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✸ *Facility-Specific Speed/Non-FTP Correction Factors and VMT Weighting Estimates*

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Facilty-Specific Correction Factors and VMT Weighting Estimates

- Background
- Facility-Specific Cycles
- Testing
- Analysis
- Proposal for MOBILE6
- VMT Weighting Estimates

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Background

- MOBILE5
- Real-world driving
- Transportation models
- Air Quality Models

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Facilty-Specific Cycles

- Include non-FTP driving, including enrichment effects
- Different roadway (facility) types, at different average speeds
- Based on chase car data
- Details in Report “Development of Speed Correction Cycles” by Sierra Research

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Testing

- 50 vehicles under contract / 20” twin-roll dynamometer
- 23 vehicles at EPA / 48” dynamometer (with and without air conditioning)

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73 Vehicles

- Randomized order of cycles
- 55 passenger cars (48 1988+, 7 pre-1988)
- 18 light duty trucks (13 1988+, 5 pre-1988)

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Preliminary Analysis

- Emission level
- Freeways vs. Arterial/Collectors
- Low speed (2.5 - 12.9 mph)

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Emission Level

- Calculated LA4 Running Emissions:
  LA4 Running = (Running 505 * .479) + (Bag 2 * .521)
- Cutpoints (low/high):
  HC: LA4 Running > 0.8 grams/mile
  CO: LA4 Running > 15 grams/mile
  NOx: LA4 Running > 2.0 grams/mile
- Propose separate speed curves by emission level for all pollutants

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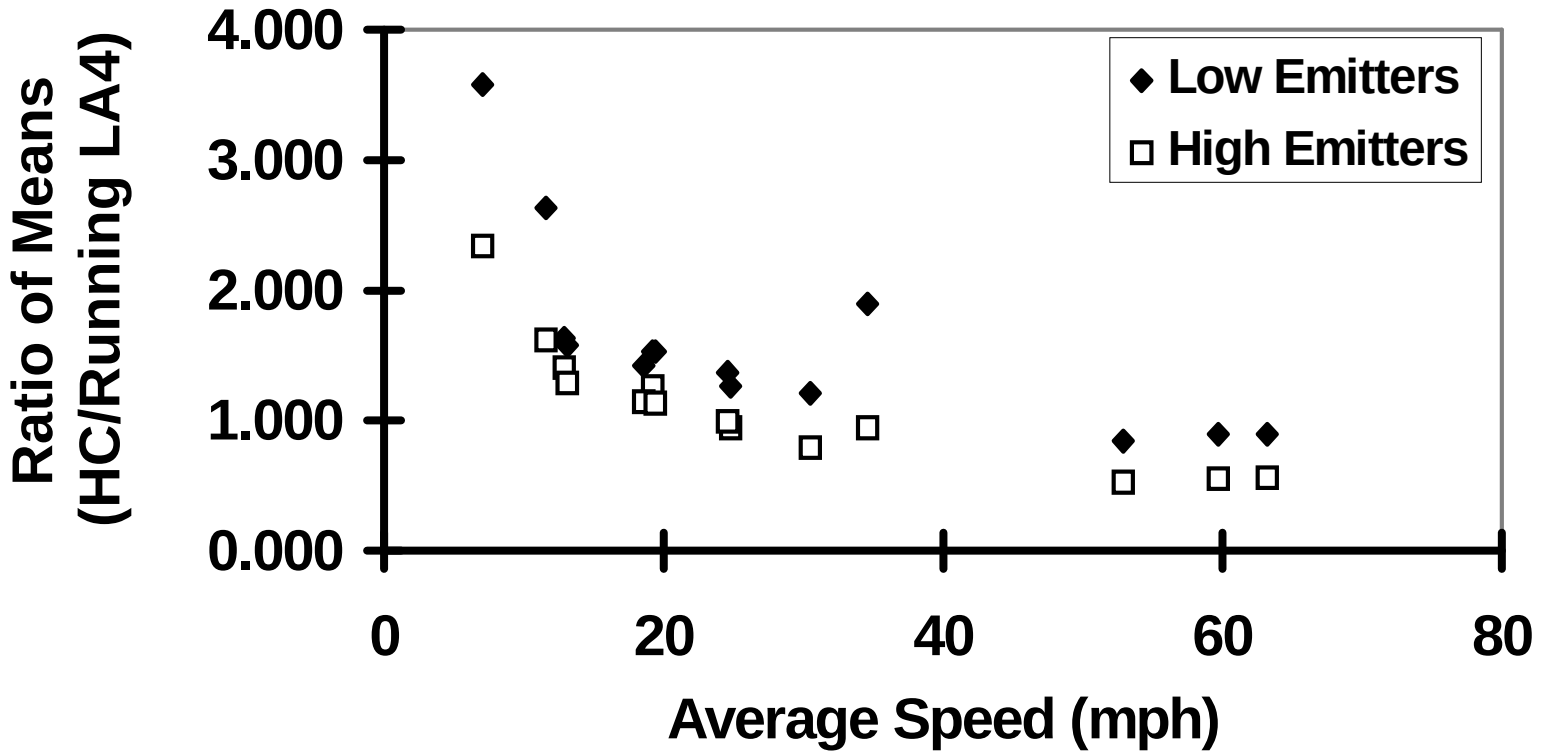
Facility Cycles Ratio of Means, HC by Emitter Level Groups



