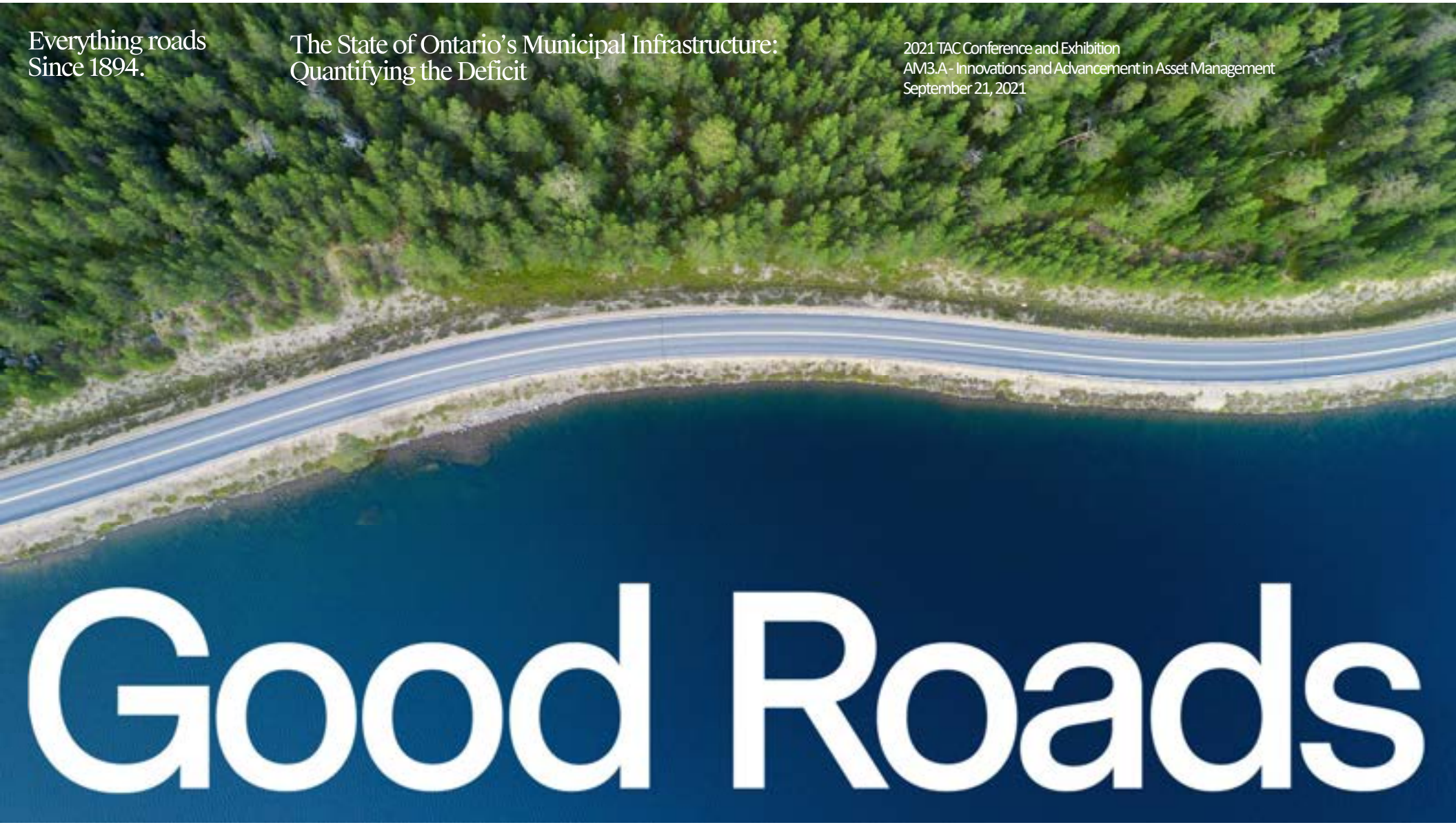
Everything roads
Since 1894.

