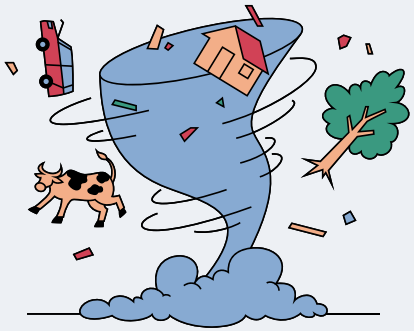
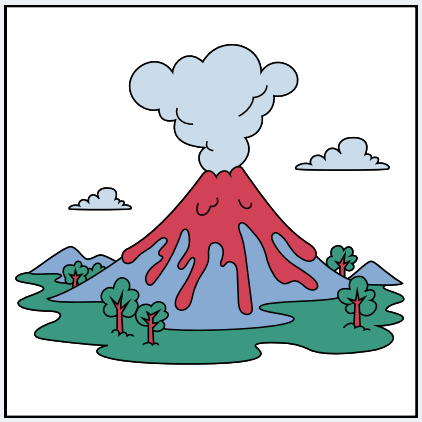
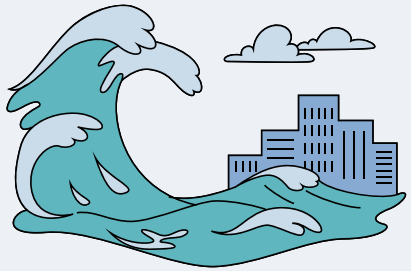




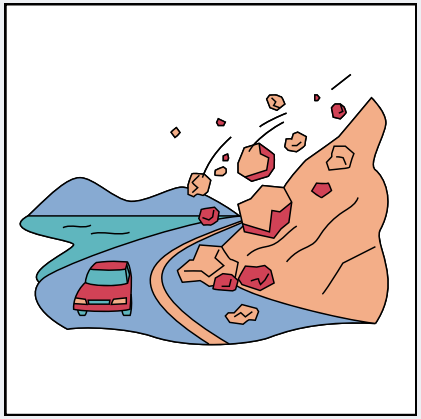


NATURAL DISASTER PRESENTATION

ANALYSIS OF
EARTHQUAKE/TSUNAMI
USING SQL AND CANVA.

Name: **Piyush Kumar Mishra**

Date: **24 - 10 - 2025**

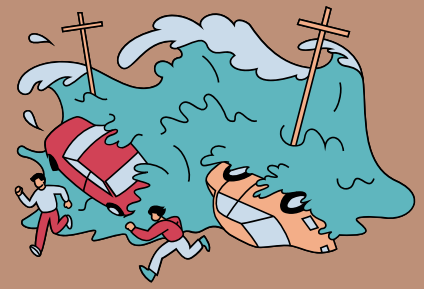


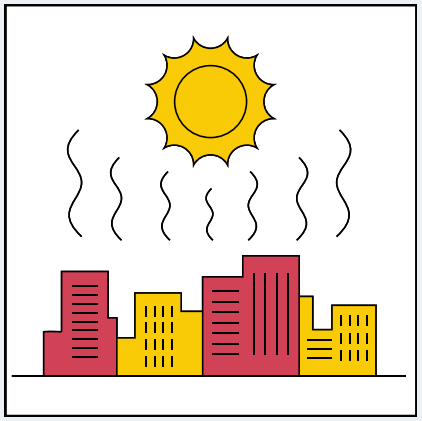
1. HOW MANY EARTHQUAKES CAUSED A TSUNAMI?

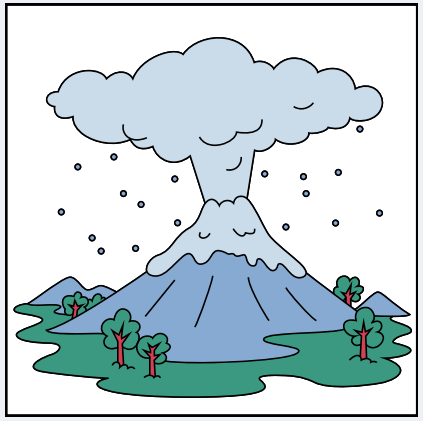
```sql
SELECT COUNT(*) AS tsunami_events
FROM earthquake_data_tsunami
WHERE tsunami = 1;
```

