

Summary

This is the fourth independent survey of this scale examining the coverage of 3G networks in Finland. In the survey, conducted in January – March 2010, reception conditions in 100 municipalities were studied.

The results show that Elisa remains the leading operator when assessing coverage and signal strength. DNA has slightly broader coverage than Sonera, but regarding signal strength, there is little difference between the two. When measuring data speeds, a speed of over 4 Mbps was attained in the Elisa network significantly more often than in the other networks. DNA has also significantly improved the availability of high-speed data services. In the Sonera network, data services are usually only available at speeds lower than 3 Mbps. Elisa also has a clear advantage in the number of base stations. In this comparison Sonera comes second, followed by DNA.

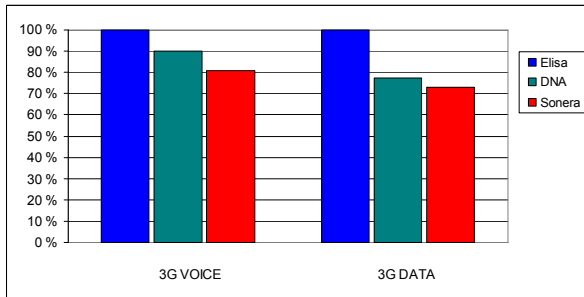


Figure 1. *The relative number of squares covered - 3G voice and high-speed 3G data (The highest number of squares equals 100%).*

The results for the country as a whole show that Elisa remains the 3G operator with the broadest coverage at all signal strength levels. DNA is slightly ahead of Sonera.

An examination of the reception quality shows that in signal strengths for voice services there are clear differences: Elisa comes first, DNA second and Sonera third. In signal strengths for high-speed data services, Elisa is clearly number one and DNA is slightly ahead of Sonera (Figure 1).

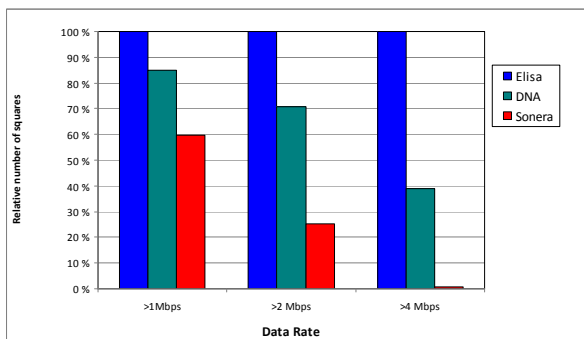


Figure 2. *Cumulative and relative coverage of data services at data speeds of more than 1 Mbps, 2 Mbps and 4 Mbps (The highest number of squares equals 100%).*

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 coverage of the service. The combined total of squares of more than 1 Mbps, 2Mbps and 4 Mbps and an analysis of the relative coverage show that the differences between operators are significant. Elisa is the strongest, DNA comes second and Sonera third (Figure 2).

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 3).

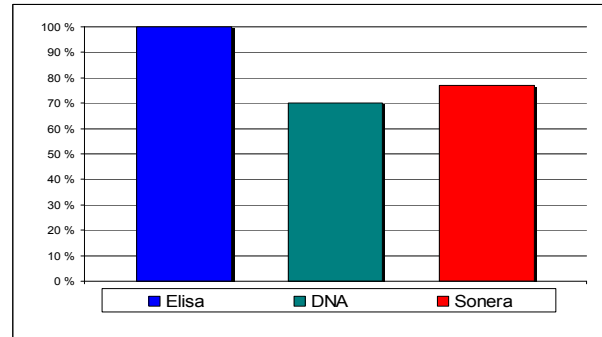
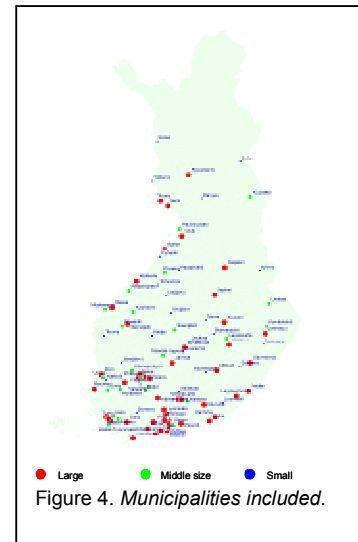


Figure 3. *The number of 3G cells observed in the measurements (The highest number of cells equals 100%).*

To sum up the results, the Elisa 3G network remains the most extensive. The Elisa network also has the highest signal strength. DNA is slightly ahead of Sonera in coverage, but in signal strength they are at a tie. Additionally, Elisa is clearly ahead of the other two operators in attained data speeds and in the number of base stations.

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 75 per cent of the country's population. The three previous surveys were carried out in spring 2008, autumn 2008 and spring 2009.

Of the 15,888 road kilometres covered during the survey, 12,223 km were measuring routes. A total of 3,951,450 measuring samples were collected on the measuring routes (Figure 4).



The reception in each municipality was examined by carrying out measurements in the central area and residential and industrial zones as well as on the main roads leading to the municipality. The analysis was carried out by first dividing each municipality into grid squares and then determining which of these operators had coverage in which squares. The comparison was carried out at various signal strength levels.

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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