Assessing Poverty to Inform Program Design

ADePT for Survey Data Analysis

December 4, 2013

World Bank

SSN Core Course

This presentation is based on work by HDN and DEC

Agenda

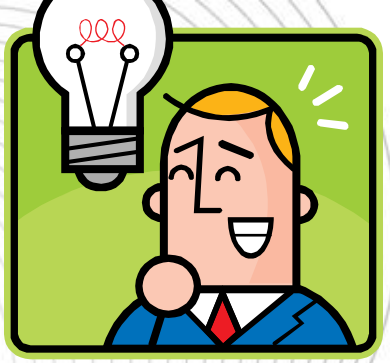
- Overview of using ADePT for Poverty Analysis and SSN design (30 minutes)
- Groups work - conduct analysis and prepare presentation (30 minutes)
- Group presentations & discussion (30 minutes)
- Closing (5 minutes)

Overview of using ADePT for Poverty Analysis and SSN design

Why poverty analysis?

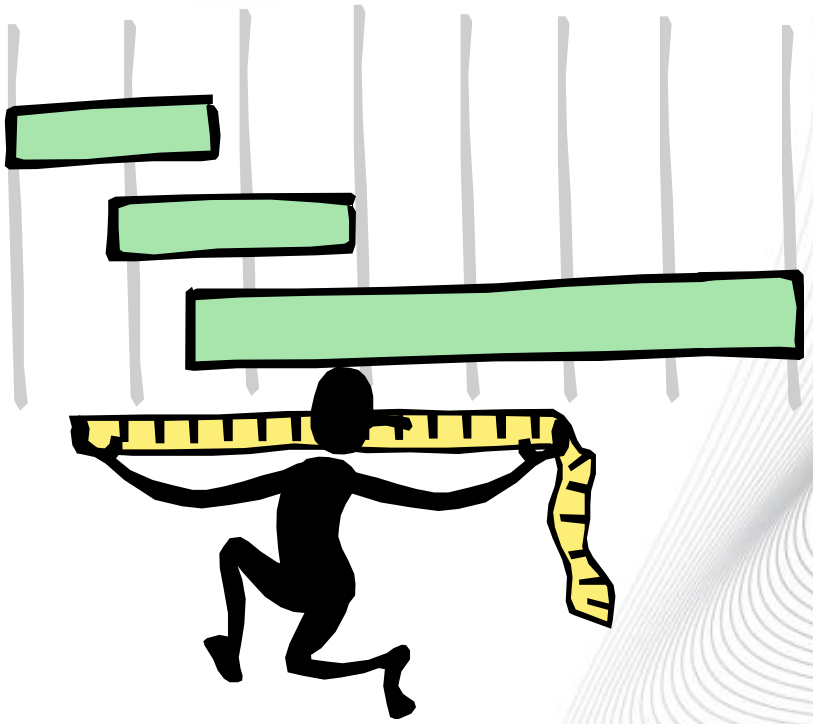
- Understand the characteristics of the poor and non-poor
- Examine inequality of income/ expenditure
- Assess poverty change over time and by sub-groups
  - Eg – women, education, employment, age
- Estimate vulnerability to poverty
- Inform program and policy design

Basic idea



- Policymakers would like to track progress – is poverty declining over time/how does this compared with other countries?
- Data from surveys, unlike administrative data, allows for analysis by sub-groups
- From analysis can adjust programs and policies, based on evidence-based findings

Let’s get measuring!

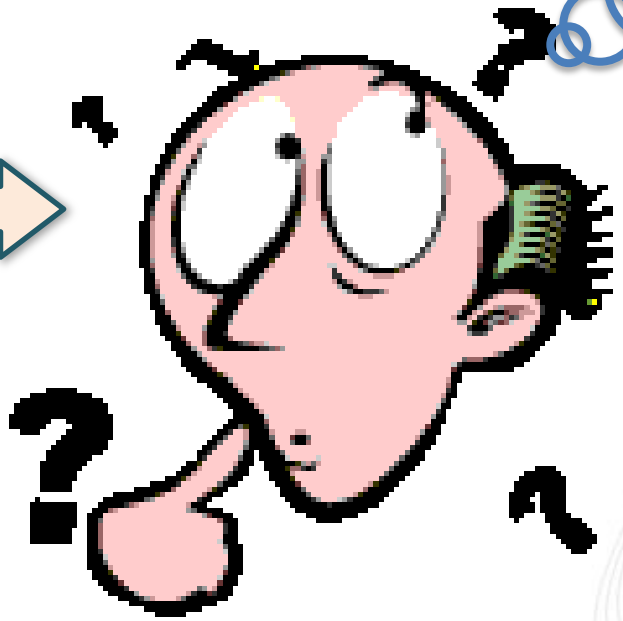


Why ADePT?

- ADePT stands for *Automated DEC Poverty Tables*. ADePT is a product of the Development Research Group (DECRG).
- ADePT largely automates the production of standardized tables and charts
- **User requires knowledge of statistical packages -e.g. Stata and SPSS – to prepare the dataset. Construction of key variables is not trivial but a statistician can do it. Then**
  - **ADePT saves time for users because user do not need to write commands and code to produce the tables and charts.**
- ADePT runs without Stata on the user's computer!
- ADePT minimizes human errors in programming—even skilled Stata users make mistakes!
- ADePT ensures comparability of results across countries/years, in a standardized format – we're comparing apples with apples
- ADePT frees up resources for data-preparation, interpretation of results, and thinking about policy implications

Why *ADePT* ?

