# 1. Description of the problem and a discussion of the background.

This is Kathy. She works as a headhunter and international staff recruiter in Toronto, Canada since more than 10 years. Her business is running very well and her customers highly appreciate her professionalism as well as her fruitful input to their companies' staff structure improvement. Local business association already called her the #1 recruiter in town since she always seems to find the one and only candidate somewhere in the world for any highly specialized position while internal HR departments looked for such new staff for a long time without any success.

However, competition is tough and the market for what she does is limited only to a few business orders per week. So, instead of relaxing and enjoying her achievements, she continuously observes current developments and always tries out to offer anything more than other headhunters do. Since some years, for example, she extended here activity to a business section that she calls 'after recruitment services', where she serves her customer companies with additional data she gained by evaluating the whole recruiting process and comparing it with previous business cases. Additional services she offers to the recruited candidates as well, who very often come from foreign countries to Toronto without any knowledge of this place.

'If a candidate is happy after arrival, his contribution to make his new employer more successful will rise as well', she thinks. Several times she already cooperated with a real estate company to ease the candidate's way to a new home after moving around the world just for this job. Unfortunately, from time to time, there was some dissatisfaction from the candidate's perspective in the past. They got a wonderful apartment with a nice view, but later they recognized that their new neighborhood did not match their preferences very well. It turned out, that the real estate company was very happy about customers who do not have this in-depth knowledge of Toronto's local context and did not care much about anything else than profiting quickly from them.

On Kathy's permanent way of optimizing her business, she now sends out a short questionnaire to her candidates to learn what kind of venues they really prefer to have in their neighborhood instead. Her idea is, to recommend them their perfect neighborhoods so they are better prepared when they look for a new home.

After some internal evaluation she found out that there are four main categories of preferred neighborhoods among her staff candidates:

1) Some hipsters for example want to have coffee shops and sushi places around.
2) Candidates with families prefer parks or playgrounds close to their future home.
3) Sportive candidates need a gym in their neighborhood.
4) Others can mainly be satisfied if they have enough options to go shopping.

She does not only offer this to the candidates but also likes to share it with these companies she got the recruiting orders from. 'You can book a hotel in their preferred

areas if you invite candidates for an interview. So you can make sure that they have a great stay which may convince them even more to work for you in the future.', she says to her clients. They really like this idea and they are confident again and again that she is still the best and most innovative recruiter in town.

Kathy's problem: though she knows her home town very well, it's also no secret to her that trending neighborhoods come and go, gentrification can change streets and surroundings completely in a very short period of time and that her own subjective view on such city developments is not representative enough and of course not very scientific.

So she decides to ask a **data scientist** to help her defining these favorite neighborhoods and to create a map of it for her candidates and the companies who want to hire them.