Survey Methods & Sampling Techniques

Homework 1

A comparison within Belgian Heath surveys and a comparison between Belgian Health survey with Canadian and New Zealand Health Surveys

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1 Belgian Health care surveys comparison

.	Belgian Health Survey (2008)	Belgian Health Survey (2004)	Belgian Health Survey (2001)	Belgian Health Survey (1997)
Survey duration	1 year	1 year	1 year	1 year
Target no. of interviews	10,000 (3,500 Flanders, 3,500 Wallonia*, 3,000 Brussels) + 1,250 extra older people	10,000 (3,500 Flanders, 3,500 Wallonia*, 3,000 Brussels) + 1,250 extra older people	10,000 (3,500 Flanders, 3,500 Wallonia*, 3,000 Brussels)	10,000 (3,500 Flanders, 3,500 Wallonia*, 3,000 Brussels)
Interview type	Face-to-Face, card for private items	Face-to-Face, card for private items	Face-to-Face, card for private items	Face-to-Face, card for private items
Interview duration	45 min (Face-to-Face part)	45 min (Face-to-Face part)	45 min (Face-to-Face part)	45 min (Face-to-Face part)
Sampling frame	HH (national register)	HH (national register)	HH (national register)	HH (national register)
Design	MSS; 3 strata of regions (having nested 12 strata of provinces); at the regional level unequal sampling rates chosen to gain precision	MSS; 3 strata of regions (having nested 12 strata of provinces); at the regional level unequal sampling rates chosen to gain precision	MSS; 3 strata of regions (having nested 12 strata of provinces); at the regional level unequal sampling rates chosen to gain precision	MSS; 3 strata of regions (having nested 12 strata of provinces); at the regional level unequal sampling rates chosen to gain precision
Sampling units	a. PSU – municipalities (SYS) within each stratum (province) b. SSU – HH (STRAT → SYS → CLUST) c. TSU – individuals in a HH (CLUST)	a. PSU – municipalities (SYS) within each stratum (province) b. SSU – HH (STRAT → SYS → CLUST) c. TSU – individuals in a HH (CLUST)	a. PSU – municipalities (SYS) within each stratum (province) b. SSU – HH (STRAT → SYS → CLUST) c. TSU – individuals in a HH (CLUST)	a. PSU – municipalities (SYS) within each stratum (province) b. SSU – HH (STRAT → SYS → CLUST) c. TSU – individuals in a HH (CLUST)
Topics covered	General health perception, morbidity, use of health services, lifestyle, socio-economics, medical consumption & health of older people	General health perception, morbidity, use of health services, lifestyle, socio-economics, medical consumption & health of older people	General health perception, morbidity, use of health services, lifestyle & socio-economics	General health perception, morbidity, use of health services, lifestyle & socio-economics
HH participation	≤ 4 (ref. person, partner, 2 children)	≤ 4 (ref. person, partner, 2 children)	≤ 4 (ref. person, partner, 2 children)	≤ 4 (ref. person, partner, 2 children)

.	Belgian Health Survey (2008)	Belgian Health Survey (2004)	Belgian Health Survey (2001)	Belgian Health Survey (1997)
Proxy sampling	For age < 15y	For age < 15y	For age < 15y	For age < 15y
Std. questionnaire	GHQ-12	GHQ-12	GHQ-12	GHQ-12
Any pilot study	Yes	Yes	Yes	Yes
Software	SAS®	SAS®	SAS®	SAS®
No. of PSUs	?	?	?	?
No. of HHs	5,809	6,530	5,532	4,464
No. of responders	11,254	12,650	12,111	10,221
Response rate (individual)	55%	61%	61%	58%
Oversampling	German community	German community; provinces: Luxemburg, Limburg	German community; provinces: Luxemburg, Hainaut, Antwerpen, Limburg	German community; provinces: Luxemburg, Hainaut, Antwerpen, Limburg
Persons excluded	Homeless, non-elderly institutions, religious community > 8 persons, prison, psychiatric institution health institution	Homeless, non-elderly institutions, religious community > 8 persons, prison, psychiatric institution health institution	Homeless, non-elderly institutions, religious community > 8 persons, prison, psychiatric institution health institution	Homeless, non-elderly institutions, religious community > 8 persons, prison, psychiatric institution health institution

HH: households; PSU: primary sampling unit; SSU: secondary sampling unit; TSU: tertiary sampling unit; MSS: multi-stage sampling;

SYS: systematic sampling; STRAT: stratified sampling; CLUST: clustered sampling; GHQ: general health questionnaire.