User micro-level data:
DHS, LSMS, LFS, …



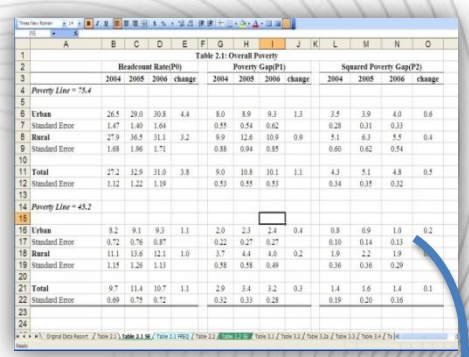


Table 2.1: Overall Poverty

	Headcount Rate(P0)				Poverty Gap(P1)				Squared Poverty Gap(P2)			
	2004	2005	2006	change	2004	2005	2006	change	2004	2005	2006	change
Poverty Line = 75.4												
Urban	26.5	29.0	30.8	4.4	8.0	8.9	9.3	1.3	3.5	3.9	4.0	0.6
Standard Error	1.47	1.40	1.64		0.55	0.54	0.62		0.28	0.31	0.33	
Rural	27.9	36.5	31.1	3.2	9.9	12.6	10.9	0.9	5.1	6.3	5.5	0.4
Standard Error	1.68	1.96	1.71		0.88	0.94	0.85		0.60	0.62	0.54	
Total	27.2	32.9	31.0	3.8	9.0	10.8	10.1	1.1	4.3	5.1	4.8	0.5
Standard Error	1.32	1.22	1.19		0.53	0.55	0.53		0.34	0.35	0.32	
Poverty Line = 45.2												
Urban	8.2	9.1	9.3	1.1	2.0	2.3	2.4	0.4	0.8	0.9	1.0	0.2
Standard Error	0.72	0.76	0.87		0.22	0.27	0.27		0.10	0.14	0.13	
Rural	11.1	13.6	12.1	1.0	3.7	4.4	4.0	0.2	1.9	2.2	1.9	
Standard Error	1.15	1.26	1.13		0.58	0.58	0.49		0.36	0.36	0.29	
Total	9.7	11.4	10.7	1.1	2.9	3.4	3.2	0.3	1.4	1.6	1.4	0.1
Standard Error	0.69	0.75	0.72		0.32	0.33	0.28		0.19	0.20	0.16	

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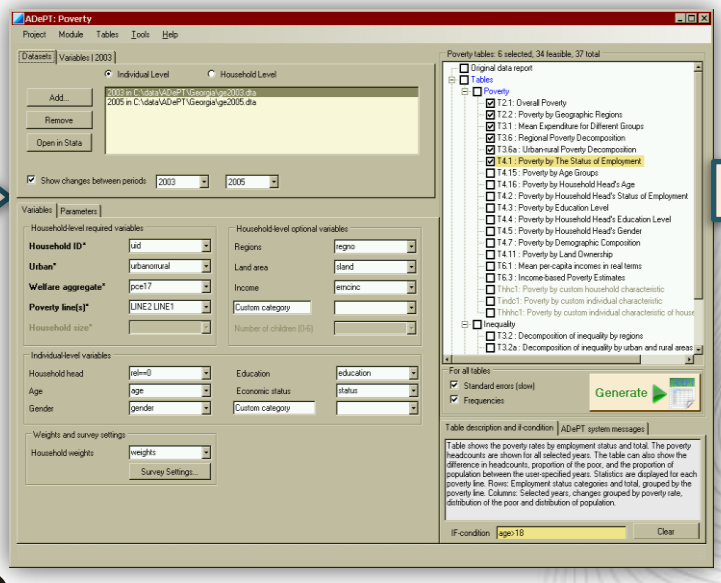
ADePT

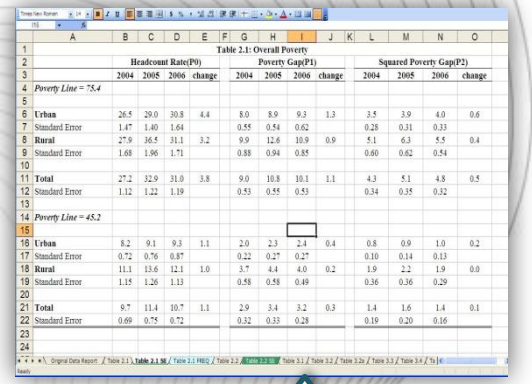
Why *ADePT* ?

User micro-level data:
DHS, LSMS, LFS, …

ADePT



Print-ready output



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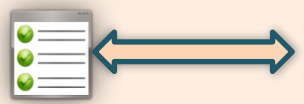
Inside ADePT



User interface — **Computational kernel (Stata)**

ADePT

Some practical uses of ADePT

- Quickly understand poverty characteristics of population (e.g by age, education level, region)
- Determine poverty rate, depth, and severity
- Measure the distribution of income/ expenditure/ inequality by sub-groups
- Produce *e*vidence- based findings for tracking *progress*, preparing *reports*, informing *programs*

What ADePT Poverty does

- ADePT uses the living standards variable to rank individuals and create population quintiles (using household weights)
- Produce a number of standardized tables to examine how poverty and inequality measures for population and sub-groups
- Allows for assessing how differing methodologies (eg poverty line, equivalence scales) affect poverty measures
- Starting point for ADePT SP

What ADePT Poverty asks for

Main source of information:

- Representative Household Surveys (HBS, IES, LSMS)

Key Variables:

- Living standards measure - continuous variable (e.g. Consumption, expenditure, income, asset index or score)
- Poverty line (s) if income or consumption
- Weights and survey settings relate to sample design information (sampling weight, cluster, strata)
- Household ID
- Location of the household (Urban or Rural)

Let’s see ADePT Poverty in action!

