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PM2.5 Mass Data Quality Assessment

May 22-25 Workshop

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OAQPS**



DQA Approach

- Purpose of DQA is to determine whether data are of **type**, **quantity**, and **quality** to support intended use.
 - **Type** - Representativeness, comparability
 - **Quantity** - **Completeness**
 - **Quality** - **Precision** and **Bias**
- Current focus
 - explore data quality
 - evaluate quantity, precision, and bias
 - develop data quality indicators (OAQPS, Regional Office, State/Local agencies)
 - verify assumptions made in DQO process
- Future focus
 - Full DQA of mass and PEP data (Aug-Sept, 00)
 - QA Report of CY99 data (Aug-Sept, 00)



DQA - Data Quantity

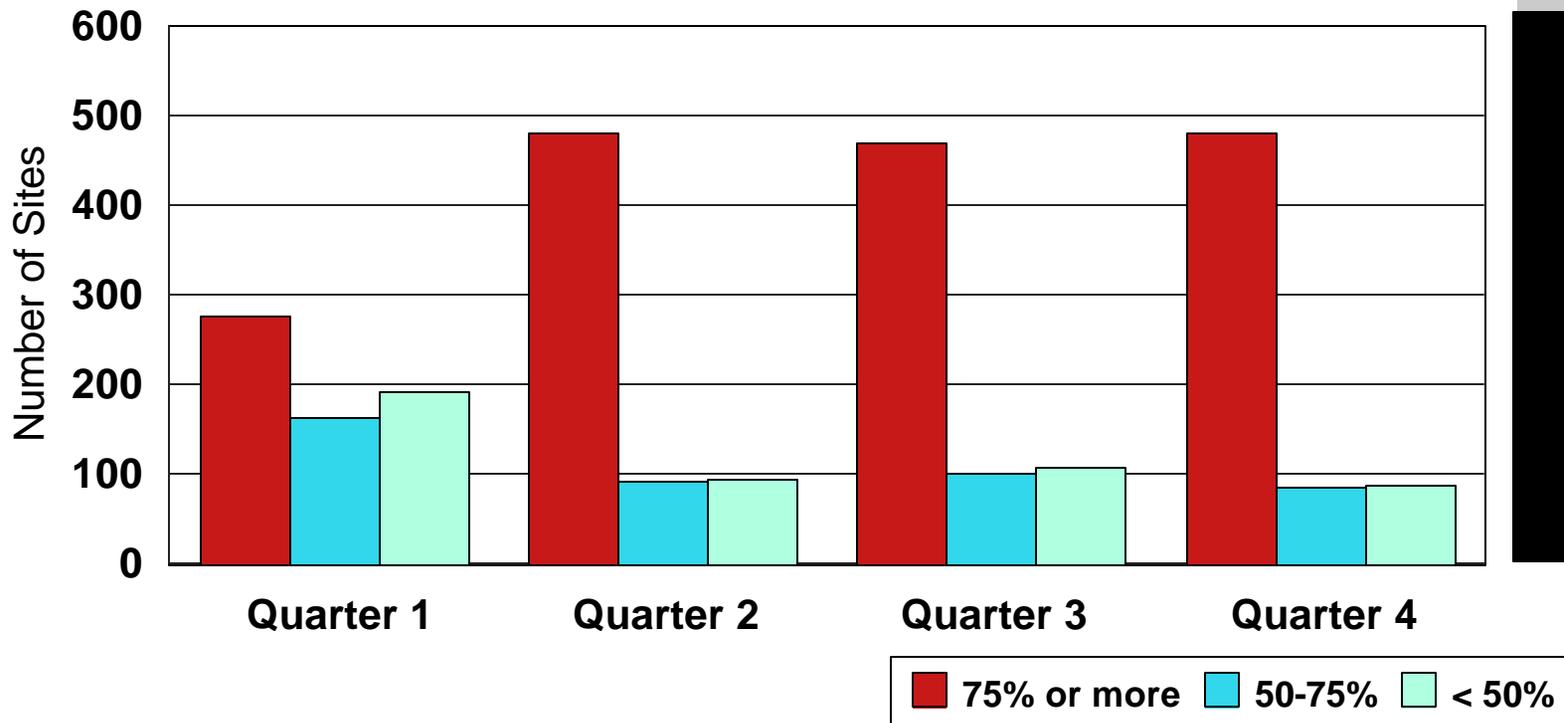
- **Data capture for**
 - ▶ **PM2.5 mass**
 - ▶ **Accuracy (manual flow rate audit 4/yr)**
 - ▶ **Precision (collocation of 25% of mass network with like method designation)**
 - ▶ **Bias (performance evaluation (PEP) 4 times per year at 25% of sites)**

PM2.5 Mass - Data Capture

Data Capture by Quarter, 1999

Primary samplers only (lowest POC)

1033
FRM Sites
operating
as of 5/00



Number of sites reporting data:

633

667

680

654

Number of sites operating:

715

802

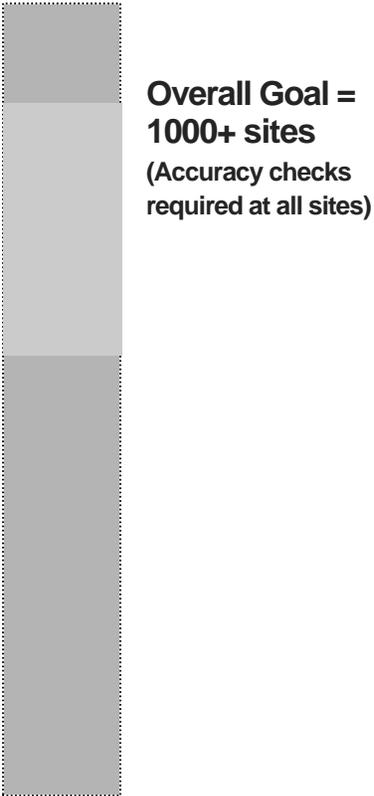
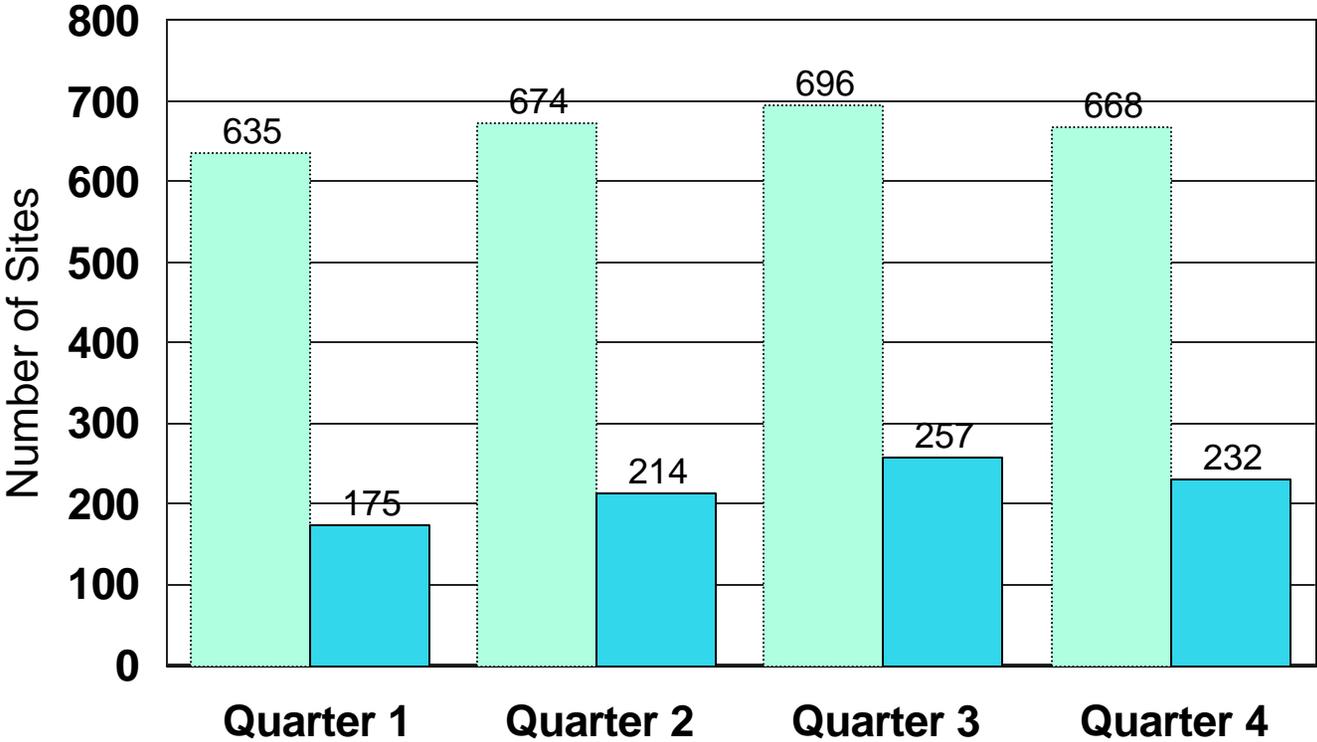
887

