Uber Trip Analysis Report

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Summary

This report presents an exploratory data analysis of Uber ride data for the year 2016 (public dataset) using a Power BI dashboard. It covers KPIs and focuses on trip volume (Total Bookings) and Total Trip Distance across different time frames, purposes, categories, and geographic locations. Insights aim to support business decisions related to user behavior, resource allocation, and operational planning. The dashboard includes interactive slicers (Date, Location, Time) to update core insights dynamically.

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1. Data Preparation

Cleaned and transformed raw Uber trip data using Power Query in Power BI to ensure data quality and enable accurate analysis.

ETL Process Highlights:

- **Exploratory Analysis:** Generated summary statistics, identified missing values, and duplicate rows, and examined column uniqueness.
- **Data Type Corrections:** Converted 'START_DATE' and 'END_DATE' columns to proper datetime format and standardized 'MILES' column to decimal.
- **Duplicate Removal:** Detected and removed one duplicate row from the dataset.
- **Missing Value Treatment:** Identified that 49% of the values in the 'Purpose' column are missing and handled them using the **fill-down** method based on logical continuity.
- **Unit Conversion:** Standardized trip distance by converting from **miles to kilometers**.
- **Feature Engineering:** Extracted date, time, hour, month, and day from datetime columns, and calculated **trip duration** and **time-of-day categories** (e.g., Morning, Night).

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2. Key Metrics Overview

Metric	Value
Total Bookings	1.15K
Total Trip Distance	19,626 km
Average Trip Distance	17.01 km
Farthest Trip	499.4 km (Latta → Jacksonville)
Average Trip Duration	23.24 min

3. Dashboard Highlights

A. Overview Analysis

- **Trip Category**:
    - Business trips dominate 93.33% of all bookings and 94.11% of total distance.
    - Personal trips represent only 6.67% of all bookings, suggesting Uber is used primarily for work-related travel.
- **Trip Timing**:
    - Afternoon has the highest volume of bookings (446), followed by evening (328) and morning (244), while night and midnight account for a small proportion of trips.
    - Afternoons and evenings are peak trip distances.
- **Purpose Breakdown**:
    - The most frequent purposes of total bookings are Meeting (290), Meal/Entertainment (227), and Temporary Site Visit (185), and they are classified as Business purposes.
    - The most common purposes of the total trip distance are Meeting and Customer Visit, and they are classified as Business purposes as well.
- **Purpose Trends Over Months:**
    - Total bookings for customer Visits peak in November and December, while Meal/Entertainment shows consistent volume across most months.
    - Total bookings for Meetings dominate Q4, indicating end-of-year business activity, and some minor purposes like Charity and Between Offices occur sporadically.
    - Total distance for customer Visits spiked in March and April, while Meal/Entertainment and Meetings were consistently high over most months.
    - Some months (e.g., September) show lower diversity in" purposes" and potentially low-activity periods.
- **Top Locations**:
    - **Pickup:** Cary (201), Morrisville (85), and Whitebridge (68) are top origins.
    - **Drop-off:** Cary (202) leads, followed by Morrisville and Whitebridge.
    - Indicating that most rides happen between a few business-centric hubs.

B. Time-Based Analysis

- **By Day of the Week**:
    - Friday sees the highest volume (206 bookings), suggesting a workweek wrap-up trend.

    - Wednesday is the lowest, possibly indicating midweek stability.
    - Friday leads in total distance, followed by Saturday and Thursday.
- **By Day of Month:**
    - Traveled Distances spike around the 25th of each month, potentially due to payroll cycles or scheduled client visits.
- **By Month**:
    - The peak months for total bookings are December (146), August (133), and November (123).
    - Lows observed in bookings during September (36) and May (49) - possible seasonal vacations.
    - October and March have the highest overall distance.
- **By Hour of Day**:
    - Clear peak from 9:00 AM to 5:00 PM, with the sharpest climb starting around 8:00 AM — ideal for business targeting and driver supply planning.
    - Post 6:00 PM sees a gradual decline, aligning with typical business hours.
    - Very low activity from midnight to 6:00 AM.

