traffic Management

NOCoE
National Operations Center of Excellence

CASE STUDY

TSMO PROJECT SELECTION AND PRIORITIZATION

By Ohio Department of Transportation

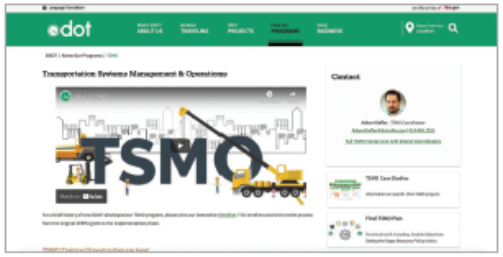
IN THIS CASE STUDY YOU WILL LEARN:

1. How ODOT generated a method to prioritize projects for a new TSMO Capital Program, the first new Capital Program created at ODOT in nearly 20 years.
2. How the program derived a data-driven metric to identify poor performing segments within the State Highway system.
3. How these efforts resulted in a dedicated budget line item for TSMO projects in FY 2019.

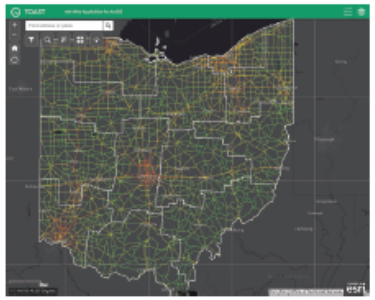
BACKGROUND

In 2013, the Ohio Department of Transportation (ODOT) was awarded a SHRP2 grant for key leadership personnel to embark on a nine-state benchmarking tour on TSMO. This led to the development of Ohio's TSMO Plan, aided by Gannett Fleming Consultants. The resulting TSMO plan identified a need to not only create a TSMO Capital Program to fund the design and construction of TSMO-specific projects, but to also incorporate TSMO considerations into other projects designed and funded under other existing DOT funding programs. Before making funds available for TSMO projects, Executive leadership created a new office, the Office of Traffic Management within the Division of Operations and each of the twelve regional Districts was assigned a designated District TSMO Coordinator.

The office was tasked with generating a method to prioritize projects for this new TSMO Capital Program. This would be the first new capital program created at ODOT in nearly 20 years, when the Highway Safety program was launched. The now $158 million Highway Safety Program has grown into one of the largest DOT safety programs in the country. It is unique because each District's Safety Review Team conducts the Safety Analyses and works with local governments to vet and submit safety applications for funding. This successful and District-driven structure was the ideal program to model the new TSMO funding program after. Additionally, ODOT Executive leadership encouraged TSMO concepts be prioritized in ODOT's Planning and Research projects to develop new strategies and technologies to the state.

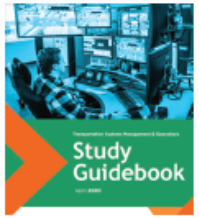


TSMO PROJECT SELECTION AND PRIORITIZATION



TSMO PLANNING, STRATEGIES AND DEPLOYMENT

The first task in developing the prioritization necessary for a new funding program was deriving a data-driven metric to identify poor performing segments within the State Highway system. In 2018 ODOT released its first annual Transportation Operations Assessment System Tool (TOAST); the Congestion version of the Highway Safety Maps. TOAST scores each roadway segment on Travel Time Performance, Bottlenecks, Incident Clearance Time, Secondary Crashes, Volume per Lane, Freight, and Safety Performance. With the poor performing segments and corridors identified and ranked, the District TSMO Coordinator can take a deeper dive into their problems and potential countermeasures. Given that nearly all of the District TSMO Coordinators did not come from a planning or design background, ODOT, consulted by Gannett Fleming, created the TSMO Guidebook. Modeled after an abbreviated Highway Safety Study, the Guidebook provides guidance on how to perform a TSMO study along with example studies, and a guide to reference problems with an appropriate countermeasure. Additionally, each countermeasure lists the typical Benefit-Cost range for TSMO treatments most likely to be utilized in Ohio.



The next stage in the development to prioritize funding for TSMO projects was to come up with a process to review and prioritize applications for funding. Along with half of the District TSMO Coordinators, each application is vetted by a committee of diverse, creative, and divergent leaders from various disciplines within ODOT, representing the Offices of Traffic Management, Traffic Operations, Roadway Engineering, Environmental Services, Construction Alternative Delivery, and the Highway Safety Program.

To ensure TSMO concepts have been considered and vetted for each project, including those that might not be targeting TSMO funding, it was practical to engage the District TSMO Coordinator in the earliest stages of project development. The ODOT Project Initiation Package (PIP), was modified to require review and approval of the TSMO Coordinator as the TSMO Subject Matter Expert, along with the other respective discipline's expert before advancing the project development process. To further factor in TSMO prioritization to other funding programs, TSMO is incorporated into the scoring process of some other programs. For example, ODOT's TRAC program, which is the council of external stakeholders who prioritize major projects, utilize TOAST scores as a tiebreaker in their selection of projects. ODOT's Statewide Planning and Research Program prioritizes research requests that are directly related to ODOT's TSMO and Smart Mobility efforts.