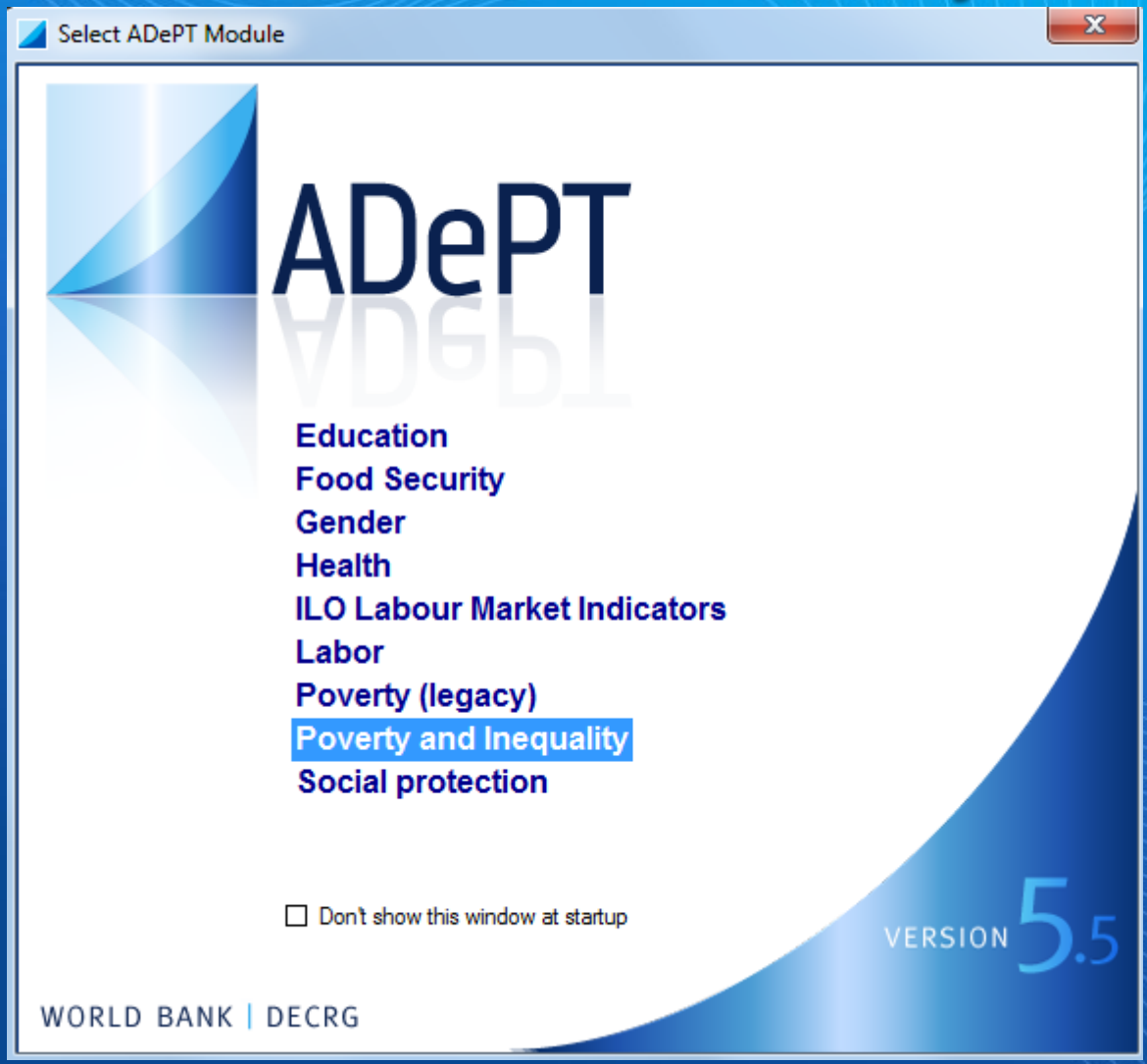
First step preparation of input data

- Main source of information: Existent Household Surveys
- Key Variables:
  - Household identification
  - Location of the household (Urban or Rural)
  - The welfare level of the households, typically expressed as a per capita or per adult equivalent consumption or income;
  - Poverty line (s)
  - Expansion factor (individual or household)
    - Sample frame design

Remember:

- GIGO principle:
  - Garbage In Garbage Out

Software Platform for Automated Economic Analysis



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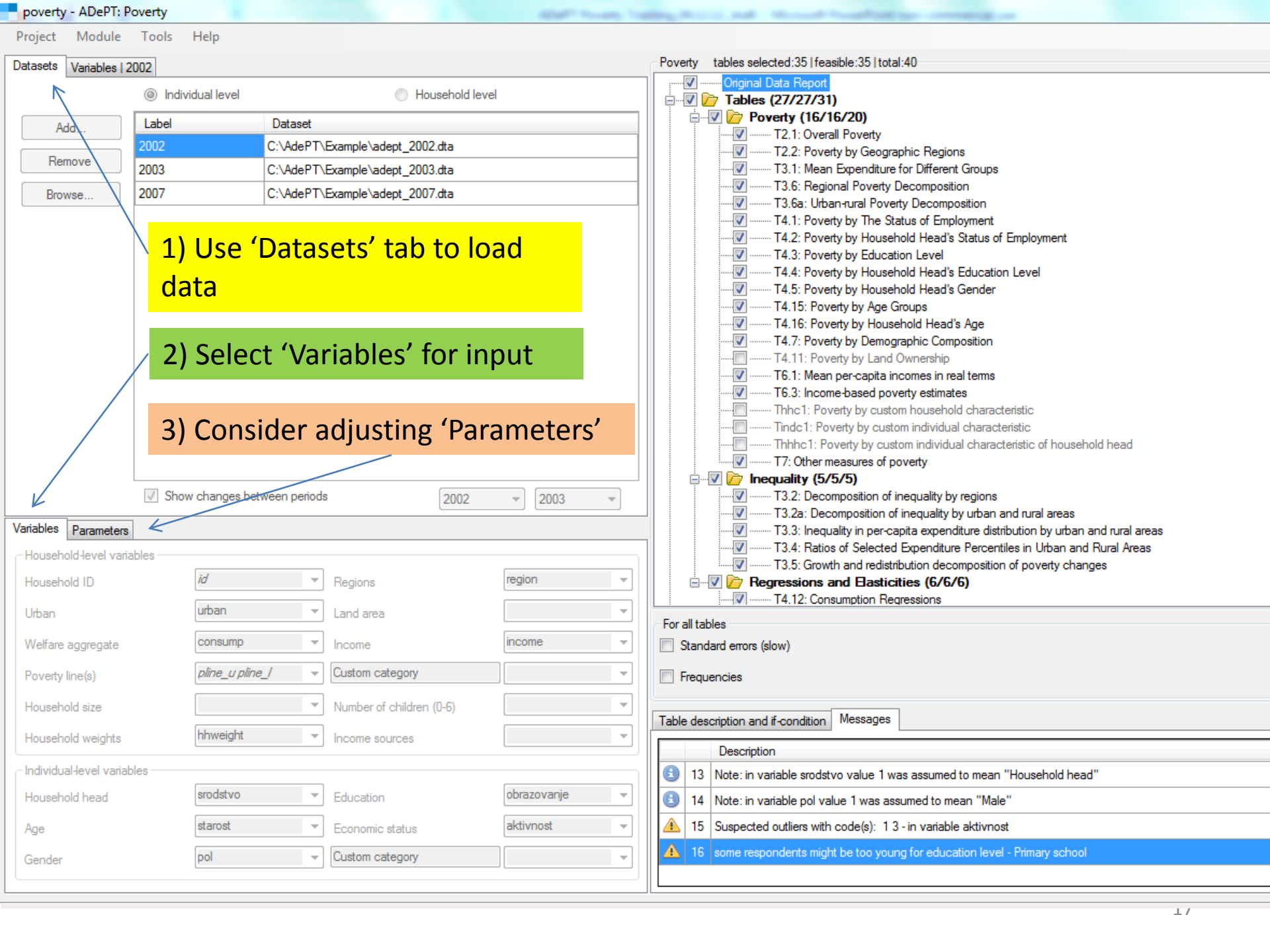
poverty - ADePT: Poverty
Project
Module
Tools
Help
Datasets
Variables | 2002
Individual level
Household level
Add...
Remove
Browse...
Label
Dataset
2002
C:\AdePT\Example\adept_2002.dta
2003
C:\AdePT\Example\adept_2003.dta
2007
C:\AdePT\Example\adept_2007.dta
1) Use 'Datasets' tab to load data
2) Select 'Variables' for input
3) Consider adjusting 'Parameters'
Show changes between periods
2002
2003
Variables
Parameters
Household-level variables
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Regions
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Land area
Welfare aggregate
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Income
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Household size
Number of children (0-6)
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Individual-level variables
Household head
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Education
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Age
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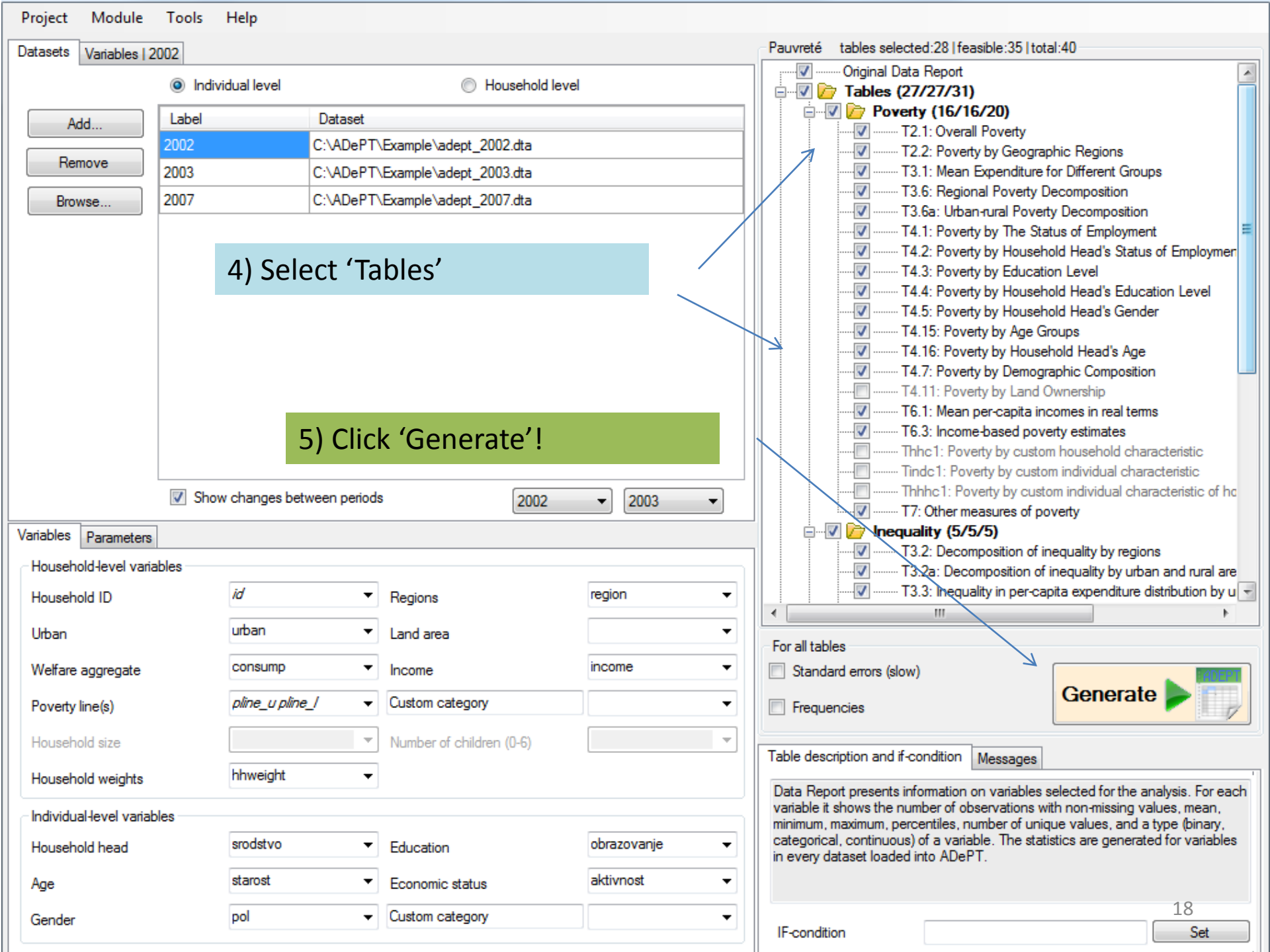
Gender
pol
Custom category
Poverty
tables selected:35 | feasible:35 | total:40
Original Data Report
Tables (27/27/31)
Poverty (16/16/20)
T2.1: Overall Poverty
T2.2: Poverty by Geographic Regions
T3.1: Mean Expenditure for Different Groups
T3.6: Regional Poverty Decomposition
T3.6a: Urban-rural Poverty Decomposition
T4.1: Poverty by The Status of Employment
T4.2: Poverty by Household Head's Status of Employment
T4.3: Poverty by Education Level
T4.4: Poverty by Household Head's Education Level
T4.5: Poverty by Household Head's Gender
T4.15: Poverty by Age Groups
T4.16: Poverty by Household Head's Age
T4.7: Poverty by Demographic Composition
T4.11: Poverty by Land Ownership
T6.1: Mean per-capita incomes in real terms
T6.3: Income-based poverty estimates
Thhc1: Poverty by custom household characteristic
Tindc1: Poverty by custom individual characteristic
Thhhc1: Poverty by custom individual characteristic of household head
T7: Other measures of poverty
Inequality (5/5/5)
T3.2: Decomposition of inequality by regions
T3.2a: Decomposition of inequality by urban and rural areas
T3.3: Inequality in per-capita expenditure distribution by urban and rural areas
T3.4: Ratios of Selected Expenditure Percentiles in Urban and Rural Areas
T3.5: Growth and redistribution decomposition of poverty changes
Regressions and Elasticities (6/6/6)
T4.12: Consumption Regressions
For all tables
Standard errors (slow)
Frequencies
Table description and if-condition
Messages
Description
13
Note: in variable srodstvo value 1 was assumed to mean "Household head"
14
Note: in variable pol value 1 was assumed to mean "Male"
15
Suspected outliers with code(s): 1 3 - in variable aktivnost
16
some respondents might be too young for education level - Primary school


