



## **Research Project No. 34**

# **“Impact of Employment Guarantee Programmes on Gender Equality and Pro-Poor Economic Development”**

## **APPENDIX B**

### **Statistical Analysis of Time Spent on Unpaid and Paid Work**

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## Appendix B. Statistical Analysis of Time Spent on Unpaid and Paid Work

Pictorial representation of patterns in time spent on different types of unpaid work (Part 3 of the report) has shown that gender, employment status and household poverty status play an important role. Below we report sample means and levels of significance for each one separately.

Table 1 tabulates the average number of minutes and standard deviations, using females and males as the two independent samples. In order to compare the means, first we've checked whether the assumption of equal variances for each type of activity for female and male respondents is violated using Bartlett's test. Our results confirm that the equal variances assumption is violated for each and every activity. Thus, in order to be able to make a comparison of the sample means, rather than using a pooled variance, we needed to consider the unequal variance case. Performing the t-test for two independent samples with unequal variances (using Satterthwaite's approximation for the approximate t-statistic) we obtained the following results.

**Table 1. Time Spent on Unpaid and Paid Work Activities by Gender**

Weighted Means, Standard Deviations and Comparison of Means					
Activity	Female		Male		Individual t-stat
	Mean	Std.	Mean	Std.	
Water and Fuel Collection*	12.83	0.97	3.93	0.62	-7.67
Social Care*	45.09	1.65	10.77	1.32	-16.24
Home Maintenance*	205.25	3.50	79.88	2.41	-29.48
Sleep and Necessary Care**	420.54	3.47	488.77	4.54	11.93
Leisure**	266.32	3.39	326.61	4.48	10.72
Learning**	52.65	2.92	65.54	3.62	2.76
SNA**	145.68	233.20	277.99	286.96	26.65

*Source:* Authors' calculations from TUS South Africa 2000.

*Note:* Observation number working age women and men are 6,028 and 5,246 respectively. STATA outputs with details for Bartlett's test and individual t-statistics are available upon request.\* The Satterthwaite's approximation for the approximate t-statistic shows that the null hypothesis of no difference between means is rejected at the 0.05 level. The difference between male and female respondents as the mean(male)-mean(female) is negative.\*\* Given the same criteria for Satterthwaite's approximation, the null hypothesis of no difference between means is rejected at the 0.05 level; the difference as mean(male)-mean(female) is positive.

As can be seen in Table 1, the average time spent on water and fuel collection, social care and home maintenance is significantly higher for female respondents than males, whereas with respect to the average time spent on necessary activities (including time for sleeping, learning and SNA/paid work), we observe that male respondents spend a significantly higher amount of time on average.

Comparing the average time spent on unpaid and paid work activities by income groups, we obtained some interesting results, as well as results confirming the pictures presented above. First we present the tests results we obtained comparing the averages corresponding to the poor respondents and non-poor respondents. We observe that except for sleep, necessary care and social care there is a statistically significant difference between the two groups. Table 2 below summarizes these results. Poor people spend a significantly higher amount of time on water and fuel collection, social care and home maintenance, as well as learning.<sup>1</sup> As expected, the average time spent on SNA/paid activities by poor respondents is lower than that spent by non-poor respondents and is statistically significant at 5 percent. In a parallel manner, Table 3 presents the results obtained by comparing the non-poor respondents with ultra-poor respondents, which describes a picture very similar to Table 2. Lastly, Table 4 presents the third pair-wise comparison by income groups. As indicated by the first two comparisons, the average time spent on unpaid and paid work is similar for poor and ultra-poor respondents. Yet, we do observe differences among the two in the case of water and fuel collection and social care, as well as SNA activities—where the former two are positive (i.e., ultra-poor respondents spend a much higher amount of time on water and fuel collection and social care, but they spend less time, on average, on paid activities).

