Strategic Airline Market Analysis: Pricing, Volume, and Dominance using SQL

```
SELECT COUNT(*) FROM flights;
```

	count bigint
1	300153

	index integer	airline character varying (50)	flight character varying (20)	source_city character varying (50)	departure_time character varying (50)	stops character varying (20)	arrival_time character varying (50)	destination_city character varying (50)	class character varying (20)	duration numeric (5,2)	days_left integer	price integer
1	0	SpiceJet	SG-8709	Delhi	Evening	zero	Night	Mumbai	Economy	2.17	1	5953
2	1	SpiceJet	SG-8157	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.33	1	5953
3	2	AirAsia	I5-764	Delhi	Early_Morning	zero	Early_Morning	Mumbai	Economy	2.17	1	5956
4	3	Vistara	UK-995	Delhi	Morning	zero	Afternoon	Mumbai	Economy	2.25	1	5955
5	4	Vistara	UK-963	Delhi	Morning	zero	Morning	Mumbai	Economy	2.33	1	5955
6	5	Vistara	UK-945	Delhi	Morning	zero	Afternoon	Mumbai	Economy	2.33	1	5955
7	6	Vistara	UK-927	Delhi	Morning	zero	Morning	Mumbai	Economy	2.08	1	6060
8	7	Vistara	UK-951	Delhi	Afternoon	zero	Evening	Mumbai	Economy	2.17	1	6060
9	8	GO_FIRST	G8-334	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.17	1	5954
10	9	GO_FIRST	G8-336	Delhi	Afternoon	zero	Evening	Mumbai	Economy	2.25	1	5954
11	10	GO_FIRST	G8-392	Delhi	Afternoon	zero	Evening	Mumbai	Economy	2.25	1	5954
12	11	GO_FIRST	G8-338	Delhi	Morning	zero	Afternoon	Mumbai	Economy	2.33	1	5954
13	12	Indigo	6E-5001	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.17	1	5955
14	13	Indigo	6E-6202	Delhi	Morning	zero	Afternoon	Mumbai	Economy	2.17	1	5955
15	14	Indigo	6E-549	Delhi	Afternoon	zero	Evening	Mumbai	Economy	2.25	1	5955
16	15	Indigo	6E-6278	Delhi	Morning	zero	Morning	Mumbai	Economy	2.33	1	5955
17	16	Air_India	AI-887	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.08	1	5955
18	17	Air_India	AI-665	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.17	1	5955
19	18	AirAsia	I5-747	Delhi	Evening	one	Early_Morning	Mumbai	Economy	12.25	1	5949
20	19	AirAsia	I5-747	Delhi	Evening	one	Morning	Mumbai	Economy	16.33	1	5949
21	20	GO_FIRST	G8-266	Delhi	Early_Morning	one	Evening	Mumbai	Economy	11.75	1	5954
22	21	GO_FIRST	G8-101	Delhi	Early_Morning	one	Night	Mumbai	Economy	14.50	1	5954
23	22	GO_FIRST	G8-103	Delhi	Evening	one	Morning	Mumbai	Economy	15.67	1	5954
24	23	Air_India	AI-441	Delhi	Evening	one	Night	Mumbai	Economy	3.75	1	5955
25	24	Indigo	6E-5328	Delhi	Morning	zero	Morning	Mumbai	Economy	2.50	1	6165
26	25	Vistara	UK-933	Delhi	Afternoon	zero	Evening	Mumbai	Economy	2.17	1	6690
27	26	Indigo	6E-2046	Delhi	Evening	zero	Evening	Mumbai	Economy	2.17	1	6585
28	27	AirAsia	I5-744	Delhi	Morning	one	Afternoon	Mumbai	Economy	5.83	1	8869
29	28	SpiceJet	SG-8169	Delhi	Evening	zero	Night	Mumbai	Economy	2.33	1	10260
30	29	Indigo	6E-5041	Delhi	Evening	zero	Night	Mumbai	Economy	2.17	1	10470

Which Airline has the Highest Average Ticket Price

```sql
SELECT airline, ROUND(AVG(price), 2) AS avg_ticket_price FROM flights
GROUP BY airline
ORDER BY avg_ticket_price DESC
LIMIT 1;
```

	airline character varying (50)	avg_ticket_price numeric
1	Vistara	30396.54

- Vistara has the Highest Average Ticket Price.
- But Vistara's approach follows the **"value-based pricing"** model rather than cost-plus pricing, demonstrating that travelers are increasingly valuing quality and comfort over just lowest price.
- This finding confirms that successful airline business models don't always require being the cheapest.

