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.

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