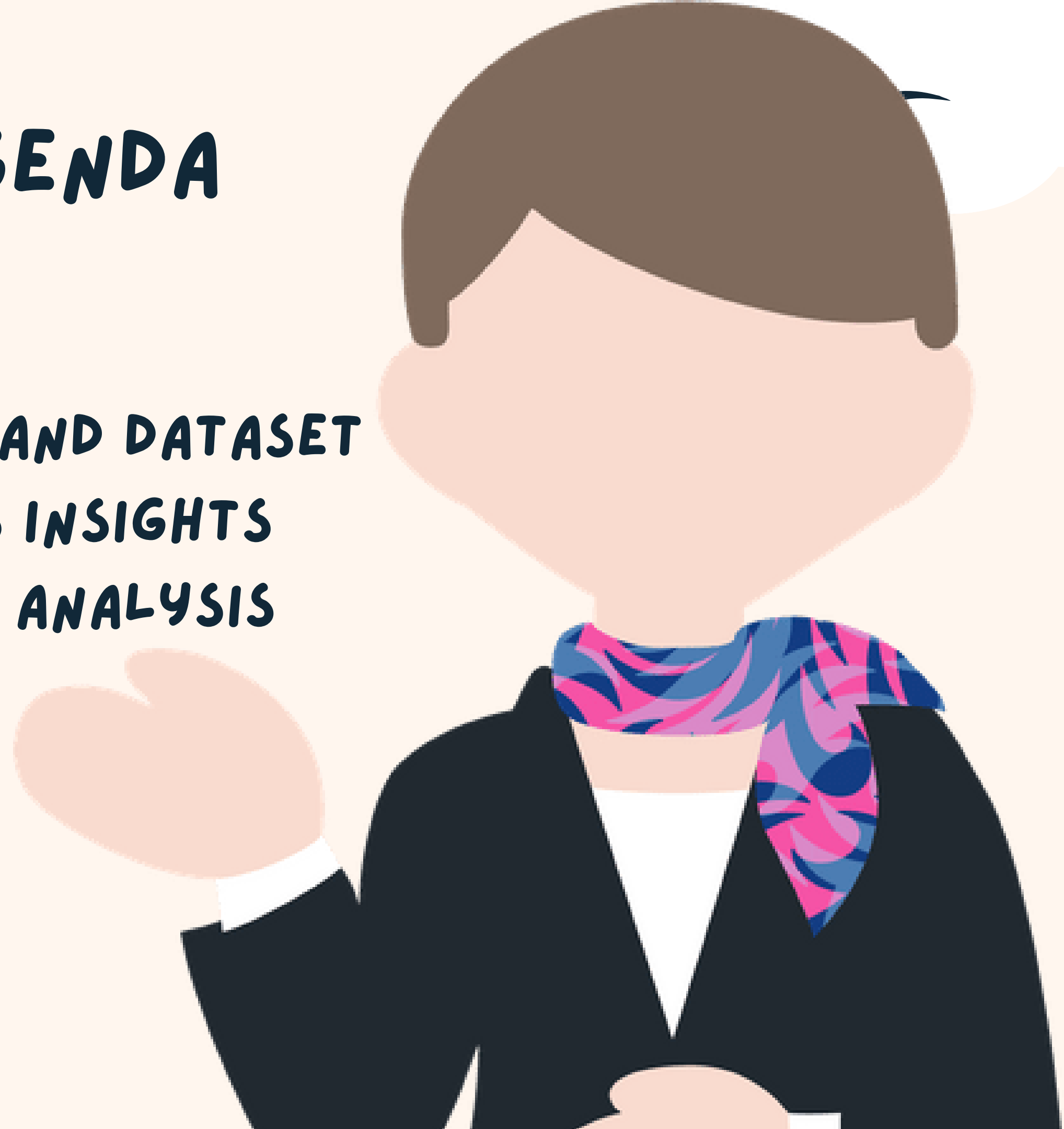# PREDICTING HAPPINESS AND ELEVATING BUSINESS CLASS JOURNEYS

Presented by: Florian and Bartek

AGENDA

1. Overview of Idea and Dataset
2. Business Analysis Insights
3. Machine Learning Analysis

THE RELEVANCE OF BUSINESS TRAVELLERS

Business travellers make up **12% of passengers**

but account for **75% of profits** by PwC.

CREATING VALUE FOR ....

Name: **Paris,** Age: **39,** Gender: **Female,**
Type: **Frequent business flyer.**

