Slide 1: Title slide – Data ‘R’ Us Making Good Use of Your Data: Session I – Research Basics 101 Review (Things you already know but may have forgotten).

Slide 2: Agenda: Science/Research/Program Evaluation (PE), Research/PE Process, Research/PE Questions, Methodology, Basic Statistics, Synthesis of Info

Slide 3: Science Definition: An attempt to produce description and explanation of the world (a set of facts and a set of theories that explain the facts) using a specific method. Goals of Science: Description (What? - Phenomena, Differences, Relationships); Understanding (Why? - Causality); Prediction (Forecasting/Hypotheses); Control (Implications/Applications).

Slide 4: Research Definition: any systematic investigation, to establish facts, solve new or existing problems, prove new ideas, or develop new theories, usually using a scientific method (designed to contribute to generalizable knowledge). Program Evaluation Definition: the systemic assessment of the processes and/or outcomes of a program with the intent of furthering its development and improvement (to provide info for decision making about the program, not advance knowledge or theory) [Collaborative process with program staff / Stakeholders / Program Mission].

Slide 5: Slide discusses Program Evaluation: Purpose – to provide useful info for decision-making to a variety of stakeholders; Types: Formative: to strengthen or improve the object being evaluated (e.g., Needs Assessment, Process Evaluation); Summative: to examine the effects or outcomes of some object (e.g., Outcome Evaluation, Cost-Benefit Analysis)

Slide 6: PE Models – Scientific-experimental, management-oriented system (e.g., CIPP), qualitative, participant oriented. CDC’s 6 Step Framework for PE: Engage stakeholders; describe the program; focus the evaluation; gather credible evidence; justify conclusions; ensure use and share lessons learned.

Slide 7: Slide discusses the research process. Step 1 – Identify research problems: sources (Gap, Clinical Observation, Needs Assessment); Lit Review, theory, hypothesis; Purpose/Research question. Step 2 – Methodology: Research design; Sample, instruments, procedures; Data analysis. Step 3 – Results: Decision making; Collaboration with stakeholders; Next step.

Slide 8: Discusses step 1 of the research process – Identify Research Problems. Sources of Research Problems: everyday life, practice (clinical observation), current problems that are not well understood, past research (understudied area or counterintuitive/inconsistent findings), theory.

Slide 9: Developing research questions – Types: description, relationship (Difference, Association), causality. Caveats: A question, not a hypothesis; observable/measurable variables (need to operationalize abstract concepts); relationship (or correlation) does not equal causality

Slide 10: Exercise 1 - Take a couple of minutes and create any type of research questions. Possible projects: Comprehensive Statewide Needs Assessment, Consumer Satisfaction Project, RSA-911 Data, Special Populations (e.g., type of disabilities, race/ethnicity, SSA beneficiaries).

Slide 11: Discusses step 2 of the research process – Methodology. Plan/Describe how research problems/questions will be approached, focusing on key variables; Research Design, Sample selection, Instruments to be used, Existing data to be utilized, Anticipated analysis.

Slide 12: Slide discusses difference between quantitative and qualitative research. Quantitative Research: Experimental Design – Randomized Controlled Trials; Non-Experimental Design – Quasi-experimental design, cohort design, other correlational design (e.g. regression). Qualitative Research: Observation, Case Study, Archival Research; Survey/Focus group/Interview; Data analysis (coding, themes).

Slide 13: Discusses basic issues on measurement. Reliability – consistency of a measuring instrument (e.g., internal consistency reliability (Cronbach alpha), test retest reliability, inter-rater reliability). Validity – the extent to which a concept or measurement is well founded to the real world (e.g., discriminant variability, predictive validity, fact validity, content validity).

Slide 14: Exercise 2: Go back to your research questions. How would you like to approach to answer the research questions? Research Design: Qualitative, Quantitative, Both; Target population and samples (Sample selection strategies); Your sample size; Operationalized variables; Instruments: Existing one or Created by you?; Timelines.

Slide 15: Discusses step 3 of the research design – Results. Understand data collected – frequency distributions, central tendency (e.g. mean, median, mode): a measure of the middle value of the dataset (cluster around some value); variability (e.g. standard deviation, range): a measure of how spread out numbers are.

Slide 16: Slide gives an exercise for the participants. Exercise 3 – Read the following statements. Do you think the information is correct? “The average weekly earnings of the customers with an employment outcome was $409.04 and hourly wage was $12.18. In addition, VR customers worked an average of only 31 hours per week. ($409.04 / 12.18 = $33.58 hrs)

Slide 17: Slide gives an exercise for the participants. Exercise 3 (Cont’d). Fill the blanks in the Weekly Earnings column and compute the mean of Weekly Earnings for each group.

Weekly Earnings = Hrs Worked in a week \* Hourly Wage

Mean (m) = Sum of values / Number of cases (n)

There are two tables of exercises, a group A and group B. To complete the exercise, the participants are supposed to compute the weekly earnings, mean and SD for Group A and Group B.

Slide 18: Slide discusses frequency distributions. Mean: the average value (sum of xi / n); Median: the middle value in your list; Mode: the number that occur most frequently; Variance: the average of the squared differences from the mean (xi - m)2 / (n-1); SD: the square root of the variance [sqrt (xi - m)2 / (n-1)]; Range: difference between two extremes (upper and lower)

There are two tables, Group A and Group B which give mathematical computations for mean, median, mode, variance, SD and range.

Slide 19: Slide discusses statistical methods. Group difference – e.g. t-test, ANOVA; Associations/Relations - Chi-Square for Categorical variables and Correlation Coefficient; Prediction – simple/multiple regression and logistic regression. Dr. Kim Maier will review about the statistical methods on the third session (7/27/11).

Slide 20: Final Synthesis of Information: 1. Compile evidences on the assessed needs of the program’s targeted beneficiaries and assess the extent to which program goals are reflective of the assessed needs; 2. Determine appropriate rules for reaching justified conclusions; 3. Select or derive defensible criteria for applying the decision rules; 4. Retrieve appropriate quantitative and qualitative evidence for applying the determined criteria (e.g., merit, worth, significance, probity).

Slide 21: Continued Final Synthesis of Info: 5. Determine if there is reliable and valid evidence to proceed with a determination of justified conclusions; 6. Determine with stakeholders if the criteria should be weighted differently; 7. Use relevant evidence to rate the program on each criterion (strong, weak, unratable); 8. Develop a bar graph of the rating results for each involved dimension; 9. For each dimension of value, provide a narrative conclusions about the extent to which the evaluand satisfied the associated criteria and justify the conclusion with reference to the supporting evidence.

Slide 22: Continued Final Synthesis of Info: 10. Looking across all the dimensions of value, write an overall summary statement that assess the evaluand’s value; 11. In consideration of the evaluative conclusions and supporting evidence, determine if useful recommendations can be presented and justified with supporting evidence. (Stufflebeam & Shinkfeild, 2007)

Slide 23: Thank you! Questions and Comments? Thank you! Sukyeong Pi, Ph.D. Project Director, Project Excellence, Michigan State University, Email: supi@msu.edu