# Predicting regional demand for social support

## Background

Municipalities in the Netherlands are by The Social Support Act (Wet Maatschappelijke Ondersteuning 2015; WMO) responsible for supporting their inhabitants with regards to participation and self-sustainability [1, 2]. Examples of the types of support available for inhabitants can be found in [3].

Municipalities have a certain flexibility in how they organize and finance their support, and from these budget and capacity allocation decisions it is important for municipalities to know how many inhabitants are expected to make use of the Social Support Act. In this case study you will therefore use available data from Statistics Netherlands to make a prediction model for predicting Social Support Act demand on a regional basis.

More information on local implementation practices of the Social Support Act can be found in [4], whereas more background on how the Social Support Act fits in the broader movement of decentralization can be found in [5].

## Data

The data for this case study has to be obtained from Statistics Netherlands by directly importing it using their API. A guide on **how to download the data** in Python or R can be found here: https://www.cbs.nl/en-gb/our-services/open-data/statline-as-open-data/quick-start-guide [6].

Statistics Netherlands has thousands of tables publicly available through their API. In this case study we start off working with tables indicating the number of WMO-clients per 1,000 inhabitants per municipality (the tables called '*Wmo-cliënten; type maatwerkarrangement, wijken'* for the years 2020, 2019, etc.), and tables containing indicators per municipality (the tables called '*Kerncijfers wijken en buurten'* for the years 2020, 2019, etc.).

## Data preparation

Data preparation for this case study involves linking a multitude of tables, making choices about which regional level to focus on in terms of prediction and selecting the right subset of data accordingly, cleaning your data, etc. There will be many choices to make; there is no one right approach (though there are definitely wrong ones), just make sure you document and explain every choice you make.

## Outcome and CRISP-DM iterations

We will make a model predicting whether a municipality will be above the threshold of 50 WMO-clients per 1,000 inhabitants.

As advice, start off in a first CRISP-DM iteration with a straightforward and naïve approach to get things working (while making sure you do not make choices that are wrong), and extend your model from there in consecutive iterations, by adding additional tables (search for the occurrence of 'Wmo' in the *Title* or *ShortTitle* variables of the Statistics Netherlands table index to see what information is available and might be relevant), careful feature selection and/or feature preparation, making better use of the time structure in the data, trying out different types of models, etc.

Once you feel you have arrived at a good performing model that was refined in a number of consecutive iterations, try and predict other outcomes, such as whether the number of WMO-clients

per 1,000 inhabitants will increase as compared to the previously available period, or the demand for specific types of Social Support.

[1] https://en.wikipedia.org/wiki/Social_Support_Act_2015
[2] Social Support Act (Wmo 2015) | Care and support at home | Government.nl
[3] The Hague - What is the Social Support Act (Wmo) (denhaag.nl)
[4] Summary - The Social Support Act 2015 in practice english.scp.nl › De+Wmo+2015+in+praktijk_Summary (google.com)
[5] (PDF) The Dutch Social Support Act in the shadow of the decentralization dream (researchgate.net)
[6] https://www.cbs.nl/en-gb/our-services/open-data/statline-as-open-data/quick-start-guide