



**Question**

**How to optimize pricing and product availability?**

Demand Forecasting

Four Core Concepts of RM

Overselling

## What is overselling?

According to Donald Trump

- We are rounding the turn [on COVID-19 in the USA]



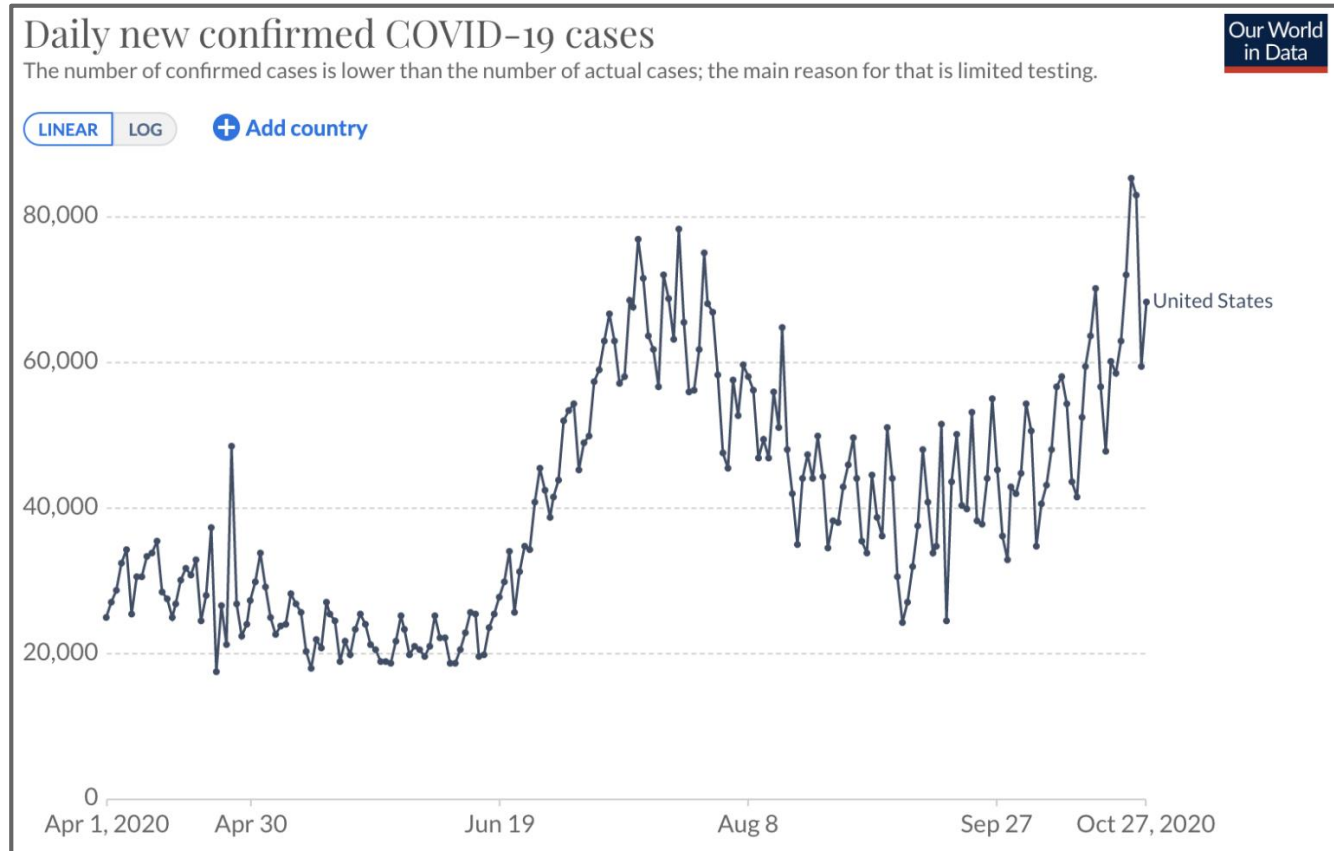
**Donald J. Trump** ✓

@realDonaldTrump

Until November 4th., Fake News Media is going full on Covid, Covid, Covid. We are rounding the turn. 99.9%.

