53rd IEA General Assembly Meeting

The IEA IDB Analyzer

Phuket, October 2012

DPC
IEA DATA PROCESSING AND RESEARCH CENTER
HAMBURG GERMANY

IEA IDB Analyzer – Introduction

- The IEA International Database (IDB) Analyzer is a plug-in for SPSS developed by the IEA Data Processing and Research Center back in 2004
- In the past SPSS scripts needed to be adapted in order to run analyses properly

Example:

```
jackpv
            infile=analysis/
            cvar=IDCNTRY /
            Rootpv=ASMMAT0/
            NPV=5 /
            njkz=75 /
            jkz=jkzone/
            jkr=jkrep/
            wgt=totwgt.

            sort cases by idcntry.
print formats n (f6.0) totwgt (f10.0) mnx mnx_se pct pct_se (f6.2).
report format=list automatic /
            var = IDCNTRY(label)  n totwgt mnpv mnpv_se pct pct_se .
EXECUTE.
```

The IEA IDB Analyzer

- It can be used to combine data files and analyze data from IEA large scale assessments such as TIMSS, TIMSS Advanced, PIRLS, SITES, TEDS-M, CivED, ICCS as well as studies like PISA or TALIS
- A software program developed to analyze the data from those IEA surveys that used a complex sample design and made use of the plausible value technology

IEA IDB Analyzer – Introduction (cont.)

- Easy creation of analysis data sets, by
  - adding data from different countries,
  - merging of different data levels (student, home, teacher, school), and
  - selection of analysis variables
- Allows to analyze data by calculation of the correct standard errors (calculates sampling and imputation errors)
- Two components: Merge and Analysis Module

Now available: IEA IDB Analyzer Version 3.0

New Directions…

New Look

- One integrated application
  - Merge and Analysis Modules are combined
  - Data from both IEA and OECD studies can be analyzed in one application
- Drop down menus for analysis specifications
  - Analysis type, use of Plausible Values, Benchmark options, missing data options, and number of decimals
- New analysis type selection scheme
  - By study and data aggregation level

New Look

- New variable selection scheme
  - New search capabilities
  - Sorting capabilities for variable lists
  - Drag and drop variables
  - Expanding variable windows

New Functionality

- Works with newer Operating Systems
- Requires SPSS 15 or later version
- Administrator rights
  - Still needed for installation
  - Not needed for use

New Analysis Capabilities

- All Analysis Types
  - Prior to analysis, it calculates and presents un-weighted descriptive statistics to facilitate quality control of the data
    - Means, standard deviations, minimum and maximum
    - Frequencies by analysis subgroups
- Correlation
  - Calculates correlations between 2 or more plausible values
  - Calculates descriptive statistics for the data used (mean and standard deviation)

New Analysis Capabilities (cont.)

- Regression
  - Calculates standardized regression coefficients and standard errors
  - Calculates descriptive statistics for the data used (mean, standard deviation, and variance)
  - Calculates ANOVA statistics (sums of squares)
  - Calculates Model statistics (R Squared and Adjusted R Squared)

New Analysis Capabilities (cont.)

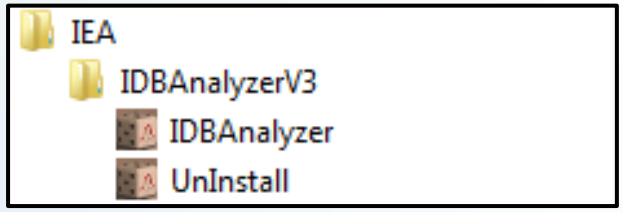
- Regression
  - Has the option of pair-wise or list-wise deletion of cases
  - Fully labeled and “better looking” output
    - Separate output for coefficients, model, ANOVA and descriptive statistics
  - No limit on the number of predictor variables used
  - In the works (available November 2012):
    - Use of one or more plausible values as independent variable
    - Use of plausible values on both sides of the equation

