-- Total Flights

```
56      -- Total Flights
57
58 •    select count(*) as total_flights
59      from flights;
60
```

esult Grid | Filter Rows: | Export:

total_flights
4601537

-- On-Time Performance (%)

```
51      -- On-Time Performance (%)
52
53 •    select
54          round(100.0 * sum(case when arrival_delay <= 15 then 1 else 0 end) / count(*),2) as on_time_percentage
55      from flights
56      where cancelled = 0;
57
58      -- Average Arrival Delay
59
```

esult Grid | Filter Rows: | Export: | Wrap Cell Content:

on_time_percentage
77.96

-- Average Arrival Delay

```
68      -- Average Arrival Delay
69
70 •    select
71          round(avg(arrival_delay),2 ) as Average_Arrival_Delay
72      from flights
73      where cancelled = 0;
74
75
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Average_Arrival_Delay
7.74

-- Cancellation Rate

```sql
-- Cancellation Rate

select
    round(100.0 * sum(cancelled) / count(*), 2) as cancellation_rate
from flights;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

cancellation_rate
3.67

- Flights by Airline

```sql
select
  airline,
  count(*) as total_flights,
  round(avg(arrival_delay), 2) as avg_arrival_delay,
  round(100.0 * sum(case when arrival_delay <= 15 then 1 else 0 end) / count(*), 2) as on_time_percentage,
  round(100.0 * sum(cancelled) / count(*), 2) as cancellation_rate
from flights_sample
group by airline
order by total_flights desc;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

airline	total_flights	avg_arrival_delay	on_time_percentage	cancellation_rate
WN	21160	17.93	62.38	0.85
DL	13156	4.9	80.75	0.14
EV	10810	22.11	64.30	3.89
OO	10475	19.96	66.81	3.99
AA	9449	22.64	61.16	2.75
UA	8413	18.43	64.16	0.77
US	6968	11.59	73.19	0.89
MQ	6305	35.06	51.32	13.94
B6	4688	18.56	66.49	0.34
AS	2836	4.4	81.24	0.14

-- KPI Querying

-- 1. Delay Reason Breakdown

```sql
-- KPI Querying
-- 1. Delay Reason Breakdown

Select
    round(avg(arrival_delay), 2) as avg_arrival_delay,
    round(avg(departure_delay), 2) as avg_departure_delay,
    round(avg(air_system_delay), 2) as avg_air_system_delay,
    round(avg(security_delay), 2) as avg_security_delay,
    round(avg(airline_delay), 2) as avg_airline_delay,
    round(avg(late_aircraft_delay), 2) as avg_late_aircraft_delay,
    round(avg(weather_delay), 2) as avg_weather_delay
From flights
where cancelled = 0;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

avg_arrival_delay	avg_departure_delay	avg_air_system_delay	avg_security_delay	avg_airline_delay	avg_late_aircraft_delay	avg_weather_delay
7.74	11.4	3.13	0.01	4.15	5.26	0.8

-- 2. Delay by Time of Day

```
114     -- 2. Delay by Time of Day
115
116 •   select
117         hour(scheduled_departure) as departure_hour,
118         count(*) as total_flights,
119         round(avg(arrival_delay), 2) as avg_arrival_delay
120     From flights
121     where cancelled = 0
122     group by hour(scheduled_departure)
123     order by departure_hour;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

departure_hour	total_flights	avg_arrival_delay
0	4359488	7.74

-- 3. Delay by Day of Week

```
125     -- 3. Delay by Day of Week
126
127 •   select
128         day_of_week,
129         count(*) as total_flights,
130         round(avg(arrival_delay), 2) as avg_arrival_delay
131     from flights_sample
132     where cancelled = 0
133     group by day_of_week
134     order by day_of_week;
135
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

day_of_week	total_flights	avg_arrival_delay
1	16113	18.77
2	14920	21.24
3	5588	7.5
4	13484	5.34
5	16484	9.82
6	15103	25.37
7	15919	31.91

-- 4. Delay by Month

```sql
-- 4. Delay by Month

select
    month,
    count(*) as total_flights,
    round(avg(arrival_delay), 2) as avg_arrival_delay
from flights_sample
where cancelled = 0
group by month
order by month;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

month	total_flights	avg_arrival_delay
1	97611	18.3

-- Top 10 Busiest Routes