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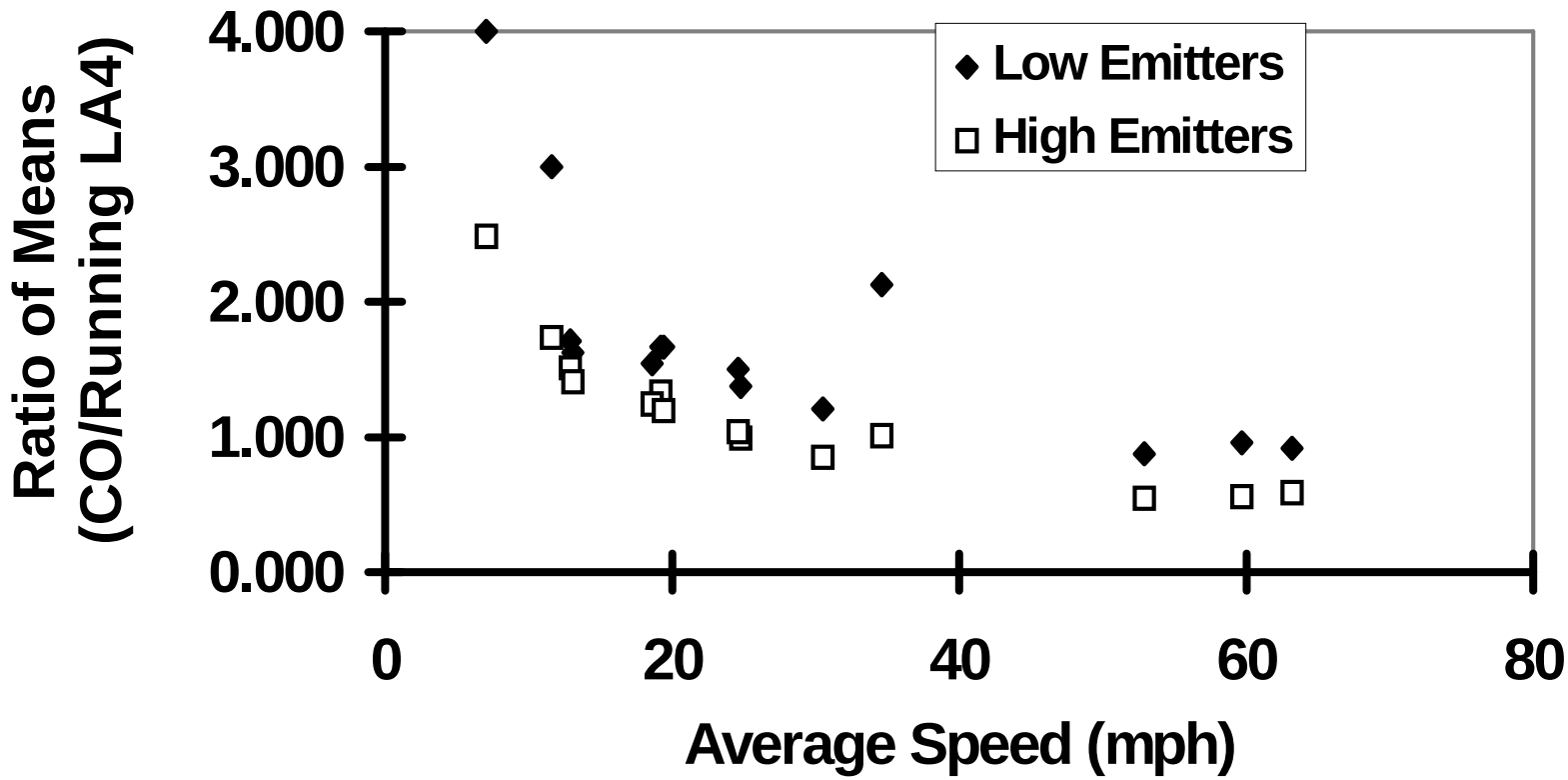
Facility Cycles Ratio of Means, CO by Emitter Level Groups