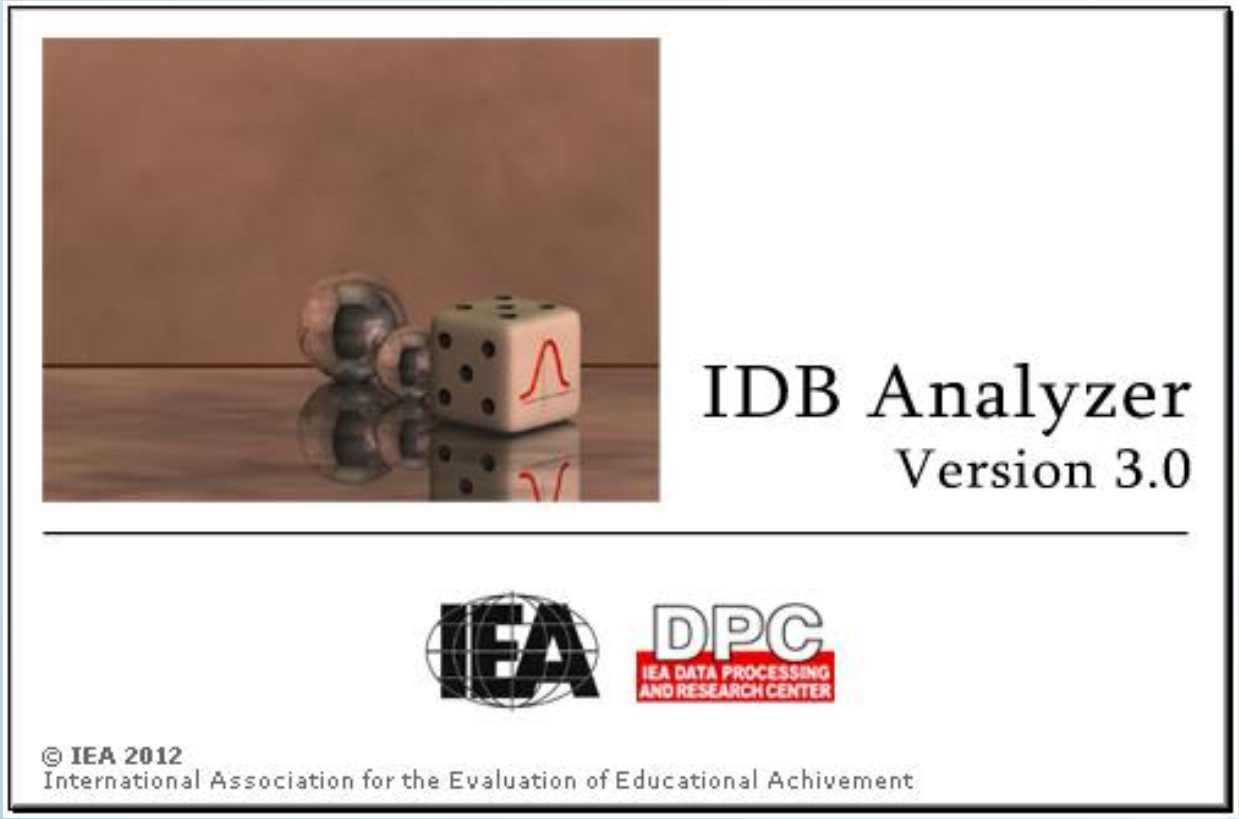
IEA IDB Analyzer Overview

- Merge module
- Analysis module

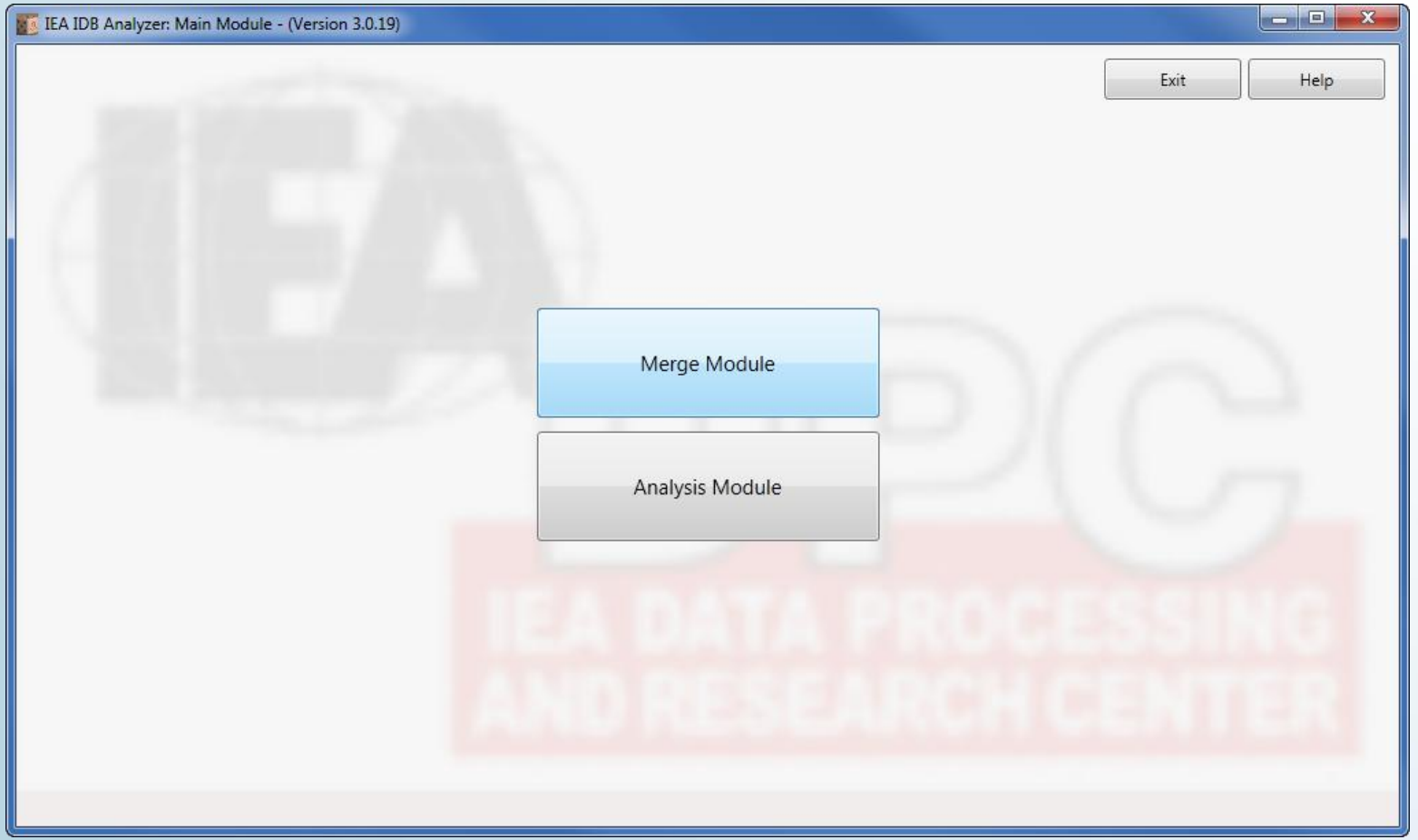
IEA IDB Analyzer – Start

From the Start Menu select
IEA→IDBAnalyzerV3→IDBAnalyzer

