

# NEW YORK



THE RACE TO BETTER DATA  
APRIL 25TH-28TH, SARATOGA SPRINGS

## Illinois Percent Improvement Ride Quality Specification

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# Outline

- Background and History
- Specification Development
- 2021 Collection and Analysis
- A look at the numbers
- What's next?

# Background and History

- 2002 – Illinois moves to zero blanking band PI
- 2016 - Illinois officially started its transition to IRI
- 2018 – Industry requests for research project
- 2020 – Research project concludes
- 2021 – First year implementing IRI specifications

# R27-199 Optimizing Smoothness vs Cost

- Low speed IRI thresholds
- Percent Improvement
- Percent within limits for IRI thresholds
- Full-Depth Pavement IRI thresholds
- [R27-199 Final Report](#)

# Specification Negotiation

- Hosted at least 3-4 meetings to negotiate spec contents
- Started with 3 of the 4 ideas from R27-199
  - Low speed IRI
  - Percent Improvement
  - Full-Depth Thresholds
- Industry has never cared for PWL with HMA so we didn't want to scare them off right away.

# Final Specification for 2021

- Percent Improvement
- Low speed pavements = simulated rolling straightedge
- Full-Depth Thresholds maintained

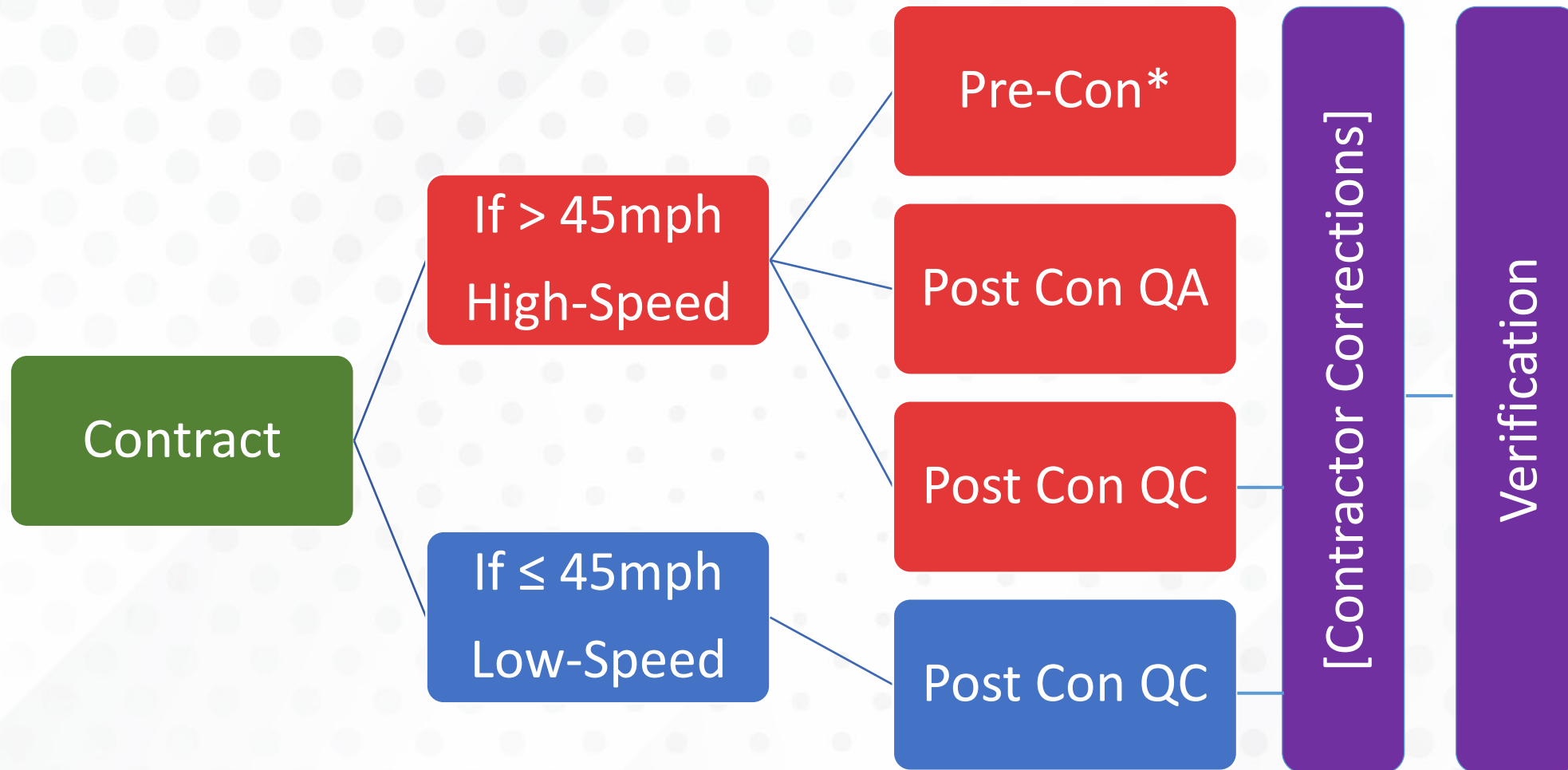
# 2021 Collection and Analysis



# General Collection Procedures

- Data was collected at 3 different phases of construction
  - Preconstruction
  - Post construction
  - Post correction (if applicable)
- 3 complete passes
  - Passes were averaged unless erroneous data was suspected





*\* Overlays only*

# General Analysis Procedure

- Submitted Data was converted to .PPF or .ERD format
