Detecting Financial Stress Periods in Students

This project analyzes student attendance and simulated fee payment delays to detect periods of financial stress. By combining attendance patterns with delay-based stress classification, the dashboard identifies students who may be at academic risk due to financial difficulties.

Add project filter

SQL 1

4h ago Dataframes

```sql
select
  Student_ID,
  count(*) as Total_Classes,
  sum(Attendance) as Classes_Attended,
  round( (sum(Attendance) * 100.0) / count(*), 2 ) as Attendance_Rate,
  date '2025-01-10' as Fee_Due_Date,
  date '2025-01-10' + ((CAST(Student_ID AS INTEGER) % 30) * interval '1 day') as Fee_Paid_Date,

  -- delay days
  date_diff(
      'day',
      date '2025-01-10',
      CAST(
        date '2025-01-10' + ((CAST(Student_ID AS INTEGER) % 30) * interval '1 day')
        AS DATE
      )
  ) as Delay_Days,

  -- stress level based on delay
  case
    when date_diff(
          'day',
          date '2025-01-10',
          CAST(
            date '2025-01-10' + ((CAST(Student_ID AS INTEGER) % 30) * interval '1 day')
            AS DATE
          )
        ) <= 5 then 'Low Stress'

    when date_diff(
          'day',
          date '2025-01-10',
          CAST(
            date '2025-01-10' + ((CAST(Student_ID AS INTEGER) % 30) * interval '1 day')
            AS DATE
          )
        ) between 6 and 15 then 'Medium Stress'

    else 'High Stress'
  end as Stress_Level

from "attendance_clean.csv"
group by Student_ID;
```

Filters

	Student_ID	Total_Classes	Classes_Attended	Attendance_Rate	Fee_Due_Date	Fee_Paid_Date	Delay_Days	Stress_Level
0	201.0	1	1.0	100.0	2025-01-10	2025-01-31T00:00:00	21	High Stress
1	202.0	1	0.0	0.0	2025-01-10	2025-02-01T00:00:00	22	High Stress
2	210.0	1	0.0	0.0	2025-01-10	2025-01-10T00:00:00	0	Low Stress
3	217.0	1	1.0	100.0	2025-01-10	2025-01-17T00:00:00	7	Medium Stress
4	218.0	1	0.0	0.0	2025-01-10	2025-01-18T00:00:00	8	Medium Stress
5	220.0	1	1.0	100.0	2025-01-10	2025-01-20T00:00:00	10	Medium Stress
6	222.0	1	1.0	100.0	2025-01-10	2025-01-22T00:00:00	12	Medium Stress
7	223.0	1	1.0	100.0	2025-01-10	2025-01-23T00:00:00	13	Medium Stress
8	227.0	1	1.0	100.0	2025-01-10	2025-01-27T00:00:00	17	High Stress
9	228.0	1	0.0	0.0	2025-01-10	2025-01-28T00:00:00	18	High Stress
10	229.0	1	1.0	100.0	2025-01-10	2025-01-29T00:00:00	19	High Stress
11	231.0	1	1.0	100.0	2025-01-10	2025-01-31T00:00:00	21	High Stress
12	232.0	1	0.0	0.0	2025-01-10	2025-02-01T00:00:00	22	High Stress
13	237.0	1	1.0	100.0	2025-01-10	2025-02-06T00:00:00	27	High Stress
14	240.0	1	1.0	100.0	2025-01-10	2025-01-10T00:00:00	0	Low Stress
15	246.0	1	1.0	100.0	2025-01-10	2025-01-16T00:00:00	6	Medium Stress

attendance_clean

SQL 2

```sql
select
  Stress_Level,
  count(*) as Student_Count
from (
  -- your final query that already creates Stress_Level
  select
    Student_ID,
    case
      when date_diff(
            'day',
            date '2025-01-10',
            CAST(
              date '2025-01-10' + ((CAST(Student_ID AS INTEGER) % 30) * interval '1 day')
              AS DATE
            )
          ) <= 5 then 'Low Stress'
      when date_diff(
            'day',
            date '2025-01-10',
            CAST(
              date '2025-01-10' + ((CAST(Student_ID AS INTEGER) % 30) * interval '1 day')
              AS DATE
            )
          ) between 6 and 15 then 'Medium Stress'
      else 'High Stress'
    end as Stress_Level
  from "attendance_clean.csv"
  group by Student_ID
)
group by Stress_Level;
```

