Weather and Theme Parks

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Question

- How does weather affect the wait times for rides at theme parks?

- Chose 2 theme parks on opposite coasts for more varied data

- Disneyland in Anaheim, CA and Disneyworld in Orlando, FL

Weather Data

- Collected using the API from OpenWeatherMap
- Accepts locations in the form **q={city name}** added to the URL
- Specified units by adding **&units=imperial** to the end of the URL
- Returns a JSON file of relevant information for the specified city
- https://api.openweathermap.org/data/2.5/weather?q=Anaheim&appid={api_key}&units=imperial
- https://api.openweathermap.org/data/2.5/weather?q=Orlando&appid={api_key}&units=imperial

Example of API response

```
{
  "coord": {
    "lon": 10.99,
    "lat": 44.34
  },
  "weather": [
    {
      "id": 501,
      "main": "Rain",
      "description": "moderate rain",
      "icon": "10d"
    }
  ],
  "base": "stations",
  "main": {
    "temp": 298.48,
    "feels_like": 298.74,
    "temp_min": 297.56,
    "temp_max": 300.05,
    "pressure": 1015,
    "humidity": 64,
    "sea_level": 1015,
    "grnd_level": 933
  },
  "visibility": 10000,
  "wind": {
    "speed": 0.62,
    "deg": 349,
    "gust": 1.18
  },
  "rain": {
    "1h": 3.16
  },
  "clouds": {
    "all": 100
  },
  "dt": 1661870592,
  "sys": {
    "type": 2,
    "id": 2075663,
    "country": "IT",
    "sunrise": 1661834187,
    "sunset": 1661882248
  },
  "timezone": 7200,
  "id": 3163858,
  "name": "Zocca",
  "cod": 200
}
```

Disney Park Data

- Collected using API from queue-times.com

- Specified parks with URL:

  - https://queue-times.com/en-US/parks/16/queue_times.json – Disneyland
  - https://queue-times.com/en-US/parks/6/queue_times.json – Disney Magic Kingdom

- Returns a JSON file of wait times for all the rides at each park

```
{
"lands": [
  {
    "id": 109,
    "name": "Adventureland",
    "rides": [
      {
        "id": 326,
        "name": "Indiana Jones™ Adventure",
        "is_open": true,
        "wait_time": 50,
        "last_updated": "2023-03-21T05:56:19.000Z"
      },
      {
        "id": 296,
        "name": "Jungle Cruise",
        "is_open": true,
        "wait_time": 10,
        "last_updated": "2023-03-21T05:56:19.000Z"
      },
      {
        "id": 288,
        "name": "Walt Disney's Enchanted Tiki Room",
        "is_open": true,
        "wait_time": 0,
        "last_updated": "2023-03-21T05:56:19.000Z"
      }
    ]
  },
```
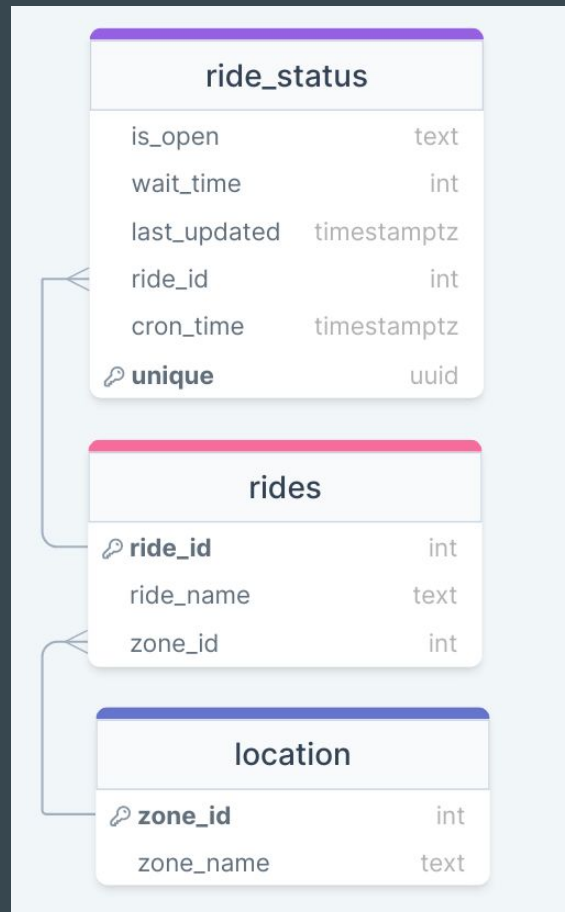
Disneyland JSON example

