



ISBE Research Methods Training Series Session 5: Quantitative and Qualitative Analysis

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4/8/2019

Workshop series

2018

October 2 **Data, Research, and Evidence Overview**
November 28 **Surveys and Focus Groups**

2019

January 29 **Interviews, Observations, and Rubric Development**
March 4 **Reporting and Data Visualization**
April 8 **Understanding and Interpreting Qualitative and Quantitative Evidence**



Today's goals

1. Synchronize understanding of quantitative and qualitative research design.
2. Discuss different types of statistical concepts.
3. Provide implementation strategies applicable to educational settings from a mixed-methods research study.

Overview of research design

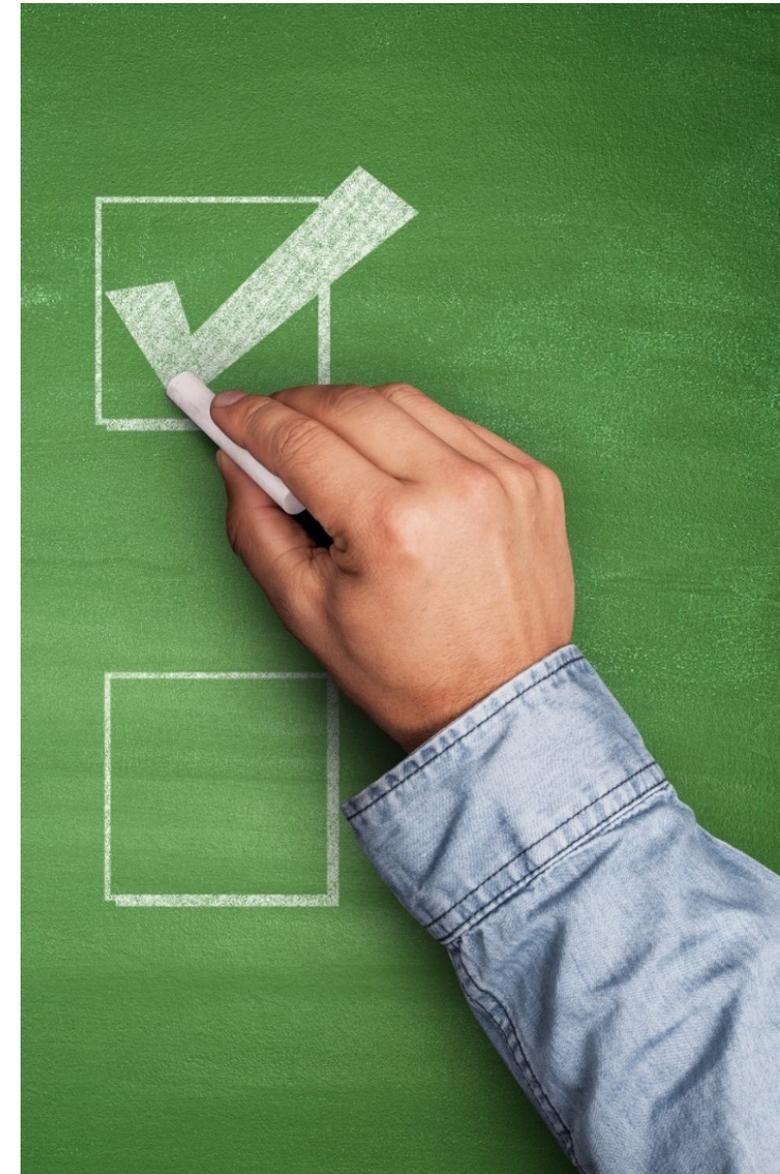
Steps to identify appropriate research design

- Identify research topic.
- Develop research question(s).
- Consider methods that will help to answer research question(s).
 - Types of participants.
 - Procedures to consider.
 - Implications for policy and/or practice.
 - Audience of final report.
- Choose a research design.
 - Quantitative.
 - Qualitative.
 - Mixed methods.

Choose the appropriate research design by selecting the data collection method that will best address your research question.

Data collection methods

- Surveys: Reported behavior or perceptions.
- Focus groups: Probative questioning and participant interaction.
- Interviews: Elicited individual participant experience.
- Observations: Observed participant behavior in their natural environment.



