

Analysis of Airline Passenger Satisfaction

Insights gathered from survey data

Project context

Aim:

To predict **passenger satisfaction** from survey data.

Why?

To drive confident decisions in the competitive, post-pandemic airline market:

- Identify key features driving passenger satisfaction and dissatisfaction.
- Recommend actions to boost satisfaction.

How?

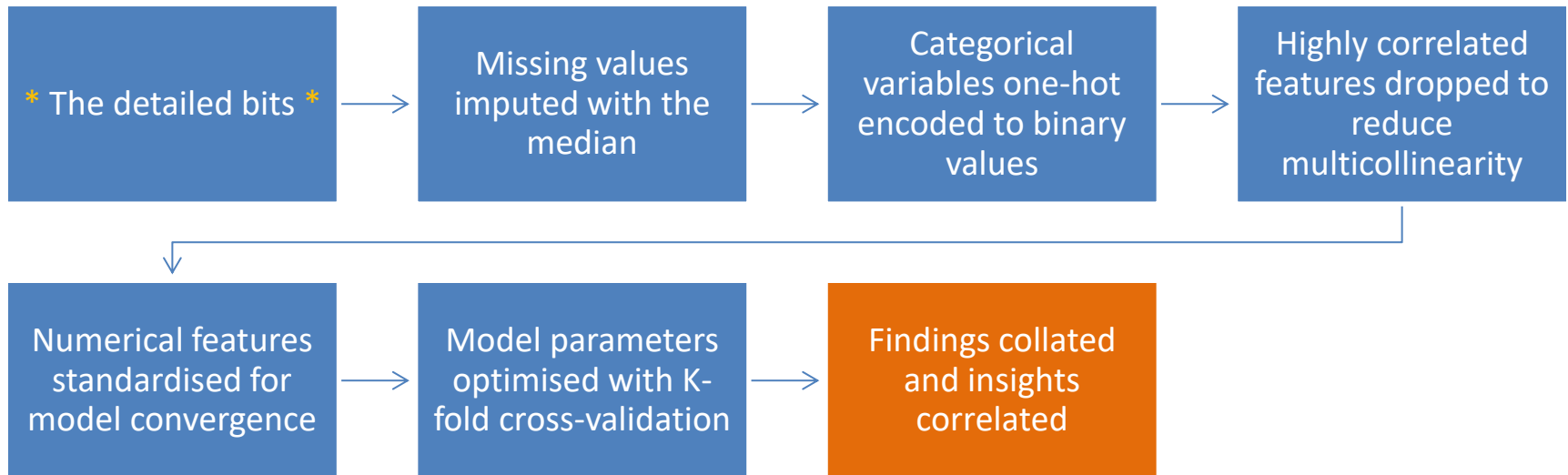
Survey data (80/20 split): 129,880 total records, 25 variables

- Customer demographics (**Age, Gender, Customer Type**)
- Travel details (**Type of Travel, Class, Flight Distance**)
- Service evaluations (**Inflight Wi-Fi, Entertainment, On-board service, Leg room, Baggage handling, Cleanliness**)
- Timeliness (**Departure Delay, Arrival Delay**)
- Satisfaction rating (**Target Variable**)



Methodology

Model	Accuracy	Purpose
Logistic Regression	≈ 87.2%	What drives satisfaction?
Decision Tree	≈ 95.1%	What do passengers value?
Artificial Neural Network (ANN)	≈ 96.3%	Automated, real-time prediction



Summary of insights

Big-picture:

- Leisure passengers and one-off customers start with a lower baseline of goodwill.
- Business and loyal passengers begin happy but flip quickly when promises are breached.
 - *Business* passengers demand **punctuality**.
 - *Economy* passengers forgive small delays if comfort and leg-room are strong.

The bottom line:

- **Seamless digital boarding** → poor UX drives 90% dissatisfaction.
- **Punctual flights** → land within 30 minutes of schedule.
- **Comfort gaps** → optimise Wi-Fi, check-in, and leg-room.

Key satisfaction drivers

- **Positive:**
Online Boarding, In-flight Wi-Fi, Check-in, On-board Service, Leg-room, Cleanliness
- **Negative:**
Leisure flyers, Non-loyal customers, Economy class, Arrival delays, Ease of online booking

Rank	Feature	Odds Ratio	Impact %	Take-away
1	Online boarding	2.29	+129%	A smoother online-boarding experience more than doubles the likelihood of satisfaction.
2	Inflight Wi-Fi service	1.71	+71%	Better connectivity has a strong positive payoff.
3	Check-in service	1.49	+49%	Friendly/helpful check-in staff matter.
4	On-board service	1.46	+46%	Cabin service, food and amenities drive satisfaction.
5	Leg-room	1.37	+37%	More spacious seating lifts satisfaction.
6	Cleanliness	1.34	+34%	A clean cabin strongly influences perception.

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Rank	Feature	Odds Ratio	Impact %	Take-away
1	Personal Travel vs Business	0.12	-88 %	Leisure flyers judge far more harshly than business travellers.
2	Non-loyal Customer vs Loyal	0.18	-82 %	Those without prior loyalty are quick to register dissatisfaction.
3	Economy Plus class (vs Business)	0.47	-53 %	Mid-tier seating falls short of expectations.
4	Economy class (vs Business)	0.51	-49 %	Standard economy remains a pain-point.
5	Arrival delay	0.70	-30 %	Every 38 minutes of delays reduce satisfaction by 30%
6	Ease of online booking	0.84	-16 %	Clunky booking UX hinders satisfaction.

Recommended actions

1. Streamline Digital Boarding
2. Set strict punctuality standards
3. Improve economy comfort, Wi-Fi, and check-in service

Insight	Explanation	Remedy
Fix digital boarding first.	One bad experience is a deal-breaker. Customers who rated boarding less than 3.5 are 90% likely to be dissatisfied .	<ul style="list-style-type: none"> • Audit app/website flows. • Deploy fast-lane kiosks.
A 30-min arrival delay flips happy business travellers.	In Business class, arrival delays over 30 minutes flip 83% satisfaction to dissatisfied.	<ul style="list-style-type: none"> • Make on-time arrival a KPI for premium routes. • Offer lounge vouchers when SLA is missed.
Economy passengers value leg-room almost as much as punctuality.	Comfort is a deal-breaker. Even without delays, tight seating leads to 75% dissatisfaction among economy passengers.	<ul style="list-style-type: none"> • Explore slim/staggered seating. • Upsell 'stretch' rows.
Check-in service, leg room and Wi-Fi matter	Improvement in any area boosts satisfaction odds by ~30%.	<ul style="list-style-type: none"> • Refine crew training. • Invest in higher-bandwidth satellite.

Next steps

