InterVISTAS
AVIATION TRANSPORTATION TOURISM

TURKISH AVIATION ACADEMY

İTÜ



Pricing

Istanbul Technical University

Air Transportation Management, M.Sc. Program

Aviation Economics and Financial Analysis

Module 5

19 November 2013

Outline

- **Revenue management**
  - Fares
  - Buckets
  - Restrictions
  - Optimisation
  - Network effects
- **The emerging merchandising approach**
  - Unbundling and rebundling
  - Charging for value

InterVISTAS
AVIATION TRANSPORTATION TOURISM

TURKISH AVIATION ACADEMY

İTÜ

Pricing Fundamentals



Airline Pricing

InterVISTAS

- **Price should be driven by demand elements, but subject to flights covering costs**
  - i.e., Do not set fare merely based on costs

- **A key to pricing is price discrimination**
  - Charge higher prices to those customers that have higher willingness to pay
  - structure fares so that these customers would not want to buy the cheaper products

InterVISTAS
AVIATION TRANSPORTATION TOURISM

TURKISH AVIATION ACADEMY

İTÜ

Revenue Management



Revenue management

InterVISTAS

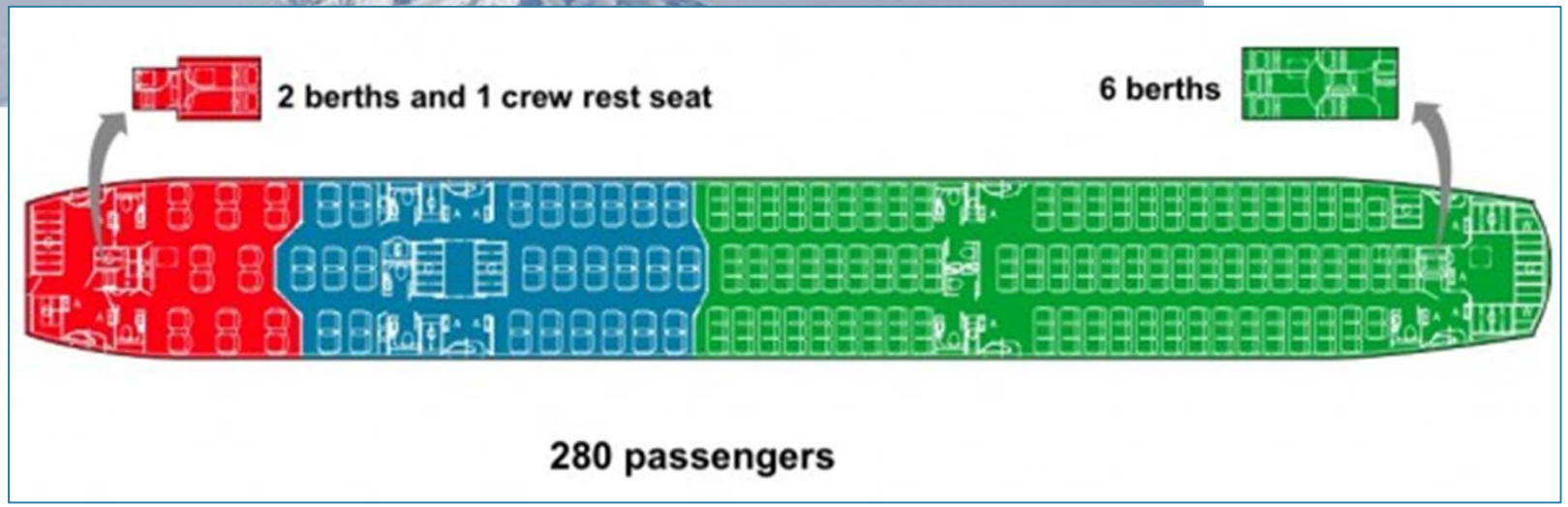
- **Revenue management = max flight revenue**
- **Other terms used**
  - seat management (manage inventory of seats for max revenue) and
  - yield management (although technically incorrect)
- **Max flight revenue is achieved by:**
  1. selling as many seats as possible at full fare
  2. selling empty seats at a discount to those who would not otherwise have flown

Revenue management fundamentals

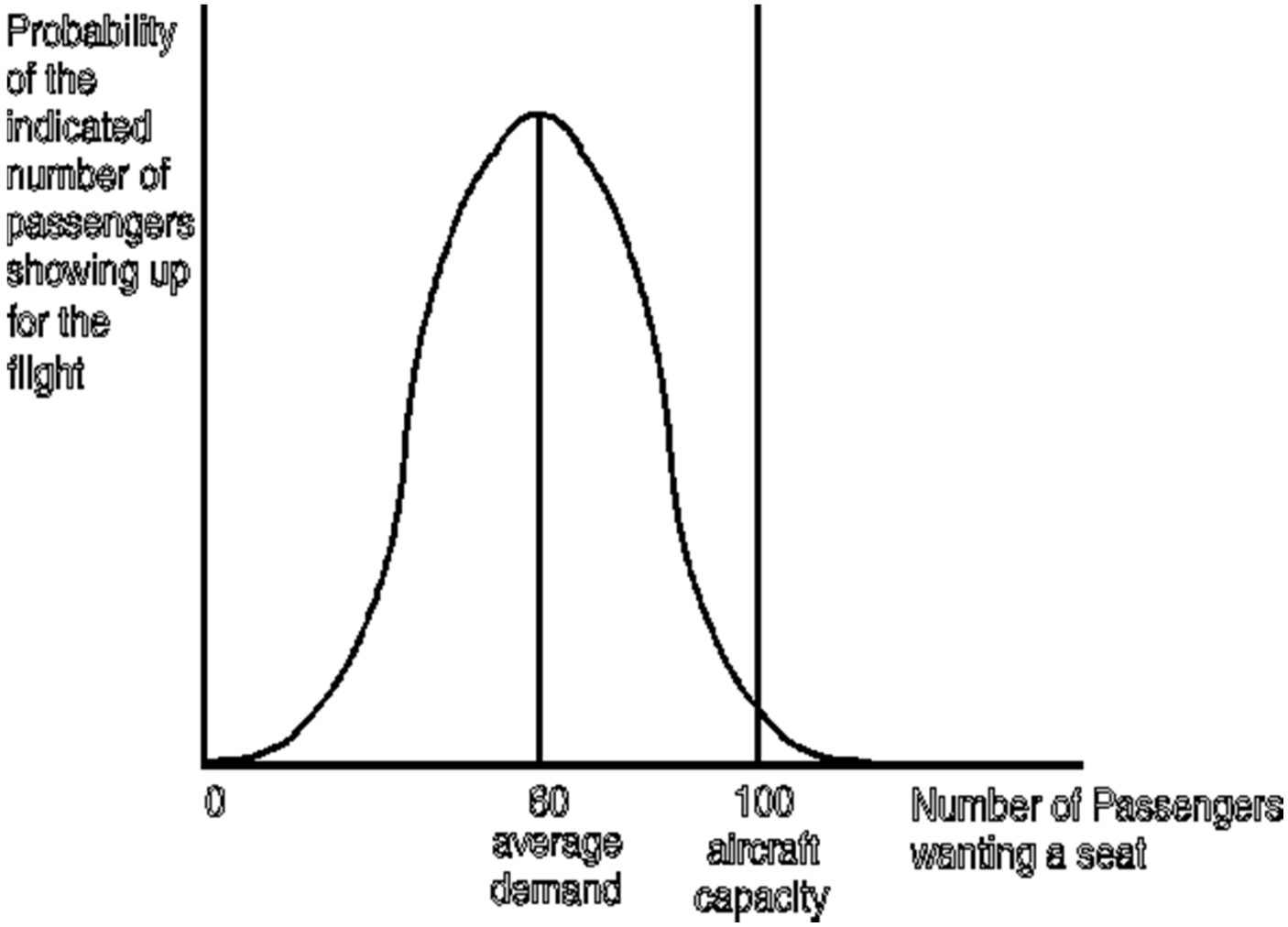
- **5 step process:**
  - Determine capacity of flight
  - Forecast demand for full fare seats
    - (stochastic demand
      – demand is not certain, but a probability range)
  - Determine an optimal full fare spill rate
  - Assign surplus seats to discount fare classes
  - Determine discount fares
    and associated restrictions to maximise flight revenue