- Active social media use

- Values luxury

- Fly business class for private & business reasons

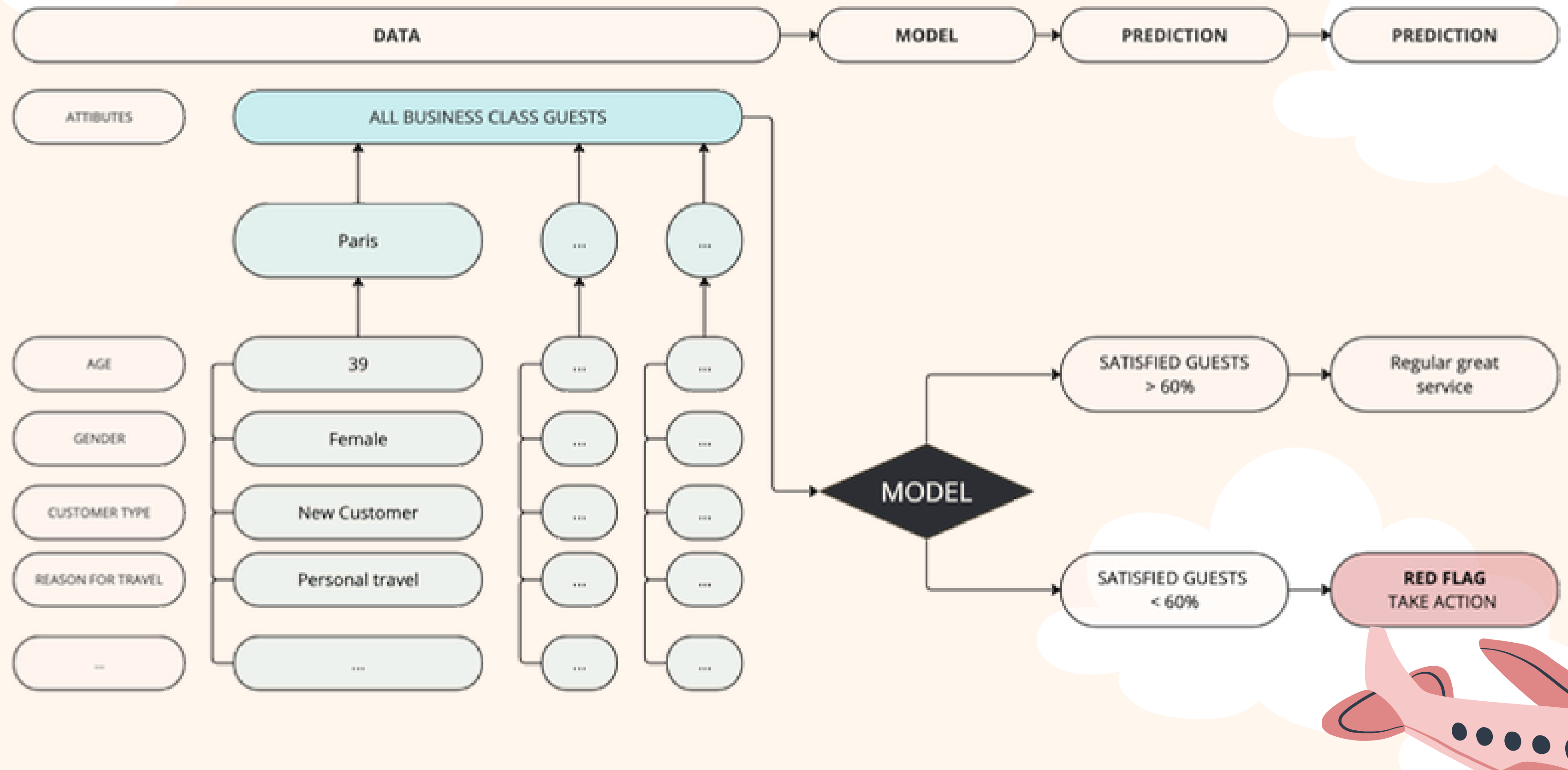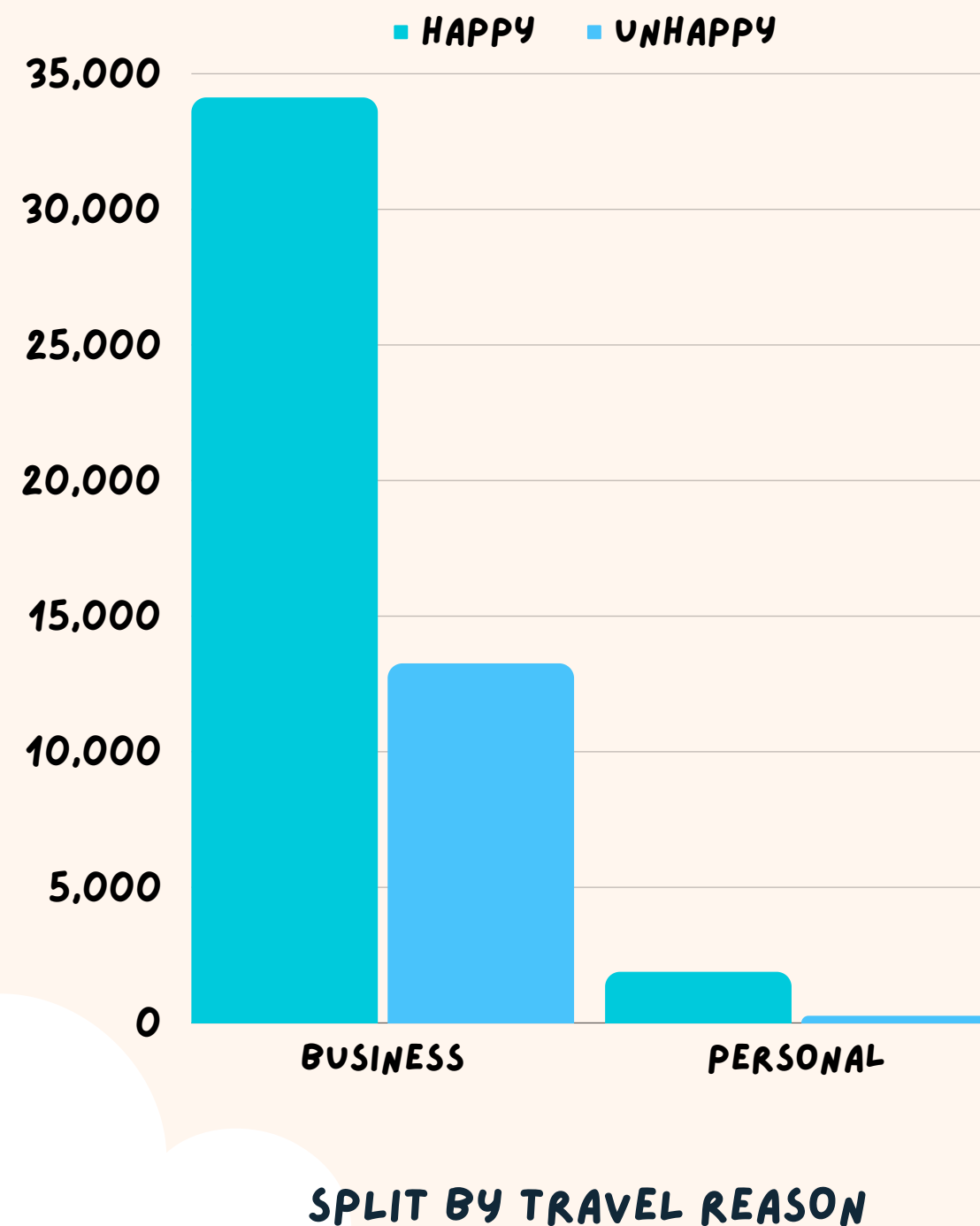- Expects seamless travel