The State of Ontario's Municipal Infrastructure: Quantifying the Deficit

2021 TAC Conference and Exhibition
AM3.A - Innovations and Advancement in Asset Management
September 21, 2021



Outline.

- Background
- Ontario Infrastructure Deficit Project
    - Methodology and Values
- Monte Carlo Simulations
- Next Steps
- Conclusions

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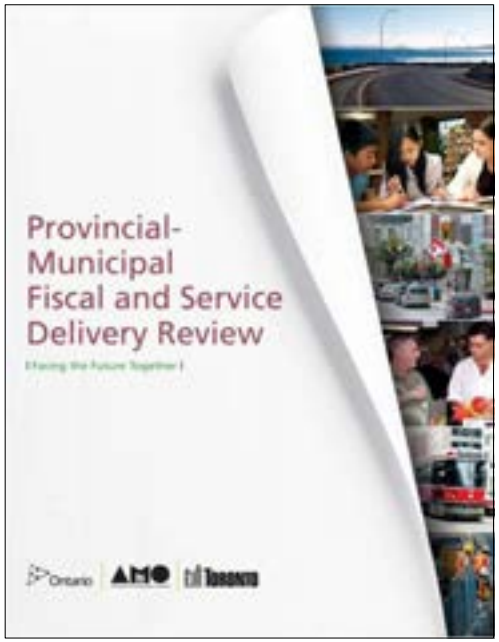
Background.

The report *Provincial-Municipal Fiscal and Service Delivery Review: Facing the Future Together* (2008) estimated Ontario's infrastructure.

- $60B, all infrastructure
- $28B, roads and bridges/culverts only

OGRA's study looks to validate/update/improve upon this value.



Background.

Seven Questions of Asset Management

1. What do I have and where is it located?
2. What is it worth?
3. What is its condition and remaining service life?
4. What needs to be done?
5. When do I need to do it?
6. How much will it cost?
7. How do I ensure accountability?

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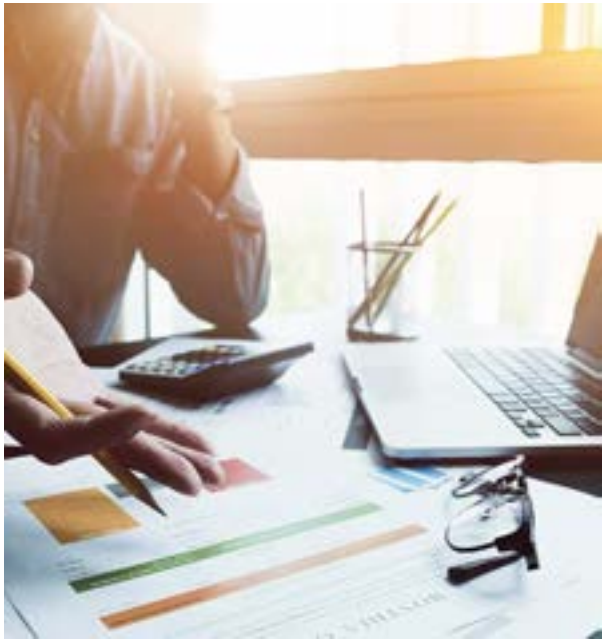
Ontario Infrastructure Deficit Project.

Methodology

Extract key data/information from the existing municipal Asset Management Plans (AMPs) prepared by Ontario municipalities.

Combine it with engineering economic principles and expert knowledge.

Refine through mathematical modelling and simulation.



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Asset Management Question #1.

What do I own and where is it located?

Previous municipal estimates.

