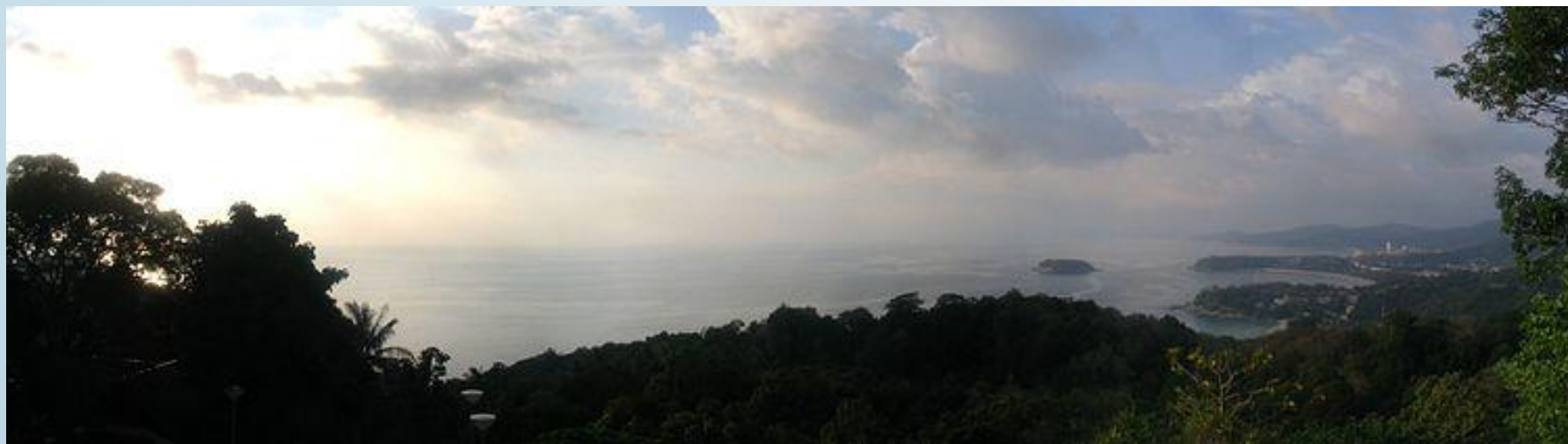


53rd IEA General Assembly Meeting



The IEA IDB Analyzer

Phuket, October 2012



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 (f16.0) 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...