Result Grid

	tsunami_events
▶	304







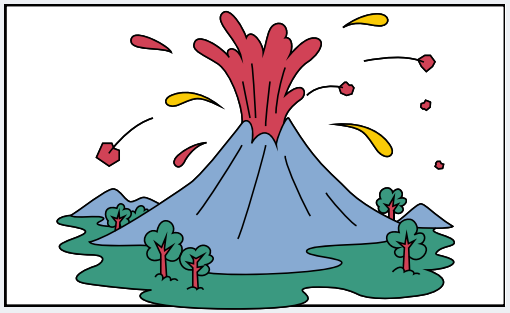
WHAT PERCENTAGE OF EVENTS RESULTED IN A TSUNAMI ?

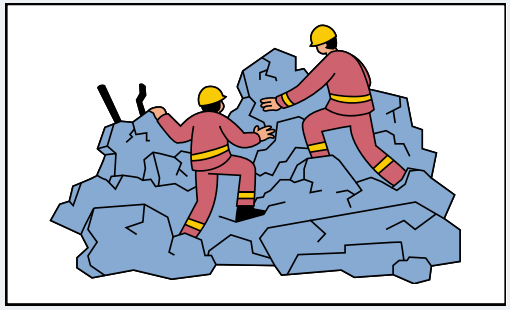
```
SELECT
    COUNT(*) AS total_events,
    SUM(tsunami) AS tsunami_events,
    ROUND(100 * SUM(tsunami)/COUNT(*), 2) AS tsunami_percentage
FROM earthquake data tsunami;
```

Result Grid | Filter Rows: | Exp

total_events	tsunami_events	tsunami_percentage
782	304	38.87

COMPARE MAGNITUDE AND DEPTH OF EVENTS THAT CAUSED A TSUNAMI VS THOSE THAT DIDN'T.

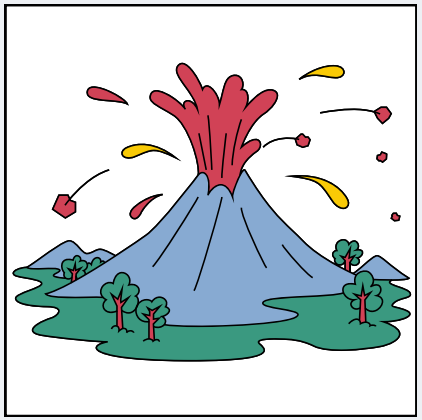


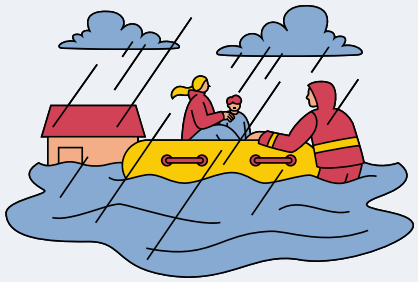


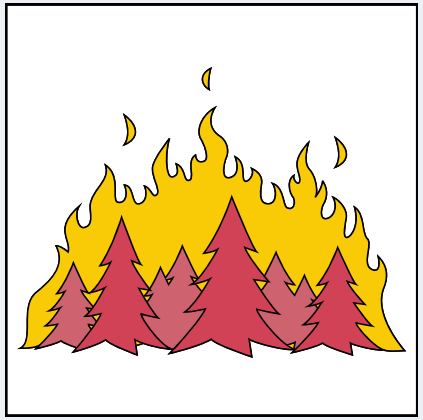
```sql
SELECT
    tsunami,
    ROUND(AVG(magnitude),2) AS avg_magnitude,
    ROUND(AVG(depth),2) AS avg_depth,
    COUNT(*) AS total_events
FROM earthquake_data_tsunami
GROUP BY tsunami;
```

Result Grid | Filter Rows: | Exp

tsunami	avg_magnitude	avg_depth	total_events
1	6.94	85.66	304
0	6.94	69.67	478







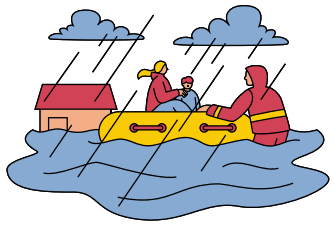
HOW MANY TSUNAMI EVENTS OCCURS EACH YEARS ?

