

## A survey on telephone coverage in Finland

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# A Survey on Telephone Coverage in Finland

VESA KUUSELA

*Abstract: Telephone coverage and telephone ownership in Finland were explored by a specific survey in January 1996. The results show that telephone coverage, in terms of conventional phones, has decreased steadily from 94% in early 90s to 86%. Simultaneously mobile phone penetration has increased from 7% to 42% and therefore the combined telephone coverage has increased. Nearly all households with a stable position in society have a conventional phone and also households who live outside cities. Households with unstable position in society or people who have fallen outside the processes and institutions of the society have much fewer conventional phones. One member households had fewer phones than other households. Especially young men living alone had more frequently mobile phones than conventional phones. Because of the rapid increase of mobile phones, some areas of survey practise have to be reconsidered.*

*Keywords: telephone coverage, mobile phone coverage, undercoverage*

## 1 Introduction

Telephone coverage has an effect on the nonresponse in surveys in two ways: in telephone surveys it directly sets the limits to which part of the population may be interviewed.<sup>1</sup> In face-to-face interviews, the initial contact and appointment are often done by a telephone. Telephone coverage is usually defined as the proportion of households that have a conventional telephone.

The actual telephone coverage in Finland was questioned in the early 90s when the search of telephone numbers of the sampled persons was commissioned to telephone operators (see Kuusela 1996). The search yielded a telephone number to only 85% of a random sample from the Population Registry, although the official telephone coverage was 94%. The telephone coverage in Finland, like in many other countries, has been traditionally

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<sup>1</sup> Conceptually we should rather speak of undercoverage. However, telephone coverage may be regarded as nonresponse, as well, because both effect the sample realised in the same way and both may be corrected in the same way, as well.

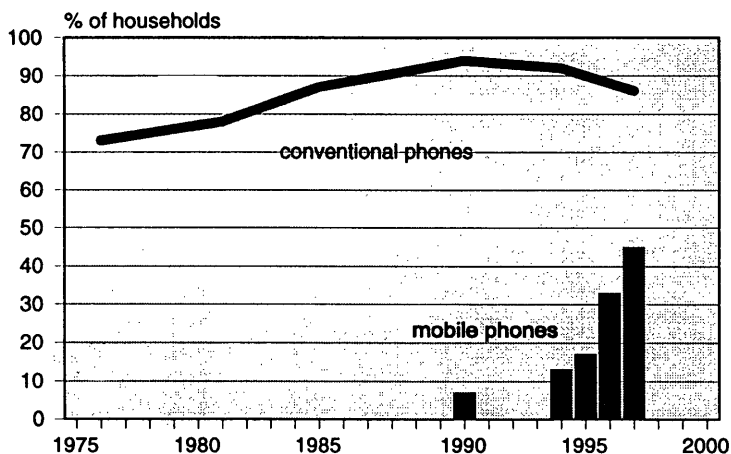
estimated on the basis of general purpose household surveys. Nonresponse in these surveys has been relatively high (about 30% in Finland) and the questions concerning telephones were kept fairly simple and they were asked in the middle of questions about other equipment in the household. This brought up the question whether the actual telephone coverage was something else.

In January 1996 a survey focused on telephone ownership was conducted to obtain a more accurate estimate of telephone coverage in Finland. Another aim was to get information about the nontelephone households. Sample size was 4,838 and the nonresponse rate was 10.3%. Interviews were carried out on the telephone when possible and face-to-face interviews otherwise.