- PPF/ ERD files were imported and processed in ProVAL
  - Fixed Interval (Sublots)
  - Continuous Processing (Area of localized roughness)
  - Simulated Rolling Straightedge
  - Miscellaneous pavements
- Text files were imported into Excel workbooks that generate final reports

# Sublots

- A subplot is a continuous section of pavement
- Normal length 528'
- Partial sublots (e.g. preceding omission)
  - $\geq 264'$ : stand-alone, normal
  - $< 264'$ : rolled into previous subplot (max length 791.9')
  - $< 264'$  & no previous subplot: consider as miscellaneous
- Sublot length resets after omission to zero (omissions are not contained within a subplot)

# Localized Roughness and Bump/ Dips

- Areas of Localized Roughness (ALR)
  - Continuous MRI calculation over a 25 ft section
  - Threshold = 150 in./ mile
- Rolling Straightedge
  - Determines bumps and dips over a 16ft section of pavement
  - Threshold = 5/16" for mainline pavement
  - Low-Speed sections were processed in ProVAL
- ALR and low-speed rolling straightedge was processed in ProVAL

# Miscellaneous Pavement

- Areas of non-standard paving
- Typically require a change in paving operation
- Examples
  - First / last 50' of the paving limits
  - Turn lanes
  - Bridge connectors and approaches
  - Within 25' of manhole
  - Horizontal curves with centerline radius  $\leq 1000$  ft
  - Vertical curves with length  $\leq 200$  ft
- These sections are evaluated in the field using a 16ft rolling straightedge



# Incentives / Disincentives

## MRI Thresholds

Incentive ( $MRI_I$ )

Full Pay ( $MRI_F$ )

Max Disincentive ( $MRI_D$ )

