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# Research Note: Overselling with Opportunistic Cancellations

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## Abstract

In many business sectors such as airlines, hotels, trucking, and media advertising, customers' arrivals and willingness to pay are uncertain. Managers must decide whether to quote a price low enough to guarantee early sales, or to quote a higher price and risk that some units remain unsold. In allocating capacity, they face a trade-off between two types of potential losses; (1) *Yield loss*—selling at a low price, and losing a better price later, and (2) *Spoilage loss*—waiting in vain to sell at a high price, and losing the opportunity of an earlier low price offer. Yield loss means that consumers who value the product most do not get to use it, and spoilage loss means that valuable products are wasted because no consumers get to use them. Sellers typically hedge against the risk of spoilage loss by selling some units early at low prices, and against the risk of yield loss by blocking some units in hope of selling them later at a high price.

In this paper we show that the use of overselling with opportunistic cancellations can increase expected profits and

improve allocation efficiency. Under this strategy, the seller deliberately oversells capacity if high-paying consumers show up, even when capacity is already fully booked. The seller then cancels the sale to some low-paying customers while providing them with appropriate compensation.

We derive a new rule to optimally allocate capacity to consumers when overselling is used, and show that overselling helps limit the potential yield and spoilage losses. Yield loss is reduced because the seller can capture more high-paying customers by compensating low-paying customers who give up their right to the product. Spoilage loss is reduced because the compensation decreases the price spread perceived by the seller, and as a result, the seller is less anxious to speculate and "block" units. Overselling with opportunistic cancellations assures that the product will be sold to consumers who value it most. This means that "everybody wins", and resources are allocated more efficiently than in conventional selling.

*(Overselling; Overbooking; Yield Management; Yield and Spoilage Losses; Capacity Management)*