Statistical concepts: Types of variables

Categorical variables

- Sex.
- Race/ethnicity.
- Home language.
- District.
- Location (urban, suburban, rural).



Ordinal variables

- Some survey responses (never, rarely, sometimes, often).
- Performance levels (below basic, basic, proficient, advanced).
- Rank order (first, second, third, and so forth).



Continuous variables

- Age.
- Assessment scores.
- A school's graduation rate.
- Number of suspensions.
- Grade point average.



Descriptive Statistics

Descriptive statistics

- Summarize characteristic of a group of units (for example, students, teachers, schools, or districts) with graphical display or with numerical descriptions of the data.
- How we do this depends on the type of variable being summarized (categorical, ordinal, continuous).

Frequency distributions

- List all possible values of a variable and the number of times each occurs. Can be expressed as proportion or percentage.

| Home language | Number | Proportion | Percentage |
|---------------|--------|------------|------------|
| English | 1,600 | 0.80 | 80% |
| Spanish | 350 | 0.15 | 15% |
| Other | 50 | 0.05 | 5% |
| Total | 2,000 | 1.0 | 100% |

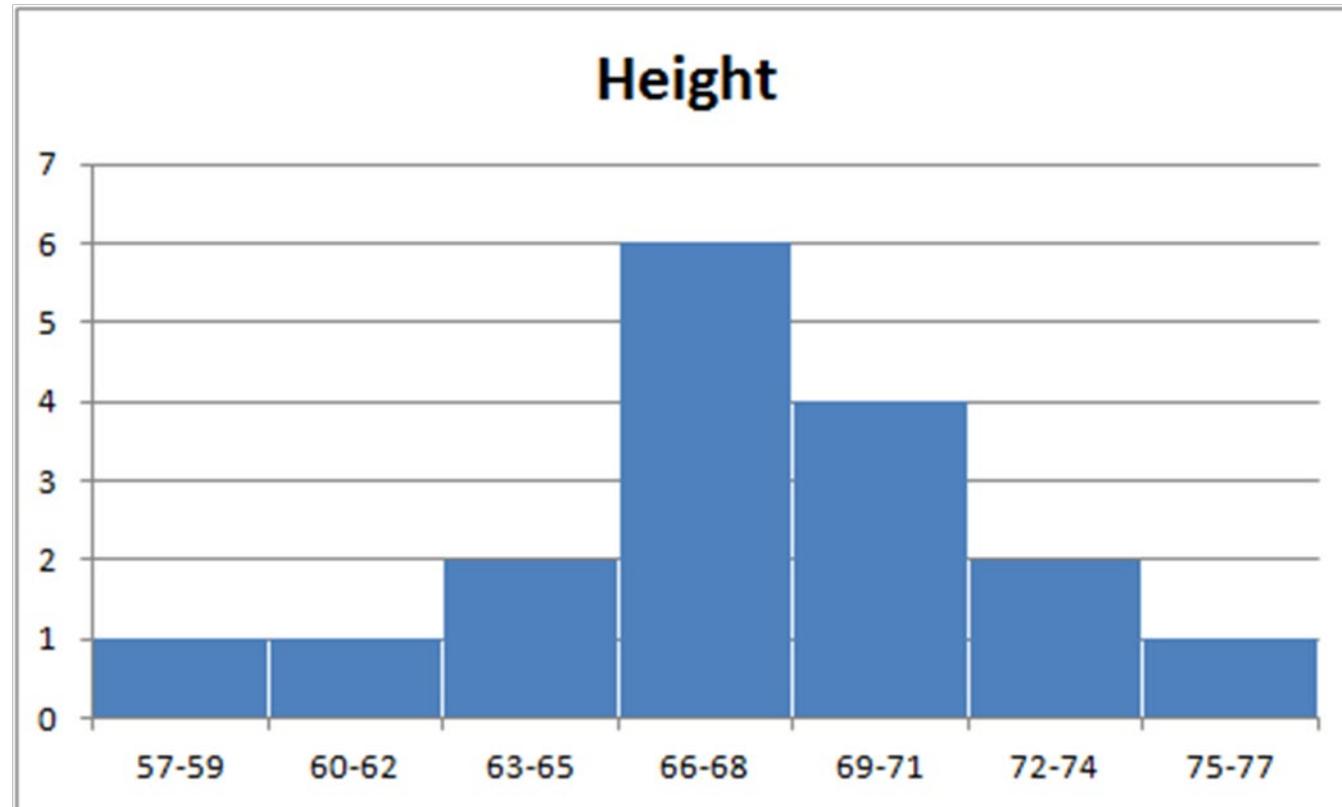
Frequency distributions also can be made for ordinal or continuous variables where values are grouped.