952

- 867 FRM sites have data in AIRS (5/1/00).
- Of these, **207 sites have 4 complete quarters (ge 75%)**.

Accuracy - Data Capture

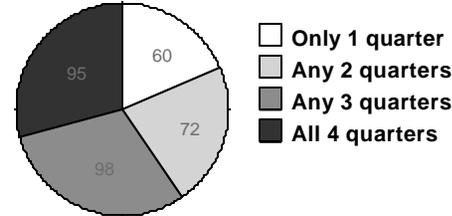
Data Capture by Quarter, 1999



■ Benchmark (All Reporting Sites)
 ■ Sites reporting accuracy data

- Currently, 95 sites reported accuracy transactions in all 4 quarters (at least 1 per quarter)
- 119 sites reported accuracy for Q1, Q2, and Q3

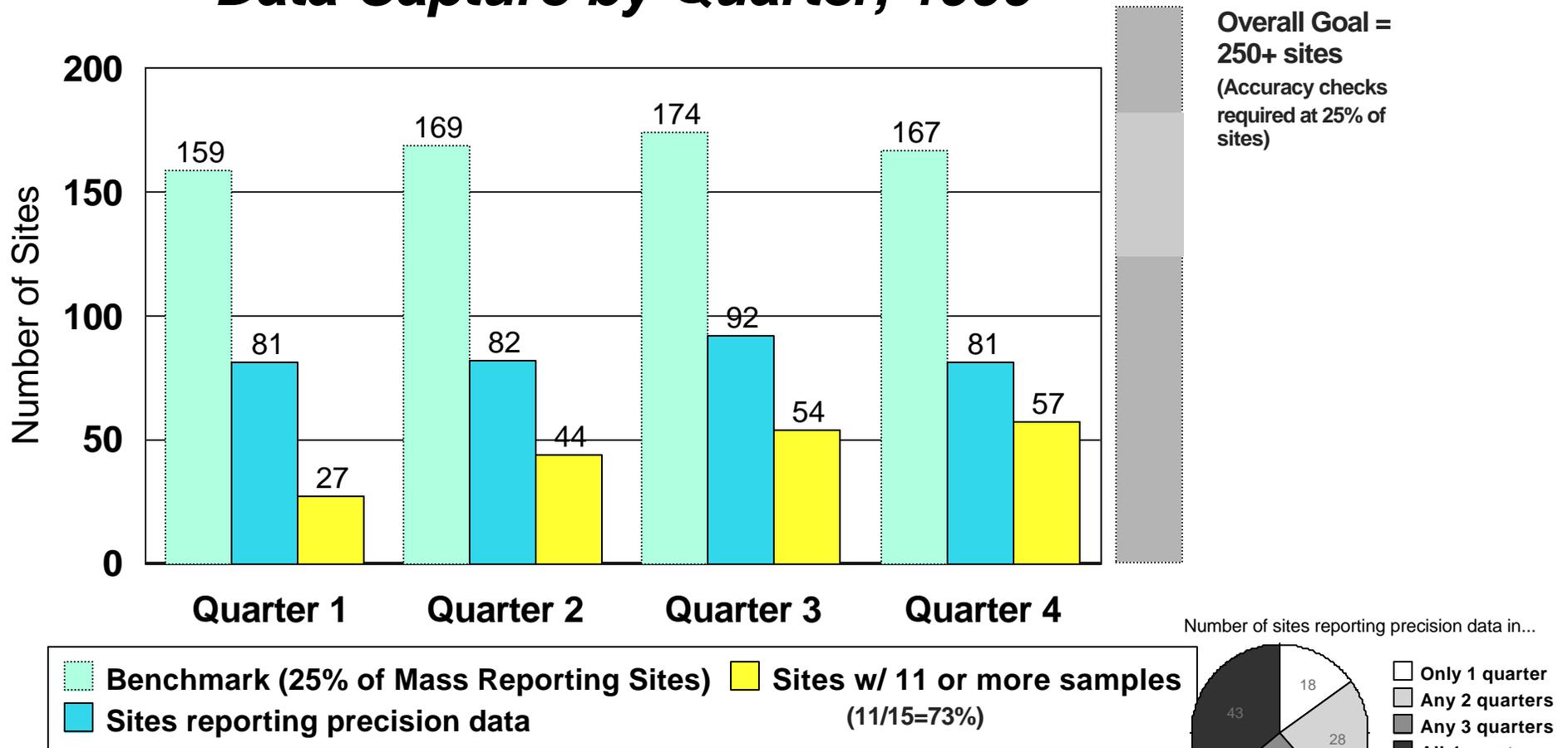
Number of sites reporting accuracy data in...



(325 Total Sites reporting)

Precision - Data Capture

Data Capture by Quarter, 1999



- Currently, 14 sites have 4 complete quarters ($\geq 73\%$)
- 17 sites have complete data for Q1, Q2, and Q3

PEP - Data Capture

Number of Visits	1 Quarter Visited	2 Quarters Visited	3 Quarters Visited	4 Quarters Visited	Total
1,2	47	27	0	0	74
3	0	7	66	0	73
4	0	1	29	112	142
Total	47	35	95	112	289

207 sites with ≥ 3 quarters visited meets site visit completeness requirement!