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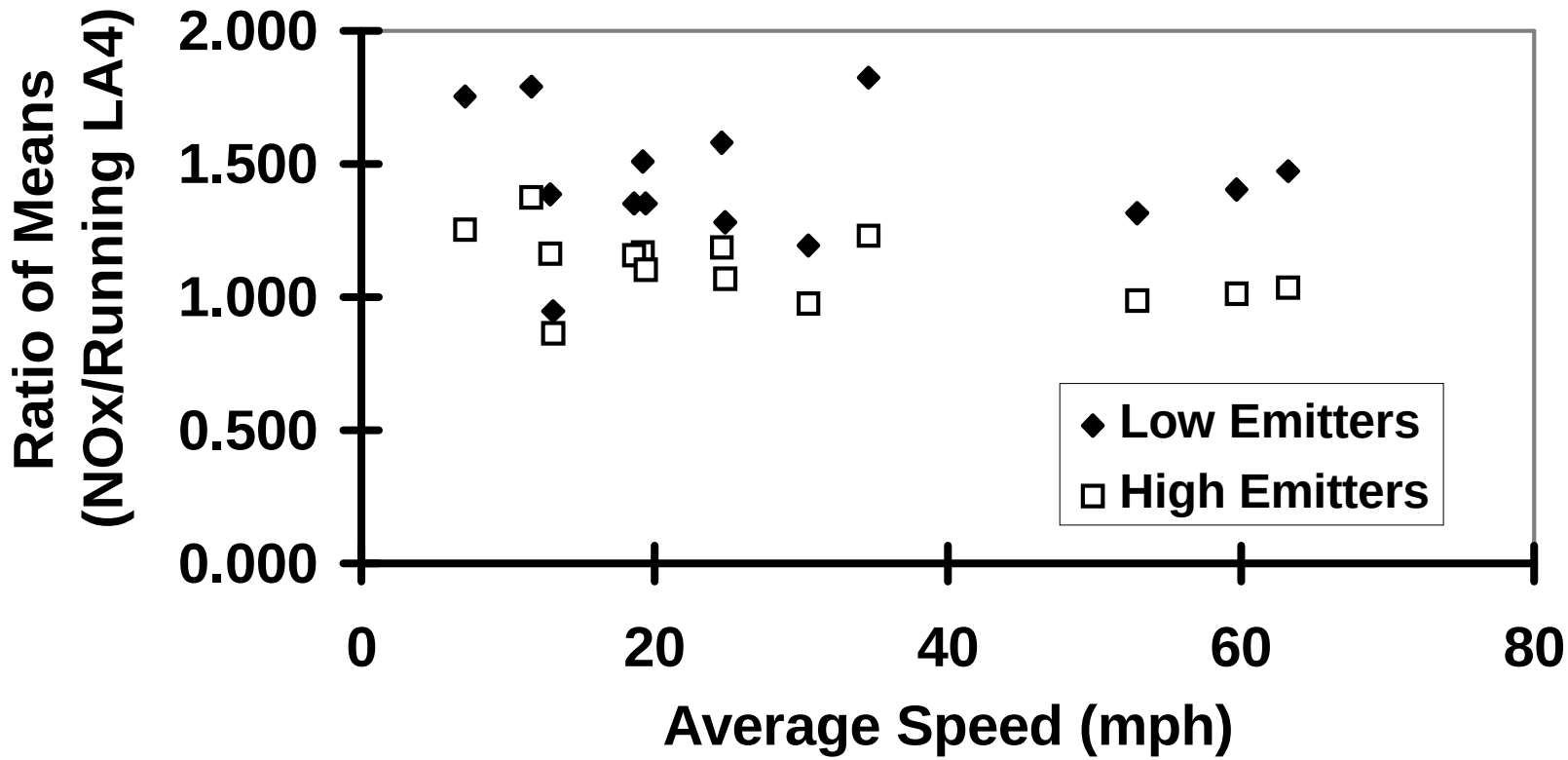
Facility Cycles Ratio of Means, NOx by Emitter Level Groups