| Proficiency | Percentage |
|-------------|------------|
| Below basic | 10% |
| Basic | 25% |
| Proficient | 55% |
| Advanced | 10% |
| Total | 100% |

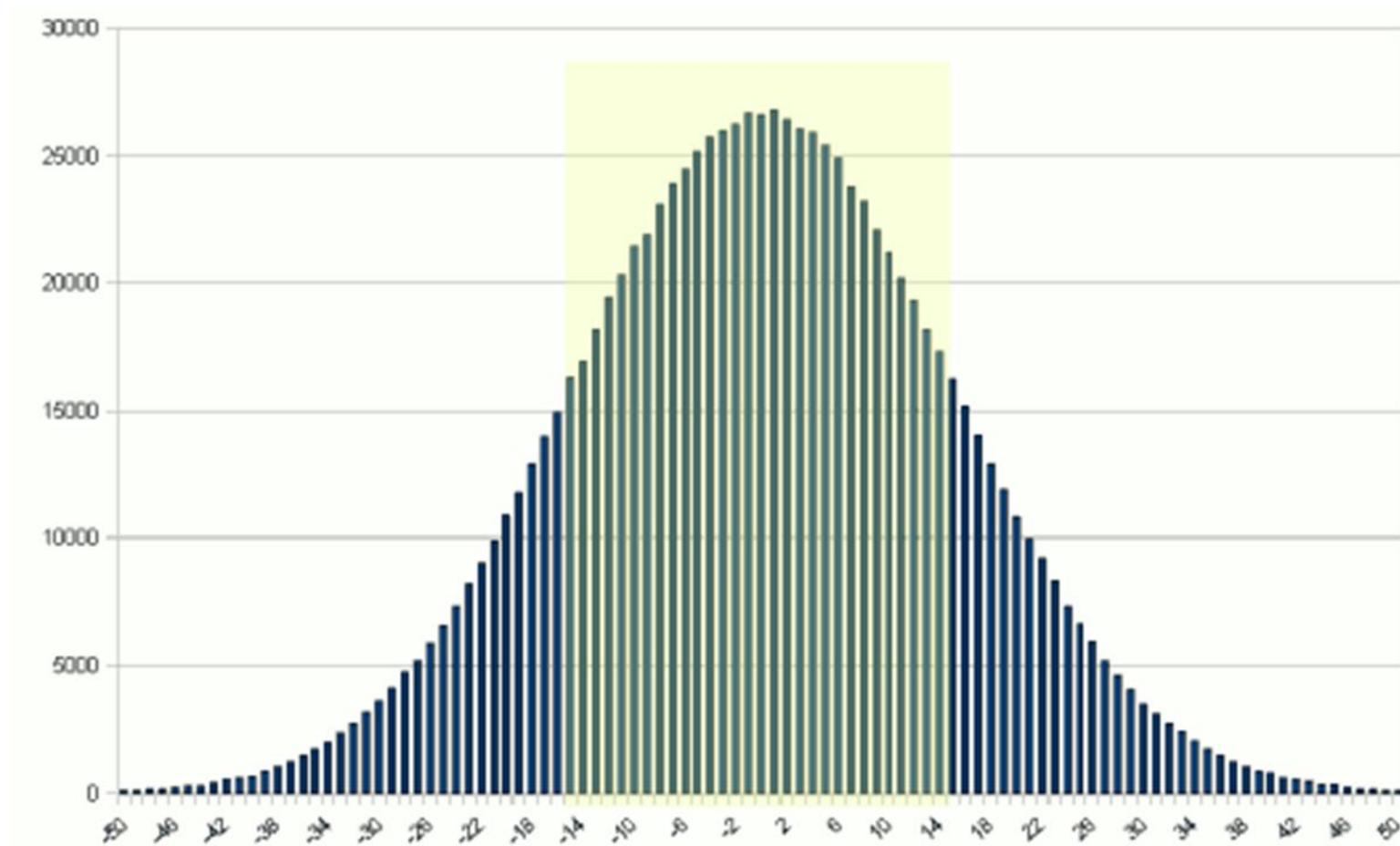
| Score | Percentage |
|--------------|------------|
| Less than 60 | 10% |
| 60–69 | 15% |
| 70–79 | 25% |
| 80–89 | 35% |
| 90–100 | 15% |
| Total | 100% |