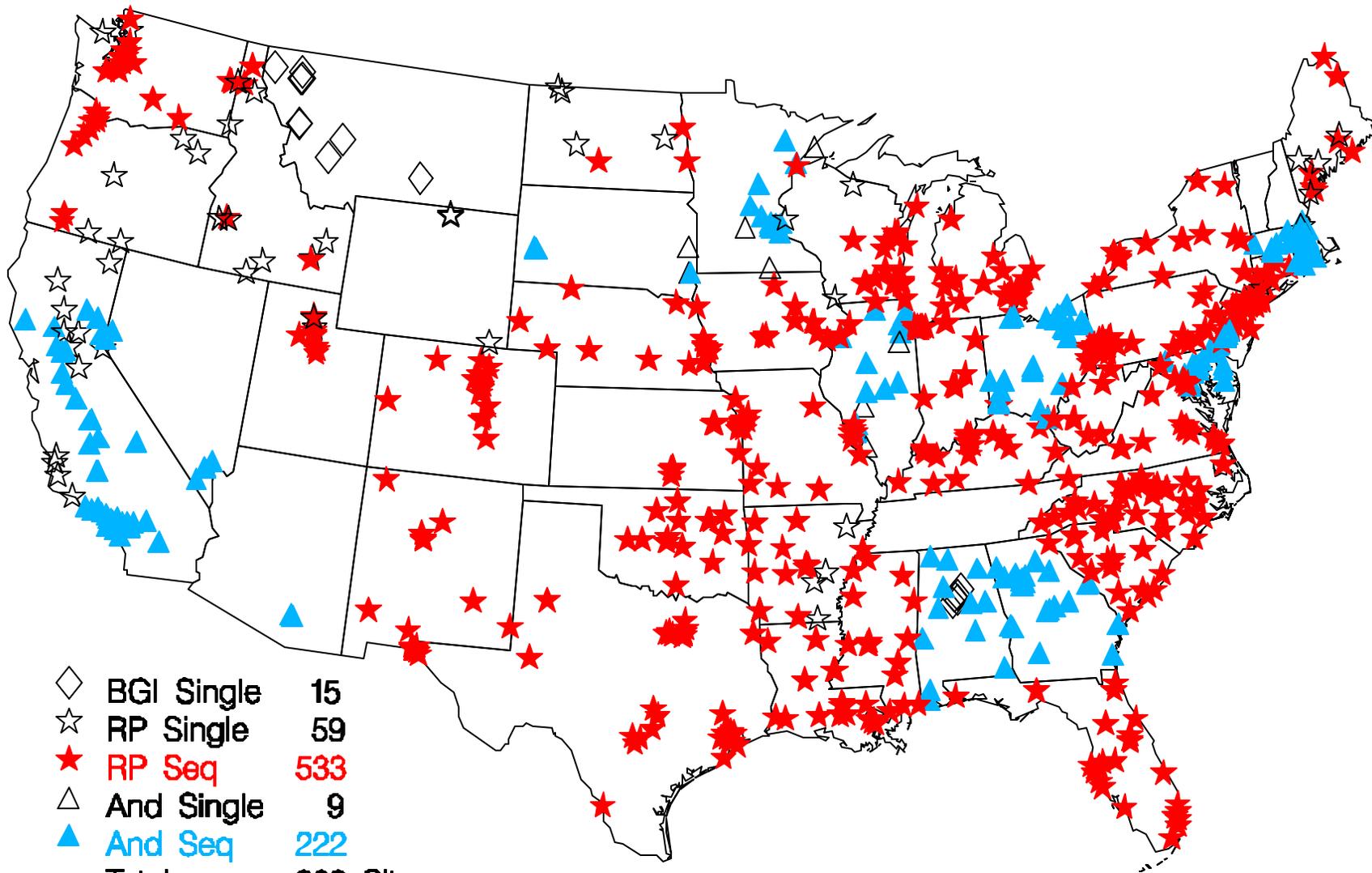
~726 sites available for sampling on
01/99
 $207/726 = 28\%$ meets the 25% CFR completeness requirements!



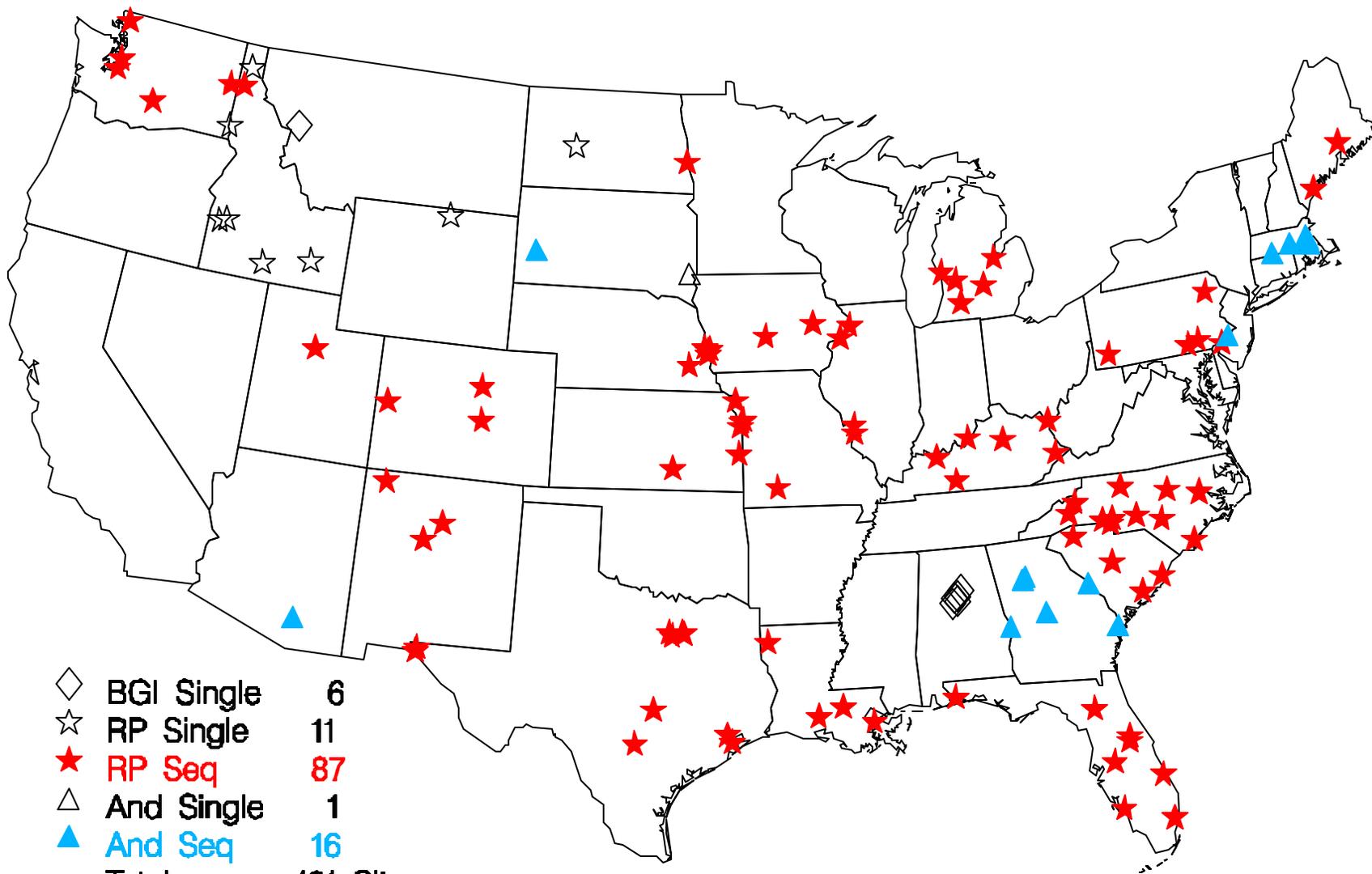
DQA- Data Quality

- Overall quality measured by
 - Collocated monitors
 - provides estimates of **precision** and **bias**
 - 25% of FRM network collocated
 - PEP
 - provides estimates of **bias**
 - 25% of FRM network evaluated 4 times within a year
- Components of quality
 - blanks and QC checks
 - provides information to understand spatial and temporal variations in precision and bias