Project
Module
Tools
Help
Datasets
Variables | 2002
Individual level
Household level
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Remove
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2002
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2003
C:\ADePT\Example\adept_2003.dta
2007
C:\ADePT\Example\adept_2007.dta
4) Select 'Tables'
5) Click 'Generate'!
Show changes between periods
2002
2003
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tables selected:28 | feasible:35 | total:40
Original Data Report
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Variables
Parameters
Household-level variables
Household ID
id
Regions
region
Urban
urban
Land area
Welfare aggregate
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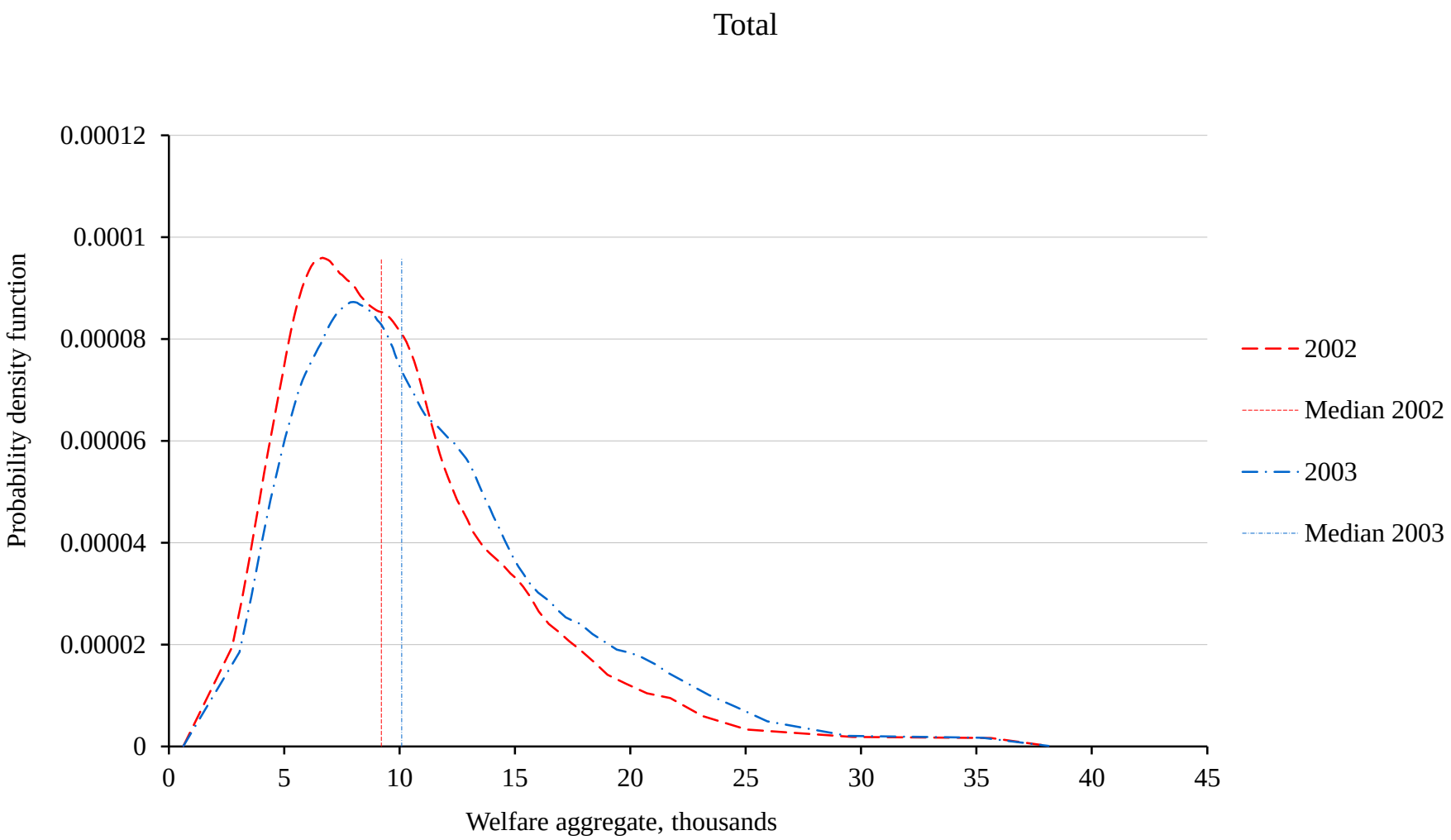
Income
income
Poverty line(s)
pline_u pline_r
Custom category
Household size
Number of children (0-6)
Household weights
hhweight
Individual-level variables
Household head
srodstvo
Education
obrazovanje
Age
starost
Economic status
aktivnost
Gender
pol
Custom category
For all tables
Standard errors (slow)
Frequencies
Generate
Table description and if-condition
Messages
Data Report presents information on variables selected for the analysis. For each variable it shows the number of observations with non-missing values, mean, minimum, maximum, percentiles, number of unique values, and a type (binary, categorical, continuous) of a variable. The statistics are generated for variables in every dataset loaded into ADePT.
IF-condition
Set