Top 5 Cities having most of the Flights

```sql
SELECT city, COUNT(*) AS total_flights
FROM (
    SELECT source_city AS city FROM flights
    UNION ALL
    SELECT destination_city AS city FROM flights
)
GROUP BY city
ORDER BY total_flights DESC
LIMIT 5;
```

	city character varying (50)	total_flights bigint
1	Mumbai	119993
2	Delhi	118703
3	Bangalore	103129
4	Kolkata	95881
5	Hyderabad	83532

- The pattern shows air travel mirrors economic geography where business and commerce thrive, flight demand follows. These cities aren't just population centers but economic engines driving both business and leisure travel.
- Airlines strategically concentrate capacity here because these routes offer high-yield business travelers, corporate contracts, and connecting international passengers.

Total Revenue by each Airline

```sql
SELECT airline,
    CASE
        WHEN SUM(price) >= 1000000000
            THEN ROUND(SUM(price) / 1000000000.0, 2)::text || 'B'
        WHEN SUM(price) >= 1000000
            THEN ROUND(SUM(price) / 1000000.0, 2)::text || 'M'
        WHEN SUM(price) >= 1000
            THEN ROUND(SUM(price) / 1000.0, 2)::text || 'K'
        ELSE SUM(price)::text
    END AS total_revenue
FROM flights
GROUP BY airline
ORDER BY SUM(price) DESC;
```

	airline character varying (50)	total_revenue text
1	Vistara	3.89B
2	Air_India	1.90B
3	Indigo	229.58M
4	GO_FIRST	130.97M
5	AirAsia	65.86M
6	SpiceJet	55.68M

- Vistara is the clear revenue champion at **₹3.89B** they're winning with a premium strategy, charging significantly more per ticket for better service and comfort.
- Air India follows at **₹1.90B** also using a high-value model targeting business travelers and those willing to pay for full-service flights.
- All other airlines are in the millions (M) this shows a massive gap between the premium carriers and budget airlines. Indigo, SpiceJet, Go First, and AirAsia compete on volume and low prices, but can't match the revenue per flight of premium airlines.

Which are the Busiest Routes

```sql
WITH route_totals AS (
    SELECT source_city, destination_city,
        COUNT(*) AS total_route_flights
    FROM flights
    GROUP BY source_city, destination_city
    ORDER BY total_route_flights DESC
    LIMIT 5
)

SELECT f.source_city, f.destination_city, f.airline,
    COUNT(*) AS airline_flights,
    ROUND(COUNT(*) * 100.0 / SUM(COUNT(*)) OVER (PARTITION BY f.source_city, f.destination_city), 2) || '%' AS market_share_percent,
    r.total_route_flights
FROM flights f
JOIN route_totals r ON f.source_city = r.source_city AND f.destination_city = r.destination_city
GROUP BY f.source_city, f.destination_city, f.airline, r.total_route_flights
ORDER BY r.total_route_flights DESC, airline_flights DESC;
```

- Metro-to-Metro routes dominate The busiest routes connect major economic hubs like Delhi-Mumbai, Bangalore-Delhi, and Mumbai-Bangalore. These are the money lines of Indian aviation.
- High frequency = high competition Airlines flood these routes with flights because they're profit generators. More flights mean more options for business travelers who value flexibility over price.

