

Highway Needs Analysis – **Network Scoring**

Regional Transportation Operations Coalition

3/17/2015

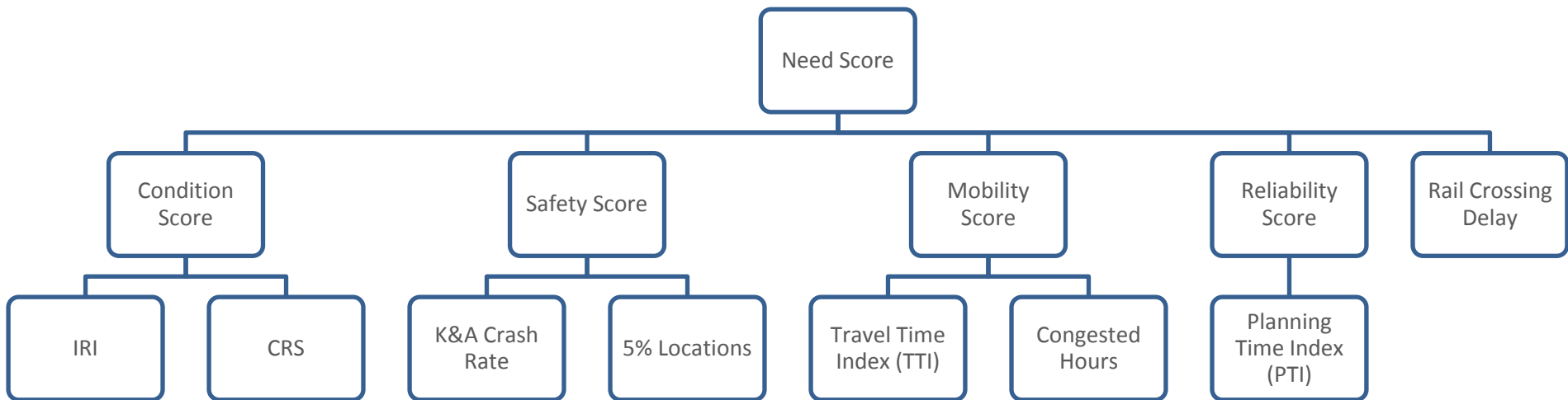
Overview

1. Measuring highway performance
2. Need factors
3. Scoring highway segments/intersections on a network

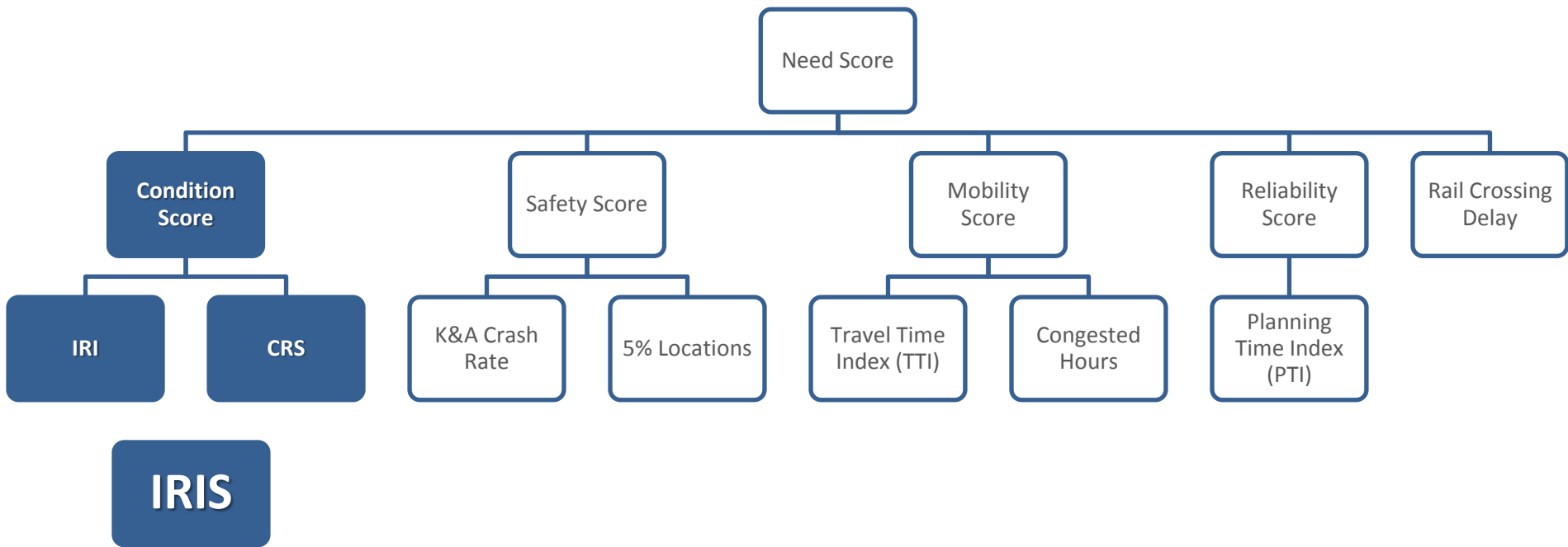
Measuring highway performance

- Major focus at CMAP on measuring and comparing needs on transportation system
- Lots of observed data available now
- Concept:
 - Simple scoring of network based on mobility, reliability, condition, and safety needs
 - Locations where investment is needed may be prioritized based on planning factors
 - Can be adapted to score projects
- Restrict initially to NHS + SRA system