Filters

	Stress_Level	Student_Count
0	Low Stress	3920
1	High Stress	9152
2	Medium Stress	6530

dataframe 1 — 3 rows

Number of Students by Stress Level

SQL 4

```sql
select
    Stress_Level,
    round(avg(Attendance_Rate), 2) as Avg_Attendance_Rate
from (
    -- your main query that already creates Stress_Level and Attendance_Rate
    select
        Student_ID,
        round((sum(Attendance) * 100.0) / count(*), 2) as Attendance_Rate,
        case
```

```sql
        when date_diff(
            'day',
            date '2025-01-10',
            cast(
                date '2025-01-10' + ((cast(Student_ID as integer) % 30) * interval '1 day')
            as date)
        ) <= 5 then 'Low Stress'

        when date_diff(
            'day',
            date '2025-01-10',
            cast(
                date '2025-01-10' + ((cast(Student_ID as integer) % 30) * interval '1 day')
            as date)
        ) between 6 and 15 then 'Medium Stress'

        else 'High Stress'
    end as Stress_Level
from "attendance_clean.csv"
group by Student_ID
) t
group by Stress_Level;
```

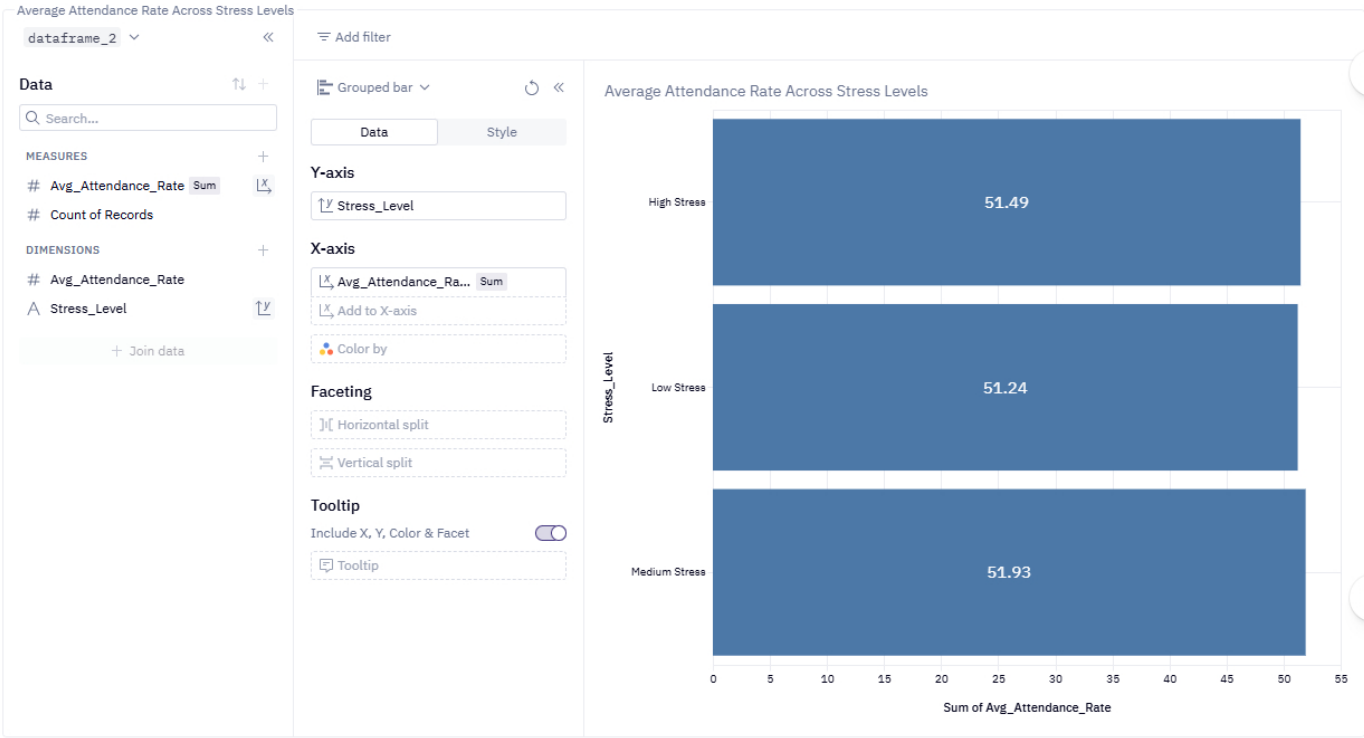
Filters

	Stress_Level	Avg_Attendance_Rate
0	Low Stress	51.24
1	High Stress	51.49
2	Medium Stress	51.93