PARIS

OUR HYPOTHESIS

By **utilizing predictive analytics**, we aim to identify potential dissatisfaction among passengers, enabling proactive measures **to enhance their in-flight experience and ensure overall satisfaction and customer retention**.
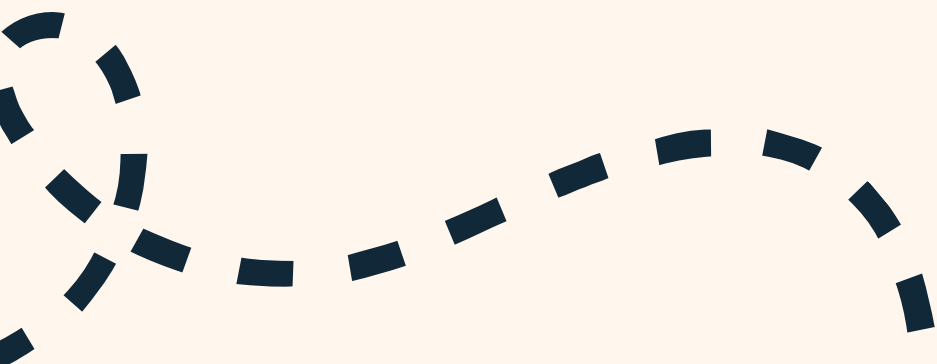
MAPPING PARIS' JOURNEY: DATA COLLECTION TO HAPPINESS