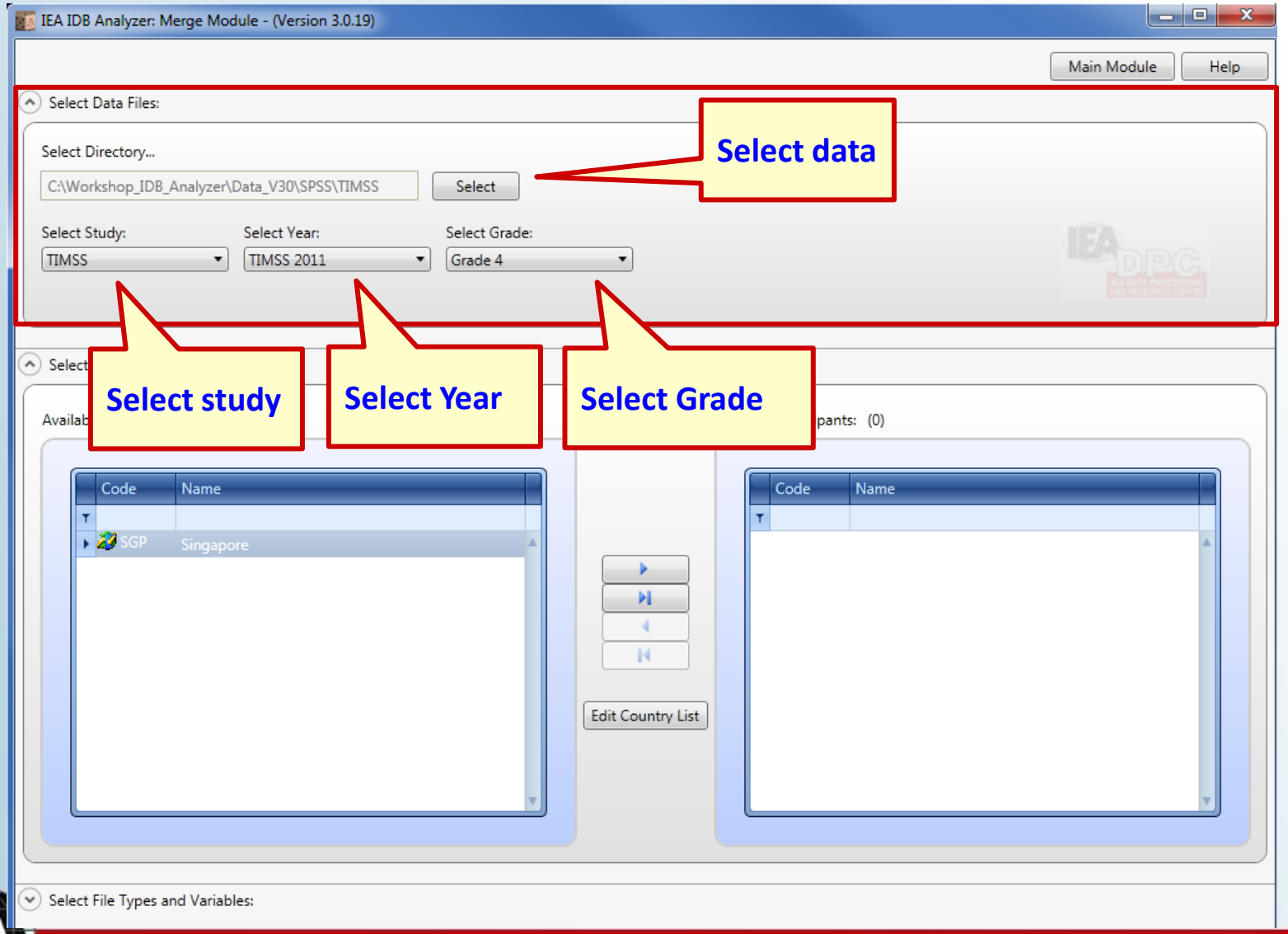




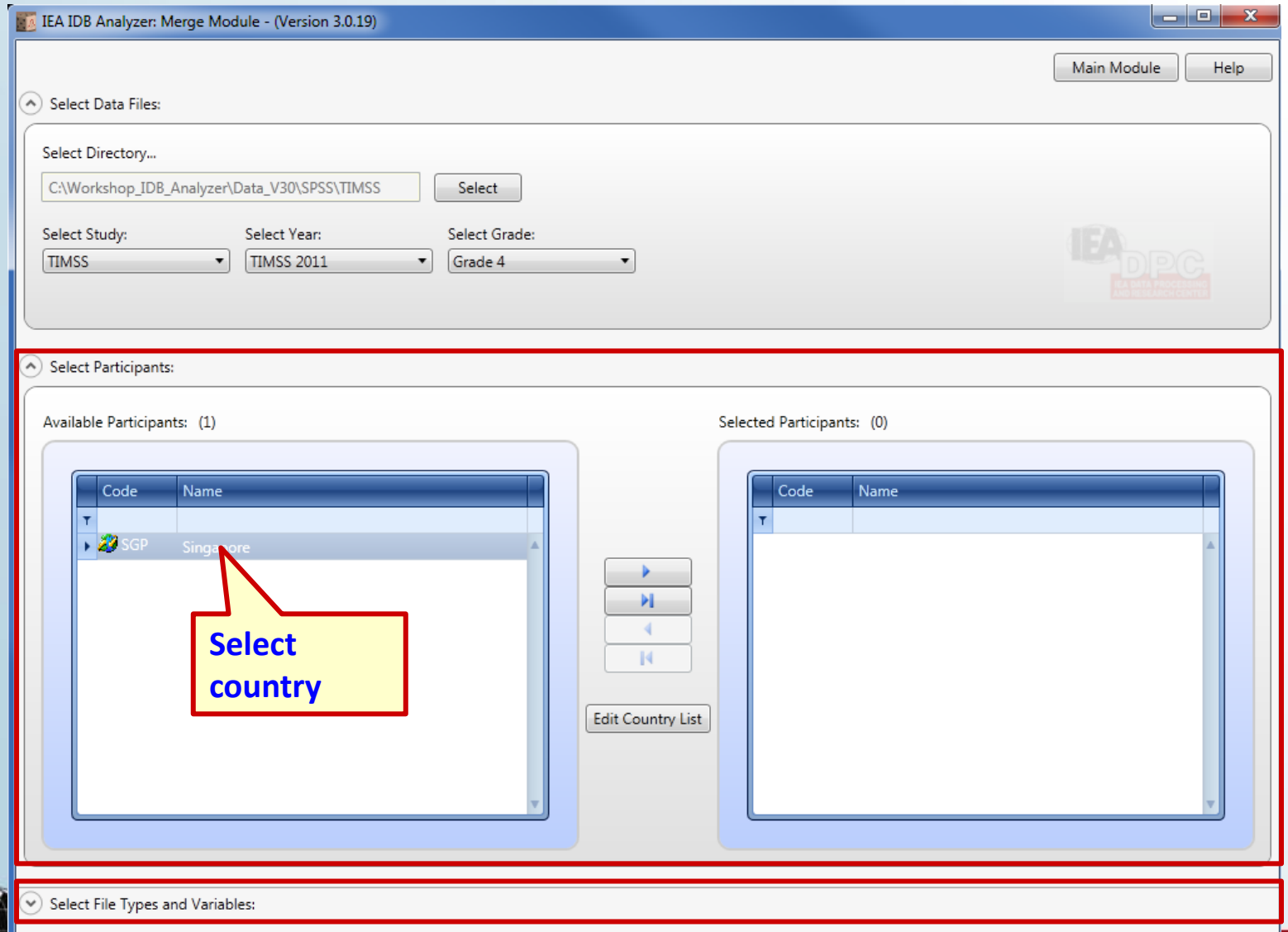
IEA IDB Analyzer – Start



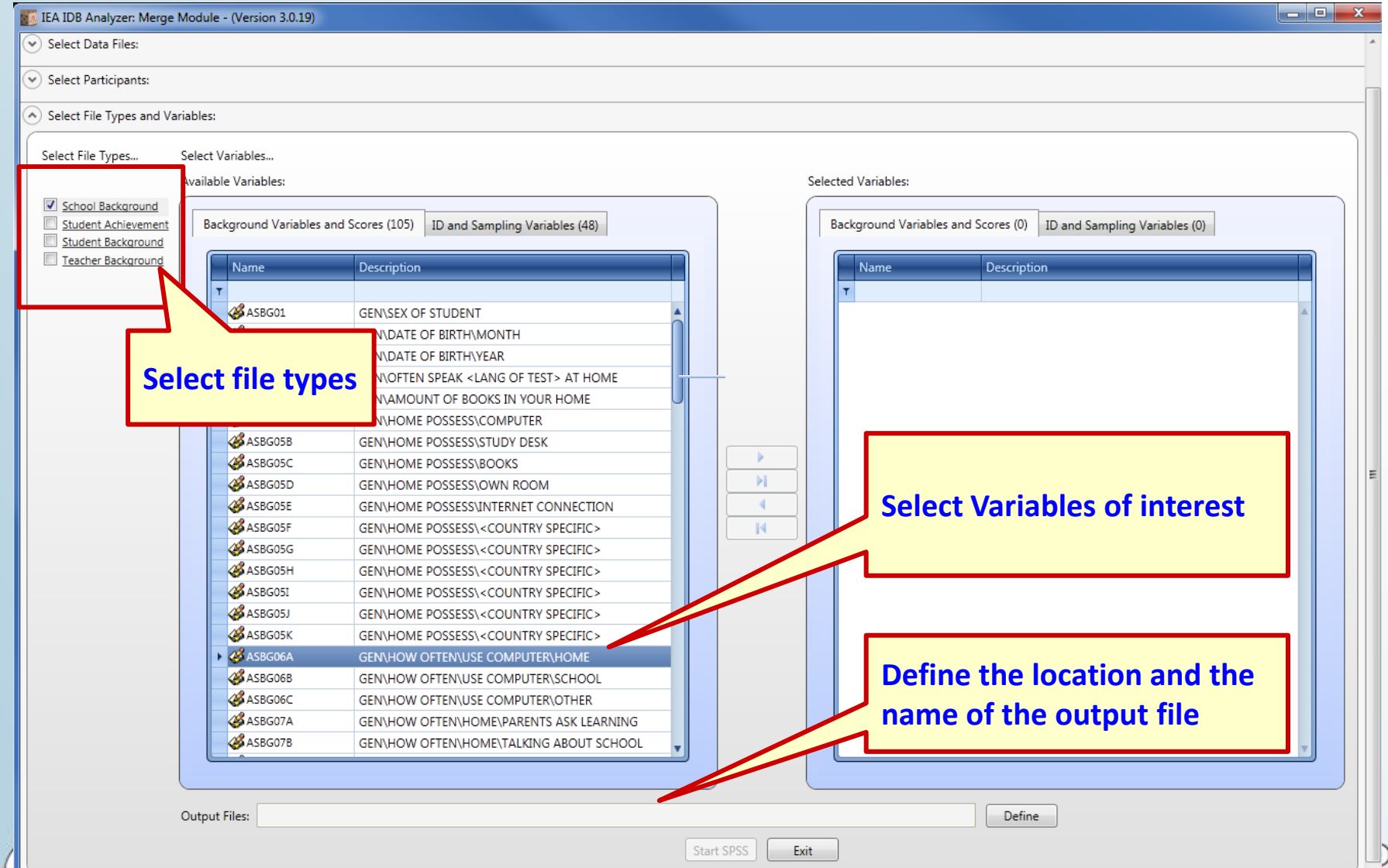
IEA IDB Analyzer: Merge Data – Step 1