INTERNATIONAL ASSOCIATION FOR THE EVALUATION OF EDUCATIONAL ACHIEVEMENT

DPC
IEA DATA PROCESSING
AND RESEARCH CENTER
H A M B U R G
G E R M A N Y

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

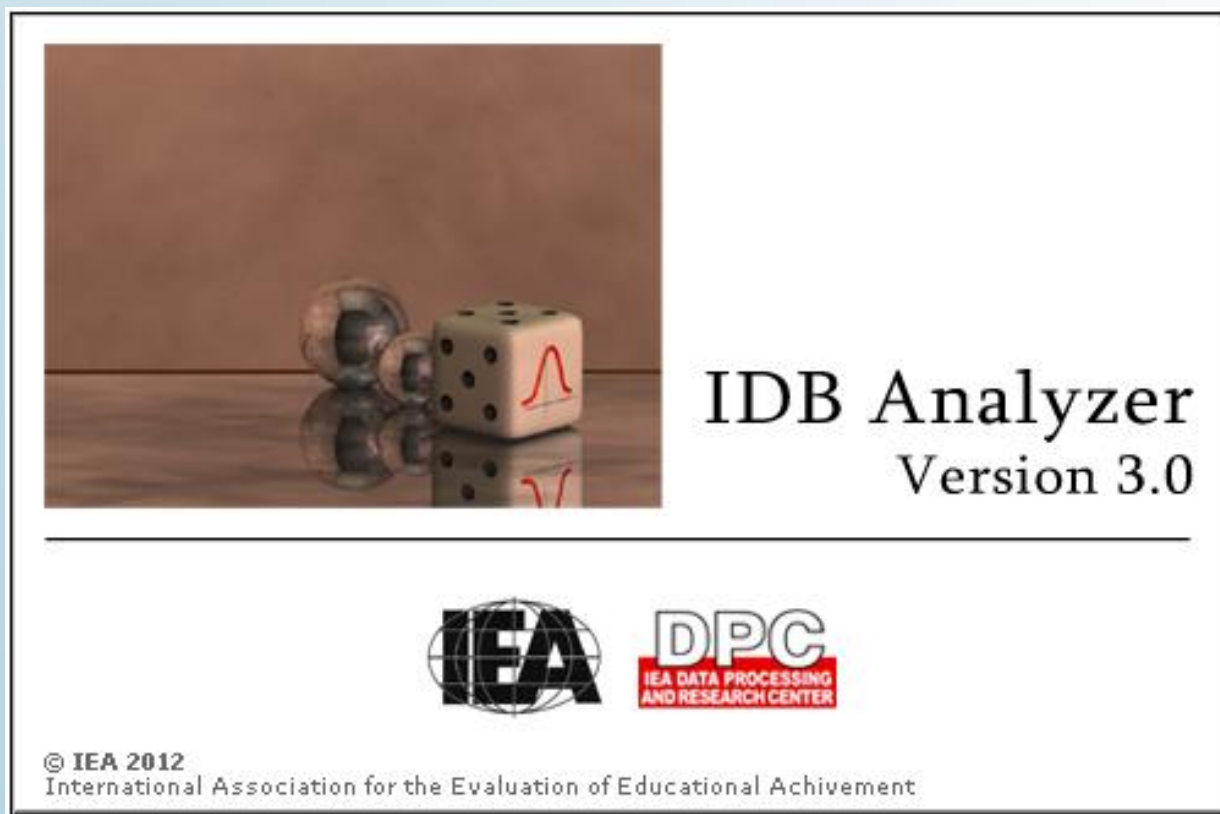
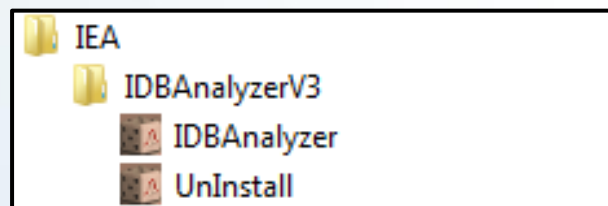
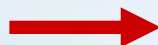
IEA IDB Analyzer Overview