PM2.5 Sites Reporting Data to AIRS (Raw or QA Data) (as of 5/4/00)



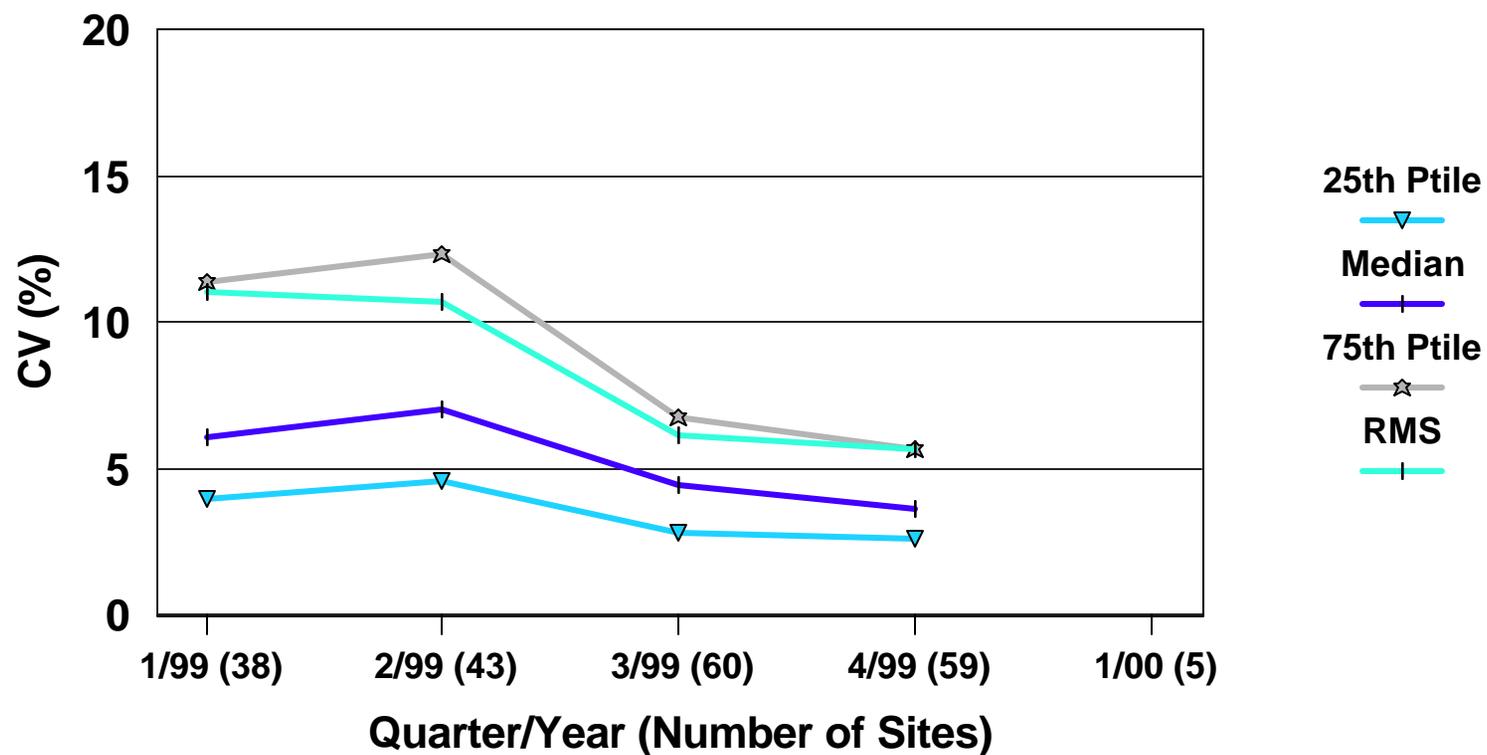
PM2.5 Sites Reporting Precision Data (as of 5/4/00)



◇	BGI Single	6
☆	RP Single	11
★	RP Seq	87
△	And Single	1
▲	And Seq	16
	Total	121 Sites

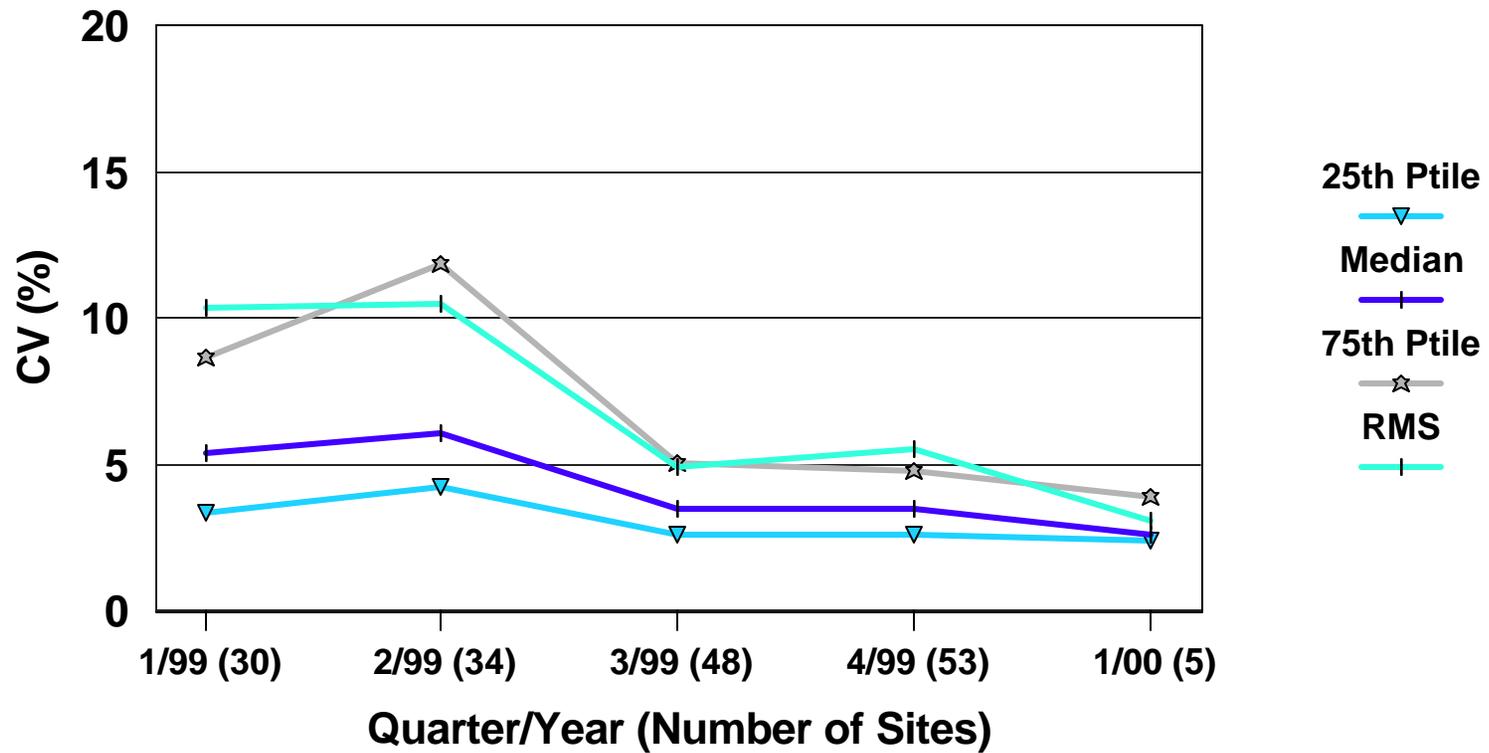
Preliminary Estimate of Qtrly CV for And + R&P Seq for Site/Qtrs with > 7 Pairs