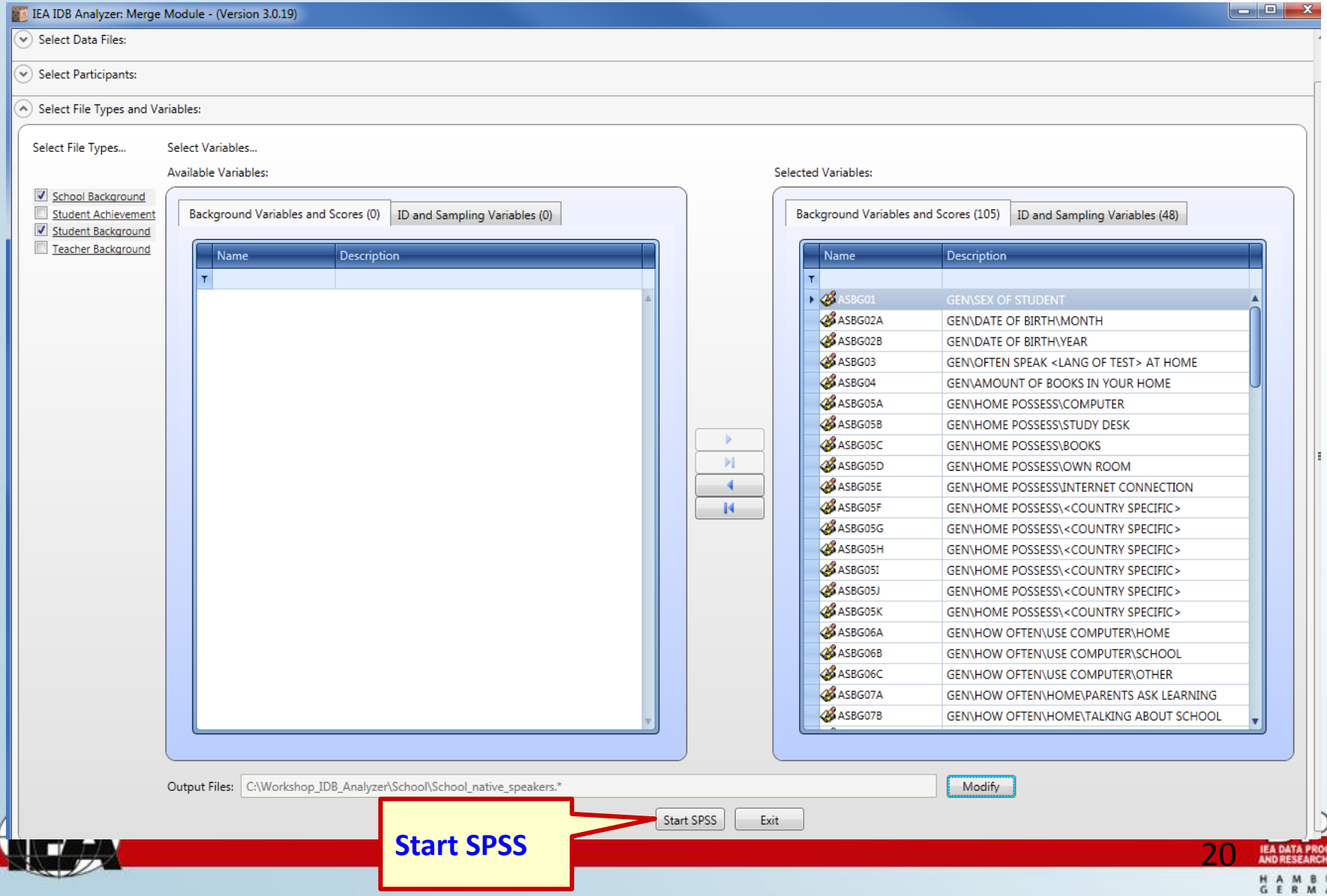
IEA IDB Analyzer: Merge Data – Step 2



IEA IDB Analyzer: Merge Data – Step 3



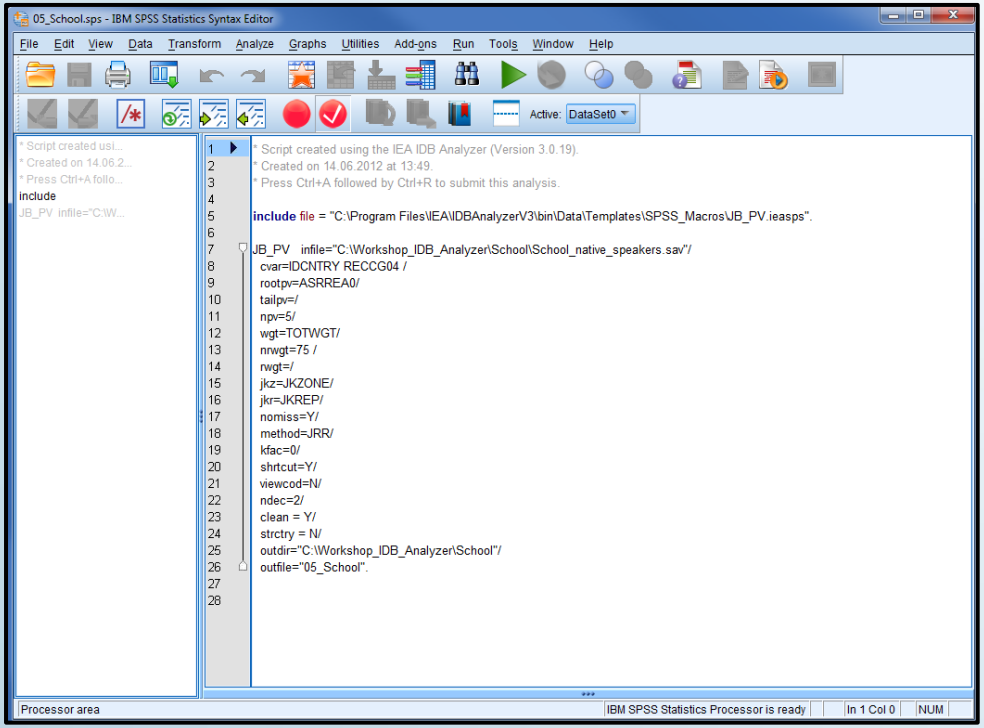
IEA IDB Analyzer: Merge Data – Step 4



Start SPSS