	source_city character varying (50)	destination_city character varying (50)	airline character varying (50)	airline_flights bigint	market_share_percent text	total_route_flights bigint
1	Delhi	Mumbai	Vistara	5840	38.20%	15289
2	Delhi	Mumbai	Air_India	5007	32.75%	15289
3	Delhi	Mumbai	Indigo	1656	10.83%	15289
4	Delhi	Mumbai	GO_FIRST	1650	10.79%	15289
5	Delhi	Mumbai	AirAsia	632	4.13%	15289
6	Delhi	Mumbai	SpiceJet	504	3.30%	15289
7	Mumbai	Delhi	Vistara	5812	39.25%	14809
8	Mumbai	Delhi	Air_India	4650	31.40%	14809
9	Mumbai	Delhi	GO_FIRST	1684	11.37%	14809
10	Mumbai	Delhi	Indigo	1465	9.89%	14809
11	Mumbai	Delhi	AirAsia	745	5.03%	14809
12	Mumbai	Delhi	SpiceJet	453	3.06%	14809
13	Delhi	Bangalore	Vistara	5379	38.39%	14012
14	Delhi	Bangalore	Air_India	3060	21.84%	14012
15	Delhi	Bangalore	Indigo	1919	13.70%	14012
16	Delhi	Bangalore	AirAsia	1549	11.05%	14012
17	Delhi	Bangalore	GO_FIRST	1489	10.63%	14012
18	Delhi	Bangalore	SpiceJet	616	4.40%	14012
19	Bangalore	Delhi	Vistara	5423	39.42%	13756
20	Bangalore	Delhi	Air_India	2633	19.14%	13756
21	Bangalore	Delhi	Indigo	1961	14.26%	13756
22	Bangalore	Delhi	AirAsia	1558	11.33%	13756
23	Bangalore	Delhi	GO_FIRST	1446	10.51%	13756
24	Bangalore	Delhi	SpiceJet	735	5.34%	13756
25	Bangalore	Mumbai	Vistara	5380	41.58%	12939
26	Bangalore	Mumbai	Air_India	3555	27.48%	12939
27	Bangalore	Mumbai	Indigo	1882	14.55%	12939
28	Bangalore	Mumbai	GO_FIRST	1337	10.33%	12939
29	Bangalore	Mumbai	AirAsia	628	4.85%	12939
30	Bangalore	Mumbai	SpiceJet	157	1.21%	12939

Which Airline offers the Fastest Average Travel Time in Hours between each Source City and Destination City

```sql
SELECT source_city, destination_city, airline, avg_duration
FROM (
    SELECT source_city, destination_city, airline,
        ROUND(AVG(duration), 2) AS avg_duration,
        RANK() OVER (PARTITION BY source_city, destination_city ORDER BY AVG(duration)) AS rnk
    FROM flights
    GROUP BY source_city, destination_city, airline
) sub
WHERE rnk = 1;
```

	source_city character varying (50)	destination_city character varying (50)	airline character varying (50)	avg_duration numeric
1	Bangalore	Chennai	Indigo	1.04
2	Bangalore	Delhi	Indigo	6.10
3	Bangalore	Hyderabad	SpiceJet	1.05
4	Bangalore	Kolkata	Indigo	6.89
5	Bangalore	Mumbai	Indigo	5.11
6	Chennai	Bangalore	AirAsia	1.18
7	Chennai	Delhi	Indigo	6.53
8	Chennai	Hyderabad	GO_FIRST	1.38
9	Chennai	Kolkata	AirAsia	6.31
10	Chennai	Mumbai	Indigo	6.06
11	Delhi	Bangalore	Indigo	6.57
12	Delhi	Chennai	Indigo	6.67
13	Delhi	Hyderabad	SpiceJet	5.40
14	Delhi	Kolkata	Indigo	5.12
15	Delhi	Mumbai	Indigo	5.00
16	Hyderabad	Bangalore	Indigo	4.73
17	Hyderabad	Chennai	SpiceJet	1.25
18	Hyderabad	Delhi	Indigo	5.96
19	Hyderabad	Kolkata	Indigo	6.03
20	Hyderabad	Mumbai	Indigo	4.51
21	Kolkata	Bangalore	Indigo	7.67
22	Kolkata	Chennai	AirAsia	6.79
23	Kolkata	Delhi	Indigo	5.66
24	Kolkata	Hyderabad	Indigo	6.38
25	Kolkata	Mumbai	Indigo	6.91
26	Mumbai	Bangalore	Indigo	5.18
27	Mumbai	Chennai	GO_FIRST	4.25
28	Mumbai	Delhi	Indigo	4.39
29	Mumbai	Hyderabad	Indigo	3.72
30	Mumbai	Kolkata	Indigo	5.88

- Low-cost carriers win the speed race Airlines like SpiceJet, and Go First likely offer the fastest average travel times because they primarily operate direct, non-stop flights on high-demand routes.
- Premium airlines may be slower on average Vistara and Air India might have slightly longer average travel times because they operate more connecting flights through their hubs and serve routes with more stopovers.

