

# DOES GSM 1800 MHz AFFECT THE PUBLIC HEALTH IN SWEDEN?

ÖRJAN HALLBERG, M.SC. E.E.,

OLLE JOHANSSON, ASSOC. PROFESSOR

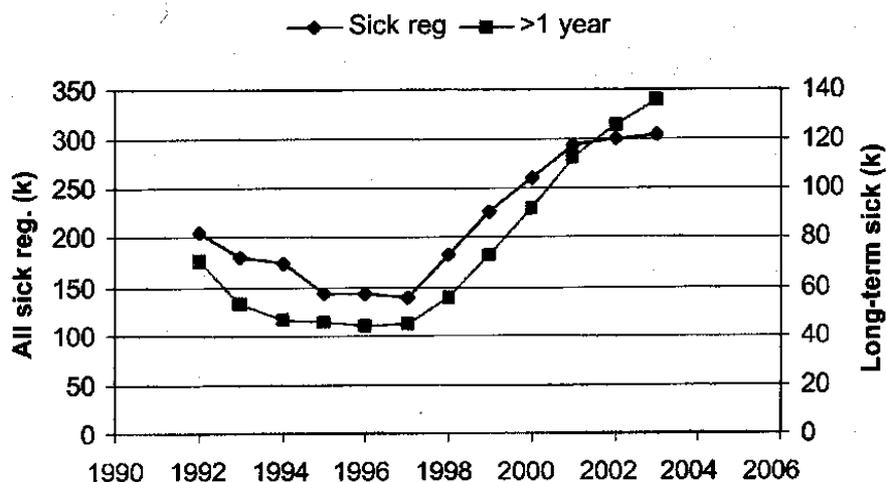
EXPERIMENTAL DERMATOLOGY UNIT, DEPARTMENT OF NEUROSCIENCE,  
KAROLINSKA INSTITUTE  
S-171 77 Stockholm, Sweden

## Abstract

Health caring costs started to increase in Sweden in the autumn of 1997. We studied trends of various health-related characteristics in search for a logical explanation. The methods we used were based on classical problem analysis in combination with the use of officially available health- and social security information. The results show that there is an apparent connection between the increasing use of mobile phones, and especially handsets that are capable of communicating at 1800 MHz, and the degrading health status of the Swedish population. We conclude that this area urgently needs to be investigated in depth to avoid further damages, should the connection between mobile phone use and public health be verified also by other studies.

## Introduction

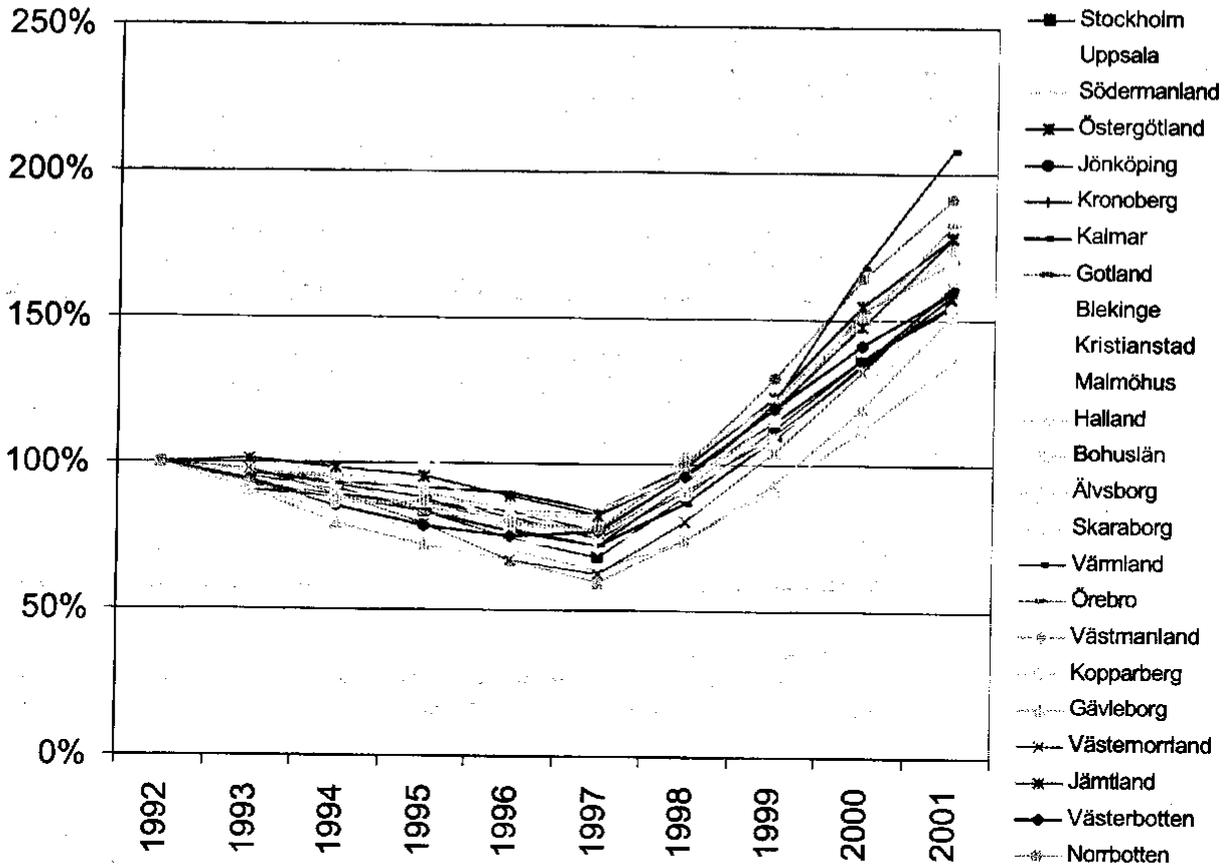
After a steady period of improving health and reduced health care costs in the beginning of 1990's there was an abrupt change of this trend in 1997. The total number of sick-registered people started to increase and so did also



