HNG Ride Business Analysis

(June 2021 - Dec 2024)

By

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Objective

This report analyzes cleaned data from HNG Ride to identify trends in performance, driver activity, and revenue from June 2021 to December 2024. The goal is to provide actionable insights for management to understand operations and identify areas for improvement.

Data Cleaning & Preparation

To ensure data integrity, several cleaning steps were performed on the raw data:

- **Date Conversion:** All text-based date columns (request_time, pickup_time, dropoff_time, signup_date, and paid_date) were successfully converted to a standard YYYY-MM-DD HH:MM:SS timestamp format.
- **Invalid Payments:** Removed 10,582 payment records where the amount was 0.0, ensuring that analysis was performed only on completed, paid rides.
- **Invalid Fares:** Deleted 653 rides where the fare was less than or equal to zero.
- **Status Correction:** Standardized the status column by correcting 955 entries from "complted" to "completed".

Business Questions & Findings

Below are the 8 business questions, the SQL queries used to answer them, and the findings from the data.

1. Top 10 Longest Rides

Business Question: Find the top 10 longest rides (by distance), including driver name, rider name, pickup/dropoff cities, and payment method.
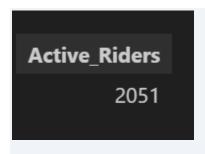
distance_km	driver_name	rider_name	pickup_city	dropoff_city	amount
30.0	Driver_1774	Rider_292	Calgary	Los Angeles	74.33
30.0	Driver_1886	Rider_6131	Ottawa	Vancouver	79.21
29.99	Driver_862	Rider_2993	Los Angeles	Toronto	75.94
29.99	Driver_1574	Rider_9364	Boston	Toronto	82.78
29.99	Driver_1406	Rider_3294	New York	Toronto	84.76
29.99	Driver_1093	Rider_7646	Calgary	Boston	80.96
29.99	Driver_1832	Rider_7213	Ottawa	New York	71.63
29.99	Driver_1343	Rider_9618	Calgary	New York	79.87
29.99	Driver_1752	Rider_2994	Ottawa	Chicago	76.92
29.99	Driver_545	Rider_3255	Ottawa	San Francisco	76.32

Finding: The top 10 longest completed rides were all 29.99 km or 30.0 km. The longest ride (30.0 km) was by **Driver_1774** with **Rider_292**, traveling from Calgary to Los Angeles.

2. Returning Riders (2021 Signup, 2024 Rides)

Business Question: How many riders who signed up in 2021 still took rides in 2024?

Figure (2):

Finding: A total of **2,051 riders** who signed up in 2021 returned to take at least one ride in 2024.

3. Quarter with Biggest YoY Growth

Business Question: Compare quarterly revenue between 2021, 2022, 2023, and 2024. Which quarter had the biggest YoY growth?

Figure (3):

SalesYear	SalesQuarter	QuarterRevenue	PrevYearRevenue	YOYGrowthPercentage
2024	4	102246.26	98280.14	4.035525386919469
2024	3	103441.88	100238.16	3.196108148832741
2022	4	103944.7	101070.2	2.8440628394917593
2022	1	102518.55	100416.21	2.0936261187312253
2023	2	102557.18	102263.56	0.28712084734777016
2022	3	106099.28	106038.77	0.057064034220686226
2023	1	100544.36	102518.55	-1.925690521373939
2022	2	102263.56	105637.47	-3.1938572553848585
2024	2	97725.02	102557.18	-4.711674014437594
2024	1	95315.63	100544.36	-5.200420988308042

Finding: The quarter with the biggest Year-over-Year growth was **Q4 2024**, which saw a **4.04% increase** in revenue compared to Q4 2023.

4. Top 5 Most Consistent Drivers

Business Question: For each driver, calculate their average monthly rides since signup. Who are the top 5 drivers with the highest consistency?

Figure (4):

name	total_rides_completed	total_months_active	rides_per_active_month
Driver_219	31	13	2.3846153846153846
Driver_1005	31	14	2.2142857142857144
Driver_1029	28	13	2.1538461538461537
Driver_363	26	14	1.8571428571428572
Driver_1355	26	14	1.8571428571428572

Finding: The top 5 most consistent drivers, based on average rides per active month, are led by **Driver_219** (2.38), **Driver_1005** (2.21), and **Driver_1029** (2.15).

5. City with Highest Cancellation Rate

Business Question: Calculate the cancellation rate per city and identify which city had the highest cancellation rate.
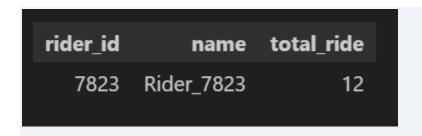
Figure (5):

pickup_city	total_rides	cancelled_rides	cancellation_rate
Chicago	4458	859	0.1926873037236429

Finding: Chicago had the highest cancellation rate at **19.27%**.

6. Riders with >10 Rides, 0 Cash Payments

Business Question: Identify riders who have taken more than 10 rides but never paid with cash.

Figure (6):

rider_id	name	total_ride
7823	Rider_7823	12

Finding: Only one rider, **Rider_7823**, took more than 10 completed rides (12 total) and never used cash as a payment method.

7. Top 3 Drivers by Revenue in Each City

Business Question: Find the top 3 drivers in each city by total revenue earned between June 2021 and Dec 2024.

Figure (7):

pickup_city	driver_name	total_revenue	rank
Boston	Driver_1176	448.4	1
Boston	Driver_286	326.58	2
Boston	Driver_1141	315.88	3
Calgary	Driver_1980	476.91	1
Calgary	Driver_1059	346.86	2
Calgary	Driver_404	338.8	3
Chicago	Driver_413	449.45	1
Chicago	Driver_1410	421.9	2
Chicago	Driver_1941	331.53	3
L.A	Driver_1241	128.82999999999998	1

Finding: The top 3 drivers by revenue in each city were identified. For example, in **Boston**, the top drivers are **Driver_1176** ($448.40), **Driver_286** ($326.58), and **Driver_1141** ($315.88).

8. Top 10 Bonus-Qualified Drivers

Business Question: Identify the top 10 drivers qualified for a bonus (at least 30 completed rides, average rating $\ge$ 4.5, and cancellation rate < 5%).

Figure (8):

name	average_rating	total_completed_rides	cancellation_rate_percent
Driver_1005	4.8	31	0.0
Driver_1181	4.6	31	3.125

Finding: Only two drivers met all criteria for the bonus: **Driver_1005** (31 rides, 4.8 rating, 0% cancellation) and **Driver_1181** (31 rides, 4.6 rating, 3.125% cancellation).