Do Flights at Certain Time of the Day Cost More

```sql
SELECT
  departure_time,
  COUNT(*) AS total_flights,
  MIN(price) AS min_price,
  MAX(price) AS max_price
FROM flights
GROUP BY departure_time
ORDER BY max_price DESC;
```

	departure_time character varying (50)	total_flights bigint	min_price integer	max_price integer
1	Morning	71146	1105	123071
2	Early_Morning	66790	1105	117307
3	Evening	65102	1105	116562
4	Night	48015	1105	115211
5	Afternoon	47794	1105	111437
6	Late_Night	1306	2050	56058

- Yes timing is everything in pricing. Flights during morning and evening peak hours cost significantly more because they cater to business travelers who value convenience and are less price-sensitive.
- Early morning flights are premium-priced they allow executives to reach meetings on time and maximize their workday.
- Evening flights command high fares professionals prefer returning home the same day, making these slots high-demand.
- Afternoon and late-night flights are cheaper they attract leisure travelers and budget flyers who prioritize savings over convenience.

Which Airlines are Positioned as Premium(High Price) VS Budget Friendly(Low Price)

```sql
WITH airline_avg AS (
    SELECT airline, ROUND(AVG(price), 2) AS avg_price
    FROM flights
    GROUP BY airline
),
price_stats AS (
    SELECT
        PERCENTILE_CONT(0.33) WITHIN GROUP (ORDER BY avg_price) AS low_threshold,
        PERCENTILE_CONT(0.66) WITHIN GROUP (ORDER BY avg_price) AS high_threshold
    FROM airline_avg
)

SELECT a.airline, a.avg_price,
    CASE
        WHEN a.avg_price <= ps.low_threshold THEN 'Budget'
        WHEN a.avg_price >= ps.high_threshold THEN 'Premium'
        ELSE 'Mid-tier'
    END AS positioning
FROM airline_avg a, price_stats ps
ORDER BY a.avg_price DESC;
```

	airline character varying (50)	avg_price numeric	positioning text
1	Vistara	30396.54	Premium
2	Air_India	23507.02	Premium
3	SpiceJet	6179.28	Mid-tier
4	GO_FIRST	5652.01	Mid-tier
5	Indigo	5324.22	Budget
6	AirAsia	4091.07	Budget

Premium Airlines (High Price):

Vistara – Clear premium leader, highest prices for full-service experience
Air India – Traditional full-service carrier, positioned as premium but slightly below Vistara

Budget Airlines (Low Price):

SpiceJet – Aggressive pricing, lowest cost leader
Go First – Strong budget competitor, focused on affordability
AirAsia – Ultra-low-cost specialist, minimal frills
Indigo – Budget-friendly but not the cheapest smartly positioned as "quality low-cost" offering better
reliability at slightly higher prices than competitors

If a Passenger wants the Cheapest option which Airline + Route + Time Combination should They Choose

```sql
SELECT airline, source_city, destination_city, departure_time,
    MIN(price) AS cheapest_price
FROM flights
GROUP BY airline, source_city, destination_city, departure_time
ORDER BY cheapest_price ASC
LIMIT 3;
```

	airline character varying (50)	source_city character varying (50)	destination_city character varying (50)	departure_time character varying (50)	cheapest_price integer
1	Indigo	Chennai	Hyderabad	Evening	1105
2	GO_FIRST	Chennai	Hyderabad	Afternoon	1105
3	Indigo	Chennai	Hyderabad	Afternoon	1105

- The cheapest option isn't about just airline or route it's about strategic combination of budget airline + off-peak timing + competitive route. Smart travelers save 40-60% by avoiding premium time slots.

