



NCHRP 40-13

Recycling and Reclamation of Asphalt Pavements Using In-Place Methods

Key Issues

- Extent of annual program
- Project selection criteria
- Materials
 - Liquids and stabilizers
 - Design methods
 - Processing methods and equipment
 - QA/QC
 - Wearing course
- Barriers
- Environmental benefits

In-Place Methods Considered

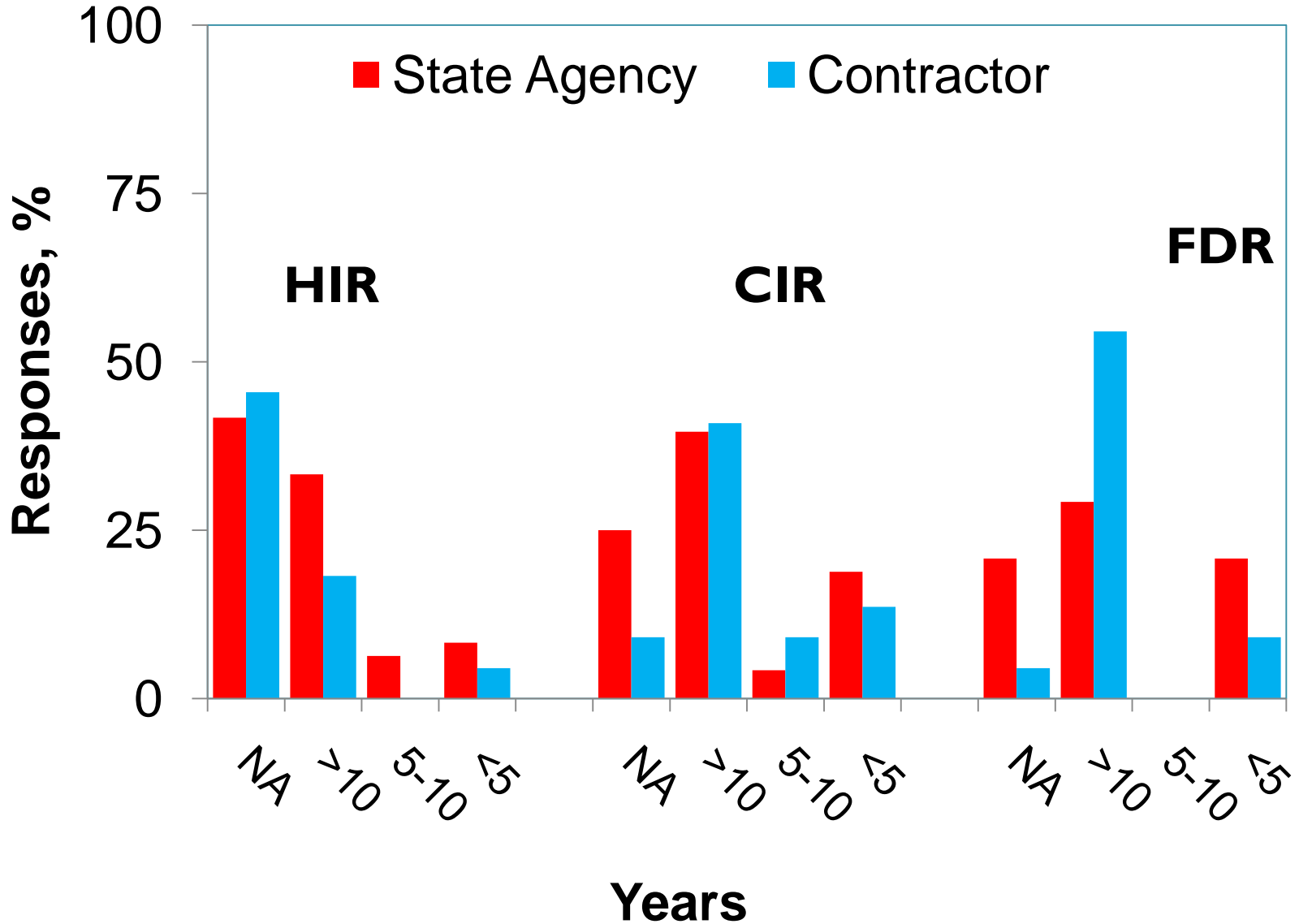
- Hot In-Place (HIR)
- Cold In-Place (CIR)
- Full Depth Reclamation (FDR)

- Why one instead of the other?
- Case studies
- Gaps in knowledge and research
- Structural coefficients?

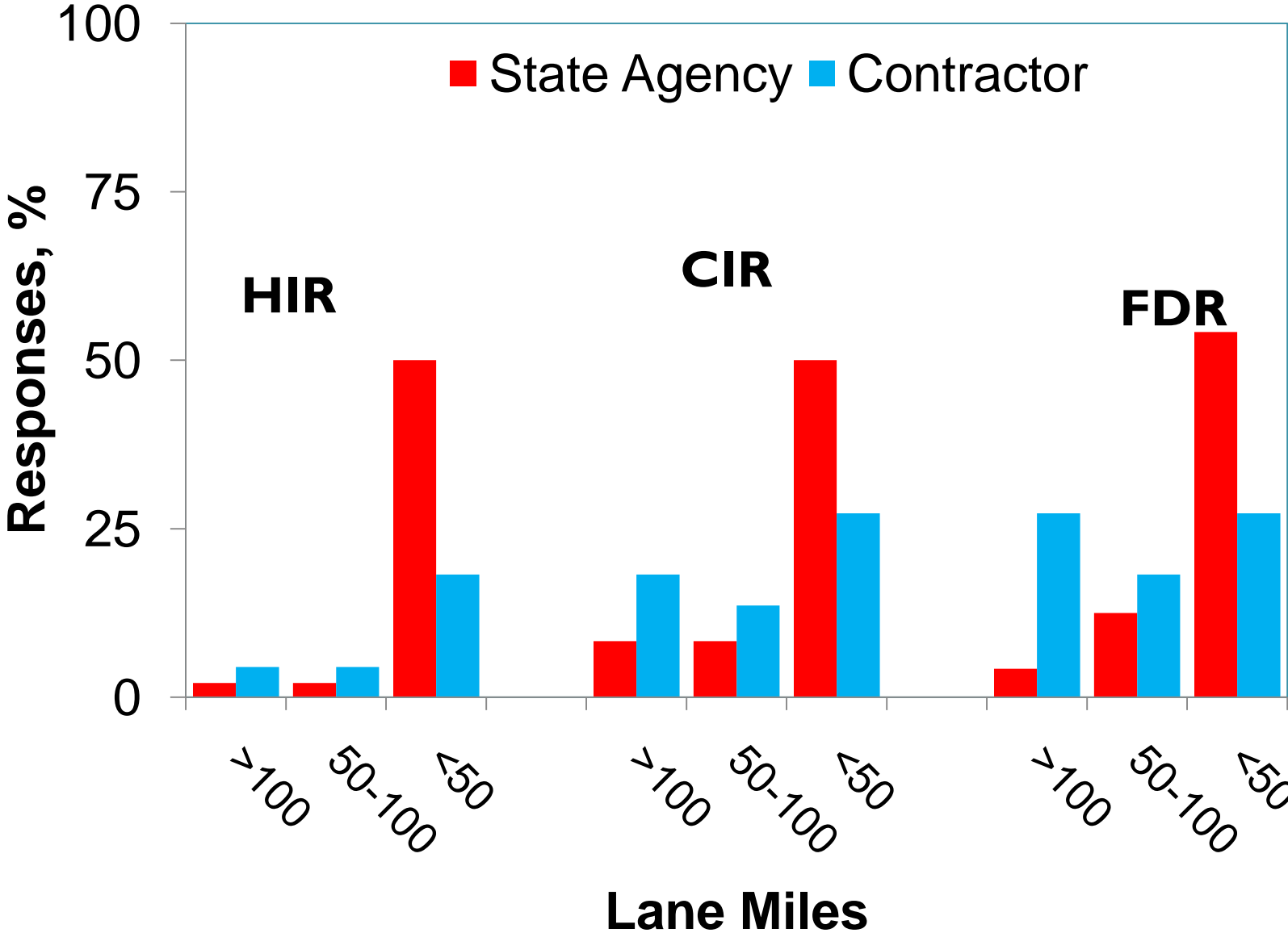
This Presentation

- Extent of Annual Program
- Project Selection Criteria
- Wear Courses
- Specifications

