Designing Random Allocation Mechanisms: Theory and Applications
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ABSTRACT

Lotteries loom large in resource allocation when the resources assigned are indivisible and monetary transfers are limited. We study random allocations by focusing on the marginal distribution of objects to agents -- rather than the joint lottery for all objects and agents -- an approach pioneered by Hylland and Zeckhauser (1979). We show how to broaden the approach to accommodate various features and constraints encountered in real-world markets, including group-specific quotas (``controlled choice'') and endogenous capacities often present in school choice and housing allocation, and scheduling and curriculum constraints arising in course allocation. We then apply the method to find allocations that are ex ante fair and efficient in the presence of these constraints. The method can also be applied to certain two-sided matching problems to produce a fair matchup design in interleague games and speed dating.

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