

# Integrating Diversity into Psychology Statistics Courses: Advice, Reflections, and Special Considerations



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## Abstract

**Introduction:** In an increasingly diverse world, there has been a call for psychology educators to make efforts to integrate diversity into the psychology curriculum.

**Statement of the Problem:** Researchers who have surveyed psychology faculty have found the amount of time devoted to diversity content in nondiversity-focused courses is limited, with faculty citing barriers to integration such as a lack of relevance and time constraints.

**Literature Review:** Educators who have worked to incorporate diversity topics into their courses have found positive outcomes.

**Teaching Implications:** We describe our approach to integrating diversity into an introductory statistics course, highlight lessons learned, and provide special considerations for psychology educators.

**Conclusion:** Integrating diversity-related content into statistics is challenging; however, the effort is worth it, particularly if integrating diversity content into required courses may be the only exposure to diversity students get.

## Keywords

diversity education, teaching, statistics, faculty development, psychology education, teacher education

Population-based demographic data in the United States paints a clear picture: we are an increasingly diverse nation across multiple indicators including race and ethnicity (Vespa et al., 2020), sexual orientation (Conron & Goldberg, 2020), gender identity (Conron & Goldberg, 2020), national origin (Vespa et al., 2020), religion (Smith, 2021), age (Vespa et al., 2020), family composition (Barroso et al., 2020), and living arrangements (Cohn et al., 2022; Fry, 2022). Despite this diverse reality, research and knowledge in psychology is often based on small, homogenous subsets of the population (i.e., White, Educated, Industrialized, Rich, and Democratic [WEIRD] samples; Cheon et al., 2020). Accordingly, psychologists have been repeatedly called to provide greater exposure to research incorporating diverse populations and broader diversity issues in the undergraduate curriculum to help prepare psychology majors for our increasingly diverse world (e.g., American Psychological Association [APA], 2011, 2013).

To answer this call, we created materials for an undergraduate statistics curriculum at a large, southeastern university that purposefully integrated diversity content (e.g., examples, data sets, and assignments) throughout the course. Incorporating such content into a research methods and statistics course is important, as diversity-related content courses (e.g., psychology of gender and multicultural psychology) are not always required in many psychology programs (Fuentes & Shannon, 2016). In the present article, we discuss the importance of integrating diversity into the psychology curriculum, describe our

approach to integrating diversity into an introductory statistics course, highlight lessons learned in the process, and provide special considerations for educators in the field of psychology considering this work.

## Importance of Integrating Diversity Into Psychology Curriculum

The Steering Committee for the 2008 National Conference on Undergraduate Education in Psychology compiled a list of recommended principles for quality undergraduate education specifying that, “Faculty should ensure that diversity issues are infused throughout the curriculum, with deliberate inclusion in most, if not all, courses” (Halpern et al., 2010, p. 166). Dunn et al. (2010) noted that “Learning about diversity and culture should be a critical learning outcome for all students” (p. 57). Furthermore, the APA Guidelines for the Undergraduate Major (APA, 2013) include multiple learning goals

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requiring knowledge of diversity, including students' ability to understand the impact of sociocultural factors in scientific inquiry, acknowledge the potential for prejudice and discrimination in both them and others, recognize how biases influence research, and accept their ethical and social responsibilities in an increasingly diverse world.

Although surveyed members of the Society for the Teaching of Psychology endorse the importance of integrating diversity issues and content into the curriculum, the amount of time faculty report devoting to diversity content ranges from 13% to 18% of class time (Prieto, 2018; Prieto et al., 2009), with White faculty, and faculty who have not taught a diversity-centered course previously, spending significantly less time incorporating diversity content into their courses. Inconsistencies in requiring diversity content in the curriculum may explain these findings. For example, Fuentes and Shannon (2016) analyzed websites and course catalogs from 200 universities and colleges through the United States and Canada, and found that 26% did not offer diversity courses, 68% offered diversity courses as electives, and only 6% required a diversity course for psychology majors. Further, only 28% of their random sample of 89 nondiversity-focused psychology courses mentioned diversity in the course description (e.g., age, class, gender, race, and ethnicity). When diversity courses are offered, they generally focus on one aspect of diversity: gender (28%), sexuality (21%), and other (e.g., multicultural psychology).

There are several reasons faculty provide for not incorporating diversity into nondiversity-focused courses, including barriers such as time constraints, limited training, resources, and institutional support, irrelevance to course content, lack of diversity incorporated into available textbooks, and concerns about making mistakes or having a misunderstanding when teaching diversity content (Prieto, 2018; Prieto et al., 2009). Helping faculty overcome these barriers is important to offering quality undergraduate psychology programs, in line with benchmarks proposed by Dunn et al. (2007).

