

**Poverty Assessment Tool Accuracy Submission: Addendum for New Poverty Lines
USAID/IRIS Tool for Albania
Submitted: September 14, 2011**

In order to improve the functionality of the existing PAT for Albania, the IRIS Center has updated the tool with the following features:

- Re-ran the models at the median line, after comparing with the new purchasing power parity (PPP) rates lines released by the World Bank
- Calibrated the model to also allow predictions at the national poverty line
- Revised the paper questionnaire to reflect best practice in survey design

The data source used for the PAT in Albania remains the same as when the tool was originally submitted for certification, as has the general tool construction process, aside from a more rigorous screening process to ensure that the variables are in line with the project's current best practices for selecting practical indicators. Because of these similarities, this document should be viewed as an addendum to the original tool's certification document. The document proceeds by detailing how the new median line was applied and the results at the national line and median line. Accompanying this document are the revised questionnaire and screenshots of the Epi Info data entry template and output.

Updating the poverty line

The tool originally predicted poverty outreach at the international poverty line of \$1.08/day in 1993 PPP terms. With the release of the 2005 PPP rates and the adoption of the \$1.25/day line in 2005 PPP terms by the World Bank, it seemed prudent to update the PAT to the new line through comparing the \$1.25 and median line, as well as update the tool to permit predictions at the \$2.50 or national poverty line.

The legislation governing the development of USAID tools defines the "very poor" as either the bottom (poorest) 50 percent of those living below the poverty line established by the national government or those living on the local equivalent of less than the international poverty line (\$1.25/day in 2005 PPP terms).¹ The applicable poverty line for USAID tool development is the one that yields the higher household poverty rate for a given country.

At the time of the survey, the international poverty line (\$1.25/day in 2005 PPP terms) was equal to 2132.47 Lek per capita per month in 2002 average prices. This line identifies only 3.02% of households as "very poor."

¹ The congressional legislation specifies the international poverty line as the "equivalent of \$1 per day (as calculated using the purchasing power parity (PPP) exchange rate method)." USAID and IRIS interpret this to mean the international poverty line used by the World Bank to track global progress toward the Millennium Development Goal of cutting the prevalence of extreme poverty in half by 2015. This poverty line has recently been recalculated by the World Bank to accompany new, improved estimates of PPP. The applicable 2005 PPP rate for Albania is 2,132.47 Lek per capita per month in 2002 average prices.

By comparison, Albania’s national poverty line, 4891 Lek per capita each month, identifies 19.3% of the population as “very poor.” The poorest half of this group represented 9.7% of the total population, considerably more than the percentage living below the \$1.25/day line.

Because the median line implies a higher poverty rate for Albania, we adopt the median line as the binding line instead of the \$1.25 per day line.

Results for median model

Table 1 summarizes the accuracy results achieved by four estimation methods in predicting household poverty relative to the new median poverty line. The selection of the best model was based on the Balanced Poverty Accuracy Criterion (BPAC) and the Poverty Incidence Error (PIE), along with practicality considerations.² We use four estimation methods in this case, rather than the eight methods used originally, for two reasons: 1) fewer methods reduces analysis time; 2) the 1-step quantile was shown to be as accurate as 2-step methods in the original data analysis. For Albania, the most accurate method, on the basis of BPAC and PIE, is the 1-step Quantile regression. Therefore, 1-step Quantile was selected as the best model, taking into consideration both accuracy and practicality. Table 2 presents a 2x2 matrix of the poverty status predicted by the model versus the true poverty status according to the expenditure benchmark. Table 3 provides the regression results from the median model.

Table 1: In-sample Accuracy Results for Prediction at the Legislative Poverty

Albania Median line* Share of “very poor”: 9.7%	Total Accuracy	Poverty Accuracy	Under-coverage	Leakage	PIE	BPAC
Single-step methods						
OLS	90.78	12.75	87.25	8.25	-7.63	-66.26
Quantile regression (estimation point: 30%)	88.42	42.80	57.20	62.60	0.52	37.40
Linear Probability	90.49	2.10	97.90	0.57	-9.40	-95.23
Probit	91.05	19.31	80.69	12.02	-6.63	-49.36
* Median line is 4041.42 Lek per capita per month in 2002 average prices.						

² For a detailed discussion of these accuracy criteria, see “Note on Assessment and Improvement of Tool Accuracy” at www.povertytools.org.

Table 2: Poverty Status of Sample Households, as Estimated by Model and Revealed by the Benchmark Survey (Albania: 1-step weighted quantile regression)

	Number of households identified as very poor by the tool	Number of households identified as not very-poor by the tool
Number of “true” very poor households (as determined by benchmark survey)	125 (4.1%)	167 (5.5%)
Number of “true” not very-poor households (as determined by benchmark survey)	183 (6.1%)	2,548 (84.3%)

Table 3: Regression Estimates using 1-step Quantile Method for Prediction at the Median National Poverty Line