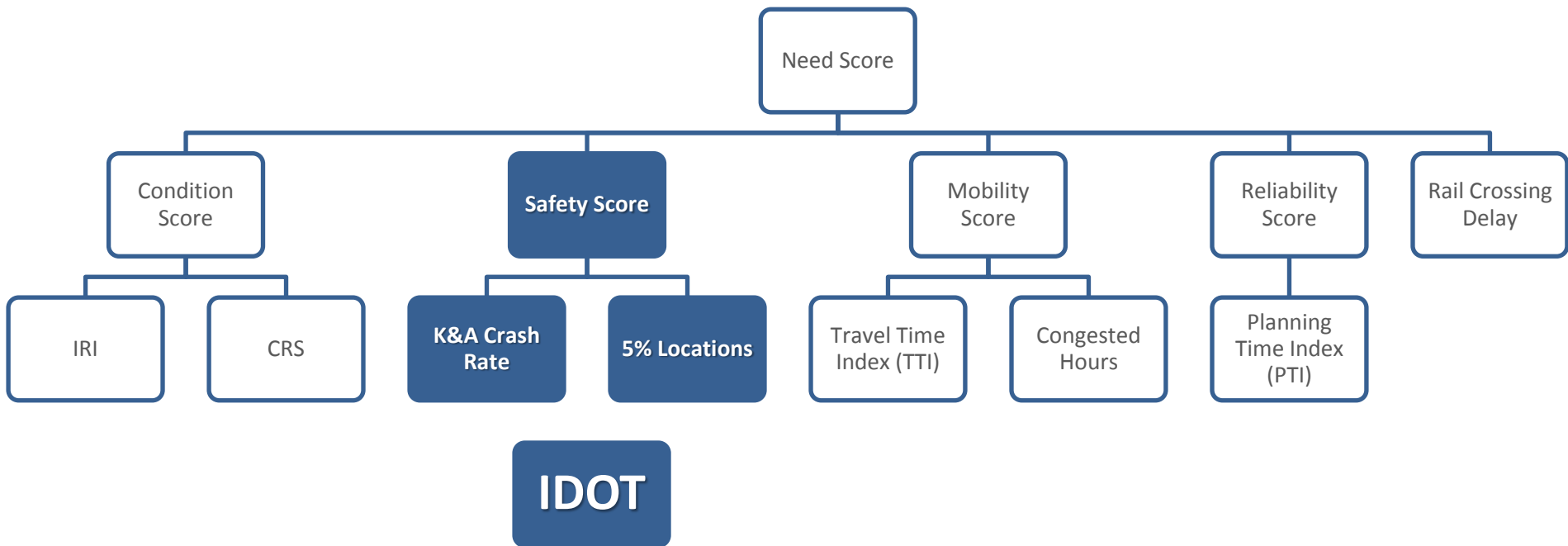
Need factors



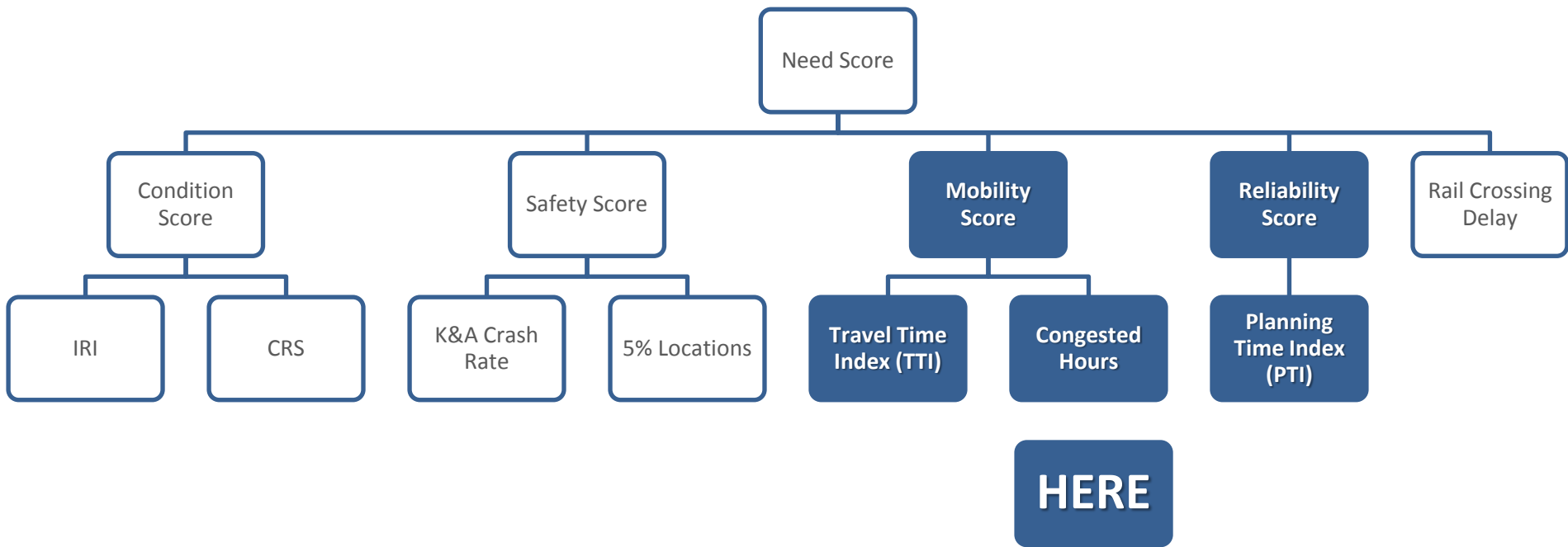
Need factors



