Distance Dependence on the Willingness of Patients to Participate in Ambulatory Heart Rehabilitation Programs

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INTRODUCTION

In Austria there are different types of heart rehabilitation programs. Locations of hospitals where the optional ambulatory phase after the stationary stay can be carried out are mainly located in provincial capitals. Data is being prepared to use statistical methods and to investigate the catchment area of rehabilitation centers.

FACTS

- There are several rehabilitation centers in Austria offering heart rehabilitation programs
- Ambulatory treatment of myocardial infarct patients is optional
- For each treatment patients have to travel to their corresponding rehabilitation center

GOALS

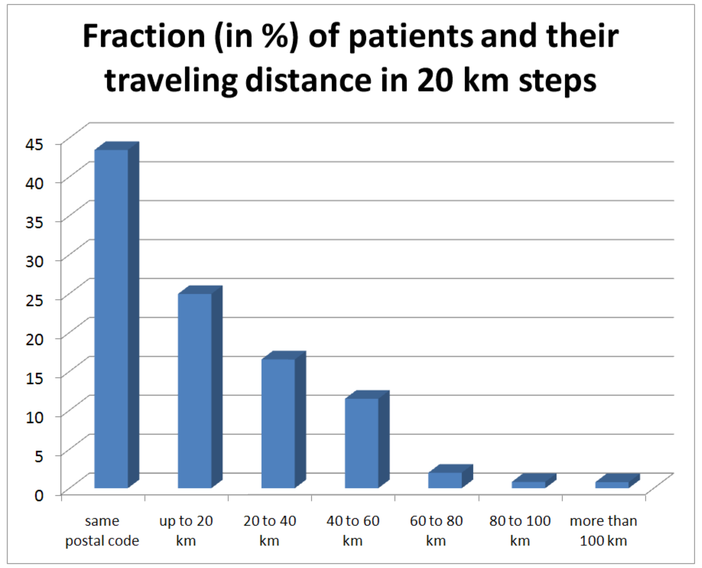
We want to find out about the correlation between the patients' distance to the rehabilitation centers and their willingness to participate in the ambulatory phase.

DATA

- Patient data is stored in two different databases
- Usage of data quality assessment methods to delete mistakes and improve data quality
- Identification of patients with complete rehabilitation history

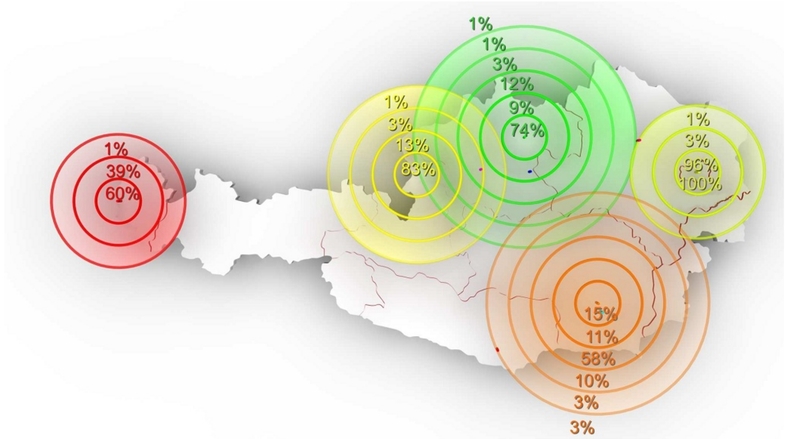
METHODS

- Converting postal codes to longitude and latitude geo-coordinates
- Calculation of distances between patients and their rehabilitation centers
- Evaluating quantiles of hospital catchment radiuses and percentages of treated patients within predefined bounders
- Analysis of the influence of the discrete space on the travelling distance distribution

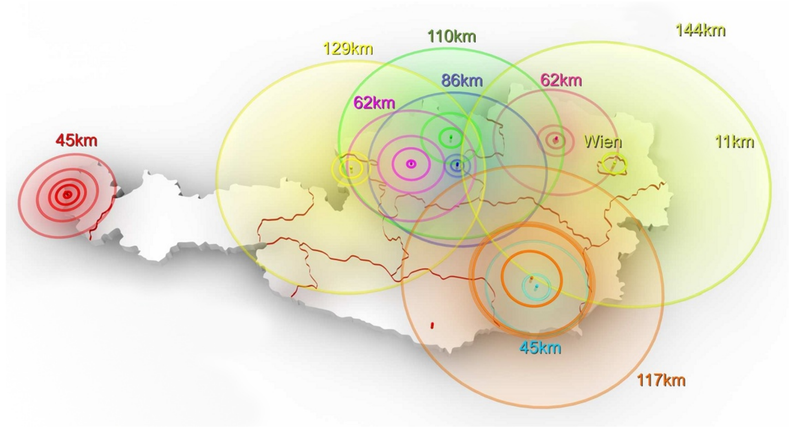


VISUALISATION

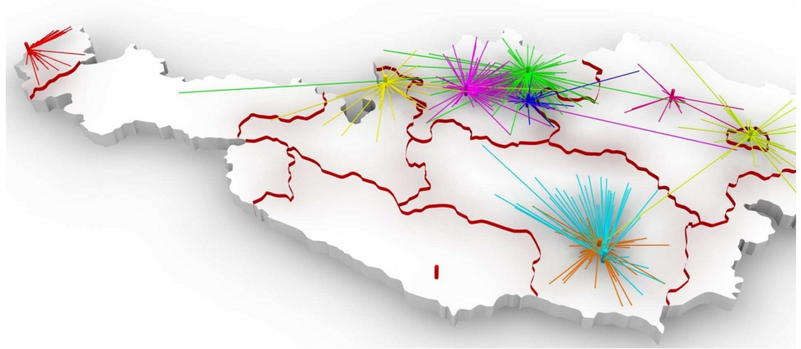
After calculating key figures and analysing coherences we give an overview about the situation that can be understood easily and in an intuitive way. Therefore we project the 3-dimensional space on a map of Austria and prepare three figures:



- The first one shows the percentages of patients coming from 20, 40, 60, 80 and 100 km radiuses.



- The second figure shows radiuses where 20, 40, 60, 80 and 99 percent of the patients come from.



- The third shows the direction and distance of the patients home location.

CONCLUSION

- Most patients come from an area with the same postal code as the hospital.
- Hardly any patient needs to travel more than 60 km.
- The patients willingness to participate in the program is inverse proportional to their distance to the rehabilitation center.
- The small sample and the discretisation of the space lead to a discontinuous distance distribution. Clustering distances is necessary to identify coherences correctly.