COMMUNICATIONS PLANNING AND EXECUTION

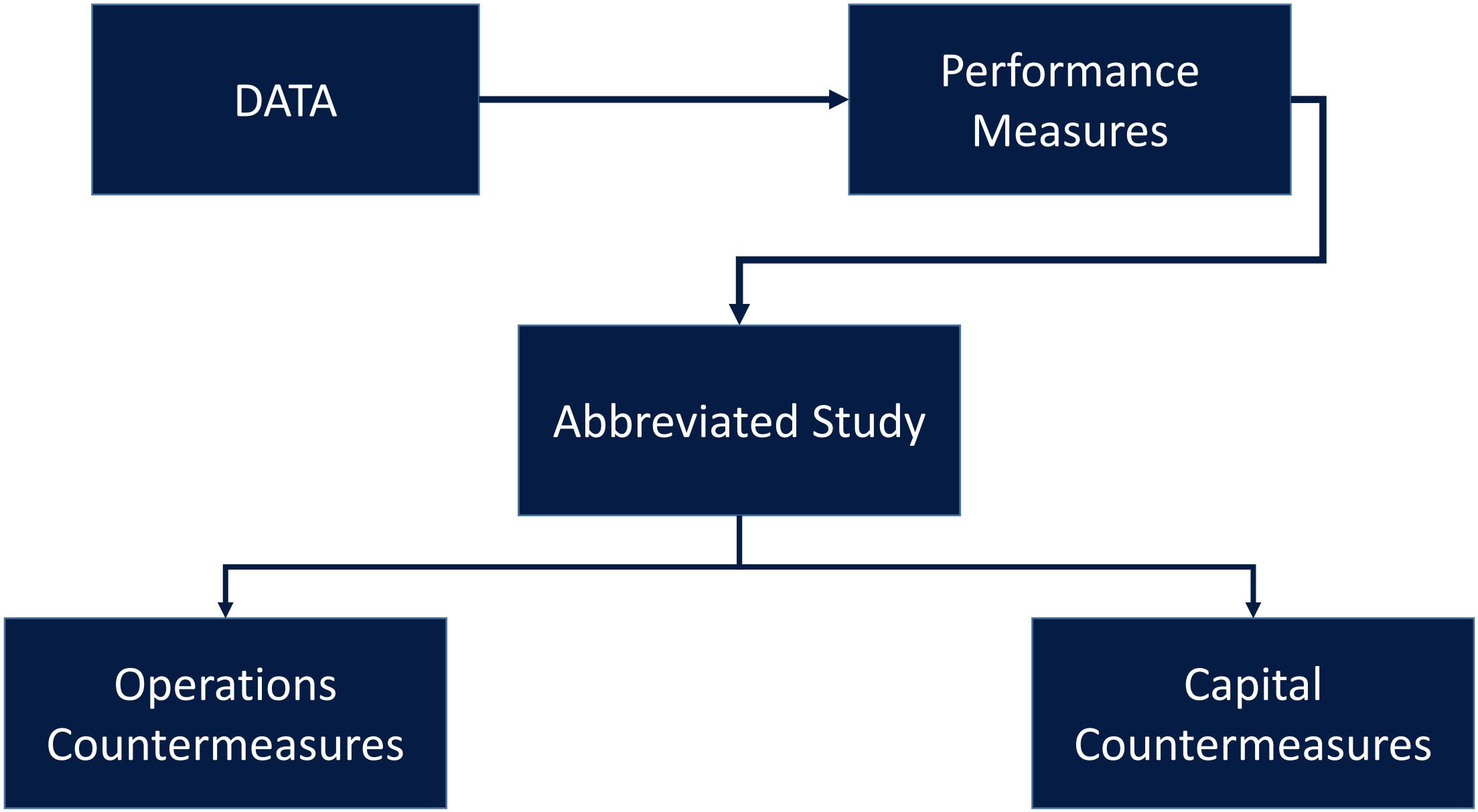
To develop ODOT's selection process, the Office of Traffic Management's TSMO Capital Program manager was seated as a member of the Highway Safety Application Scoring Committee to better understand the process and include TSMO-expertise within those project application's discussions. The project to develop the TSMO Guidebook created a Technical Advisory committee of diverse DOT employees from various disciplines. Several workshops were held to develop the core product thought the life of the project. This guidebook also serves as a reference manual for Consultant Engineering firms conducting TSMO studies on ODOT's behalf.

To market the success of TSMO projects, the Office of Traffic Management is creating a project-specific case

Setting the Stage

- Projects generally initiated & delivered by the District
  - ITS expansion initiated by CO ITS Maintenance team

- TSMO Plan Goal: TSMO Capital budget line item
  - Modeled after $158m HSIP
    - Safety Analyses conducted at Dist
    - Work with local to vet and submit applications for funding


DATA
Performance Measures
Abbreviated Study
Operations Countermeasures
Capital Countermeasures

Data, Data, Data

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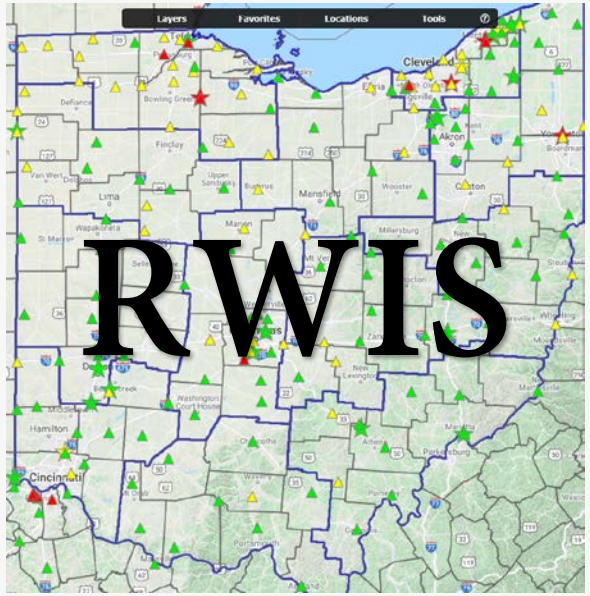
OHGO inSIGHT ATMS



STATE OF OHIO DEPARTMENT OF TRANSPORTATION

StateFarm SAFETY PATROL

INRIX

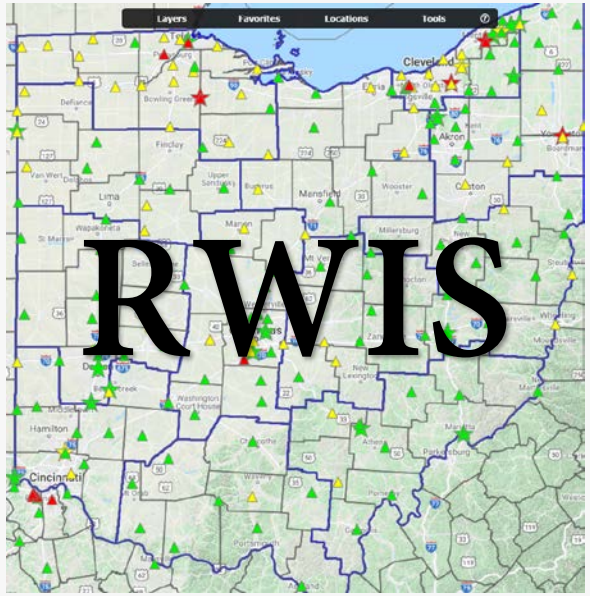
Ohio Department of Public Safety

TRAFFIC CRASH REPORT

Why?

