It’s a dog’s life: when OR meets canine welfare

*The breeding, ownership and welfare of dogs in the UK is a complex social policy area. Without an understanding of the dog population and how it is stratified, it is difficult to propose meaningful welfare policies. To help with this, three Operational Researchers and an engineer from DECC have worked with RSPCA and DogED to develop a stock and flow model of the UK dog population.*

Although there has been research into the size of the dog population, nobody has pulled all this together into a single model that everyone can use to help focus priority issues. As a consequence, different stakeholders have varying, and sometimes conflicting, views of how many dogs there are and their needs. Without a consensus understanding of the population and how it is stratified, it is difficult to propose meaningful welfare improvement policies.

In order to collect the relevant data and develop a useful model the RSPCA - UK’s leading animal welfare charity - and DogED - a social enterprise applying System Thinking to canine welfare - have started a project with a group of three Operational Research and one engineer from the Department of Energy and Climate Change (DECC), namely me and my team.

We accepted the project with great enthusiasm: we liked the idea of applying OR techniques in a Pro Bono context and of working on something different to the daily energy-related projects at the department. Our work included building a model which evaluates the stocks and flows of dogs within the UK and predicts the population changes over time.

*Figure 1: Stock and flow diagram developed with Vensim*

It involved pulling in data from a large number of journal papers and reports (we reviewed more than 50 data sources) and attempting to corroborate these against each other, whilst also working to identify gaps in existing knowledge. Needless to say, this was no mean feat – if you ask 10 people what a “stray” dog is, you’ll get 10 different answers!

At the start of the project we were a brand new team, having worked together for less than three months. Therefore, the project was a great opportunity to get to know each other outside of the work environment and to develop a strong team spirit. We made the most of fortnightly working lunches and spent some time together during weekends; the relaxed environment and our enthusiasm for the project always made the work very productive and fun.

Talking about fun, the RSPCA gave us the fabulous opportunity to spend a day at the Battersea Dogs and Cats Home, one of the biggest animal welfare centres in the UK. There, we were treated to a tour of the home by the director of operations and got to see the efforts that go into looking after so many animals simultaneously. It was a great experience and at the end of the day we were all considering bringing home a dog or a cat with us!

*Figure 2: our visit to Battersea Dogs and Cats Home*

However, it was not only leisure time; we also worked hard to deliver the project and the experience was both interesting and fruitful. The work matched our skillset closely and we all learnt something from it: we deepened our knowledge in system dynamics and applied it on a real problem, worked with different roles and in different contexts and, above all, learnt a lot about dogs and their welfare.

At the end of the project we delivered a comprehensive literature review and a working stock and flow model prototype. We also identified many data and evidence gaps that unfortunately mean the model results are not yet robust enough to inform policy decisions. We therefore provided some recommendations on how to close these gaps in the future. Based on this work, the client is now in a position to argue the case for better data collection to inform policy making.

All in all the experience was fulfilling and we would recommend it to all OR practitioners. The work was interesting and fun and our client was always appreciative and respectful of our time constraints; at the end it was very satisfactory to see that our work has been useful for a worthy project.