



For the greater good

At KULeuven, Prof. Dr Antonia Arnaert uses SAS to improve care for elderly patients

If someone says “this is good”, what exactly do they mean by “good”? For millions of people working in the care professions, this is more than a philosophical question. Whereas the physical world can be easily quantified in units such as metres or kilograms, people in the caring professions need to be able to assess intangibles such as subjective feelings. For example: has a programme of care been successful? This is a difficult enough question when dealing with large groups of people. But when it comes to assessing how a particular type of support can help the well-being of an individual or a specific sub-segment of patients, information has to be treated very carefully.

“Management base their decisions on opinions and the experience of experts. But we can only prove that something is good if we have tested it statistically.”

Arnaert’s research employed SAS software to gather, calibrate and process data in order to provide reliable and objective measurements of the success of new technologies and scientific approaches. Her conclusions showed that great care needs to be taken in selecting and preparing data, and that SAS Enterprise Miner™ provides the solution required to process data into actionable knowledge.

Telenursing the elderly

The research project focused on the findings of a European Union-funded IT project, in which elderly people were given access to care providers via video-telephony, so that they could stay in their own private homes rather than having to be admitted to an old people’s home. The two-way link via telephone cable and phone line not only facilitated the provision and monitoring of healthcare services but also gave the clients – people living largely in isolation – an important source of social contact.

Arnaert’s project measured the change in the well-being of a sample group living in Kortrijk in order to assess how the care was functioning. She chose eight indicators of well-being that are particularly relevant to elderly people, such as morale, social networking and

Prof. Dr Antonia Arnaert is a specialist in care for the elderly. Already a fully qualified nurse and MBA before completing her PhD, she has also worked as Director of a nursing home in Ieper, in the west of Belgium. In 2001 she finalized her PhD project at the Catholic University of Leuven, where she had worked in the Centre for Nursing and Health Research. Her research concerned the question of how to measure the effect of particular types of care on the well-being of specific groups of elderly people. Arnaert was conscious that management investment decisions on the use of a specific technology were not always based on solid information.



Customer	Catholic University of Louvain (UCL)
Sector	Academic
Business Issue	Needed analytical solutions for research in elderly healthcare quality
Solution	SAS® Enterprise Miner™
Benefits	Rapid and inexpensive exposure of scientific findings

daily activities, and assessed changes in relation to the introduction of the video-telephony system and how much individual clients used it. The goal was to provide an objective view of how this technology actually helped this specific group of elderly people. It was a challenging task because the additional social benefits of the video technology are difficult to evaluate. But if successful, her method could then be used as a reliable tool for social services and healthcare management to take scientific decisions. As Arnaert says, "The literature on this subject has all been qualitative. There is no quantitative information available."

What elderly? What care?

There is, of course, raw data in abundance but that is not the same as information. Arnaert's research, presented as a doctoral thesis in 2001, demonstrated the need to take care that data is accurate, relevant and, above all, comparable. "Data exists, but we have to create knowledge: above all, the problem is one of gauging and calibrating data. A simple average does not work." Individuals are very different and care interventions have very different results; consequently, we have to question and quantify terms such as "elderly" and "care".

Building the knowledge was a multi-staged process. First, Arnaert had to select data that was truly relevant to the study. Second, she looked for suitable ways to collect the data. Third, provisions had to be made for cleaning the data so that it could be used for processing. Finally, Arnaert used some sophisticated techniques for mining and analysing the data to ensure that the knowledge produced would support decision makers. Arnaert took a course in SAS Enterprise Miner and was soon able to harness its data mining power and flexibility to build a decision-tree modelling tool to process data into knowledge. Decision trees provide a highly effective structure within which you can lay out options and investigate the possible outcomes of choosing each of those options. They also help you to form a balanced picture of the benefits and risks associated with each possible course of action.

Arnaert hopes that her research findings and methodology will help policymakers in sensitive areas of healthcare that often require considerable public investment. Her work demonstrates that it is possible to quantify what until now has been a subjective, "gut instinct" decision-making process.

"There is a way to quantify what until now has been very subjective. SAS® Enterprise Miner™ has helped me extract reliable information from a whole range of data."

Prof. Dr Antonia Arnaert

Catholic University of Leuven

"This sort of model is by no means restricted to assessing the impact of video-telephony. It could be adapted to evaluate the impact of any form of care on the well-being of the elderly – or indeed on other target groups," says Arnaert.

After formally presenting her PhD thesis Arnaert published several articles in the specialist press and made presentations on the case for telecare for the elderly, based on her research findings. She is conscious that her quantitative approach will become increasingly important for service providers. It is easy to assert that technology can provide an extra level of care and give elderly people another, fuller view of the world. But care providers need an objective view of its true impact. "Now we have a way of showing the difference that technology can make," concludes Arnaert.



SAS World Headquarters
and SAS Americas
SAS Campus Drive
Cary, NC 27513 USA
Tel: (919) 677 8000
Fax: (919) 677 4444
U.S. & Canada sales:
(800) 727 0025

SAS Europe, Middle East & Africa
P.O. Box 10 53 40
Neuenheimer Landstr. 28-30
D-69043 Heidelberg, Germany
Tel: (49) 6221 416-0
Fax: (49) 6221 474850

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