Airline Analysis:

Our airline company, operating a diverse fleet of aircraft ranging from small business jets to medium-sized planes, has been facing multiple challenges in the current market environment. Stricter environmental regulations, rising fuel prices, higher flight taxes, labor market constraints, and increasing labor costs have all contributed to decreased profitability. Despite these pressures, our company is committed to enhancing the customer experience, optimizing operations, and identifying strategic opportunities to improve profitability.

This report focuses on analyzing the company's occupancy rate and its impact on overall profitability, with the goal of developing actionable recommendations to increase seat occupancy, improve pricing strategies, and enhance the customer experience. The ultimate objective is to mitigate external challenges and maximize the profitability per seat, ensuring the airline remains competitive in a rapidly changing market.

Challenges Facing the Airline Industry

1. **Stricter Environmental Regulations**
    - Airlines worldwide are under growing pressure to reduce their carbon footprint, leading to stricter regulations and compliance requirements.
    - Environmental laws are causing higher operating costs due to the need for investment in cleaner, more fuel-efficient technologies.
2. **Higher Flight Taxes**
    - Governments are increasing flight taxes to address environmental concerns and fund sustainability initiatives. This results in higher operating costs for airlines and can decrease demand, especially in price-sensitive markets.
3. **Tight Labor Market and Increased Labor Costs**
    - The aviation sector is facing a shortage of skilled labor, leading to higher wages and increased turnover rates.

- This scarcity of trained professionals has put additional strain on the airline's operational costs, further squeezing profit margins.

Objectives of the Analysis

To address the above challenges and ensure sustainable growth, the airline company aims to achieve the following objectives:

1. **Increase Occupancy Rate**
    - Focus on strategies that can increase the average occupancy rate of flights, thereby improving the revenue per seat and overall profitability.
2. **Improve Pricing Strategy**
    - Develop a dynamic pricing strategy that considers market conditions, customer preferences, and competitor pricing to maximize revenue and attract more customers.
3. **Enhance Customer Experience**
    - Create a seamless and positive travel experience that encourages repeat business, customer loyalty, and positive word-of-mouth.

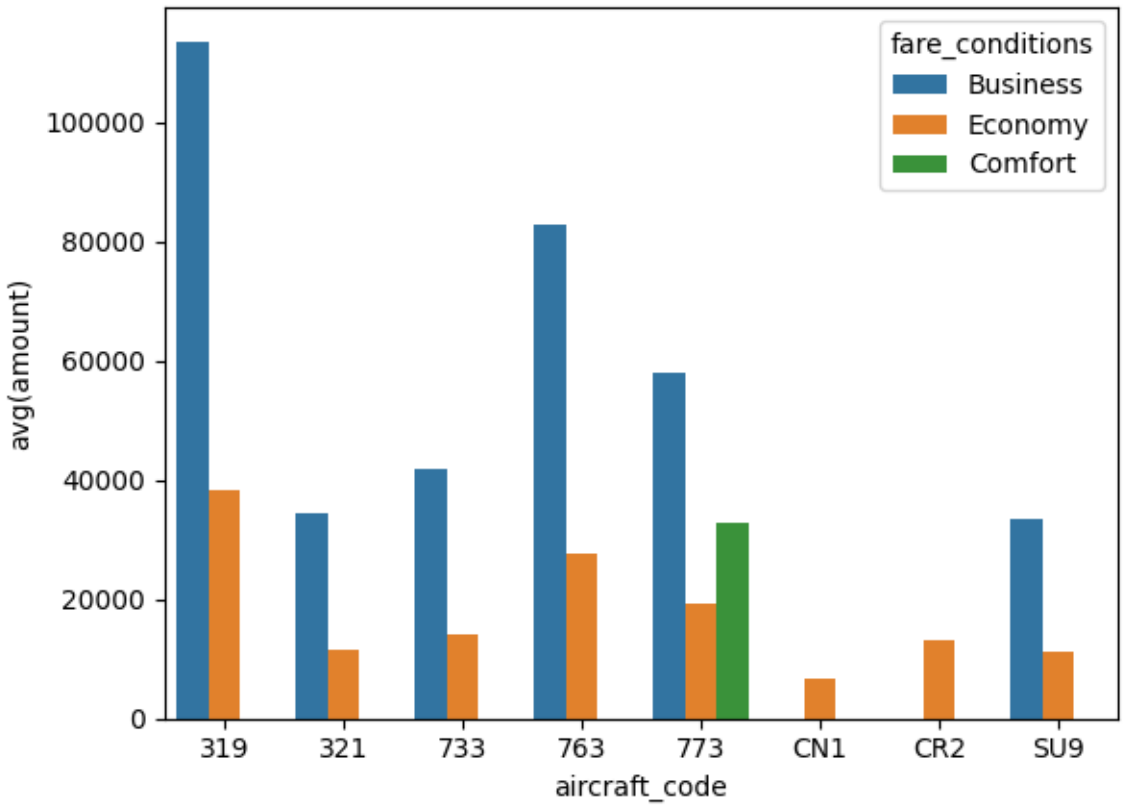
Findings from the Occupancy Rate and Revenue Analysis