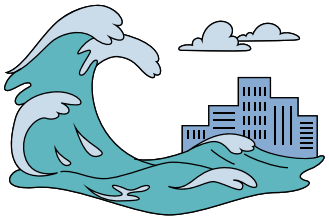
```sql
SELECT
  year,
    COUNT(*) AS tsunami_events
FROM earthquake_data_tsunami
WHERE tsunami = 1
GROUP BY year
ORDER BY year;
```

Result Grid | Filter Rc

year	tsunami_events
2013	34
2014	40
2015	33
2016	31
2017	27
2018	33
2019	26
2020	15
2021	33
2022	32

IDENTIFY ANY TRENDS OR SPIKE OVER TIME.





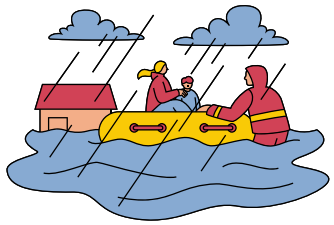
```sql
SELECT year, COUNT(*) AS tsunami_events
FROM earthquake_data_tsunami
WHERE tsunami = 1
GROUP BY year
ORDER BY tsunami_events DESC
limit 5;
```

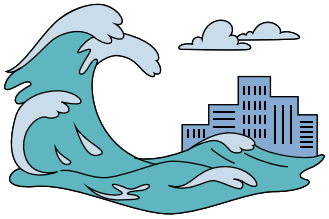
Result Grid | Filter

year	tsunami_events
2014	40
2013	34
2021	33
2015	33
2018	33

34

WHICH MAGNITUDE RANGES ARE MOST LIKELY CAUSED TSUNAMI ?





```sql
SELECT
    CASE
        WHEN magnitude < 5 THEN '<5'
        WHEN magnitude BETWEEN 5 AND 6 THEN '5-6'
        WHEN magnitude BETWEEN 6 AND 7 THEN '6-7'
        WHEN magnitude BETWEEN 7 AND 8 THEN '7-8'
        ELSE '>=8'
    END AS mag_range,
    COUNT(*) AS total_events,
    SUM(tsunami) AS tsunami_events,
    ROUND(100.0 * SUM(tsunami)/COUNT(*),2) AS tsunami_percentage
FROM earthquake_data_tsunami
GROUP BY mag_range
ORDER BY mag_range;
```

Result Grid | Filter Rows: | Export: | Wr

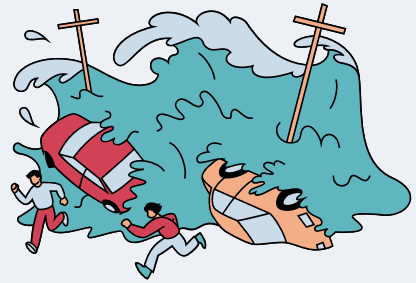
mag_range	total_events	tsunami_events	tsunami_percentage
>=8	23	8	34.78
6-7	548	215	39.23
7-8	211	81	38.39

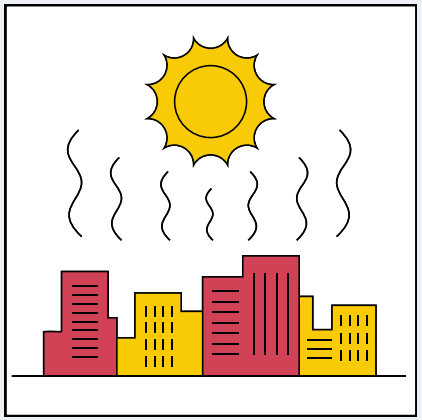
EFFECT OF LOW VS HIGH MAGNITUDE.

