### Longitudinal Study

[*Longitudinal studies can be used to make the sample data representative of a given population at one point in time or to look at change over time. Unlike cross-sectional studies, longitudinal studies follow the same group of people over time. The weights are designed to make the data representative of the target population, or cohort, regardless of when the data were collected. NCES longitudinal studies provide various weights that can be used to analyze data from one or more rounds (waves) of data collection. By selecting the appropriate weights both point in time and trend estimates can be made. Because the data comes from a longitudinal study, it is important to discuss who is being tracked, how are they being tracked, why are they being tracked, and what is the duration of the study.*

*The SDC measures must take into account the recurring nature of the study with the same subjects. There is a higher risk of identification and/or of impacting the data with perturbation than cross-sectional studies. For example, changing the age or gender of a participant may not conform to the questions they are asked over time. Perturbations of the data should be conducted in the base year and carried forwards into the future survey administrations.*

***Base Year Study***

*If this is the first time that the study has been conducted, the risk assessment will be important to do and the SDC treatments will need to be established. Careful DRB review will be required.*

*There are many considerations to take into account when providing approaches to confidentiality with a longitudinal study. One has to take into account not only what is being collected in the base year but what is anticipated in follow-up years. The selection of variables for swapping / perturbation could be impacted by their connection to the follow-up surveys. For example if an age is perturbed/swapped and the follow-up survey is age-based, that could cause problems in the data. If a gender or race is changed and the follow-up are gender or race-based, then some data could be invalidated.*

***General Rules to Follow***

*The following rules are applied to longitudinal data.*

* *Swapping should occur in Wave 1 as much as possible. Swapping partners may be then maintained throughout the waves and data swapped between them. Issues will occur if the partners are not both participating in subsequent waves, therefore it is beneficial to swap variables that are not expected to change much over time.*
* *After Wave 1, if new items are added to the survey, they are subjected to risk assessment and data swapping.*
* *After Wave 1, if new sample cases are introduced into the survey, they are subjected to swapping so that all have a chance of being swapped.*

***Example***

*Example of a longitudinal study from NCES website:*

*The Early Childhood Longitudinal Studies (ECLS) program is sponsored primarily by NCES in collaboration with other federal agencies and organizations. The ECLS program includes three longitudinal studies that examine child development, school readiness, and early school experiences. The Early Childhood Longitudinal Study, Birth Cohort (ECLS-B) is a study of children born in 2001 who were followed from birth through kindergarten entry. The Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K) is a study of children followed from kindergarten through the eighth grade. The Early Childhood Longitudinal Study, Kindergarten Class of 2010-11 (ECLS-K: 2011) is following a sample of children from kindergarten through the fifth grade.*