## 2 Telephone coverage in Finland

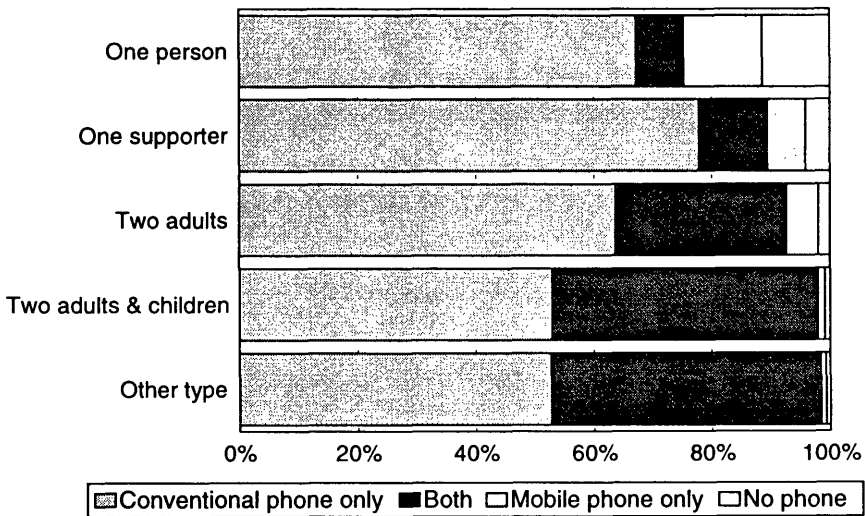
Telephone coverage in terms of conventional phones (that is phones connected with a line to a plug) fell from 94% in 1990 to 88% in 1996 (see Figure 1). Simultaneously, the coverage of mobile phones saw a rapid increase. In January 1996, the coverage of mobile phones was 33% of the households, but during the next three months the number of mobile phones increased by nearly 25%. In another survey (see Nurmela 1997) carried

**Figure 1: The change in telephone coverage in Finland from 1975 to 1997.**  
The coverage of conventional phones is presented by the line and the coverage of mobile phones by the columns



out at the end of the same year, 86% of households had a conventional phone and 42% had at least one mobile phone. (The number of mobile phones has grown even more rapidly since then). In January 1996, the coverage of these two amounted to 95% and ten months later the combined coverage was 98%. In other words, telephone coverage increased but the increase was due to the increase in mobile phones. So, their relative amount has increased very rapidly. Already, the number of mobile phones in Finland is so great that they cannot be ignored in survey practice. In particular, if RDD is used mobile phones should be included in the algorithm.

**Figure 2: Combined telephone coverage (%) in Finland (1996) by the type of the household**

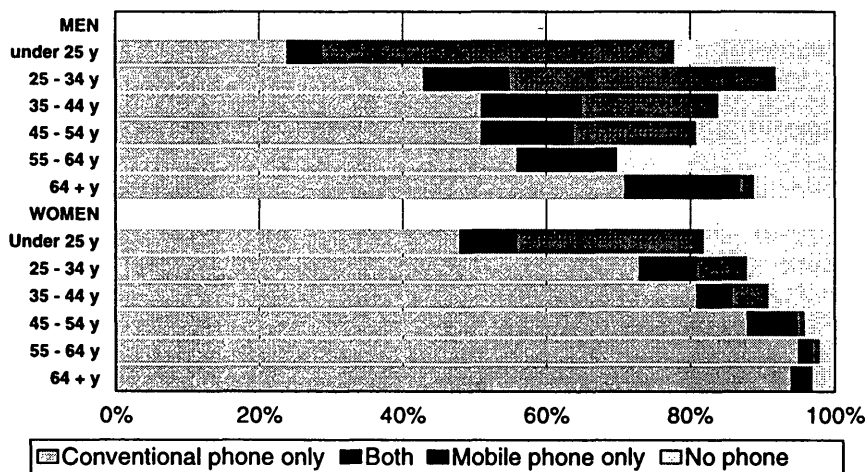


Telephone coverage (conventional phones) varied considerably both geographically and from the socio-economic point of view. The size and the structure of household had an exceptionally strong effect on telephone ownership (see Figure 2): only 75% of one-person households had a conventional phone. In all other types of households, telephone coverage was clearly more than 90%. If there were more than two children in the household, there was practically always a conventional telephone in the household, as well. Other types of households with high coverage of conventional phones were those of farmers, pensioners, and of households who had lived in the same dwelling at least three

years, especially if the dwelling was in a single family house. In all these groups the coverage was almost 100%. If the head of the households was an entrepreneur or a white collar worker, the telephone coverage was also high.

Telephone coverage was low in one member households, in particular if the member was a young man, who was a student or unemployed. Telephone coverage among females was distinctly higher in all population segments. For instance, only 45% of unemployed men had a telephone but 73% of unemployed women had one. The low telephone coverage of the one member households partly explains the decrease in the total telephone coverage, because in Finland the proportion of the one-member households has increased for many years now.

