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On-Road Motor Vehicle Emissions Measurements Worldwide

Sajal S. Pokharel

Gary A. Bishop

Donald H. Stedman

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On-Road Motor Vehicle Emissions Measurements Worldwide

www.feat.biochem.du.edu

Sajal S. Pokharel, Gary A. Bishop and Donald H. Stedman

Department of Chemistry and Biochemistry

University of Denver

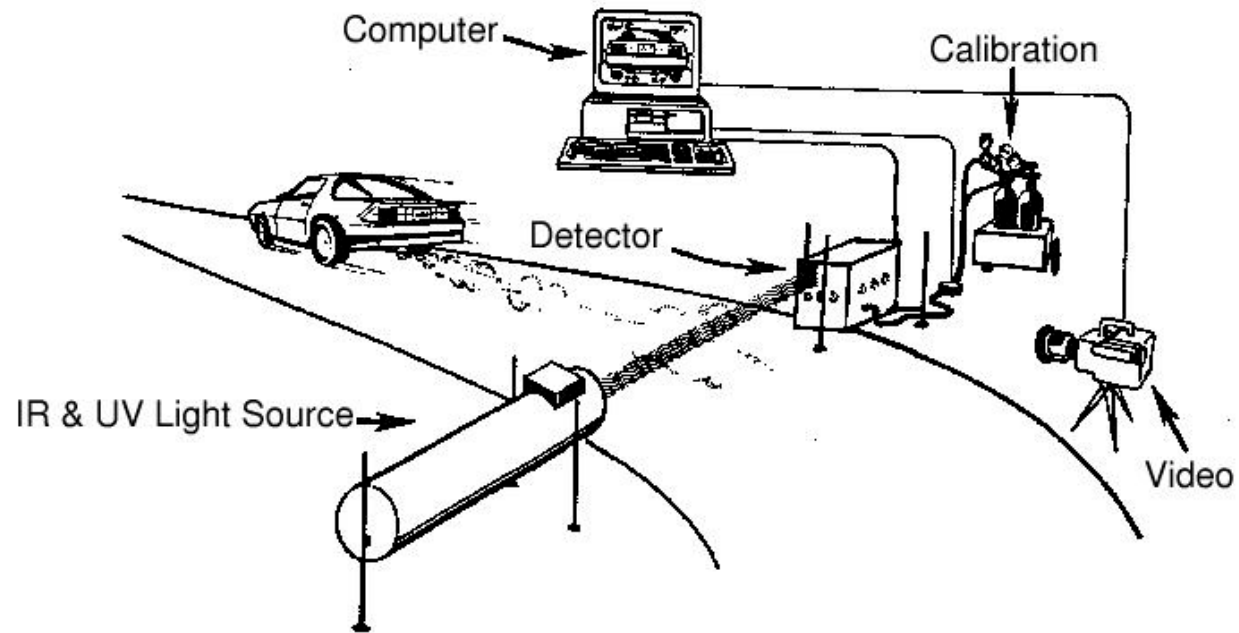
2101 E. Wesley Ave.