BUSINESS CLASS DISAPPOINTMENT LIKELY FOR PERSONAL TRAVELERS

■ HAPPY   ■ UNHAPPY

35,000
30,000
25,000
20,000
15,000
10,000
5,000
0

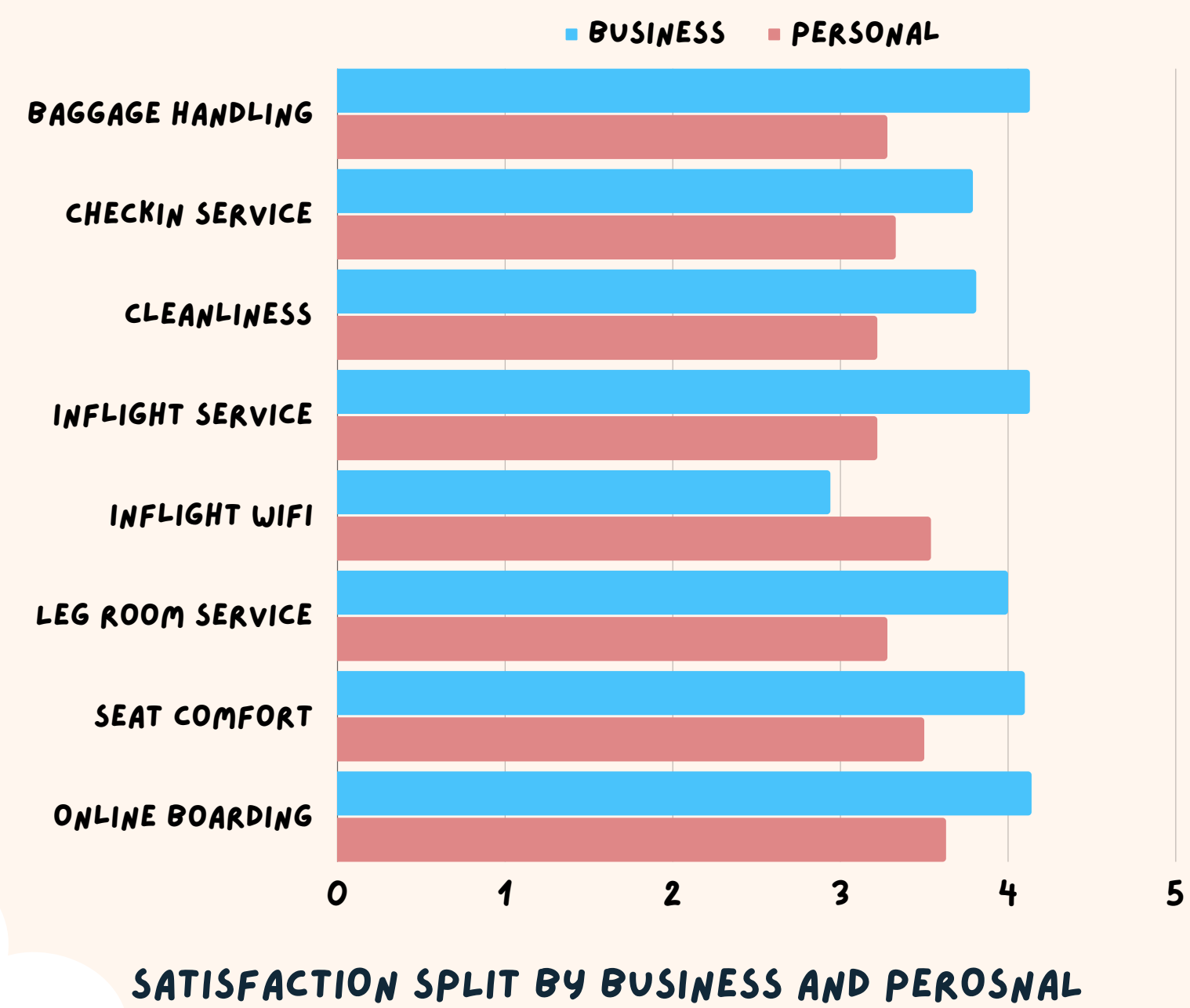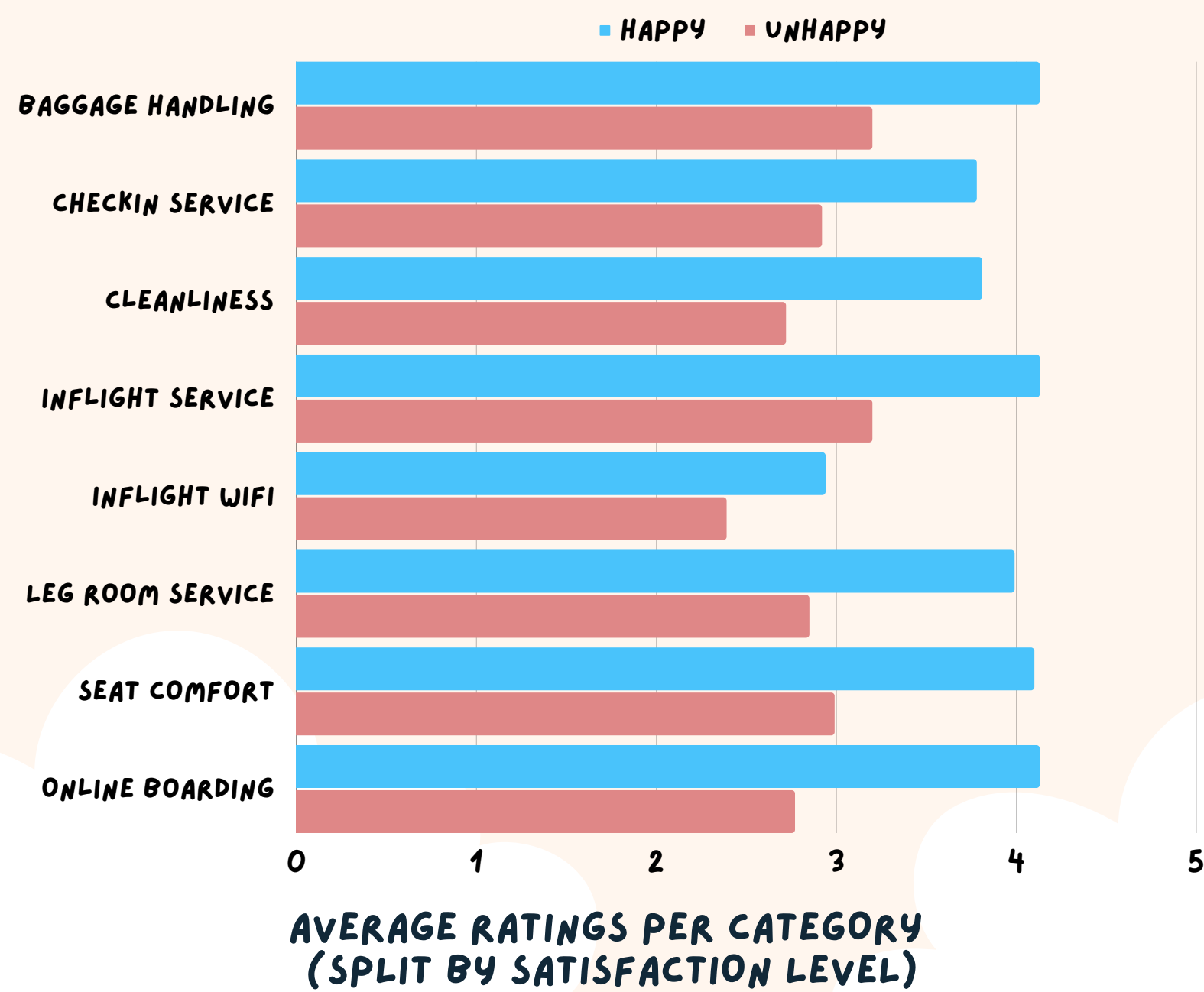BUSINESS   PERSONAL

SPLIT BY TRAVEL REASON

Satisfaction levels average at 69%, driven primarily by **business travelers at 72% satisfaction.**

Conversely, only **12% of private travellers express satisfaction** with their business class experience.

SIMILAR INSIGHTS ON CATEGORY LEVEL

Satisfaction outperformance
dissatisfaction in every category, but...