* Including 300 from the German community in the Liège province was considered as a separate province.

Note: within a selected municipality in the Belgian survey, a pre-fixed number (= 50) individuals needed to be interviewed.

2 Belgian and Canadian Health surveys comparison

Characteristics	Canadian Community Health Survey (2007)	Belgian Health Survey (2008)
Beginning year	2001	1997
Survey duration	1 year	1 year
Waves or phases	2001, 2003, 2005, **2007**, 2008, 2009, 2010	1997, 2001, 2004, **2008**
Target no. of interviews	66,280	10,000 (3,500 Flanders, 3,500 Wallonia*, 3,000 Brussels) + 1,250 extra older people
Interview type	Computer Assisted Interviewing (CAI): - 50% Face-to-Face using computer assisted personal interviewing (CAPI) - 50% conducted over phone using computer assisted telephone interviewing (CATI)	Face-to-Face, card for private items
Interview duration	40-45 min (3 components)	45 min (Face-to-Face part)
Sampling frame	HH	HH (national register)
Design	a. MSS; 50% from an area frame (based on geographic & socio-economic conditions), 50% from a phone frame (*e.g.*, RDD)	MSS; 3 strata of regions (having nested 12 strata of provinces); at the regional level unequal sampling rates chosen to gain precision
Sampling units	a. PSU - Clusters of HH within regions (STRAT → CLUST) b. SSU – HH (SYS) c. TSU – individual in a HH (SRS)	a. PSU – municipalities (SYS) within each stratum (province) b. SSU – HH (STRAT → SYS → CLUST) c. TSU – individuals in a HH (CLUST)
Topics covered	Diseases & health conditions, general health, lifestyle & social conditions, prevention & detection of disease	General health perception, morbidity, use of health services, lifestyle, socio-economics, medical consumption & health of older people
HH participation	1 individual	≤ 4 (ref. person, partner, 2 children)
Proxy sampling	For age < 12y	For age < 15y
Std. questionnaire	SF-36	GHQ-12
Any pilot study	Yes	Yes
Software	?	SAS®
No. of PSUs	?	?
No. of HHs	71,922	5,809
No. of responders	65,946	11,254
Response rate (individual)	78%	55%
Oversampling	Youths aged 12 to 19 years	German community
Persons excluded	Indian reserves & crown lands, institutional residents, full-time members of the Canadian forces, residents of certain remote regions	Homeless, non-elderly institutions, religious community > 8 persons, prison, psychiatric institution health institution

HH: households; PSU: primary sampling unit; SSU: secondary sampling unit; TSU: tertiary sampling unit; MSS: multi-stage sampling; SYS: systematic sampling; SRS: simple random sampling; STRAT: stratified sampling; CLUST: clustered sampling; SF: short form; GHQ: general health questionnaire; RTP: research triangle park (NC, USA).

* Including 300 from the German community in the Liège province was considered as a separate province.

Note: within a selected municipality in the Belgian survey, a pre-fixed number (= 50) individuals needed to be interviewed.