2013
- 301,886 lane kilometres
- ~25,000 structures

1995
- 273,982 lane kilometres
- ~17,400 structures

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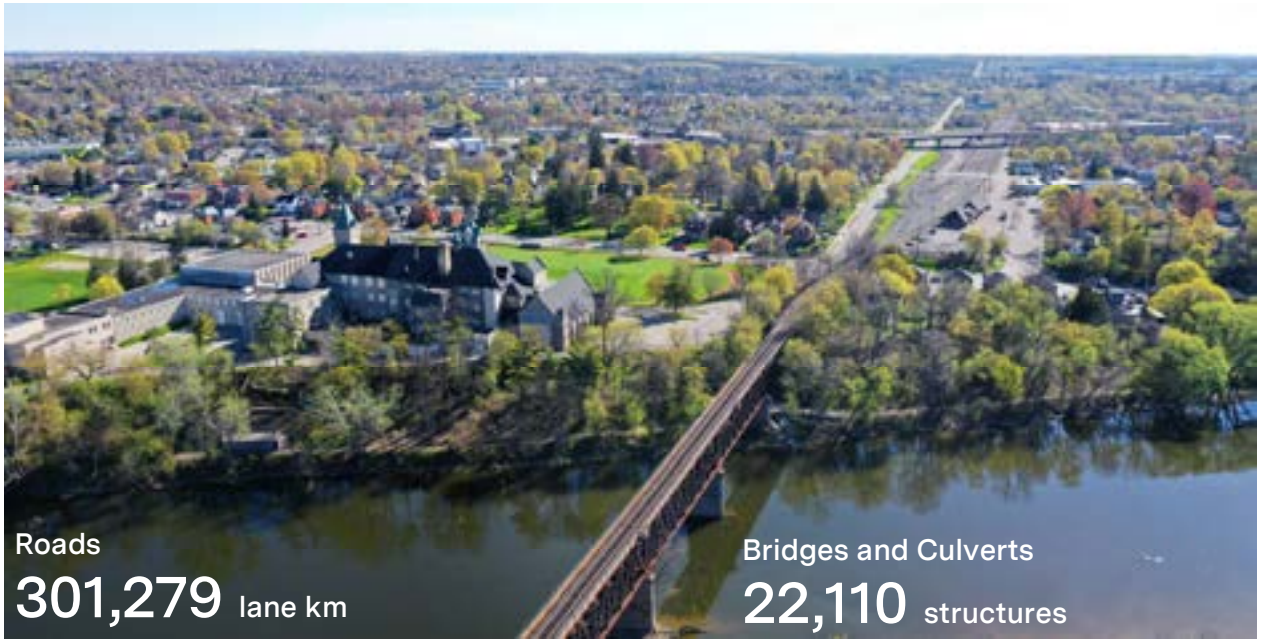
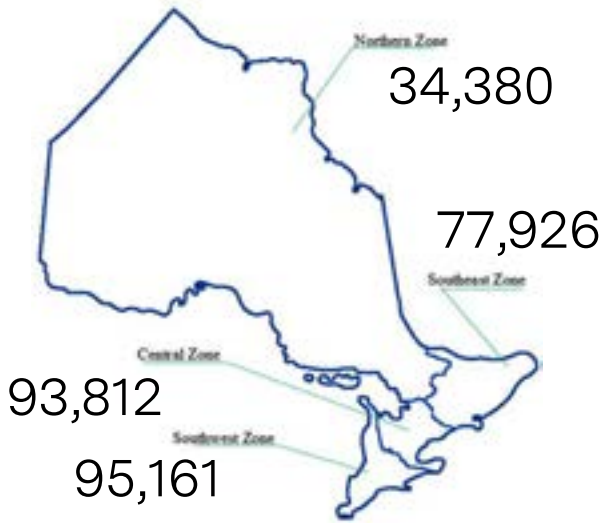


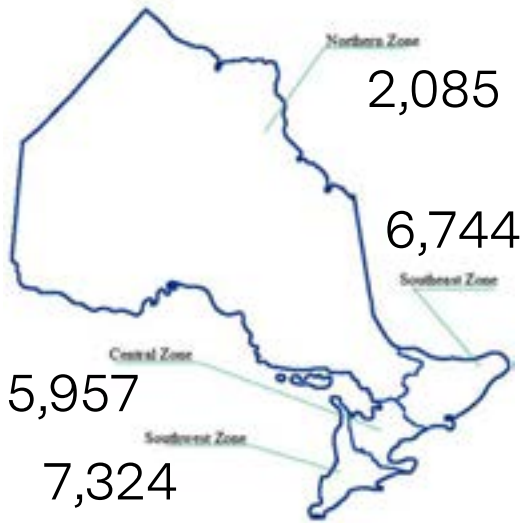
Asset Management Question #1.

