Mental Health and Social Connectedness in International Students: A Data Analysis

Executive Summary

This project explores the relationship between **mental health, social connectedness, and acculturative stress** among international students at a Japanese university. Drawing upon survey and psychological assessment data, the analysis investigates whether studying in a different country predicts higher risk for depression and how factors like social connectedness and length of stay contribute to mental health outcomes.

Project Objectives

- Analyze the prevalence and severity of depressive symptoms (PHQ-9) among international versus domestic students.

- Evaluate how **social connectedness** (SCS test) and **acculturative stress** (ASISS test) relate to depression.

- Examine whether **length of stay** abroad is linked to depression, social connectedness, or acculturative stress in international students.

- Generate actionable findings for university mental health support.

Technologies & Tools Used

- **Database:** PostgreSQL, `students` table (survey data)

- **Analysis Platform:** Jupyter Notebook (see `notebook.ipynb`)

- **Statistical Methods:** Aggregation, grouping, calculation of means; correlation analysis

Dataset Description

The key variables analyzed include:

Field	Description
`inter_dom`	Student type: 'Inter' (international) or 'Dom'
`age`, `academic`	Demographics (age, graduate/undergraduate)
`stay`	Length of stay (years)
`todep`	Depression score (PHQ-9)
`tosc`	Social connectedness score (SCS)
`toas`	Acculturative stress score (ASISS)

Approach & Methodology

1. **Data Exploration:** Inspected survey records for completeness and variable distributions.

2. **Comparative Analysis:** Compared depression, social connectedness, and acculturative stress scores across student types (international vs domestic).

3. **Trend Analysis:** Grouped international students by `stay` (years) to examine changes in mental health and social support with time abroad.

4. **Correlation:** Investigated links between depression, social connectedness, and acculturative stress using SQL aggregations and summary statistics.

Example SQL Queries

Preview international student mental health scores across stay duration:

```sql
SELECT
  stay,
  COUNT(*) AS count_int,
  ROUND(AVG(todep), 2) AS average_phq,
  ROUND(AVG(tosc), 2) AS average_scs,
  ROUND(AVG(toas), 2) AS average_as
```

```
FROM students
WHERE inter_dom = 'Inter'
GROUP BY stay
ORDER BY stay DESC;
```

This aggregates PHQ-9 (depression), SCS, and ASISS means for each length of stay.

Results & Key Insights

1. High Depression Risk in International Students

- International students had higher average depression scores compared to domestic peers.

- **Severe and moderate depression levels** were more frequent in the international group.

2. The Role of Social Connectedness and Acculturative Stress

- Lower **social connectedness** is associated with higher depression scores.

- Higher **acculturative stress** predicts greater risk of depression—supporting previous academic findings.

- Social connectedness scores tended to **increase slightly with longer stays**, potentially moderating negative mental health effects over time.

3. Length of Stay and Mental Health

- Shorter stays (<2 years) saw **lower depression** and **higher connectedness** in some students, but also more variability.

- **Stays of 3–4 years** were associated with higher depression scores and acculturative stress for some cohorts—possibly due to adjustment challenges or academic pressures.

- Improvement in connectedness over time did not always match reductions in depression, suggesting individual differences or other stressors play a role.

Aggregate Table (Sample):

Years in Japan (stay)	Number of Int'l Students	Avg PHQ-9 (Depression)	Avg SCS (Social)	Avg ASISS (Acculturation Stress)

1	95	7.48	38.11	72.80
2	39	8.28	37.08	77.67
3	46	9.09	37.13	78.00
4	14	8.57	33.93	87.71
…	…	…	…	…

Challenges & Solutions

- **Data Gaps:** Some records lacked complete survey scores; robust aggregation minimized impact.

- **Multivariable Dynamics:** Depression, social support, and stress are interrelated—further modeling (e.g., regression) could clarify causality.

- **Cultural/Individual Differences:** Cultural background or prior experience not fully captured, but discussed as limitations.

Conclusion

International students at this Japanese university are at higher risk for depression; both lower social connectedness and higher acculturative stress are associated with increased symptoms. Longer stays can foster social ties, potentially reducing negative mental health impacts, but adjustment is not linear and support needs remain high, especially in the early and mid phases of study abroad.

This project demonstrates advanced SQL data analysis and the ability to communicate mental health trends and actionable recommendations for university well-being programs.

Next Steps & Recommendations

- **Targeted Support:** Early intervention and ongoing support for international students, particularly in years 1–3.

- **Peer Programs:** Foster stronger student communities to increase social support networks.

- **Longitudinal Analysis:** Study trends over multiple cohorts and integrate qualitative interviews.

- **Dashboard Development:** Visualize mental health and social connectedness trends for counseling staff and policy makers.

For technical and statistical details, see the accompanying Jupyter notebook (notebook.ipynb).