ROOMSYNC: A ROOMMATE MATCHING DATABASE

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INTRODUCTION

RoomSync is a database-driven platform that analyzes what makes roommates compatible.

THE PROBLEM AND OUR MOTIVATION

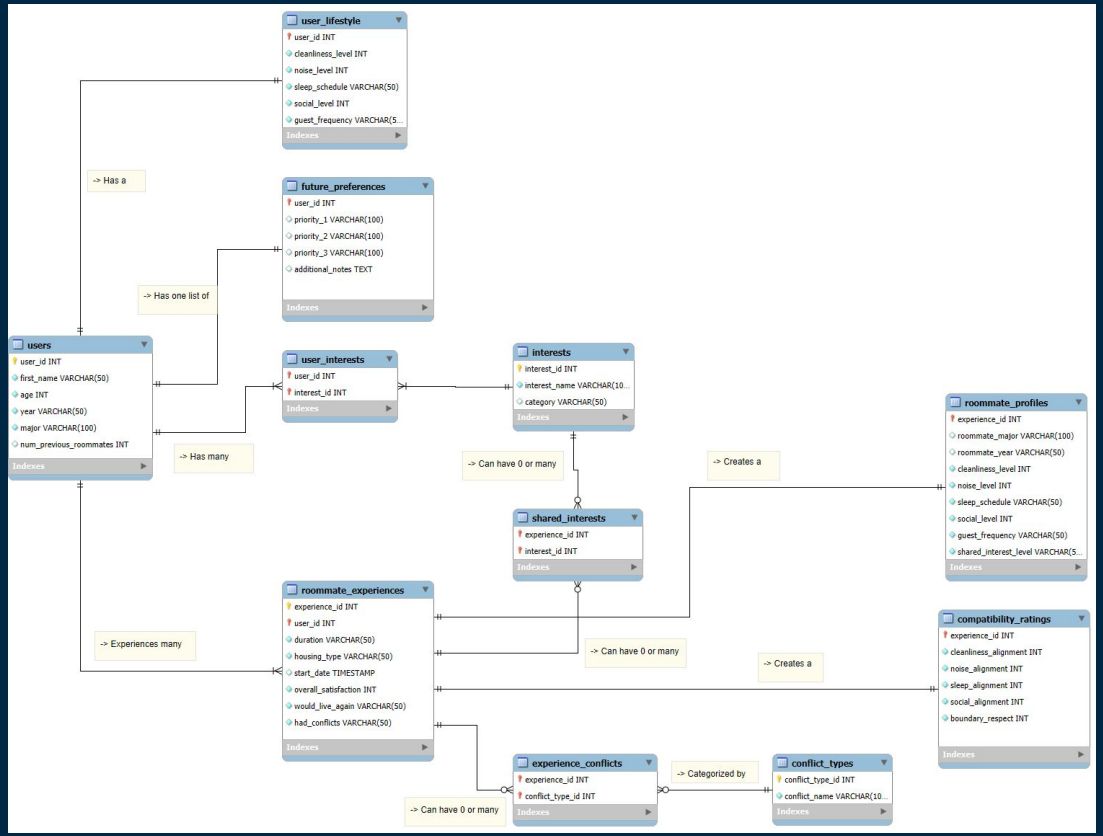
THE PROBLEM

Poor roommate matches affect academic performance and student wellbeing, yet universities lack data-driven tools to predict compatibility

OUR MOTIVATION

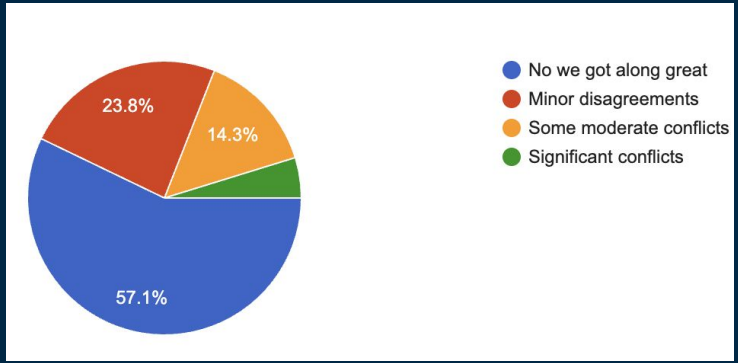
Our goal: analyze 36 real experiences to discover data-driven predictors of roommate compatibility.