What do I own and where is it located?

Roads



Bridges



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Asset Management Question #2.

What is it worth?
(replacement value)

Replacement cost is the cost to construct or replace at a given time.

The value was manipulated to only account for the roadway and the desired structures.

All values were transformed using the economic principle, Future Value (F/P,i,n), to move the reported number to a 2019 value.

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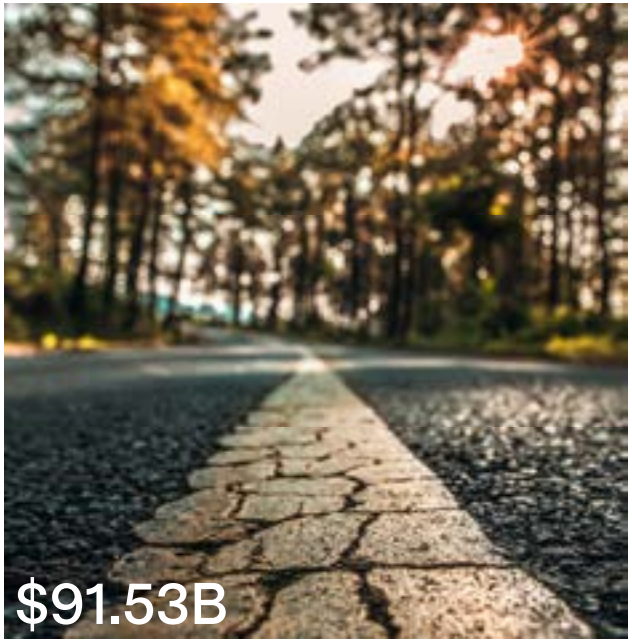
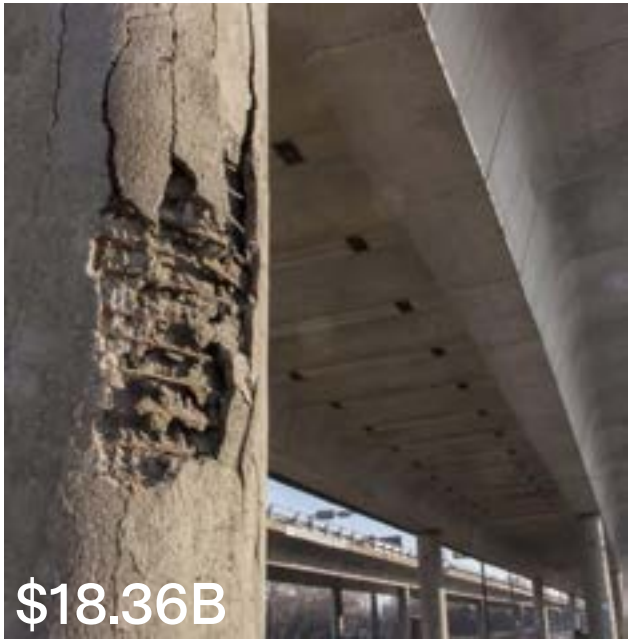
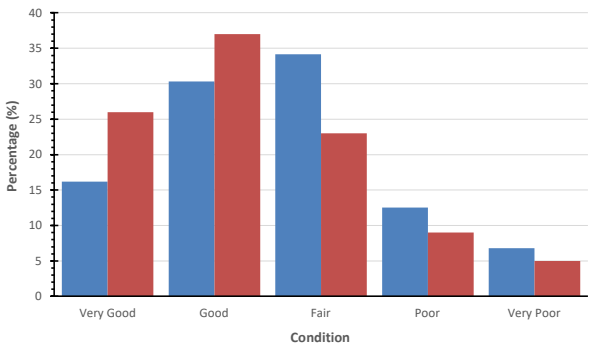