Source: Tretheway and Oum (1992)

Aircraft capacity



Expected demand

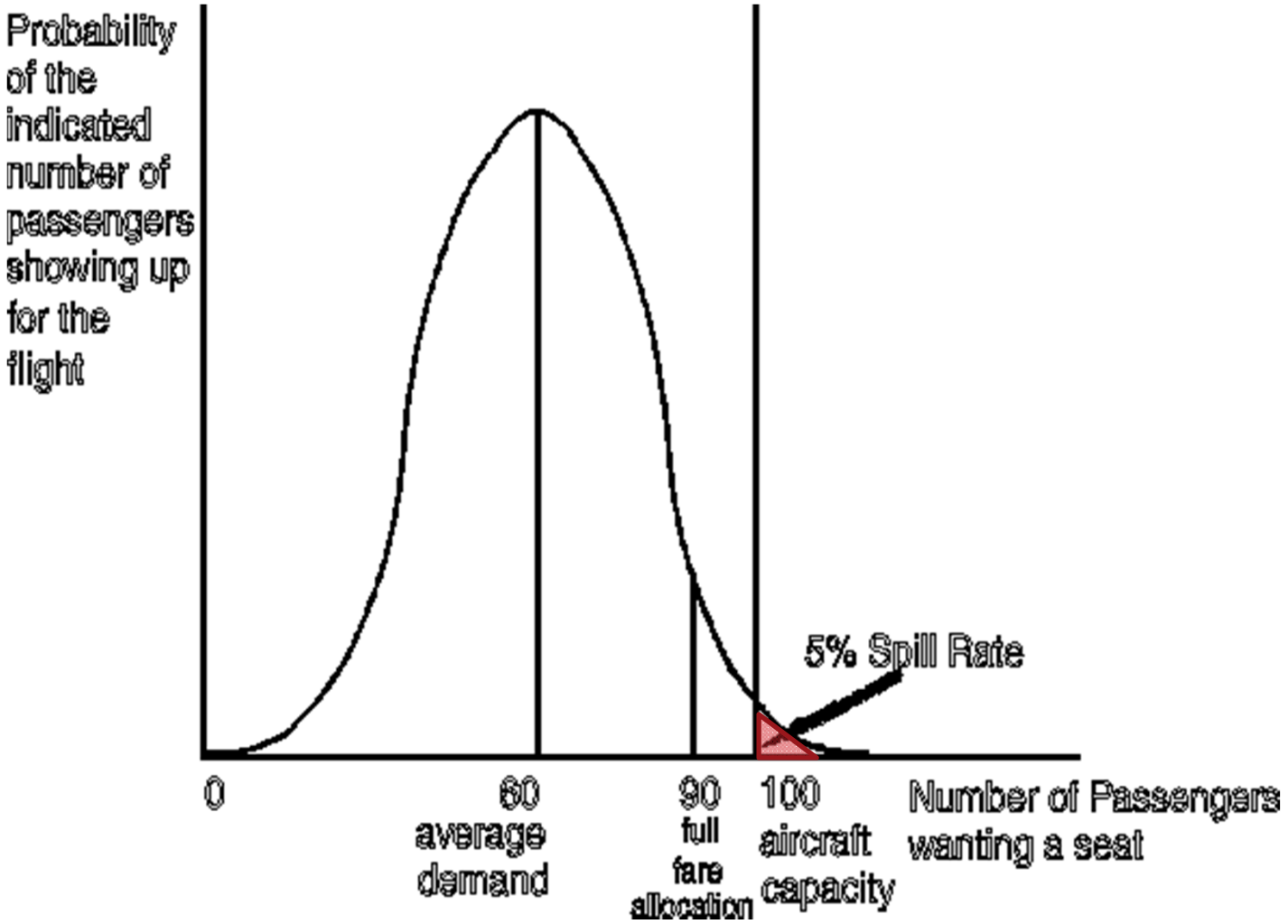


Source: Tretheway and Oum (1992)