Denver, CO 80208

July 2001



CO, HC and NO Remote Sensing





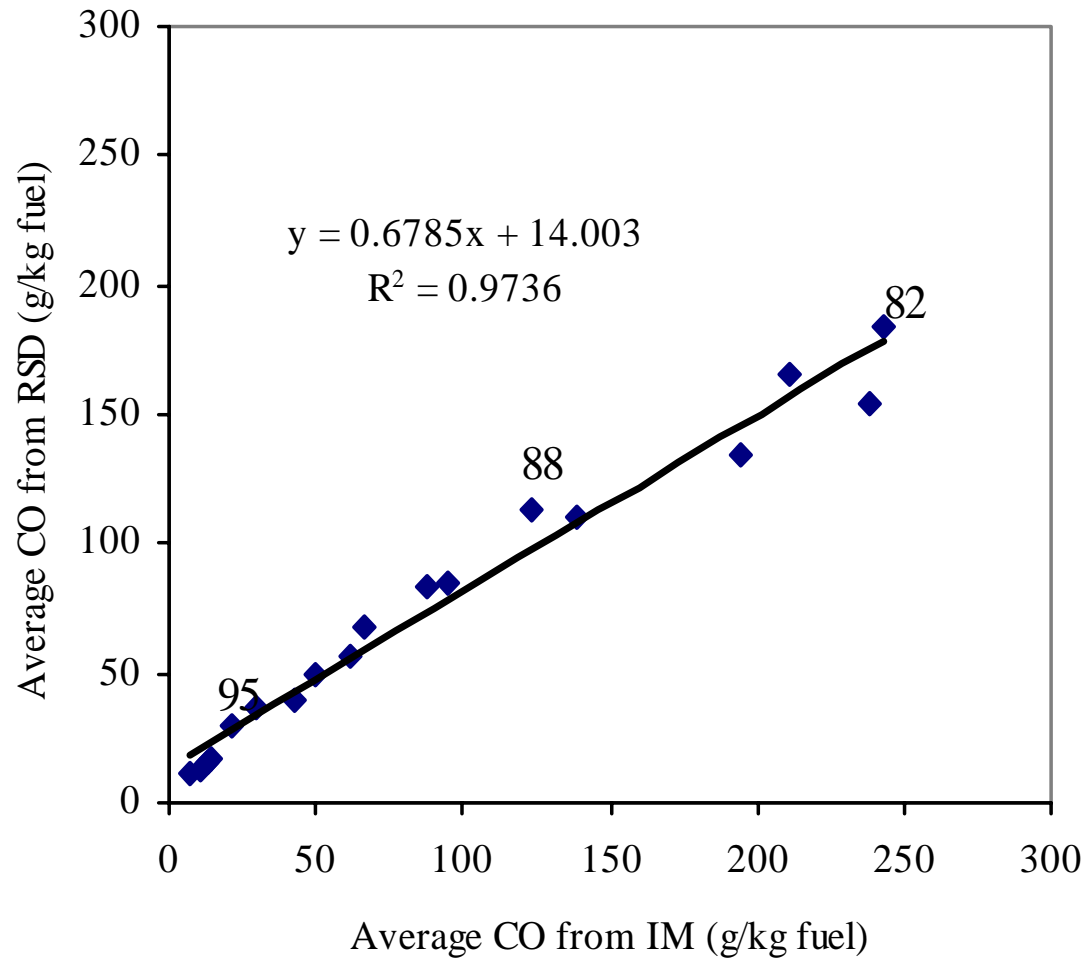
先鋒環保有限公司 Pioneer Environmental Systems Ltd. www.pioneer-env.com

Remote Sensing versus IM240

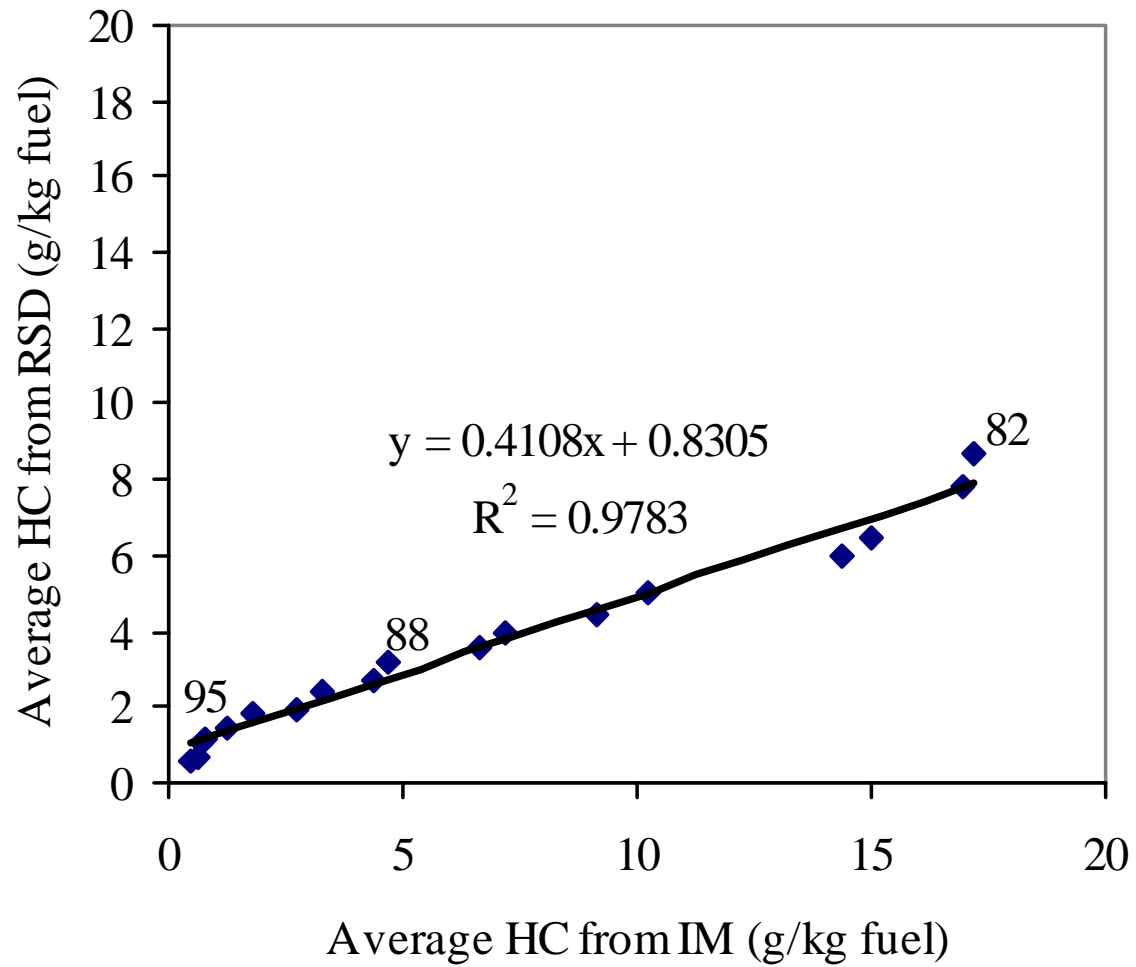
Correlation in grams/kg

- Data averaged by model year correlate very well
- Cost of RSD: \$25,000
- Cost of IM240: \$25,000,000