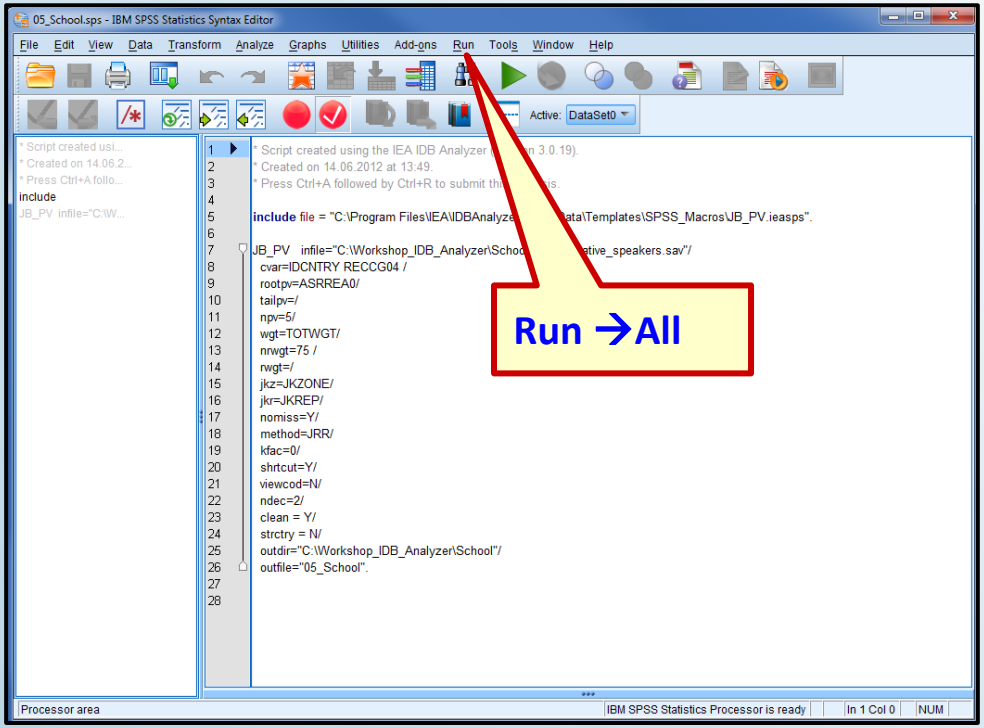
IEA IDB Analyzer – SPSS Syntax

- After pressing the “Start SPSS” button:
  - IDB Analyzer creates and saves a syntax file
  - Syntax file is automatically opened in SPSS