Spill rate

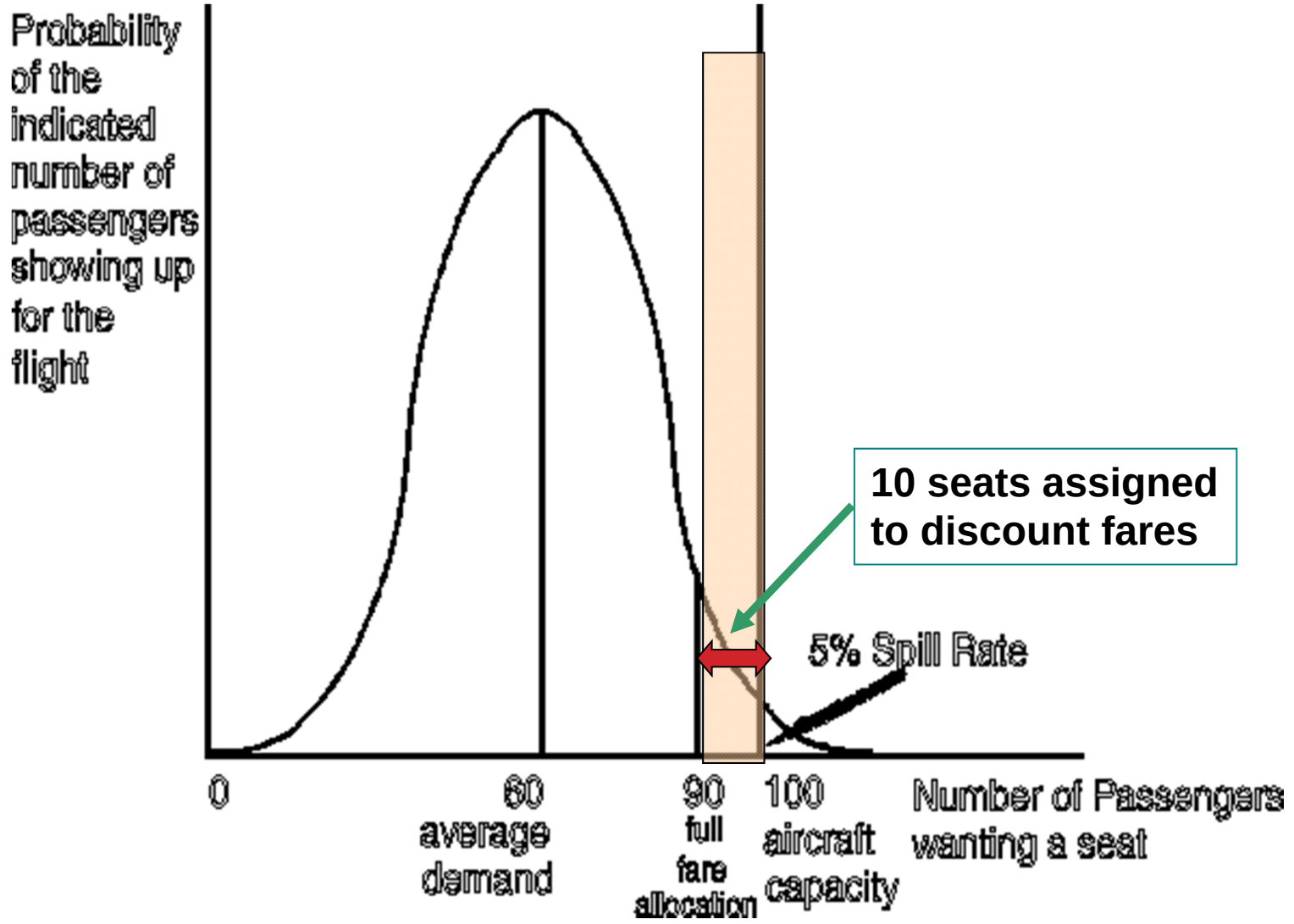
- **Spill models estimate average passenger loads when demand occasionally exceeds capacity**
- **If all requests for full fare traffic are accommodated 95% of the time, then full fare spill rate = 5%**
- **Determines how many seats to reserve/block/protect for full fare customers**
- **Revenue management systems' function is to spill discount demand so as to maintain space for higher fare demand**

Spill rate



Source: Tretheway and Oum (1992)