.30 Quantile regression

Number of obs = 3,023

Min sum of deviations 728.7987

Pseudo R2 = 0.2978

Indicator	Coef.	Std. Err.	T	P> t 	[95% Conf.	Interval]
Household head age	0.005	0.005	1.02	0.31	-0.005	0.014
Household size	-0.276	0.019	-14.35	0	-0.313	-0.238
Household head age squared	0.000	0	-0.86	0.387	0	0
Household size squared	0.013	0.002	7.94	0	0.01	0.016
Household lives in Central region	-0.092	0.023	-3.92	0	-0.138	-0.046
Household lives in Mountain region	-0.125	0.025	-4.98	0	-0.174	-0.076
Household lives in Tirana	-0.115	0.029	-3.99	0	-0.171	-0.058
Household lives in rural area	0.123	0.027	4.56	0	0.07	0.176
Highest education completed by household head is primary school	-0.041	0.023	-1.77	0.077	-0.085	0.004
Household head completed university	0.180	0.031	5.75	0	0.118	0.241
Percent of household members with no education	-0.165	0.086	-1.92	0.055	-0.334	0.003
Percent of household members with highest education completion as some primary school	-0.106	0.055	-1.93	0.053	-0.214	0.002
Percent of household members with highest education completion is primary school	-0.140	0.055	-2.55	0.011	-0.248	-0.032
Household owns one or more landline phones	0.116	0.026	4.48	0	0.065	0.167
Household owns one or more VCRs	0.100	0.025	4.01	0	0.051	0.148

Household owns one or more generators	0.362	0.087	4.14	0	0.191	0.533
Household owns one or more boilers	0.135	0.023	5.86	0	0.09	0.18
Household owns one or more trucks	0.231	0.06	3.83	0	0.113	0.349
Household owns one or more refrigerators	0.181	0.029	6.32	0	0.125	0.237
Household owns one or more automobiles	0.228	0.032	7.19	0	0.166	0.29
Number of rooms occupied by family	0.044	0.01	4.35	0	0.024	0.063
Household owns one or more waterpumps	0.129	0.051	2.53	0.012	0.029	0.229
Number of horses owned by household	0.050	0.044	1.14	0.254	-0.036	0.135
Intercept	9.231	0.132	69.72	0	8.971	9.49

Results for national poverty line model

Table 4 summarizes the predictive accuracy results for the national poverty line using the Quantile model specification from the median poverty line. The indicators are the same as those in the model for the median line, but the percentile of estimation and the coefficients of the model were allowed to change (compare Tables 3 and 6). This methodology allows the content and length of the questionnaire to remain the same, but permits greater accuracy in predicting at the national poverty line. Table 5 presents a 2x2 matrix of the poverty status predicted by the model versus the true poverty status according to the expenditure benchmark. Table 6 provides the regression results from the national poverty line model.

Table 4: Accuracy Results Obtained for Prediction at the national Poverty Line

Albania National Line* Share of Poor: 19.3%	Total Accuracy	Poverty Accuracy	Under-coverage	Leakage	PIE	BPAC
Single-step methods						
Quantile regression (estimation point: 35%)	82.08	54.64	45.36	47.36	0.39	52.64

*The National line is 4,891 Lek per capita per month in 2002 average prices.

Table 5: Poverty Status of Sample Households, as Estimated by Model and Revealed by the Benchmark Survey, at national Poverty Line

	Number of households identified as poor by the tool	Number of households identified as not poor by the tool
Number of "true" poor	319	265

households (as determined by benchmark survey)	(10.5%)	(8.7%)
Number of “true” not poor households (as determined by benchmark survey)	277 (9.2%)	2,162 (71.6%)

Table 6: Regression Estimates using 1-step Quantile Method for Prediction at the National Poverty Line

.35 Quantile regression
Min sum of deviations 778.0719

Number of obs = 3,023
Pseudo R2 = 0.2984

Indicator	Coef.	Std. Err.	T	P> t 	[95% Conf.	Interval]
Household head age	0.006	0.004	1.39	0.165	-0.003	0.015
Household size	-0.264	0.018	-14.98	0	-0.299	-0.23
Household head age squared	0.000	0	-1.29	0.197	0	0
Household size squared	0.012	0.002	8.03	0	0.009	0.015
Household lives in Central region	-0.092	0.021	-4.29	0	-0.133	-0.05
Household lives in Mountain region	-0.109	0.023	-4.77	0	-0.154	-0.064
Household lives in Tirana	-0.119	0.026	-4.54	0	-0.171	-0.068
Household lives in rural area	0.137	0.024	5.6	0	0.089	0.184
Highest education completed by household head is primary school	-0.037	0.021	-1.78	0.076	-0.078	0.004
Household head completed university	0.191	0.028	6.72	0	0.135	0.246
Percent of household members with no education	-0.166	0.077	-2.15	0.031	-0.318	-0.015
Percent of household members with highest education completion as some primary school	-0.125	0.05	-2.48	0.013	-0.224	-0.026
Percent of household members with highest education completion is primary school	-0.166	0.05	-3.3	0.001	-0.264	-0.067
Household owns one or more landline phones	0.123	0.024	5.18	0	0.076	0.169
Household owns one or more VCRs	0.118	0.022	5.26	0	0.074	0.162
Household owns one or more generators	0.355	0.084	4.22	0	0.19	0.52
Household owns one or more boilers	0.126	0.021	5.92	0	0.084	0.167

Household owns one or more trucks	0.228	0.054	4.2	0	0.122	0.335
Household owns one or more refrigerators	0.184	0.026	6.97	0	0.132	0.236
Household owns one or more automobiles	0.246	0.029	8.45	0	0.189	0.303
Number of rooms occupied by family	0.047	0.009	5.16	0	0.029	0.065
Household owns one or more waterpumps	0.106	0.047	2.24	0.025	0.013	0.198
Number of horses owned by household	0.105	0.04	2.6	0.009	0.026	0.184
Intercept	9.204	0.123	75.05	0	8.964	9.444