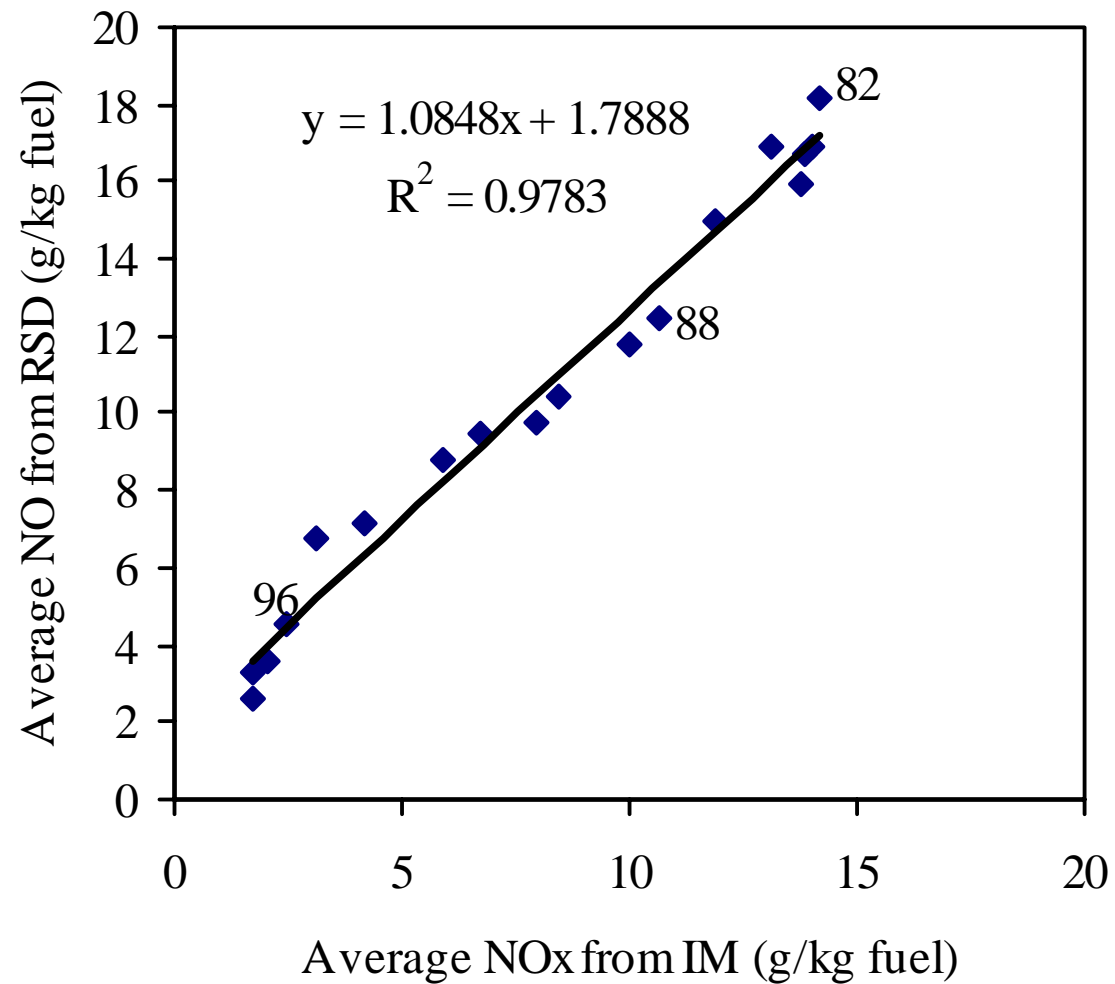
Denver 1999 CO

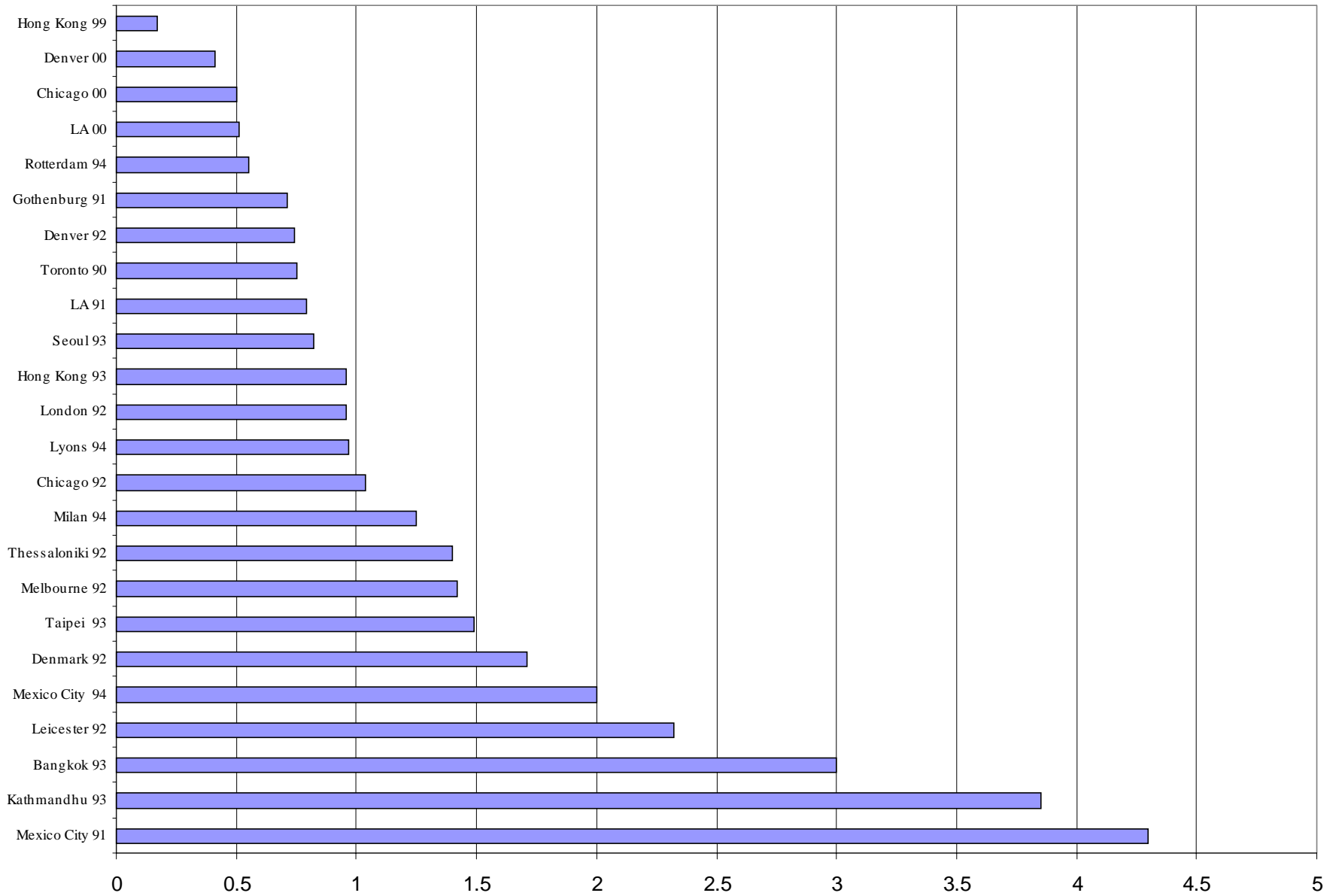