the number of people that stayed sick for more than one year. Figure 1 shows this trend-break. Figure 1. In 1997 the number of sick-registered in Sweden suddenly started to increase.

Detailed information on the number of registrations per month showed that the trend-break actually was very precise and could be narrowed down to the autumn in 1997. By looking at the corresponding data for all Swedish counties we noted that the same applied for these; all counties had very precise trend-breaks that could be

connected to one specific month of the year. These trend-break months were distributed between October 1997 to January 1998 for the different counties. Such information is valuable when searching for a causing factor. If e.g. a change in the social welfare support system was the major cause to the trend-break, then we should expect to see the trend-break take place the same month in all counties. Figure 2 shows the number of sick registered at the end of each year relative to the number of registered at the end of 1992 in each county of Sweden.



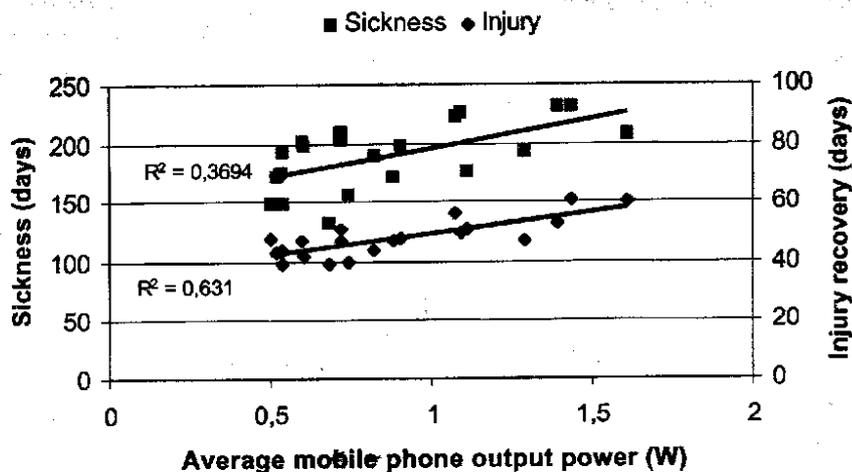
**Figure 2.** The number of sick-registered starts to increase in all counties from 1998. The numbers are normalised to respective measurements at the end of 1992.

During this period at the end of 1997 and beginning of 1998 the new GSM system using 1800 MHz was rolled-out all over Sweden, predominantly in cities and municipalities to support the 900 MHz system. We tried to get information from the authorities and from the Swedish operator Telia AB regarding the commissioning times for the new system in each county, but we never got any answer or even response to this question.

If sickness is to be something that you could claim when you want some more spare time, then this might be used more or less frequently in different parts of the country according to some politicians. It is, however, less likely that you deliberately would hurt yourself in a work-related accident just to get a few days off. Figure 3 shows that both work-related sickness and the recovery time from work accidents is correlated to the average output power from mobile phones in the different counties of Sweden.

Since the general sickness rate in all counties of Sweden is strongly correlated to the average pulse power from the mobile phones ( $R^2=0.82$ ;  $p<0.000001$ ; see ref. [1]) and the recovery time from work accidents correlate similarly, we should not try to dismiss this as just a matter of curiosity.

