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The effect of face-to-face and telephone interviews in keeping of time use diaries

33rd Conference of the International Association for Time Use Research
1.8.2011 – 3.8. 2011

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Introduction

Nonresponse
- Household nonresponse
- Individual nonresponse
- Face-to-face and telephone interviews

Diary nonresponse

Diary quality

Face-to-face against telephone guided diaries

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Sample size: 4.500 households including 9.987 persons
Overcoverage: 98 households 2.2%
Final sample : 4.402 households including 9.742 persons*
*) 586 persons were moved from households and
177 persons were moved to households
Nonresponse : 1.787 households 39.7% including 4.220 persons
Responded : 2.614 households 60.3% including 5.522 persons

Individual nonresponse in the responded households was 4.5%

Nonresponse rates are calculated often as weighted

$$\tilde{p}_k = \frac{\sum_k 1/\pi_i}{\sum_s 1/\pi_i}$$

Where k refers to nonresponse group and s to sample

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Household nonresponse

	Face-to-face	Telephone	Total
Respondent	57.9	61.9	59.4
Refused	27.5	24.4	25.3
Not at home	11.4	10.7	11.1
Other	3.2	3.1	3.2
Total	62.4	37.5	100.0

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Nonresponse at individual level

Total sample of the whole year by respondents (1). proxy interviews (2). individual nonreponse when household responded (3) and individuals belonging to household nonrespnse (4)

	Frequency	% Unweighted
(1) Answered personally	4.645	47.7
(2) Proxy interview	546	5.6
(3) Nonresponse	331	3.4
(4) Household nonresponse	4.220	43.3
Total	9.742	

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Nonresponse at individual level for responded households

	Frequency	Unweighted %	Weighted %
Respondents	4645	84.1	87.1
Proxy interview	546	9.9	8.4
Person nonresponse	331	6.0	4.5

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Diary nonresponse

Diaries	Frequencies	Unweighted	Weighted*
Both diaries received	3685	37.8 %	39.9 %
First diary received	82	0.8 %	0.9 %
Second diary received	25	0.3 %	0.3 %
Both diaries missing	1410	14.5 %	15.5 %
Individual nonresponse	320	3.4%	2.6 %
Household nonresponse	4420	43.3 %	40.8 %
Total	9942	100.0 %	100.0 %

* Inclusion probability weight

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Individual is included in the Jobseekers Register

Diaries returned	Not in Jobseekers register	Unemployed in register	Employed in register
Both diaries received	40%	30%	39%
First diary	1%	1%	0%
Second diary	0.4%	0.2%	0.4%
Both diaries missing	15%	18%	16%
Individual nonreponse	3%	2%	1%
Household nonresponse	40%	49%	44%
Total	100%	100%	100%

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Respondents and nonresponse by education level

Diaries returned	Lower level	Secondary	Tertiary
Both diaries	33%	40%	49%
First diary	1%	1%	1%
Second diary	0.4%	0.2%	0.4%
Both diaries missing	17%	16%	12%
Individual nonreponse	3%	2%	2%
Household nonresponse	45%	41%	35%
Total	100%	100%	100%

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Distribution of persons by randomized and realized interview modes

Randomized interview mode	Realized interview mode			
	Household nonresponse	Face-to-face	Telephone	Total
Face-to-face	2765 28.4%	2042 21.0%	1264 13.0%	6071 62.3%
Telephone	1455 14.9%	294 3.0%	1922 19.7%	3671 37.7%
Total	4220 43.3%	2336 24.0%	3186 32.7%	9742 100.0%

Percentages are calculeted from the total number of the individuals of the sample

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Proportions of diaries by ranomized and realized interview modes
(Diaries were left only for responded housholds)

Randomized / Realized	Respondent	Proxy interview	Individual nonresponse
face / face	91%	5%	4%
face / phone	76%	13%	11%
phone / face	91%	6%	3%
phone / phone	81%	13%	6%
Total	84%	10%	6%

