

## Summary

This is the third independent survey of this scale examining the coverage of 3G networks in Finland. In the survey, conducted in February – April 2009, reception conditions in 100 municipalities were studied. The survey was carried out by ECE Ltd and covered Finland's 50 largest municipalities, 25 of those ranked between 51 and 100, and 25 other municipalities. The municipalities included account for about 74 per cent of the country's population. The two previous surveys were carried out in January – February and August – November 2008.

Of the 17,428 road kilometres covered during the survey, 13,752 km were measuring routes. A total of 4,717,959 measuring samples were collected on the measuring routes. (Figure 1).

The reception in each municipality was examined by carrying out measurements in the central area and residential and industrial zones. The limits of the coverage were determined by driving on the main roads leading away from the municipality until no signal was received from any of the 3G networks.

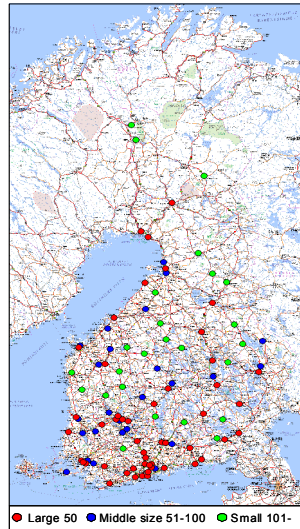


Figure 1. Municipalities included

The analysis was carried out using computer software by first dividing each municipality into grid squares and then determining which of the operators had coverage in which squares. The comparison was carried out at various signal strength threshold levels.

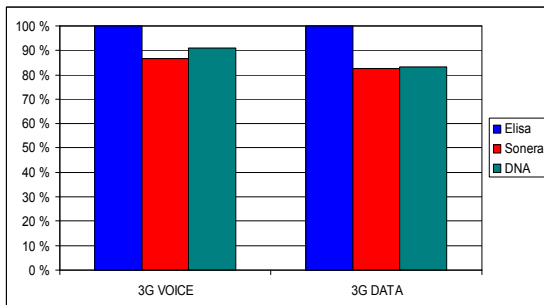


Figure 2. The relative number of squares covered - 3G voice and high-speed 3G data (The highest number of squares equals 100%).

The results for the country as a whole show that Elisa remains the operator with the broadest coverage at all threshold levels, while DNA would seem to be slightly ahead of Sonera. More detailed analyses show that each of the three operators comes on top in at least some municipalities even though Elisa has the best coverage in most localities (Figure 2).

An examination of the reception quality (signal strength) shows that in signal strengths for voice services Elisa comes first, followed by DNA and Sonera. In signal strengths for high-speed data services the gap between Elisa and its two competitors is wider, while there is little difference between DNA and Sonera.

The speed and coverage of 3G data was also examined. The analysis was carried out by dividing the results into data-speed categories at intervals of 250 kbps and by examining the number of squares. The combined total of squares of more than 1 Mbps and 2 Mbps and an analysis of the relative coverage show that in this respect, too, Elisa is in a class of its own. While DNA and Sonera are in most cases only able to provide low-speed and medium-speed data for their customers, Elisa can also offer high-speed data services (Figure 3).

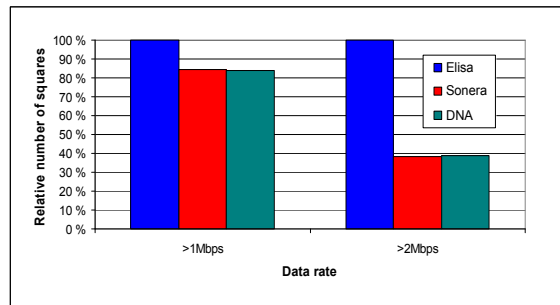


Figure 3. Cumulative and relative coverage of data services at data speeds of more than 1 Mbps and 2 Mbps (The highest number of squares equals 100%).

Elisa also has a clear advantage in the number of base station cells. A large number of cells means a broad coverage and a dense network. In this comparison Sonera comes second, followed by DNA (Figure 4).

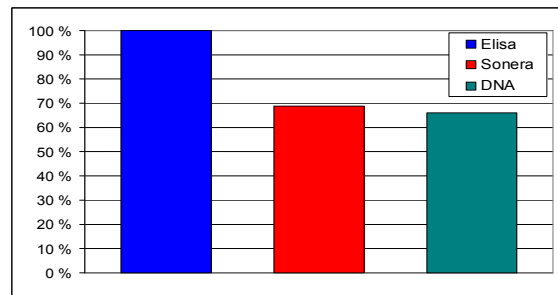


Figure 4. The number of 3G cells observed in the measurements (The highest number of cells equals 100%)

To sum up the results, Elisa remains the number one operator in Finland, both in terms of coverage and signal strength, while at the same time there is little difference between DNA and Sonera. Furthermore, in terms of network data speeds and the number of base stations, Elisa has a clear advantage over other operators.

The coverage survey was commissioned by Elisa and carried out by European Communications Engineering (ECE Ltd), an independent Finnish expert service company in the field of radio network design, training and development.

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