**Table 2. Time Spent on Unpaid and Paid Work Activities by Poverty Status**

Weighted Means, Standard Deviations and Comparison of Means					
Activity	Poor		Non-Poor		Individual t-stat
	Mean	Std.	Mean	Std.	
Water and Fuel Collection**	8.83	0.97	2.39	0.36	6.21
Social Care	26.14	1.67	25.27	1.54	0.38
Home Maintenance**	161.87	4.18	129.61	3.97	5.59
Sleep and Necessary Care	453.53	5.57	453.49	4.55	0.01
Leisure***	293.75	5.55	302.05	3.83	-1.23
Learning**	67.13	4.90	45.15	2.88	3.86
SNA*	144.53	6.30	248.02	5.90	-14.69

*Source:* Authors' calculations from TUS South Africa 2000.

*Note:* Observation number for working age South Africans who are poor and non-poor is 5,587 and 2,870 respectively. Means are calculated in minutes.\* The Satterthwaite's approximation for the approximate t-statistic shows that the null hypothesis of no difference between means is rejected at the 0.05 level. The difference between poor and non-poor respondents as the mean(poor)-mean(non-poor) is negative.\*\* Given the same criteria for Satterthwaite's approximation, the null hypothesis of no difference between means is rejected at the 0.05 level; the difference as mean(poor)-mean(non-poor) is positive.

<sup>1</sup> This result might reflect higher amount of travel-time for learning among the non working age population.

**Table 3. Time Spent on Unpaid and Paid Work Activities among Ultra-Poor and Non-Poor Households**

Weighted Means, Standard Deviations and Comparison of Means					
Activity	Ultra-Poor		Non-Poor		Individual t-stat
	Mean	Std.	Mean	Std.	
<b>Water and Fuel Collection**</b>	18.06	1.71	2.39	0.36	8.93
<b>Social Care**</b>	37.54	2.48	25.27	1.54	4.21
<b>Home Maintenance**</b>	161.82	4.45	129.61	3.97	5.40
<b>Sleep and Necessary Care</b>	448.96	5.81	453.49	4.05	-0.64
<b>Leisure**</b>	282.93	5.76	302.05	3.83	-2.76
<b>Learning**</b>	71.93	4.83	45.15	2.88	4.76
<b>SNA *</b>	116.85	6.16	248.01	5.90	-15.35

*Source:* Authors' calculations from TUS South Africa 2000.

*Note:* Observation number of ultra-poor respondents is 2817, where non-poor respondents' number is 5591.\* The Satterthwaite's approximation for the approximate t-statistic shows that the null hypothesis of no difference between means is rejected at the 0.05 level. The difference between ultra-poor and non-poor respondents as the mean(ultra-poor)-mean(non-poor) is negative.\*\* Given the same criteria for Satterthwaite's approximation, the null hypothesis of no difference between means is rejected at the 0.05 level; the difference as mean(ultra-poor)-mean(non-poor) is positive.

**Table 4. Time Spent on Unpaid and Paid Work Activities among Ultra-Poor and Poor Households**

Weighted Means, Standard Deviations and Comparison of Means					
Activity	Ultra-Poor		Poor		Individual t-stat
	Mean	Std.	Mean	Std.	
<b>Water and Fuel Collection**</b>	18.06	1.71	8.83	0.97	4.67
<b>Social Care**</b>	37.54	2.48	26.14	1.67	3.81
<b>Home Maintenance</b>	161.82	4.45	161.87	4.18	-0.01
<b>Sleep and Necessary Care</b>	448.96	5.81	453.53	5.52	-0.57
<b>Leisure</b>	282.93	5.76	293.75	5.55	-1.35
<b>Learning</b>	71.93	4.83	67.13	4.90	0.70
<b>SNA *</b>	116.85	6.16	144.53	6.30	-3.14

*Source:* Authors' calculations from TUS South Africa 2000.

*Note:* Observation number of ultra-poor respondents is 2817, where poor respondents' number is 2870.\* The Satterthwaite's approximation for the approximate t-statistic shows that the null hypothesis of no difference between means is rejected at the 0.05 level. The difference between ultra-poor and poor respondents as the mean(ultra-poor)-mean(poor) is negative.\*\* Given the same criteria for Satterthwaite's approximation, the null hypothesis of no difference between means is rejected at the 0.05 level; the difference as mean(ultra-poor)-mean(poor) is positive.