Frequency distributions can be graphed to show their shape.

Height (in inches) of 17 students

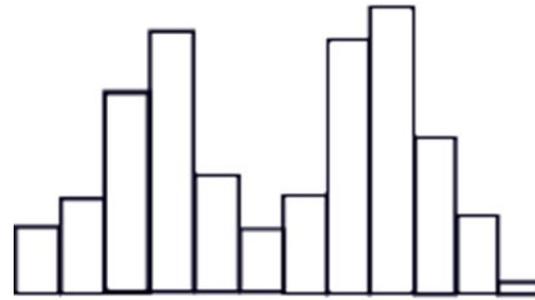


Distributions for continuous variables are often “normal” (bell shaped), with most values near the center.

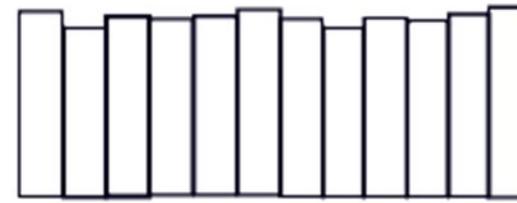


Other common distribution shapes

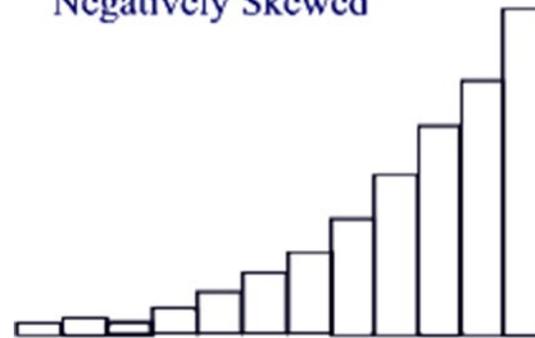
Bi-Modal Distribution



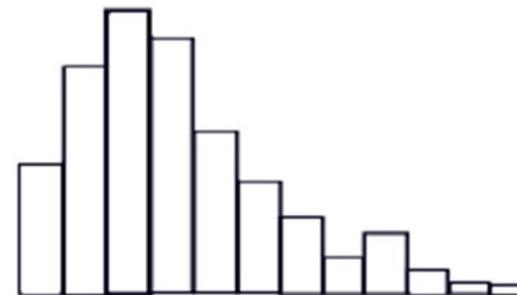
Unitary Distribution



Negatively Skewed



- Positively Skewed



Statistical concepts

Measures of central tendency

- Offers a number to best summarize and represent a data set.
- Relies on the shape of the distribution and the variable's scale of measurement.

(Wilson, 2005)

Measures of Central Tendency

- **Mode** – most frequently occurring value

How many carbonated drinks do students drink daily?

4 students = 0 cans, 8 students = .5 cans, 9 students = 1 can, 2 students = 2 cans

- **Median** – the middle value

Value of soda cans consumed daily in order by student

| Student | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | S13 | S14 | S15 | S16 | S17 | S18 | S19 | S20 | S21 | S22 | S23 |
|---------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cans | 0 | 0 | 0 | 0 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |

- **Mean** – the average

Research methods training series discussion

- How have you used the information presented in the training sessions in your job/projects?
- How do you plan to incorporate the information acquired?
- How do you plan to share the information with your colleagues?
- What additional supports would be useful in helping you apply the information to your job/projects?