- Merge module
- Analysis module

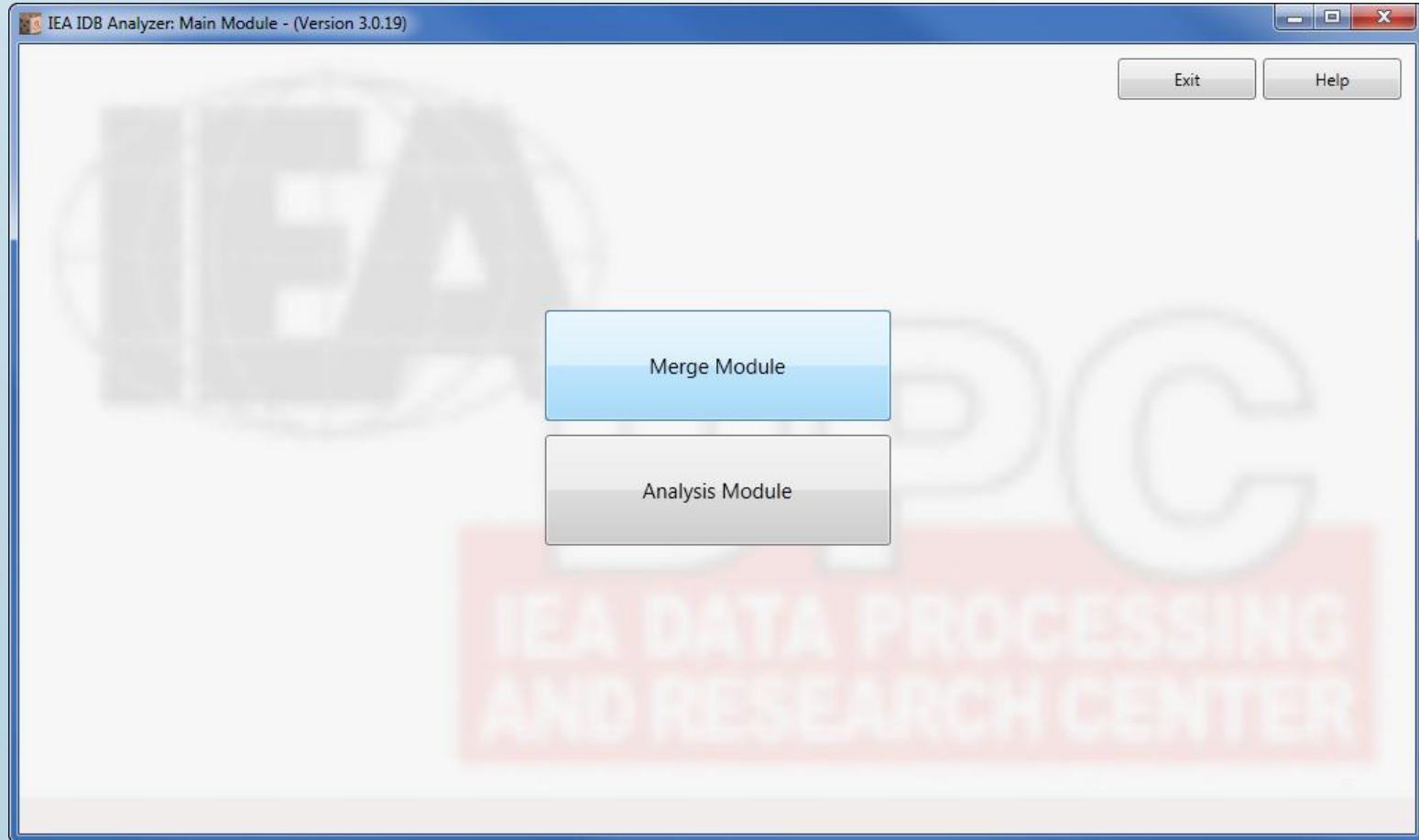


IEA IDB Analyzer – Start

From the Start Menu select
IEA→IDBAnalyzerV3→IDBAnalyzer



IEA IDB Analyzer – Start



IEA IDB Analyzer: Merge Data – Step 1

IEA IDB Analyzer: Merge Module - (Version 3.0.19)

Main Module Help

Select Data Files:

Select Directory...
C:\Workshop_IDB_Analyzer\Data_V30\SPSS\TIMSS Select

Select Study: TIMSS Select Year: TIMSS 2011 Select Grade: Grade 4

Select data

Select study Select Year Select Grade

Available Countries: (0)

Code	Name
SGP	Singapore

Edit Country List

Select File Types and Variables:

IEA DPC IEA DATA PROCESSING AND RESEARCH CENTER HAMBURG GERMANY

IEA IDB Analyzer: Merge Data – Step 2

IEA IDB Analyzer: Merge Module - (Version 3.0.19)

Main Module Help

Select Data Files:

Select Directory...
C:\Workshop_IDB_Analyzer\Data_V30\SPSS\TIMSS Select

Select Study: TIMSS Select Year: TIMSS 2011 Select Grade: Grade 4

Select Participants:

Available Participants: (1)

Code	Name
SGP	Singapore

Select country

Selected Participants: (0)

Code	Name
------	------

Edit Country List

Select File Types and Variables:

IEA IDB Analyzer: Merge Data – Step 3

The screenshot shows the 'IEA IDB Analyzer: Merge Module - (Version 3.0.19)' window. It has three main sections: 'Select Data Files:', 'Select Participants:', and 'Select File Types and Variables:'. The 'Select File Types and Variables:' section is active, showing a list of available variables on the left and a list of selected variables on the right. A red box highlights the 'Select File Types...' button, with a yellow callout bubble containing the text 'Select file types'. Another red box highlights the 'Available Variables' list, with a yellow callout bubble containing the text 'Select Variables of interest'. A third red box highlights the 'Selected Variables' list, with a yellow callout bubble containing the text 'Define the location and the name of the output file'. The 'Available Variables' list is divided into two tabs: 'Background Variables and Scores (105)' and 'ID and Sampling Variables (48)'. The 'Selected Variables' list is divided into two tabs: 'Background Variables and Scores (0)' and 'ID and Sampling Variables (0)'. The 'Available Variables' list contains the following variables:

Name	Description
ASBG01	GEN\SEX OF STUDENT
	W\DATE OF BIRTH\MONTH
	W\DATE OF BIRTH\YEAR
	W\OFTEN SPEAK <LANG OF TEST> AT HOME
	W\AMOUNT OF BOOKS IN YOUR HOME
	W\HOME POSSESS\COMPUTER
ASBG05B	GEN\HOME POSSESS\STUDY DESK
ASBG05C	GEN\HOME POSSESS\BOOKS
ASBG05D	GEN\HOME POSSESS\OWN ROOM
ASBG05E	GEN\HOME POSSESS\INTERNET CONNECTION
ASBG05F	GEN\HOME POSSESS\<COUNTRY SPECIFIC>
ASBG05G	GEN\HOME POSSESS\<COUNTRY SPECIFIC>
ASBG05H	GEN\HOME POSSESS\<COUNTRY SPECIFIC>
ASBG05I	GEN\HOME POSSESS\<COUNTRY SPECIFIC>
ASBG05J	GEN\HOME POSSESS\<COUNTRY SPECIFIC>
ASBG05K	GEN\HOME POSSESS\<COUNTRY SPECIFIC>
ASBG06A	GEN\HOW OFTEN\USE COMPUTER\HOME
ASBG06B	GEN\HOW OFTEN\USE COMPUTER\SCHOOL
ASBG06C	GEN\HOW OFTEN\USE COMPUTER\OTHER
ASBG07A	GEN\HOW OFTEN\HOME\PARENTS ASK LEARNING
ASBG07B	GEN\HOW OFTEN\HOME\TALKING ABOUT SCHOOL

The 'Selected Variables' list is currently empty. At the bottom of the window, there is an 'Output Files:' field, a 'Define' button, and 'Start SPSS' and 'Exit' buttons.

IEA IDB Analyzer: Merge Data – Step 4

IEA IDB Analyzer: Merge Module - (Version 3.0.19)

Select Data Files:

Select Participants:

Select File Types and Variables:

Select File Types... Select Variables...

Available Variables:

☒ School Background
☐ Student Achievement
☒ Student Background
☐ Teacher Background

Background Variables and Scores (0) ID and Sampling Variables (0)

Name	Description
------	-------------

Selected Variables:

Background Variables and Scores (105) ID and Sampling Variables (48)

Name	Description
ASBG01	GEN\SEX OF STUDENT
ASBG02A	GEN\DATE OF BIRTH\MONTH
ASBG02B	GEN\DATE OF BIRTH\YEAR
ASBG03	GEN\OFTEN SPEAK <LANG OF TEST> AT HOME
ASBG04	GEN\AMOUNT OF BOOKS IN YOUR HOME
ASBG05A	GEN\HOME POSSESS\COMPUTER
ASBG05B	GEN\HOME POSSESS\STUDY DESK
ASBG05C	GEN\HOME POSSESS\BOOKS
ASBG05D	GEN\HOME POSSESS\OWN ROOM
ASBG05E	GEN\HOME POSSESS\INTERNET CONNECTION
ASBG05F	GEN\HOME POSSESS\<COUNTRY SPECIFIC>
ASBG05G	GEN\HOME POSSESS\<COUNTRY SPECIFIC>
ASBG05H	GEN\HOME POSSESS\<COUNTRY SPECIFIC>
ASBG05I	GEN\HOME POSSESS\<COUNTRY SPECIFIC>
ASBG05J	GEN\HOME POSSESS\<COUNTRY SPECIFIC>
ASBG05K	GEN\HOME POSSESS\<COUNTRY SPECIFIC>
ASBG06A	GEN\HOW OFTEN\USE COMPUTER\HOME
ASBG06B	GEN\HOW OFTEN\USE COMPUTER\SCHOOL
ASBG06C	GEN\HOW OFTEN\USE COMPUTER\OTHER
ASBG07A	GEN\HOW OFTEN\HOME\PARENTS ASK LEARNING
ASBG07B	GEN\HOW OFTEN\HOME\TALKING ABOUT SCHOOL