Tables 5 and 6 tabulate the test results comparing the means by employment status. We observe that employed respondents spend a lower amount of time on unpaid activities (such as water and fuel collection and social care) compared to the unemployed correspondents. This is true not only for the above mentioned unpaid activities, but also our results indicate that unemployed people sleep longer and spend more time on personal care as well as on leisure, pointing to *forced* idleness rather than “choice”. As expected, the unemployed spend much lower amount of time on SNA/paid activities when compared to the employed.<sup>2</sup>

Table 6 depicts the significance of mean differences between employed and economically inactive respondents and the average time they spend on unpaid and paid activities. Except for the paid work activities, in regards to all other activities the difference is negative (i.e., employed respondents spend significantly less time than the respondents who are not economically active).

**Table 5. Time Spent on Unpaid and Paid Work Activities among Employed and Unemployed Households**

Weighted Means, Standard Deviations and Comparison of Means					
Activity	Employed		Unemployed		Individual t-stat
	Mean	Std.	Mean	Std.	
Water and Fuel Collection*	5.08	0.56	12.13	2.44	-2.81
Social Care*	24.73	1.41	39.90	3.73	-3.81
Home Maintenance*	119.06	2.57	207.25	12.68	-6.81
Sleep and Necessary Care*	423.27	3.93	509.47	10.47	-7.71
Leisure*	268.95	3.67	357.67	9.57	-8.65
Learning**	20.48	1.84	12.20	3.36	2.16
SNA**	309.12	5.34	67.31	9.34	22.48

*Source:* Authors’ calculations from TUS South Africa 2000.

*Note:* Observation number of employed respondents is 6534, where unemployed respondents’ number is 1116. \* The Satterthwaite’s approximation for the approximate t-statistic shows that the null hypothesis of no difference between means is rejected at the 0.05 level. The difference between employed and unemployed respondents as the mean(employed)-mean(unemployed) is negative.\*\* Given the same criteria for Satterthwaite’s approximation, the null hypothesis of no difference between means is rejected at the 0.05 level; the difference as mean(employed)-mean(unemployed) is positive.

<sup>2</sup> The travel time spent on job search is recorded as SNA activities, thus for unemployed respondents, the positive amount of time on SNA activities simply reflects this erroneous fact.

**Table 6. Time Spent on Unpaid and Paid Work Activities among Employed and Not Economically Active Households**

<b>Weighted Means, Standard Deviations and Comparison of Means</b>					
<b>Activity</b>	<b>Employed</b>		<b>Not Econ. Active</b>		<b>Individual t-stat</b>
	<b>Mean</b>	<b>Std.</b>	<b>Mean</b>	<b>Std.</b>	
<b>Water and Fuel Collection*</b>	5.08	0.56	13.17	1.27	-5.79
<b>Social Care*</b>	24.73	1.41	32.95	1.95	-3.41
<b>Home Maintenance*</b>	119.06	2.57	172.62	3.87	-11.52
<b>Sleep and Necessary Care*</b>	423.28	3.93	479.28	4.60	-9.25
<b>Leisure*</b>	268.95	3.67	314.41	4.80	-7.50
<b>Learning*</b>	20.48	1.84	127.97	5.23	-19.38
<b>SNA**</b>	309.12	5.34	27.49	2.57	47.55

*Source:* Authors' calculations from TUS South Africa 2000.

*Note:* Observation number of employed respondents is 6534, where unemployed respondents' number is 3628.\* The Satterthwaite's approximation for the approximate t-statistic shows that the null hypothesis of no difference between means is rejected at the 0.05 level. The difference between employed and unemployed respondents as the mean(employed)-mean(not econ. active) is negative.\*\* Given the same criteria for Satterthwaite's approximation, the null hypothesis of no difference between means is rejected at the 0.05 level; the difference as mean(employed)-mean(not economically active) is positive.