Break

Mixed-methods study



Adolescent perspectives on postsecondary planning in Brazil And Colombia

Keshia L. Harris, Ph.D.

Study Outline

Part I : Independent Research Study

- ❑ Research Questions & Framework

- ❑ Methodology

- ❑ Findings

- ❑ Implications

Part II: Research to Practice

- ❑ Framework

- ❑ 3 Strategies for Implementation

Background

- Latin America is one of the most economically unequal regions in the world (World Bank, 2005).
- Brazil and Colombia: countries of the region with the lowest levels of educational mobility (Viáforo López & Serna Alvarado, 2015).
- Top 10% in Brazil hold 46.9% of national income (World Bank, 2007).

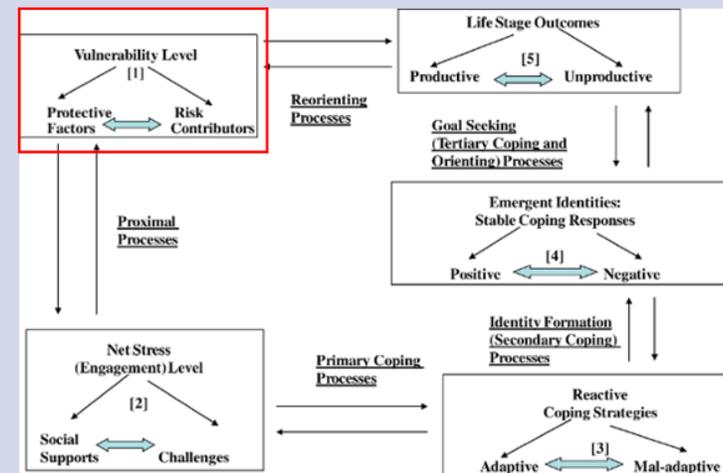
Part I: Research Study on Postsecondary goals

Research questions

- What associations are prevalent between school resources and postsecondary goals for Brazilian and Colombian adolescents?
- How do skin tone and perceived discrimination interact with perceptions of socioeconomic mobility?

Theoretical framework

- Phenomenological Variant of Ecological Systems Theory (PVEST)



(Spencer, Dupree & Hartmann, 1997)



Method

Fieldwork

- Mixed-methods study in Salvador, Brazil, and Cartagena, Colombia.

Participants

- 737 high school seniors.
- 10 high schools.