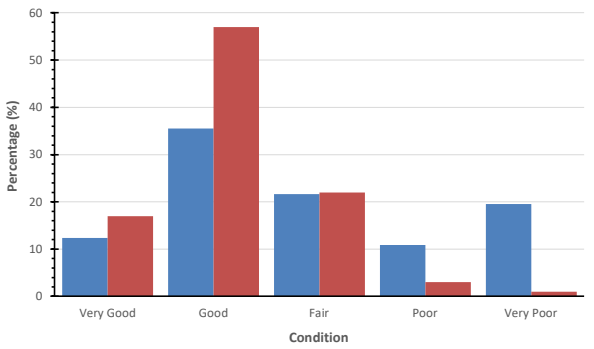
Asset Management Question #3.

What is its condition and expected remaining service life?

Roads



Bridges



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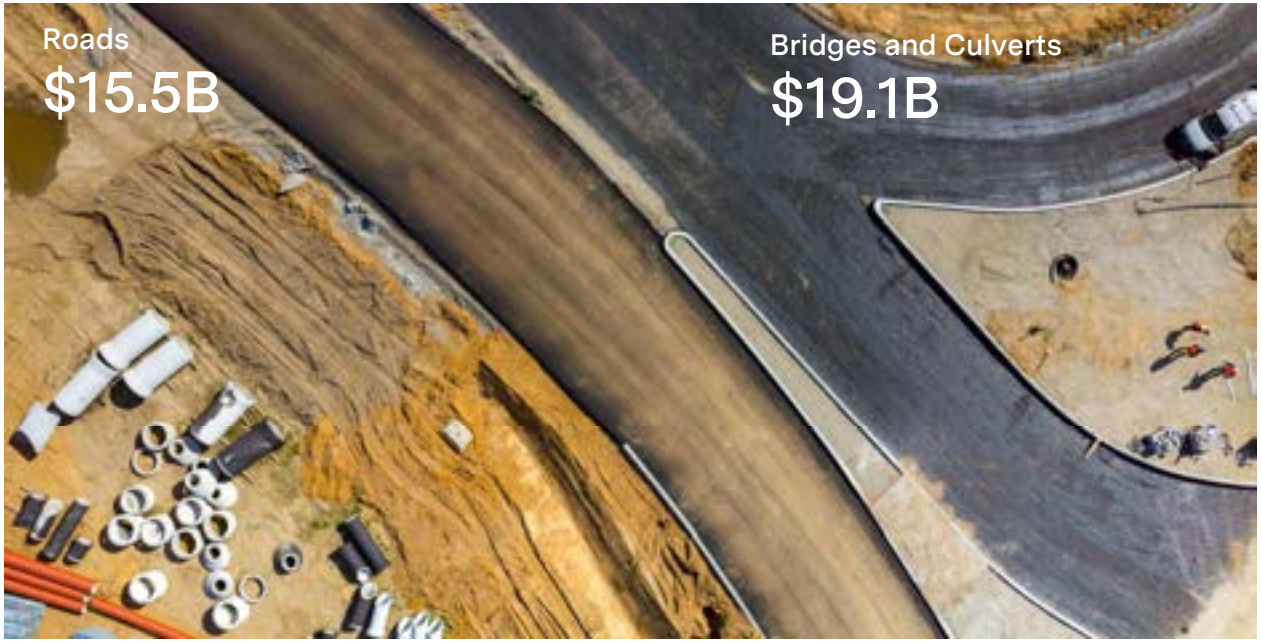
Asset Management Question #6.

How much will it cost?

Very few municipalities reported deficit values in their AMP.

Deficit values were based on the required investment to return the asset to a like-new condition.

Maintenance/rehabilitation techniques and average costs were applied based on each municipality's condition profile.