DATABASE OVERVIEW

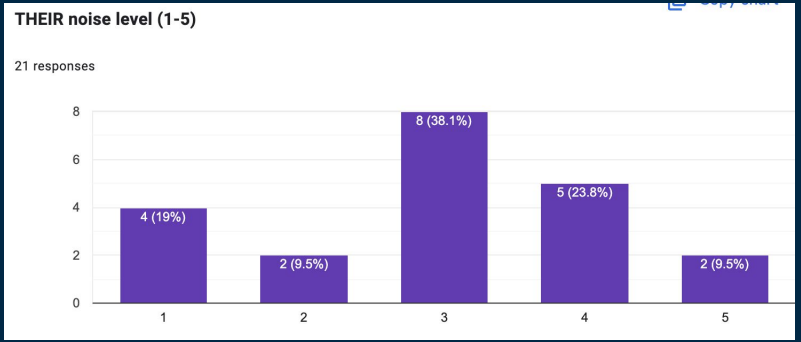


DATA COLLECTION

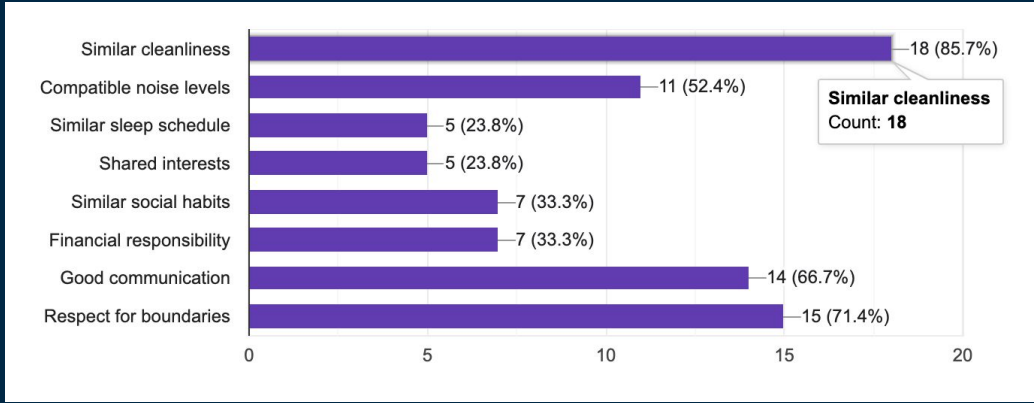
Conflicts?



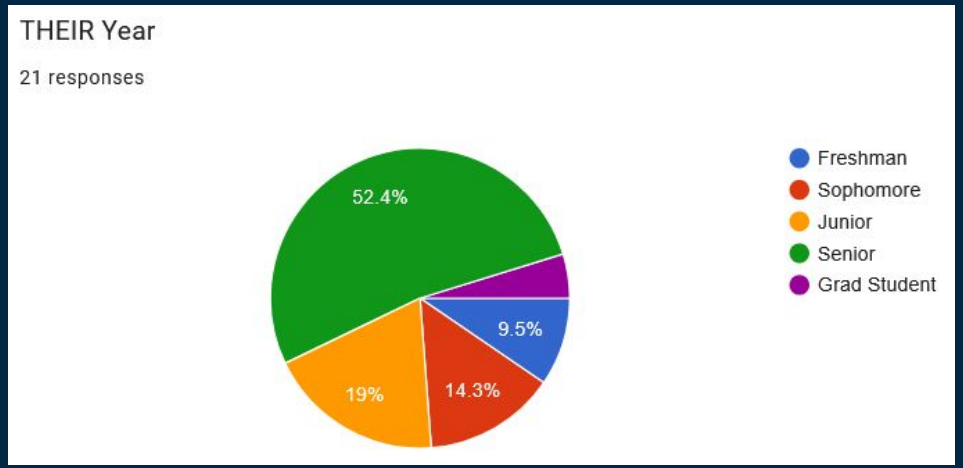
Roommate Lifestyle?