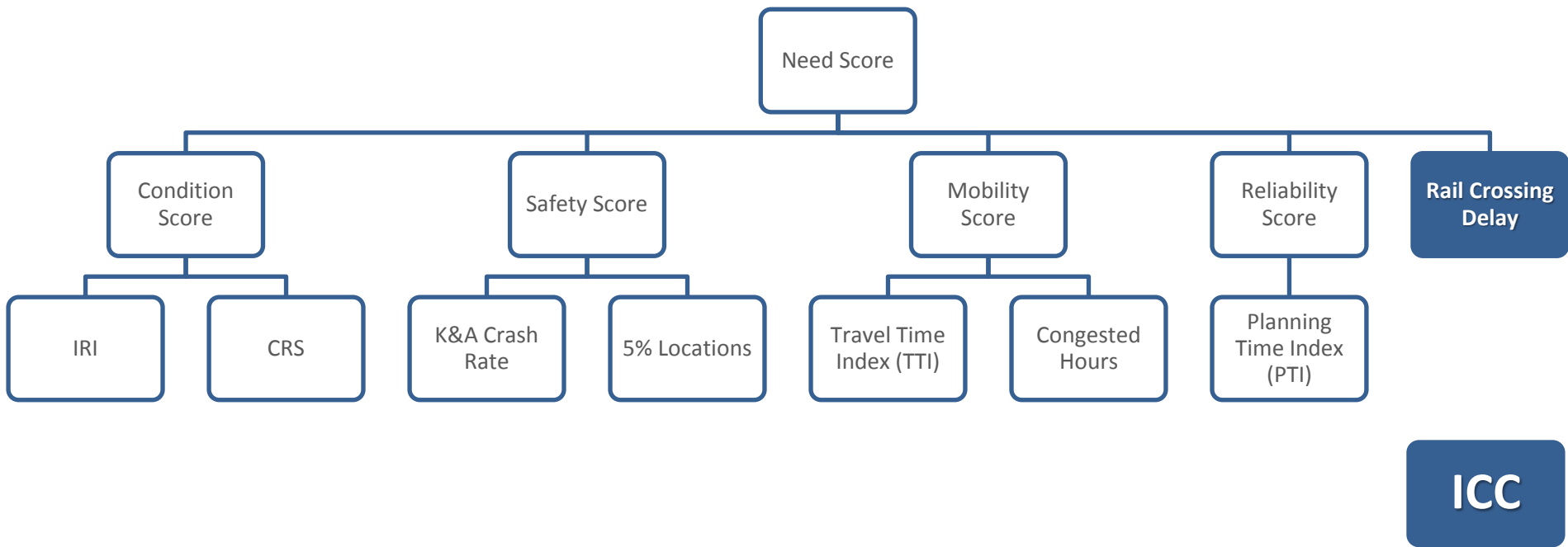
Need factors



Need factors



Need factors



Network Scoring Process

1. Base scores indexed 0 – 100