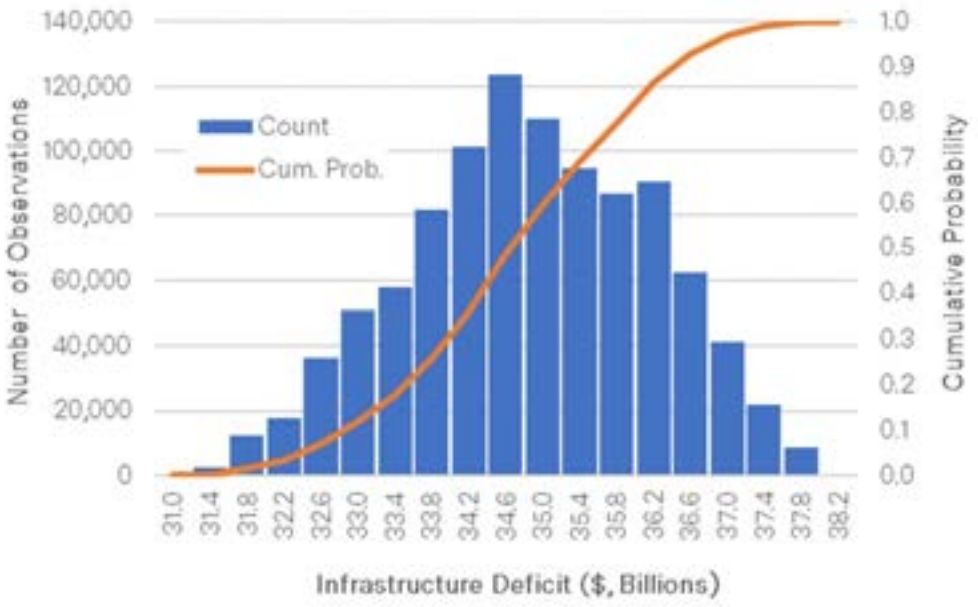
Monte Carlo Simulations.

Account for the variability/uncertainty

1 million runs.

Results (minimum, best estimate, maximum).

- Replacement cost ($B), 104.8 - 109.9 – 128.6
- Lane km, 293,784 - 301,279 – 305,602
- Structures, 21,000 - 22,110 – 22,600
- Condition, good to fair
- Deficit value ($B), 31.8 - 34.7B - 37.85



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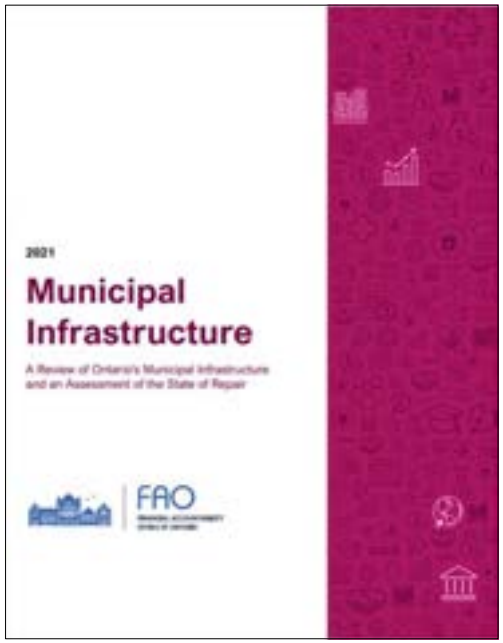
Next Steps.

Validate with another data source.

Redo study after July 1, 2022 (next milestone O.Reg. 588/17).

- Expand the number of maintenance and rehabilitation treatments used at the different condition levels.
- Potential to expand beyond roads and structures to include additional asset classes.
- Potential to partner with other stakeholder associations.



Conclusions.

443 Ontario municipal asset management plans reviewed.

Results.

- Replacement cost, $109.89B
- Lane kilometres, 301,279
- Structures (bridges/culverts), ~22,110
- Condition, good to fair
- Deficit value, $34.7B

Need for standardization.

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Thank you.

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