Years of Experience



Annual Lane Miles





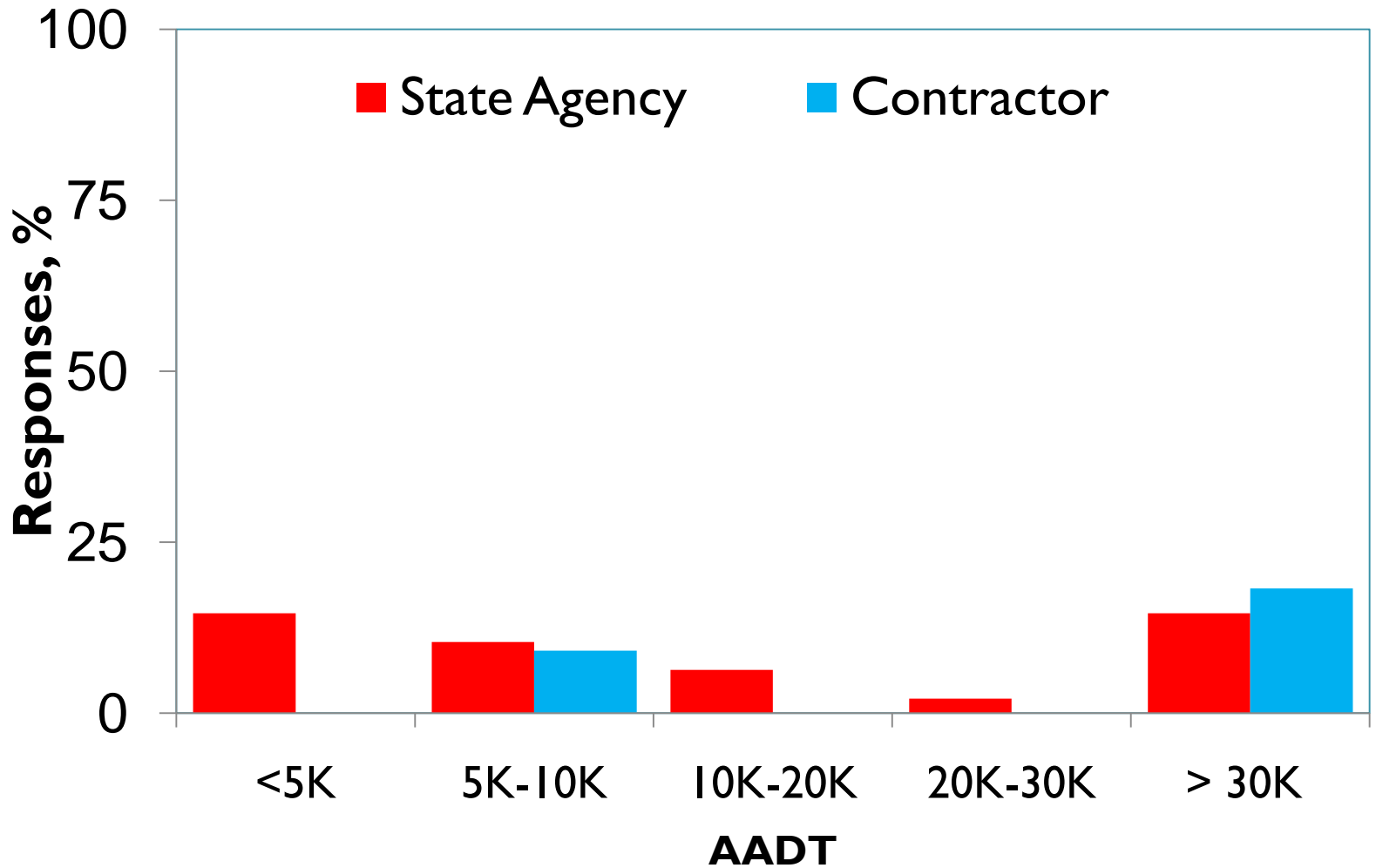
Project Selection Criteria Survey Results