(as of 5/4/00; based on concs > 6 ug/m3 only)



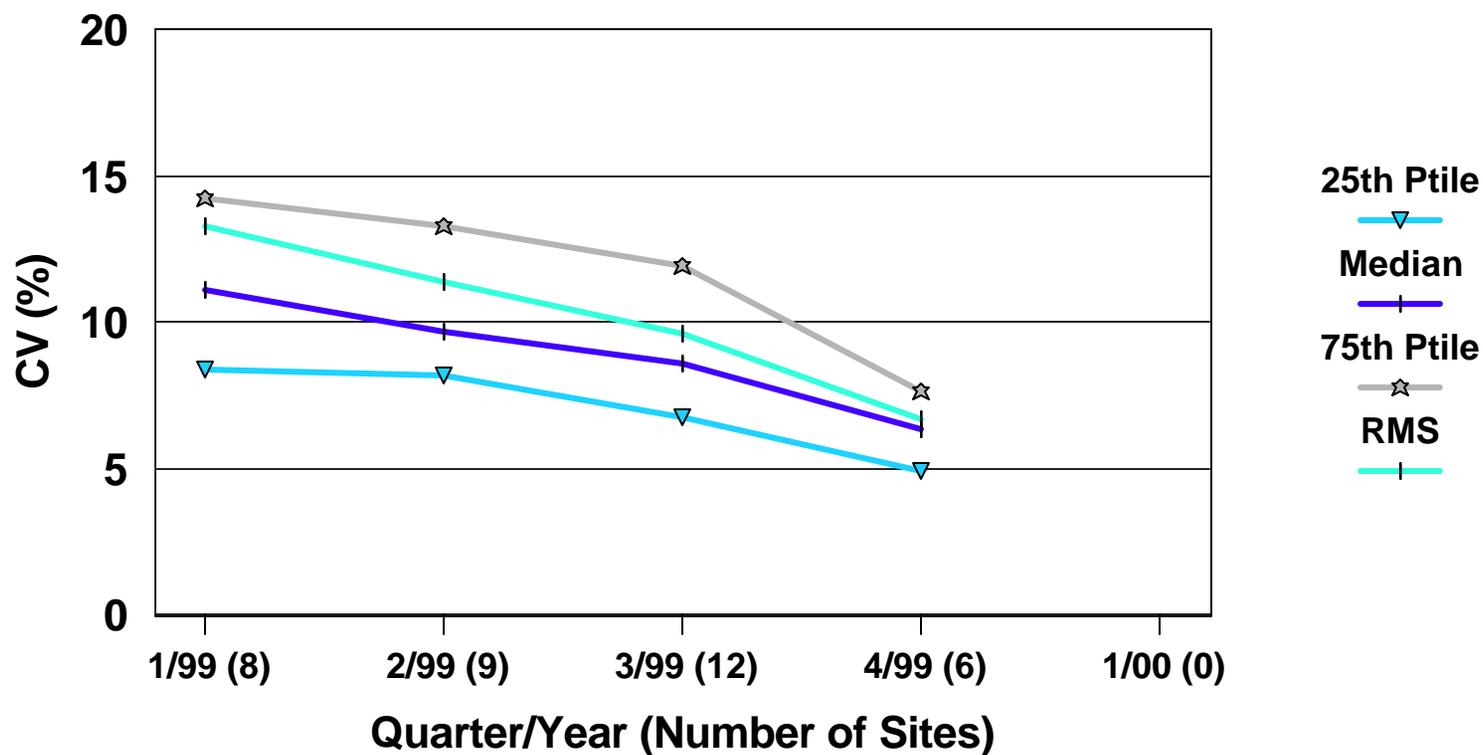
Preliminary Estimate of Qtrly CV for R&P Seq for Site/Qtrs with > 7 Pairs

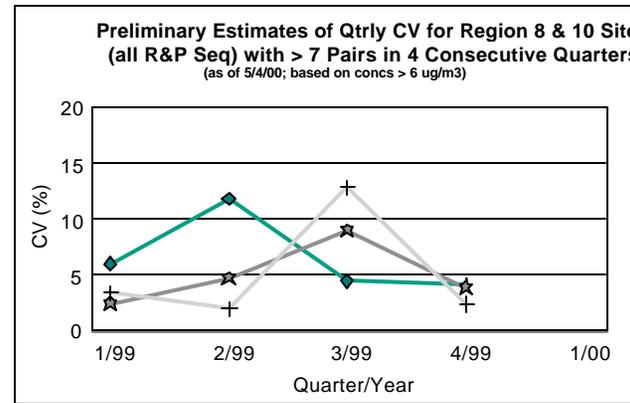
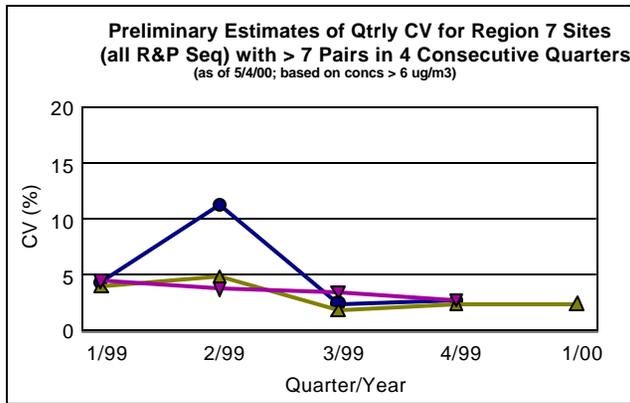
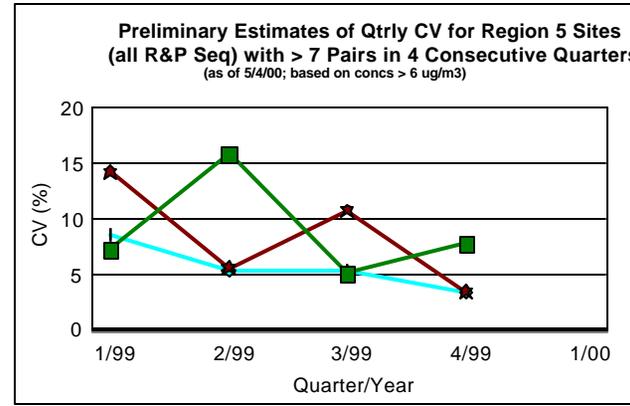
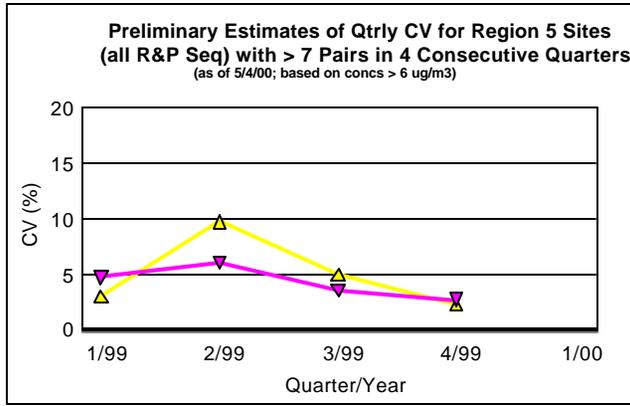
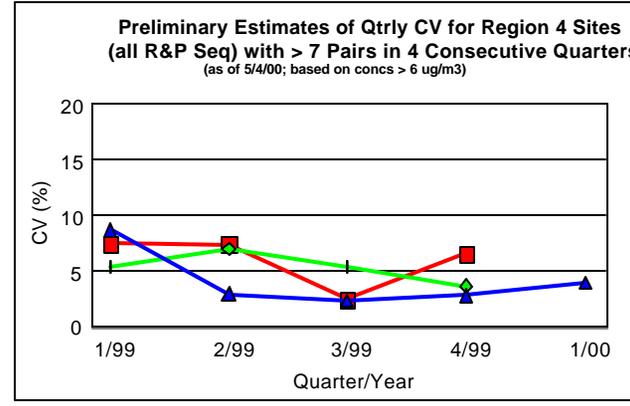
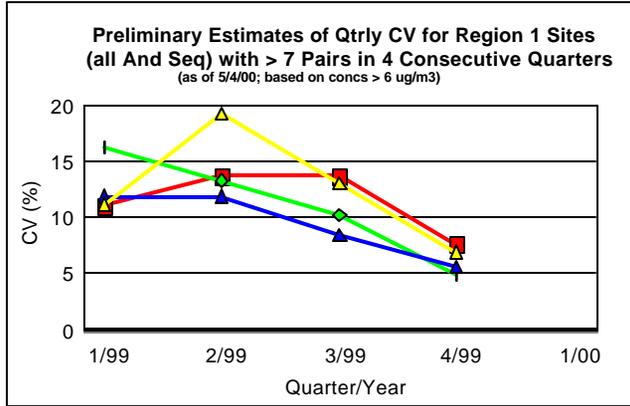
(as of 5/4/00; based on concs > 6 ug/m3 only)



