

1 Introduction

Do you want to make a direct contribution at an innovative Home Care company and are you able to bring together different stakeholders in a dynamical environment around a mathematical problem? The need for research in Home Care is high, and Thuiszorg West Brabant (TWB) is therefore looking for a master student to help with the challenges they face. TWB is currently working on a project to involve Decision Support in the planning processes. The research you will do contributes directly to this project.

If you are interested, please send your motivation letter, CV and grade list to Yelte Kikke (n.y.s.a.kikke@utwente.nl) and Erwin Hans/Gréanne Leeftink (e.w.hans@utwente.nl/a.g.leeftink@utwente.nl)

2 The need for research in Home Care

Demand for formalized Home Care (HC) is increasing in the last years, and will continue to increase in the future. [1]. Reasons for this are, besides the well known increasing life expectancy, the increasing participation of women on the labour market and children moving farther away from their home towns. This makes it difficult for relatives to provide informal care, resulting in increasing demand for formalized HC.

We expect total costs of formalized HC therefore to rise, making it important to create efficient HC systems. To help achieve this, we need efficient planning to reduce waste in the HC processes. Both in the primary processes, in the form of unnecessary traveling, and in the planning processes in the form of manual labour to correct discrepancies in the planning.

3 Organization and planning at TWB

TWB (Thuiszorg West Brabant), is a HC provider in the regio West Brabant. It consists of 1800 employees, giving care to more than 2000 clients daily. TWB receives money per client from Dutch healthcare insurances, making it important to register the duration spent at each client, and keep proper records of this.

Planning is done mostly manually, where a base planning is created for each week. The planning process itself is fairly simple, we show it in Figure 1.

TWB has a set clients O , a set Care Operators (CO) K and a set of planners P . Care Operators are distinguished on three qualification levels: $B \leq C \leq IG$, where a higher qualified CO can do the work of lower qualified Care Operators, but not the other way around. Each CO has a costs of c , where $c_B \leq c_C \leq c_{IG}$.

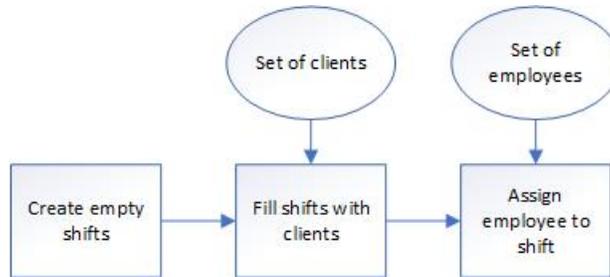


Figure 1: Simplified planning process at TWB

The company is organized geographically, where clients are grouped together based on location. The set of clients is divided into clusters, which are divided into teams again. Each team operates individually and no clients or Care Operators are shared between teams.

4 Research project

The base planning of TWB is made by the planner for each team. Since the planning system does not help the planner with decision support, it is not clear for the planner if the planning is efficient with respect to travel costs and employee costs.

Currently, planners assign clients to routes based on clients location and mix clients of different qualification requirements in one route. Hence, overqualified Care Operators are doing work at a too high price. On the other hand, routing clients based on location saves travel costs. We then have two routing strategies: one based on location and one based on qualification level. Figure 2 shows a simplified example with 3 *B* clients and 3 *C* clients. Clearly, routing costs in the current routing strategy are lower than in the new routing strategy. For the employee costs it is the other way around .

TWB wants to know which routing strategy is more efficient in which situations. One can think that when the distances between clients increases, it gets more efficient to route based on geography. Other, more cost saving, strategies can also be investigated.

5 Practical points

The assignment is intended for a Master student Industrial Engineering and Management. The time frame is around 6 months, and you will get a workplace at TWB in Roosendaal or Bergen op Zoom. Of course you are not required to work full time from TWB, but it would be good to be there a few days per week

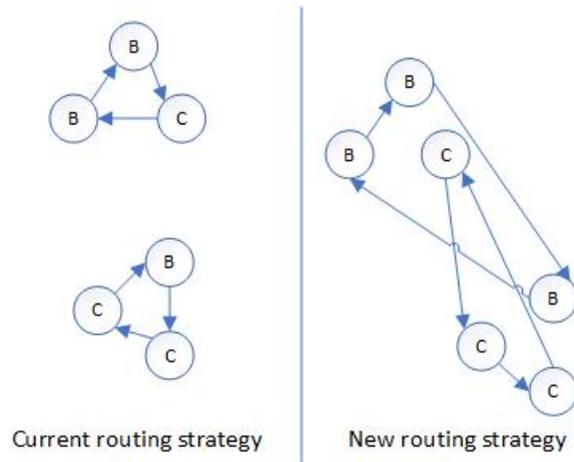


Figure 2: Two routing strategies

to get to know TWB and understand the requirements of the stakeholders.

References

- [1] Smith, P. R. (2013). Who will care for the elderly: The future of home care. *Buff. L. Rev.*, 61, 323.