**Figure 3: Combined telephone coverage of conventional and mobile phones in one-person households in Finland**



One reason why people live without telephones is, of course, lack of money, but an even more important reason is their life style. An indication of this is that mobile phones were most common in those households which less often had conventional phones. That is, the mobile phones had replaced conventional phones. For instance, only 29% of young men living alone had a conventional phone. However, 54% of them had a mobile phone and 49% had only a mobile phone. Another subgroup with low telephone coverage was made up of people who might be described as outsiders with a weak attachment to society and

its processes and institutions (for example single or divorced middle-aged, possibly unemployed, men). Smith (1990) made the same observation in United States. Typical to the latter group is that they do not have many mobile phones either.

Telephone coverage was higher in country areas than in towns. In many towns, less than 85% of the households had a conventional phone. (In Helsinki, telephone coverage was 90%.) The further the household was from a population centre the more probably there was a telephone.

87% of the conventional phones were listed in the printed telephone directory under the name of someone living in the same household and 5% of the numbers were not listed but they were not secret, either. Slightly more than 4% of the households had a secret telephone number and the rest of the telephones were listed by a person who did not live in that household or by the name of the employer. Secret numbers were more frequent in big cities, especially in the capital area. In the countryside, secret numbers were quite rare.

### **3 Discussion**

In terms of conventional phones there are some clearly detectable population segments regarding telephone coverage: Practically all households with a stable position in society (ie. head of the household has a (good) job; families with children; household had stayed for some time in the same dwelling, etc.) had a conventional telephone. On the other hand, households with unstable positions in society have far fewer conventional phones. The unstable position may stem from, for instance, moving from parents' home, studying, unemployment, or change of dwelling. The most problematic subgroup, in many ways, is composed of those people who have fallen outside the processes and institutions of the society.

In Finland, the situation in telephone coverage is changing very rapidly due to the rapid increase in the number of mobile phones. Consequently, the proportion of households that have only a mobile phone is increasing. Characteristically, the mobile phones are more common in that type of households where the conventional phones are less frequent. For instance, many smaller households have only mobile phones. Two main processes are causing this: some of these people have given up the conventional phone and bought a mobile phone instead because it fits better in their life style; some of them bought a mobile phone as their first phone, and probably they have not acquired a conventional phone.

However, it is not clear what the future of telephone ownership will look like. The transition is partly connected to the change of household structure in the Finish society.

The proportion of one-member households has been increasing for a long time (at the moment, more than 35%) and especially young people living alone are most frequently acquiring mobile phones instead of conventional phones. This development would increase the amount of those households that have only a mobile phone. On the other hand, along with the growth of the Internet, the number of conventional phones may increase, because a mobile phone does not serve internet purposes well and a part of the same group of people, who now have only the mobile phone, are heavy users of the Internet. Another thing difficult to predict is what will happen when young people get married (or move together) and have children. Will they have only mobile phone(s) or will they have a conventional phone, as well?

From survey organisations' point of view, the transition from the conventional phones to mobile phones has two sides: The combined telephone coverage has increased and now those population segments which earlier were hard to reach have always a phone in their pocket; on the other hand a mobile phone is not as good for interviewing as the conventional phone: long interviews are not possible and respondents may be virtually anywhere, possibly in a place where he or she cannot be interviewed. The increasing number of mobile phones changes the costs on interviewing because it is much more expensive to call to a mobile phone, and, moreover, occasionally a part of the expenses goes to the respondent.

Another point of view, at least in Finland, is the change in sampling procedures. At the moment, mobile phones are not listed in a catalogue as frequently as conventional phones, thus introducing a new source of bias in telephone surveys (see also Brick et al. 1995, Keeter 1995). In Random Digit Dialling-procedures mobile phones cannot be ignored. This, in turn, leads to a new problem: there are households with more than one mobile phone, hence all households do not have equal selection probability.

The increase of mobile phones forces us to think over what telephone coverage means. In Finland, quite a few households have already more than one mobile phone and the number of those households is increasing. Even now, in some larger households, every member has one of his/her own. In the future, the mobile phone might become more like a personal phone (like a wrist watch) and the conventional phone will then assume the role of a household appliance (like a clock on the wall). Consequently telephone coverage will be more than 100% if the number of private phones is calculated in respect to number of households. Nevertheless, there will be households without any telephone and many households without a conventional phone. The old definition of telephone coverage will not give a precise description anymore and it cannot be used as a measure of the accessibility.

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