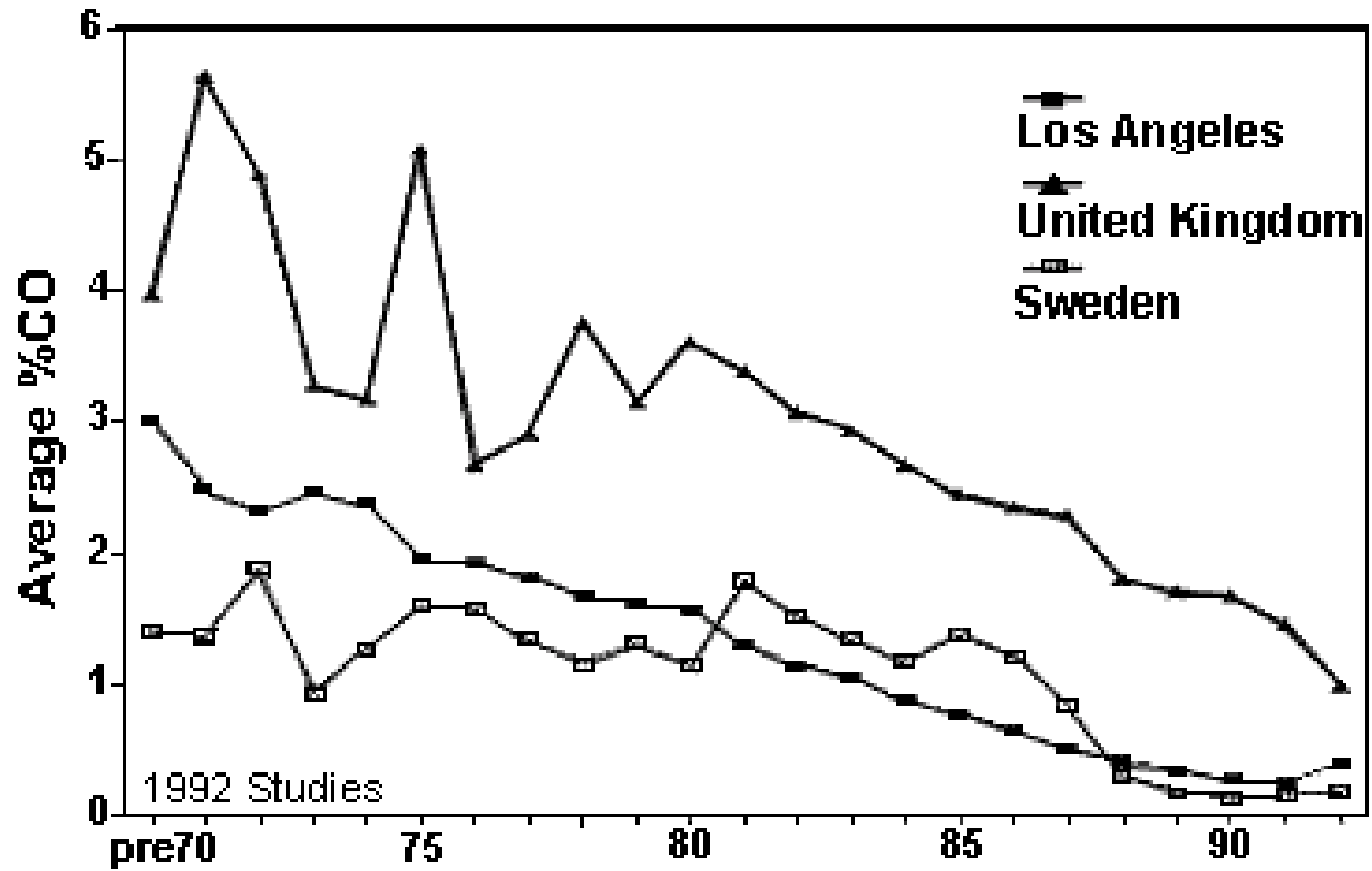
Denver 1999 HC