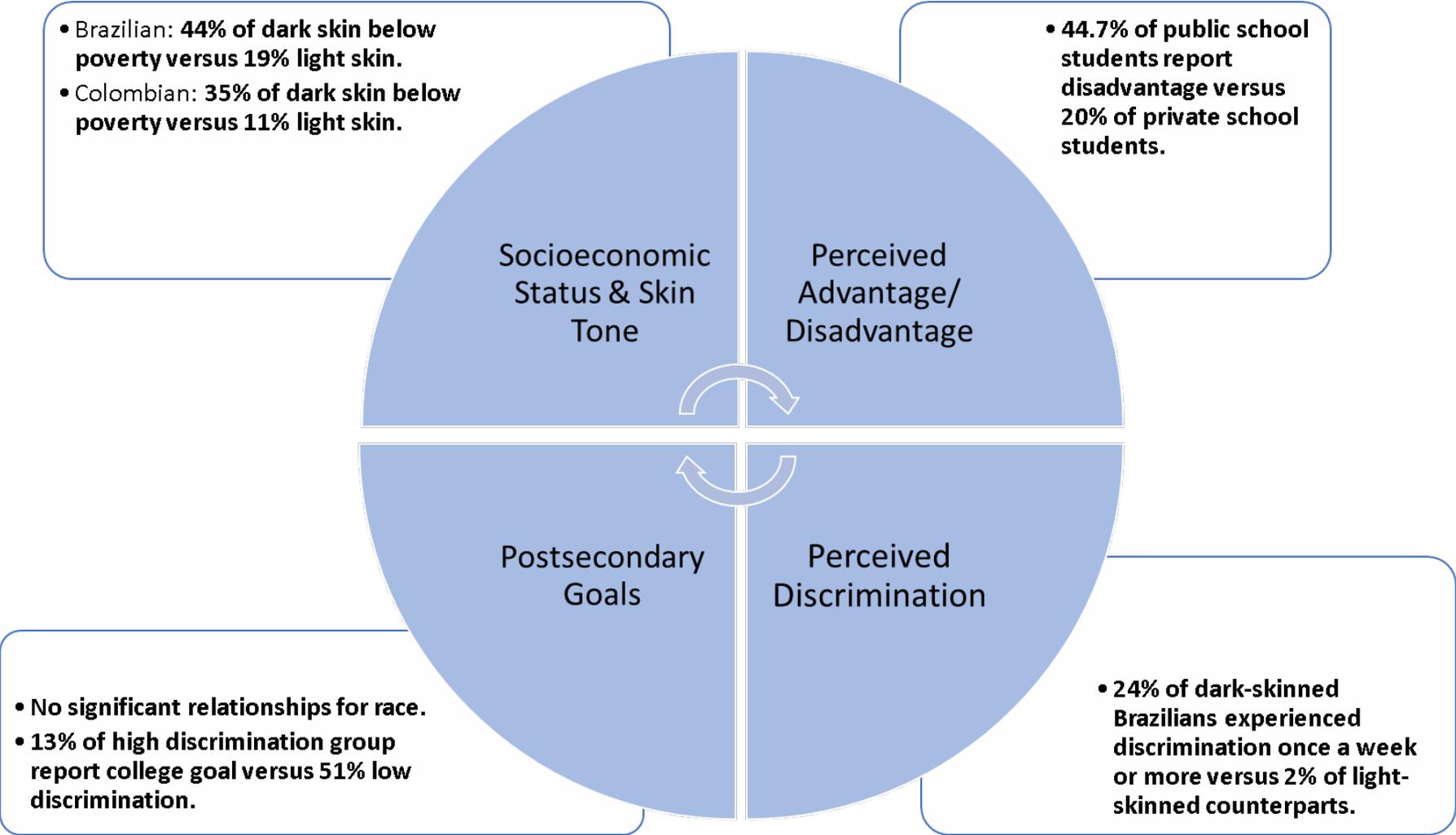
Procedure

- 55-item survey administration.
- 41 semistructured interviews.

Analyses

- Cross-tabulations and chi square analyses.
- Thematic analysis.

