Statistics and Actuarial Science Seminar

Title: Pooo triangles and expected order statistics

Speaker: Andrew Smith (University College Dublin)

Date: Thu 26th September 2019 at 3:00PM

Location: Seminar Room SCN 1.25

Abstract: A pooo triangle is an array of discrete measures satisfying a set of linear relations which we call the descent formula. Pooo triangles arise in (at least) two applications: (1) The calculations of expected order statistics; these are needed in exploratory data analysis for assigning and calibrating distributions using L-moments, and for investigating coefficient sampling properties in quantile regression. (2) The probabilities that an observation is an odd-one-out (hence the acronym pooo); consider n-1 observations from an amber distribution, and one observation (the odd one out) from a blue distribution. We want to find the probability that the r-th smallest observation out of n is the odd-one-out. For several important distributions, expected order statistics are difficult to compute, while the probabilities of odd-one-out are more easily derived. We prove a correspondence between expected order statistics and probabilities of odd-one-out. We also address such important questions as to whether every pooo triangle solves an expected order statistic problem.