BUCKEYE TRAFFIC .org

OHGO inSIGHT ATMS



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StateFarm SAFETY PATROL

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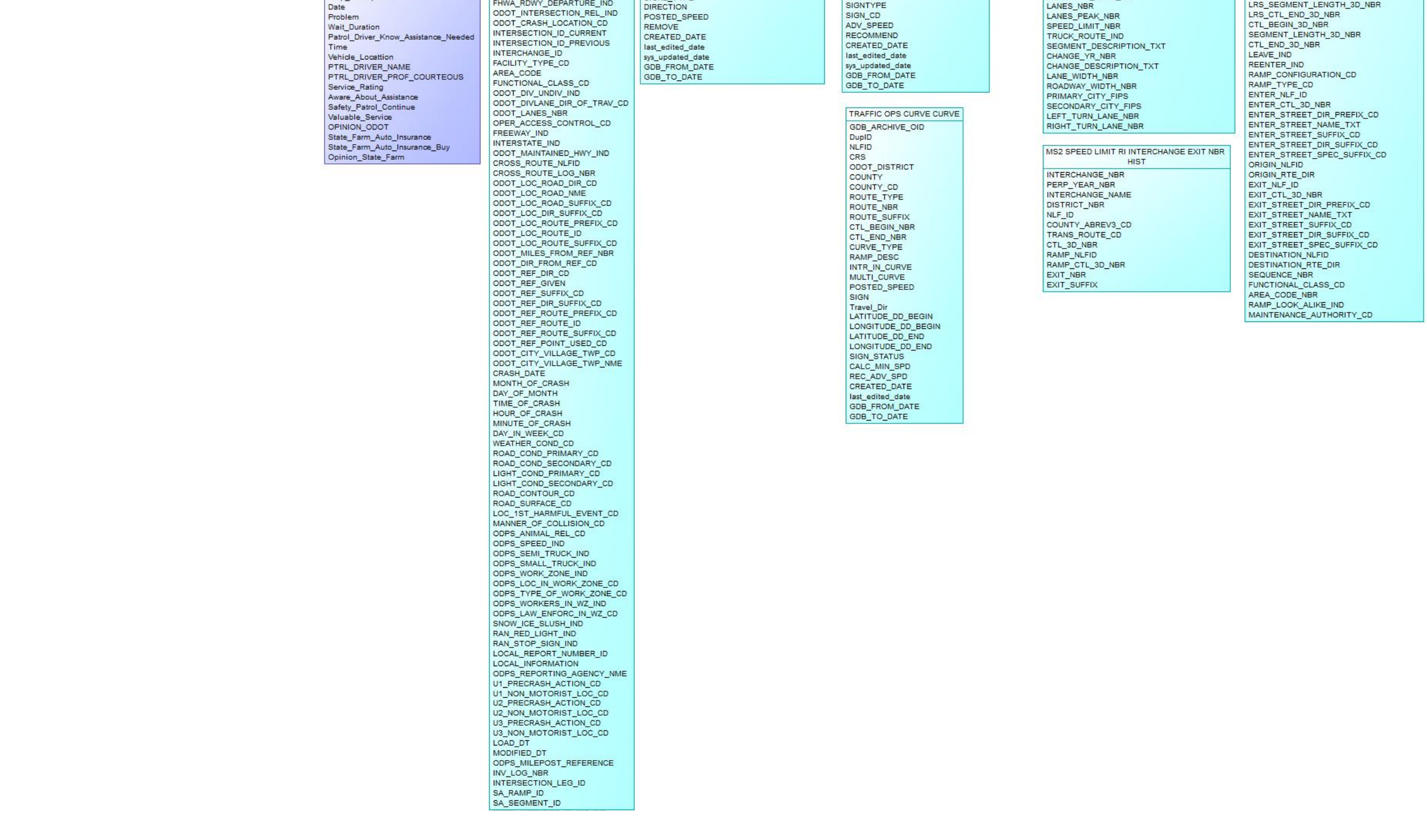
TRAFFIC CRASH REPORT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Wait_Duration
Patrol_Driver_Know_Assistance_Needed
Time
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PTRL_DRIVER_NAME
PTRL_DRIVER_PROF_COURTEOUS
Service_Rating
Aware_About_Assistance
Safety_Patrol_Continue
Valuable_Service
OPINION_ODOT
State_Farm_Auto_Insurance
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DAY_OF_MONTH
TIME_OF_CRASH
HOUR_OF_CRASH
MINUTE_OF_CRASH
DAY_IN_WEEK_CD
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ROAD_SURFACE_CD
LOC_1ST_HARMFUL_EVENT_CD
MANNER_OF_COLLISION_CD
ODPS_ANIMAL_REL_CD
ODPS_SPEED_IND
ODPS_SEMI_TRUCK_IND
ODPS_SMALL_TRUCK_IND
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SA_SEGMENT_ID
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SIGN_CD
ADV_SPEED
RECOMMEND
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GDB_TO_DATE
TRAFFIC OPS CURVE CURVE
GDB_ARCHIVE_OID
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SECONDARY_CITY_FIPS
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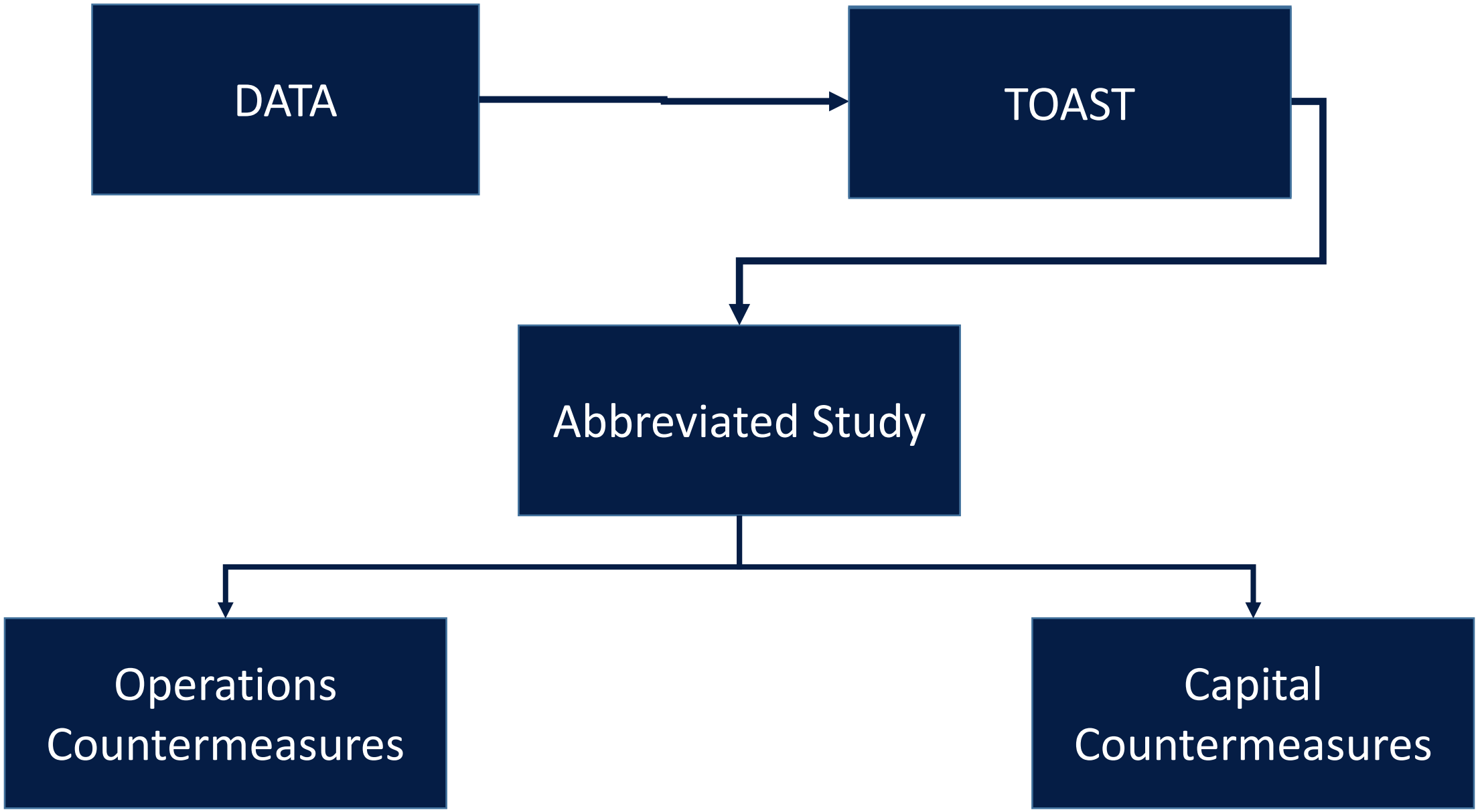
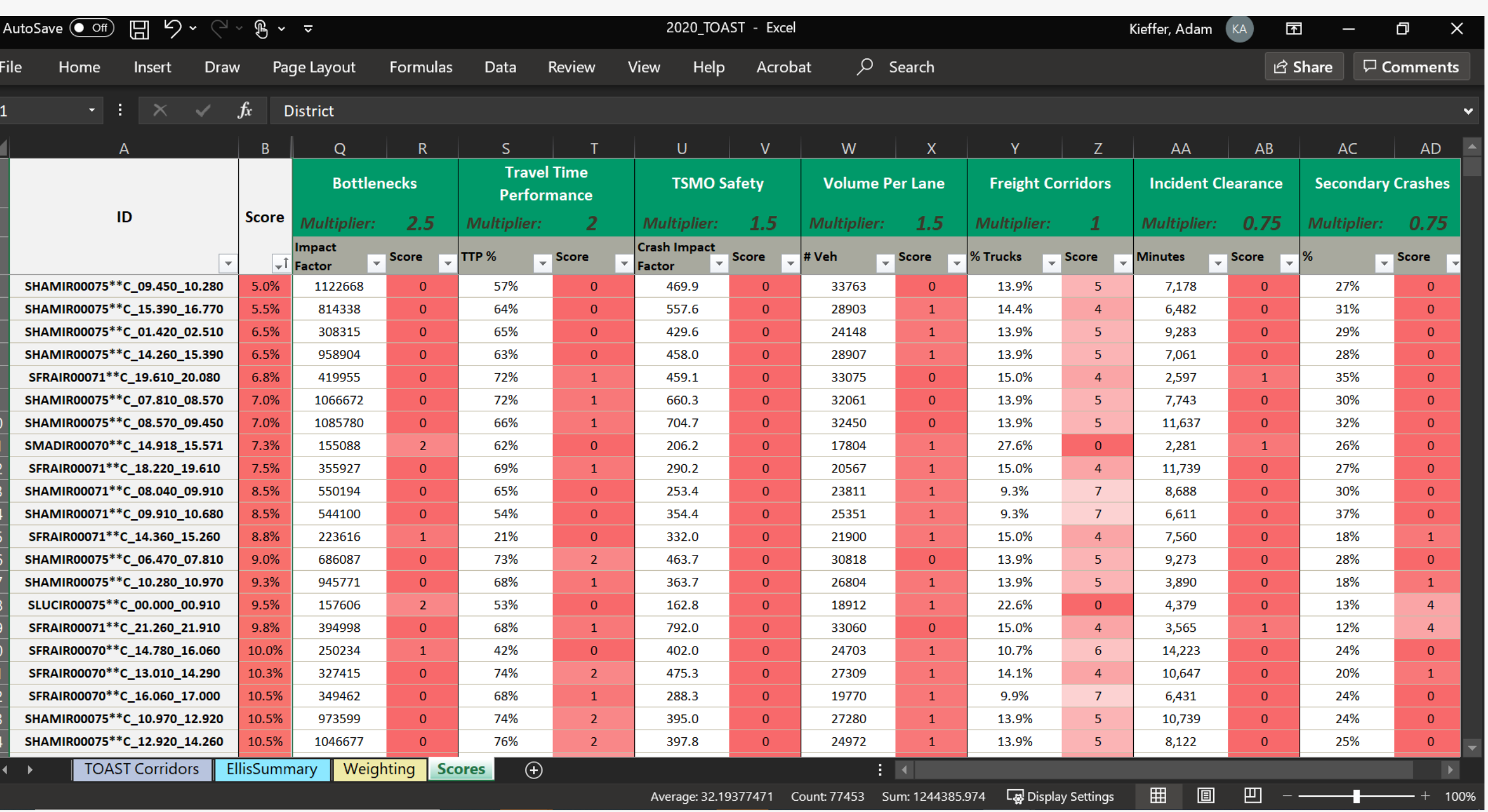