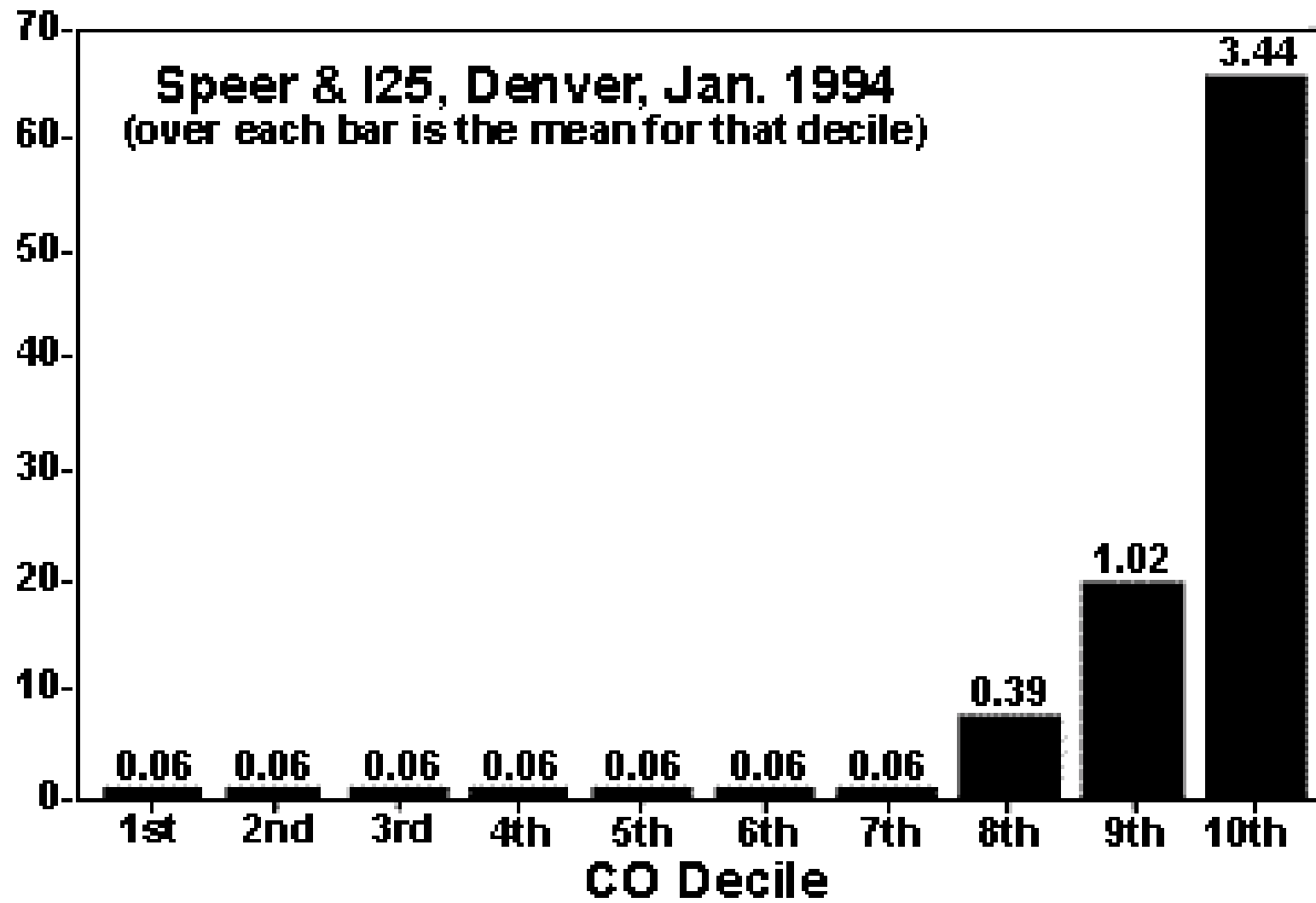


Denver 1999 NO



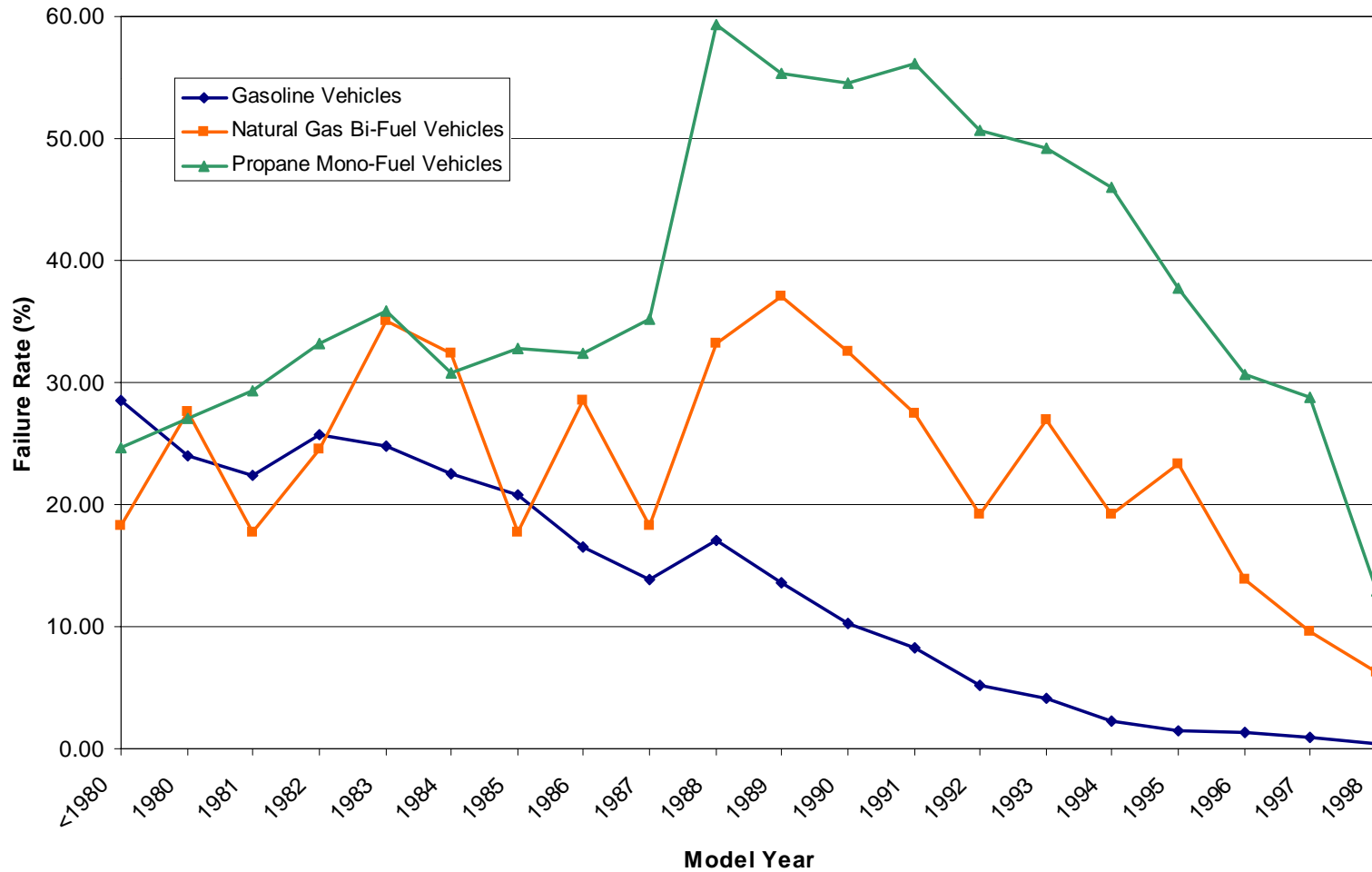






AirCare 1 Alternative fuel failure rates comparison (inspections in 2000)