\*Only applies to overlays

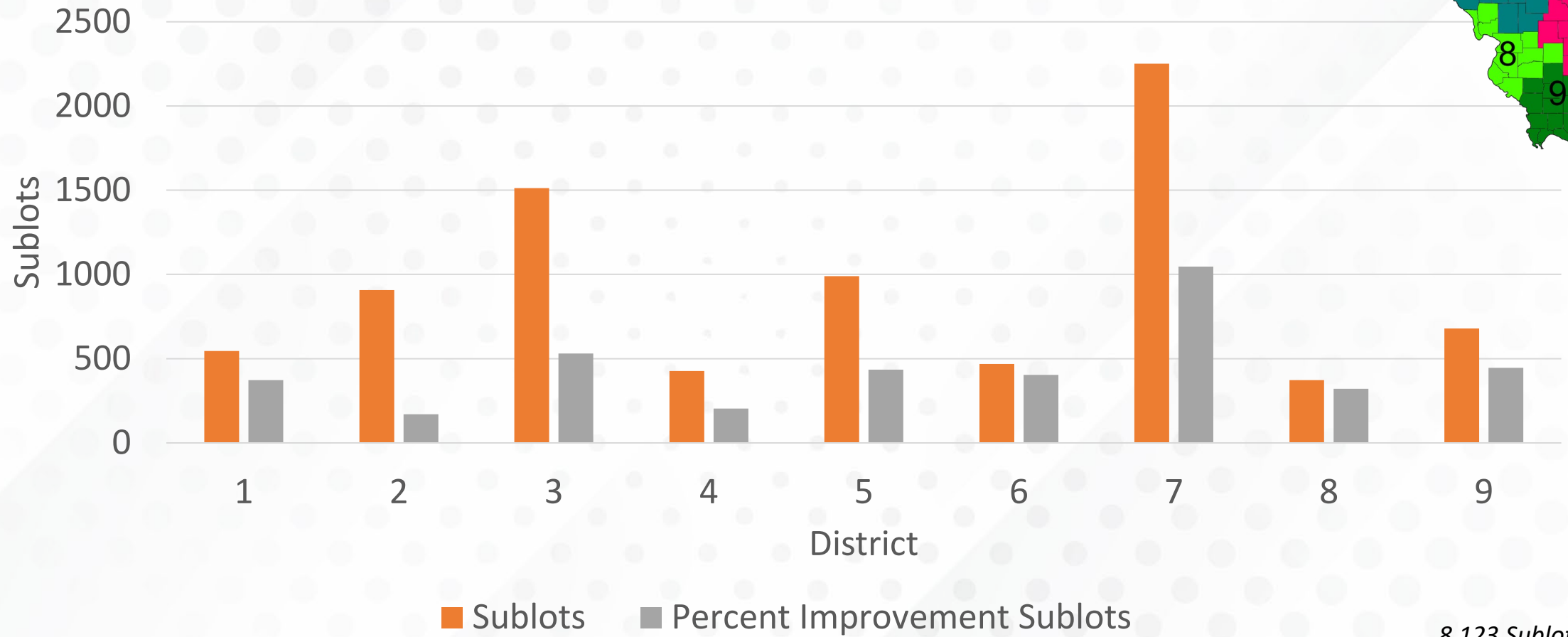
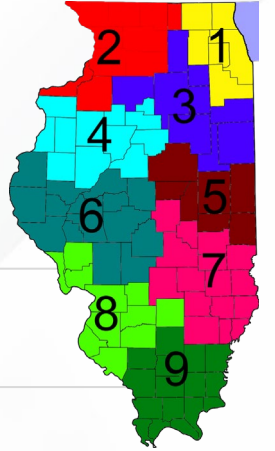
# Incentives / Disincentives

Pay Category
Max Incentive
Incentive ( $MRI \leq MRI_I$ )
Full Pay ( $MRI_I < MRI < MRI_F$ )
Disincentive ( $MRI_F < MRI < MRI_D$ )
Max Disincentive ( $MRI > MRI_I$ )