... business travellers on average less
critical, except for WiFi

■ HAPPY ■ UNHAPPY

- BAGGAGE HANDLING
- CHECKIN SERVICE
- CLEANLINESS
- INFLIGHT SERVICE
- INFLIGHT WIFI
- LEG ROOM SERVICE
- SEAT COMFORT
- ONLINE BOARDING

0 1 2 3 4 5

AVERAGE RATINGS PER CATEGORY
(SPLIT BY SATISFACTION LEVEL)

■ BUSINESS ■ PERSONAL

- BAGGAGE HANDLING
- CHECKIN SERVICE
- CLEANLINESS
- INFLIGHT SERVICE
- INFLIGHT WIFI
- LEG ROOM SERVICE
- SEAT COMFORT
- ONLINE BOARDING

0 1 2 3 4 5

SATISFACTION SPLIT BY BUSINESS AND PEROSNAL

BRIEF INTRO TO LOGISTIC REGRESSION
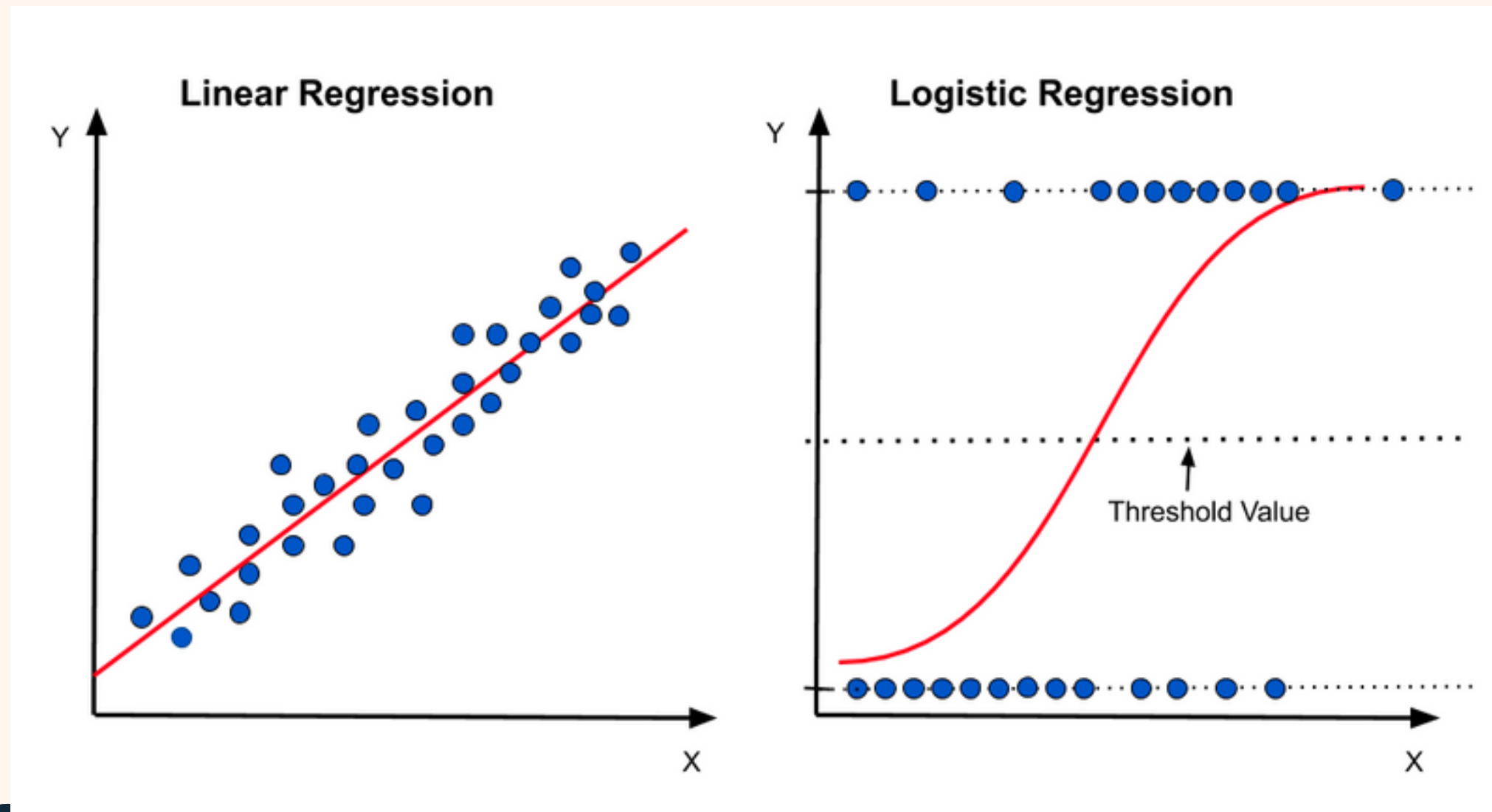
LINEAR VS. LOGISTIC REGRESSION

LOGISITC REGRESSION WHY? WHEN? HOW?

- Categorical Target Variable
- Output is not numerical but a class
- Imbalanced data needs to be re-sampled
- Intepretations models differ

MODEL 1: WE IDENTIFIED KEY PREDICTORS OF SATISFACTION.