Output Files: C:\Workshop_IDB_Analyzer\School\School_native_speakers.*

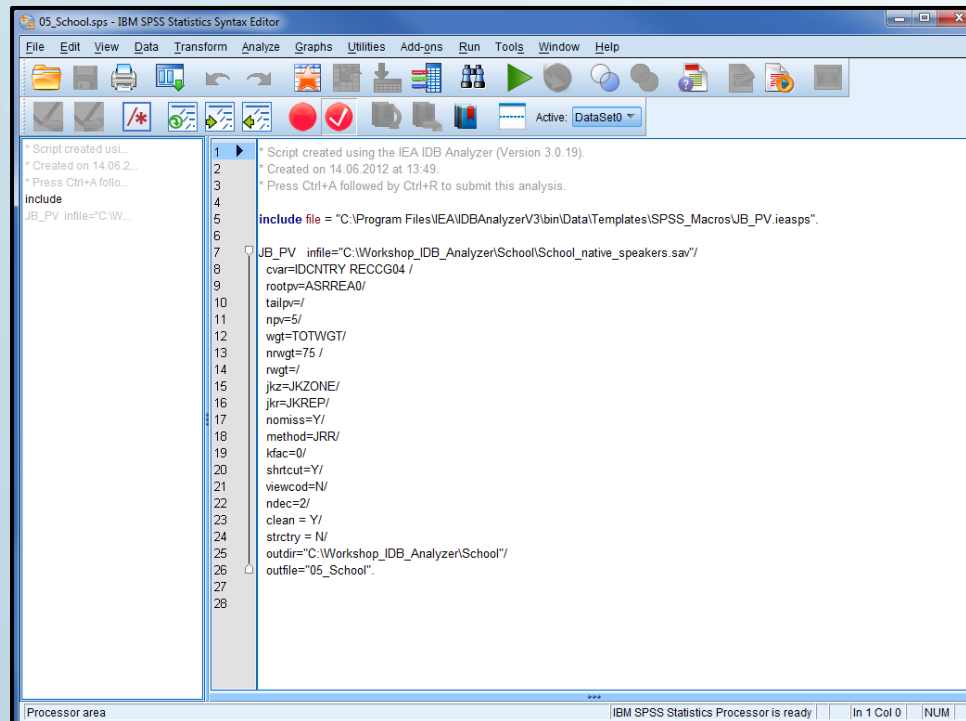
Modify

Start SPSS Exit

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



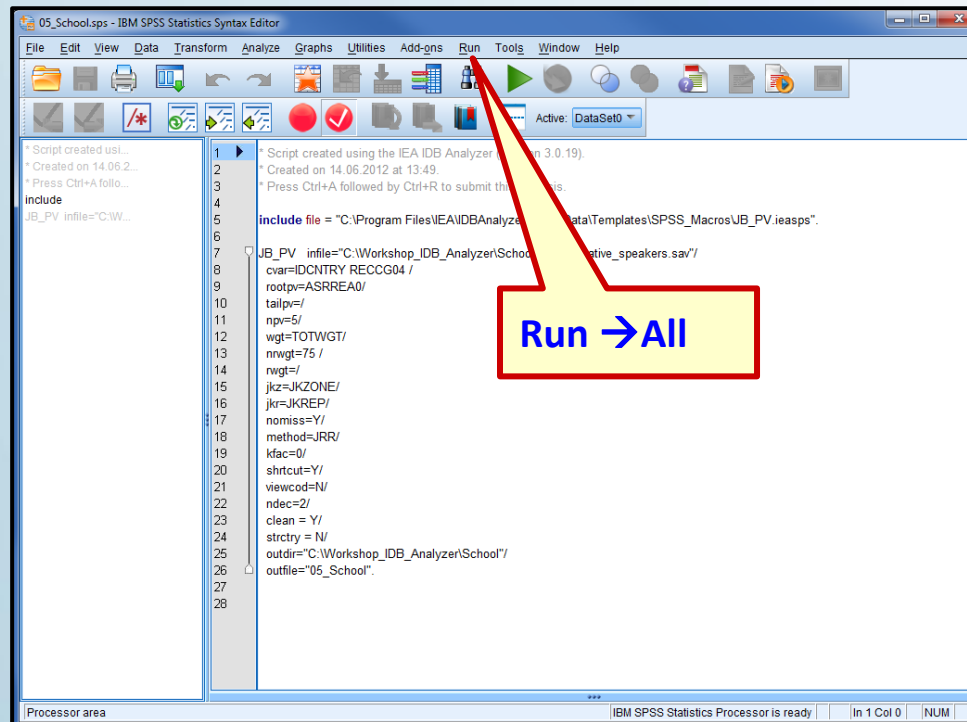
The screenshot shows the IBM SPSS Statistics Syntax Editor window. The title bar reads "05_School.sps - IBM SPSS Statistics Syntax Editor". The menu bar includes File, Edit, View, Data, Transform, Analyze, Graphs, Utilities, Add-ons, Run, Tools, Window, and Help. The toolbar contains various icons for file operations, editing, and running. The main text area displays the following syntax:

```
1 * Script created using the IEA IDB Analyzer (Version 3.0.19).
2 * Created on 14.06.2012 at 13:49.
3 * Press Ctrl+A followed by Ctrl+R to submit this analysis.
4
5 include file = "C:\Program Files\IEA\IDBAnalyzer\3\bin\Data\Templates\SPSS_Macros\UB_PV.ieasps".
6
7 UB_PV infile="C:\Workshop_IDB_Analyzer\School\School_native_speakers.sav"/
8 cvar=IDCOUNTRY RECCG04 /
9 rootpv=ASRREA0/
10 tailpv=/
11 npv=5/
12 wgt=TOTWGT/
13 nrwgt=75 /
14 nrwt=/
15 jkz=JKZONE/
16 jkr=JKREP/
17 nomiss=Y/
18 method=JRR/
19 kfac=0/
20 shrtcut=Y/
21 viewcod=N/
22 ndec=2/
23 clean = Y/
24 strctry = N/
25 outdir="C:\Workshop_IDB_Analyzer\School"/
26 outfile="05_School".
27
28
```

The status bar at the bottom indicates "IBM SPSS Statistics Processor is ready" and shows the cursor position as "In 1 Col 0" and "NUM".