Educators who have worked to incorporate diversity topics into their courses have found positive outcomes. For example, Garlington et al. (2021) incorporated a lecture focused on bias in psychological research and were able to raise students' awareness of the importance of social justice in statistics and research. Other researchers studied the impact of integrating content related to ambivalent sexism throughout their research methods courses (Yoder et al., 2016), finding that students who utilized ambivalent sexism-focused examples, readings, and assignments had lower levels of both hostile and ambivalent sexism at the end of the semester. Additionally, when faculty incorporated a "Difficult Dialogues" project into a multicultural psychology course, students were significantly higher in social justice behavioral intentions, and control, compared to students in a control section (Hicks et al., 2023). Furthermore, Kowalski (2000) suggested the following benefits to incorporating diversity-related content into psychology courses: (1) make students aware of existing biases in the scientific process, (2) prepare students for the existing diversity in the workplace,

(3) prepare students to interact with diverse groups, (4) help students understand how psychological processes are similar and different across different groups of people, and (5) it is an important part of science dedicated to understanding individual differences and behavior. Similar points have been made about the benefits of incorporating diversity-related content into graduate psychology courses, as well (for more details see Gomez, 2023).

## Model for Integration: Introductory Statistics Courses

Our model of integrating diversity content throughout the statistics course was designed to meet the following goals: (1) answer the call to incorporate diversity issues throughout the psychology curriculum, (2) expose students to published, peer-reviewed research with diverse samples, (3) increase student interest in, appreciation for, and knowledge of diversity, (4) give students the opportunity to apply statistical knowledge by working with open-source datasets, (5) provide one solution to the barriers to incorporating diversity content reported by faculty (i.e., lack of integration in textbooks, time constraints, lack of resources, and lack of relevance to course content), and (6) keep student textbook costs low by utilizing an online textbook format. To do this, we co-authored and designed *Applied Data Analysis in Psychology: Exploring Diversity with Statistics*, including supporting instructor materials and supplementary open education resources (OER; Black et al., 2021; Walker et al., 2022); our supplemental OER materials (e.g., JASP walk-through guides, data sets, and PowerPoint slides) are accessible at the following link: <https://scholar.utc.edu/open-textbooks/1/> (Walker et al., 2022).

## Teaching Materials and Activities

Our statistical manual opens with an explanation of our focus on diversity-related research by discussing the APA Ethical Principles of Psychologists and Code of Conduct expectation that psychologists are knowledgeable about diversity (APA, 2017) and an introduction to the ADRESSING model of diversity (Hays, 1996). Specifically, by calling a focus on age, disability status, religion, ethnicity and race, socioeconomic status, sexual orientation, indigenous heritage, national origin, and gender (ADRESSING), this model of diversity provides a framework for understanding and addressing aspects of diversity that impact how we experience and perceive the world. According to the APA Guidelines for the Undergraduate Major (2013), "The term diversity encompasses human, sociocultural, sociohistorical, and sociopolitical diversity in its many forms, including race, ethnicity, gender identity/expression, sexual orientation, age, religious affiliation, health and disability status, national identity and immigration status, and social class, among other sociocultural differences and distinctions" (p. 12). Version 3.0 of the guidelines transitions from a focus on diversity to equity, diversity, and inclusion (EDI) frameworks that encourage

student awareness of privilege, marginalization, culture, and opportunities for social justice (APA, 2022). Thus, in the creation of our manual and supporting materials, we incorporated diversity topics encompassing a broad understanding of EDI, including (but not limited to) aging, bicultural/biracial identity, bystander behavior, chronic illness, citizenship status, collectivism and individualism, cultural intelligence, income inequality, intellectual (dis)ability stigma, interracial marriage, gender-based discrimination, healthcare biases, Latinx/Hispanic identity preferences by age, LGBTQIA + issues, Native American perceptions, religious attitudes, sexual assault/harassment, sexuality, and weight stigma.

Those chapters devoted to a specific statistical analysis (e.g., independent samples *t* test, one-way analysis of variance [ANOVA], and correlation) all follow a similar format and order: (1) an introduction to the statistical test using a peer-reviewed research article focused on a diversity topic reporting the statistical test of interest, (2) a discussion of the statistical test (e.g., when it is used, important terms, assumptions, practical and statistical significance, and APA reporting), and (3) a walk-through example of the statistical test using data from a published, open-source dataset focused on the diversity topic using statistical software (i.e., JASP, SPSS, and Excel). The last chapter of the manual discusses ethical considerations of applying and interpreting statistics (e.g., reproducibility, replication crisis, false discovery rates, *p*-hacking, and HARKing). Throughout all 13 chapters, we made efforts to utilize examples that highlighted diversity content whenever possible.

