

Oregon Department of Administrative Services
Supplemental Information for Performance Measurement Auditing

The purpose of this document is to assist auditors of performance measurement data with their process of reviewing the methodology behind measure calculations. What follows are some general definitions and rules about data analysis. The goal is for the auditor to determine that common data use standards are not being violated as part of the calculation and reporting of performance measurement results.

NOMINAL DATA	ORDINAL DATA
Nominal data are used for description and identification purposes (e.g. 6 cows, 300 new unemployment claims, etc). Most of the raw data generated in the system are nominal data.	Ordinal data are mostly used in forming <i>categories</i> , ranking and ordering (the top ten most popular movies of 2008, in order ... etc.); classification of a population by income grouping, etc.
Examples: Ages, income, number of days to process, number of applications, open days, open cases, errors, time to process, etc.	Examples: Percentages, age groups, survey data, income strata, rank orders, any categorical expressions.
Appropriate Expressions—Analysis <ul style="list-style-type: none"> • Range (lowest to highest) • Mean (average) • Median (half below, half above) • Mode (most common) • Standard Deviation (average variation) • Correlation (relationships among variables) • Regression Analysis • Distribution of Variance Charts (Histograms, Run Charts, XbarR, XmR, and XbarS, etc.) • Scatter, line, trend charts • Descriptive Statistics (Anderson-Darling, p-value, A-squared, etc.) 	Appropriate Expressions—Analysis <ul style="list-style-type: none"> • Rank order • Quartiles • Percentages • Median • Mode • Column-Bar Graphs • Pie Graph

Areas of Concern: Most of the KPM data are more appropriate for expression as **percentages** (what % of students graduating from high school attend post secondary institutions) and **median value** (income, education, days to process, etc.); however, what you will find may be other expressions.

Things to watch for are:

- 1) The use of mean-based expressions (averages of categories) with ordinal data. For example, the customer services measure groups nominal data (good to excellent scores) into a category that is recorded as percentage who evaluate timeliness as good or excellent. If you were to take an average of the percentage results for all six customer service criteria, you would be using mean-based expression on ordinal data...which leads to meaningless data.
- 2) The statement of conclusions that are drawn from small total numbers (e.g., % increase/decrease in an "n" of 25). For example, 25% increase participation when there is a n=3; this expression is misleading.
- 3) There may be other issues that when uncovered seem to just not make intuitive sense to you as the reviewer. If you find yourself having this reaction and want to discuss this issue please feel free to contact Rick Gardner, Performance Management Coordinator (of the Department of Administrative Services Budget and Management Division), at 503-378-3117.