Surplus seats assigned to discount fare classes

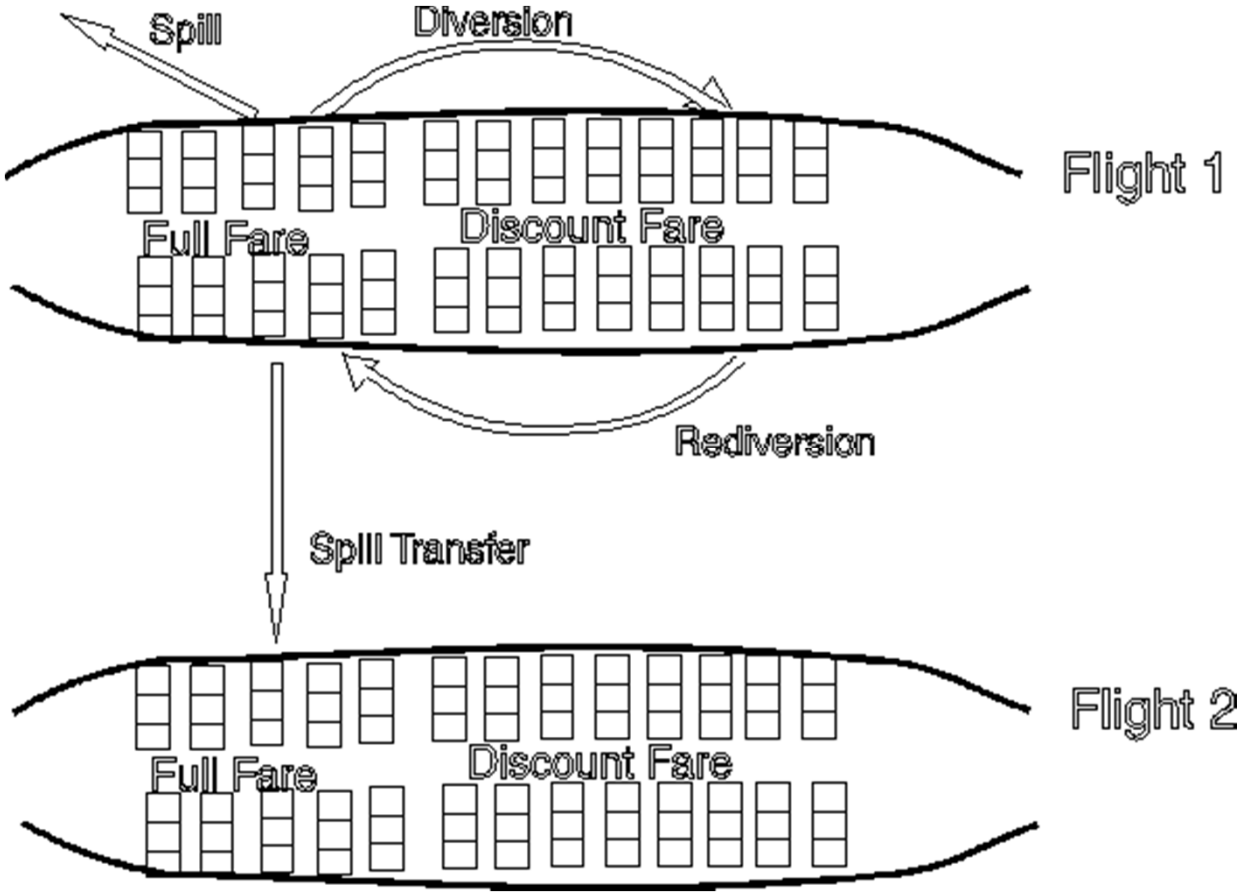


Discount fares

- **Discount fares have associated restrictions to maximise flight revenue**
- **There will be diversion of some full fare traffic to discount**
- **Fares and restrictions may result in some discount traffic loss**
- **Spill transfer: some spilled traffic goes to seats on another flight**
- **Re-diversion: "diverters" who are spilled will go back to full fare**

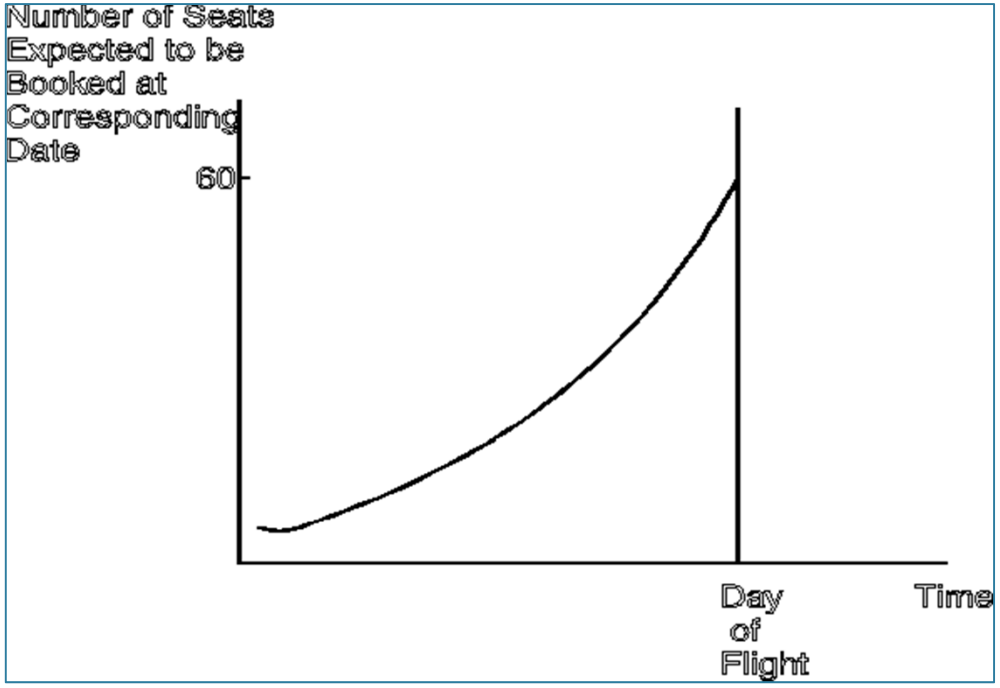
Source: Tretheway and Oum (1992)

Spills and diversion



Static versus dynamic revenue management

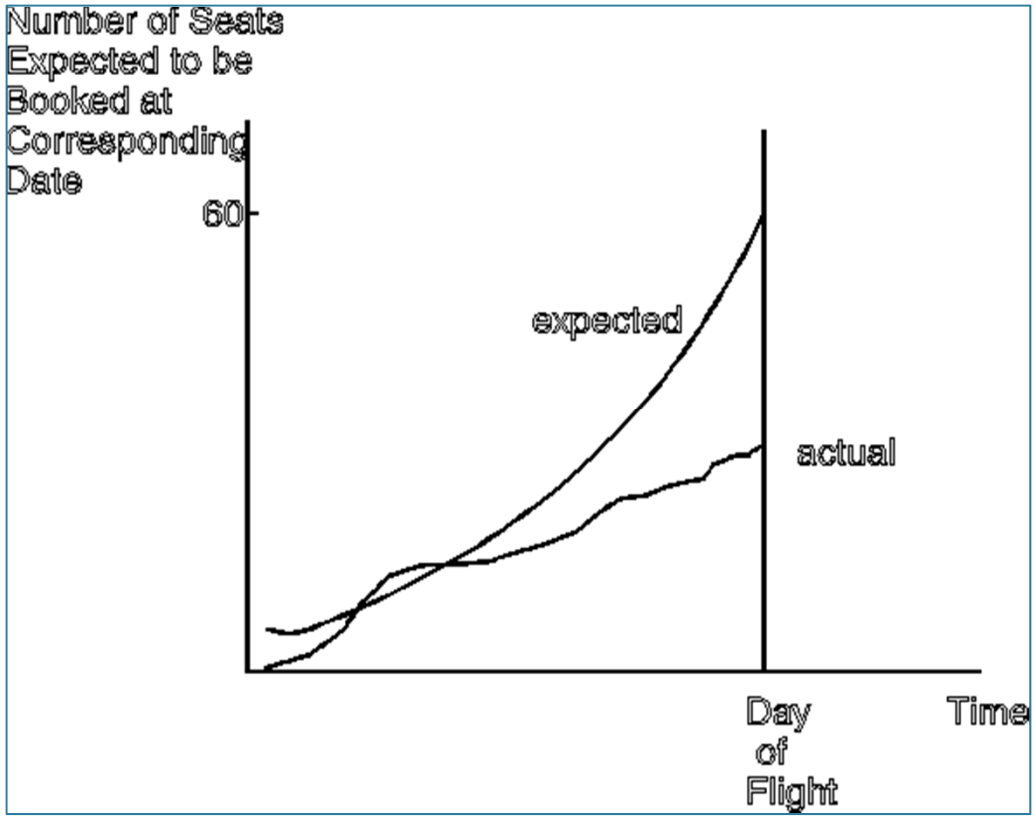
- **Airlines reallocate seats in a dynamic environment by monitoring seat sales prior to the flight.**
  - A **booking curve** is a normal expected time path of sales.