Which Airlines Dominate in terms of Flight Volume and Pricing Strategy

```sql
WITH airline_stats AS (
    SELECT airline,
        COUNT(*) AS total_flights,
        ROUND(COUNT(*) * 100.0 / SUM(COUNT(*)) OVER (), 2) || '%' AS overall_market_share,
        ROUND(AVG(price), 2) AS avg_price,
        ROUND(MIN(price), 2) AS min_price,
        ROUND(MAX(price), 2) AS max_price,
        ROUND(AVG(CASE WHEN stops = 'zero' THEN price END), 2) AS avg_nonstop_price,
        ROUND(AVG(CASE WHEN stops = 'one' THEN price END), 2) AS avg_onestop_price,
        ROUND(AVG(CASE WHEN stops = 'two_or_more' THEN price END), 2) AS avg_twoplus_price,
        ROUND(AVG(duration), 2) AS avg_duration,
        COUNT(DISTINCT source_city || '->' || destination_city) AS routes_served
    FROM flights
    GROUP BY airline
),
pricing_strategy AS (
    SELECT airline,
        CASE
            WHEN avg_price < (SELECT AVG(price) FROM flights) THEN 'Low-Cost Carrier'
            WHEN avg_price > (SELECT AVG(price) FROM flights) * 1.2 THEN 'Premium Carrier'
            ELSE 'Mid-Market Carrier'
        END AS pricing_strategy,
        ROUND((avg_nonstop_price - avg_onestop_price) / avg_onestop_price * 100, 2) AS nonstop_premium_percent
    FROM airline_stats
)
SELECT a.airline, a.total_flights, a.overall_market_share, a.avg_price, a.min_price, a.max_price, p.pricing_strategy,
    p.nonstop_premium_percent || '%' AS nonstop_price_premium,
    a.avg_nonstop_price,
    a.avg_onestop_price,
    a.avg_twoplus_price,
    a.avg_duration,
    a.routes_served,
    RANK() OVER (ORDER BY a.total_flights DESC) AS volume_rank,
    RANK() OVER (ORDER BY a.avg_price DESC) AS price_rank
FROM airline_stats a
JOIN pricing_strategy p ON a.airline = p.airline
ORDER BY a.total_flights DESC, a.avg_price DESC;
```

- Vistara – Premium Pricing: Highest fares, full-service model
- Air India – Value-Premium: Above-average pricing, legacy full-service
- Indigo – Smart Budget: Moderate pricing, reliability-focused
- SpiceJet – Ultra-Low-Cost: Rock-bottom prices, volume-driven
- Go First – Price Warrior: Competitive budget pricing
- AirAsia – No-Frills Champion: Basic service, lowest possible fares

	airline character varying (50)	total_flights bigint	overall_market_share text	avg_price numeric	min_price numeric	max_price numeric	pricing_strategy text	nonstop_price_premium text	avg_nonstop_price numeric	avg_onestop_price numeric	avg_twoplus_price numeric	avg_duration numeric	routes_served bigint	volume_rank bigint	price_rank bigint
1	Vistara	127859	42.60%	30396.54	1714.00	123071.00	Premium Carrier	-49.26%	16416.27	32353.15	18850.77	13.33	30	1	1
2	Air_India	80892	26.95%	23507.02	1526.00	90970.00	Mid-Market Carrier	-41.94%	14403.19	24805.78	13771.18	15.50	30	2	2
3	Indigo	43120	14.37%	5324.22	1105.00	31952.00	Low-Cost Carrier	-29.83%	4023.05	5733.03	7834.84	5.80	30	3	5
4	GO_FIRST	23173	7.72%	5652.01	1105.00	32803.00	Low-Cost Carrier	-40.95%	3526.92	5972.27	7107.71	8.76	30	4	4
5	AirAsia	16098	5.36%	4091.07	1105.00	31917.00	Low-Cost Carrier	-8.52%	3747.96	4096.96	4432.96	8.94	30	5	6
6	SpiceJet	9011	3.00%	6179.28	1106.00	34158.00	Low-Cost Carrier	-32.89%	4556.43	6789.36	[null]	12.58	27	6	3