

Business Intelligence

1. Reducing Environmental Impact for Airlines

To analyze environmental impact, we can look at distances traveled and identify the longest routes and those with multiple stopovers, which tend to increase emissions.

there are around 43551 flights with stopovers > 0 OR distance(km) > 1000

Like these flights

	airline_name text	flight_number integer	source_airport_id integer	destination_airport_id integer	stopovers integer	distance_km double precision
1	Qantas	4089	3361	3670	0	13808.197759952754
2	American Airlines	24	3361	3670	0	13808.197759952754
3	Delta Air Lines	2009	813	3682	0	13582.607065230082
4	Delta Air Lines	2009	3682	813	0	13582.607065230082
5	Emirates	2183	3484	2188	0	13400.095957684265
6	JetBlue Airways	3029	2188	3484	0	13400.095957684265
7	Emirates	2183	2188	3484	0	13400.095957684265
8	JetBlue Airways	3029	3484	2188	0	13400.095957684265

lists airlines with long routes and multiple stopovers, helping identify where more efficient routing could reduce fuel usage.

Recommendation

- **Fuel Efficiency:** Airlines can invest in fuel-efficient aircraft, such as newer models from Airbus or Boeing, which consume less fuel per mile
- **Sustainable Aviation Fuel :** are derived from renewable resources and can reduce carbon emissions by up to 80% over their lifecycle
- **Carbon Offsetting and Reduction:** Airlines can participate in carbon offset programs or fund reforestation projects to mitigate their carbon footprint.

2. Opportunities for a New Airline Venture

To assess areas where a new airline could succeed, we can identify underserved routes or regions with few existing connections by filtering routes with lower competition.

	source_airport_id integer	destination_airport_id integer	airline_count bigint	avg_distance double precision
1	3682	813	1	13582.607065230082
2	813	3682	1	13582.607065230082
3	3484	2072	1	13389.838975002514
4	2072	3484	1	13389.838975002514
5	3797	2276	1	12544.634375176956
6	2276	3797	1	12544.634375176956
7	156	3361	1	12500.969794039052
8	3361	156	1	12500.969794039052
9	2564	2188	1	12217.080092332944

finds routes with fewer airlines operating, indicating potential opportunities for new airlines to enter less competitive routes.

Recommendation

- Target budget-conscious travelers, especially in regions like the Middle East and Africa with limited low-cost options.
- Focus on short-haul routes in regions with underdeveloped transport networks, such as Southeast Asia and Latin America

3. Reducing Operational Costs for an Underperforming Airline

For underperforming airlines, it's helpful to identify routes with low passenger volumes, high stopovers, or long distances (which increase costs).

	airline_name text	flight_number integer	source_airport_id integer	destination_airport_id integer	stopovers integer	distance_km double precision
1	Qantas	4089	3361	3670	0	13808.197759952754
2	American Airlines	24	3361	3670	0	13808.197759952754
3	Delta Air Lines	2009	813	3682	0	13582.607065230082
4	Delta Air Lines	2009	3682	813	0	13582.607065230082
5	JetBlue Airways	3029	3484	2188	0	13400.095957684265
6	JetBlue Airways	3029	2188	3484	0	13400.095957684265
7	Emirates	2183	3484	2188	0	13400.095957684265
8	Emirates	2183	2188	3484	0	13400.095957684265
9	Saudi Arabian Airlines	4533	2072	3484	0	13389.838975002514

helps pinpoint costly routes for an underperforming airline that may be candidates for adjustment or termination to cut costs.

Recommendation

- Phase out older aircraft and lease newer, fuel-efficient models to reduce maintenance and fuel expenses.
- Focus on profitable hubs and eliminate unprofitable routes to improve resource allocation.

4. Improving Positioning for an Underperforming Airport

We can identify airports with low flight volume, which may benefit from increased connectivity and marketing to attract airlines.

	airport_name text	city text	country text	total_routes bigint
86	Tumling Tar Airport	Tumling Tar	Nepal	8
87	Tavie Airport	Paama Island	Vanuatu	8
88	Elcho Island Airport	Elcho Island	Australia	8
89	Griffith Airport	Griffith	Australia	8
90	Ulawa Airport	Ulawa	Solomon Islands	8
91	Santa Ana Airport	Santa Ana	Solomon Islands	8
92	Lamap Airport	Lamap	Vanuatu	8
93	Thandwe Airport	Thandwe	Burma	8
94	Wamena Airport	Wamena	Indonesia	8

lists airports with fewer routes, indicating they may be underutilized and could benefit from attracting more airlines or partnerships to increase their positioning.

Recommendation

- Use technology to reduce wait times and improve amenities, making the airport a destination itself.
- Attract low-cost carriers and incentivize new routes to increase traffic.
- Expand cargo facilities to capture e-commerce-driven freight traffic, providing a lucrative revenue source