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4. Insights & Recommendations

1. **Driver Allocation**: Focus availability during weekdays (especially **Fridays**) and peak hours **(9 AM–5 PM)** for higher ride demand.
2. **Location Strategy**: Prioritize coverage in Cary, Morrisville, and Whitebridge where most bookings occur.
3. **Client-Facing Services**: Increase support for business trips — meetings, visits, and meal/entertainment dominate.
4. **Seasonal Campaigns**: Boost marketing during low months (e.g., **September, May**) to stabilize usage.
5. **Seasonal Planning**: Plan promotions or ride incentives around **December, August, and November**, when usage patterns peak.
6. **Purpose-Based Targeting**: Consider offering **purpose-based ride packages** (e.g., **A Meeting Ride Plan**) tailored for high-frequency purposes.
7. **Category-Based Targeting:** Incentivize personal use to diversify category usage beyond business-only trips.

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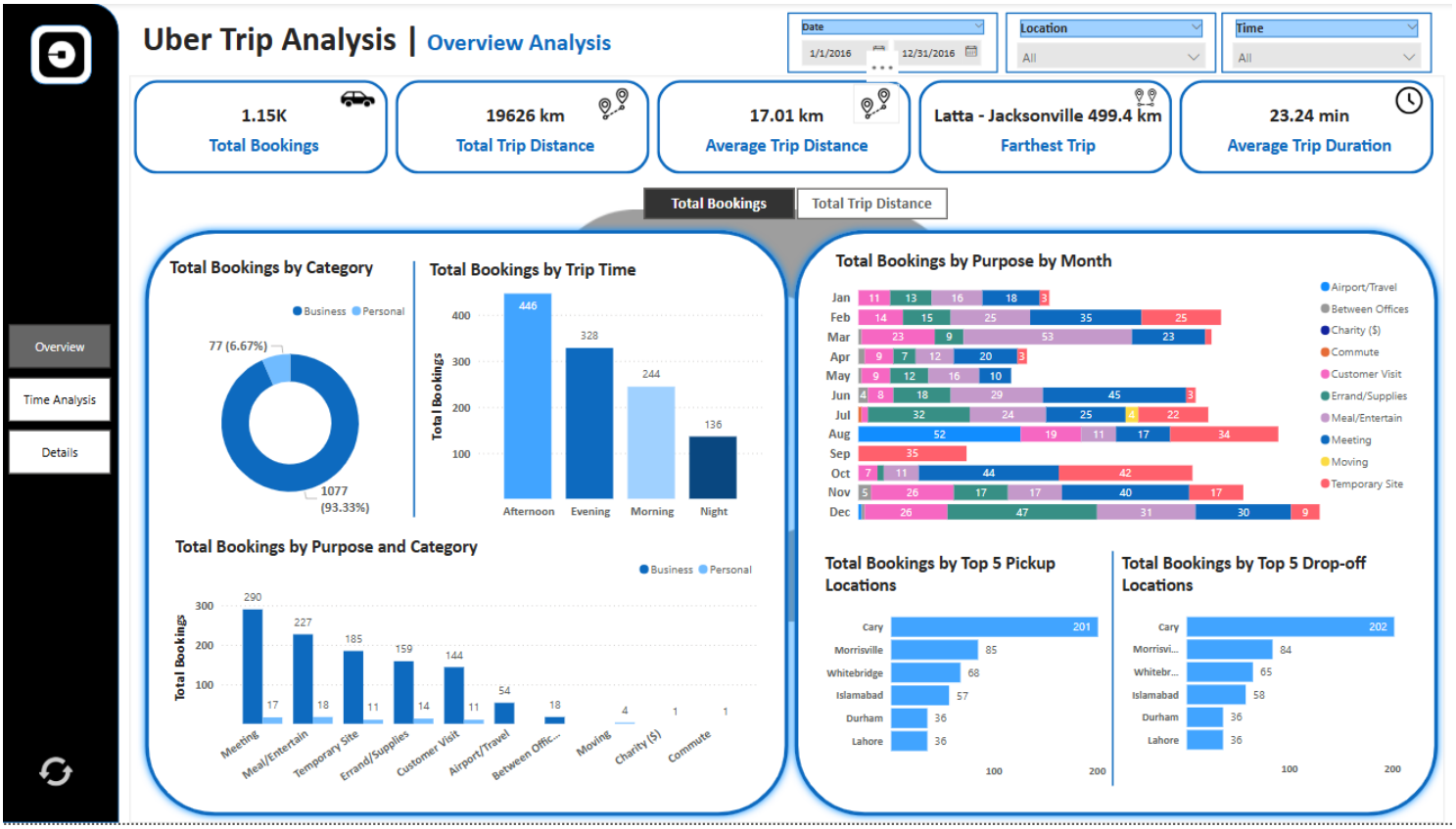
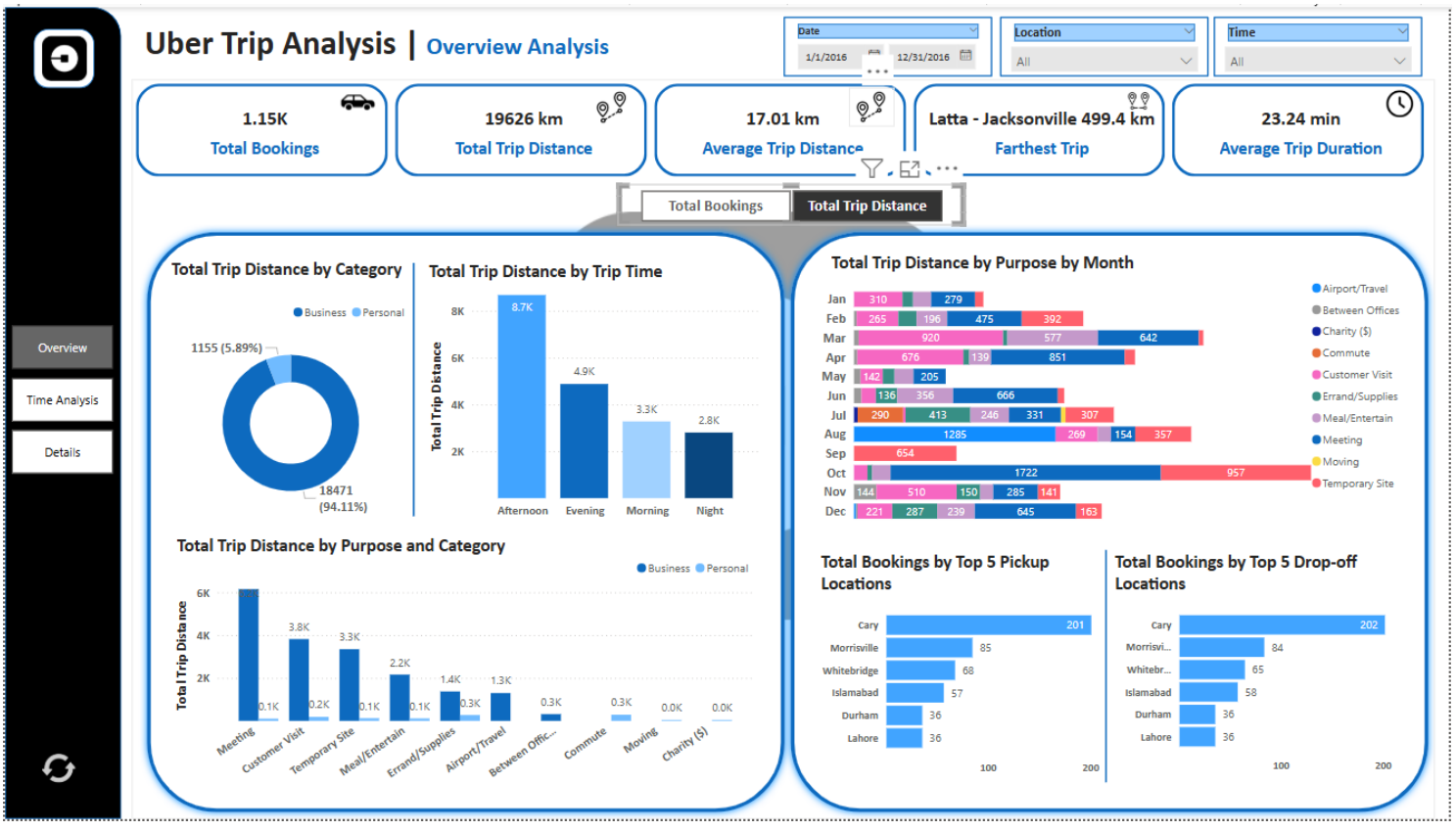
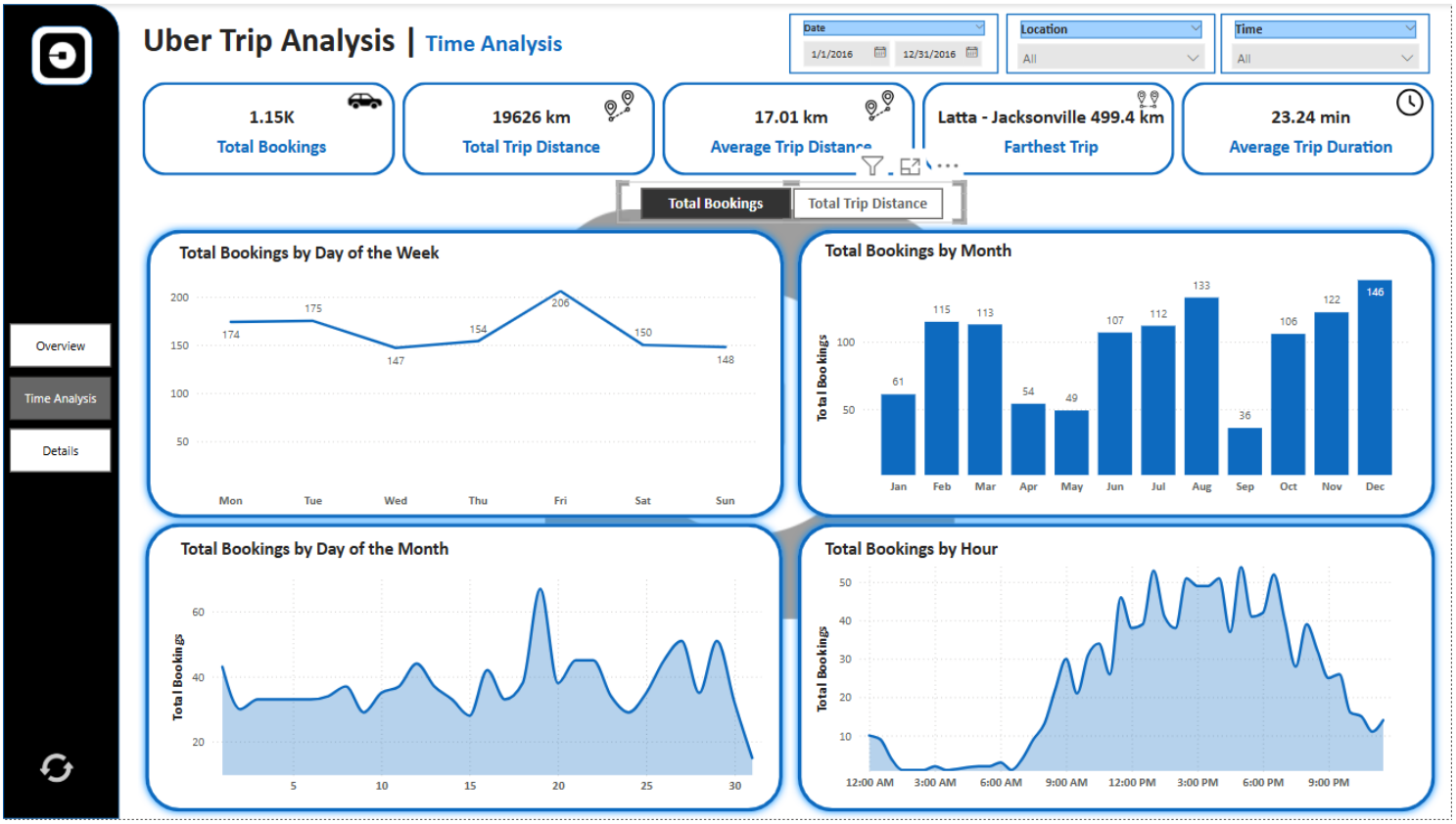
4. Dashboard