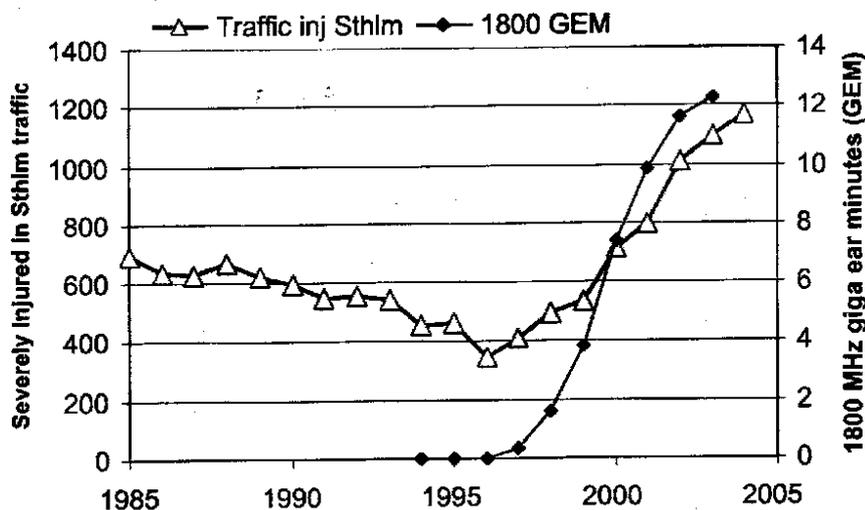
## GSM 1800 AND THE HEALTH



**Figure 3.** The time for rehabilitation after a work-related sickness or injury correlates with the average mobile phone output power in the different counties of Sweden.

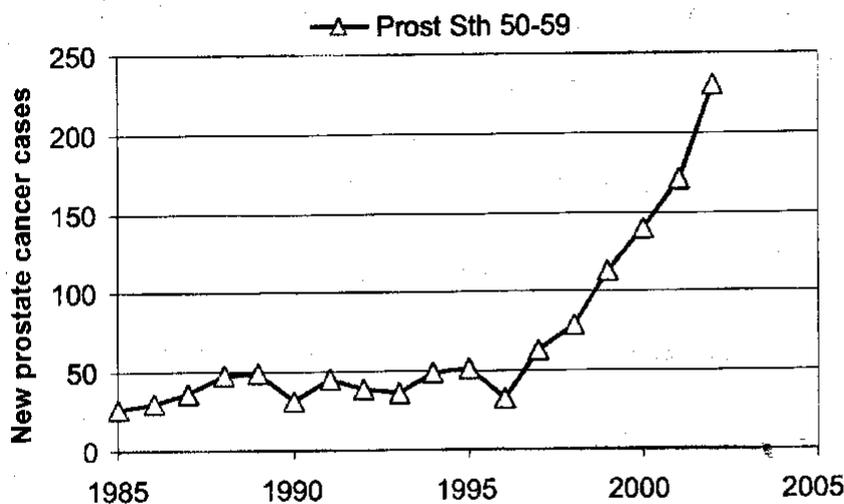
Based on the above, we suspect that mobile phone radiation has a negative effect on the ability to recover from a disease or an injury.

Moreover, we also suspect that mobile phones in the short term interact with our concentration ability during car driving, thus increasing the number of injuries in the traffic. Figure 4 shows that the number of severely injured people in the traffic of Stockholm is increasing. Measurements presented by The Swedish National Road Administration (Vägverket) show that the reaction time by car drivers is increased by 40% if they are talking in a mobile phone, regardless if it is equipped with a hands-free cord or not [2]. Figure 4 also shows the annual number of spoken mobile phone minutes using phones capable of transmitting 1800 MHz according to data from The National Post and Telecom Agency in Sweden.



**Figure 4.** The number of people seriously injured in the traffic of Stockholm started to increase dramatically since 1997.

As another example, we would like to point at the increasing rate of verified prostate cancer cases among Swedish men. In Stockholm the number of new cases among men aged 50-59 years has started to increase at a scaring rate. The responsible authority The National Security Board states that this is just an artefact due to the increased use of PSA-tests.



**Figure 5.** The number of verified cases of prostate cancer among men aged 50-59 years is increasing in Stockholm since 1997.

Figure 5 shows the increasing prostate cancer rate in Stockholm. We could not see any relation to the increased use of PSA testing that started already around 1991 [1]. Similarly, we analysed a number of other health-related characteristics like load-related injuries, suicide rates, bus driver accidents, company health statistics, sickness distribution over Sweden in 1981 and 2002, etc. The result of that work is to be published later on [1].

### Summary

1997 was a very curious year in the sense that a number of health-related measures indicates a fast degradation of the Swedish health. The general health situation is now worst in the more sparsely populated regions, quite in contrary to what it used to be in 1981 before the mobile era. The recovery capability of the human body seems to have been reduced, leading to longer sickness times and recovery times. The use of mobile phones while driving should be an offence, since few would argue on its obvious effects on traffic safety. Prostate cancer is booming and adds to the already too high costs for health care.

It would be wrong to believe that all this was just a matter of coincidence or curiosity. The decision taken by the authorities, to allow the exposure of the entire population to 1800 MHz electromagnetic radiation for 24 h per day from transmitters or during phone calls at up to 1000 times stronger power density, must be questioned.

The apparent connection between the increasing use of GSM 1800 and the increasing health problems in Sweden and other countries must be investigated carefully to proof that no such connection really exists. This is especially important since the 3rd generation of mobile phone system is utilizing an even higher frequency, 2100 MHz, than the dual-band phones do. If responsible authorities can not present scientifically valid and convincing arguments that explain our findings by reasons other than due to radiation from GSM 1800 handsets, then logically all 1800 MHz transmitters ought to be closed at once.

### Acknowledgements

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### References

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- [2] The Swedish National Road Administration (SNRA), Report 2003:91  
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