dataframe_2 1

3 rows

Average Attendance Rate Across Stress Levels



SQL 6

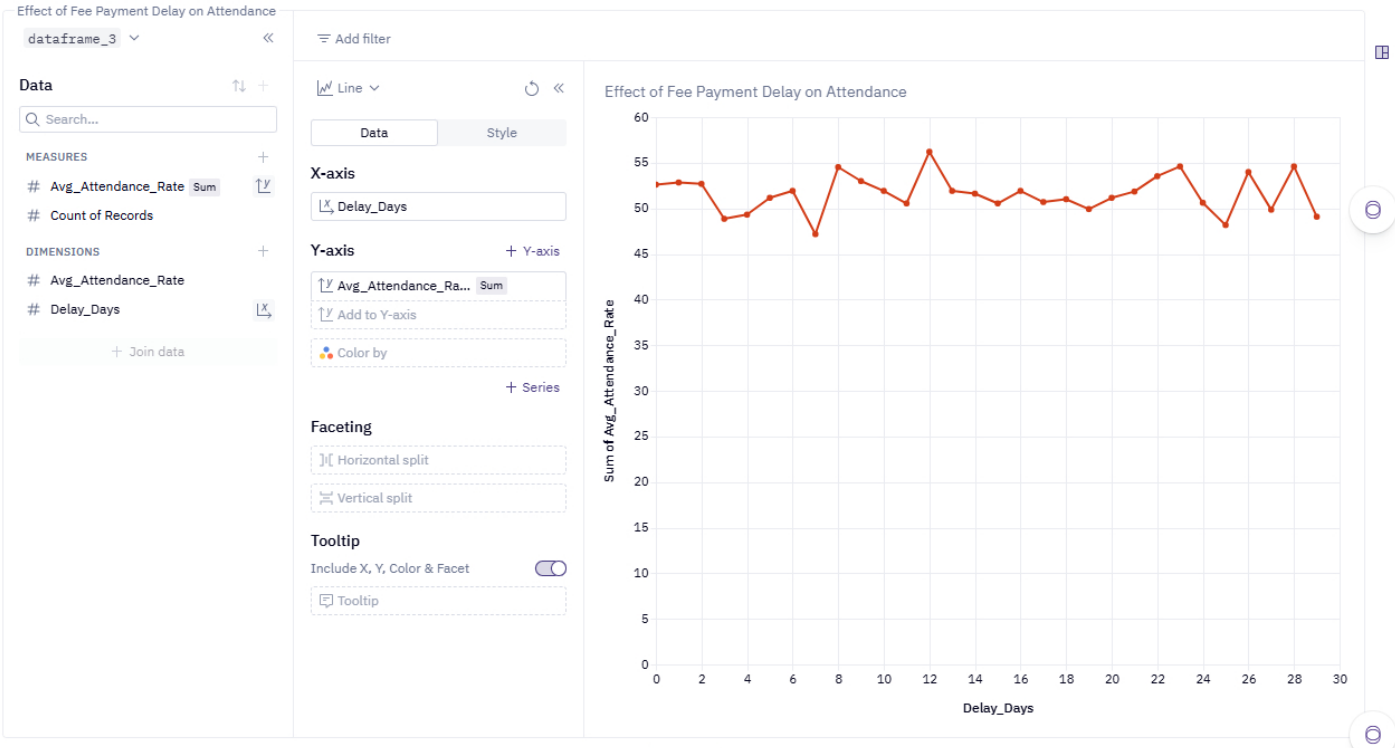
```sql
select
    Delay_Days,
    round(avg(Attendance_Rate), 2) as Avg_Attendance_Rate
from (
    select
        Student_ID,
        round((sum(Attendance) * 100.0) / count(*), 2) as Attendance_Rate,

        date_diff(
            'day',
            date '2025-01-10',
            cast(
                date '2025-01-10' + ((cast(Student_ID as integer) % 30) * interval '1 day')
            as date)
        ) as Delay_Days

    from "attendance_clean.csv"
    group by Student_ID
) t
group by Delay_Days
```

```
21 order by Delay_Days;
22
```

Filters

	Delay_Days	Avg_Attendance_Rate
0	0	52.6
1	1	52.83
2	2	52.68
3	3	48.85
4	4	49.31
5	5	51.15
6	6	51.91
7	7	47.17
8	8	54.52
9	9	52.99
10	10	51.91
11	11	50.54
12	12	56.2
13	13	51.91
14	14	51.61
15	15	50.54

dataframe_3 1 — 30 rows



Key Takeaway

Students with longer fee payment delays are more likely to experience high financial stress and show slightly lower and irregular attendance patterns. Early identification of delayed payments can help institutions prevent academic risk.

Insights & Conclusion

1. A significant proportion of students are classified under High Stress, indicating that delayed fee payments are a frequent and serious concern in the student population.

2. Students with High Stress levels show a slightly lower average attendance rate compared to those in Low Stress, suggesting that financial difficulties may negatively influence classroom participation and academic engagement.

3. The analysis shows a clear relationship between payment delay and stress level. As the number of delay days increases, the likelihood of a student falling into Medium or High Stress categories rises steadily.

4. The trend between Delay Days and Attendance Rate indicates that prolonged financial stress leads to more irregular attendance patterns, which may affect long-term academic performance.

Final Conclusion:

Fee payment delay can be used as a strong early indicator of student financial stress and potential academic risk.

By combining fee delay data with attendance patterns, educational institutions can proactively identify vulnerable students and provide timely financial support, counseling, or flexible payment plans.

This data-driven approach can improve student well-being, reduce drop-out risk, and enhance overall academic success.