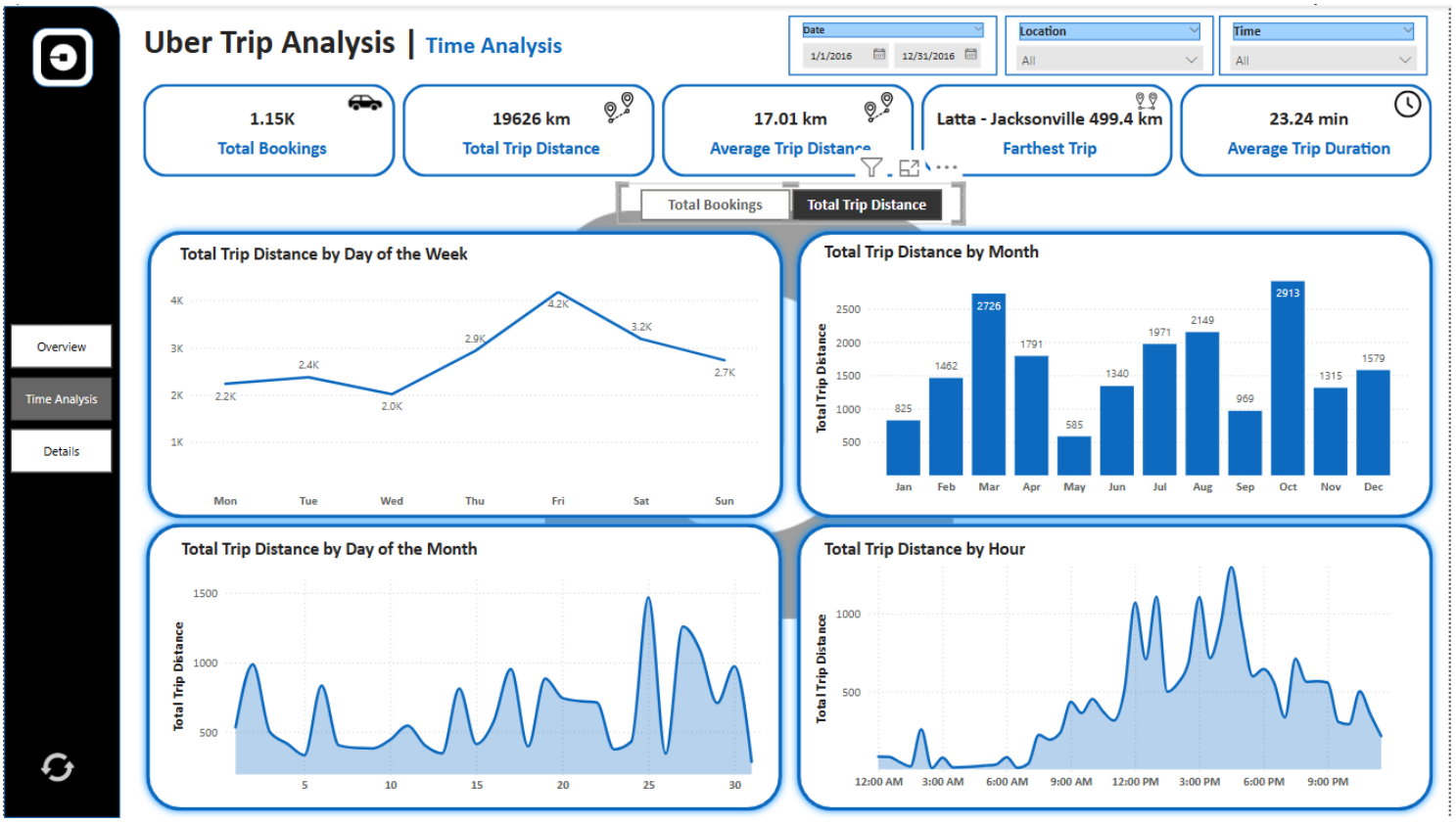
A. Overview



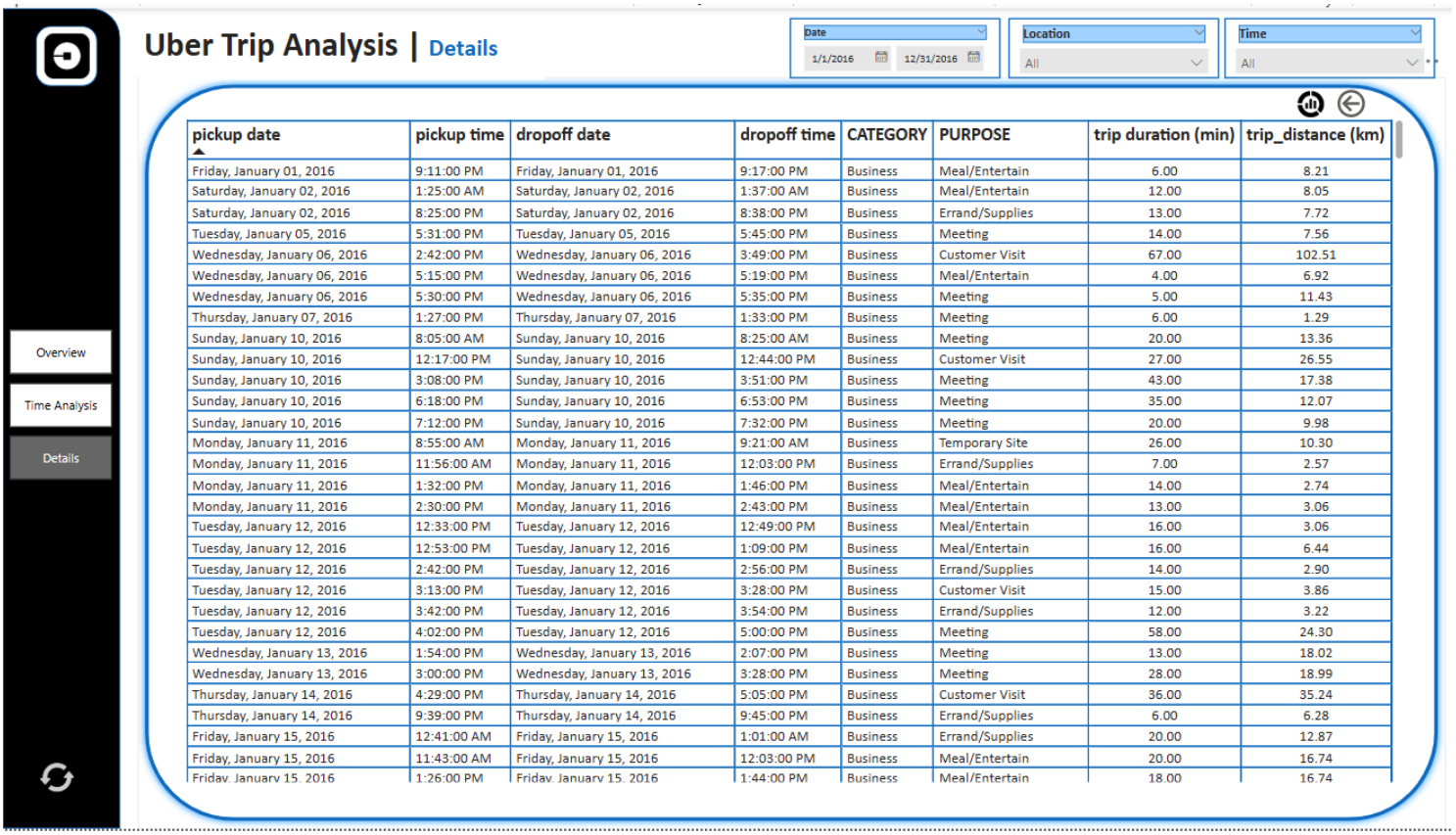


B. Time Analysis





C. Details



pickup date	pickup time	dropoff date	dropoff time	CATEGORY	PURPOSE	trip duration (min)	trip_distance (km)
Friday, January 01, 2016	9:11:00 PM	Friday, January 01, 2016	9:17:00 PM	Business	Meal/Entertain	6.00	8.21
Saturday, January 02, 2016	1:25:00 AM	Saturday, January 02, 2016	1:37:00 AM	Business	Meal/Entertain	12.00	8.05
Saturday, January 02, 2016	8:25:00 PM	Saturday, January 02, 2016	8:38:00 PM	Business	Errand/Supplies	13.00	7.72
Tuesday, January 05, 2016	5:31:00 PM	Tuesday, January 05, 2016	5:45:00 PM	Business	Meeting	14.00	7.56
Wednesday, January 06, 2016	2:42:00 PM	Wednesday, January 06, 2016	3:49:00 PM	Business	Customer Visit	67.00	102.51
Wednesday, January 06, 2016	5:15:00 PM	Wednesday, January 06, 2016	5:19:00 PM	Business	Meal/Entertain	4.00	6.92
Wednesday, January 06, 2016	5:30:00 PM	Wednesday, January 06, 2016	5:35:00 PM	Business	Meeting	5.00	11.43
Thursday, January 07, 2016	1:27:00 PM	Thursday, January 07, 2016	1:33:00 PM	Business	Meeting	6.00	1.29