1. Revenue Analysis per Aircraft

- **Aircraft Performance by Revenue**: The analysis revealed significant differences in revenue generation across different aircraft.
    - **SU9** emerged as the highest revenue-generating aircraft. Interestingly, both **business class** and **economy class** tickets on SU9 were priced lower than on other aircraft, which likely contributed to its higher volume of sales. The aircraft's lower pricing was an attractive factor for many customers, making it a popular choice.
    - **CN1**, on the other hand, generated the least revenue. This aircraft only offers economy class seating at lower price points, which,

while economical, seems to be less appealing to passengers, possibly due to poorer onboard conditions or fewer amenities.

	fare_conditions	aircraft_code	avg(amount)
0	Business	319	113550.557703
1	Economy	319	38311.402347
2	Business	321	34435.662664
3	Economy	321	11534.974764
4	Business	733	41865.626175
5	Economy	733	13985.152000
6	Business	763	82839.842866
7	Economy	763	27594.721829
8	Business	773	57779.909435
9	Comfort	773	32740.552889
10	Economy	773	19265.225693
11	Economy	CN1	6568.552345
12	Economy	CR2	13207.661102
13	Business	SU9	33487.849829
14	Economy	SU9	11220.183400



2. Average Occupancy Rate

- **Occupancy Rate Trends**: The average occupancy rate across the fleet was analyzed by comparing the number of booked seats to total available seats per aircraft.
    - Aircraft with higher occupancy rates, such as SU9, were more profitable, benefiting from higher demand and better pricing strategies.
    - Lower occupancy rates, particularly on aircraft like CN1, reflect underutilized capacity, which directly impacts overall profitability.

	aircraft_code	booked_seats	num_seats_count	occupancy_rate
0	319	53.583181	116	0.461924
1	321	88.809231	170	0.522407
2	733	80.255462	130	0.617350
3	763	113.937294	222	0.513231
4	773	264.925806	402	0.659019
5	CN1	6.004431	12	0.500369
6	CR2	21.482847	50	0.429657
7	SU9	56.812113	97	0.585692

- **Occupancy Rate Improvement Potential**: A 10% increase in occupancy rates across all aircraft could have a significant impact on the airline's total revenue. By focusing on increasing occupancy, especially on underperforming aircraft, the airline could maximize its revenue per flight.

	aircraft_code	booked_seats	num_seats_count	occupancy_rate	Inc occupany rate
0	319	53.583181	116	0.461924	0.508116
1	321	88.809231	170	0.522407	0.574648
2	733	80.255462	130	0.617350	0.679085
3	763	113.937294	222	0.513231	0.564554
4	773	264.925806	402	0.659019	0.724921
5	CN1	6.004431	12	0.500369	0.550406
6	CR2	21.482847	50	0.429657	0.472623
7	SU9	56.812113	97	0.585692	0.644261

3. Revenue Impact of Increasing Occupancy Rates

- **Revenue Boost from Higher Occupancy**: When analyzing the potential impact of a 10% increase in occupancy across the entire fleet, it was found that total revenue would gradually increase. This is particularly relevant for aircraft with lower occupancy, where the incremental revenue from filling those empty seats could result in a noticeable boost to the airline's financial performance.

For example:

  - If the average occupancy rate for all aircraft is increased by 10%, total revenue would grow due to a higher number of paid seats, leading to reduced operational costs per seat (e.g., fuel, crew, maintenance).

aircraft_code	booked_seats	num_seats_count	occupancy_rate	Inc occupany rate	Inc_occupany_rate	Inc total annual turnover	Inc_total_annual_turnove
319	53.58318098720292	116	0.46192397402761143	0.5081163714303726	0.5081163714303726	2976779410.0	2976779410.
321	88.80923076923077	170	0.5224072398190045	0.574647963800905	0.574647963800905	1801980510.0	1801980510.
733	80.25546218487395	130	0.617349709114415	0.6790846800258565	0.6790846800258565	1569207310.0000002	1569207310.000000
763	113.93729372937294	222	0.5132310528350132	0.5645541581185146	0.5645541581185146	4808404810.0	4808404810.
773	264.9258064516129	402	0.659019419033863	0.7249213609372492	0.7249213609372492	3774326050.0	3774326050.
CN1	6.004431314623338	12	0.5003692762186115	0.5504062038404727	0.5504062038404727	106011180.00000001	106011180.0000000
CR2	21.48284690220174	50	0.42965693804403476	0.4726226318484382	0.4726226318484382	2181036550.0	2181036550.
SU9	56.81211267605634	97	0.5856918832583128	0.644261071584144	0.644261071584144	5625933169.999999	5625933169.99999

Conclusion

To summarize, analyzing revenue data—such as total revenue per year, average revenue per ticket, and average occupancy per aircraft—is critical for airlines seeking to maximize profitability. By assessing these key performance indicators, airlines can identify areas for improvement and adjust their pricing and route strategies accordingly. One significant factor in enhancing profitability is improving the occupancy rate, as this allows the airline to maximize revenue while minimizing costs associated with vacant seats.

The airline should reconsider its pricing strategy for each aircraft, as both very low and very high ticket prices are leading to suboptimal sales. A balanced, reasonable price—reflecting the condition and amenities of each aircraft—will help increase ticket purchases and improve overall revenue.

However, boosting occupancy rates should not come at the expense of customer satisfaction or safety. It is essential for airlines to maintain a balance between the need for higher profits and the importance of providing high-quality service and ensuring passenger safety.

By adopting a data-driven approach to revenue analysis and optimization, the airline can achieve long-term success in a highly competitive market, ensuring both profitability and customer loyalty.