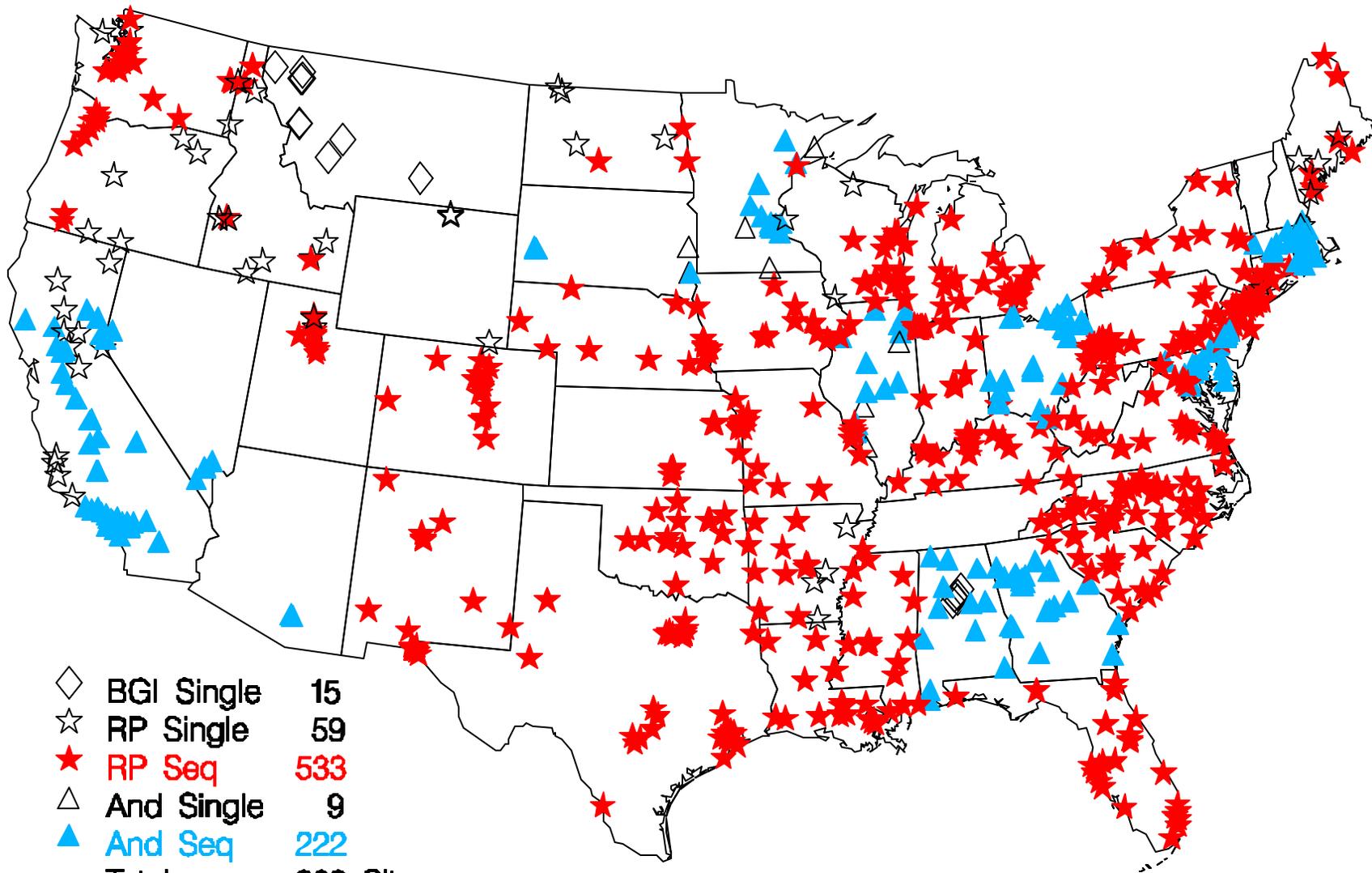
Preliminary Estimate of Qtrly CV for Andersen Seq for Site/Qtrs with > 7 Pairs

(as of 5/4/00; based on concs > 6 ug/m3 only)

