When Providing Wait Times, It Pays to Underpromise and Overdeliver

by Qiuping Yu
In 1999, Disneyland became a pioneer of the virtual queue. That’s the year the company introduced its FastPass system, which allowed customers to hold their place in line virtually while enjoying attractions elsewhere in the park. Virtual queues have since become common in restaurants, call centers, rideshare platforms, and other businesses — and the Covid-19 pandemic has only accelerated
this trend. But not all virtual queues are created equal. What can businesses do to optimize the customer experience when implementing a virtual queuing system?

Decreasing wait times by increasing capacity is the simplest solution, of course, but that’s often prohibitively expensive. Luckily, it’s possible to reduce wait times without increasing capacity, and to improve the customer experience without actually changing wait times.

Over the past decade, I have conducted extensive research on the impact of providing estimated wait times on the customer experience in virtual queues, and I’ve made four findings in that work that represent tactical takeaways for businesses:

**Finding 1: Providing wait-time estimates reduces customers’ average wait time.**

Our first finding may not be surprising, but it carries significant implications for any business operating a virtual queue. In a study looking at banking call centers, conducted with Gad Allon, of the University of Pennsylvania, and Achal Bassamboo, of Northwestern University, we found that providing wait-time estimates led to lower average wait times for all customers. This is because every time someone decided to give up their spot in line, it shortened the wait time for everyone else. Providing wait-time estimates prompted some customers to abandon the line when wait times were very long, and made them less likely to abandon during non-peak times, thus reducing the average wait time while keeping the total number of customers served constant. Just by providing these estimates, companies can improve the waiting experience for everyone.

In addition, for rideshare apps and call centers, where congestion is high during peak hours, this research, along with another study of ours, suggests that it may be beneficial to provide a pessimistic wait-time estimate, because this can weed out less-patient customers who are likely to abandon their spot in line eventually anyway. If capacity limitations mean that you won’t be able to serve all customers, then more-pessimistic estimates upfront will quickly eliminate the customers with less tolerance for waiting, speeding up the queue and improving the experience for everyone.

**Finding 2: Pessimistic estimates are better than optimistic ones.**

In our call-center study, we examined the impact of providing an initial wait-time estimate not only on wait times but also the customer experience. We analyzed over 100,000 calls, which were divided into three test conditions. In the first group, customers were not provided with an estimated wait time; in the second group, they were provided with an inaccurate estimate, either optimistic or pessimistic; and in the third group, they were provided with an accurate estimate. We used caller abandonment (for example, when callers hang up before reaching their turn) as a proxy for customer experience, inferring that higher levels of boredom and stress led customers to abandon at greater rates.

Waits that were shorter than expected, we found, had a small positive impact on the customer experience, but waits than wer longer than expected had a significant negative impact. The penalty for under-delivery, in fact, was up to seven times larger than the reward for over-delivery.
This suggests that companies offering virtual queues should generally avoid providing optimistic wait-time estimates. Although an optimistic estimate may reduce upfront abandonment rates, that boost isn’t worth the negative experience customers will have when they end up waiting longer than expected. If the estimate is just slightly pessimistic, it’s unlikely to increase the abandonment rate, and the pleasant surprise when their wait is faster than expected will have a significant positive impact on the overall customer experience.

**Finding 3: More frequent progress updates improve customer experience.**

In the call-center study described above, customers were provided with a wait-time estimate upon their arrival but were not given subsequent updates about their remaining wait time. To explore the impact of providing progress updates, I worked with Yiming Zhang and Yong-Pin Zhou, of the University of Washington, to conduct a study that explored how the combination of the initial estimate and updates along the way affected customers’ experience. We collaborated with a major ridesharing platform to analyze data from 1.4 million rides, which were randomly assigned to provide a neutral, optimistic, or pessimistic wait-time estimate with real-time updates. We made sure to control for all factors other than estimated wait time and associated frequency of updates, including the actual time customers waited before being matched with a driver.

Because customers who received a more-pessimistic initial estimate would by definition receive more frequent updates (for a given wait length), we found that these customers experienced faster perceived progress and so canceled their rides at a lower rate. As long as the initial estimate is not too pessimistic, the positive impact of more frequent updates offsets the any increase in immediate abandonment that occurs as a result of the longer initial estimate. Just as in the call-center study, this suggests that slightly pessimistic wait-time estimates are better than optimistic ones — although if wait-time estimates are too pessimistic, the net abandonment rate may rise.

Based on these insights, we helped the platform redesign their virtual-queue system. This helped them achieve significant improvement in their customer-experience metrics: It reduced by 80% the percentage of customers who had to wait longer than their initial estimate and who experienced delays near the end of their wait. The overall abandonment rate, meanwhile, stayed constant.

**Finding 4: Customers who wait for longer than expected will take longer when their turn finally arrives.**

In a study we conducted with Eric Webb, of the University of Cincinnati, and Kurt Bretthauer, of Indiana University, we found that the wait experience not only impacts customers’ behavior while in line but also their behavior once their turn arrives. My colleagues and I analyzed over 50,000 calls to a bank call center to explore the impact of wait time on their behavior once they were connected with a representative. We found that customers who waited longer than the expected wait time ended up also spending longer on the call once they were connected. This may be because customers who were forced to wait longer than expected spent more time complaining, or felt the need to ask for additional services in order to justify the extra time spent waiting.
This suggests that providing pessimistic wait-time estimates can help companies to serve customers faster, thus increasing the number of customers that they can serve in a fixed amount of time. For example, if a restaurant provides more pessimistic estimates, their customers are likely to finish their meals more quickly, increasing the restaurant’s total throughput.

Of course, all of these improvement hinge on a company’s ability to make accurate wait-time estimates. Improving your ability to estimate actual wait times is therefore a worthwhile investment. And when inherent uncertainty is high (such as for rideshare services, where both supply and demand can fluctuate wildly), it may be best to acknowledge this limited accuracy by providing the estimate in the form of an interval (as in, “Your estimated wait time is 5 to 10 minutes.” Another strategy, employed by the leading Chinese ridesharing platform Didi Chuxing, is to provide not just an estimated wait time interval but also the probability that the customer will be served within that interval (as in, “There is a 90% chance that you will be matched with a driver in 5 to 10 minutes”). This provides an additional level of transparency, which has been shown to increase trust and thus improve the customer experience.

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Americans spend roughly 37 billion hours each year waiting in line. A recent survey reported that wait-related issues are the number-one reason that retailers lose customers — and the rapid shift to online operations hasn’t made the problem go away. As queues go virtual, optimizing how you provide wait-time estimates is an inexpensive yet effective tool to significantly improve your customers’ experience.

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