FEATURE IMPORTANCE
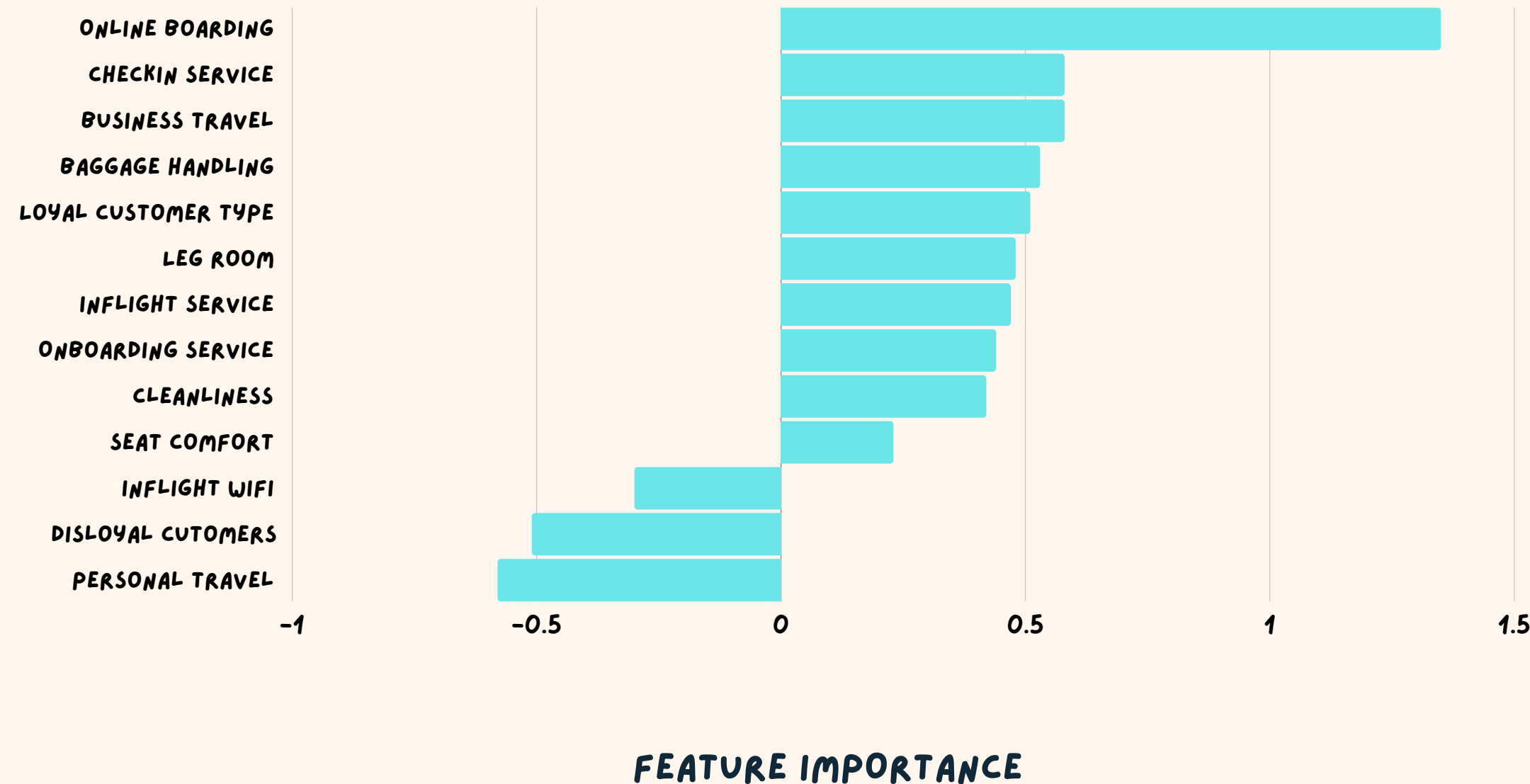
Online boarding experience emerges as the most influential feature, with a coefficient of 1.35, indicating a strong **positive association with satisfaction.**

In line with the BI analysis, the model confirms that passengers travelling for personal reasons are less likely to be satisfied, reflected by a coefficient of -0.59.
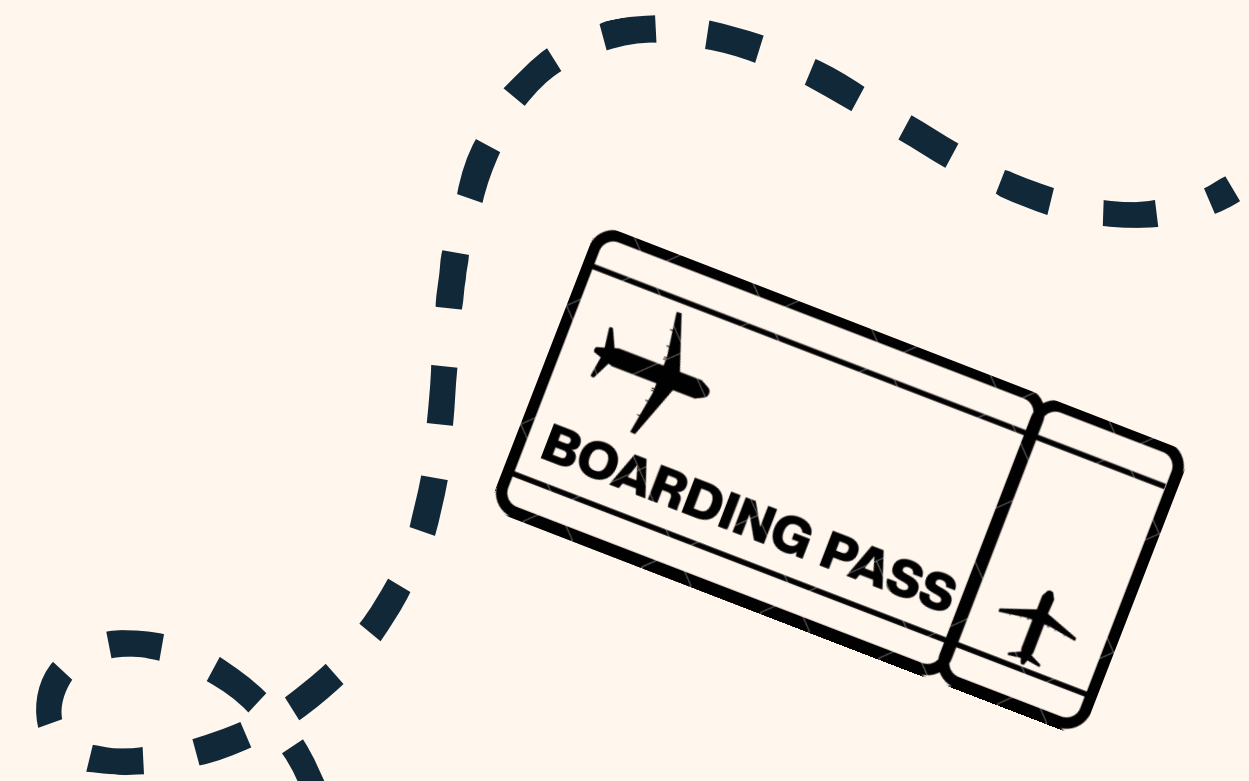
MODEL 2: FOR PRECISION, WE SELECTED ONLY THE RELEVANT FEATURES FOR OUR CASE