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Freeway vs. Arterial/Collector

- Speed overlap range 13-25 mph
- NOx strong statistical difference
- HC some difference for low emitters
- CO no statistical difference

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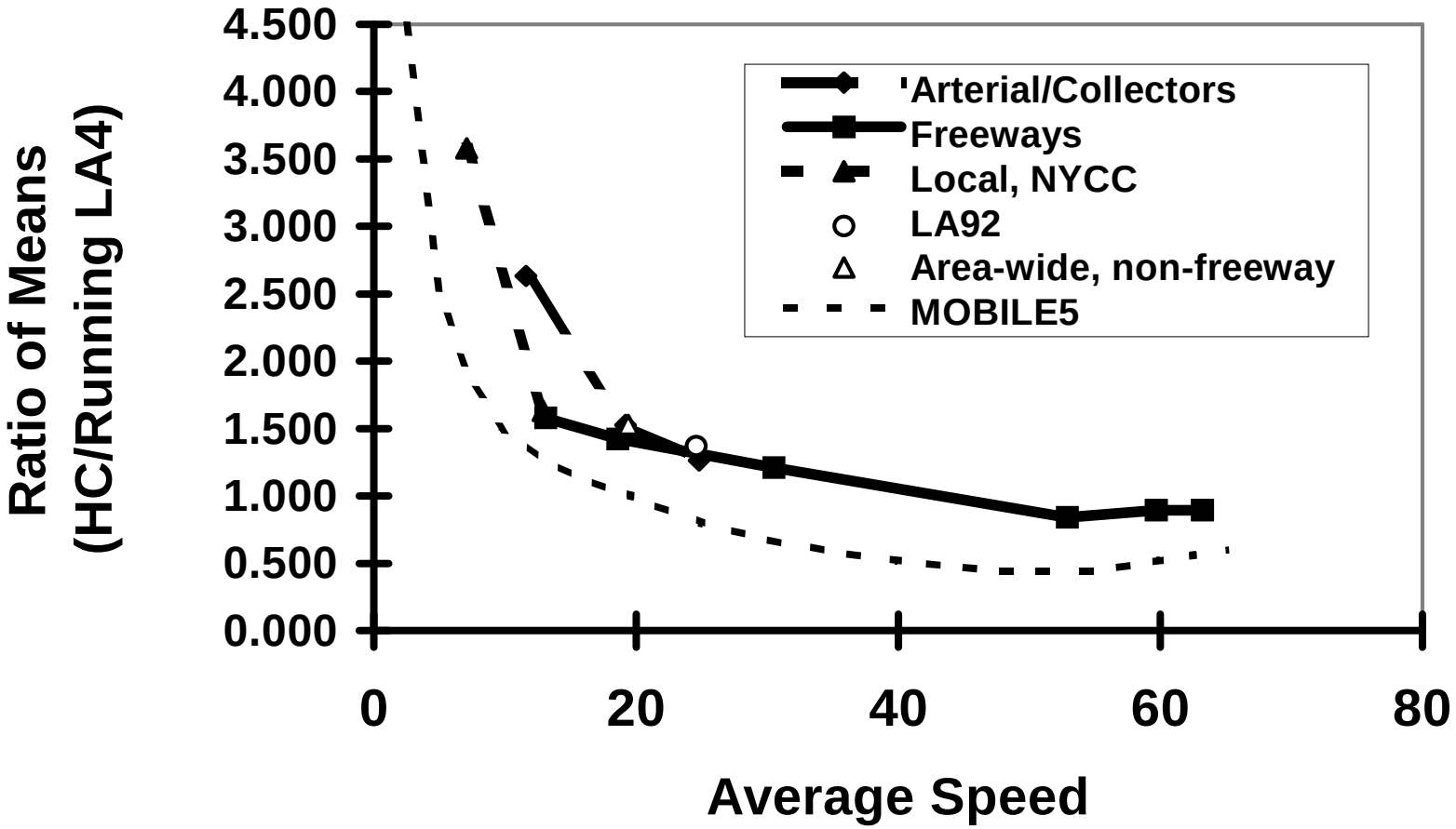
Facility Cycle Data, HC