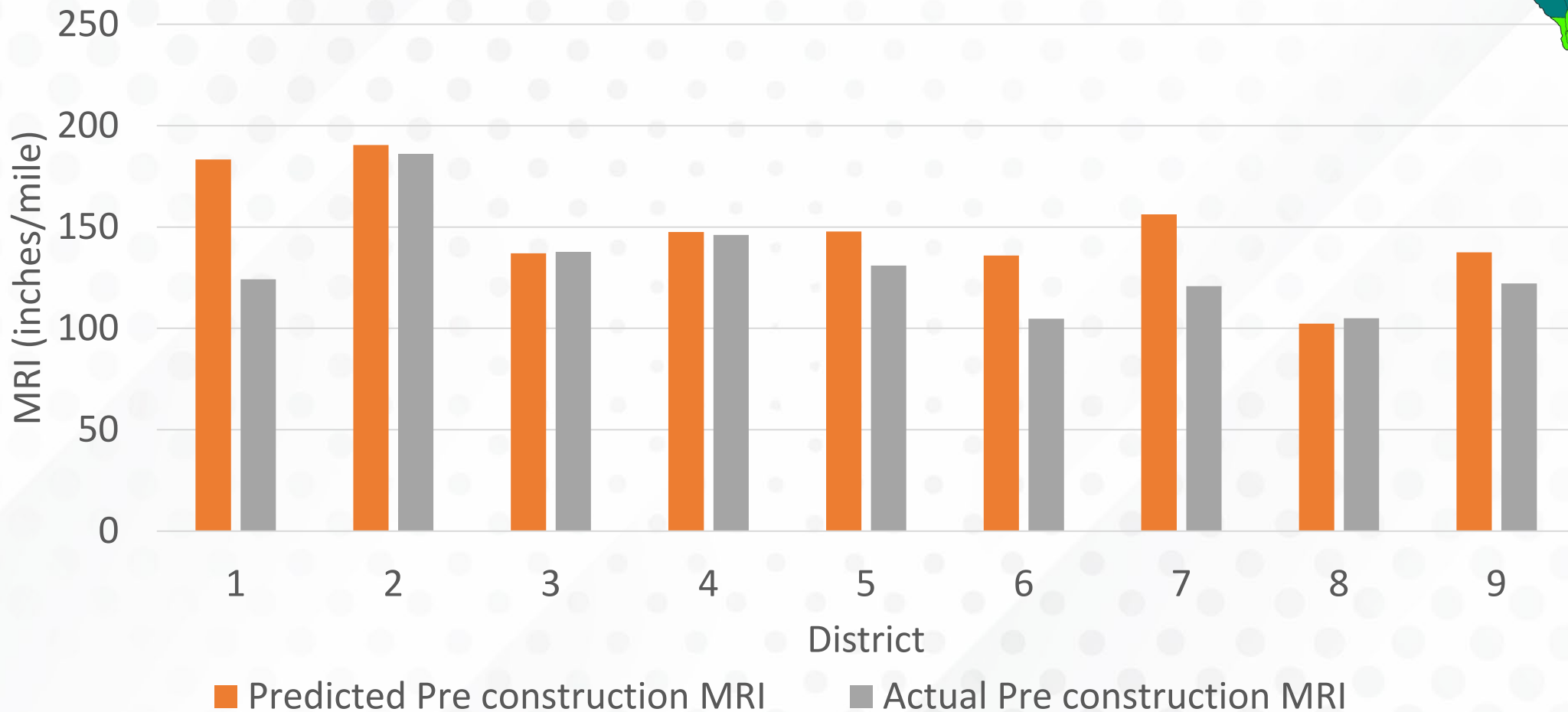
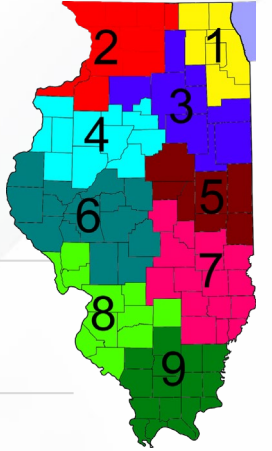
# 2022 In Review: Putting Specification into Practice