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Diaries by interview mode (%) in the subset to which diaries were left

	Unweighted		weighted	
Diaries returned	Face-to-face	Telephone	Face to face	Telephone
Both diaries	72.2 %	62.0 %	73.6 %	62.9 %
First diary	1.8 %	1.3 %	1.9 %	1.3 %
Second diary	0.6 %	0.3 %	0.8 %	0.4 %
Both diaries missing	21.1 %	28.8 %	21.5 %	29.8 %
Individual nonresponse	3.3 %	7.6 %	2.3 %	5.7 %
Household nonresponse	-	-	-	-
Total	100.0 %	100.0 %	100.0 %	100.0 %

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When a household sample is used, which one is the better strategy to receive more diaries when:
1)a diary fulfilling is advised by face-to-face or
2)a diary fulfilling is advised by telephone interviews

The differences of these methods can be studied with the sample that is divided into face-to-face and telephone interviews by random process.

Is there differences in the quality of diaries guided by face-to-face and telephone interviews?

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Average number of episodes and totals of secondary activities in the diaries by interview mode

Interview mode	N Obs	Label	Mean	Std Dev
Face-to-face	**3477**	**Episodes**	26.9	9.0
		SecActTot	155	166
Telephone	**4004**	**Episodes**	26.8	8.9
		SecActTot	175	173

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Average number of episodes and totals of secondary activities in the diaries by randomized and realized interview modes

Random / Realized	Label	N	Mean	StdDev	Min	Max
Face / Face	Episode counts	3064	26.8	8.9	2	64
	SecActTot	3064	156.3	166.3	0	1150
Face / Phone	Episode counts	1422	26.6	9.3	2	65
	SecActTot	1422	171.9	168	0	960
Phone / Face	Episode counts	413	27.2	9.3	3	60
	SecActTot	413	141.9	163.1	0	980
Phone / Phone	Episode counts	2582	26.9	8.7	3	66
	SecActTot	2582	177.2	175.7	0	1070

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Model of average number of episodes in a diary

Independent: episode counts

Dependent: Randomized / realized modes, education level, employed, age class, gender

Tests of Model Effects			
Effect	**Num DF**	**F Value**	**Pr > F**
Model	12	58.02	<.0001
Intercept	1	13262.5	<.0001
Randomized / realized	3	0.80	0.4965
Education level	2	30.32	<.0001
Employed	1	60.09	<.0001
Age class	5	27.91	<.0001
Gender	1	367.04	<.0001

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Model of average number of episodes in a diary

Estimated Regression Coefficients				
Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	31.83	0.66	48.39	<.0001
Face / Face	-0.15	0.36	-0.43	0.6683
Face / Phone	-0.61	0.43	-1.44	0.1510
Phone / Face	0.21	0.77	0.27	0.7904
Phone / Phone	0.00	0.00	.	.
Education level, Low	-3.04	0.42	-7.29	<.0001
Education level, Secondary	-1.90	0.34	-5.56	<.0001
Education level, Tertiary	0.00	0.00	.	.
Work, employed	-3.23	0.42	-7.75	<.0001
Work, not employed	0.00	0.00	.	.
Age class 10-19	-4.58	0.68	-6.72	<.0001
Age class 20-29	0.84	0.80	1.05	0.2931
Age class 30-39	3.42	0.81	4.23	<.0001
Age class 40-59	1.58	0.70	2.27	0.0235
Age class 60-74	0.64	0.61	1.06	0.2897
Age class 75-high	0.00	0.00	.	.
Gender, men	-4.85	0.25	-19.16	<.0001
Gender, women	0.00	0.00	.	