Weather Database

- Selected the potentially useful pieces of information out of the JSON and stored them in the following table
- 'description' contains one of eight one-word general weather conditions, such as 'Drizzle'
- 'description_long' contains slightly more detail, such as 'light intensity drizzle'

weather	
🔑 **id**	int
add_time	timestamp
city	text
temp	float
humidity	float
pressure	float
temp_max	float
temp_min	float
temp_feel	float
wind_speed	float
clouds	int
description	text
description_long	text

Disney Database

- Created 3 different tables from the JSON file
- The location table contains each zone of the park: Adventureland, Fantasyland, etc.
- The ride table contains the ride name, ride ID and zone ID
- Ride status included the ride_id, wait_time, and our scraping time (cron_time)
- Tables are connected to one another with 1 to many relationships

Combination

- Our scrapes were synced to run every 2 hours
- Imported the weather table into the database with the ride tables
- Joined tables using the time that rows were added to their database

```
FROM disneyland_ride_status
JOIN clean_weather
ON date_trunc('hour', cron_time AT TIME ZONE 'PDT') = date_trunc('hour', add_time AT TIME ZONE 'UTC' AT TIME ZONE 'PDT')
```
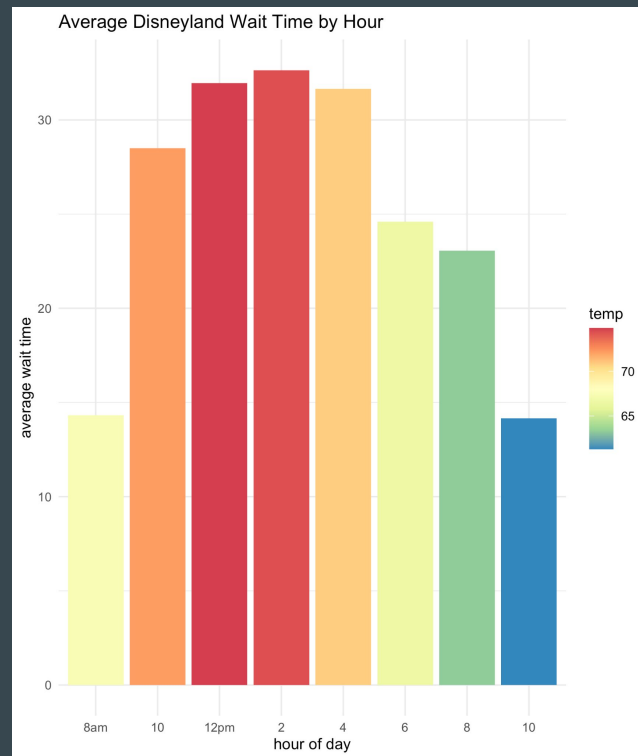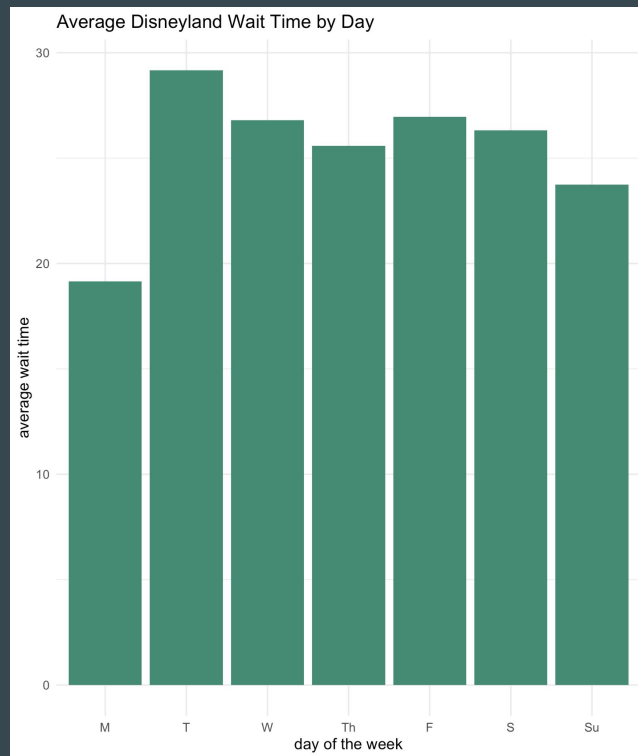
- Combining data across both Disneyland and Disneyworld was more complicated

```
CREATE OR REPLACE VIEW disneyworld_weather AS(
  SELECT *, world.cron_time AT TIME ZONE 'EDT' AS real_time
  FROM disneyworld_ride_status as world
  JOIN clean_weather as weather
  ON date_trunc('hour', world.cron_time AT TIME ZONE 'EDT') = date_trunc('hour', weather.add_time AT TIME ZONE 'UTC' AT TIME ZONE 'EDT')
  WHERE weather.city = 'Orlando' AND world.wait_time > 0
);
```

```
CREATE OR REPLACE VIEW combined AS(
  SELECT * FROM disneyworld_weather
  UNION
  SELECT * FROM disneyland_weather
);
```
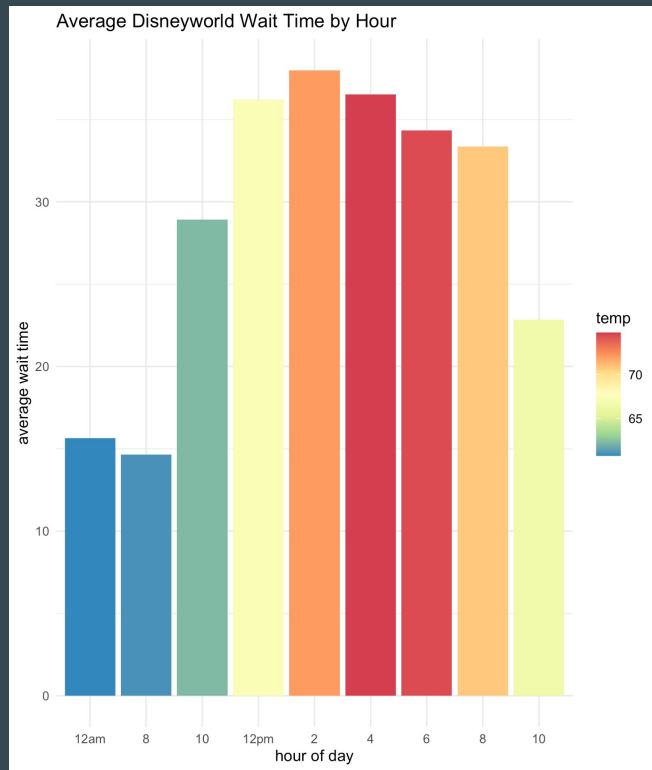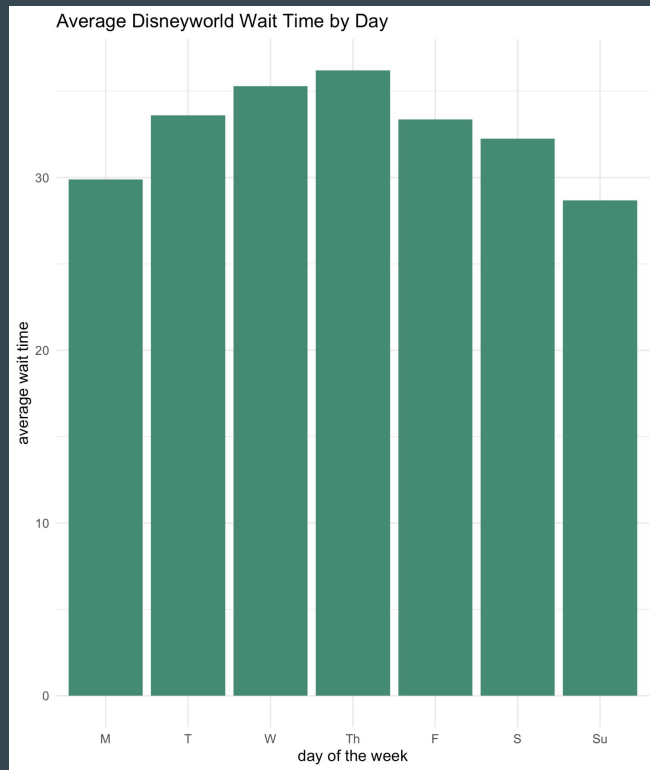
Related Questions: Disneyland

- Wait time was shortest on Mondays
- Wait times under 30 min
- Wait times were longest mid-day which was also the warmest time of the day