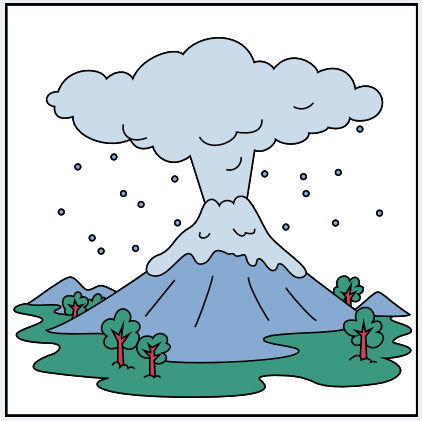
```sql
SELECT
    CASE
        WHEN magnitude < 6 THEN 'Low (<6)'
        ELSE 'High (>=6)'
    END AS mag_group,
    COUNT(*) AS total_events,
    SUM(tsunami) AS tsunami_events,
    ROUND(100.0 * SUM(tsunami)/COUNT(*),2) AS tsunami_percentage
FROM earthquake_data_tsunami
GROUP BY mag_group;
```

Result Grid | Filter Rows: | Export: | W

mag_group	total_events	tsunami_events	tsunami_percentage
High (>=6)	782	304	38.87







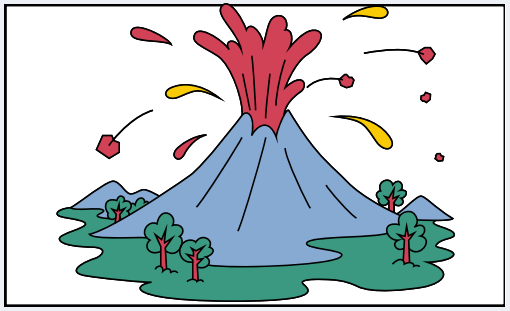
TYPICAL VALUES OF CDI, MMI, SIG, NST, DMIN, GAP FOR TSUNAMI EVENTS.

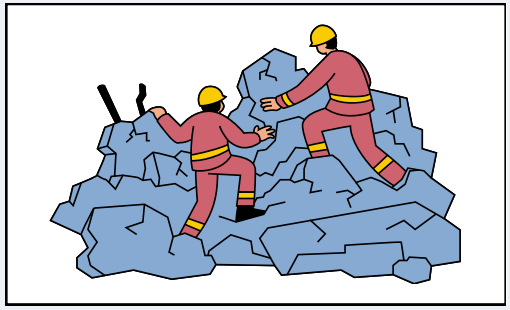
```sql
SELECT
    ROUND(AVG(cdi),2) AS avg_cdi,
    ROUND(AVG(mmi),2) AS avg_mmi,
    ROUND(AVG(sig),2) AS avg_sig,
    ROUND(AVG(nst),2) AS avg_nst,
    ROUND(AVG(dmin),4) AS avg_dmin,
    ROUND(AVG(gap),2) AS avg_gap
FROM earthquake_data_tsunami
WHERE tsunami = 1;
```

Result Grid | Filter Rows: | Export:

avg_cdi	avg_mmi	avg_sig	avg_nst	avg_dmin	avg_gap
4.97	5.69	863.85	42.07	2.44	28.58

AVERAGE MAGNITUDE PER MONTH (SEASONAL PATTERN)

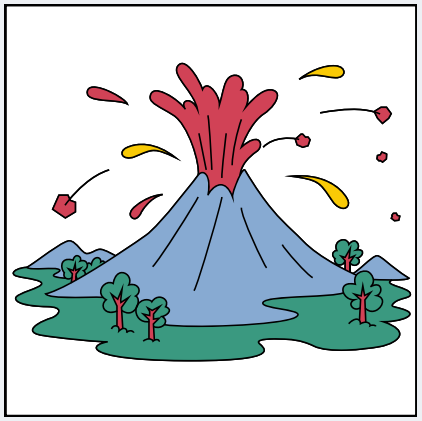


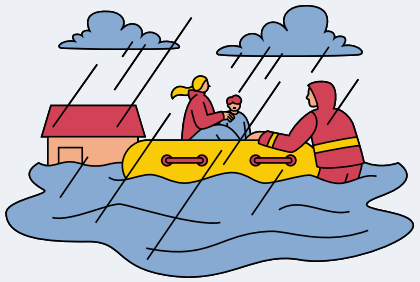


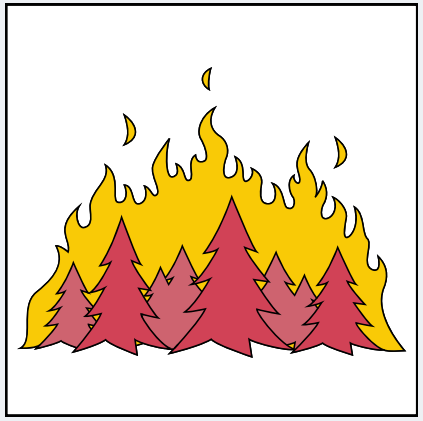
```sql
SELECT
    month,
    ROUND(AVG(magnitude),2) AS avg_magnitude,
    SUM(tsunami) AS tsunami_events
FROM earthquake_data_tsunami
GROUP BY month
ORDER BY month;
```

