

# Operations Management and Statistics

**In-person Seminar in classroom LL 1020**

**& Hybrid online via MS Teams\***

**Wed., Feb. 15, 2023 @ 2:00 pm EST**

## An asymptotic perspective on risk pooling: Limitations and relationship to transshipments

**Yale T. Herer, Professor - Vice Dean for Study Programs,  
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*All students and faculty welcome.*

*\*Held in LL 1020: Hybrid portion hosted in MS Teams – [Click here to join the meeting.](#)*

**Abstract |** In this talk we provide a novel perspective on risk pooling approaches by characterizing and comparing their asymptotic performance, highlighting the conditions under which one approach dominates the other. More specifically, we determine the inventory policy and the expected total costs of systems under physical and information pooling as the number of locations grows. We show that physical pooling dominates information pooling in settings with no additional per-item and per-location costs for operating the centralized system. In the presence of such costs, however, information pooling becomes a viable alternative to physical pooling. Through asymptotic analysis, we also address the grouping problem, the division of a given set of non-identical locations into an ordered collection of mutually exclusive and collectively exhaustive subsets of predetermined sizes and demonstrate that homogeneous groups, comprising locations with similar demand volatility, achieve a lower expected total cost. Finally, the convergence of the expected total costs and the base stock levels under the two pooling approaches is demonstrated through a simple numerical illustration. Our analysis supports the assertion that it is important to consider not only the individual characteristics of each location in isolation, but also the interactions among them, when designing pooling systems. Joint work with Enver Yücesan.

This talk is based on the publication: Yale T. Herer & Enver Yücesan (2022) An asymptotic perspective on risk pooling: Limitations and relationship to transshipments, IIE Transactions, DOI: 10.1080/24725854.2022.2086719

**Bio |** Yale T. Herer, B.S. (1986), M.S. (1990), Ph.D. (1990), Cornell University, Department of Operations Research and Industrial Engineering. Yale is currently a Professor in the Faculty of Data and Decision Sciences at the Technion – Israel Institute of Technology where, since 2018, he serves as Vice Dean of Programs of Study. Yale is a past Vice President of ORSIS, the Operations Research Society of Israel. Yale has successfully planned and executed four conferences, including two international conferences. In 2010 he chaired the annual conference for the Manufacturing and Service Operations Management Society (MSOM) of INFORMS. In addition, Yale co-chaired POMS Israel 2017. Yale's research interest can be broadly defined as covering Production Planning and Control. More recently Yale has focused his research on the area of Supply Chain Management, especially when integrated with transshipments or other responsive operational activities. Yale has won various prizes including a 1996 IIE Transactions Best Paper Award, the 2002 Mitchner Award in Quality Sciences and Quality Management, a 2008 IBM Faculty Award, and INFORM's 2013 Daniel H. Wagner Prize for Excellence in Operations Research Practice.