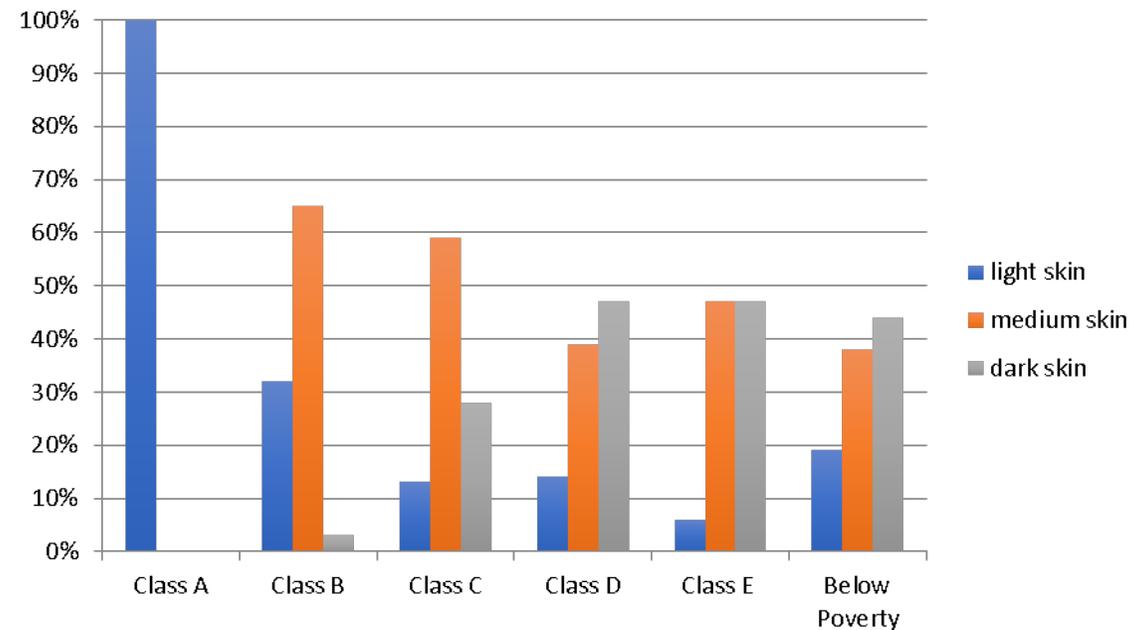
Quantitative data findings



Quantitative data findings

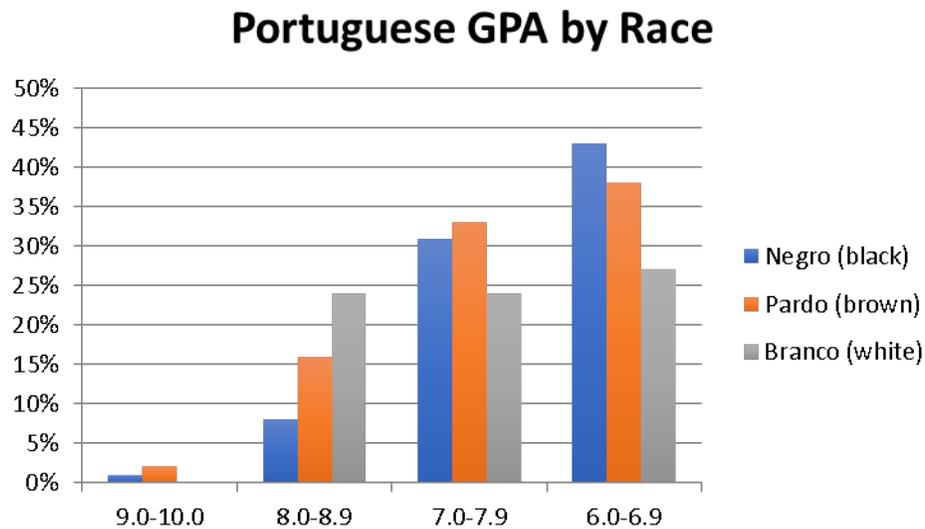
Socioeconomic status significantly related to race and skin tone for both samples