IEA IDB Analyzer: Merge Data – Step 5

- From the SPSS syntax editor choose:
  - Run > All
  - The syntax is executed and the merged file is saved under the location you have chosen in the last step of the IDB Analyzer Merge Module



IEA IDB Analyzer Overview

- Merge module
- Analysis module

Analysis Type – Percentages and Means with PVs

- Without Achievement Scores
  - Computes the percentages of students within specified subgroups, their mean and standard deviation on the continuous variable selected with their JRR standard errors
- With Achievement Scores
  - Computes percentages and mean achievement scores based on plausible values with their JRR standard errors

Analysis Type – Percentages Only

- Computes percentages of students within specified subgroups with their JRR standard errors

Analysis Type – Linear Regression

- Without Achievement Scores
  - Calculates a multiple linear regression between a dependent variable and a set of independent variables, computes the regression coefficients and their JRR standard errors Without Achievement Scores
- With Achievement Scores
  - Calculates a multiple linear regression between a set of plausible values as the dependent variable and a set of independent variables, computes the regression coefficients and their JRR standard errors

Analysis Type – Correlation

- Without Achievement Scores
  - Calculates correlation coefficients between selected analysis variables with JRR standard errors
- With Achievement Scores
  - Calculates correlations between a set of plausible values and other variables with JRR standard errors

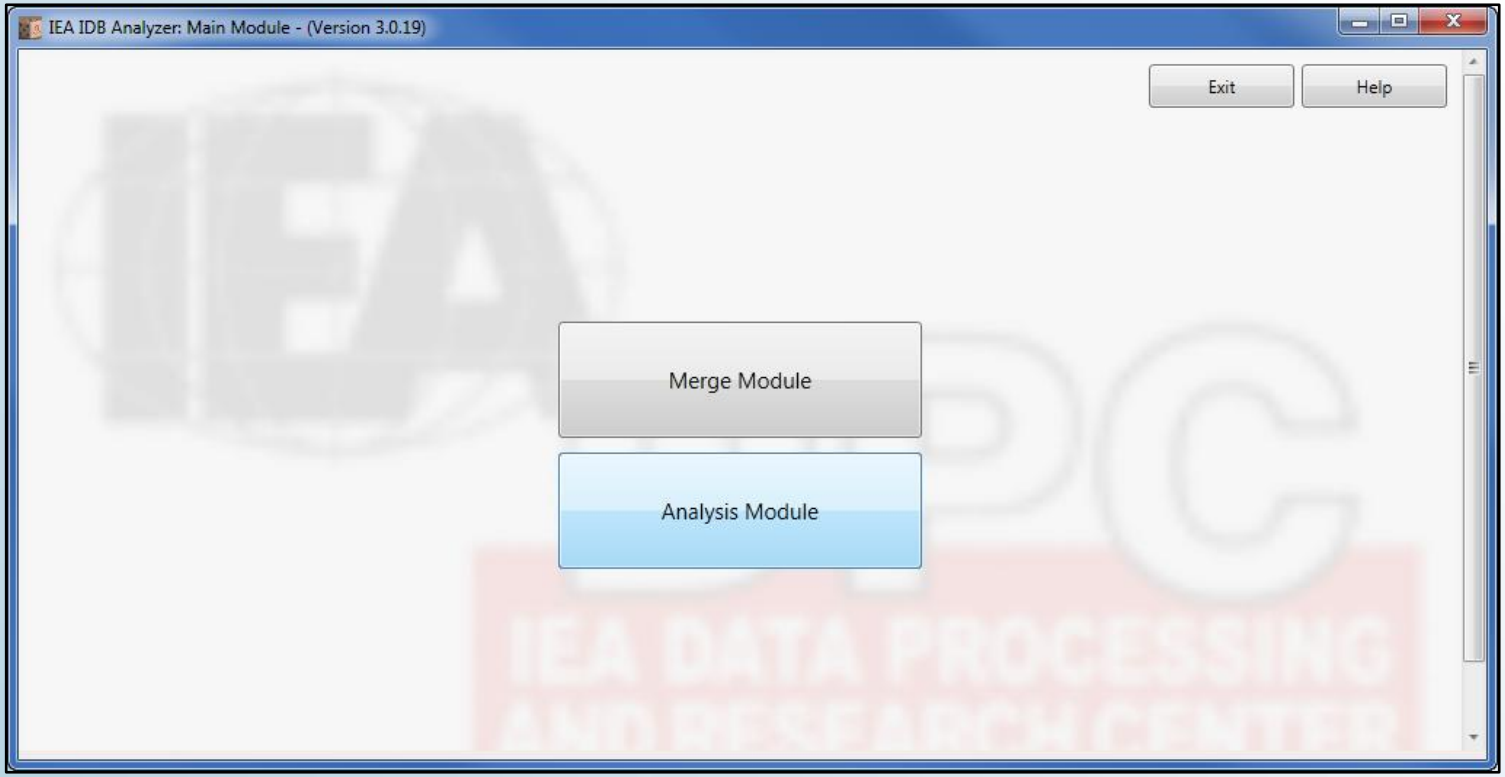
Analysis Type – Benchmarks

- Computes percentages of students within, reaching or surpassing user provided benchmarks of achievement with JRR standard errors for those percentages