DATA
TOAST
Abbreviated Study
Operations Countermeasures
Capital Countermeasures

TOAST Metrics

1. Bottlenecks
2. Travel Time Performance
3. TSMO Safety
4. Volume per Lane
5. Freight Corridor
6. Incident Clearance
7. Secondary Crashes



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District

ID	Score	Bottlenecks Multiplier: 2.5		Travel Time Performance Multiplier: 2		TSMO Safety Multiplier: 1.5		Volume Per Lane Multiplier: 1.5		Freight Corridors Multiplier: 1		Incident Clearance Multiplier: 0.75		Secondary Crashes Multiplier: 0.75	
		Impact Factor	Score	TTP %	Score	Crash Impact Factor	Score	# Veh	Score	% Trucks	Score	Minutes	Score	%	Score
SHAMIR00075**C_09.450_10.280	5.0%	1122668	0	57%	0	469.9	0	33763	0	13.9%	5	7,178	0	27%	0
SHAMIR00075**C_15.390_16.770	5.5%	814338	0	64%	0	557.6	0	28903	1	14.4%	4	6,482	0	31%	0
SHAMIR00075**C_01.420_02.510	6.5%	308315	0	65%	0	429.6	0	24148	1	13.9%	5	9,283	0	29%	0
SHAMIR00075**C_14.260_15.390	6.5%	958904	0	63%	0	458.0	0	28907	1	13.9%	5	7,061	0	28%	0
SFRAIR00071**C_19.610_20.080	6.8%	419955	0	72%	1	459.1	0	33075	0	15.0%	4	2,597	1	35%	0
SHAMIR00075**C_07.810_08.570	7.0%	1066672	0	72%	1	660.3	0	32061	0	13.9%	5	7,743	0	30%	0
SHAMIR00075**C_08.570_09.450	7.0%	1085780	0	66%	1	704.7	0	32450	0	13.9%	5	11,637	0	32%	0
SMADIR00070**C_14.918_15.571	7.3%	155088	2	62%	0	206.2	0	17804	1	27.6%	0	2,281	1	26%	0
SFRAIR00071**C_18.220_19.610	7.5%	355927	0	69%	1	290.2	0	20567	1	15.0%	4	11,739	0	27%	0
SHAMIR00071**C_08.040_09.910	8.5%	550194	0	65%	0	253.4	0	23811	1	9.3%	7	8,688	0	30%	0
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TOAST Corridors | EllisSummary | Weighting | Scores