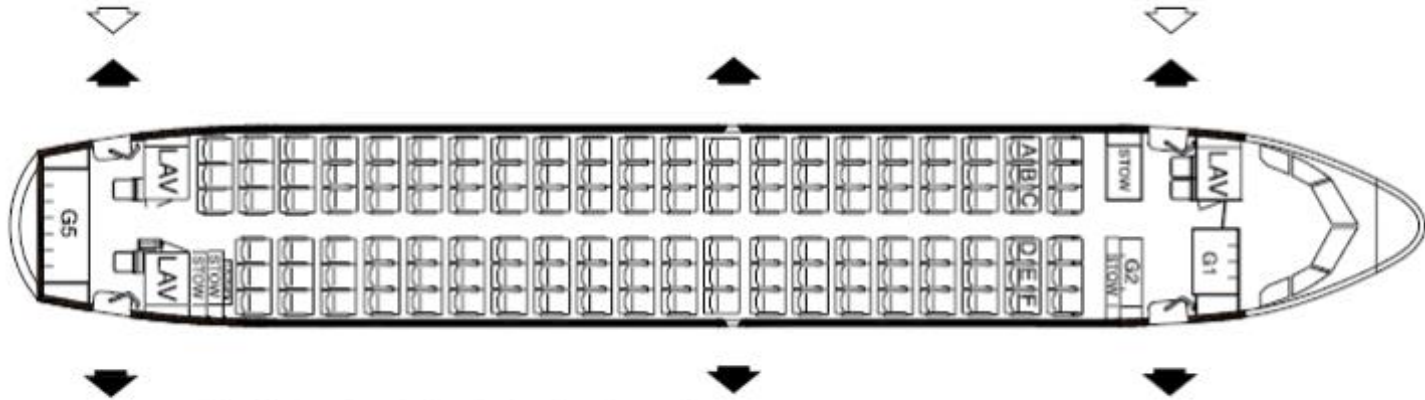
9:18 pm · 27 Oct 2020 · Twitter for iPhone

# What is overselling?



## Motivating example for overbooking – selling airline tickets

- Cathay Pacific flight from Singapore to Hong Kong
- Suppose there are 123 seats on the plane



How many tickets should Cathay sell?

## What is a customer no-show?

- Definition – A **no-show** is a customer who reserves space but neither uses nor cancels the reservation
- Examples
  - Transportation — airlines, cruise ships, trains, etc
  - Hotels
  - Car rentals

## Why do customer no-shows occur?

You will write down some reasons in your in-class exercise



See teacher's slide

# What is overselling?

- Definition – Overselling is accepting reservations in excess of actual capacity
  - Example – A hotel with 80 rooms accepting 83 reservations
- AKA “overbooking”
- Objective
  - Since some customers no-show
  - Use overselling to attempt to utilize 100% of service capacity
  - In order to maximize profitability
- Common practice in travel and hospitality sectors
- Overselling is regulated in many countries – protect consumers’ rights

Suppose your company engages in overselling.  
What happens when...

## There are enough no-shows

Everyone is served → Happy customers



## There are too few no-shows

Unlucky customers must be bumped

When United Airlines overbooks a flight...







Bumped!



住宿安排?



## How airlines take care of bumped passengers

- Rule #1 – Keep passengers informed
- Arrange alternative flights or refund passengers
- Provide accommodation (for overnight stays)
- Provide meal vouchers
- Give passengers cash or travel vouchers

# The infamous United Express Flight 3411 incident shows that airlines need to be extremely careful when bumping passengers

- United Airlines forcibly removed Dr David Dao from a full boarded flight
- This led to a huge PR crisis



Note: This was actually a case of bumping and NOT a case of overbooking, but similar principles apply

## How should a company decide the overbooking level?

- Gain – Profit from each additional reservation sold
- Loss – Cost of compensating bumped passengers
- The optimal overbooking level achieves a “balance” between the gain and expected loss
- Use mathematics / statistics / analytics to determine the optimal overbooking level (not taught in this course)

## Intuition about overbooking

Overbooking level = number of seats/rooms to overbook

How do the problem parameters affect the overbooking level?

- When the selling price increases, the overbooking level  $\uparrow$  or  $\downarrow$  ?
- When the compensation cost increases, the overbooking level  $\uparrow$  or  $\downarrow$  ?
- When the no-show rate increases, the overbooking level  $\uparrow$  or  $\downarrow$  ?

See teacher's slide