# 2021 Sublots by District

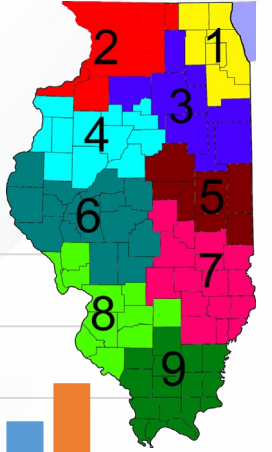
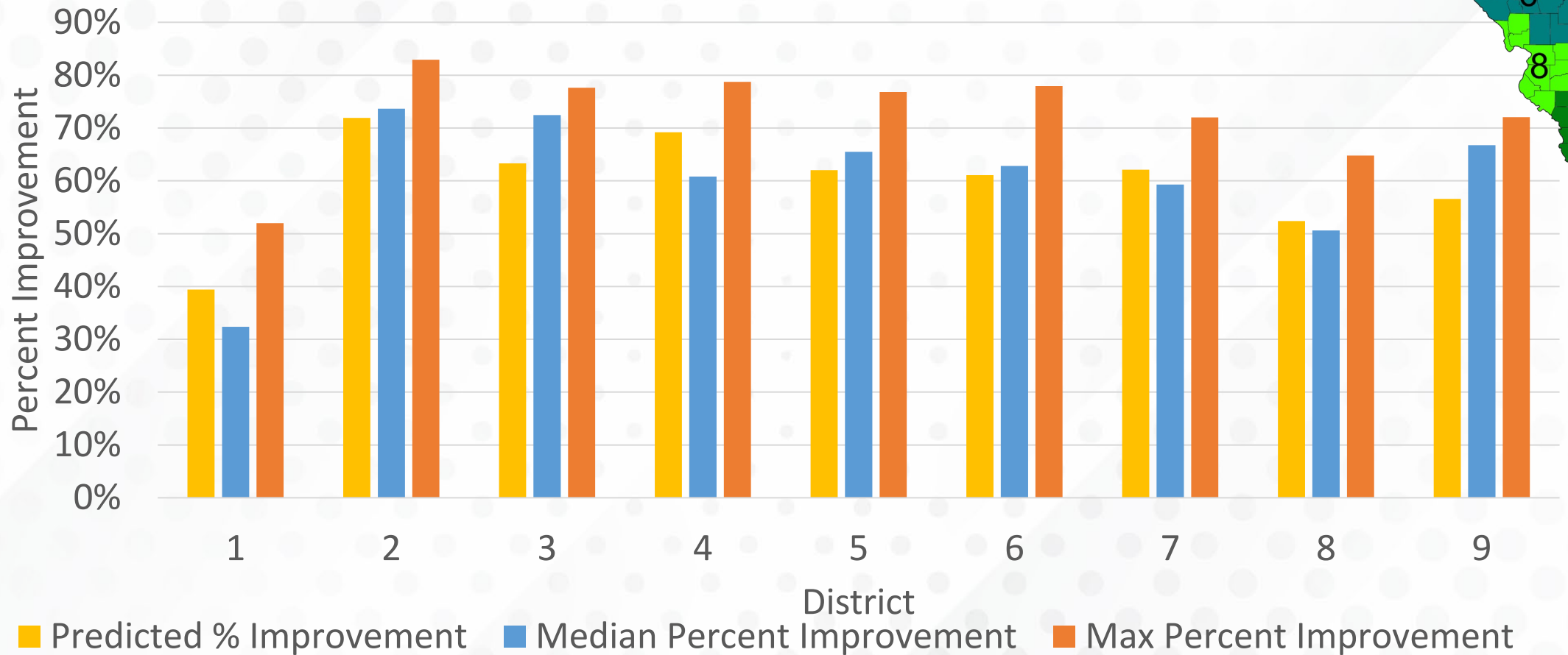