Source: Tretheway and Oum (1992)

Expected and actual bookings

- **Airlines compare actual sales to expected bookings and re-examine seat allocations.**
  - Actual < expected
    - Increase # of discount seats
    - Increase % of discount
  - Actual > expected
    - Decrease # of discount seats
    - Decrease % of discount

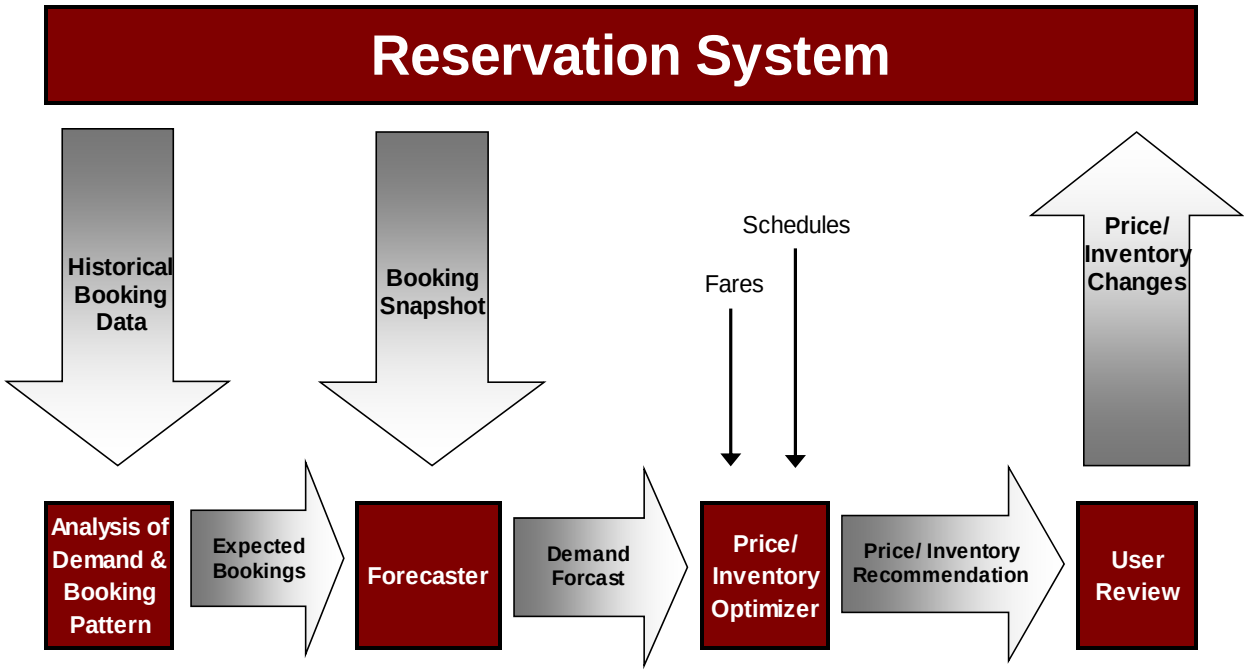


Source: Tretheway and Oum (1992)

Airline pricing in a nutshell ("revenue management")

InterVISTAS

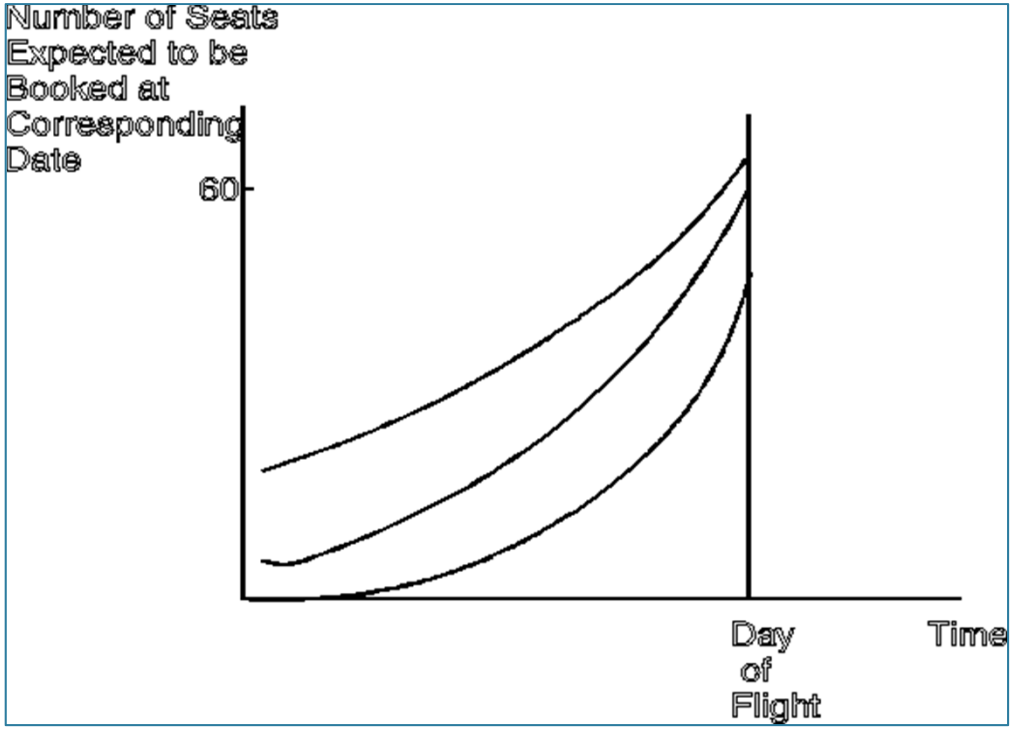
The goal of revenue management is to optimize revenue on each flight by balancing capacity against demand. Revenue management systems use econometric forecasting techniques and advance booking information to optimize inventory allocation against evolving consumer demand.