Result Grid | Filter Rows:

month	avg_magnitude	tsunami_events
1	6.95	28
2	6.91	23
3	6.98	23
4	6.92	29
5	6.99	31
6	6.89	16
7	6.95	25
8	6.96	26
9	7.01	27
10	6.89	23
11	6.92	36
12	6.92	17







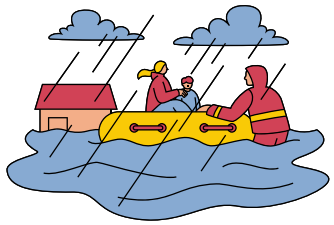
ARE TSUNAMI EVENTS MORE FREQUENT IN CERTAIN MONTHS ?

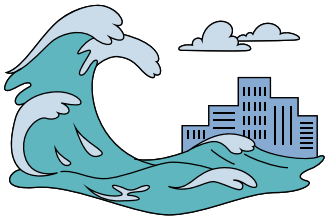
```sql
SELECT
    month,
    COUNT(*) AS tsunami_events
FROM earthquake_data_tsunami
WHERE tsunami = 1
GROUP BY month
ORDER BY month;
```

Result Grid | Filter R

month	tsunami_events
1	28
2	23
3	23
4	29
5	31
6	16
7	25
8	26
9	27
10	23
11	36
12	17

EXPLORE POTENTIAL SEASONAL PATTERNS.

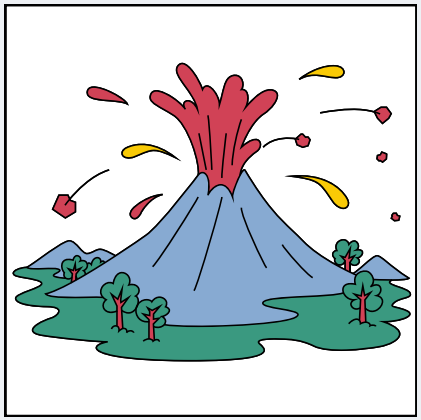


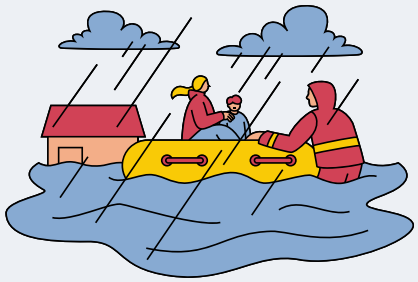


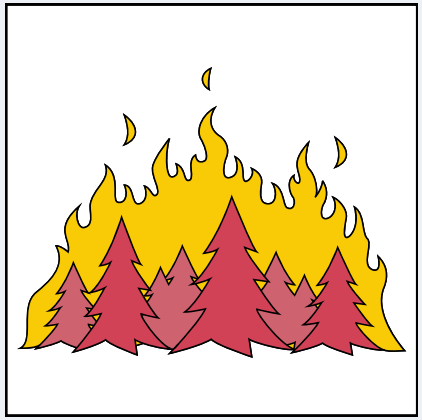
```sql
SELECT
    month,
    COUNT(*) AS tsunami_events,
    ROUND(AVG(magnitude),2) AS avg_magnitude
FROM earthquake_data_tsunami
WHERE tsunami = 1
GROUP BY month
ORDER BY month;
```

Result Grid | Filter Rows:

month	tsunami_events	avg_magnitude
1	28	6.89
2	23	6.93
3	23	6.94
4	29	6.96
5	31	7
6	16	6.96
7	25	7.04
8	26	6.9
9	27	6.95
10	23	6.83
11	36	6.89
12	17	7.02