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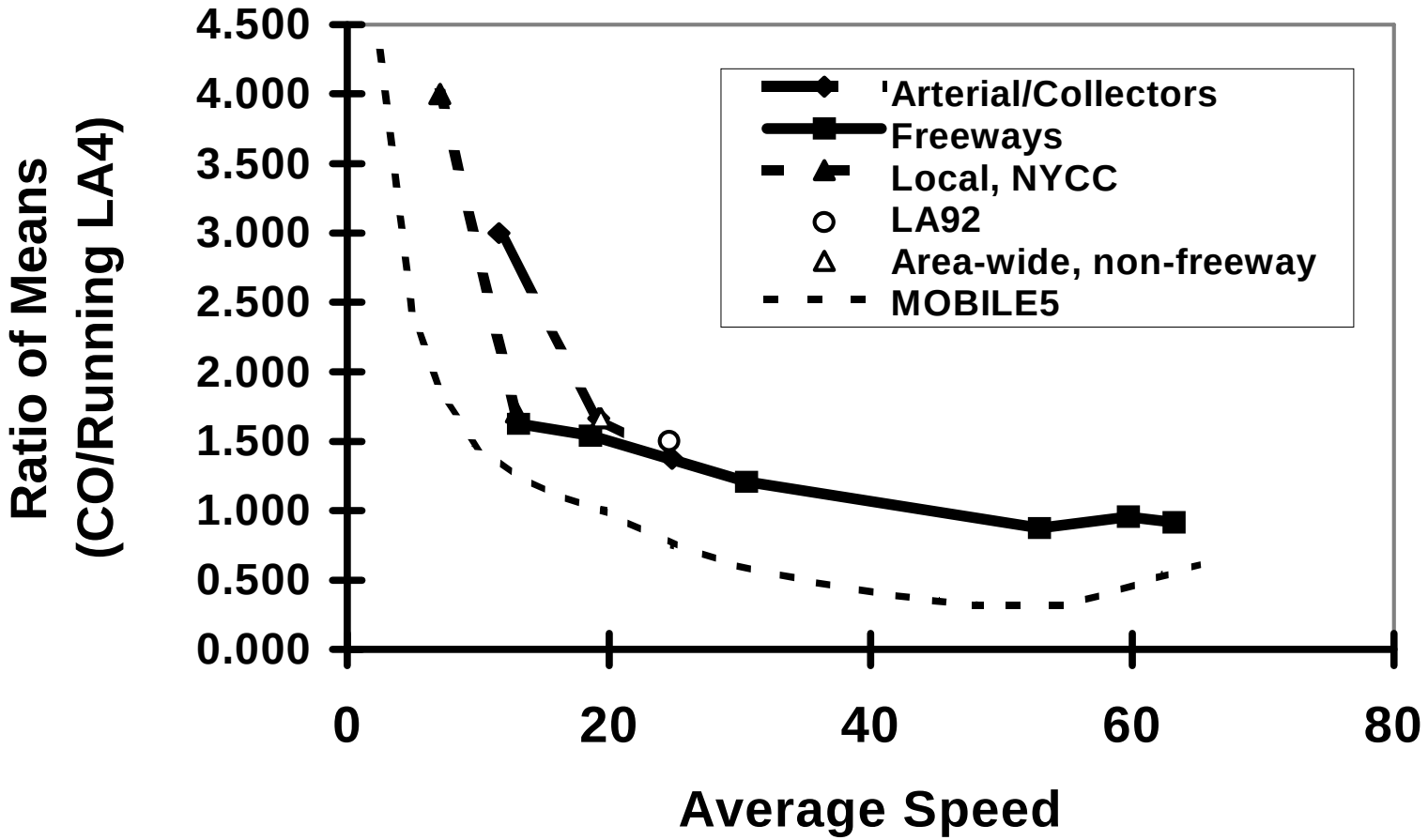
Facility Cycle Data, CO