Threshold curves

- **Threshold curves are defined around the normal booking curve to create a range which an airline will tolerate.**

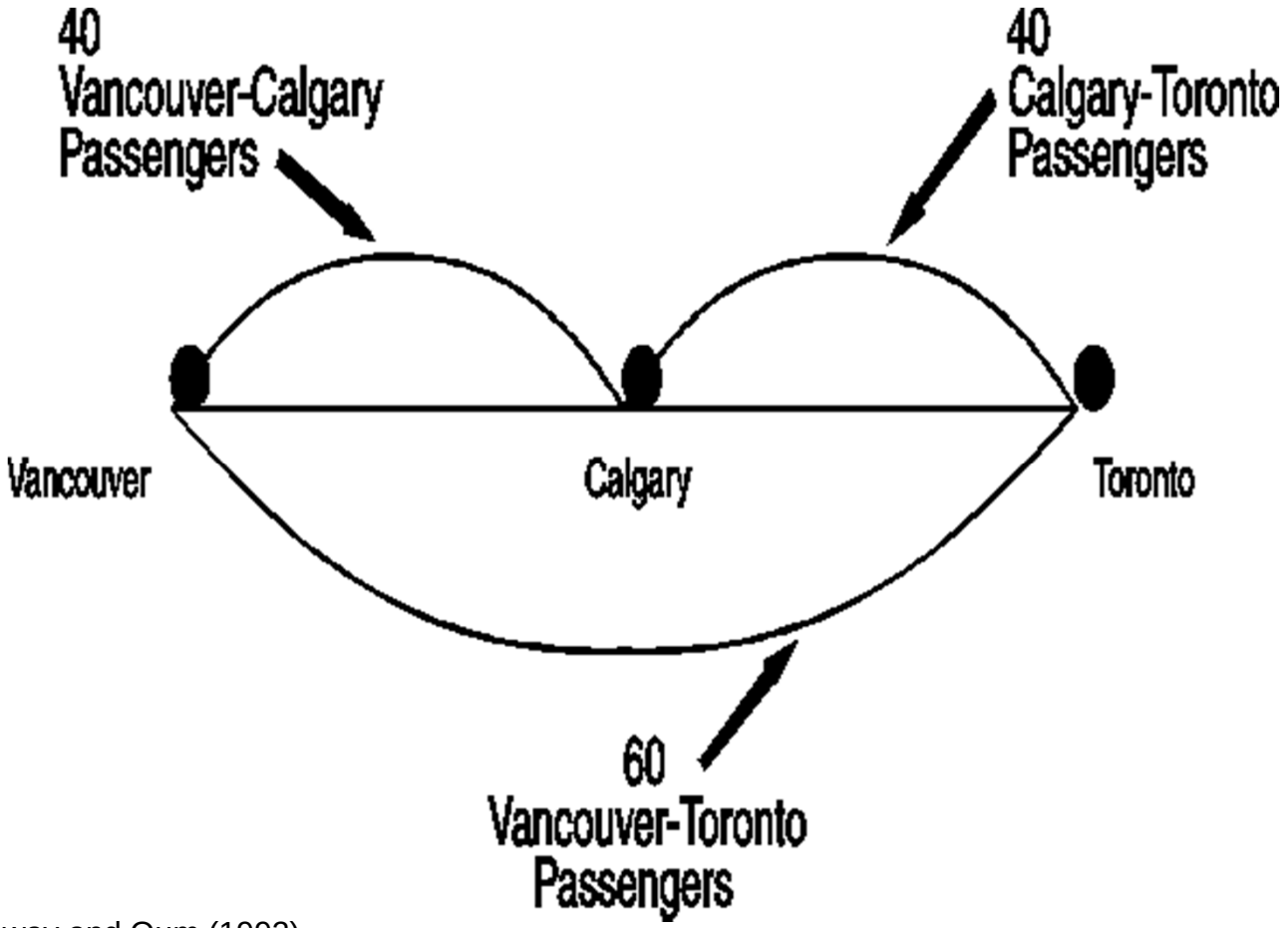
- If actual bookings fall outside the tolerable range:
  - An exception report is generated
  - Automatic correction is made



Source: Tretheway and Oum (1992)

Other related issues

Assignment of seat on multi-segment routes



Source: Tretheway and Oum (1992)

System-wide impacts

- **E.g. carrier operates routes from Denver to:**
  - Seattle
  - Portland
  - Dallas
- **If discount seats sold on Seattle-Dallas route**
  - this reduces # full fare seats available for Portland-Dallas
  - result: Portland-Denver flight may be empty and competitor gets full fare traffic (on Portland-Dallas)

Network Effects

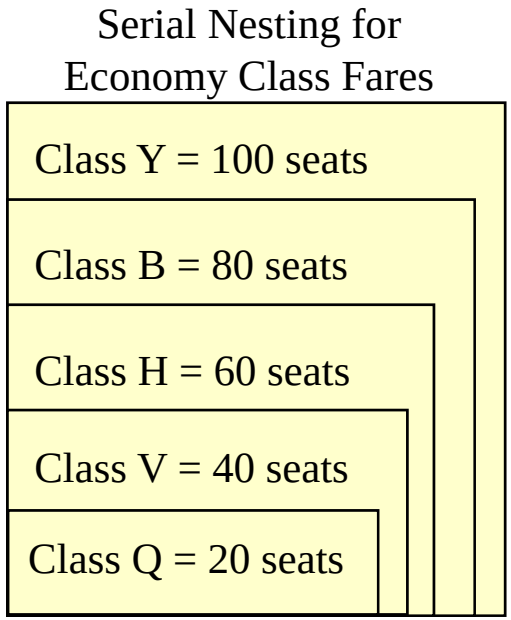
- **Maximize revenue over each leg of a connecting flight**
  - Have seats available for both the high-revenue long-haul passengers and high-revenue short-haul passengers
- **New techniques are allowing for origin-destination optimization**
  - Not used by the majority of airlines as of yet

Source: Belobaba (2013)

Revenue management – why all the variation in prices?

InterVISTAS

Airlines use different booking class codes to control the amount of seats sold at each fare level. Booking class codes vary by airline. Carriers adjust the allocation of seats in each class based on changes in demand.