ADePT Poverty and Inequality: Table of Contents

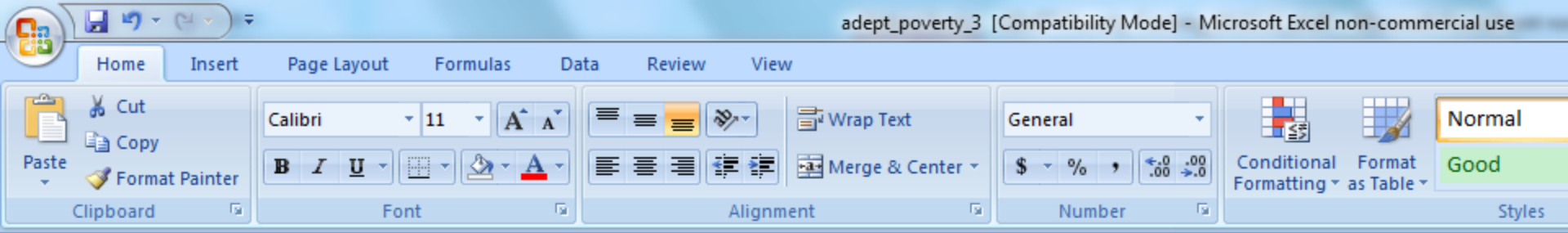
		CPU time
Notifications	Errors, Warnings and Notifications generated by data checking process	
Original Data Report	Original Data Report	1.68
Figure 1	Figure 1: Probability Density Function	21.85
Table 1	Table 1: Mean and Median Per Capita Consumption Expenditure, Growth, and the Gini Coefficient	2.15
Table 2	Table 2: Overall Poverty	2.69
Table 3	Table 3: Distribution of Poor in Urban and Rural Areas	4.40
Table 4	Table 4: Composition of FGT Family of Indices by Geography	5.02
Table 5	Table 5: Quantile PCEs and Quantile Ratios of Per Capita Consumption Expenditure	1.49
Table 6	Table 6: Partial Means and Partial Mean Ratios	7.29
Table 7	Table 7: Distribution of Population across Quintiles	1.07
Table 8	Table 8: Mean and Median Per Capita Consumption Expenditure, Growth, and the Gini Coefficient across Subnational Regions	2.53
Table 9	Table 9: Headcount Ratio by Subnational Regions	4.57
Table 10	Table 10: Poverty Gap Measure by Subnational Regions	4.57
Table 11	Table 11: Squared Gap Measure by Subnational Regions	4.52
Table 12	Table 12: Quantile PCEs and Quantile Ratios of Per Capita Consumption Expenditure	1.87
Table 13	Table 13: Partial Means and Partial Mean Ratios for Subnational Regions	12.75
Table 14	Table 14: Distribution of Population across Quintiles by Subnational Regions	0.98
Table 16	Table 16: Mean and Median Per capita Consumption Expenditure, Growth, and the Gini Coefficient by Household Head's Characteristics	5.03
Table 17	Table 17: Headcount Ratio by Household Head's Characteristics	9.31
Table 18	Table 18: Distribution of Population across Quintiles by Household Head's Characteristics	2.08
Table 19	Table 19: Headcount Ratio by Employment Category	4.56
Table 20	Table 20: Headcount Ratio by Education Level	4.71
Table 21	Table 21: Headcount Ratio by Demographic Composition	6.97
Table 23	Table 23: Headcount Ratio by Age Groups	5.00
Figure 2	Figure 2: Age-Gender Pyramid and Poverty	0.91
Table 24	Table 24: Elasticity of FGT Indices to Per capita Consumption Expenditure	6.38
Table 25	Table 25: Sensitivity of Poverty Measures to the Choice of Poverty Line	10.52
Table 26	Table 26: Other Poverty Measures	4.79
Table 27	Table 27: Atkinson Measures and Generalized Entropy Measures by Geographic Regions	10.37

Probability Density Function



Overall Poverty

1	**Table 2: Overall Poverty**			
2		**Poverty Headcount**	**Poverty Gap**	**Squared Poverty Gap**
3		**2002**	**2002**	**2002**
4	**Poverty line = pline_u**			
5	Urban	19.1	4.2	1.4
6	Rural	28.3	7.0	2.6
7				
8	Total	23.1	5.4	1.9
9				
10	**Poverty line = pline_l**			
11	Urban	7.0	1.3	0.4
12	Rural	11.8	2.6	0.9
13				
14	Total	9.1	1.8	0.6
16				
17	Note: Changes shown between years 2002 and 2003			
18				
19	Back to the table of contents			
20				

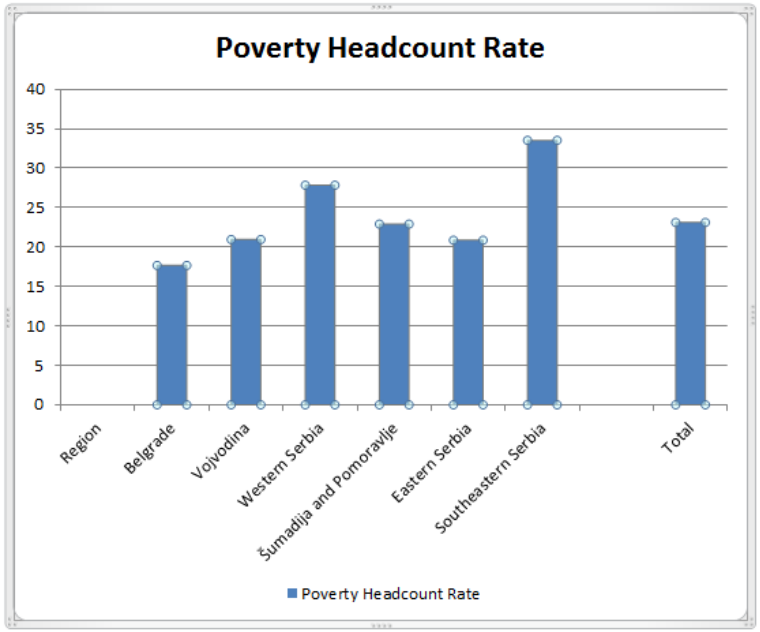


	A	B	C	D	E	F	G	H	I	J	K	L	M
1	**Table 4.7: Poverty by Demographic Composition**												
2		**Poverty Headcount Rate**		**Distribution of the Poor**		**Distribution of Population**							
3		**2002**		**2002**		**2002**							
4	**Poverty line = pline_u**												
5													
6	**Number of children 0-6 years old**												
7	no children	23.1		77.9		77.8							
8	1	21.2		14.3		15.6							
9	2	26.8		6.8		5.9							
10	3 or more children	32.9		1.1		0.8							
11													
12	**Household size**												
13	1	27.8		6.8		5.7							
14	2	25.3		17.6		16.1							
15	3	18.9		15.8		19.3							
16	4	18.0		22.0		28.2							
17	5	25.5		15.5		14.0							
18	6	28.2		12.1		9.9							
19	7 or more	34.5		10.2		6.8							
20													
21	Total	23.1		100.0		100.0							
22													
23	**Poverty line = pline_l**												

Chart 1 | =SERIES('Table 2.2'!$B$2,'Table 2.2'!$A$8:$A$16,'Table 2.2'!$B$8:$B$16,1)