Future Preferences?

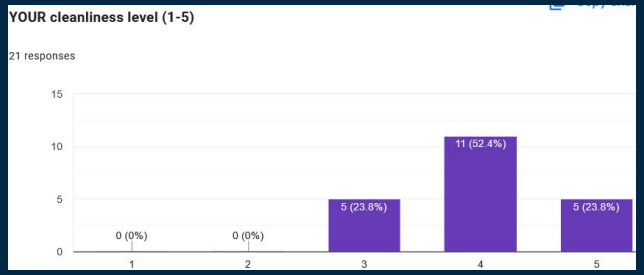


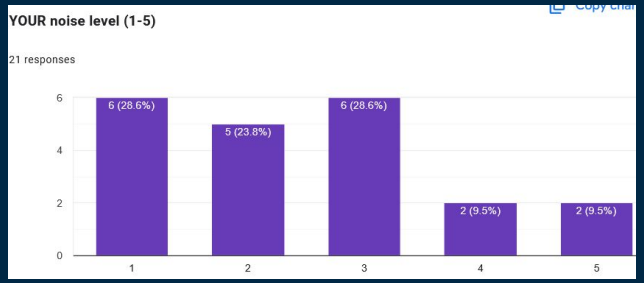
DATA COLLECTION (cont.)



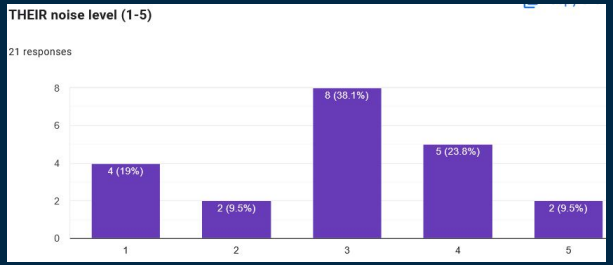
Majority Senior

Respondents view themselves overly positively





Likely more honest when judging others



OUR QUERIES

Lifestyle Compatibility Query

```sql
SELECT
    re.overall_satisfaction,
    COUNT(*) AS num_experiences,
    AVG(cr.cleanliness_alignment) AS cleanliness_alignment,
    AVG(cr.noise_alignment) AS noise_alignment,
    AVG(cr.sleep_alignment) AS sleep_alignment,
    AVG(cr.social_alignment) AS social_alignment,
    AVG(cr.boundary_respect) AS boundary_respect
FROM Roommate_Experiences re
JOIN Compatibility_Ratings cr ON re.experience_id = cr.experience_id
JOIN Users u ON re.user_id = u.user_id
JOIN User_Lifestyle ul ON u.user_id = ul.user_id
GROUP BY re.overall_satisfaction
ORDER BY re.overall_satisfaction DESC;
```

overall_satisfaction	num_experiences	cleanliness_alignment	noise_alignment	sleep_alignment	social_alignment	boundary_respect
5	6	4.1667	4.0000	4.3333	4.0000	4.8333
4	8	4.1250	3.7500	4.3750	4.1250	4.2500
3	4	3.2500	4.0000	2.7500	3.7500	3.2500
2	7	2.5714	2.5714	3.0000	2.0000	2.0000
1	11	2.5455	2.8182	2.6364	2.4545	1.2727

- High satisfaction requires 4.0+ alignment across ALL factors
- Boundary respect is the strongest predictor
- No single factor compensates for others