Average Disneyland Wait Time by Day

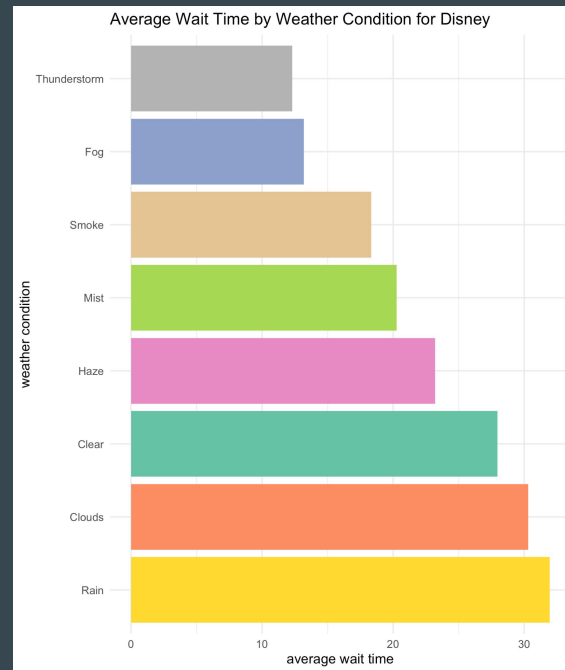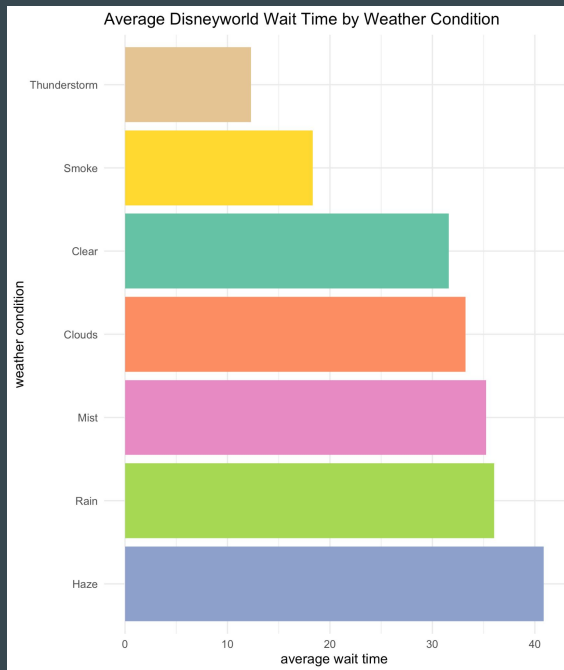
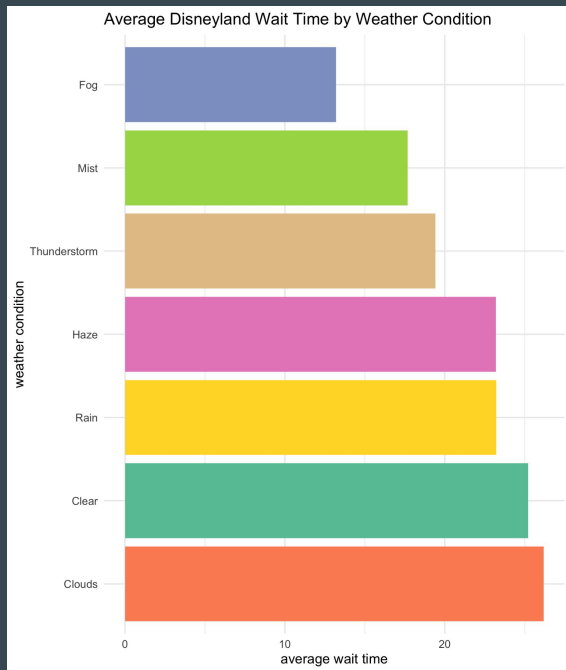Average Disneyland Wait Time by Hour

Related Questions: Disneyworld

- Wait time was shortest on Sunday
- Wait times were over/near 30 min
- Wait times were longest in the afternoon/evening which was also the warmest time of day

Average Disneyworld Wait Time by Day

Average Disneyworld Wait Time by Hour

Answering the Question: Weather Conditions

Average Disneyland Wait Time by Weather Condition

Average Disneyworld Wait Time by Weather Condition

Average Wait Time by Weather Condition for Disney

Conclusions

description	count
Clouds	327
Clear	268
Mist	32
Rain	20
Haze	10
Fog	3
Thunderstorm	3
Drizzle	2
Smoke	1

- Monday is the best day to go to Disneyland
- Sunday is the best day to go to Disneyworld
- Mornings had the shortest wait times

- Fog, thunderstorms, smoke, and mist had lower wait times
- Clear skies, clouds, rain, and haze had longest wait times
- Weather seems to impact wait times at Disneyworld much more than Disneyland

Problems

- Because we scraped every 2 hours, and EDT and PDT are an odd number of hours apart, our combined data had local times which didn't line up
- The JSON for the disney rides was grouped by park zone, but there was a ride without a zone, which had to be individually addressed for the file to be read in correctly

Questions?

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