Table 2.2: Poverty by Geographic Regions

	Poverty Headcount Rate	Distribution of the Poor	Distribution of Population
	2002	2002	2002
Poverty line = pline_u			
Urban	19.1	46.7	56.4
Rural	28.3	53.3	43.6
Region			
Belgrade	17.7	16.1	21.1
Vojvodina	20.9	24.6	27.1
Western Serbia	27.8	13.5	11.2
Šumadija and Pomoravlje	22.9	17.1	17.3
Eastern Serbia	20.9	8.4	9.3
Southeastern Serbia	33.5	20.3	14.0
Total	23.1	100.0	100.0
Poverty line = pline_l			
Urban	7.0	43.2	56.4
Rural	11.8	56.8	43.6
Region			
Belgrade	7.1	16.5	21.1
Vojvodina	7.4	22.2	27.1
Western Serbia	10.9	13.4	11.2
Šumadija and Pomoravlje	9.2	17.5	17.3
Eastern Serbia	8.2	8.3	9.3
Southeastern Serbia	14.4	22.1	14.0
Total	9.1	100.0	100.0



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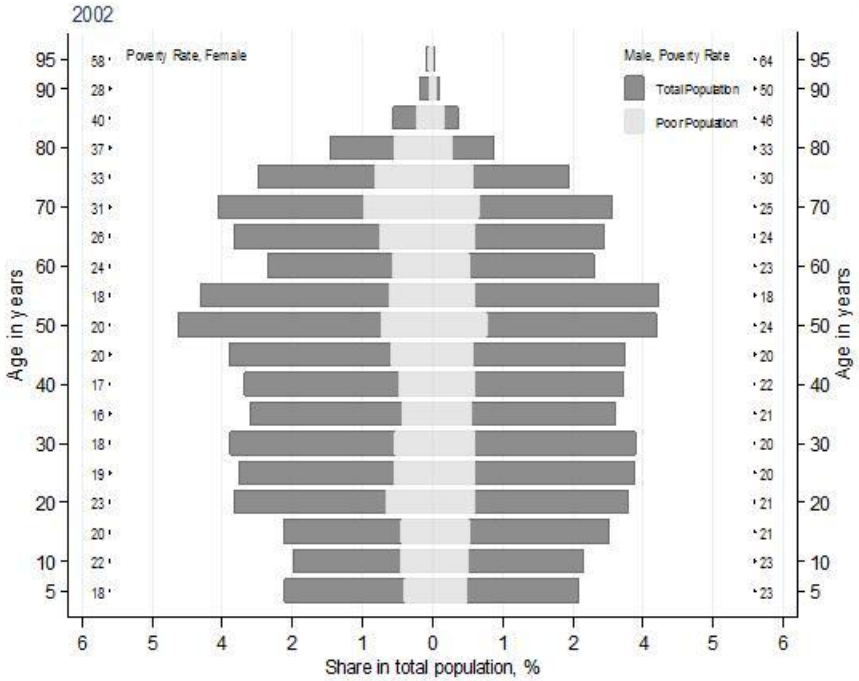
Can use output to make charts:

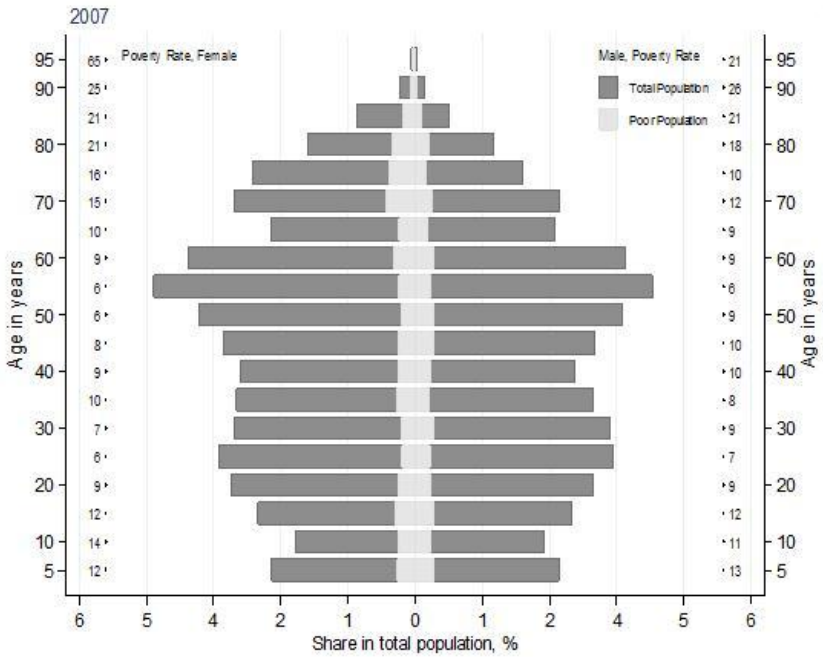
Poverty by Status of Employment

	Poverty Headcount Rate			Distribution of the Poor				Distribution of Population		
	2002	2003	Change	2002	2003	2007	Change	2002	2003	Change
Poverty line = pline_u										
activity										
Employed	17.2	10.8	-6.3	26.5	28.7	28.0	2.3	35.6	36.2	0.6
Unemployed	32.7	17.2	-15.5	14.2	11.6	13.9	-2.6	10.0	9.2	-0.8
Inactive	25.2	14.9	-10.3	59.3	59.6	58.2	0.3	54.3	54.6	0.2
Total	23.1	13.7	-9.5	100.0	100.0	100.0	0.0	100.0	100.0	0.0
Poverty line = pline_l										
activity										
Employed	5.6	5.3	-0.3	21.9	27.8	27.2	5.9	35.6	36.2	0.6
Unemployed	14.6	9.1	-5.5	16.2	12.1	15.2	-4.1	10.0	9.2	-0.8
Inactive	10.4	7.6	-2.7	62.0	60.1	57.6	-1.9	54.3	54.6	0.2
Total	9.1	6.9	-2.2	100.0	100.0	100.0	0.0	100.0	100.0	0.0

Note: Changes shown between years 2002 and 2003

Has poverty changed over time, and in what ways?





Example :

- How has the poverty rate changed between 2002 and 2007?
- Would you allocation of resources/ programs be same/different?

