Raising the curtain on the dynamics of pricing tickets for Broadway shows.

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EVERY night in New York, about 25,000 people, on average, attend Broadway shows.

As avid theatergoers know, ticket prices have been rising inexorably. The top ticket price for Broadway shows has risen 31 percent since 1998. But the actual price paid has gone up by only 24 percent.

The difference is a result of discounting. Savvy fans know that there are deals available for even the most popular shows, with the most popular discounts being offered through coupons, two-for-one deals, special prices for students, and through the TKTS booth in Times Square.

Why so much discounting? The value of a seat in a theater, like a seat on an airplane, is highly perishable. Once the show starts or the plane takes off, a seat is worth next to nothing.

In both industries, sellers use a variety of strategies to try to ensure that the seats are sold to those who are willing to pay the most.

This phenomenon was examined recently by a Stanford economist, Phillip Leslie, in an article, "Price Discrimination in Broadway Theater," published in the autumn 2004 issue of the RAND Journal of Economics.

Mr. Leslie was able to collect detailed data on a 1996 Broadway play, "Seven Guitars." Over 140,000 people saw this play, and they bought tickets in 17 price categories. Some price variation was due to the quality of the seats -- orchestra, mezzanine, balcony and so on -- while other price differences were a result of various forms of discounting.

The combination of quality variation and discounts led to widely varying ticket prices. The average difference of two tickets chosen at random on a given night was about 40 percent of the average price. This is comparable to the price variation in airline tickets.

The highest price, for full-price orchestra seats, was about $55, while the lowest-price balcony seats were about $17. The average price over all performances was about $36.
The ticket promotions also varied over the 199 performances of the show. Targeted direct mail was used early on, while two-for-one tickets were not introduced until about halfway through the run.

The tickets offered for sale at the TKTS booth in Times Square are typically orchestra seats, the best category of seats available. But the discounted tickets at TKTS tend to be the lower-quality orchestra seats. They sell at a fixed discount of 50 percent, but are offered only for performances that day.

Mr. Leslie's goal was primarily to model the behavior of the theatergoer. The audience for Broadway shows is highly diverse. About 10 percent, according to a 1991 survey conducted by Broadway producers, had household incomes of $25,000 or $35,000 while an equal number had incomes over $150,000 (in 1990 dollars).

The prices and discounting policy set by the producers of Broadway shows try to use this heterogeneity to get people to sort themselves by their willingness to pay for tickets.

You probably will not see Donald Trump waiting in line at TKTS; presumably, those in his income class do not mind paying full price. But a lot of students, unemployed actors and tourists do use TKTS.

Yes, it is inconvenient to wait in line at TKTS. But that is the point. If it weren't inconvenient, everyone would do it, and this would result in substantially lower revenues for Broadway shows.

Mr. Leslie uses some advanced econometric techniques to estimate the values that different income groups put on the various categories of tickets. He finds that Broadway producers do a pretty good job, in general, at maximizing revenue. The average price set -- which is different than the average price paid -- was about $55. According to Mr. Leslie's estimates, the best price to maximize revenue would be about $60.

Mr. Leslie was also able to examine what would happen if the producers changed the way tickets were sold. For example, suppose the producers moved to flat-rate pricing, where they sold every ticket at the same price. In this case, his model predicts that the average price set would be about $50.

Mr. Leslie also looked at various possibilities involving the TKTS booth. He found that the current 50 percent discount is too low if the goal is to maximize revenue. He calculates that a 30 percent discount would raise revenue by about 7 percent, albeit at the cost of reducing attendance by about 1.6 percent.

Of course, this estimate is based on data from only one show.

The availability of the TKTS booth stimulates attendance at dozens of shows. Even though any single show might wish for a lower discount and higher revenue, the overall industry could easily benefit from the low prices and the variety of choice offered by the Times Square booth.

There are other variations in ticket pricing that could be considered. For example, rather than sell good orchestra seats at full price and not-so-good seats at half price at the TKTS booth, why not split these seats into two categories? It is difficult to estimate the impact of such a change with the data Mr. Leslie used, but theater owners might want to consider such an experiment.

We are likely to see more and more goods and services sold using the same sort of differential pricing. As more and more transactions become computer-mediated, it becomes easier for sellers to collect data, to experiment with pricing and to analyze the results of those experiments.

This, of course, makes life more complicated for us consumers. The flip side is that pricing variations make those good deals more likely.

Last time I was in New York, I was pleased that I managed to get a ticket to "The Producers" for half price. It almost made up for the fact that I had to book my airline ticket two weeks in advance and stay over a Saturday night.