Traffic level

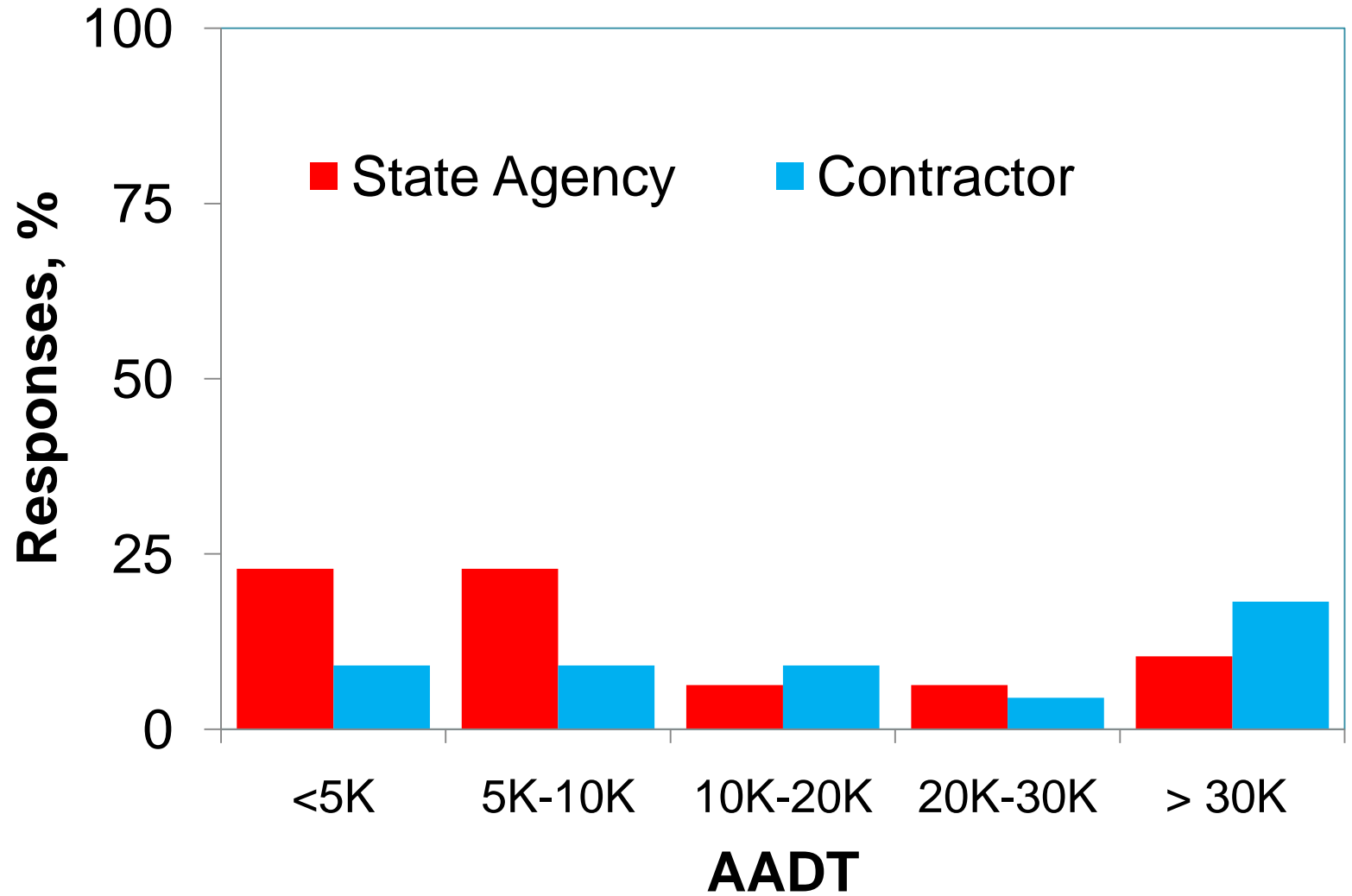
Roadway Geometry

Climate Region

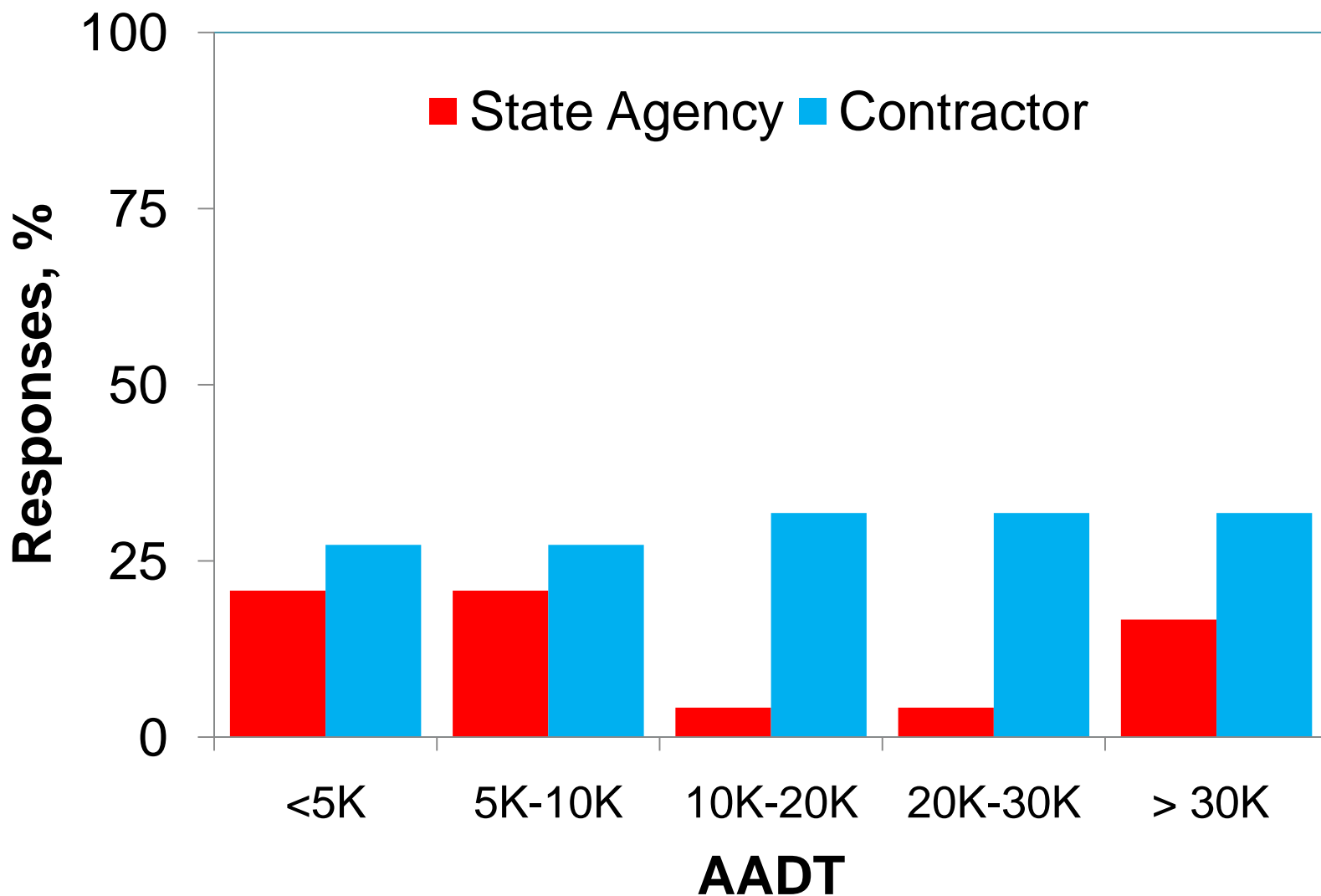
Traffic Levels for Recycling Method HIR



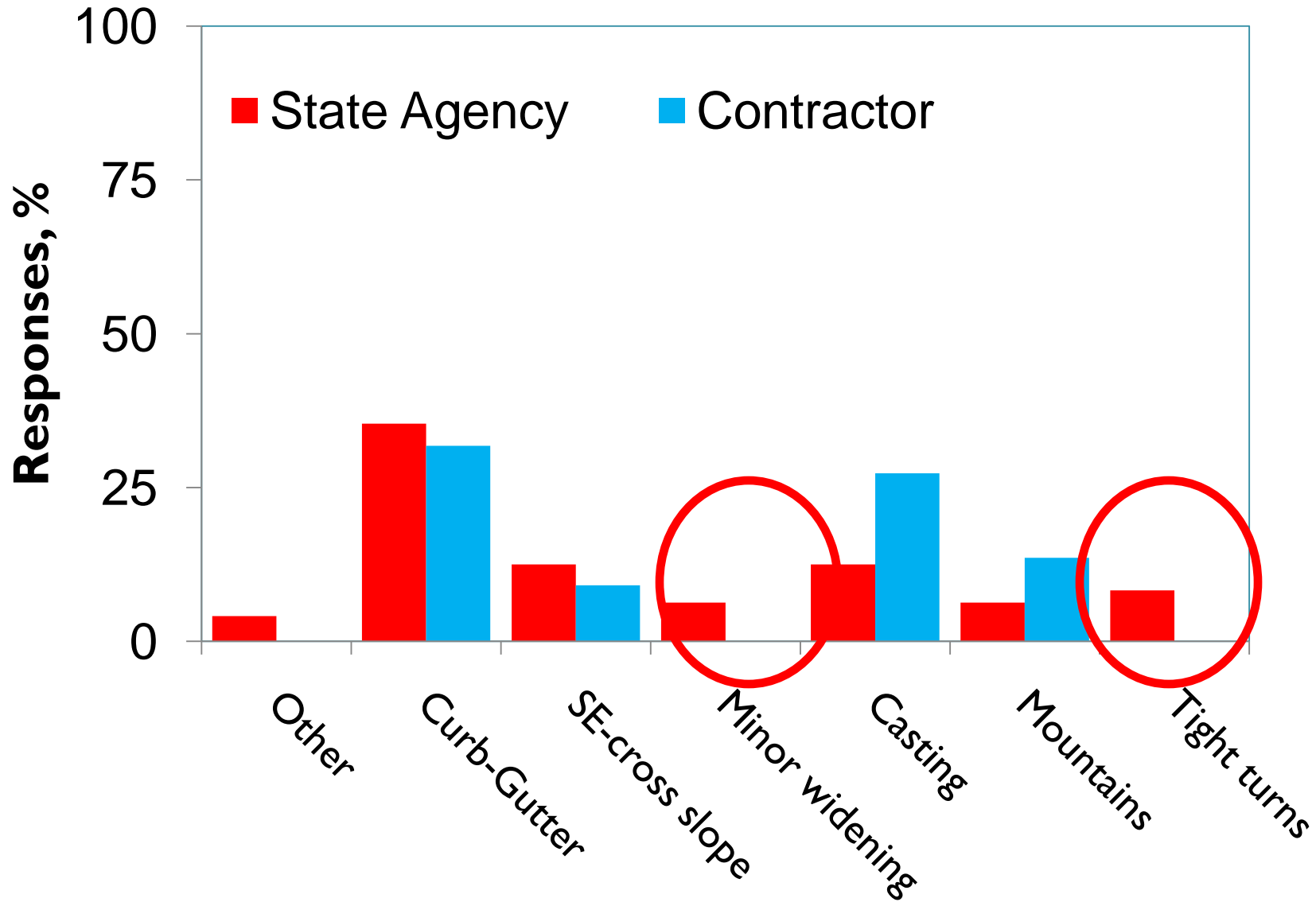
Traffic Levels for Recycling Method CIR



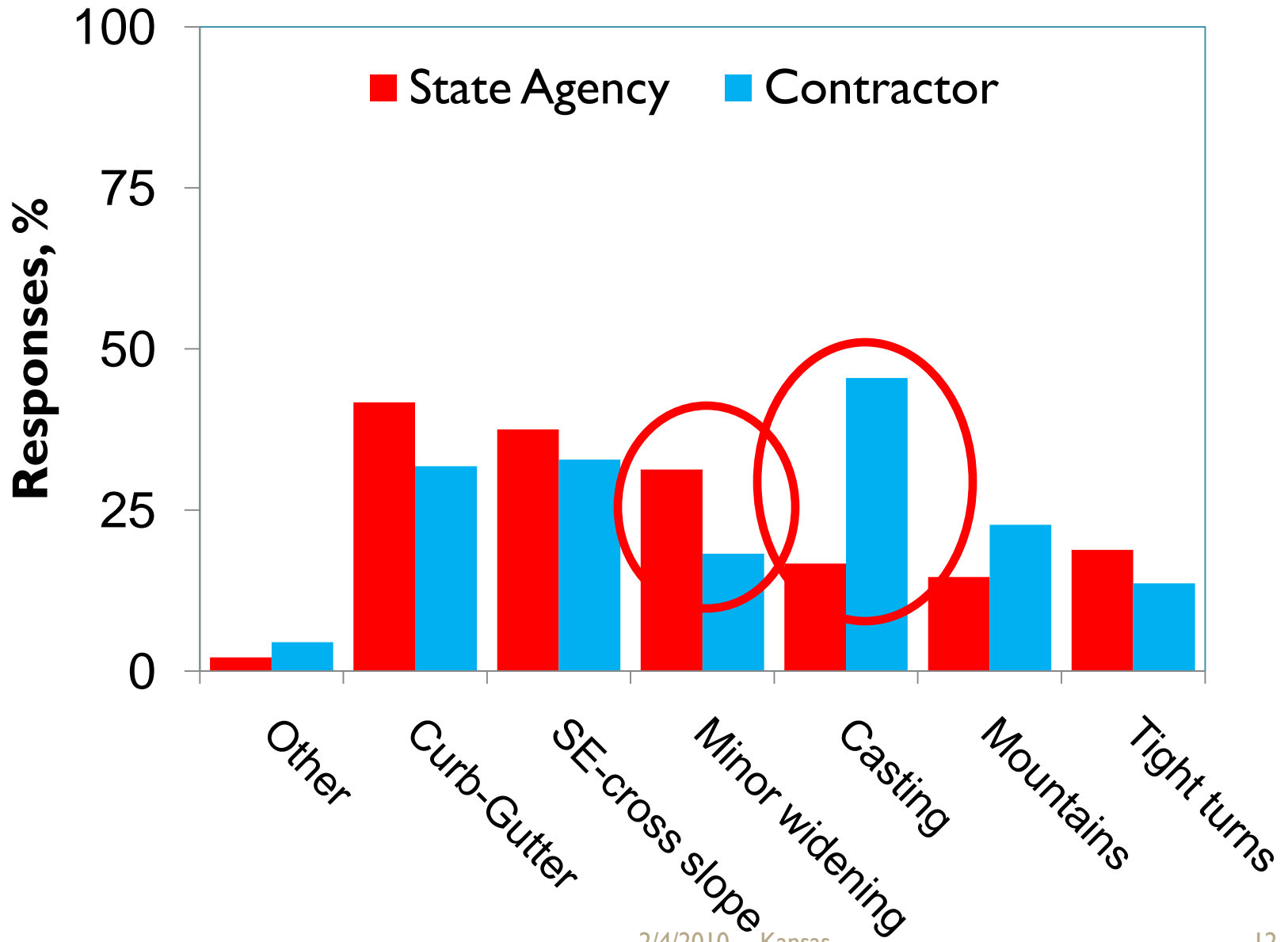