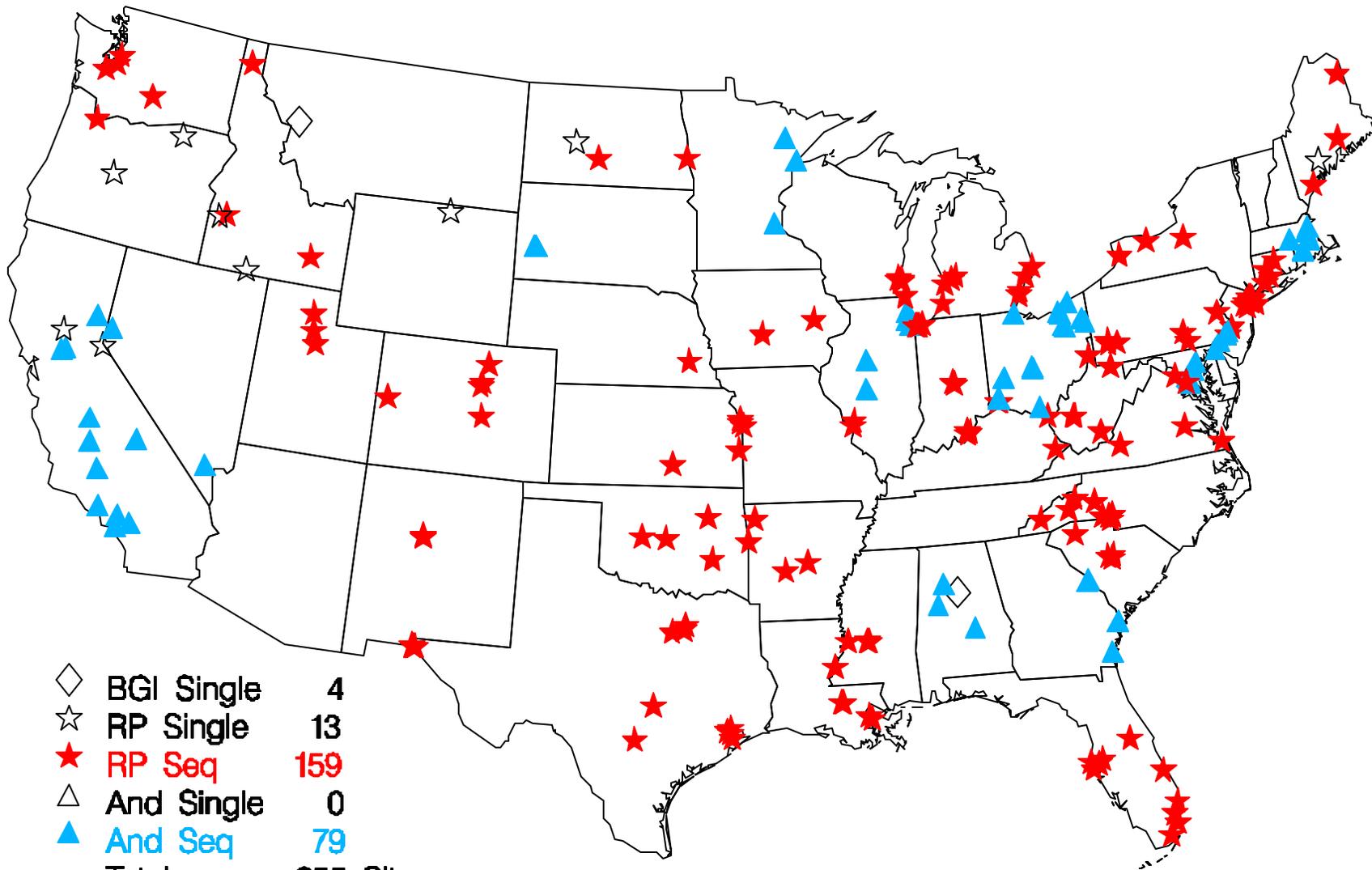




PM2.5 Sites Reporting Data to AIRS (Raw or QA Data) (as of 5/4/00)



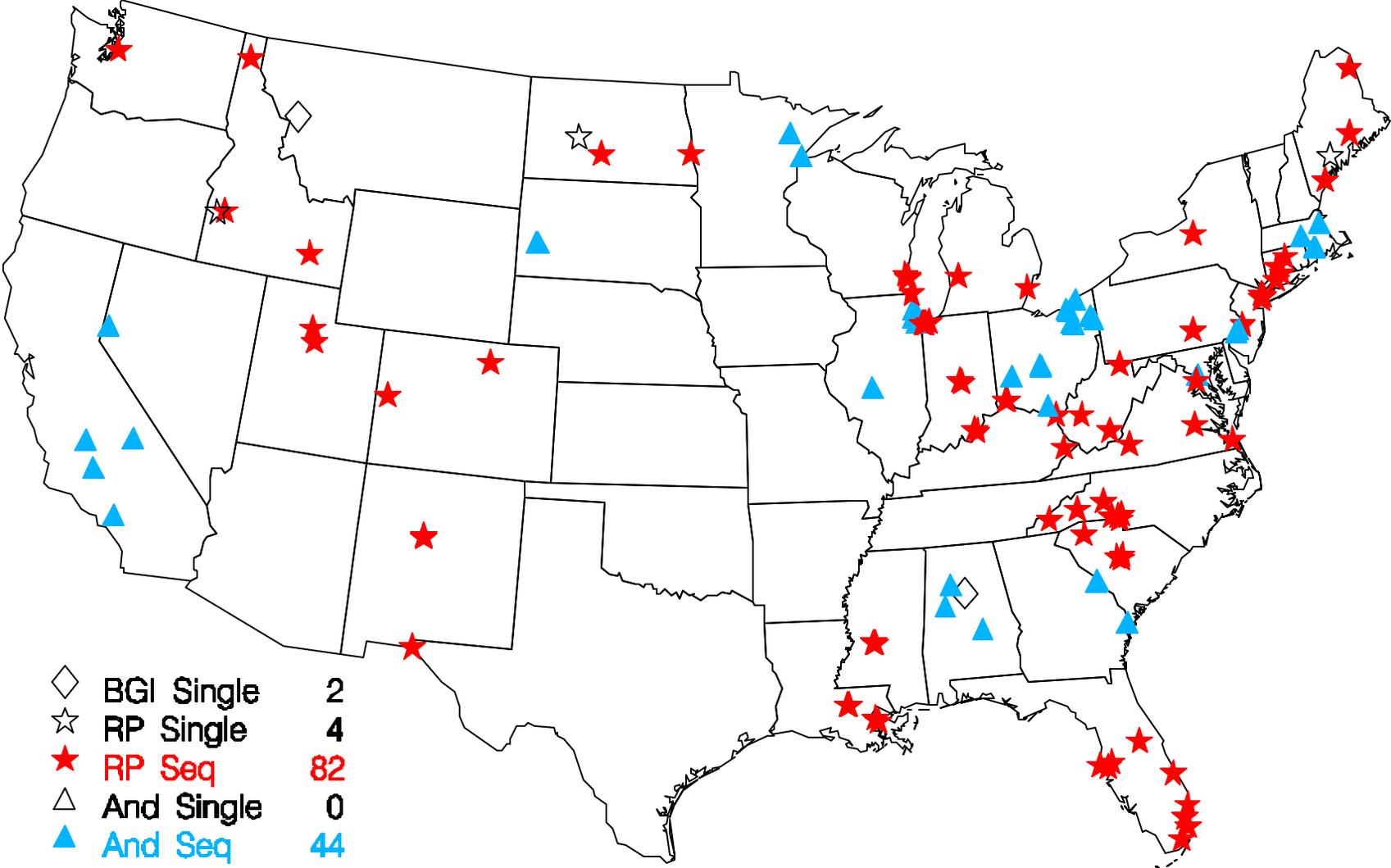
PM2.5 Sites Visited by PEP at Least Once in 1999 (as of 5/4/00)



◇	BGI Single	4
☆	RP Single	13
★	RP Seq	159
△	And Single	0
▲	And Seq	79
	Total	255 Sites

