



1



2

© istockphoto.com/shapecharge

HealthFaCT – OPTIMIZING OUTPATIENT MEDICAL CARE IN RURAL AREAS

1 *Interactive evaluation and exploration of optimised pharmacy emergency service plans*

Our healthcare system faces major challenges in outpatient medical care. Despite the decline in population and rising costs, medical care must still be guaranteed in rural areas. The aim of HealthFaCT (Facility Location, Covering and Transport) is to find the optimal distribution of the scarce health care resources in rural areas.

2 *Pharmacies are an essential component of outpatient medical care.*

The collaborative project HealthFaCT is developing an innovative software-based optimization and decision-making system to improve outpatient medical care. The software quickly identifies and evaluates the best possible option for strategic, tactical, and operational decisions. In addition, the user can interactively visualize, explore, analyze, and verify the results. We are developing a web-based simulation platform that integrates the optimization methods designed by our project partners.

Research alliance with focus on three pillars

The project is funded by the German Federal Ministry of Education and Research (BMBF) and focuses on three major pillars of outpatient care: Pharmacies, emergency doctors, and ambulance and rescue services. Together with our project partners RWTH Aachen University, Technical University of Kaiserslautern, and University of Erlangen-Nuremberg, we are optimizing the following three areas based on future requirements forecasting:

- Location structure and emergency service plan for pharmacies
- Location structure and resource distribution for emergency doctors
- Waiting times in the ambulance and rescue services

Software-based implementation of mathematical algorithms

The project primarily studies location, coverage, and route planning problems from a mathematical perspective. The main challenges are real time optimization and robustness against uncertainties. Moreover, in a complex use case with divergent target functions, it is not possible to determine a single optimal solution by means of a purely algorithmic approach.

Therefore, we develop a data-driven tool that focuses on the decision maker. The software objectively shows the user different options and provides opportunities to interactively evaluate the solutions. Discussions with the application partners prove the need and the enormous potential of such a software-based optimization and decision-making system.

SPONSORED BY THE