Failure Rates of Different Fuel Types Vehicles by Model Years



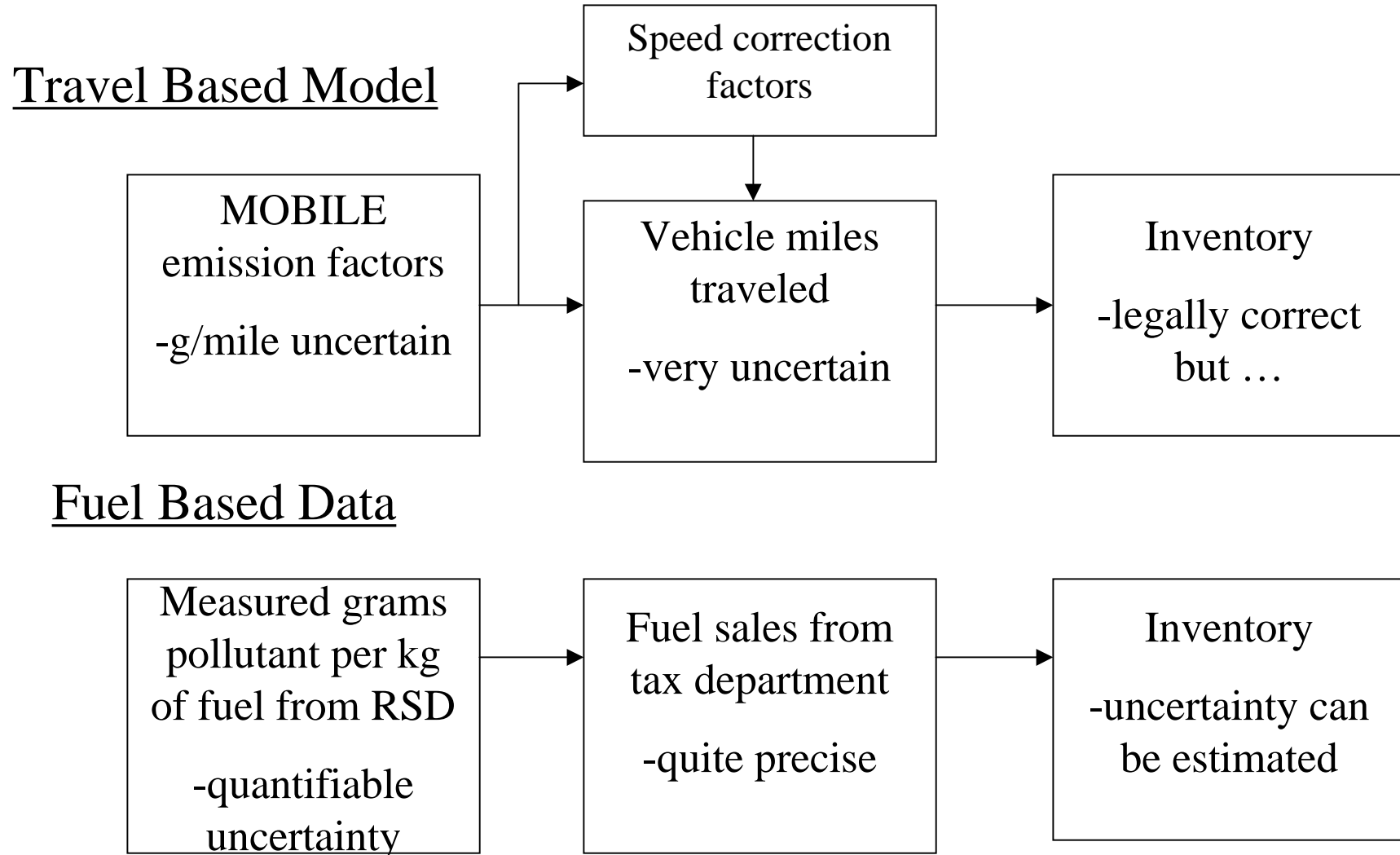
**A few broken vehicles cause
most of the emissions.**

Catalysts and maintenance are
both important.

Propane and CNG are NOT
“cleaner burning”.