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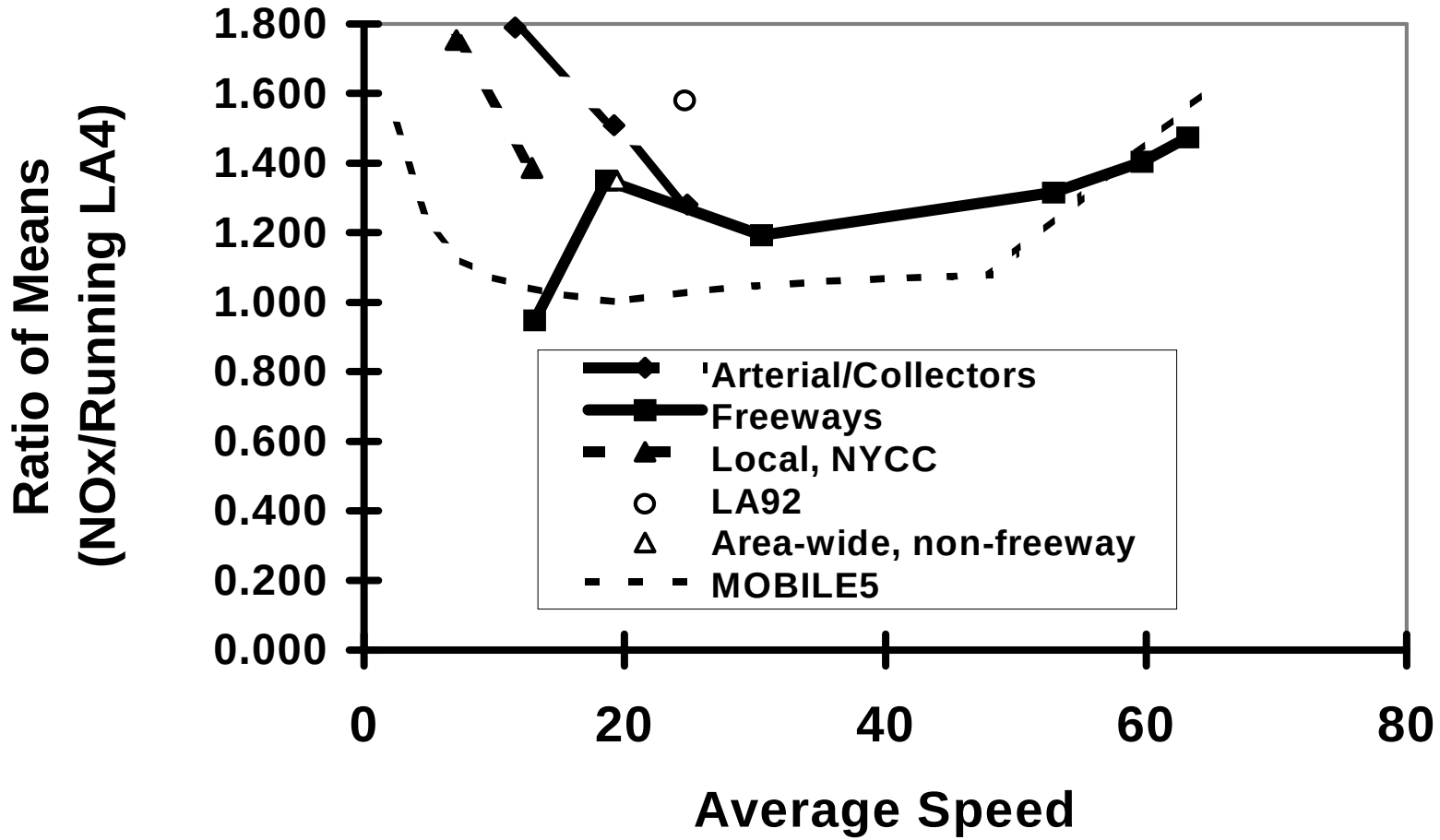
Facility Cycle Data, NOx