Predicted incorrectly as not satisfied, but in fact satisfied
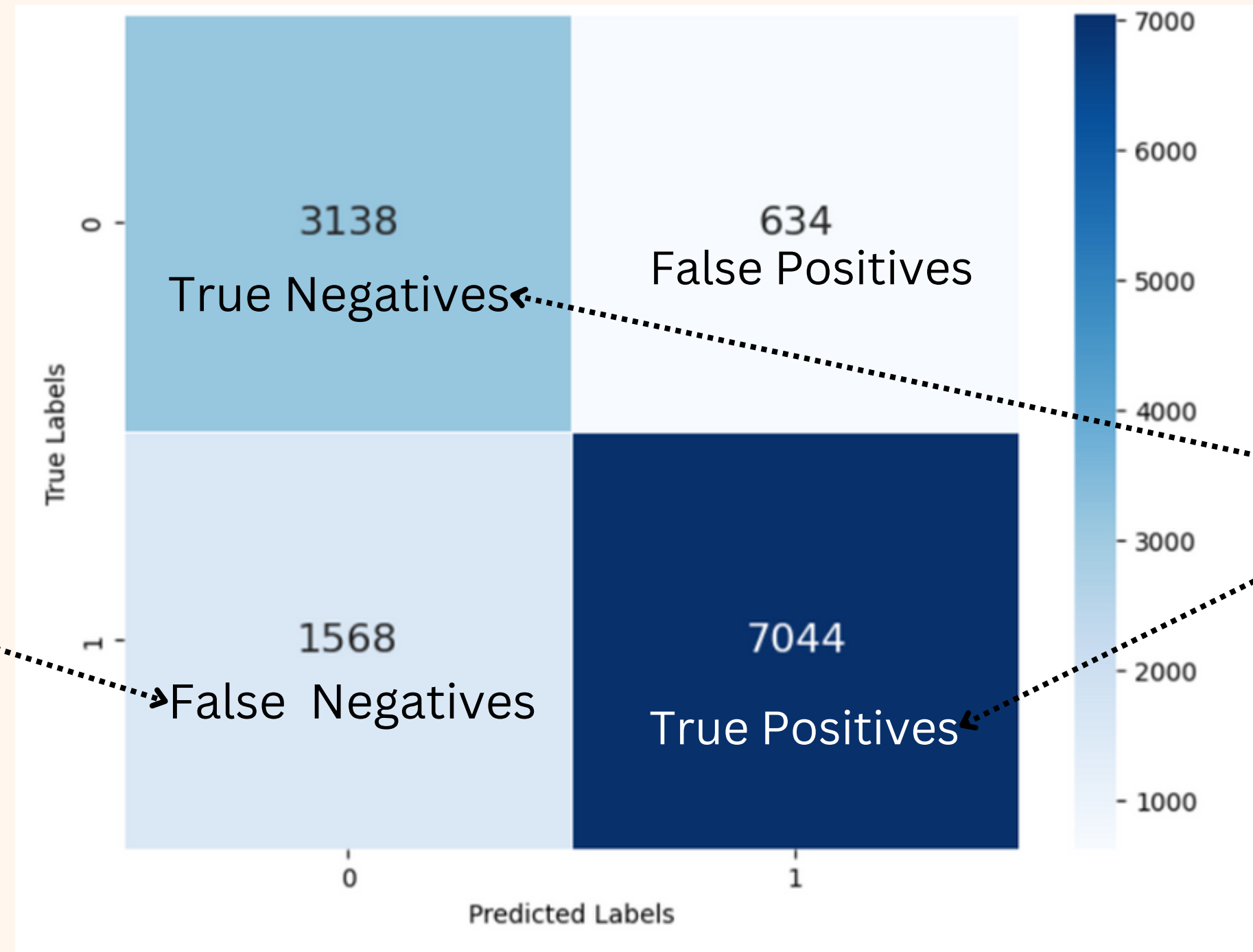
Predicted correctly as satisfied/not satisfied