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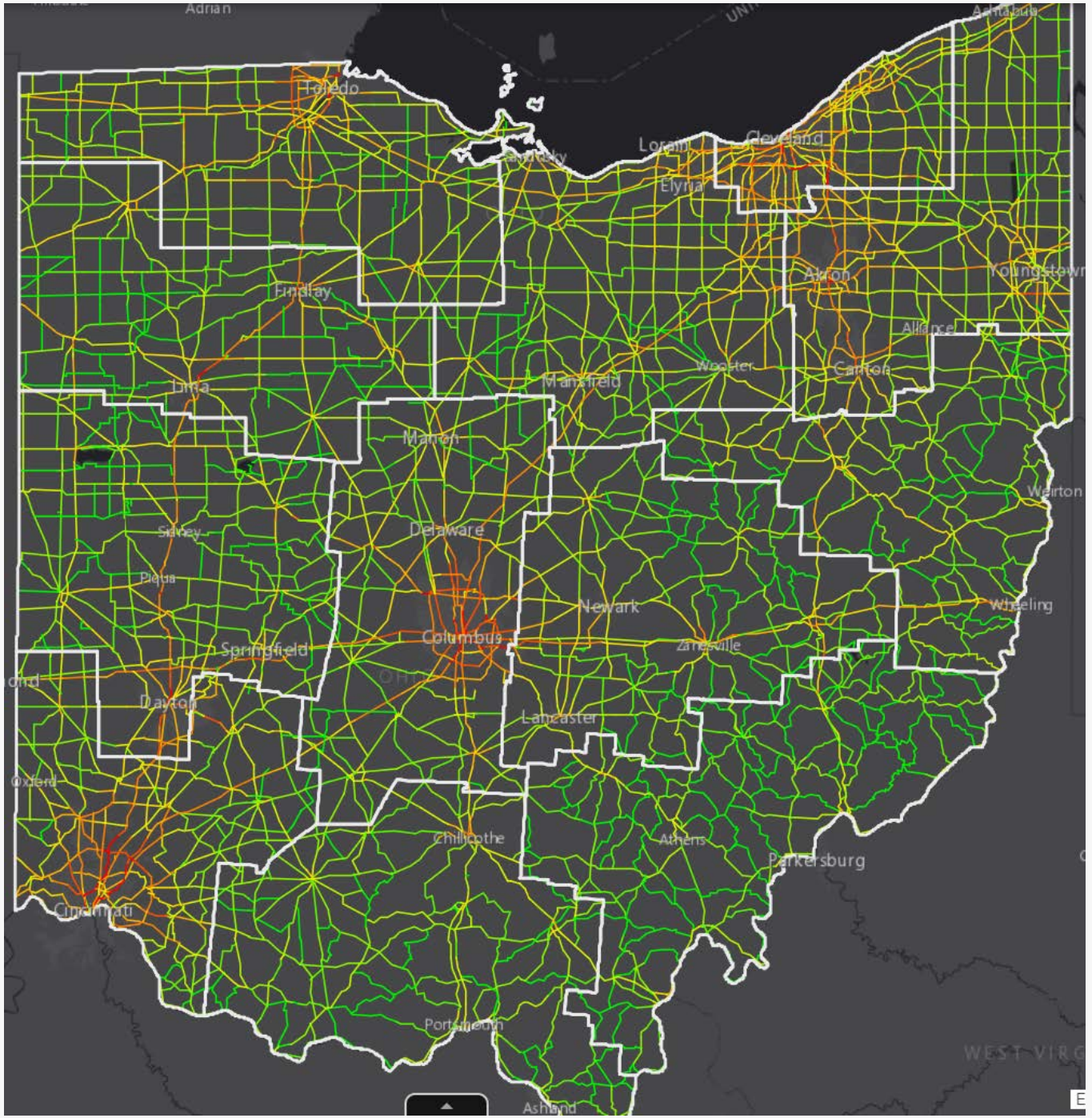
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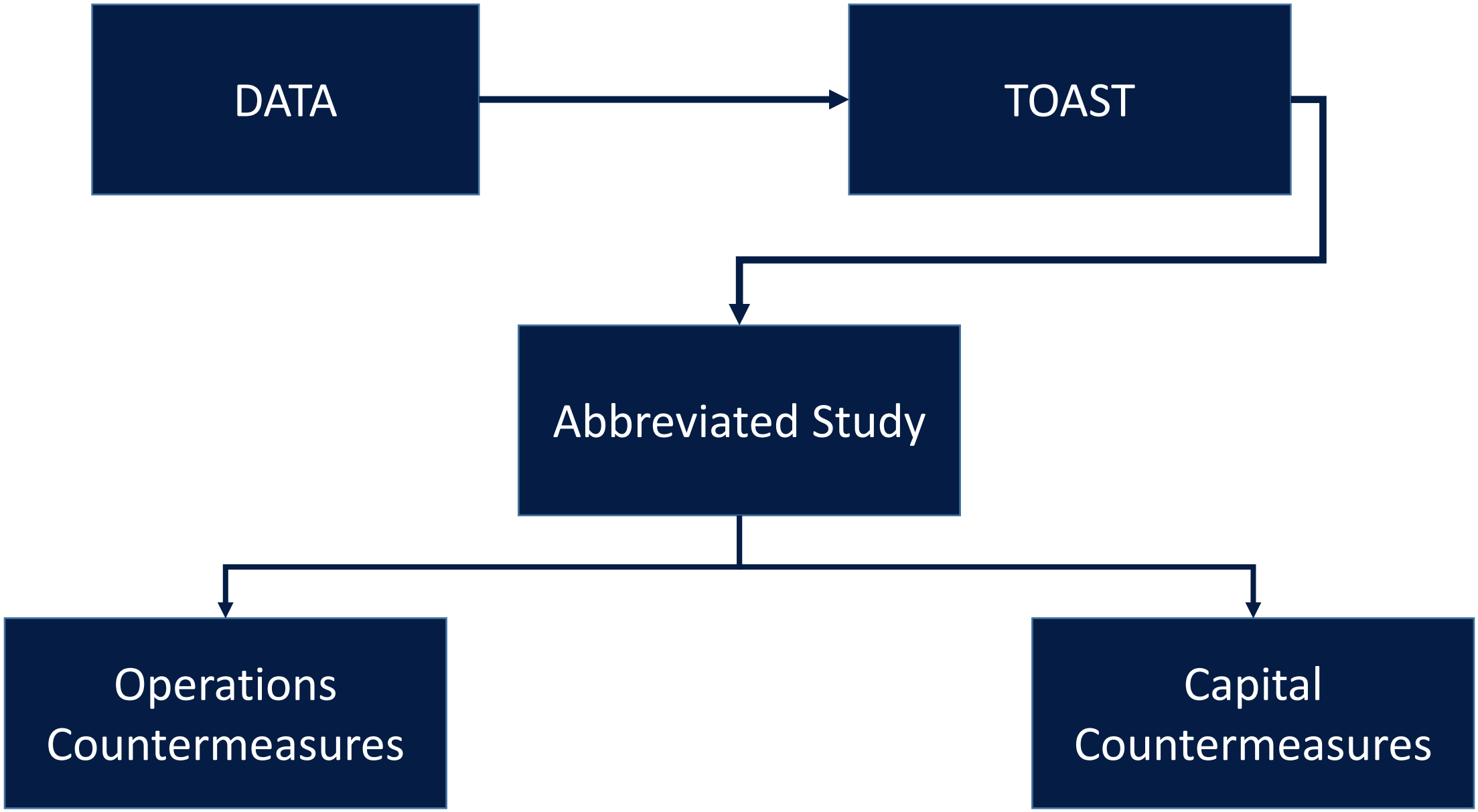
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