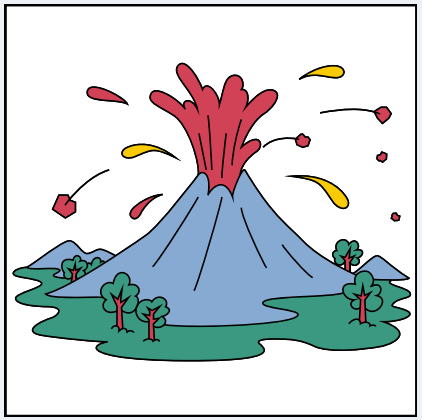


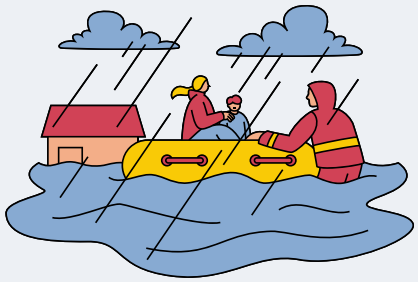
IDENTIFY THE TOP REGIONS (LAT/LON) WITH THE MOST TSUNAMI EVENTS.

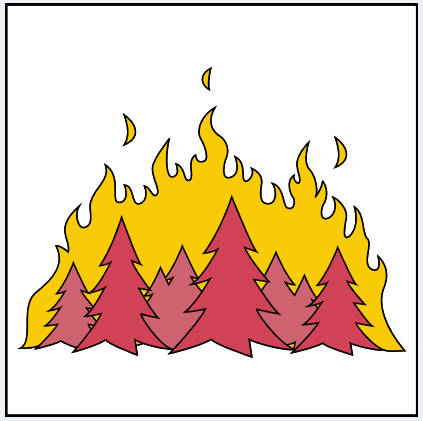
```sql
select
    count(*) as total_events,
    round((latitude),1) as top_lat,
    round((longitude),1) as top_lon
    from earthquake_data_tsunami
    where tsunami=1
    group by top_lat, top_lon
    order by total_events desc
    limit 5;
```

Result Grid | Filter Rows:

total_events	top_lat	top_lon
2	14.7	-92.5
2	52.5	-167.7
2	-6.8	155
2	-26	178.4
2	52.5	-168.1







IDENTIFY THE TOP REGIONS (LAT/LON) WITH THE MOST TSUNAMI EVENTS.

```sql
select
    count(*) as total_events,
    round((latitude),1) as top_lat,
    round((longitude),1) as top_lon
    from earthquake_data_tsunami
    where tsunami=1
    group by top_lat, top_lon
    order by total_events desc
    limit 10;
```

Result Grid | Filter Rows:

total_events	top_lat	top_lon
2	-6.8	155
2	-11	165.7
2	-26	178.4
2	14.7	-92.5
2	52.5	-167.7
2	52.5	-168.1
1	-20.1	-178.3
1	-25.6	178.3
1	7.7	-82.3
1	18.4	-103.3

🌊 IN THIS PROJECT, I PERFORMED A DETAILED ANALYSIS OF GLOBAL EARTHQUAKE/TSUNAMI DATA USING SQL.

THE GOAL WAS TO EXPLORE HOW TSUNAMIS HAVE IMPACTED DIFFERENT REGIONS OVER TIME.

I SOLVED SEVERAL ANALYTICAL QUESTIONS, SUCH AS:

- TOTAL NUMBER OF TSUNAMI EVENTS RECORDED
- YEAR AND LOCATION WITH THE HIGHEST MAGNITUDE
- TOP AFFECTED COUNTRIES BASED ON DEATHS AND DAMAGES
- YEAR-WISE ANALYSIS OF TSUNAMI OCCURRENCES
- AVERAGE MAGNITUDE AND DEATH RATE COMPARISON

USING SQL QUERIES LIKE JOIN, GROUP BY, ORDER BY, AND AGGREGATE FUNCTIONS (SUM(), MAX(), AVG()), I TRANSFORMED RAW DATA INTO VALUABLE INSIGHTS.

THIS PROJECT HIGHLIGHTS HOW SQL CAN BE USED FOR REAL-WORLD DISASTER DATA ANALYSIS AND DECISION-MAKING.

THANK YOU.