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-The interview mode in the guidance of diary keeping did not affect to the average numbers of episodes
- Men had less episodes than women.
- Young people had less episodes and middle aged more episodes.
- Employed had less episodes than not employed. Main reason is that working time is one episode.
- Lower education level had less episodes

The average of episode counts was problematic quality measure because of an individual's activities and characteristics affected to its value. In addition, the episode counts depended on activity codes, and comparisons to other time use surveys are valid if activity codes are same.
(In the Swedish TUS, the mean of episode counts was 32.8.*)

* Mikael Molén. Presentation in the Nordic TUS-group meeting , Helsinki,15.6.2011

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Mean of interview duration by randomised and realized interview modes

Mean of duration of individual interview						
Randomixed / Realized	N Obs	N	Mean	Std Dev	Minimum	Maximum
face / face	2050	2050	54	739	8	533
face / phone	1275	1275	48	1063	0	757
phone / face	296	296	50	636	9	206
phone / phone	1937	1937	55	776	1	427

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Mean of unknown activity (missing activity) by interview mode, all diaries

Analysis Variable : k999 Unknown activity				
Randomized / Raelized	N Obs	Mean	Std Error	Std Dev
Face / Face	3560	20.2	1.5	83.4
Face / Phone	1978	14.9	2.0	78.1
Phone / Face	496	19.3	4.0	82.0
Phone / Phone	3211	15.9	1.6	79.6

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Mean of unknown activity (missing activity) by interview mode to diaries that included unknown main activity

Analysis Variable : k999 Unknown activity					
Randomized / Raelized	N Obs	%	Mean	Std Error	Std Dev
Face / Face	432	12.1	142.6	8.6	178.5
Face / Phone	148	7.5	151.5	16.2	195.9
Phone / Face	66	13.3	130.7	21.6	169.7
Phone / Phone	278	8.7	154.5	12.2	197.5

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Study on the quality of diaries

Quality criteria *

- Rule of one main activity at a time
- Quality of main activity entries
- The number of empty main activity lines
- The number of lines that have entries on them
- The separation of travelling and commuting from other activities
- Vehicle used
- Marking the breaks at work
- The number of entries on the secondary activity column
- Quality of secondary activity entries
- The use of internet and computer

* Source: Kaisa-Mari Okkonen, Quality study of Finnish time use survey diaries. Presentation in the Nordic TUS-group meeting , Helsinki,15.6.2011.

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The rule of recording only one main activity was followed in the most diaries.

The rule was followed light better in telephone guided diaries than in the face-to-face guided diaries.

Men followed more accurate the one main activity rule than women but errors concerned short durations, mostly double recordings typically connected to morning or evening activities after or before sleeping coming from the too coarse marking slot of ten minutes.

Source: Kaisa-Mari Okkonen. Internal report 25.8.2010, Statistics Finland, in Finnish

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One main activity at a time

Men	Rule was followed	Few errors	Several errors
Face-to-face	63 %	37 %	0 %
Phone	76 %	19 %	5 %
All	70 %	28 %	2 %

Women	Rule was followed	Few errors	Several errors
Face-to-face	40 %	60 %	0 %
Phone	65 %	35 %	0 %
All	53 %	47 %	0 %

Source: Kaisa-Mari Okkonen, Quality study of Finnish time use survey diaries. Presentation in the Nordic TUS-group meeting , Helsinki,15.6.2011.

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Returned diaries and nonresponse of the sample

Diaries returned	Face to face	Telephone	Face to face	Telephone
Both diaries	2212	1473	36.4 %	40.2 %
First diary	47	35	0.8 %	1.0 %
Second diary	12	18	0.2 %	0.4 %
Both diaries missing	838	572	13.8 %	15.6 %
Individual nonreponse	197	123	3.2 %	3.4 %
Household nonresponse	2765	1445	45.5 %	39.6 %
Total	6071	3671	100.0 %	100.0 %

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Conclusions

Due to high household nonresponse of face-to-face interviews, the better data collection strategy would be telephone interviews in spite of that the face-to-face guided diaries had ~11% higher response rate.

In the quality of diaries, there were no remarkable differences between these two diary guidance methods.