Sunday, January 10, 2016	8:05:00 AM	Sunday, January 10, 2016	8:25:00 AM	Business	Meeting	20.00	13.36
Sunday, January 10, 2016	12:17:00 PM	Sunday, January 10, 2016	12:44:00 PM	Business	Customer Visit	27.00	26.55
Sunday, January 10, 2016	3:08:00 PM	Sunday, January 10, 2016	3:51:00 PM	Business	Meeting	43.00	17.38
Sunday, January 10, 2016	6:18:00 PM	Sunday, January 10, 2016	6:53:00 PM	Business	Meeting	35.00	12.07
Sunday, January 10, 2016	7:12:00 PM	Sunday, January 10, 2016	7:32:00 PM	Business	Meeting	20.00	9.98
Monday, January 11, 2016	8:55:00 AM	Monday, January 11, 2016	9:21:00 AM	Business	Temporary Site	26.00	10.30
Monday, January 11, 2016	11:56:00 AM	Monday, January 11, 2016	12:03:00 PM	Business	Errand/Supplies	7.00	2.57
Monday, January 11, 2016	1:32:00 PM	Monday, January 11, 2016	1:46:00 PM	Business	Meal/Entertain	14.00	2.74
Monday, January 11, 2016	2:30:00 PM	Monday, January 11, 2016	2:43:00 PM	Business	Meal/Entertain	13.00	3.06
Tuesday, January 12, 2016	12:33:00 PM	Tuesday, January 12, 2016	12:49:00 PM	Business	Meal/Entertain	16.00	3.06
Tuesday, January 12, 2016	12:53:00 PM	Tuesday, January 12, 2016	1:09:00 PM	Business	Meal/Entertain	16.00	6.44