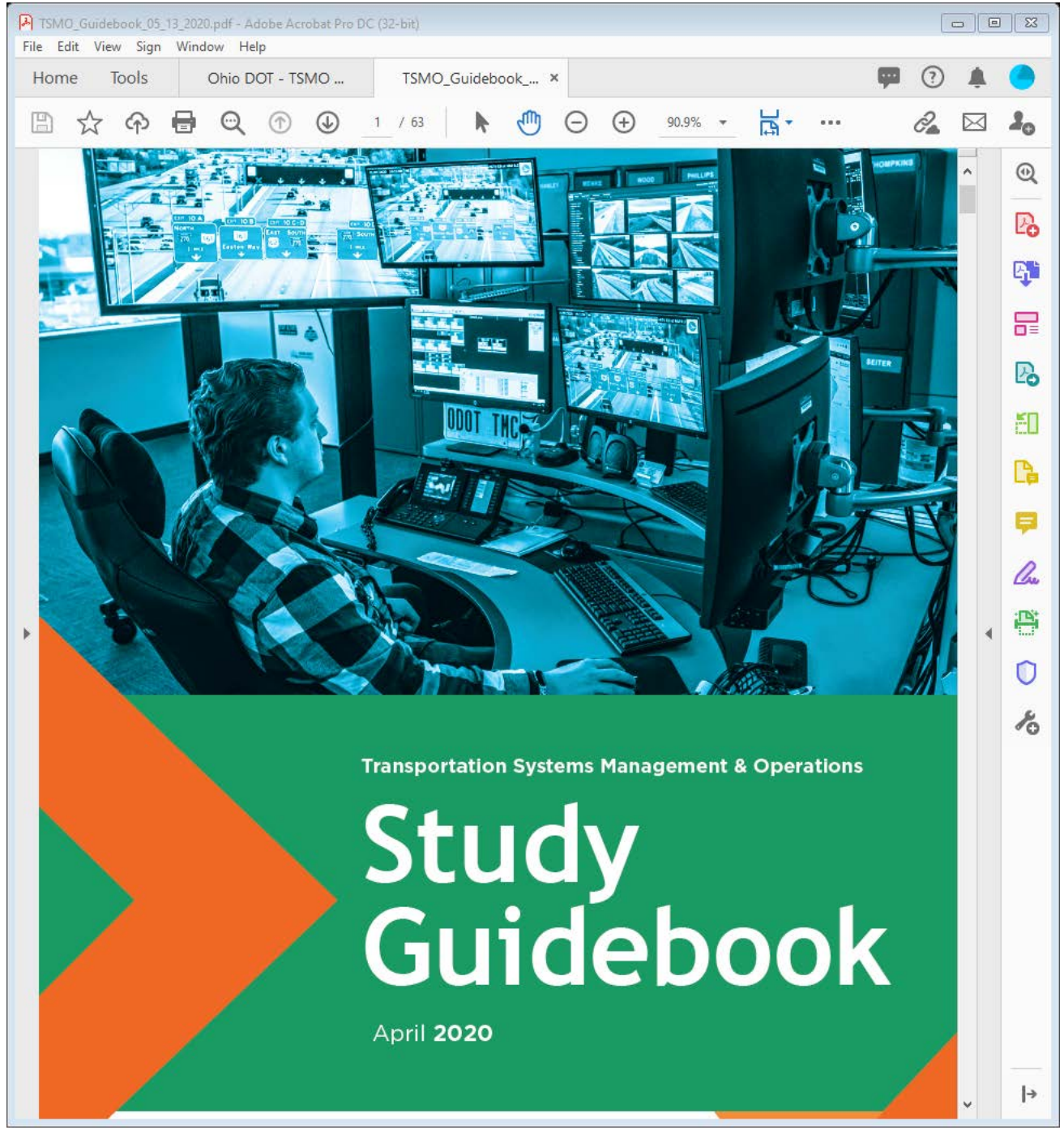
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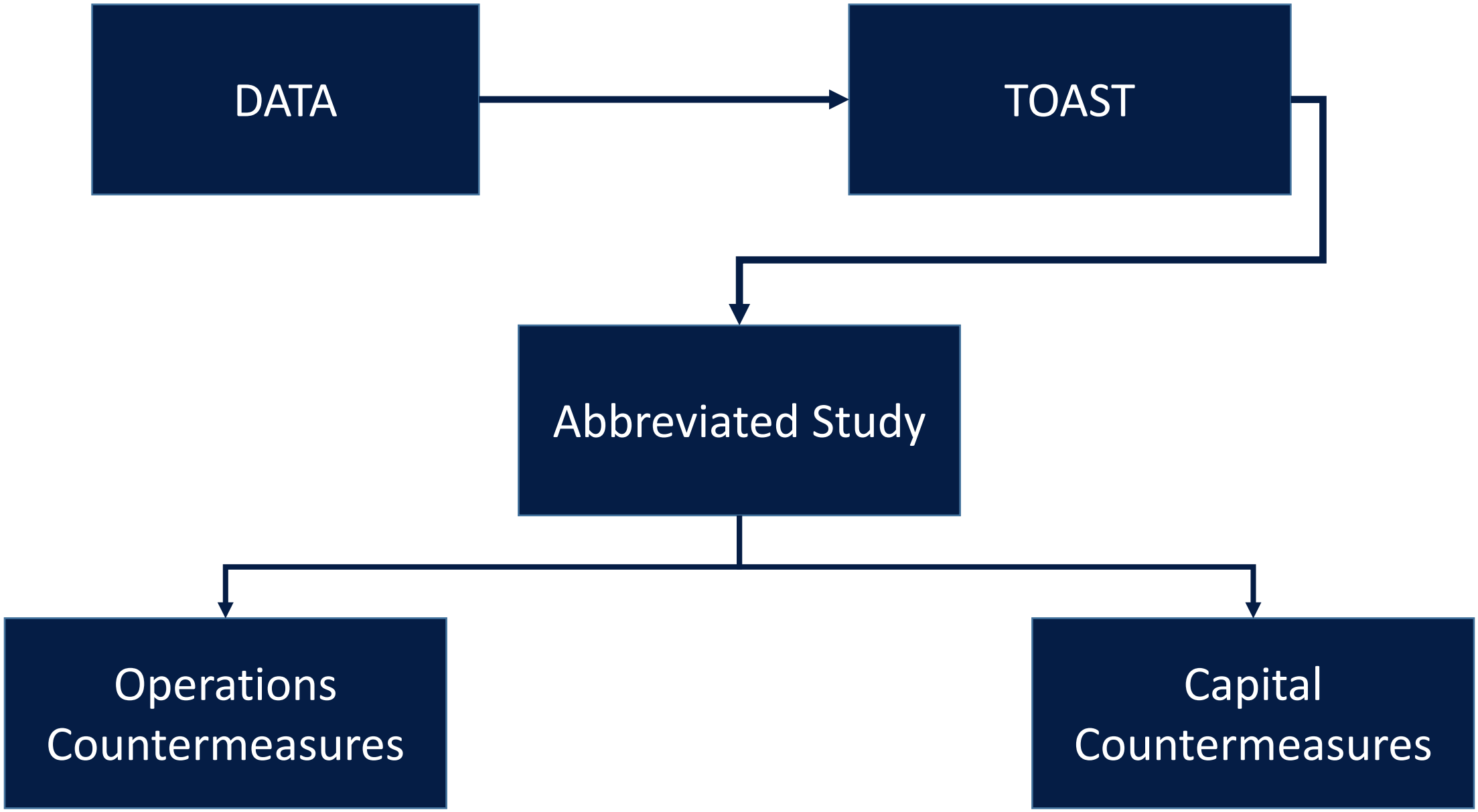
ODOT TMC
Transportation Systems Management & Operations
Study Guidebook
April 2020