Darker skin toned Brazilian students more likely to live below poverty



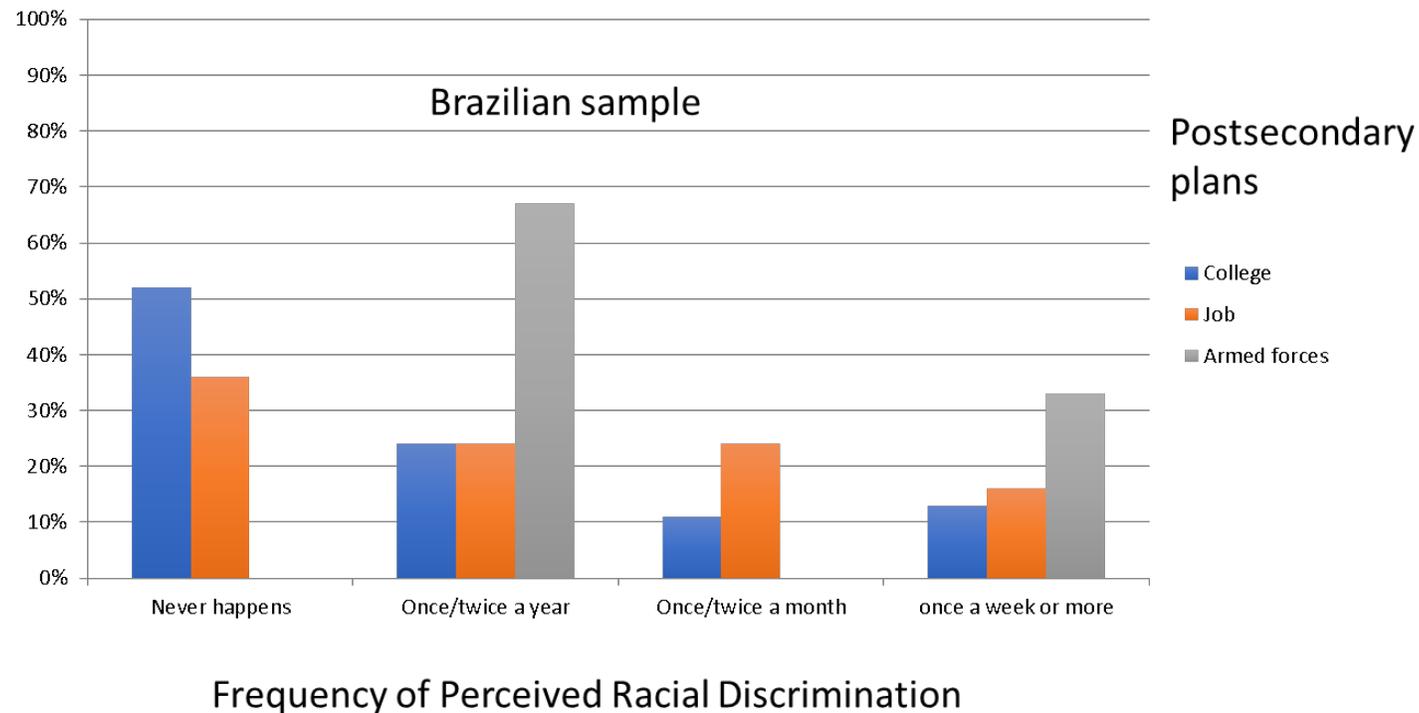
Quantitative data findings

Brazilian participants of African descent reported the lowest academic performance in grammar course.



Quantitative findings:

Postsecondary plans by discrimination



- Discrimination significantly related to postsecondary plans ($r = 0.12, p < 0.05$)
- Frequent experience of discrimination = less likely to apply for college

Qualitative data findings

Barriers to college access:

- Discriminatory practices
- Lack of financial support
- College entrance exams

Risk
factors



Importance of family support and heritage pride:

- 25/41 interview participants identified parent(s)/guardian as their primary role model.
- Racial/ethnic pride

Protective
factors



Why findings are important

- They demonstrate relationships between skin color and socioeconomic status.
- Perceptions of socioeconomic mobility are associated with school resources (for example, type of school attended).
- College aspirations are linked to experiences and social supports.
- Family unit contributes to resiliency in bridging opportunity gaps.

Implementation strategies

Research-to-practice strategies

Strategies to improve social-emotional learning for postsecondary initiatives:

- 1) Create school and neighborhood climate talks.
- 2) Have a Networking Night with professionals.
- 3) Engage the family unit.

Strategy 1: Create school and neighborhood climate talks.

Why are climate talks important?

- Provide spaces for students to speak openly.
- Can help schools improve resources to close achievement gaps.

Key things to do

- Monthly school climate talks.
- Emphasis on social/cultural capital (bilingualism).

Strategy 2: Have a networking night.

Why is networking important?

- Effective networking is a critical professional skill.
- Students can learn from professionals of similar backgrounds.

Key things to do

- Recruit professionals to visit school.
- Organized into career clusters.
- Juniors and seniors prepare questions and bring business cards.

Strategy 3: Engage the family unit.

Why is engaging the family unit important?

- Emphasis on enrichment outside of classroom.
- Helps students to acknowledge available supports.

Key things to do

- Have a “Role Model of the Month.”
- Students present on family or community member.
- Role model featured in school newspaper or classroom display.

Conclusions

Key research findings

- Student perspectives on postsecondary planning linked to availability of resources rather than ethnic/racial group.
- Discrimination, finances, and college entrance exams were greatest barriers.
- Family support and heritage pride were greatest assets.

Key strategies to implement

- Create school and neighborhood climate talks.
- Have a Networking Night, emphasizing professionals sharing demographics similar to those of students.
- Engage family and community members.

Revisiting today's work, what were you able to accomplish?





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