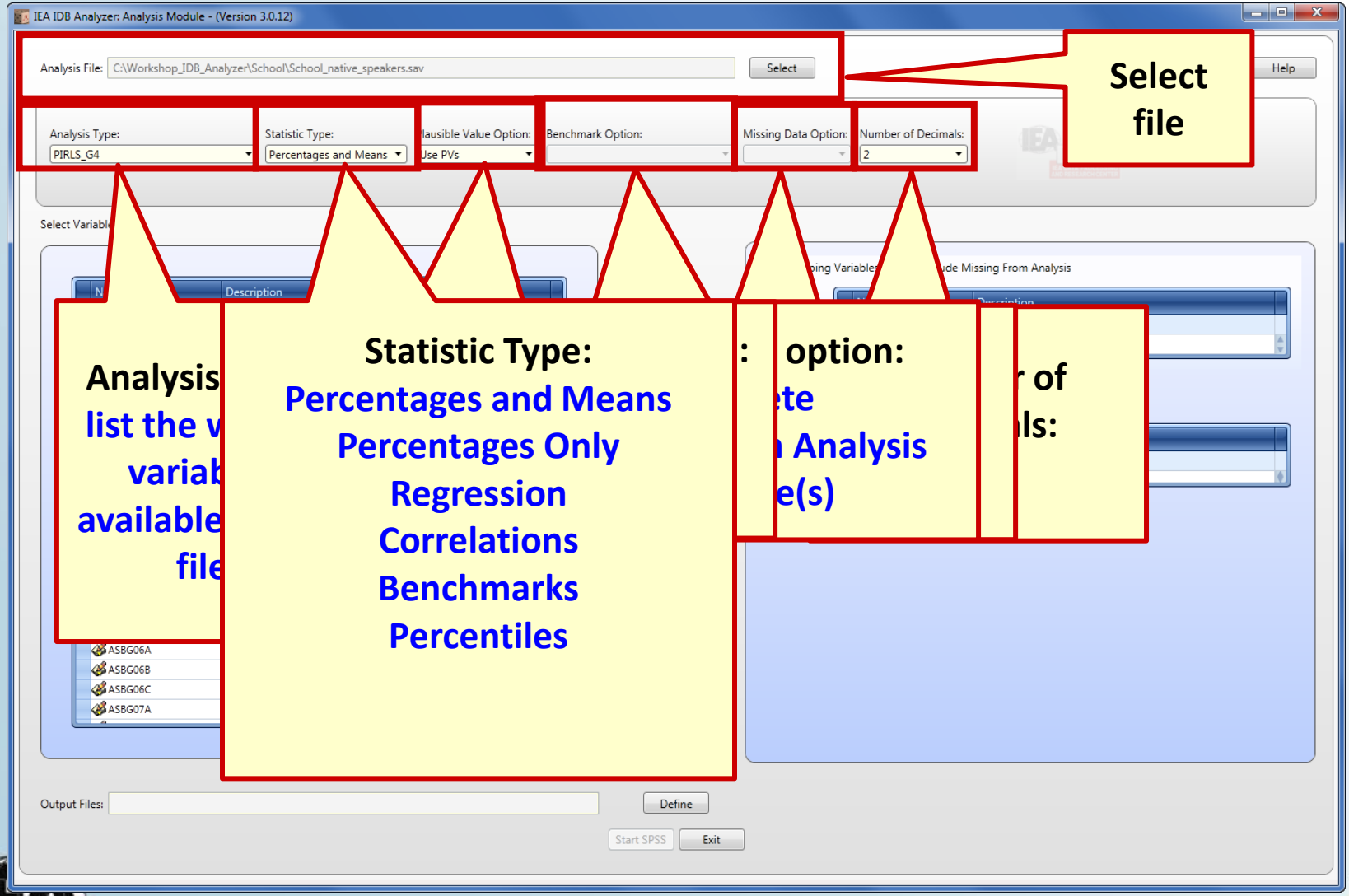
Analysis Type – Percentiles

- Without Achievement Scores
  - Calculates the score points that separate a given proportion of the distribution of a variable, by subgroups defined by the grouping variables with JRR standard errors
- With Achievement Scores
  - Calculates the score points that separate a given proportion of the distribution of set of plausible values, by subgroups defined by the grouping variables with JRR standard errors