GENERAL STUDY OUTLINE

- Title Page
- One-Page Summary
- Purpose
- Existing Conditions
  - TOAST Scoring Details
- Probable Causes/Countermeasures
  - Capacity Analysis
  - Safety Analysis
- Benefit/Cost Analysis
- Recommendations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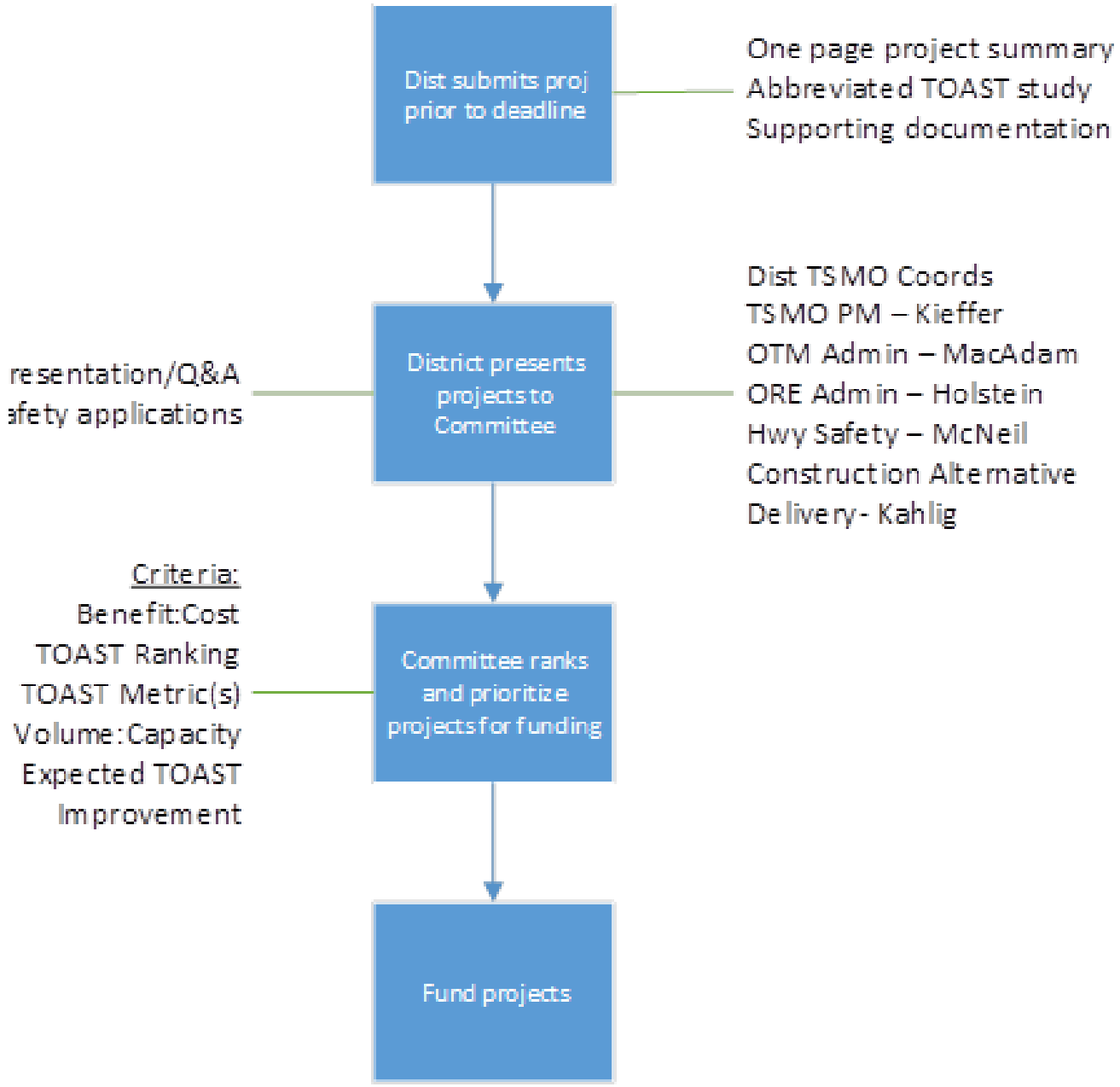
ELIGIBLE ACTIVITIES

