Interviewee: Hana Ševčíková

Affiliation:

Senior Research Scientist at University of Washington Center for Statistics and Social Sciences.

Data scientist at Puget Sound Regional Council in Seattle.

Current research area: Demography

Probabilistic population projection and estimation of population, fertility, mortality and migration for all countries, collaborate with United Nations Population Division.

Models of land use forecasting and transportation.

Education Trajectory

Post-Doctor in UW statistics department.

Ph.D. in statistics, Helmut-Schmidt-University, Hamburg.

Master’s in computer science, University Hamburg.

Q1: Your graduate study was computer science; however, you choose to study Statistics after that, and obtained doctoral and post-doctoral degrees. Is there any reason for you to make such life-related decision?

Hana: Yes, while I was studying computer science, I worked as a research assistant in Statistics department, and started to work on statistical projects. During that period of time, I studied computational statistics, concerned with mathematical methods for obtaining numerical solutions to statistically formulated problems. This area of knowledge really interested me, and I thought it will be nice for me to learn knowledge in both computer science and Statistics areas.

Q2: Majority of your current research is on demography, fields in estimation of fertility, mortality, migration and life-expectancy. Do your have any research projects in Ph.D. and post-Doc stages related to demography as well?

Hana: The research that I have done when I was in school are not related to demographics at all. There are couple of reasons why I am working on this area. When I joined the UW Statistics and Sociology Research Center as a research scientist, the demography project was available on the plan list, and the group that was working on it needed my programming skills to implement statistical methodologies into software, such as R packages. In fact, at that time, statistical demography is a very novel subject, only few statisticians worked on it. After I started exploring this area, I found it is alluring and attractive. Since the publication of my first paper on probabilistic population projection in 2012, I have been studying in this field for eight years.

Q3: Have you involved in other studies besides demographic research?

Hana: Yes, I also worked as a data scientist at Puget Sound Regional Council in the project of land use forecasting. This project was originally grouped at UW department of urban design and planning, heading to build land-use mathematical models. Later on, because the project PI move from UW to Berkeley, the project was handed over to Puget Sound Council, and I took the position in the council as well.

Q3: Since 2012, you and your team have published nearly ten research papers and a huge number of R packages. Virtually all of them are related to population projection around all countries. What is the most challenging thing you have encountered during the process?

Hana: We did encounter many unexpected difficulties during the study. At the beginning, we planned to build a complicated model on subnational population projection, a model that takes as many potential impacts as possible. However, in many sample evaluations, it turned out that our sophisticated model didn’t even work as well as simple scaling models. Thereby, we end up by using the simple model, considering its practical advantage as well. In many small communities where few people have the knowledge of complicated statistical method, simple model enabled people to understand and implement it.

Dr. Hana Ševčíková works as a senior research scientist at University of Washington’s Center for Statistics and Social Science, in the areas of Demographic statistics and Computational statistics. She also takes the position at Puget Sound Regional Council in Seattle as a data scientist.

Dr. Ševčíková studied in computer science at University Hamburg. After that, she obtained her Ph.D. degree at Helmut-Schmidt University and Post-Doctoral degree at University of Washington in statistics. Working for statistics department as a research assistant during graduate school kindled her intense enthusiasm in computational statistics, hence motivated her to study statistics at Ph.D. and Post-Doctoral stages.

Dr. Ševčíková has been involved in projects about population projection of life expectancy for all countries, of subnational fertility rate and with migration uncertainty, and projects of building land-use forecasting model for the council. Her knowledge on computational statistics and programming skill has also helped her group to implement their statistical methodology into software and R packages. She has published on CRAN with R packages of population projections, mortality projection, and snow package, which have become part of R core package parallel.

Hana is one of the first statisticians to start exploring demographic statistics. Since the publication of her and Prof. Raftery’s first paper on population prediction *Bayesian Probabilistic Population Projections for All Countries* in 2012, she has been studying in this area for eight years. In her words, statistical demography is a novel but alluring area for a statistician. The dynamic demographic model developed by her and her team has been widely accepted in that field. Compared with traditional population projection model, their new model takes into account the impact of life expectancy on mortality, uncertainty brought by migration, and measurement error in data. United Nations’ official population projection in 2015 was based in part on their methods. Since then, Hana and her team began to cooperate with the UN in optimizing projection model and developing R packages.

During the research process, not everything went smoothly. At the beginning, she and her group planned to build a complicated model on subnational population projection, an inclusive model that takes as many external factors as possible. However, in many sample evaluations, it turned out that sophisticated model didn’t even work as well as simple scaling models.

After long-term of re-inspection and discretion in such cases, they finally ended up using simple model.

Their development philosophy is also constantly improving to enable people who have little statistical background and those in small communities to use the projection models.

Building models that used by UN is a great honor, and one of the most exciting work for Hana, also is the reason that drives her continue studying in demographic statistics. Although working as scientist at two places on completely different projects often brings her great workload (although she often has great workload due to working at … , Hana can always maintain balance between work and life. She loves camping, hiking, and playing sports such as ping-pong, pickle ball, and playing with her dog.