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Proposal for MOBILE6

- Facility-specific (freeways and arterial/collectors) speed adjustments for:
  - NOx for both low and high emitters
  - HC for low emitters, same curve for high emitters
  - CO same curve used for both roadway types, different for low and high emitters

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Comparison to MOBILE5

- True “Running emission” correction factor
- Higher due to non-FTP effects
- Flatter at high speed end (freeways)

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Low-Speed Data

- Local Cycle 12.9 mph
- Old low-speed data (2.5, 3.6, 4.0, 7.1-NYCC, 12.0 mph)
- NYC cycle in both data sets to link

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Proposal for MOBILE6

- Lowspeed curve utilizing local and NYC cycles with old speed correction data

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Cycle Speed Ranges

- Freeways 13.1 - 63.2 mph
- Arterial/Collectors 11.6 - 24.8 mph
- Lowspeed/Local 2.5 - 12.9 mph

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Proposed Model Capability

- Appropriate speed ranges for all roadway types
- Issue: how to deal with speeds outside data range

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Area-wide VMT Weighting Factors for Roadtype and Speed

- Work assignment in progress to develop guidance for States
- Examples for several sizes of cities
- Determine National Average VMT Weighting factors as default for MOBILE6

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Area-wide VMT Weighting Factors Methodologies

- Traffic Count Data
- Travel Demand Models

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Traffic Count Data Method

- Available for at least subset of roadways
- Can be proportionately weighted to reflect average landuse characteristics
- Speed estimation procedures:
  - Highway Capacity Manual
  - Bureau of Public Roads

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Travel Demand Model Method

- Set up to give %VMT for functional classes by speed ranges
- More accurate method if available

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Example Cities

- Ada County, Idaho (Boise Region)
- Charlotte, NC
- Chicago, Il
- Houston, TX
- New York City, NY

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National Averages

- Based on:
  - Cities with chase car and instrumented vehicle data (Baltimore, Spokane)
  - Weighted with distributions of example cities

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Reports

- "Development of Speed Correction Cycles" by Sierra Research on website
- EPA Facility Cycle Analysis report should be posted for Stakeholder review by December
- Area-wide VMT Weighting Guidance and Report on development of National VMT weighting factors should be posted on website by December