```sql
-- Top 10 Busiest Routes

select
    origin_airport,
    destination_airport,
count(*) as total_flights
from flights_sample
group by origin_airport, destination_airport
order by total_flights desc
limit 10;
```

Result Grid | Filter Rows: | Export: | Wra

origin_airport	destination_airport	total_flights
LAX	JFK	238
JFK	LAX	238
SFO	LAX	212
LAX	SFO	211
LAS	LAX	199
LAX	LAS	194
LGA	ORD	168
HNL	OGG	167
ORD	LGA	165

-- Top 10 Delayed Airports by avg arrival delay

```sql
-- Top 10 Delayed Airports by avg arrival delay

select
    destination_airport,
    round(avg(arrival_delay),2) as Avg_arrival_delay,
    count(*) as Total_flights
from flights_sample
where cancelled = 0
group by destination_airport
having count(*) >100 -- filters noise from low-traffic airports
order by Avg_arrival_delay desc
limit 10;

```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch

destination_airport	Avg_arrival_delay	Total_flights
ASE	43.08	152
FSD	40.25	107
DSM	38.69	161
SGF	38.09	102
ICT	36.63	129
TYS	33.95	131
ORD	33.12	4639
XNA	33.11	141
LIT	33.01	189

-- Monthly Cancellation Trend

```sql
select
    month,
    count(*) as Total_flights,
    sum(cancelled) as cancelled_flights,
    round(100.0 * sum(cancelled) * count(*),2) as cancellation_rate
from flights_sample
group by month
order by month;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

month	Total_flights	cancelled_flights	cancellation_rate
1	100000	2389	23890000000

-- Diversion Summary

```sql
-- Diversion Summary

select
    count(*) as Total_flights,
    sum(diverted) as Total_diverted,
    round(100.0 * sum(diverted) / count(*), 2) as diversion_rate
from flights_sample;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Total_flights	Total_diverted	diversion_rate
100000	224	0.22

-- Delay Statistics – Min, Max, Median (Arrival + Departure)

-- Arrival Delay Summary

```
189     -- Delay Statistics – Min, Max, Median (Arrival + Departure)
190     -- Arrival Delay Summary
191
192 •   select
193         min(arrival_delay) as min_arrival_delay,
194         max(arrival_delay) as max_arrival_delay,
195         round(avg(arrival_delay),2) avg_arrival_delay
196     from flights
197     where cancelled = 0;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

min_arrival_delay	max_arrival_delay	avg_arrival_delay
-1	998	7.74

-- Departure Delay Summary

```
199     -- Departure Delay Summary
200
201 •   select
202         min(departure_delay) as min_departure_delay,
203         max(departure_delay) as max_departure_delay,
204         round(avg(departure_delay),2) avg_departure_delay
205     from flights
206     where cancelled = 0;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Conte

min_departure_delay	max_departure_delay	avg_departure_delay
-1	996	11.4

-- Scheduled vs Actual Duration

```
208     -- Scheduled vs Actual Duration
209
210 •   select
211         round(avg(scheduled_time),2) as avg_scheduled_time,
212         round(avg(air_time), 2) as avg_air_time,
213         round(avg(scheduled_time - air_time), 2) as avg_buffer_time
214     from flights
215     where cancelled = 0 and air_time is not null;
216
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

avg_scheduled_time	avg_air_time	avg_buffer_time
140.72	112.56	28.15

-- Weather Delay by Month

```sql
select
    month,
    round(avg(weather_delay), 2) as avg_weather_delay
from flights_sample
where cancelled = 0
group by month
order by month;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Conte

month	avg_weather_delay
1	0.98

-- Top 10 Delayed Airlines

```sql
-- Top 10 Delayed Airlines

select
    airline,
    count(*) as total_flights,
    round(avg(arrival_delay),2) as Avg_arrival_delay
from flights_sample
where cancelled = 0
group by airline
having count(*) >100
order by Avg_arrival_delay
limit 10;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Cont

airline	total_flights	Avg_arrival_delay
VX	1034	4.09
AS	2832	4.4
DL	13137	4.91
US	6906	11.69
HA	1326	12.18
WN	20981	18.08
UA	8348	18.58
B6	4672	18.62
OO	10057	20.79