3 Belgian and New Zealand Health surveys comparison

Characteristics	New Zealand Health Survey (1996/97)	Belgian Health Survey (1997)
Beginning year	1992/93	1997
Survey duration	1 year	1 year
Waves or phases	1992/93, **1996/97**, 2002/03, 2006/07	**1997**, 2001, 2004, 2008
Target no. of interviews	**?**	10,000 (3,500 Flanders, 3,500 Wallonia*, 3,000 Brussels)
Interview type	Face-to-Face, card for private items	Face-to-Face, card for private items
Interview duration	**?**	45 min (Face-to-Face part)
Sampling frame	HH	HH (national register)
Design	MSS; 122 strata obtained by grouping small defined geographic areas based on different census characteristics, *e.g.*, rural/urban, low/high Māori density)	MSS; 3 strata of regions (having nested 12 strata of provinces); at the regional level unequal sampling rates chosen to gain precision
Sampling units	a. PSU – small defined geographic areas (SRS) within each stratum b. SSU – HH (SRS) c. TSU – ≤ 2 individuals in a HH (CLUST)	a. PSU – municipalities (SYS) within each stratum (province) b. SSU – HH (STRAT → SYS → CLUST) c. TSU – individuals in a HH (CLUST)
Topics covered	Health status, risk & protective factors, health services utilisation, socio-demographics	General health perception, morbidity, use of health services, lifestyle & socio-economics
HH participation	≤ 2 (1 adult > 14y, 1 child)	≤ 4 (ref. person, partner, 2 children)
Proxy sampling	For age < 15y	For age < 15y
Std. questionnaire	SF-36, AUDIT (on alcohol use disorders)	GHQ-12
Any pilot study	**?**	Yes
Software	SUDAAN® (RTP), SAS®	SAS®
No. of PSUs	1,752	**?**
No. of HHs	11,921	4,464
No. of responders	7,862	10,221
Response rate (individual)	74% (for adults)	58%
Oversampling	Māori & Pacific people	German community; provinces: Luxemburg, Hainaut, Antwerpen, Limburg
Persons excluded	Non-private dwellings, long-term residents of institutions, penal institutions, permanent armed forces, overseas diplomats, overseas visitors, offshore island residents	Homeless, non-elderly institutions, religious community > 8 persons, prison, psychiatric institution health institution

HH: households; PSU: primary sampling unit; SSU: secondary sampling unit; TSU: tertiary sampling unit; MSS: multi-stage sampling; SYS: systematic sampling; SRS: simple random sampling; STRAT: stratified sampling; CLUST: clustered sampling; SF: short form; GHQ: general health questionnaire; RTP: research triangle park (NC, USA).

* Including 300 from the German community in the Liège province was considered as a separate province.

Note: within a selected municipality in the Belgian survey, a pre-fixed number (= 50) individuals needed to be interviewed.

4 Discussion

The Belgian health surveys (BHS) of 1997, 2001, 2004 and 2008 are very similar in general. The same selection methods are applied and the design is roughly the same. However, there is a difference between 1997, 2001 and 2004, 2008. In the last two surveys, there are two new topics included (*i.e.*, medical consumption and health of older people). Additional selection of the elderly was carried out in 2004 and 2008. The survey participation rates are close between surveys, albeit a slightly lower response rate for 2008. A policy of replacing a non-participating household from a cluster of four similar households was followed in all the surveys.

Comparing the Canadian survey and BHS, we can notice several differences. Most importantly, in the Belgian survey all interviews were face-to-face, while in the Canadian survey only half the interviews were face-to-face and the other half was phone-based. Secondly in the Belgian survey, systematic sampling was employed to select the PSUs, whereas in the Canadian survey, SRS method was employed for the same purpose. Thirdly, the number of target interviews and those actually carried out between the two surveys differed between the two surveys. This can be explained by the larger amount of potential interviewees available in Canada compared to Belgium. There are also a few similarities between these two surveys, *e.g.*, interview duration.

The main difference between the New Zealand Health survey (NZHS) and BHS is in the design. In the former, numerous strata (122) were created, from where the PSUs were selected by SRS; whereas in the latter, only 12 strata (provinces) were created, from where the PSUs were selected by systematic sampling. Again in the NZHS, households within a PSU were selected by SRS, to a maximum of 2 individuals from a household; whereas in the BHS, households were selected by a 3-tier stratification followed by systematic sampling in each stratum; similar households of a cluster size equal to 4 were selected to replace non-participating households, to a maximum of 4 individuals in a household – to note that once a PSU was selected, a pre-fixed number of interviews, that is equal to 50, needed to be completed. The response rate was higher in the NZHS (74% vs. 58%).

In the conclusion, expectedly the 'within' Belgian surveys methods were very similar, whereas the 'between' countries' survey methods differed to a larger extent.

5 References

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