



Assoc. Prof. Dr. Hakan Demirtas

Hakan's work spans several major areas of statistics and is driven by an interest in developing statistically sound solutions to real-world problems. His methodological research interests can be categorized into the two broad areas: analysis of incomplete multivariate data and stochastic simulation. His concentration has been on biostatistics in recent years, however, the fundamental principles of these research topics can be applied to a wide range of disciplines including finance, econometrics, mathematics, engineering, quantitative social and behavioral sciences, among many others. Having engineering and business administration degrees, followed by a doctoral level training in mathematical statistics, and currently working in a public-health oriented environment, give him the tools and perspectives for striking a delicate balance between technique and judgment to make statistical, computational, and methodological contributions to a wide range of substantive areas.

As far as missing data are concerned, Hakan focuses on multiple imputation (MI) inferences where missing observations are replaced by a set of plausible values that are drawn from a predictive distribution. Once multiple versions of the completed data sets are obtained, one can proceed with analyzing them with standard complete-data methods and incorporating the results into a single inferential summary, through which uncertainty due to missing data is formally taken into account in the modeling process. In many situations, incompleteness arises due to a myriad of reasons that are beyond the control of observers, and adequately addressing missing data issues in a statistically defensible manner is crucially important. From stochastic simulation point of view, he has been building a unified framework for concurrently generating data sets that include all four major kinds of variables (i.e., binary, ordinal, count, and continuous) when the marginal distributions and a feasible association structure are specified for simulation purposes, which could potentially become a central computational and data-analytic aspect in the big data era. As of this writing, he has authored or co-authored 127 publications including journal articles, book reviews, software documentation, and conference proceedings. His work on MI-based methodologies and random number generation has led to 69 peer-reviewed theoretical, methodological, and application papers in statistics, biostatistics and computation/simulation oriented journals, and 27 papers in various substantive fields including mental health services, environmental health, and genetic epidemiology.

Hakan is committed to ensuring that his work is widely disseminated and accessible to a broad spectrum of both specialists and generalists. He has developed 17 publicly available software tools in the form of R packages which are currently employed by a diverse range of people from social, managerial, behavioral, medical, and physical sciences. His software products generated a large percentile impact, as can be seen at

<https://www.rdocumentation.org/collaborators/name/Hakan%20Demirtas>

He has been actively involved in teaching, advising, service, consulting, and grantsmanship in addition to producing tangible intellectual products such as peer-reviewed publications and publicly accessible software tools. A more specific list of his accomplishments can be accessed at

<http://demirtas.people.uic.edu/DEMIRTAS-CV.pdf>

His hobbies are jogging, writing song lyrics, playing chess (can play blindfolded), helping high school kids with their math assignments, and participating in boy scouts activities. He is a number magician on an amateur level.

Finally, here is a story from the French literature that accurately reflects Hakan's state of mind. Balzac's servant found him crying and asked what was wrong. He said "one of the characters in his novel has died." The bewildered servant replied "Boss, aren't you the one who **created** her?" Balzac stormed "So what? What **difference** does it make? She is dead." **Understanding** the way he thinks is the key for **being** a genuine quantitative **artist** who can **feel** the whole point of what science is all about. Hakan is a passionate believer of the Balzacian paradigm. He does what he likes, and likes what he does. Computational statistics is a beautiful thing. If he hadn't woken up to it, he'd still be sleeping. Given his abiding passion, unwavering commitment, and relentless marching towards a better understanding of how science can be advanced in meaningful and broadly applicable ways, he will never retire.