- MAX = 95th percentile value

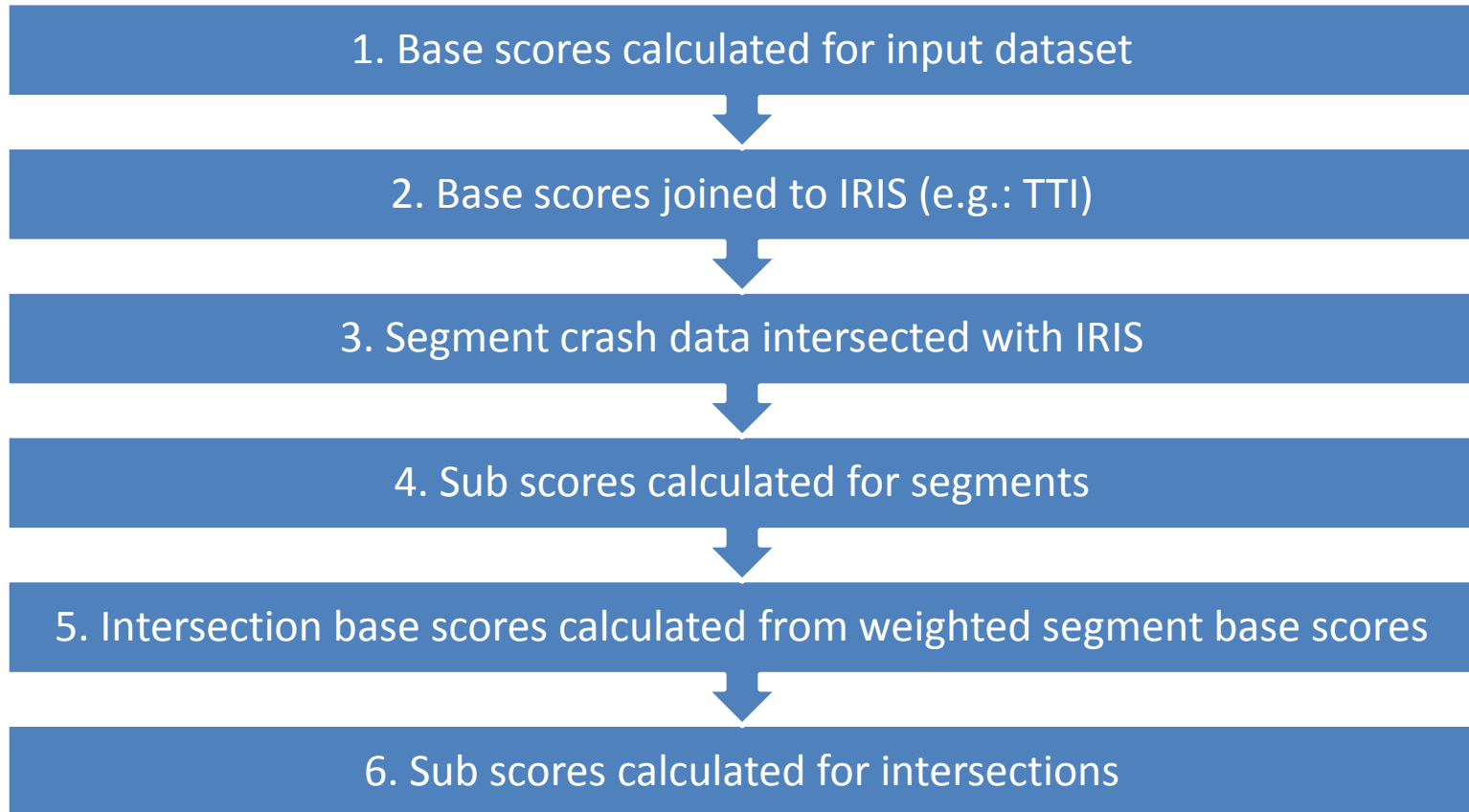
2. Sub scores calculated from weighted base scores

