

The Peninsula Collaboration for Health Operational Research & Development

What are the factors that most influence demand for ambulances in South West England?

Summary:

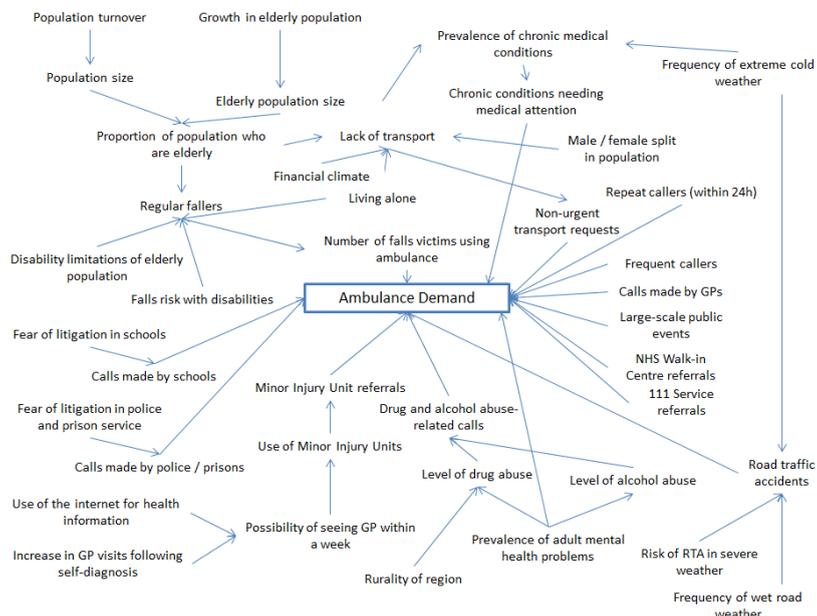
Demand for ambulance services is growing year-on-year nationally, but the driving factors behind this increase are poorly understood. We built a map of factors that potentially influence demand for ambulances using a mixture of expert opinion and information from the literature. This map was then translated into a simulation model parameterised with data relevant to the population of South West England. By running this model with each factor removed in turn, we were able to estimate those factors that are the biggest drivers for ambulance demand.

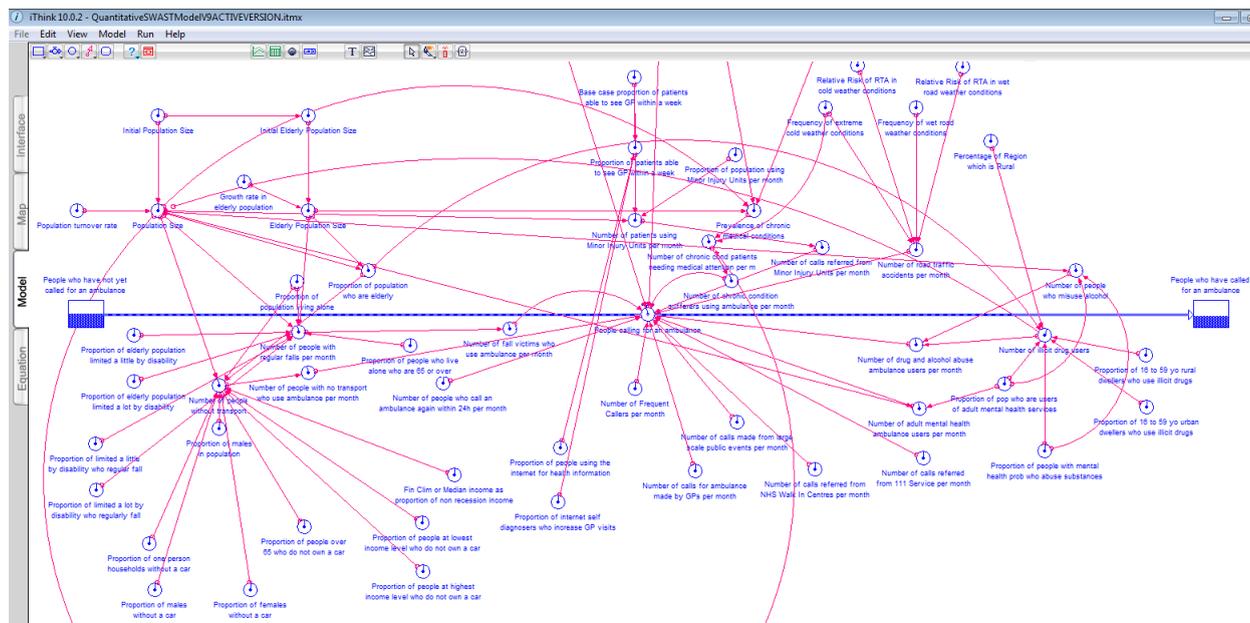
Context:

The model was developed in collaboration with the South West Ambulance Service NHS Foundation Trust. The project began in 2013 and was completed in early 2014.

Method:

We used a simulation modelling method called System Dynamics, which is typically used to develop models of large-scale “whole systems” and the flows between components in these systems. Here, we applied the method to capture the flow between a population who hasn’t yet called for an ambulance and one who has, as well as the factors that influence this rate of flow (demand for ambulances). By removing each factor in turn, we could determine which of these were estimated to have the biggest impact on demand for ambulances.





Outputs:

The model estimates that the prevalence of falls in the elderly population is by far the most significant driver of ambulance demand in South West England and is estimated to be over three times more significant than referrals from the 111 service. In addition, the increased predisposition of those with mental health problems to use ambulance services is also estimated to be a significant influence on ambulance demand.

| Rank | Influencing Factor | Absolute Magnitude of Difference (%) |
|------|---|--------------------------------------|
| 1 | Number of people with regular falls per month | 34.3122% |
| 2 | Initial Elderly Population Size | 28.8402% |
| 3 | Proportion of elderly population limited a lot by disability | 26.3619% |
| 4 | Proportion of limited a lot by disability who regularly fall | 26.3619% |
| 5 | Proportion of pop who are users of adult mental health services | 21.2111% |
| 6 | Number of adult mental health ambulance users per month | 21.2111% |
| 7 | Number of calls referred from 111 Service per month | 10.5310% |
| 8 | Proportion of elderly population limited a little by disability | 7.9503% |
| 9 | Proportion of limited a little by disability who regularly fall | 7.9503% |
| 10 | Proportion of population using Minor Injury Units per month | 5.6803% |

Evaluation and Impact:

The results of this modelling project were presented to the executive team of the South West Ambulance Service NHS Foundation Trust and the lead commissioners for South West England. Based on these results, the lead commissioners instructed local commissioning groups across the South West to prioritise falls prevention and mental health access to ambulance services in an effort to reduce demand for ambulance services.

Contact and more information:

For more information, please contact Dr Daniel Chalk (Research Fellow): d.chalk@exeter.ac.uk