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

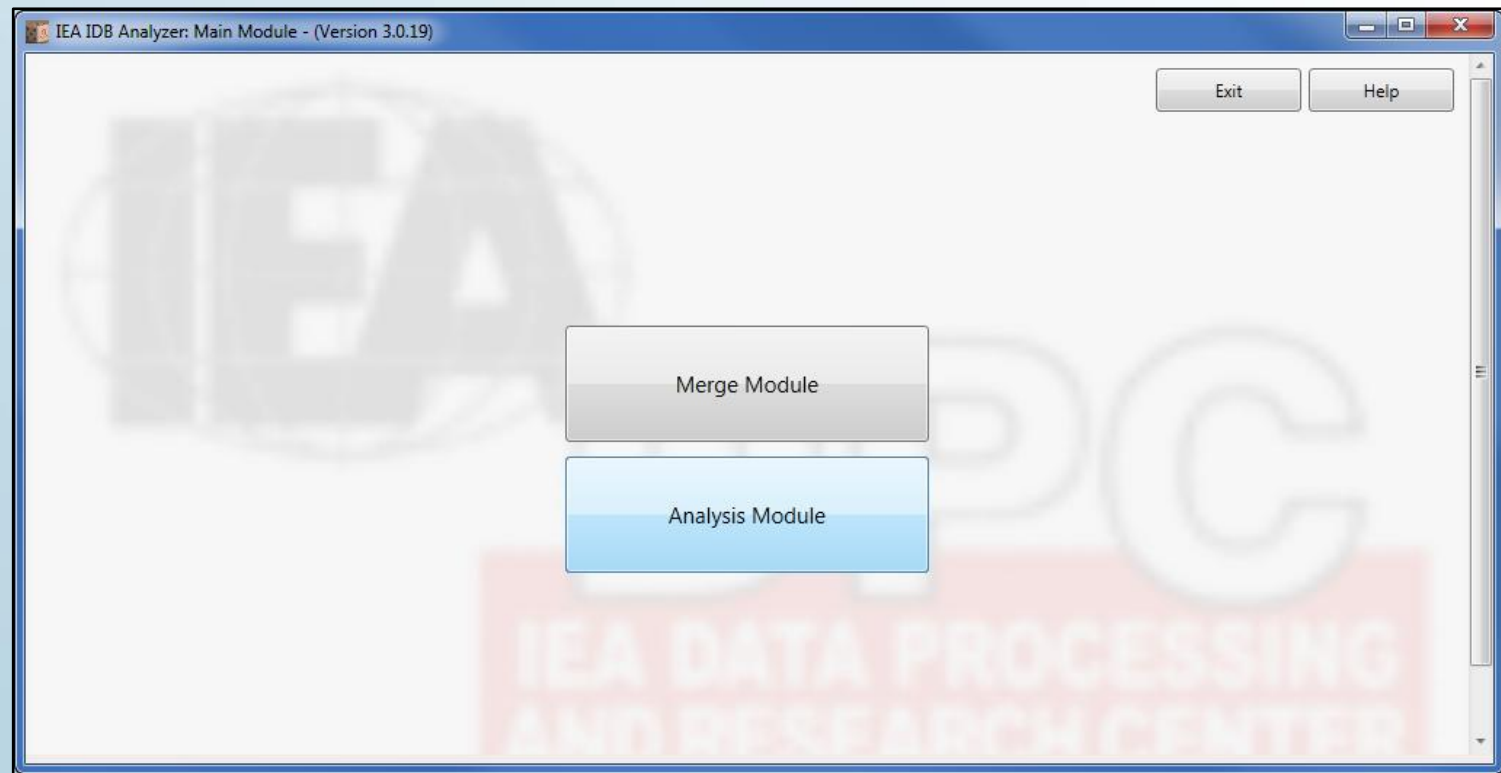
Without Achievement Scores

- 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 - (Version 3.0.12)

Analysis File: C:\Workshop_IDB_Analyzer\School\School_native_speakers.sav

Analysis Type: PIRLS_G4

Statistic Type: Percentages and Means

Plausible Value Option: Use PVs

Benchmark Option:

Missing Data Option:

Number of Decimals: 2

Select file

Analysis list the v variab available file

Statistic Type:
Percentages and Means
Percentages Only
Regression
Correlations
Benchmarks
Percentiles

: option: te n Analysis e(s)

r of ls:

Output Files:



IEA IDB Analyzer – Analysis Module

Grouping Variables

Analysis Variables

Achievement Scores

Dependent Variables

Achievement Benchmarks

Grouping Variables: ☒ Exclude Missing From Analysis

Name	Description
IDCNTRY	*COUNTRY ID*

Analysis Variables:

Name	Description
------	-------------

Plausible Values:

Name	Description
------	-------------

Dependent Variables:

Name	Description
------	-------------

Achievement Benchmarks:

Name	Description
------	-------------

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 IDCNTY 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

IEA IDB Analyzer: Analysis Module - (Version 3.0.12)

Analysis File: C:\Work

Analysis Type: PIRLS_G4

Option: Benchmark Option

Number of Decimals: 2

Select Variables:

Name	Description
ASRLIT01-05	1ST TO 5TH PLAUSIBLE VALUE: LITERARY PURPOSE PV1*
ASRINF01-05	1ST TO 5TH PLAUSIBLE VALUE: INFORMATIONAL PURPOSE*
ASRIIE01-05	1ST TO 5TH PLAUSIBLE VALUE: INTERPRETING PROCESS*
ASRRS01-05	1ST TO 5TH PLAUSIBLE VALUE: STRAIGHTFORWARD PROC*

Search for variables by name or description

Select variables and use the arrows

Exclude Missing From Analysis

Name	Description
IDCNTRY	*COUNTRY ID*
recCG04	Recorded percent native speakers in school

Plausible Values:

Name	Description
ASRREA01-05	1ST TO 5TH PLAUSIBLE VALUE: OVERALL READING PV1*

Dependent Variables:

Achievement Benchmarks / Percentiles:

Output Files: C:\Workshop_IDB_Analyzer\School\05_school.*

Define

Start SPSS

Exit

Output created by the IEA IDB Analyzer

```
jackpv
      infile=analysis/
      cvar=IDCNTRY /
      Rootpv=ASMMATO/
      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!