IEA IDB Analyzer – Analysis Module



IEA IDB Analyzer – Analysis Module



IEA IDB Analyzer – Analysis Module

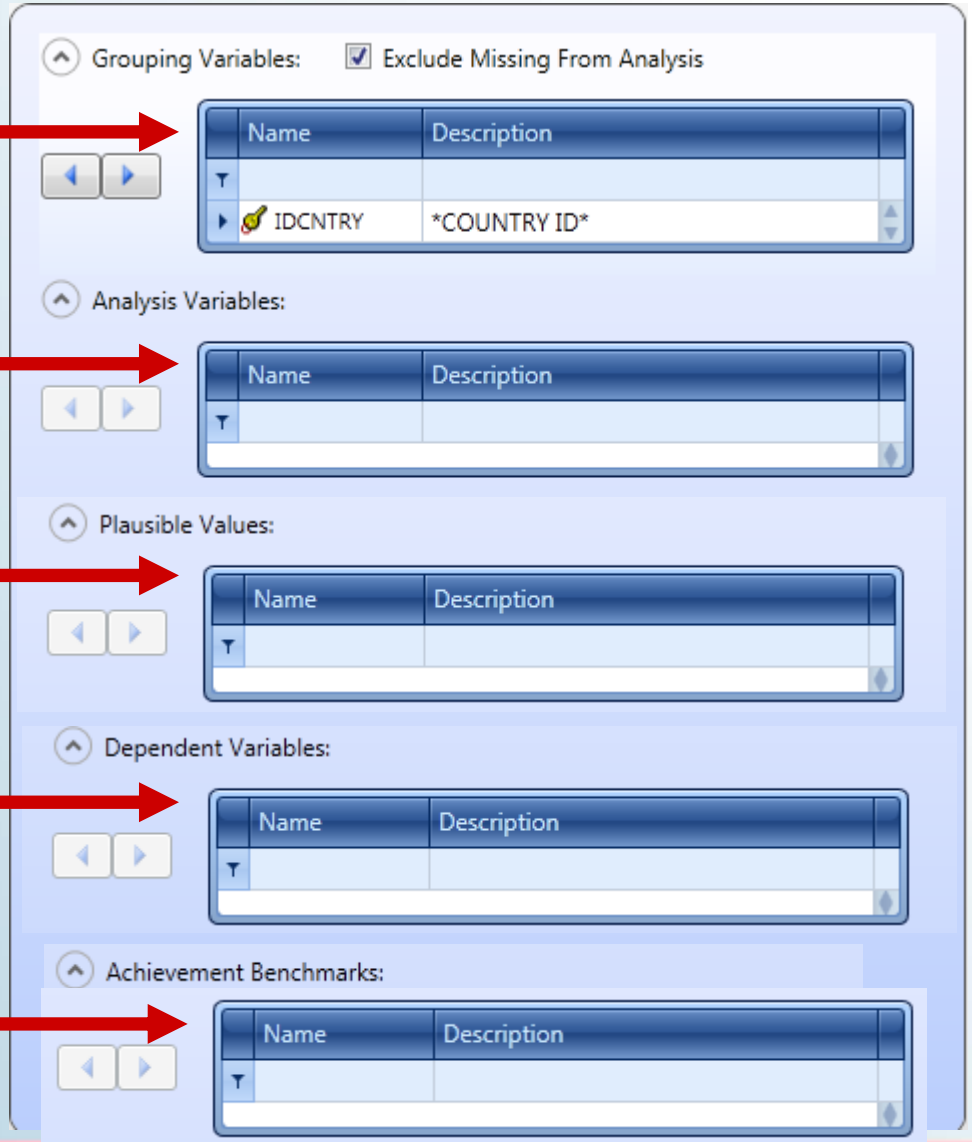
Grouping Variables

Analysis Variables

Achievement Scores

Dependent Variables

Achievement Benchmarks



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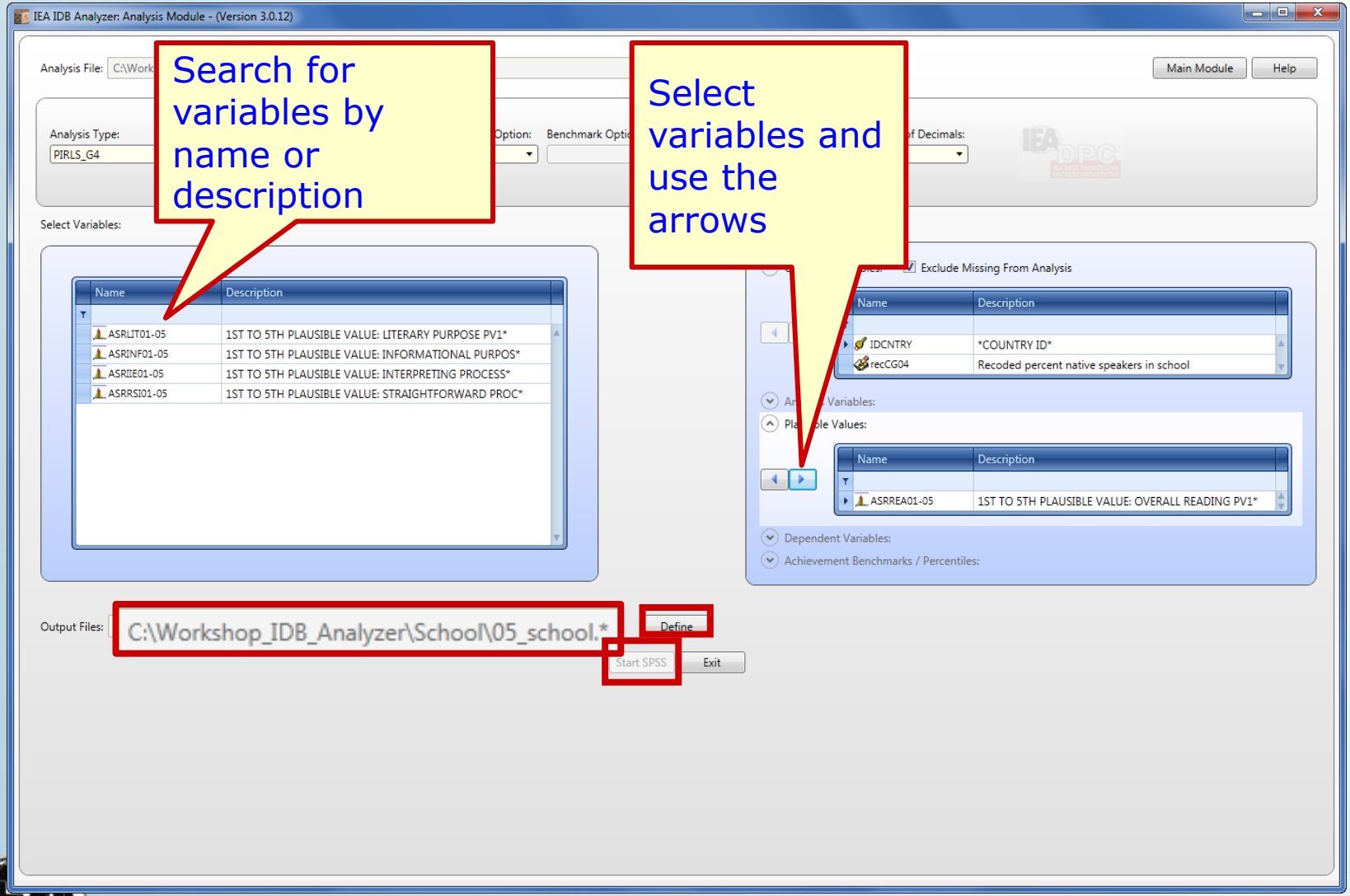
IEA IDB Analyzer: Analysis Module (Parameters)

- Grouping Variables
  - This is the list of variables that are to be used to define the subgroups. The list can consist of one or more variables. The IDB Analyzer always includes IDCNTRY as the first grouping variable and there should always be at least one grouping variable.
  - If the option “Exclude Missing from Analysis” is checked only cases that have non-missing values in the grouping variables will be used in the analysis.
- Analysis Variables
  - The list of analysis variables used as predictors in the regression model. The independent variables can be either continuous or categorical, such as ITSEX for example.

IEA IDB Analyzer: Analysis Module (Parameters)

- Achievement Scores
  - The achievement score in the form of plausible values to be predicted by the variables listed in the analysis variables.
- Dependent Variable
  - The dependent variable to be predicted by the list of analysis variables. Only one dependent variable can be listed.
- Achievement Benchmarks/Percentiles
  - These are the values that will be used as cut points of the achievement distribution.
  - These are the values that will be used for percentiles of a continuous variables (background or set of plausible values achievement scores).

IEA IDB Analyzer: Percentages and Means



Output created by the IEA IDB Analyzer

```
jackpv
        infile=analysis/
        cvar=IDCNTRY /
        Rootpv=ASMMAT0/
        NPV=5 /
        njkz=75 /
        jkz=jkzone/
        jkr=jkrep/
        wgt=totwgt.

        sort cases by idcntry.
print formats n (f6.0) totwgt (f10.0) mnx mnx_se pct pct_se (f6.2).
report format=list automatic /
        var = IDCNTRY(label)  n totwgt mnpv mnpv_se pct pct_se .
EXECUTE.
```

Thank you for your attention!