- Condition Score = .8 (CRS Score) + .2 (IRI Score)
- Safety Score = Crash Score, with 5% locations always = 100
- Mobility Score = .5 (TTI Score) * .5 (Congested Hours Score)
- Reliability Score = PTI Score

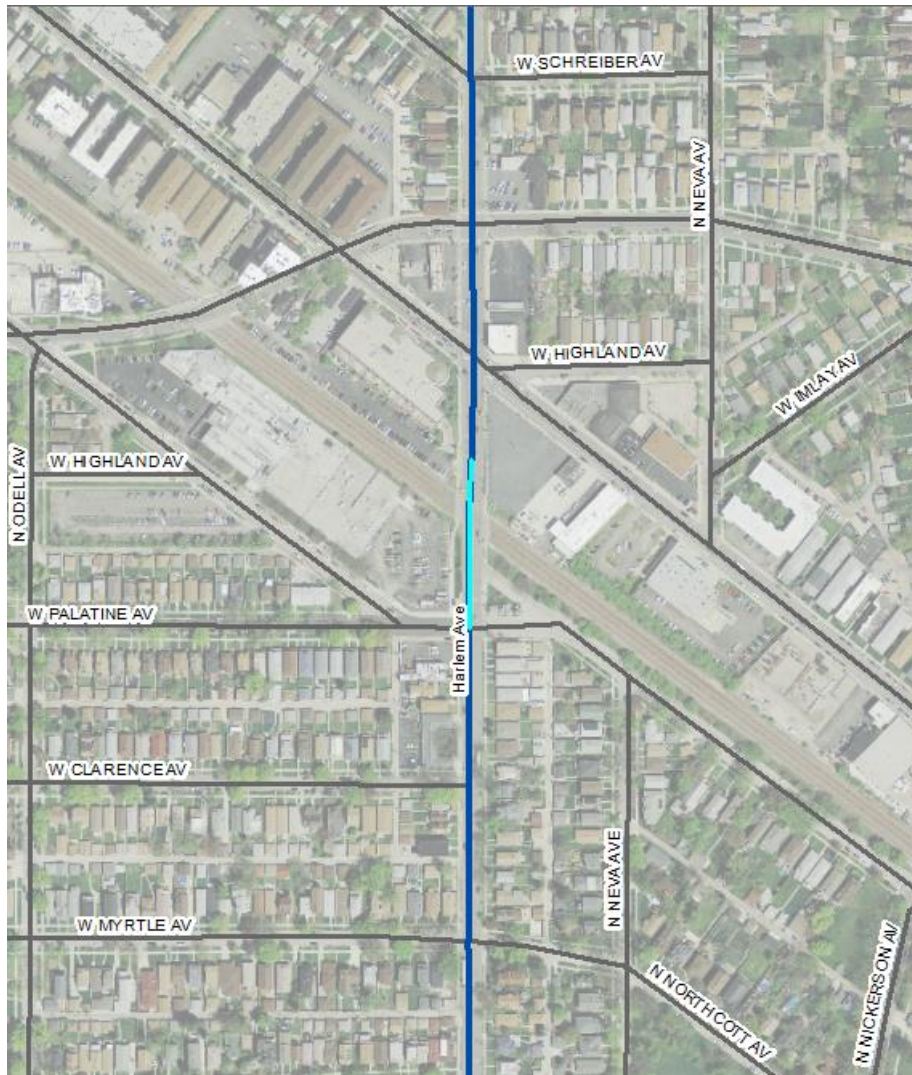
3. Overall Need Score =

- Condition Score + Safety Score + Mobility Score + Reliability Score
- Grade crossing delay bonus
- Sub-scores not currently weighted, but could be