Traffic Levels for Recycling Method FDR



Geometry HIR

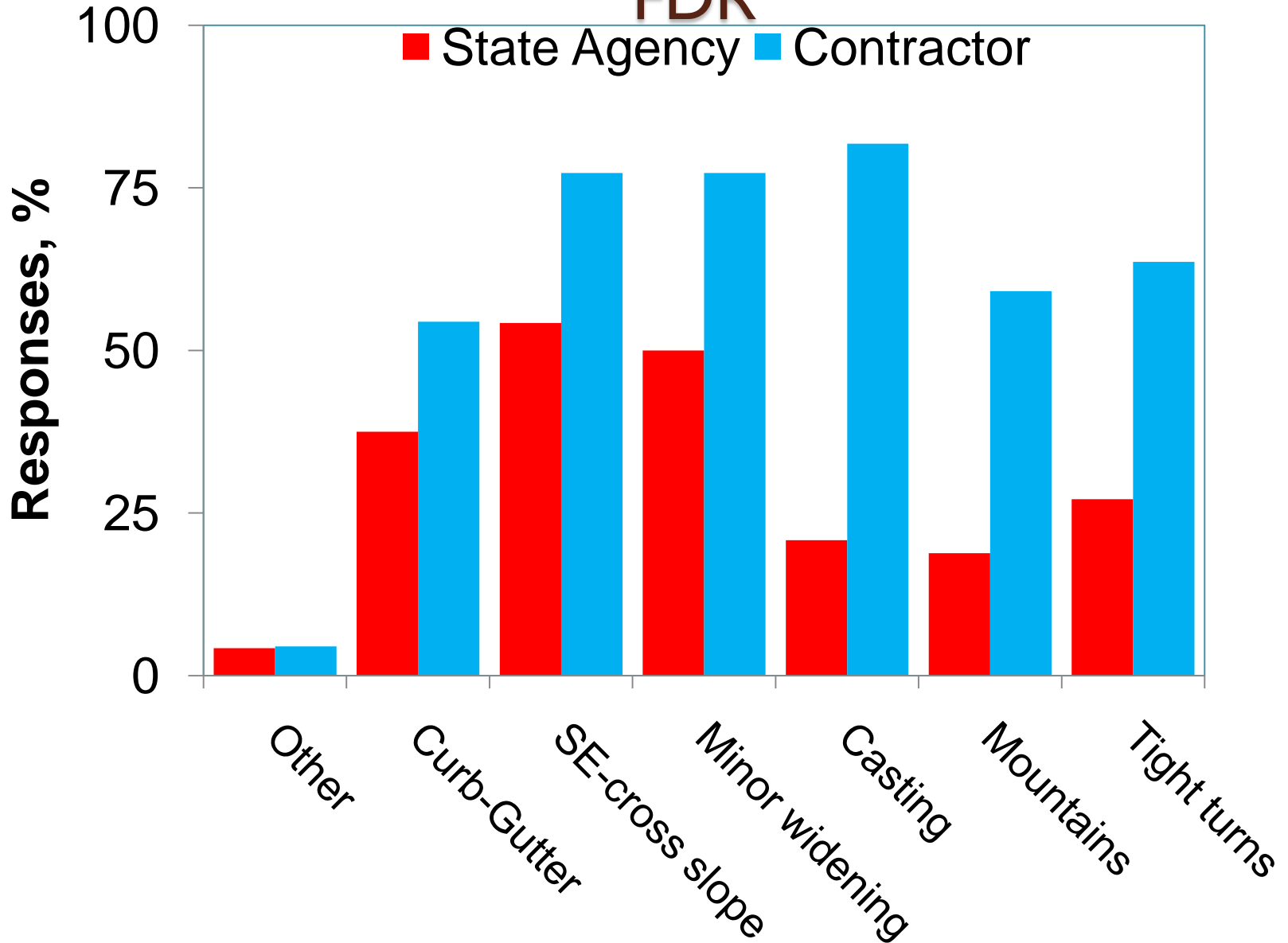


Geometry CIR

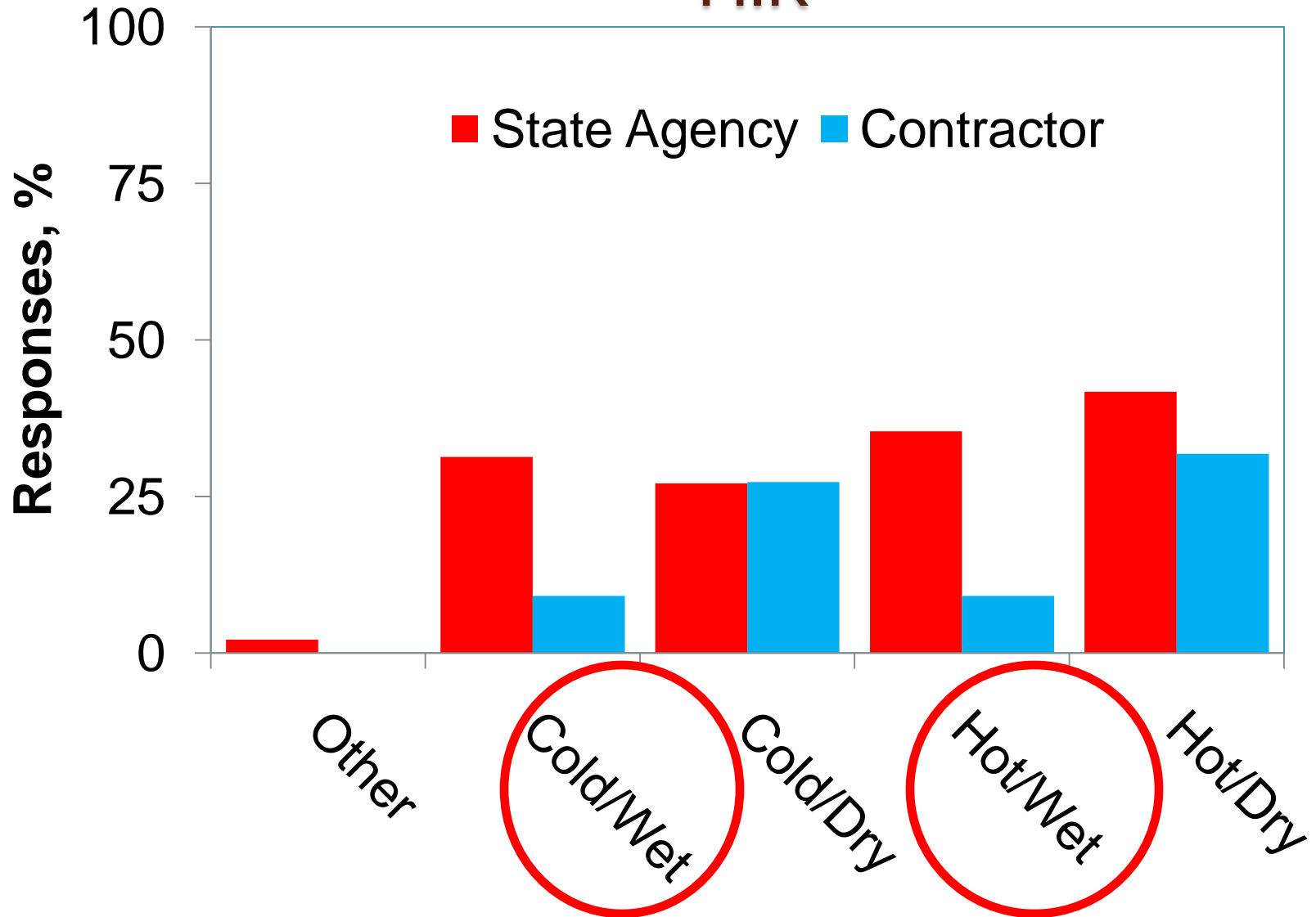


Geometry

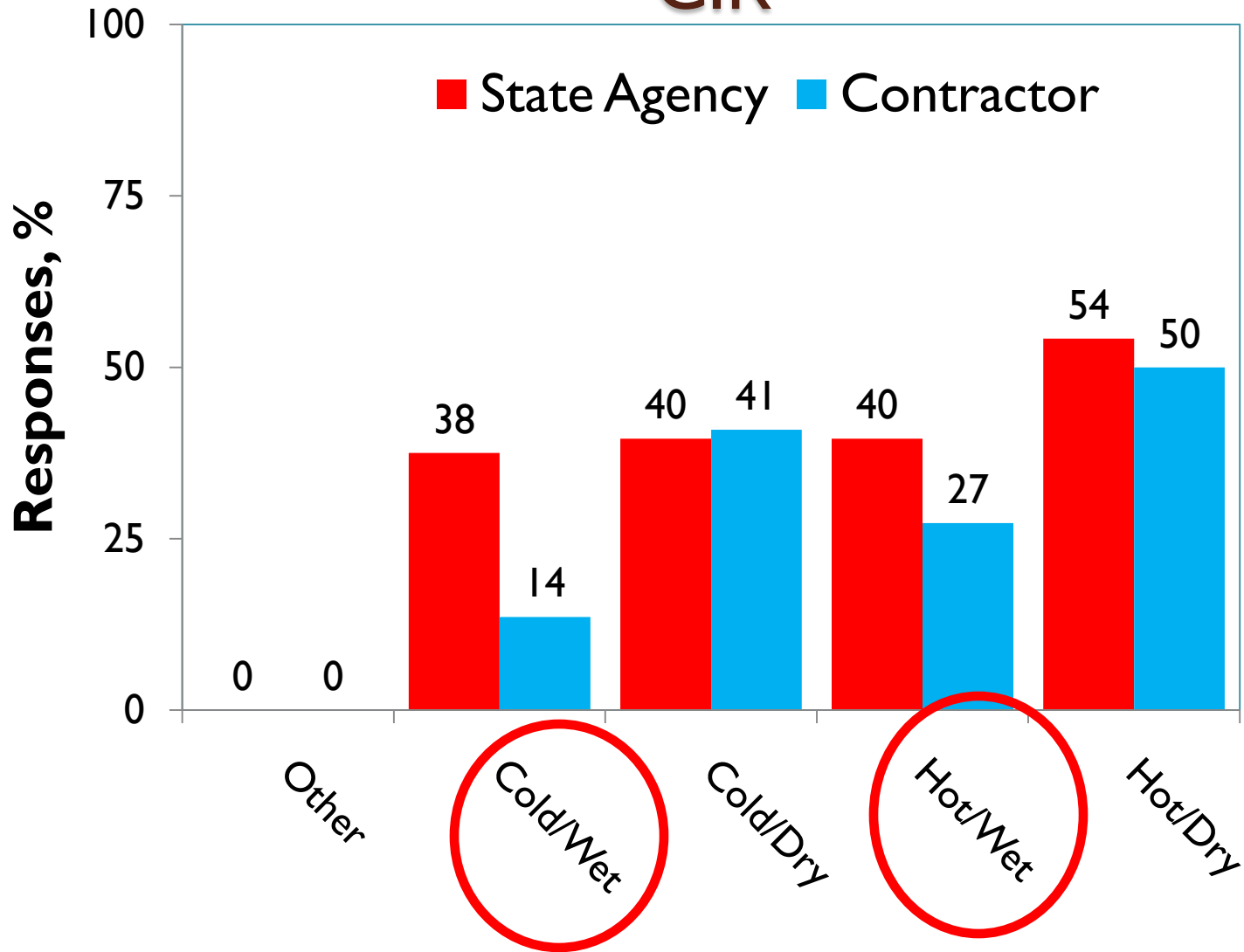
FDR



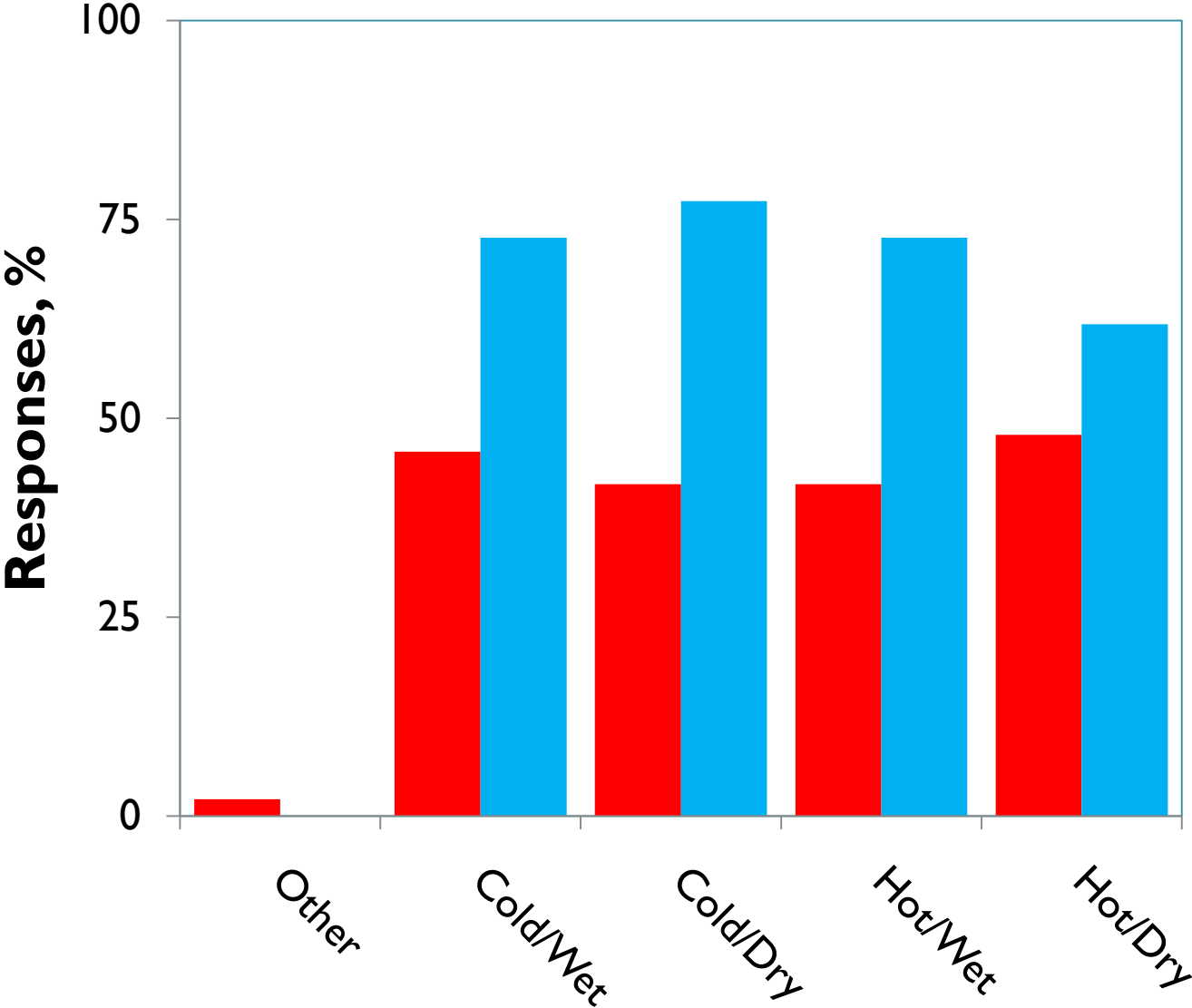
Climate HIR



Climate CIR



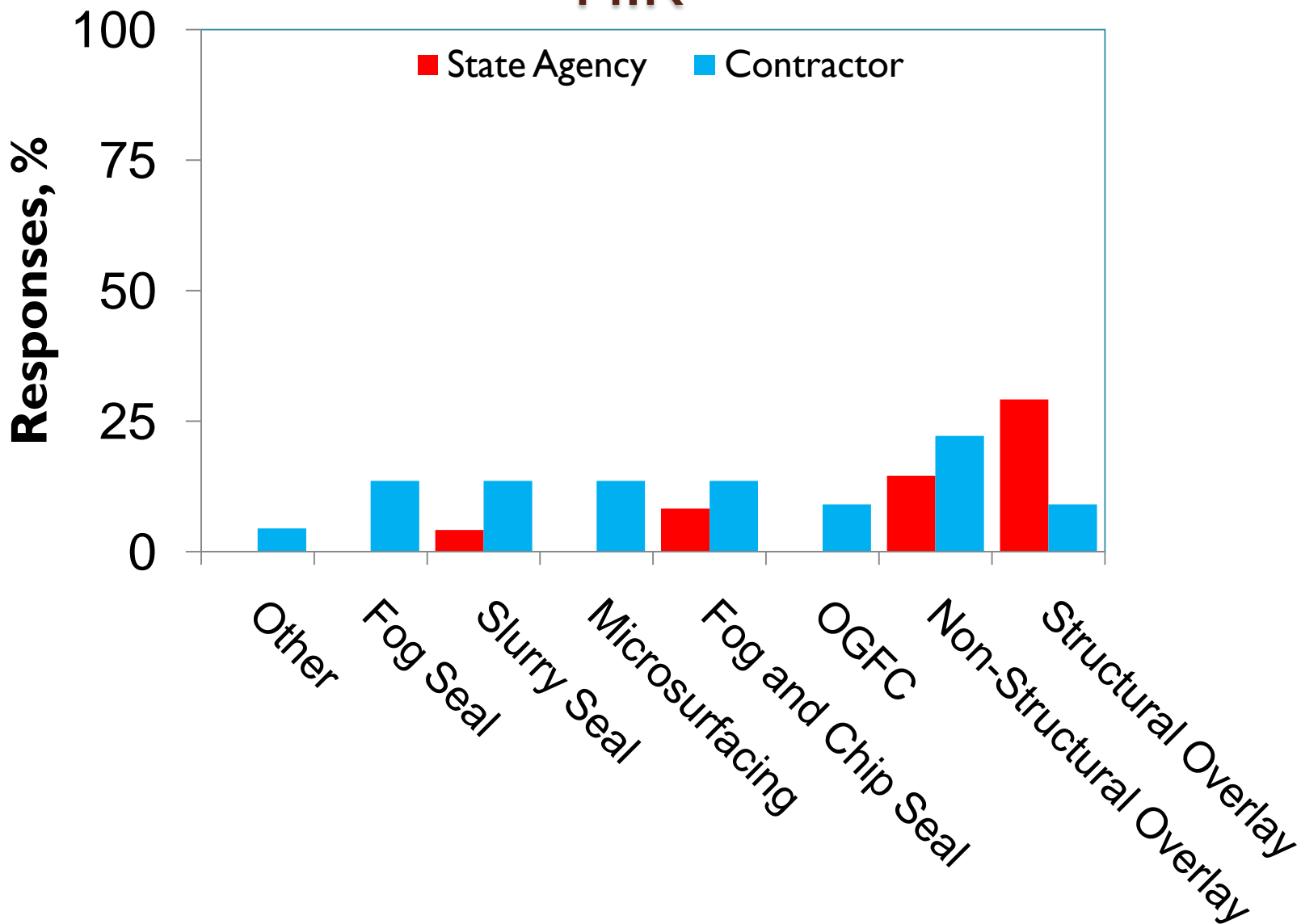