Economy Class Fare Type	Booking Class Code	Fare Level
Unrestricted economy fares	Y	1,000
Business discount	B	900
Advanced Purchase Excursion (APEX)	H	700
Discount	V	600
Deep discount	Q	450

Airline fare structure

Fare Code	Price ($)	Advance Purchase	Saturday Night Min. Stay	Change Fee	Non-Refundable
Y	800	-	-	-	-
B	400	7 day	Yes	-	-
M	300	14 day	Yes	Yes	-
Q	200	21 day	Yes	Yes	Yes

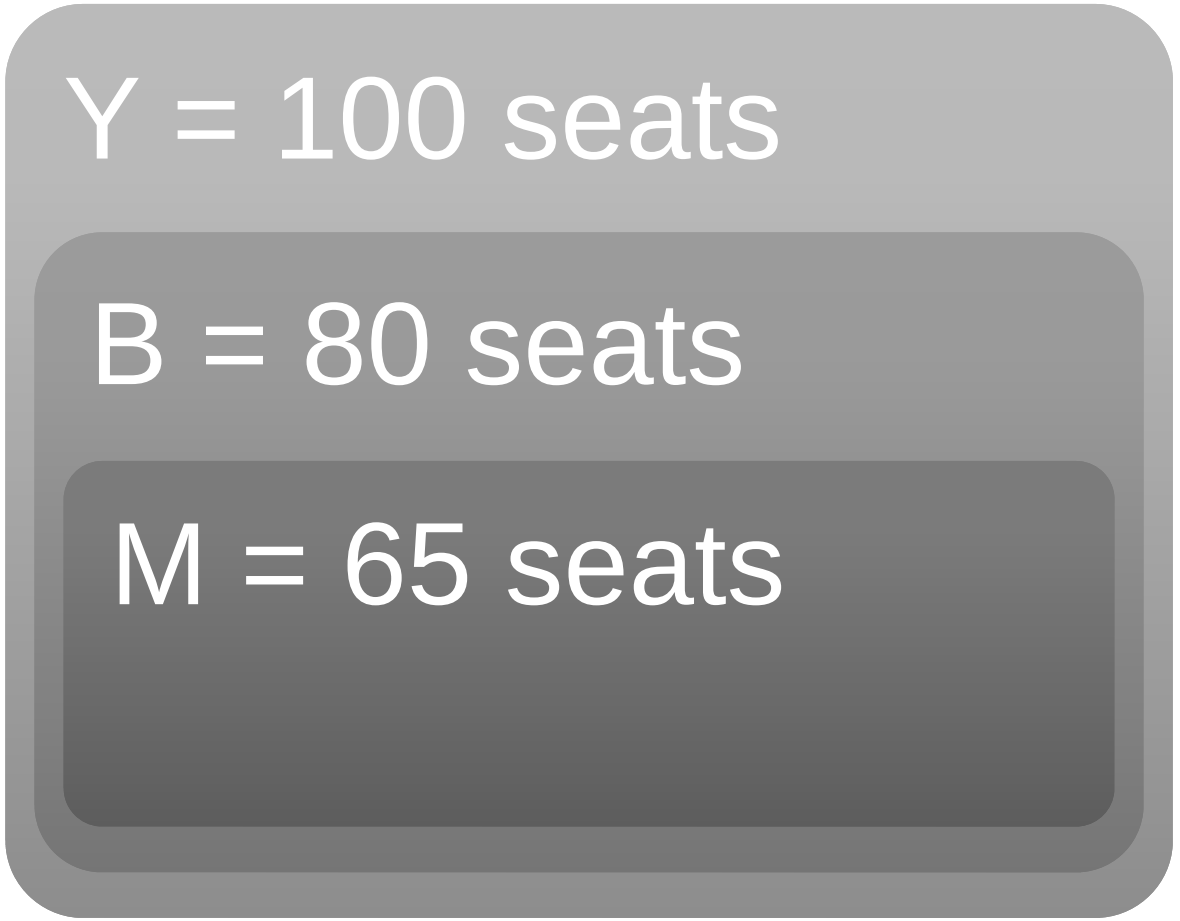
Discount fares and nesting

- **More than one discount class can be offered**
- **Nesting multiple fare-classes:**
  - Nest Y: full economy fare
    - protected seats available only to full fare
  - Nest B: Nest Y + discount class 1
    - Nest B seats available
      to both full fare & discount class 1 customers

Discount fares and nesting

- **Nest M: Nest B + discount class 2**
  - seats available to any traveller
  - allow higher fare customers to get access to any available seats

Nesting



Seat buckets

- **Airlines group fare classes into buckets to facilitate the booking process.**
- **Different fare classes may be included in one bucket, as long as they are within a certain price range.**
- **Airlines offer different buckets of seats:**
  - buckets with lowest fares have most restrictions
  - buckets with highest fares have least restrictions
  - less than 10% of tickets are full fare but account for higher share of revenue

Seat Buckets – cont.

- Similar fare classes grouped together (to simplify task for computers
- Any fare class within a bucket has equal access to available seats in the nest
- A bucket is sometimes referred to as a virtual fare class
- The procedure of making “buckets” is called “virtual nesting”

Buckets

Fare Class	YVR-YWG	YVR-YYC	YYC-YWG
Y	$800	$400	$400
Q	$425	$250	$250
W	$300	$190	$190

bucket 1 ($800): Y (yvr-ywg)

bucket 2 ($400-425): Q (yvr-ywg), Y (yvr-yyc), Y (yyc-ywg)

bucket 3 ($250-300): W (yvr-ywg), Q (yvr-yyc), Q (yyc-ywg)

bucket 4 ($190): W (yvr-yyc), W (yyc-ywg)

Revenue management risks

- **Risk 1: Cancellations or no-shows**
  - Strategy: overbooking
- **Risk 2: “spill” of high-yield passengers due to too many discount seats**
  - Strategy: careful forecasting of demand for high-fare passengers

Revenue management risks - cont.