Tuesday, January 12, 2016	2:42:00 PM	Tuesday, January 12, 2016	2:56:00 PM	Business	Errand/Supplies	14.00	2.90
Tuesday, January 12, 2016	3:13:00 PM	Tuesday, January 12, 2016	3:28:00 PM	Business	Customer Visit	15.00	3.86
Tuesday, January 12, 2016	3:42:00 PM	Tuesday, January 12, 2016	3:54:00 PM	Business	Errand/Supplies	12.00	3.22
Tuesday, January 12, 2016	4:02:00 PM	Tuesday, January 12, 2016	5:00:00 PM	Business	Meeting	58.00	24.30
Wednesday, January 13, 2016	1:54:00 PM	Wednesday, January 13, 2016	2:07:00 PM	Business	Meeting	13.00	18.02
Wednesday, January 13, 2016	3:00:00 PM	Wednesday, January 13, 2016	3:28:00 PM	Business	Meeting	28.00	18.99
Thursday, January 14, 2016	4:29:00 PM	Thursday, January 14, 2016	5:05:00 PM	Business	Customer Visit	36.00	35.24
Thursday, January 14, 2016	9:39:00 PM	Thursday, January 14, 2016	9:45:00 PM	Business	Errand/Supplies	6.00	6.28
Friday, January 15, 2016	12:41:00 AM	Friday, January 15, 2016	1:01:00 AM	Business	Errand/Supplies	20.00	12.87
Friday, January 15, 2016	11:43:00 AM	Friday, January 15, 2016	12:03:00 PM	Business	Meal/Entertain	20.00	16.74
Friday, January 15, 2016	1:26:00 PM	Friday, January 15, 2016	1:44:00 PM	Business	Meal/Entertain	18.00	16.74