8,123 Sublots

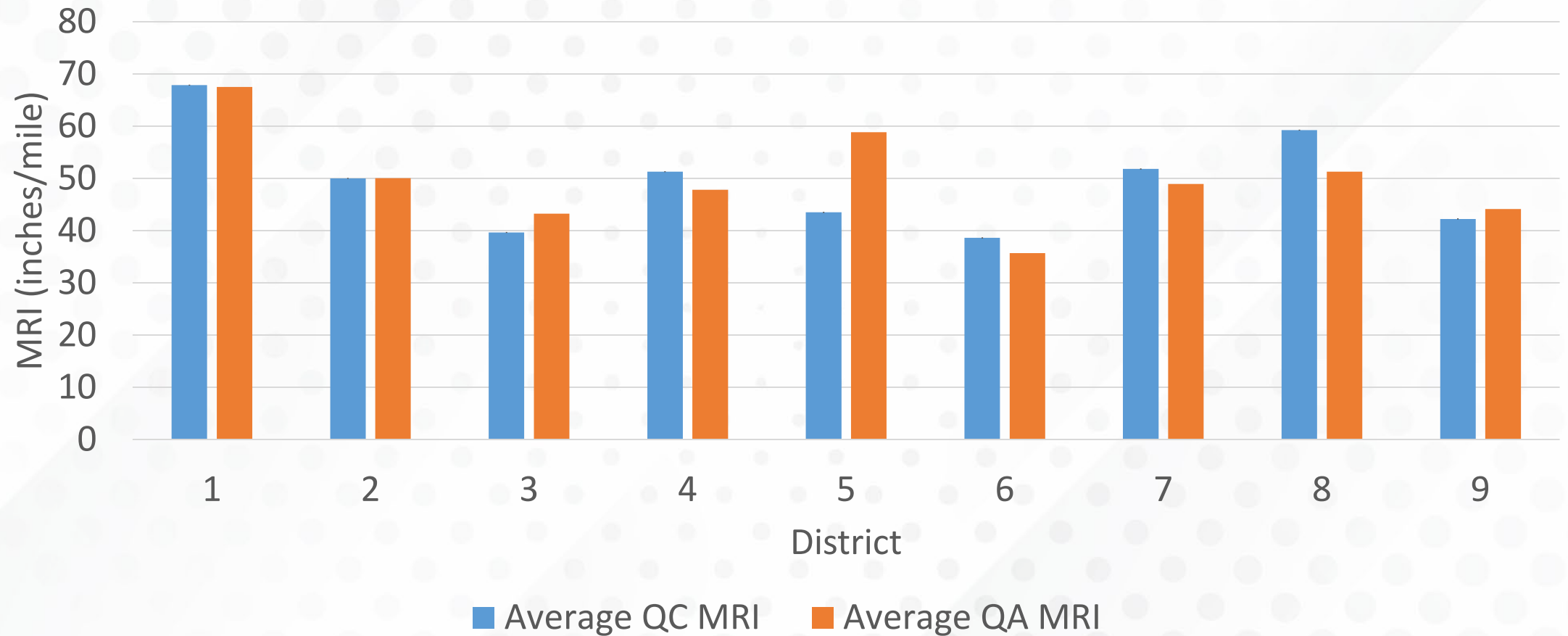
# Average Pre Con MRI by District



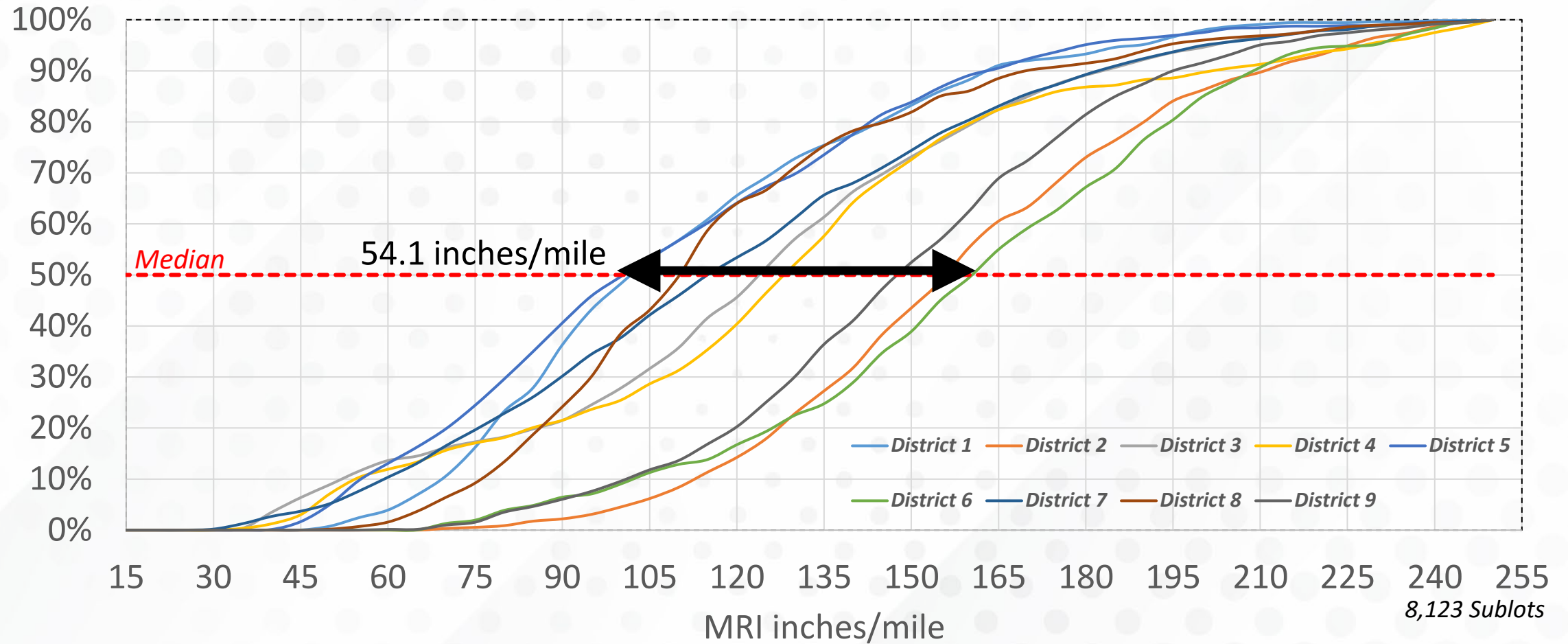
# MRI Percent Improvement by District



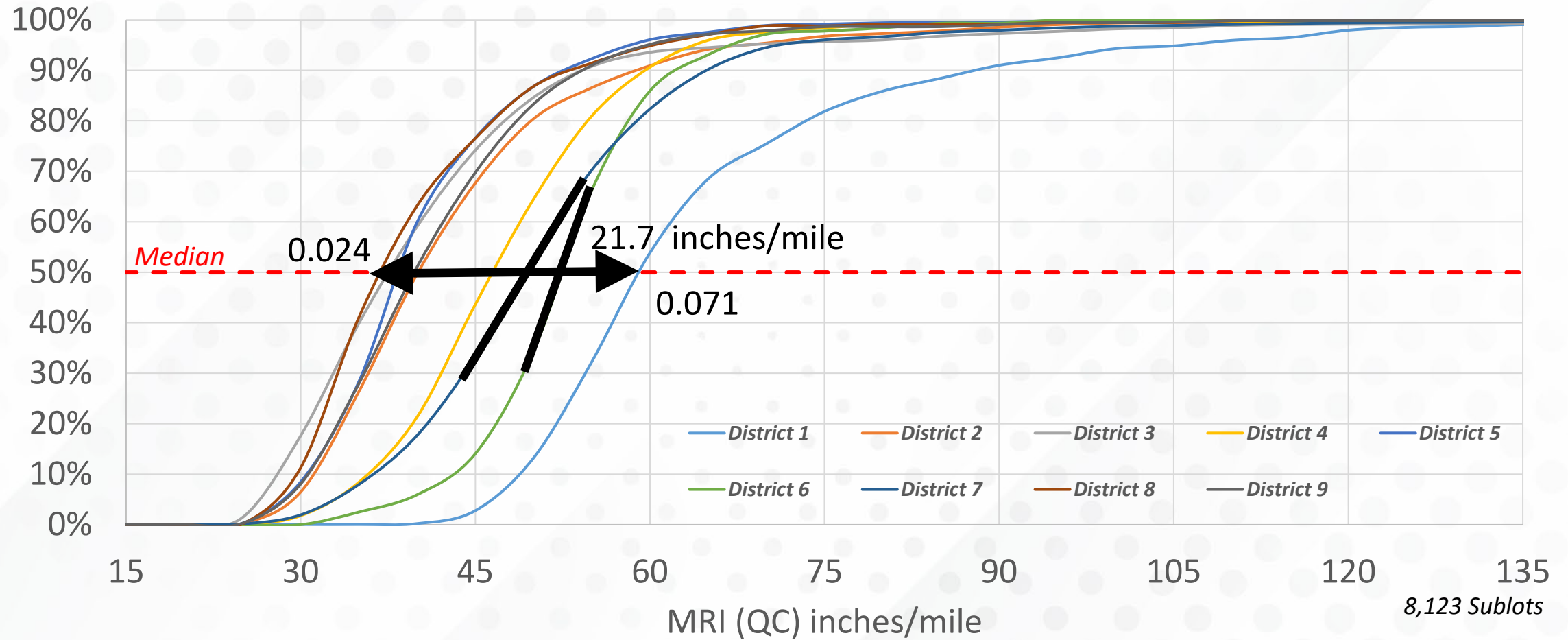