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Group Exercises

Exercises

- Each tables task is to use the poverty data to design a social safety net program
- Focus on what program will be, why chose design, and other considerations
- Work with Serbia 2002, 2003, and 2007 datasets
- Will present as a group, and other teams will provide constructive feedback

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Focus of analysis

- Dynamics of poverty & inequality 2002, 2003, 2007 (same direction or different)?
- Is poverty concentrated by region, and how does this change over time?
- Are elderly more or less vulnerable in this country, and are they more or less than if head of household?
- How would these considerations inform SSN design?

Possible topics

- What are the characteristics of poor and sub-groups?
- How has poverty changed over time?
- What factors appear to be related to being poor and non-poor? How may this influence the design of programs?
- How is poverty distributed for the entire population and for the poor?
- Other topic on relationship to poverty/policy implications: eg Education, employment, region, hhsize, gender

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Quick feedback from group

- Why do you agree or disagree with the groups' findings and policy implications?
- What could be done to better ensure successful implementation?

Final thoughts on session

- How did the group exercise surprise you?
- In your countries, what are the constraints for understanding poverty characteristics and implementing changes to anti-poverty programs to address these?
- How could these constraints be overcome?
- Other comments/ thoughts on how could use tools for further work to improve poverty assessment, national planning, and use for country's programs?

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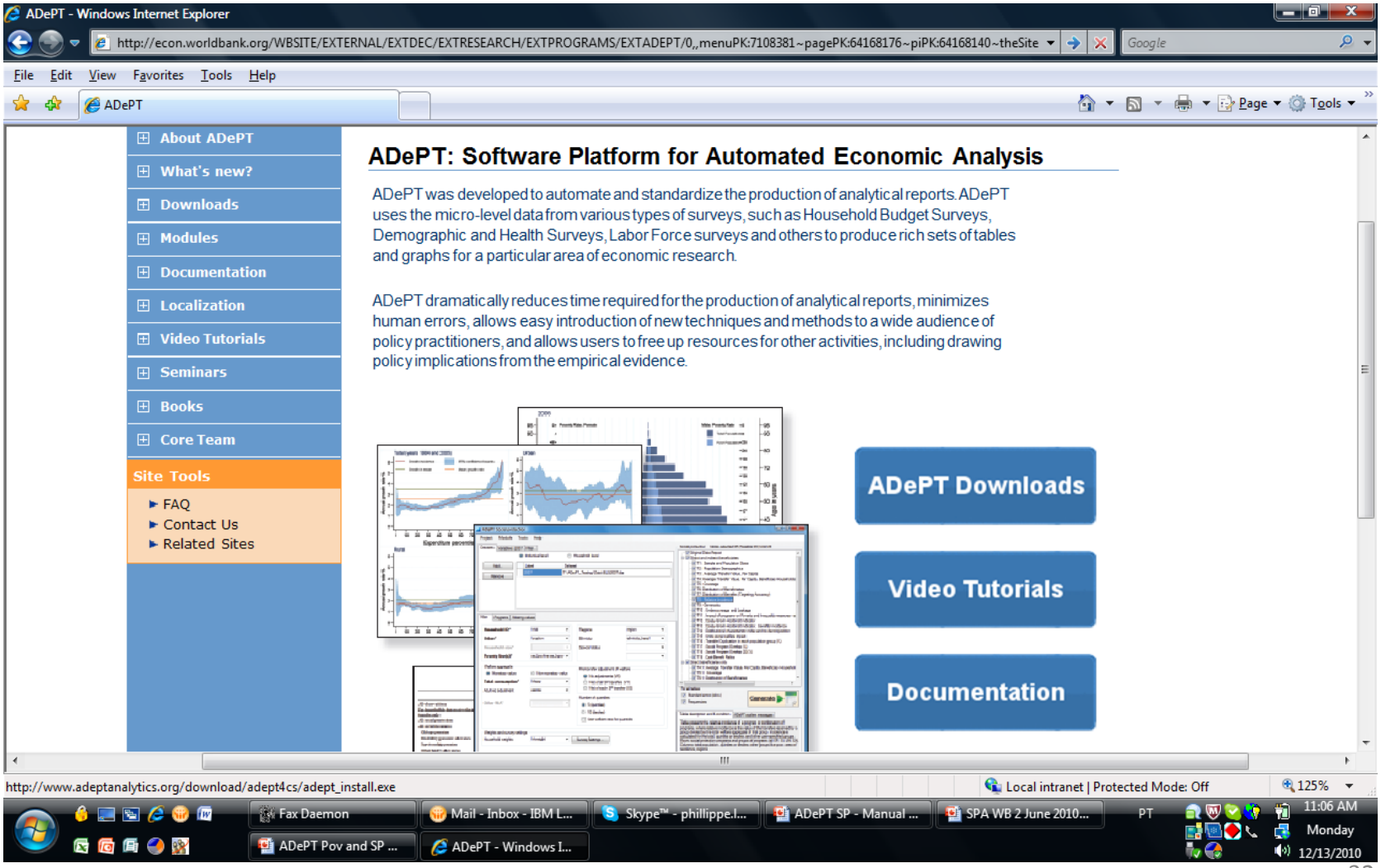

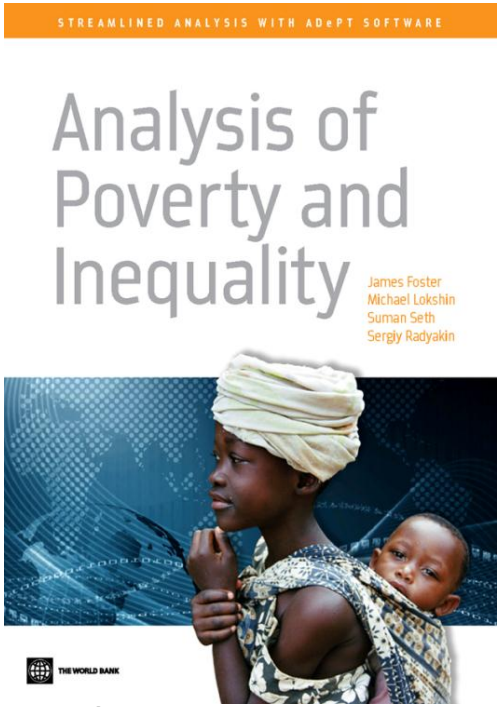

Thank you!

- If your country office is interested in a training on Social Protection and Poverty (1/2 day to 3 day courses):
  - Please contact **Mr. Ruslan Yemtsov, ryemstov@worldbank.org or Mr. Brooks Evans bevans2@worldbank.org**

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