- ITS devices and incidentals
- Preliminary Engineering
- Environmental
- Detailed Design
- Right of Way
- Construction

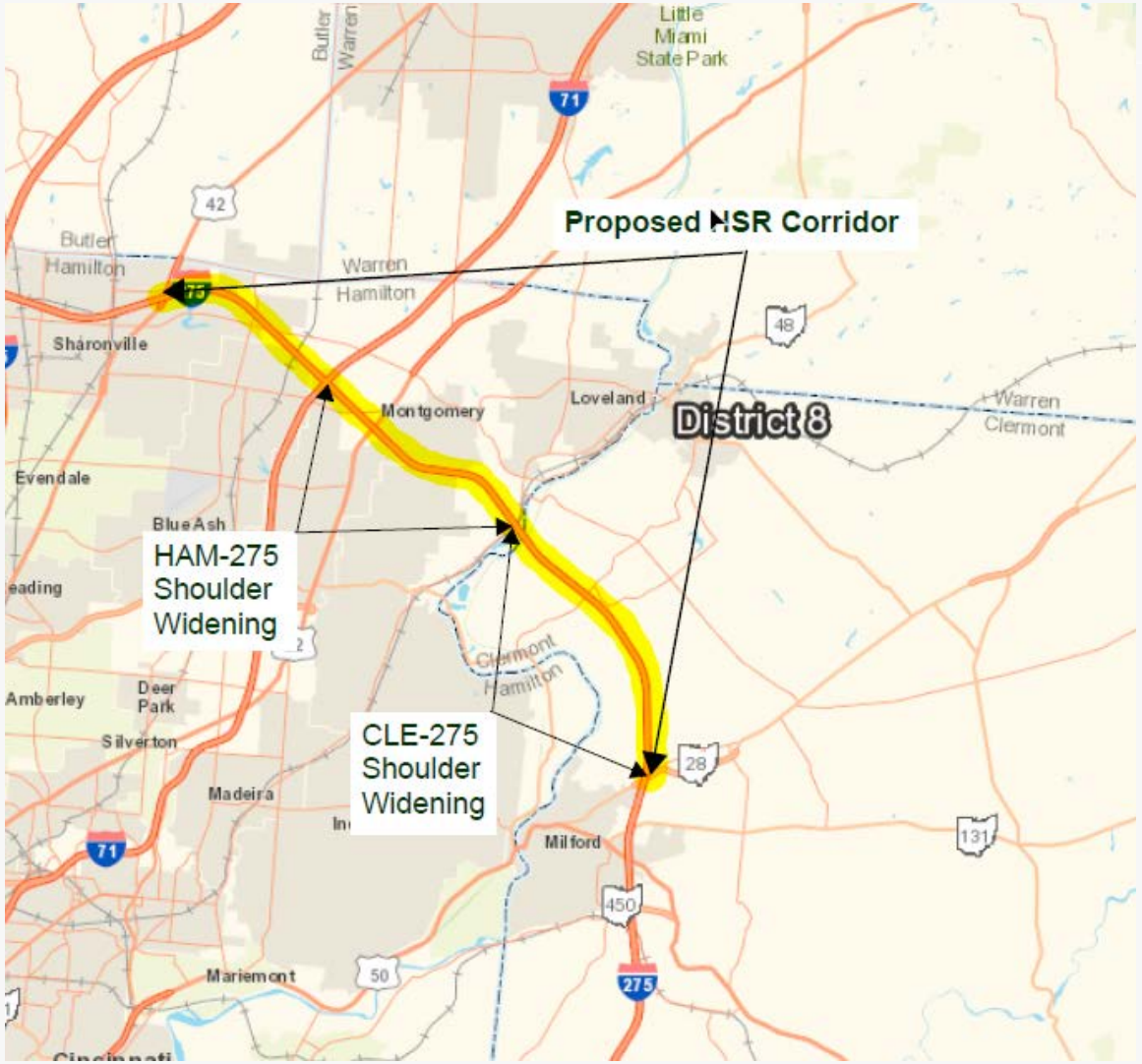

Sink or Swim.
SHARK TANK


Dist submits proj prior to deadline
One page project summary
Abbreviated TOAST study
Supporting documentation
District presents projects to Committee
resentation/Q&A
afety applications
Dist TSMO Coords
TSMO PM – Kieffer
OTM Admin – MacAdam
ORE Admin – Holstein
Hwy Safety – McNeil
Construction Alternative Delivery- Kahlig
Criteria:
Benefit:Cost
TOAST Ranking
TOAST Metric(s)
Volume:Capacity
Expected TOAST Improvement
Committee ranks and prioritize projects for funding
Fund projects

TSMO

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS

Making Our System Work Better



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