# QA vs QC



# Cumulative Distribution of Pre Con Sublots

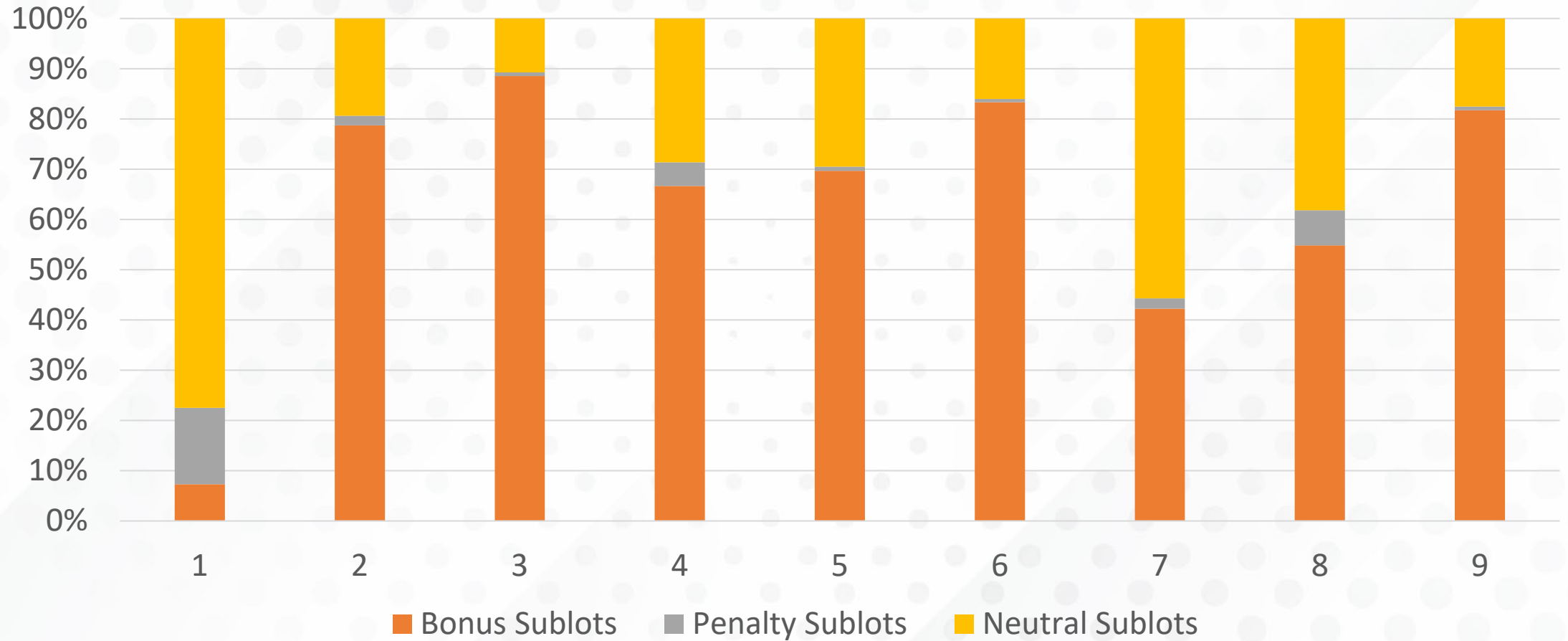


# Cumulative Distribution of QC Sublots





# Incentive / Disincentive Utilization



# What is next?

- Reviewing incentive and disincentive values
- Reviewing percent improvement
- Better correlation between simulated and manual straightedge
- Low speed IRI thresholds?

# Thank you!



## Illinois Department of Transportation

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