SHARED INTERESTS QUERY

```sql
SELECT
    rp.shared_interest_level,
    AVG(re.overall_satisfaction) AS satisfaction,
    COUNT(*) AS num_experiences,
    AVG(cr.cleanliness_alignment) AS cleanliness_alignment,
    AVG(cr.sleep_alignment) AS sleep_alignment,
    AVG(cr.social_alignment) AS social_alignment,
    AVG(cr.boundary_respect) AS boundary_respect
FROM Roommate_Experiences re
JOIN Roommate_Profiles rp ON re.experience_id = rp.experience_id
JOIN Compatibility_Ratings cr ON re.experience_id = cr.experience_id
GROUP BY rp.shared_interest_level
ORDER BY satisfaction DESC;
```

shared_interest_level	satisfaction	num_experiences	cleanliness_alignment	sleep_alignment	social_alignment	boundary_respect
Many shared interests	4.2727	11	3.9091	4.2727	4.0909	4.2727
Some shared interests	4.0000	3	4.3333	4.0000	5.0000	4.0000
Some	3.5000	2	3.5000	3.5000	3.0000	4.5000
None	1.7500	8	3.0000	3.1250	2.2500	2.1250
Few shared interests	1.6364	11	2.6364	2.7273	2.2727	1.6364
Few	1.0000	1	1.0000	1.0000	4.0000	1.0000

- Shared interests double satisfaction scores
- 58% of low-satisfaction cases had few/no shared interests
- Spillover effect on all factors

DURATION AND HOUSING TYPE EFFECT

```sql
SELECT
    re.duration,
    re.housing_type,
    AVG(re.overall_satisfaction) as avg_satisfaction,
    COUNT(*) as experience_count
FROM Roommate_Experiences re
GROUP BY re.duration, re.housing_type
HAVING experience_count > 1
ORDER BY avg_satisfaction DESC;
```

duration	housing_type	avg_satisfaction	experience_count
12-18 months	University dorm	4.2500	4
3-6 months	University dorm	3.3333	3
18+ months	University dorm	3.2500	4
12-18 months	Off-campus apartment	3.0000	2
<3 months	Off-campus apartment	2.7500	4
9-12 months	University dorm	2.5000	6
18+ months	Off-campus apartment	2.5000	2
<3 months	University dorm	2.3333	3
6-9 months	Off-campus apartment	2.2000	5

- Time effect
- Environmental difference
- Dorm advantage

BOUNDARY RESPECT ANALYSIS

```sql
SELECT
    cr.boundary_respect,
    AVG(re.overall_satisfaction) as avg_satisfaction,
    COUNT(*) as experience_count
FROM Roommate_Experiences re
JOIN Compatibility_Ratings cr ON re.experience_id = cr.experience_id
GROUP BY cr.boundary_respect
ORDER BY cr.boundary_respect DESC;
```

boundary_respect	avg_satisfaction	experience_count
5	4.6250	8
4	3.5714	7
3	3.2500	4
2	2.0000	7
1	1.0000	10