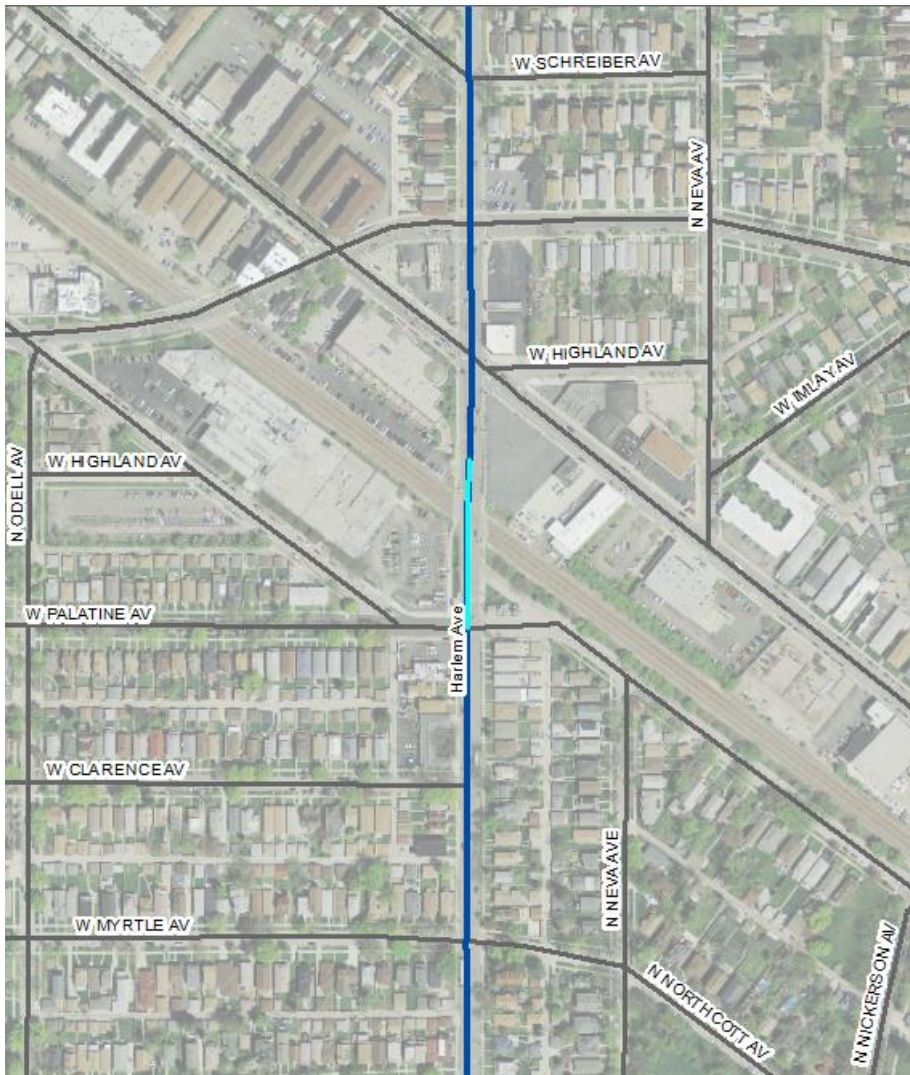
Network Scoring Process



Network Scoring – example



Network Scoring – example

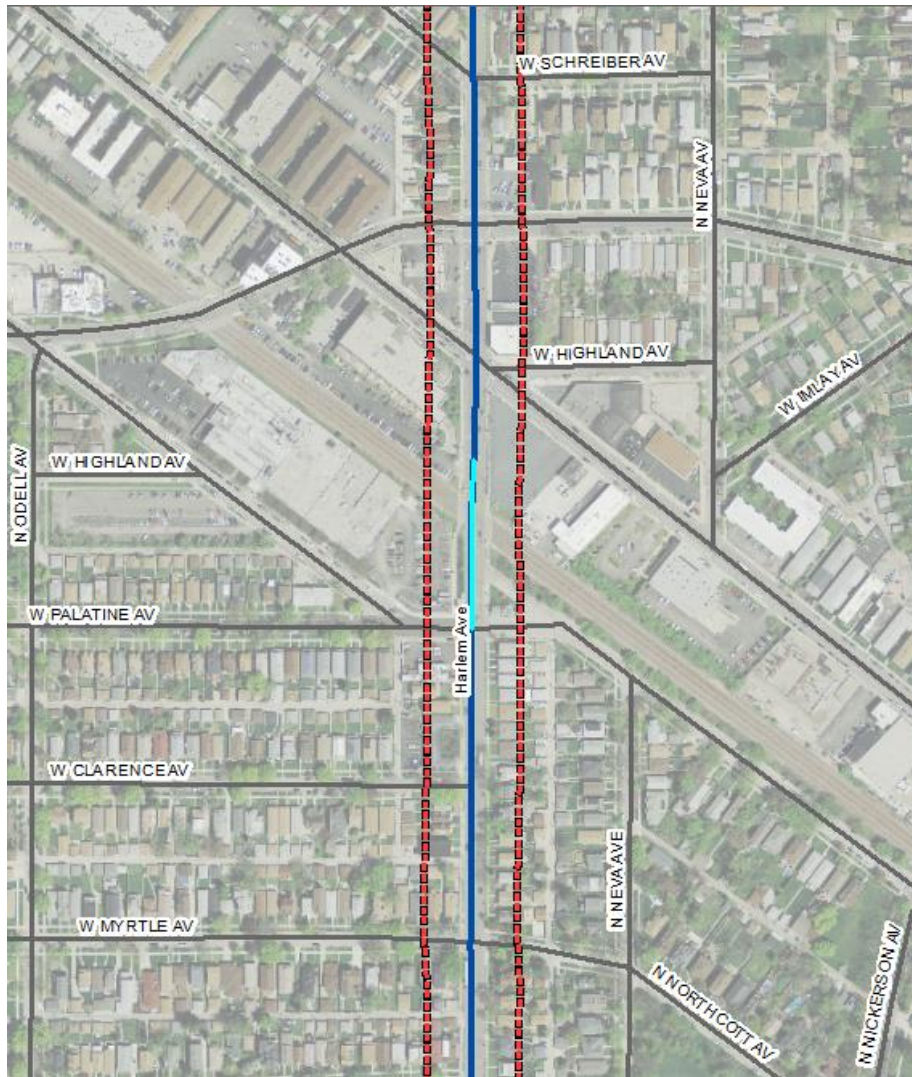


- CRS_LOW = 5.2
- CRS Score = 56

- IRI_LOW = 346
- IRI Score = 100

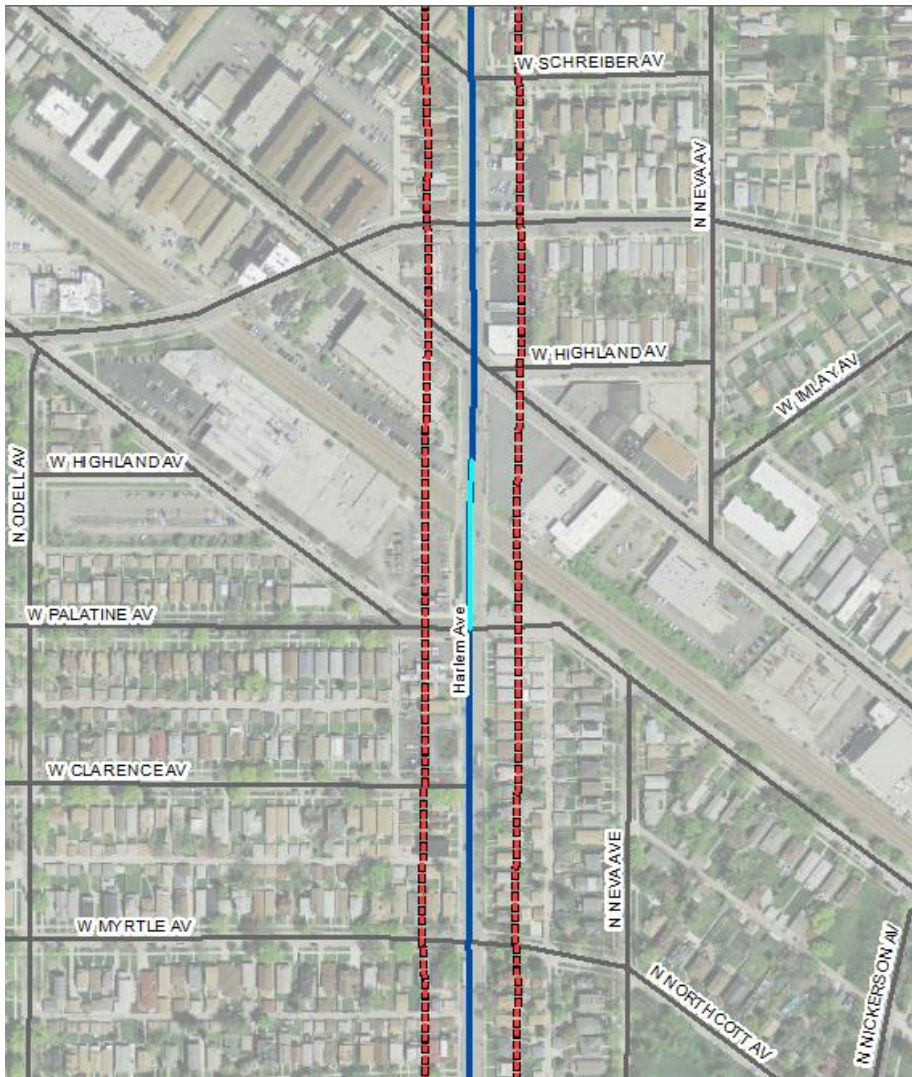
- K or A Crashes = 0

Network Scoring – example



- CRS_LOW = 5.2
- CRS Score = 56
- IRI_LOW = 346
- IRI Score = 100
- K or A Crashes = 0
- Not a 5% location
- TTI (max) = 1.335
- TTI Score = 64
- Congested Hours = 3.34
- Congestion Score = 49
- PTI (max) = 2.778
- PTI Score = 46