	3138 True Negatives	634 False Positives
	1568 False Negatives	7044 True Positives

True Labels

Predicted Labels

CONFUSION MATRIX

MODEL 2: CLASSIFICATION REPORT

	Precision	Recall	F1-score	Support
Unsatisfied	0.67	0.83	0.74	3772
Satisfied	0.92	0.82	0.86	8612
Accuracy			0.82	12384
Macro avg.	0.79	0.82	0.80	12384
Weighted avg.	0.84	0.82	0.83	12384

EVALUATION METRICS

Precision: Measures the accuracy of the predictions per class

67% correct predictions
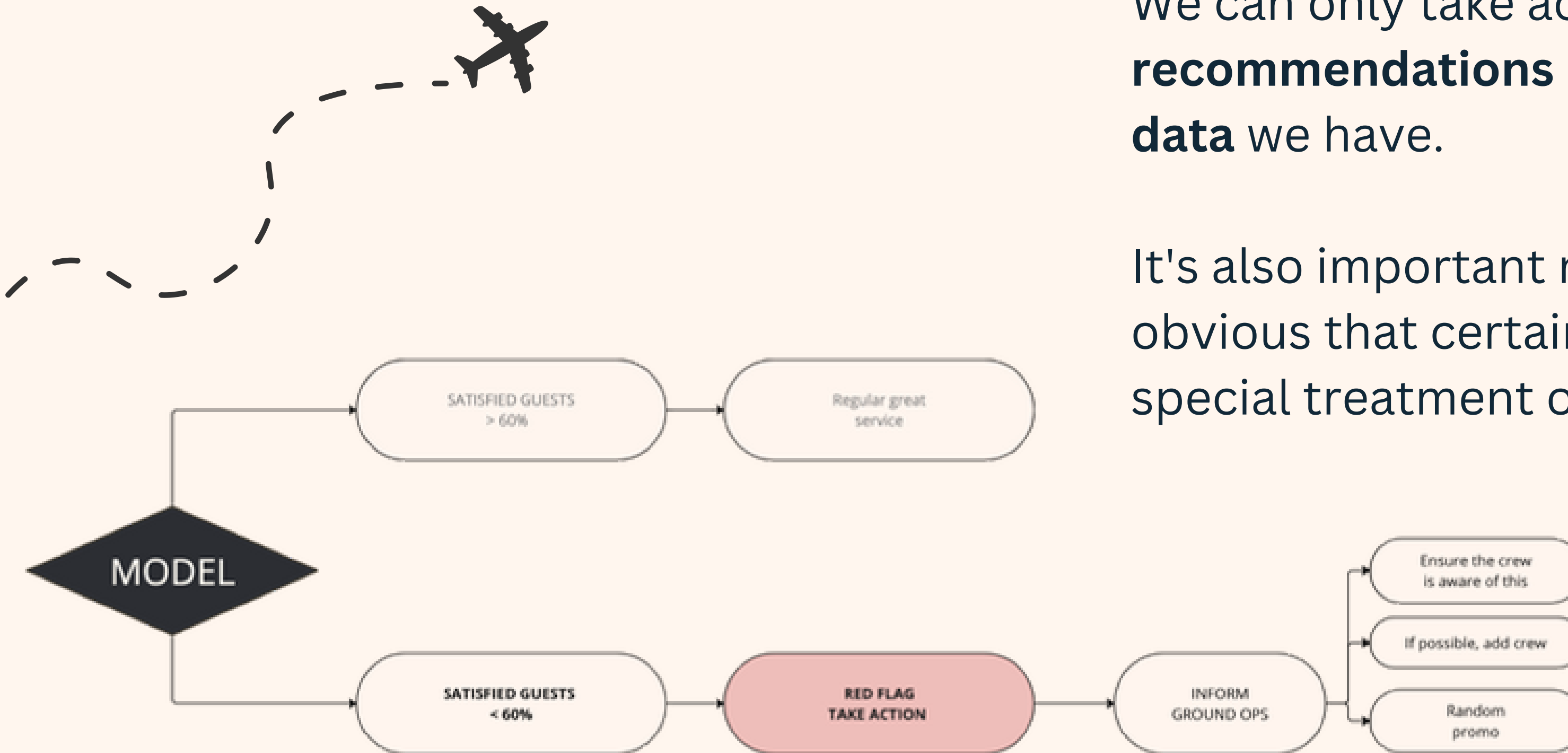92% correct predictions

Accuracy: the proportion of correctly classified instances out of the total instances

TAKING ACTION AND GENERATING RECOMMENDATIONS

We can only take action and give **recommendations based on the data** we have.

It's also important not to make it obvious that certain flights receive special treatment over others.

```
                    ┌─────────────────┐      ┌─────────────────┐
                    │ SATISFIED GUESTS │ ──→  │  Regular great  │
                    │     > 60%        │      │     service     │
                    └─────────────────┘      └─────────────────┘
       ◆
     MODEL
       ◆                                                              ┌──────────────────┐
                                                               ┌───→  │  Ensure the crew  │
                                                               │      │  is aware of this │
                                                               │      └──────────────────┘
                    ┌─────────────────┐   ┌────────────┐  ┌──────────┐  ┌──────────────────┐
                    │ SATISFIED GUESTS │→ │  RED FLAG  │→ │  INFORM  │→ │ If possible, add crew│
                    │     < 60%        │  │ TAKE ACTION│  │GROUND OPS│  └──────────────────┘
                    └─────────────────┘   └────────────┘  └──────────┘  ┌──────────────────┐
                                                               └───→  │     Random       │
                                                                      │     promo        │
                                                                      └──────────────────┘
```

miro

QUESTIONS?