Climate FDR



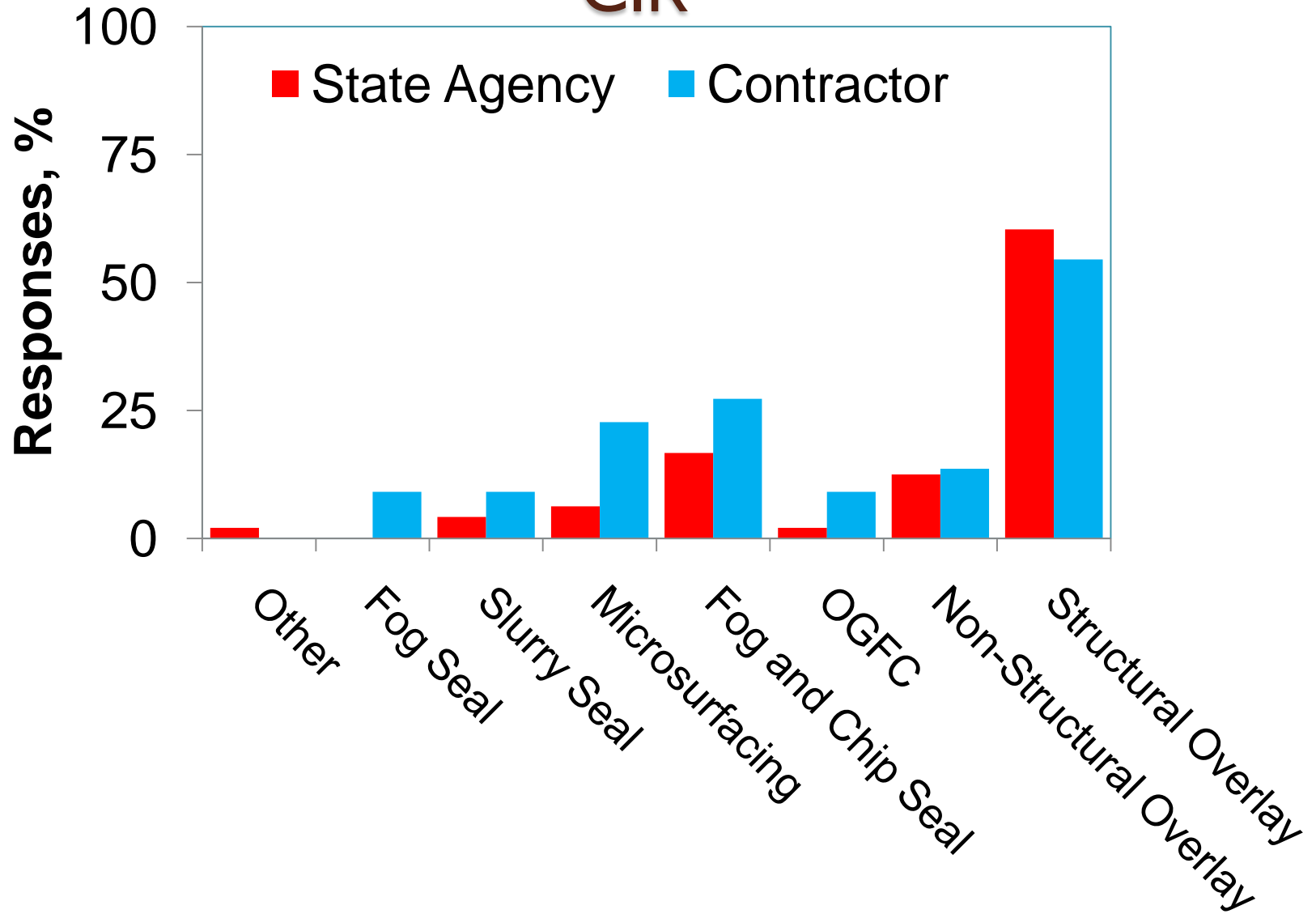


Wear Courses

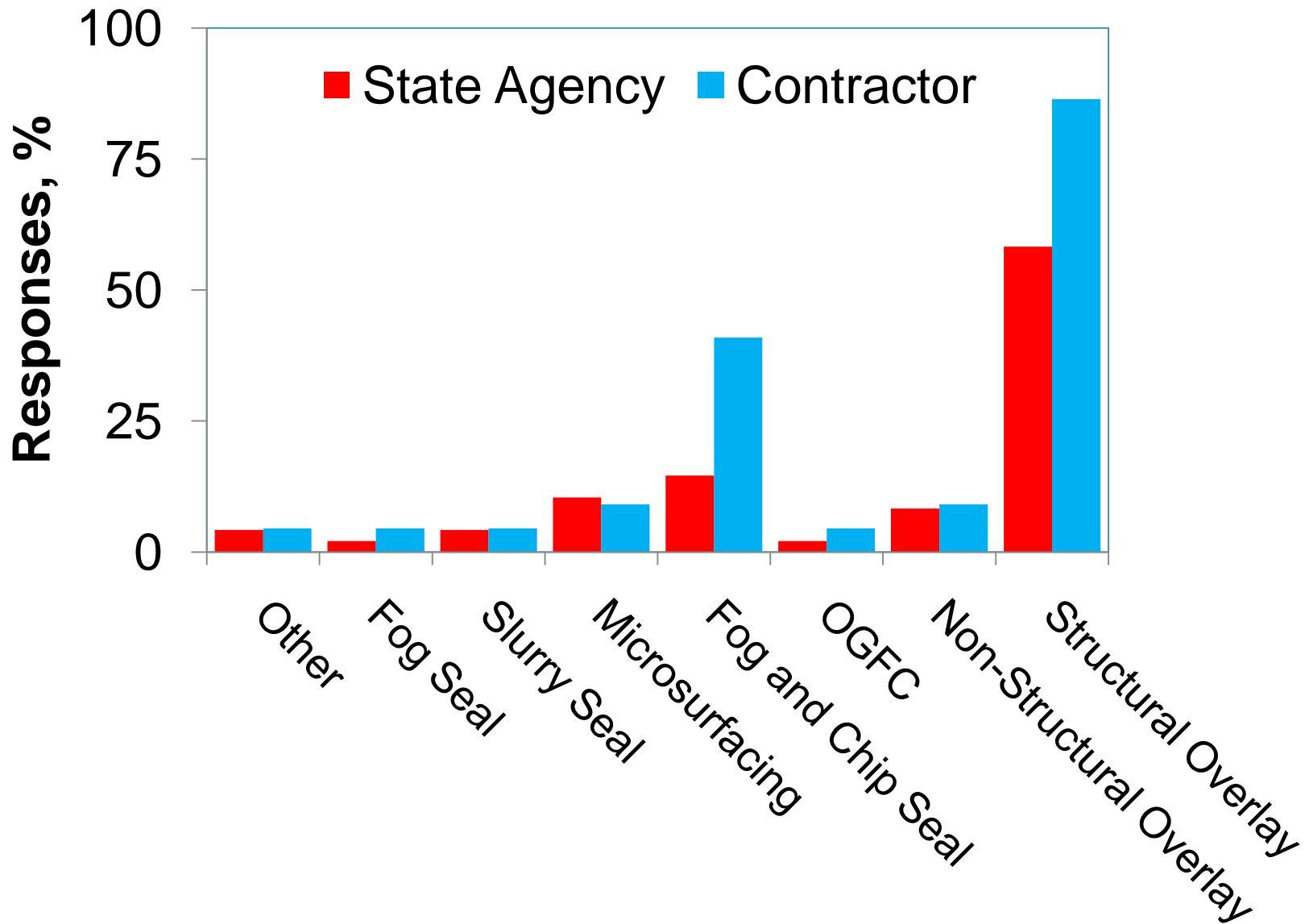
Surface HIR



Surface CIR



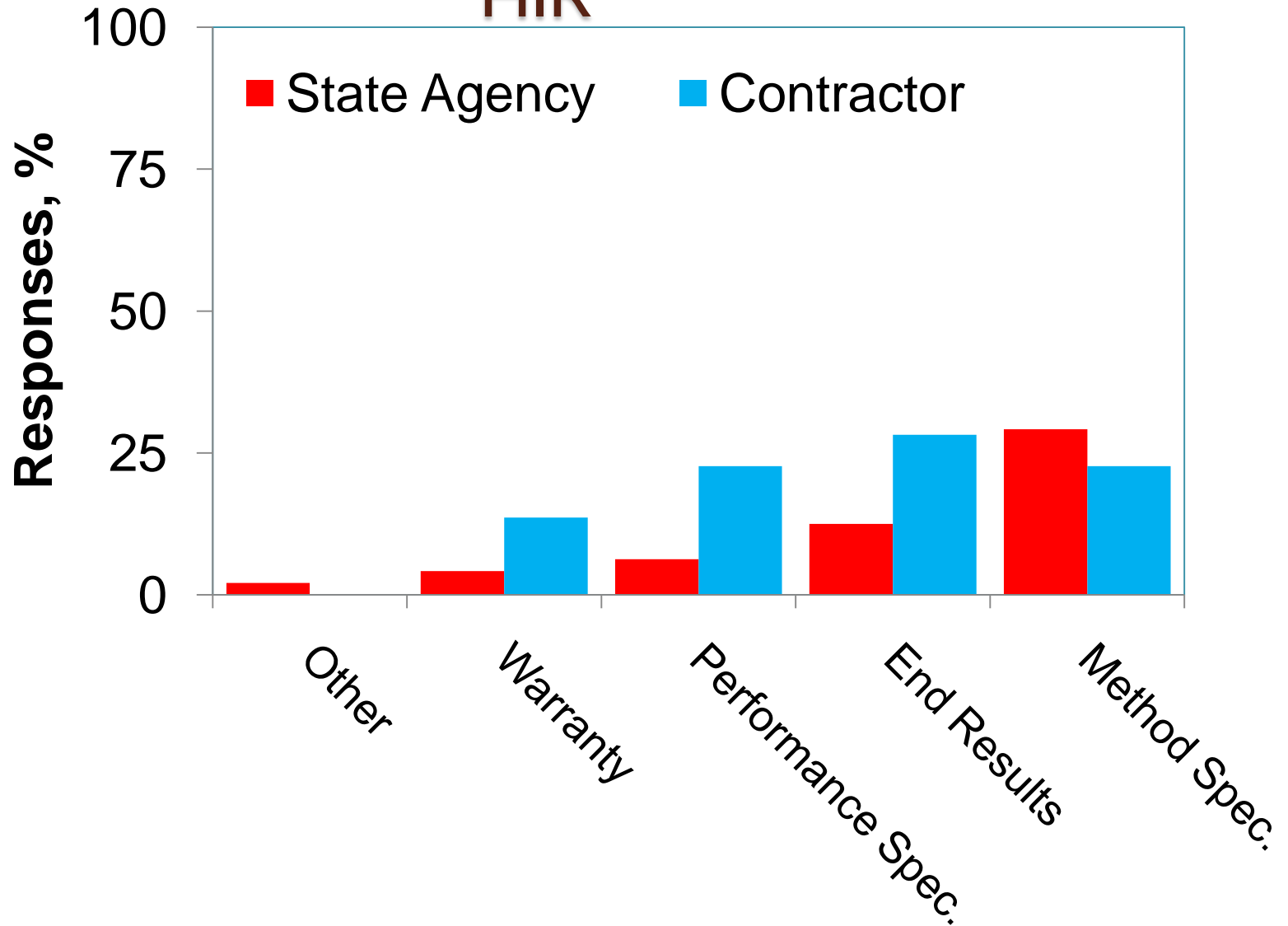
Surface FDR



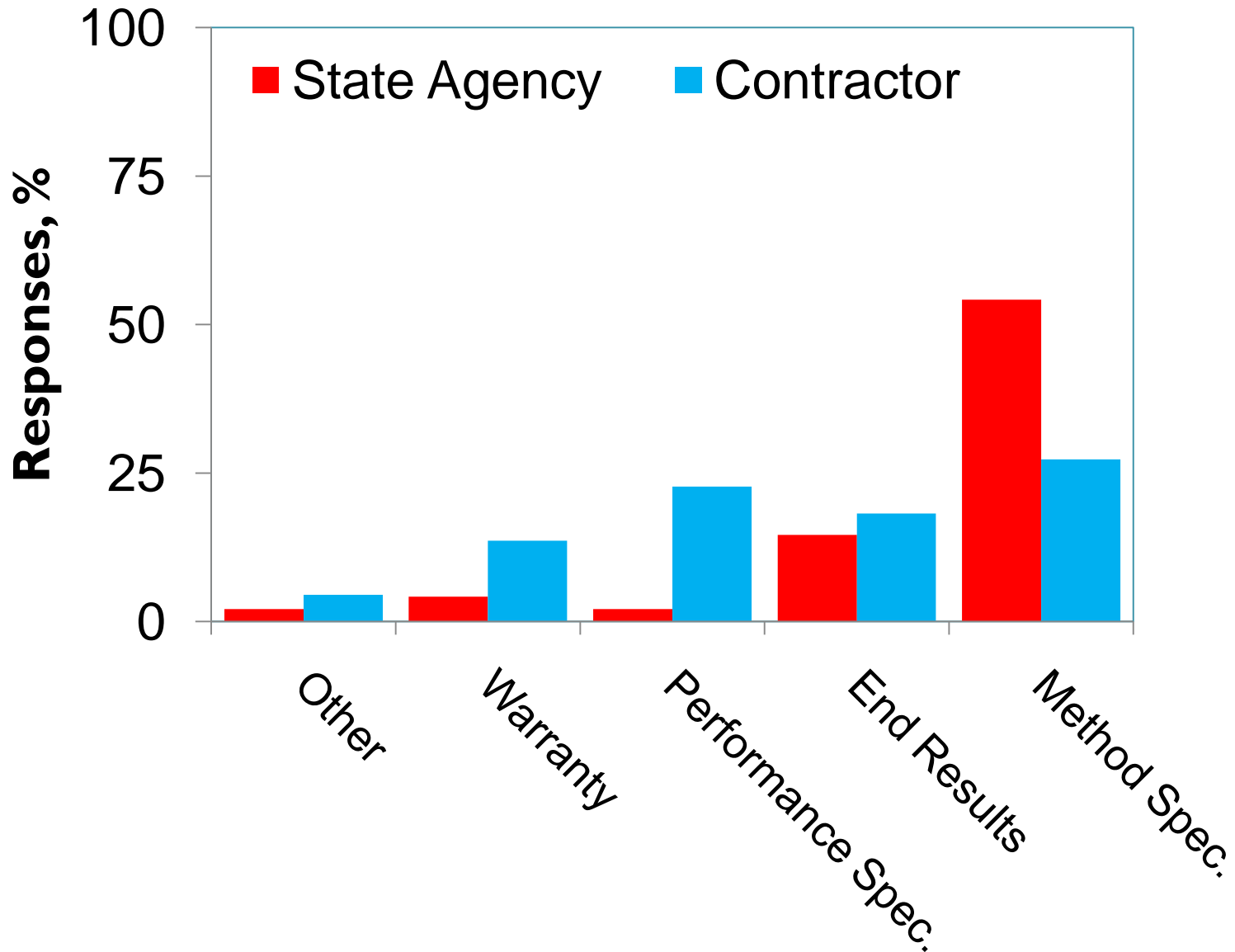


Specifications

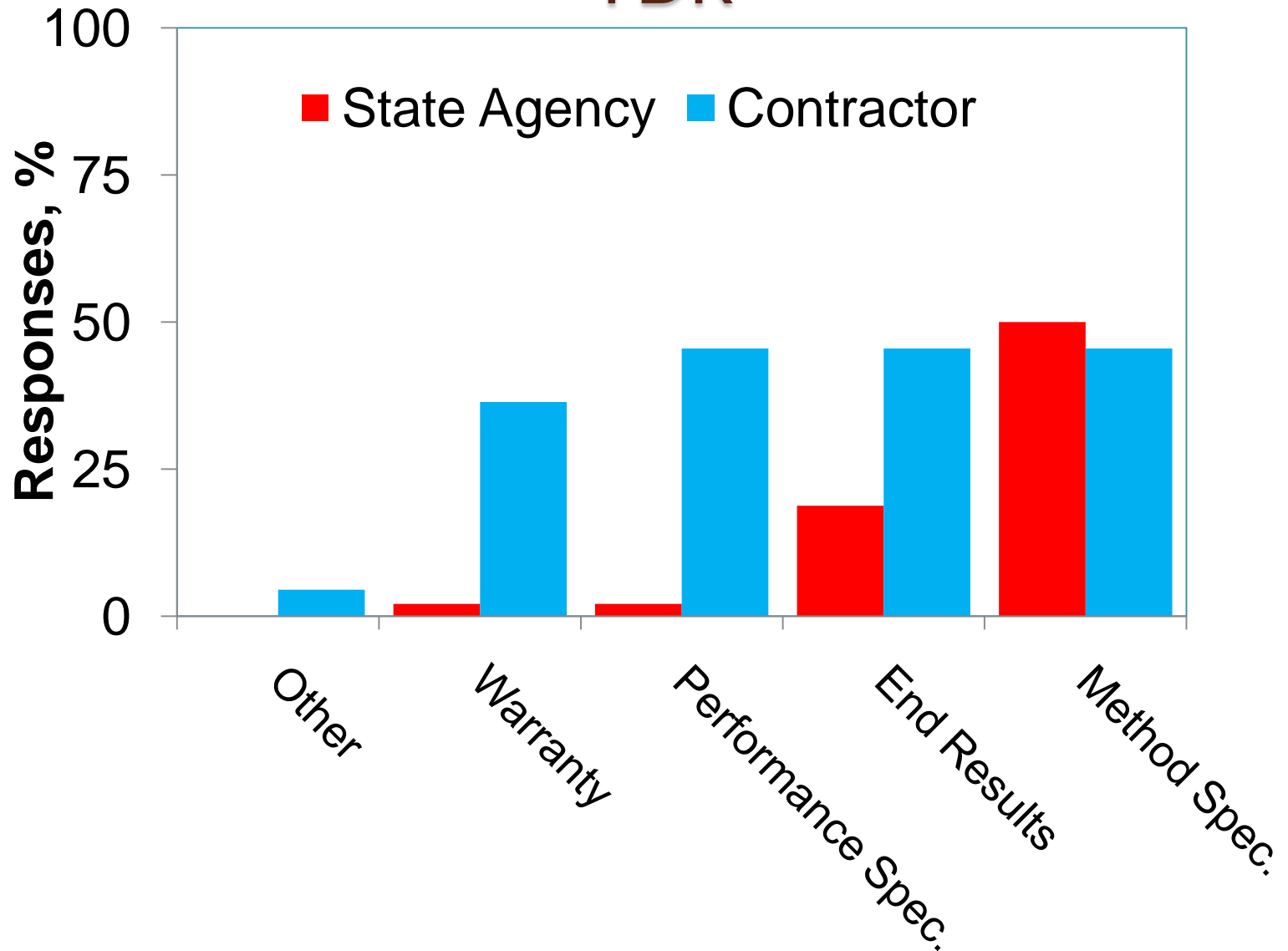
Specifications HIR



Specifications CIR



Specifications FDR



Preliminary Observations

- Experience
 - CIR and FDR increasingly used
 - Contractors have more experience with CIR, FDR than agencies
- Annual lane miles
 - Agencies < 50 lane miles per year per type
 - Contractors > 50 lane miles for CIR and FDR

Preliminary Observations

Project Selection

- Traffic
 - Contractors more likely to use CIR and FDR on higher AADT
- Climate
 - Cold/wet or hot/wet climates
 - Needs further consideration for HIR and CIR
 - FDR OK
- Geometry
 - Minor lane widening, tight turns
 - Mountainous terrain with grades
 - CIR, FDR

Preliminary Observations

- Wear Courses
 - Overlays preferred by agencies/contractors for
 - HIR, CIR, FDR
 - Contractors more likely to use other options for CIR and FDR
 - Fog and chip seal for FDR
- Specifications
 - Agencies mostly method specs
 - Contractors wider range of experience

Questions ??????