Network Scoring – example



- CRS_LOW = 5.2
- CRS Score = 56

- IRI_LOW = 346
- IRI Score = 100

Condition Score = 65

- K or A Crashes = 0
- Not a 5% location

Safety Score = 0

- TTI (max) = 1.335
- TTI Score = 64

- Congested Hours = 3.34
- Congestion Score = 49

Mobility Score = 56

- PTI (max) = 2.778
- PTI Score = 46

Reliability Score = 46

Network Scoring – example

Overall Need Score =

- Condition Score + Safety Score + Mobility Score + Reliability Score
- $65 + 0 + 56 + 46 = 167$
- Grade crossing delay bonus
- $167 + 14 = 181$

Network Scoring – calculation details

- Crash data
 - Analyze K or A crashes over 5-year sample period
 - Crashes per 100-million VMT
 - Minimum thresholds for Crashes and VMT to control outlier values
- TTI, PTI and Congestion
 - Bi-directional maximum
 - AM/PM peak maximum
- Structurally deficient bridges
 - Bridge score calculated for segments
 - *Not included in Overall Need Score*

Network Scoring – calculation details

- Construction projects (since 2012)
 - Not reflected in this analysis
 - Effect on scoring – ongoing vs. completed project
- Records with no data

Next steps

- Questions and comments