- **Risk 3: loss of high-yield long haul pax on a connecting flight due to high demand on short haul segments**
  - Strategy: traffic flow control
- **Risk 4: loss of high-yield traffic due to group travel bookings**
  - Strategy: balance between uncertain high-yield traffic and guaranteed low-yield traffic

InterVISTAS
AVIATION TRANSPORTATION TOURISM

TURKISH AVIATION ACADEMY

İTÜ

History of Discount Fares



History of discount airfares

- **United Airlines introduced discount fares in 1940**
  - San Francisco-Los Angeles
  - B247, 10-passegger aircraft
  - One-way fare of $13.90
- **Charter airlines offered a minimum service at discount fares**
  - Competition to scheduled airlines
- **Intrastate airlines offered discounts**
  - 1950s – Pacific Southwest Airlines (PSA), California
  - 1970s – Southwest Airlines, Texas

Super Saver Fares

- **Introduced by American Airlines**
  - On April 25, 1977
- **Basic concept:**
  - 30% of seats on each flight
    - were sold at a discount fare

Super Saver Fares

- **Challenges:**
  - too many discounts could “crowd out” high fare passengers who book last minute
  - too few discount fares could result in empty seats (21-day advance purchase requirement)
  - each flight had different demand characteristics
- **Other airlines followed (Delta, KLM, BA, Aer Lingus)**

InterVISTAS
AVIATION TRANSPORTATION TOURISM

TURKISH AVIATION ACADEMY

İTÜ

The Merchandising Approach



Unbundling/Rebundling

- **Some airlines are moving back to rebundling "fare families"**
  - Each bundle has a different set of restrictions and multiple prices
  - Allows customers more choice with pricing options
- **There is also a movement towards unbundling**
  - Charging a base fare with add-ons for a separate fee
    - Ancillary fees
    - Proving to be a major source of revenue for the industry
- **Ancillary fees are also used within the "fare families" bundles**

Source: Belobaba (2013)

Charging for Value

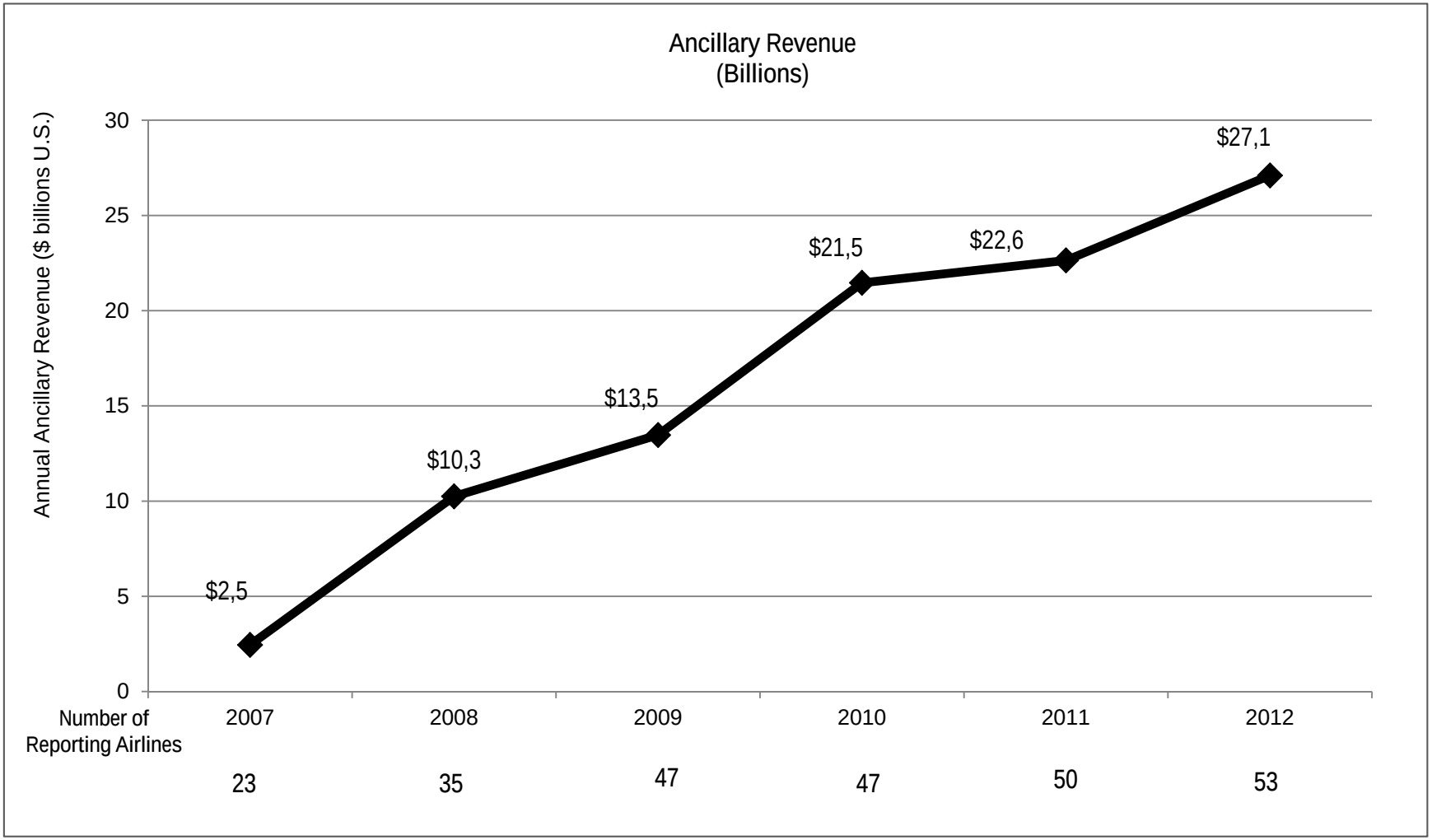
- **The merchandising approach**
  - Selling multiple products rather than one bundle
- **Ability to charge consumers for what they are willing to pay extra to have**
- **Separate base fares from add-ons**
  - Airlines view as giving choice
  - Some passengers view as charging for previously included services

Source: Belobaba (2013)

Ancillary Revenue Sources

- **A growing source of revenue**
  - The major source for some airlines
    - LCCs, ULCCs
- **Examples:**
  - Checked luggage
  - Seat choice
  - Food/beverage/entertainment on-board
  - Lounge access
  - Ticket purchase method (online vs. by phone)

Ancillary Revenues



Source: The Amadeus Yearbook of Ancillary Revenue by IdeaWorks Company, 2012 and IdeaWorksCompany Press Release June 2013.

Ancillary Revenues and Revenue Management

InterVISTAS

- **System upgrades are needed**
  - Current tools do not allow for ancillary revenues to be included in revenue maximizing
  - Methods are based on historical data, which is not readily available
  - Distribution of ancillary sales needs streamlining for optimal use

Source: Belobaba (2013)

InterVISTAS
AVIATION TRANSPORTATION TOURISM

TURKISH AVIATION ACADEMY

İTÜ



Thank You!

www.intervistas.com