RSD is a very good tool for
emissions inventory.

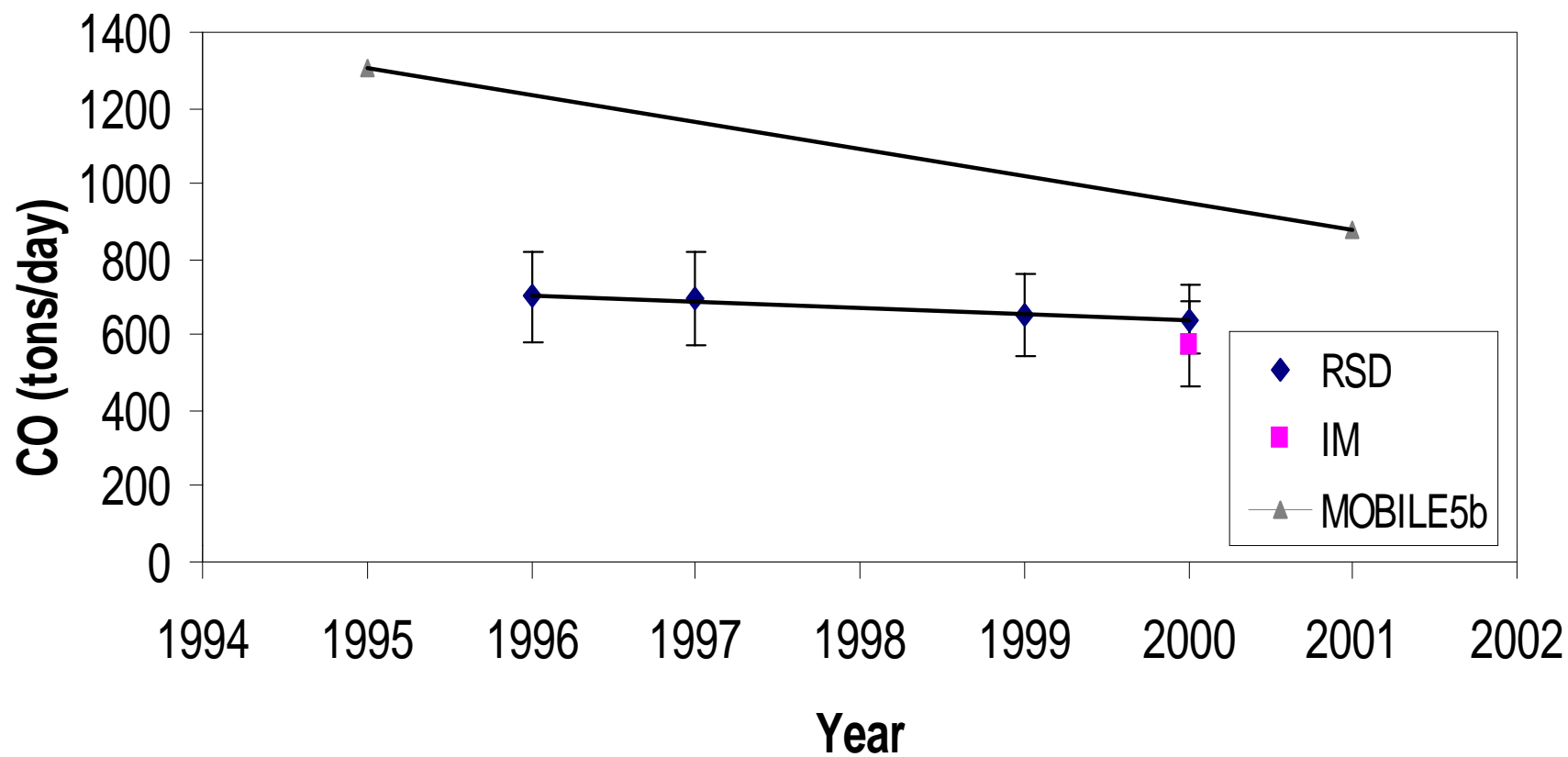
Mobile Source Emissions Inventory Methods



Emission Factors and Inventories for Denver 2000

	CO	HC	NO	Units
Gasoline (LTK, PAS)	66	9	7	g per kg of fuel
Gasohol (LTK, PAS)	59	8	7	g per kg of fuel
Diesel trucks	32	14	24	g per kg of fuel
Gasoline (LTK, PAS)	369	48	37	Tons/day
Gasohol (LTK, PAS)	220	30	27	Tons/day
Diesel trucks	52	22	38	Tons/day
Total	642	100	102	Tons/day

CO Inventories in Denver for Several Years



Implications

- RSD method ideal for realistic on-road mobile source emissions inventories
- Only need one week of work and fuel sales to get fuel based emissions inventories
- RSD is criticized for variable readings from vehicles measured repeatedly, but all emission tests demonstrate this feature.

Map of Study Area with Measurement Locations