- strong positive relationship

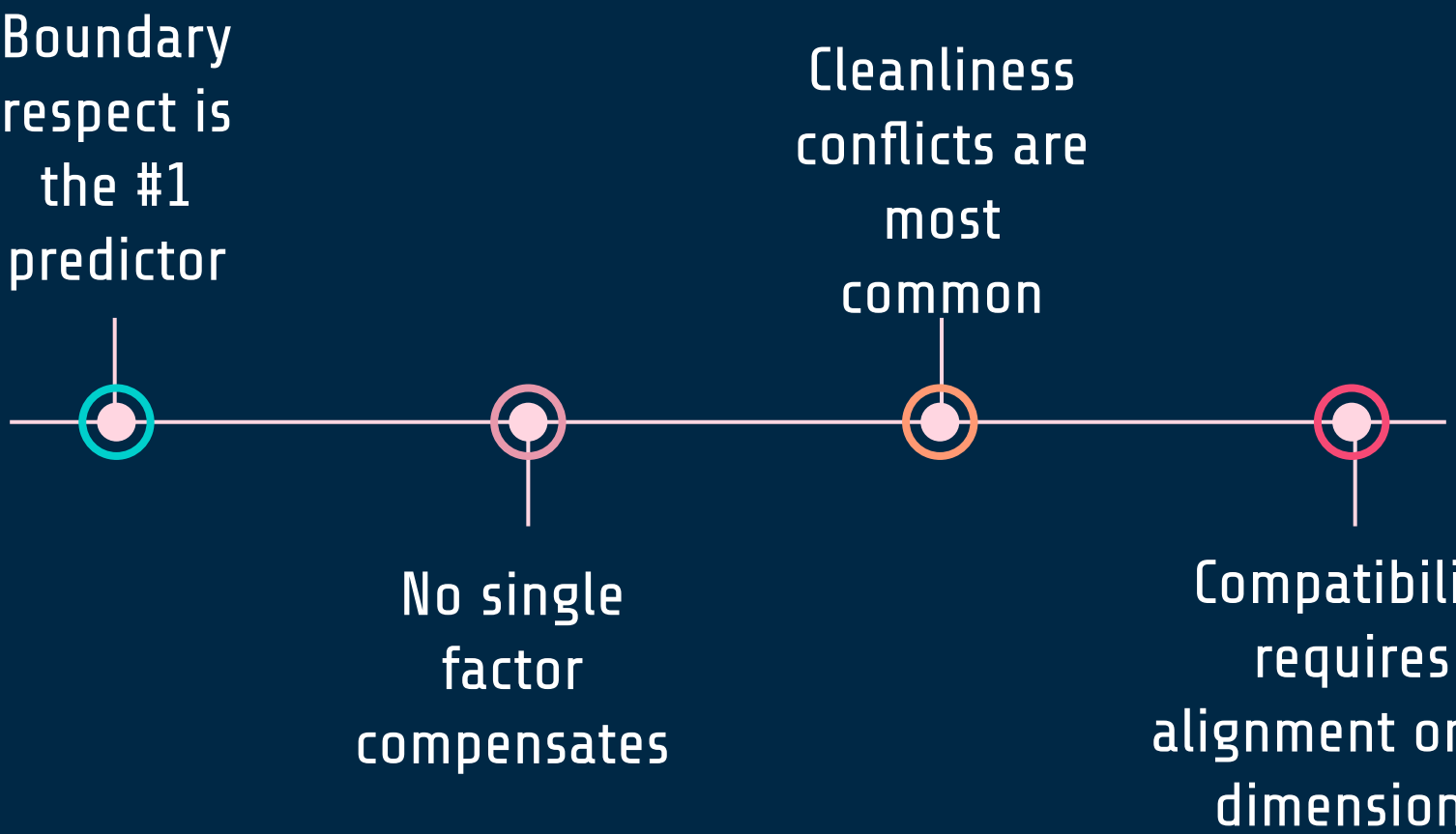
PREVIOUS EXPERIENCE INFLUENCE

```sql
SELECT
    u.num_previous_roommates,
    AVG(re.overall_satisfaction) as avg_satisfaction
FROM Roommate_Experiences re
JOIN Users u ON re.user_id = u.user_id
GROUP BY u.num_previous_roommates
ORDER BY u.num_previous_roommates;
```

num_previous_roommates	avg_satisfaction
1	3.0000
2	3.5000
3	2.5000
4	2.5000
5	2.5000
6	1.0000
7	4.0000
8	5.0000
9	4.0000
11	3.0000

- When having 4-6 previous roommates, they have better experience to deal with problems.

OUR CONCLUSIONS.


Boundary respect is the #1 predictor
No single factor compensates
Cleanliness conflicts are most common
Compatibility requires alignment on 3+ dimensions

THANKS!