

EuGerom

EC Concerted Action on Gerontology

Aging, Health and Competence

Report 3. Sampling Workshop

ERGO

Bonn, June 1996

ERGO / European Research Institute on Health and Aging, Faculty of Psychology,
University of Amsterdam, Roetersstraat 15, 1018 WB Amsterdam, The Netherlands.

Telephone: +31 20 525 6830

Telefax: +31 20 639 0279

2.8. Longitudinal Study Design

Juan Dièz-Nicolàs

Sampling for longitudinal studies is a complicated task, mainly due to the attrition rates on the original sample. This problem is even more acute in the case of the elderly, due to mortality or physical/mental impairments that make it impossible or more difficult to re-interview the individuals at several moments in time.

In general, longitudinal studies take the form of panel studies, that is, interviewing a sample of individuals at a certain time, and re-interviewing the same individuals periodically (i.e. every year, every two years, every five years, etc.). Taking the example of a medium developed European country with a life expectancy at birth around 75 years, one would find that:

Out of 100 individuals 65 years old, only 83 would be alive at age 70

- only 65 would be alive at age 75
- only 44 would be alive at age 80
- only 24 would be alive at age 85
- and only 9 would remain at age 90

Out of 100 individuals 75 years old, only 68 would be alive at age 80

- only 36 would be alive at age 85
- and only 14 would remain at age 90

Out of 100 individuals 85 years old, only 38 would be alive at age 90.

Therefore, if the panel study is conducted at three moments in time, with a periodicity of 5 years, in the third wave one would never find more than 1 out of four interviewed in the original sample, and the survivors would be quite less the older the age group which is being considered. In addition, attrition would result not only because of physical/biological death, but also because of physical/mental deterioration that would make it impossible to re-interview many of those who remained alive.

An alternative approach to the one described above would be that of periodically conducted cross-sectional samples of the older population, and comparing cohorts at different moments in time. For example, if one conducts a cross-sectional study in 1997, a second one in 2002, and a third in 2007, it would be possible to compare the age-group 65 to 70 years in 1997 with that of the age-group 70 to 75 in 2002, and with that of the

age-group 75 to 80 years in 2007. In all three dates, the "cohort" to which the individuals belong is the same, although the individuals would not be the same, they would actually be the survivors of that cohort five years later.

It may be argued that the samples would not be comparable, because only the "fittest" (that is, the survivors) would be re-interviewed, and they might differ substantially from those who did not survive. The argument is correct, but in the panel design non-survivors would not be re-interviewed either. But, while in the panel study the original sample would be smaller and smaller at every re-interviewing, running the risk of not having enough cases at a certain point of time, because it would only be a matter of increasing the sample size for those age-groups where the size was too small:

1997	2002	2007	2012	2017
60-65	a	b	c	d
e	65-70	a	b	c
f	e	70-75	a	b
g	f	e	80-85	a
h	g	f	e	85-90

Another advantage of the cohort design is that one may follow one particular cohort, as shown in the above example, but having cross-sectional samples makes it also possible to follow other cohorts, too, and therefore to compare them.

In conclusion, a comparison between the advantages and disadvantages of the panel and the cohort designs seems to be more favorable to the cohort design, in particular for the study of older age-groups.