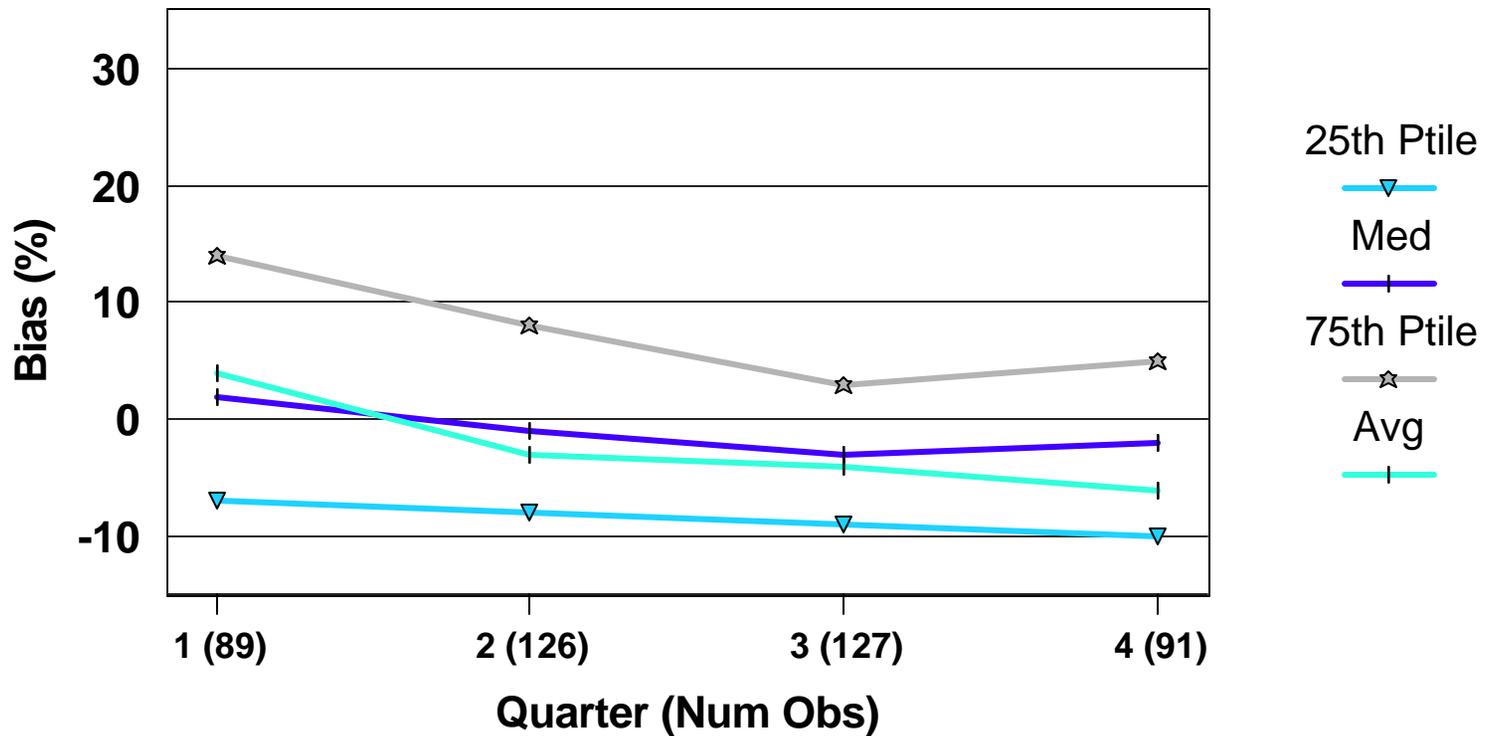
PM2.5 Sites Visited by PEP in > 2 Contiguous Qtrs.

(as of 5/4/00; based on all concentrations)



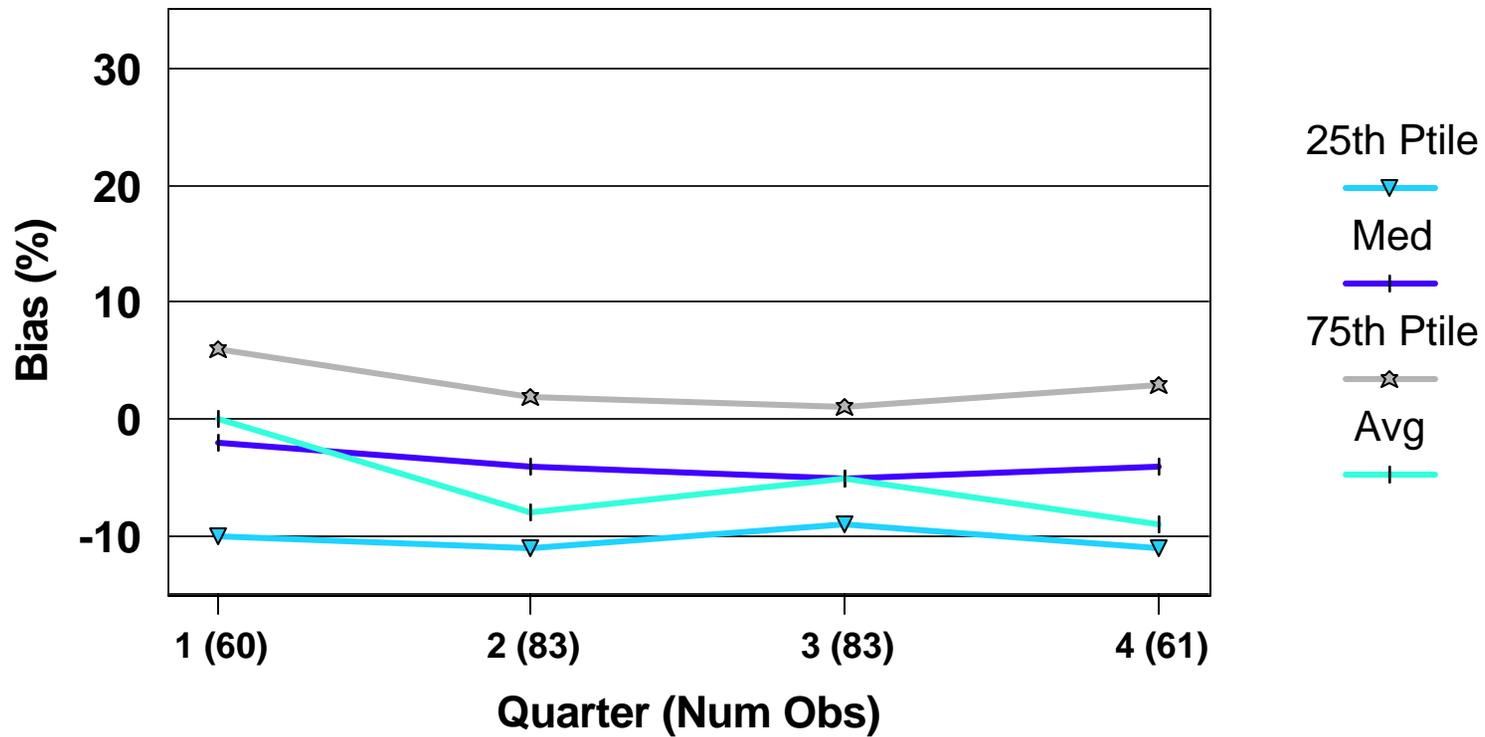
Preliminary Estimate of Bias for And + R&P Seq for Sites with PEP Visits in > 2 Contiguous Qtrs

(as of 5/4/00; based on all concentrations)



Preliminary Estimate of Bias for R&P Seq for Sites with PEP Visits in > 2 Contiguous Qtrs

(as of 5/4/00; based on all concentrations)



Preliminary Estimate of Bias for Andersen Seq for Sites with PEP Visits in > 2 Contiguous Qtrs

(as of 5/4/00; based on all concentrations)

