



THE UNIVERSITY OF CHICAGO

Department of Statistics STATISTICS COLLOQUIUM

HARRY CRANE

Department of Statistics and Biostatistics
Rutgers University

“Variants of Invariance”

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Eckhart 133, 5734 S. University Avenue

Refreshments following the seminar in Jones 111

ABSTRACT

The classical theorems of de Finetti (for exchangeable sequences) and Aldous-Hoover-Kallenberg (for exchangeable arrays), both of which deal with invariance under arbitrary relabeling of a countable index set, imply a strong homogeneity property which is rarely satisfied by modern data structures. With this in mind, I present two variants of exchangeability: relative exchangeability and relational exchangeability.

Under relative exchangeability, the distribution of a random structure is invariant with respect to the symmetries of some other structure. Examples include the stochastic blockmodel (Holland-Laskey-Leinhardt, 1983) and standard regression models. Under relational exchangeability, a structure is labeled by its relations (e.g., blocks of a partition, edges in a network, paths in a network) and the invariance is defined with respect to relabeling those relations. Examples include exchangeable random partitions (Kingman, 1978) and edge exchangeable networks (Crane-Dempsey, 2015). I discuss various results and applications of these principles throughout.

Work on relative exchangeability is joint with Henry Towsner (Penn). Work on relational and edge exchangeability is joint with Walter Dempsey (Michigan).

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