Each chapter also includes a learning check quiz with questions related to the diversity topics. For example, in the two-way ANOVA learning check quiz, students are asked to identify which group had the highest mean post hoc ratings of coworker likeability (i.e., biological males with a man gender identity) in the Dray et al. (2020) study we reviewed. This allowed for the assessment of statistical understanding (i.e., factorial ANOVA) as well as understanding of EDI research (e.g., differences in biological sex and gender identity, interaction of sex and gender on coworker perceptions). Additionally, each chapter includes an assignment for students to apply their newly acquired data analysis skills using another open-source dataset related to a diversity topic. For example, we ask students to analyze, interpret, and write-up the APA style results of a Pearson correlation associating collectivistic values with adherence to COVID-19 health guidelines using data from a study conducted by Maaravi et al. (2021). Our OER resources mirror the manual walk-through sections, with in-depth guidance on how to analyze, interpret, and write-up results of statistical tests using a published, open-source dataset focused on a diversity topic.

## What We Learned

Over the course of writing, publishing, and implementing our lab manual, we learned several lessons along the way. In the following section, we will discuss what we took away from this experience and give recommendations for practice.

## Don't Place the Burden of Responsibility on Marginalized Groups

The responsibility for integrating diversity topics into curriculum does not belong to marginalized groups, it belongs to all of us. Rains (1998) outlined common “benign” responses academics often have to discussions of race and racism in academia that can be applied more broadly to diversity issues and topics in general. For example, she notes that privilege is maintained when academics take the position that “well-I-can’t-speak-for [insert identity],” a position that may be used to justify ignorance and absolve faculty of the responsibility to learn and teach about diverse groups and diversity research (p. 88). Further, assuming faculty members who are members of marginalized groups want to take on the responsibility of teaching about diversity may contribute to the documented experiences of tokenism—when marginalized group members experience heightened visibility in an organization—in higher education (Niemann, 2016). Calls to integrate diversity into our curriculum to prepare our students for a diverse world requires we heed the call and prepare ourselves to answer it.

## Consider a Broad Definition of Diversity

Begin with a broad list of diversity topics to cover when beginning your search, for examples, activities, assignments, etc. By incorporating a broad list of topics under this umbrella, we wanted to show students a more comprehensive definition of diversity and allow for more opportunities for students to see their own identities reflected in the content. This gives students the opportunity to see how far-reaching diversity topics are in the world, the field of psychology, and how they can be studied using statistics. Student qualitative feedback on the course indicated most students felt they increased their knowledge and understanding of the breadth of diversity through the exposure to a variety of topics (Madden et al., 2023).

Although the intention of incorporating a variety of topics was to bring awareness to diverse groups while minimizing the risk of diversity fatigue by focusing exclusively on one or two topics, our quantitative data of students who self-selected to participate in our assessment indicated we did not meet this objective (Madden et al., 2023). We found a small effect for increased diversity fatigue over the semester for students. Past work by Smith et al. (2021) has noted this challenge for educators may be related to the relationship between diversity fatigue and system-justifying beliefs. We plan to address this concern by incorporating more positive diversity-related research articles (e.g., benefits of allyship) and by using a social justice framework (Etengoff, 2022; Garlington et al., 2021). Researchers have found that members of advantaged groups may feel threatened when presented with evidence of privilege (e.g., Dover, 2022; Hideg & Wilson, 2020). Thus, changing the focus from who is the recipient of advantages/disadvantages to a social justice model where everyone can contribute to positive change, may alleviate some feelings of diversity fatigue.

An example of how we can work to incorporate a social justice framework would be to adapt and reframe some of the content. For example, a current assignment adapted from Niehuis (2005) was positively mentioned by students in their course feedback. In this assignment, students conduct an independent-samples *t* test comparing customer satisfaction ratings of statistics students randomly assigned to “shop” for items (e.g., makeup, band-aids, and children’s books) appropriate for either a White woman or a Black woman. One way this assignment could be extended to incorporate social justice is to have students report their results in jargon-free language within the context of a letter written to stores to advocate for things such as additional product options and better product placement for Black women. This would allow students the opportunity to practice statistical reporting in an easy-to-understand way while learning to use statistics to advocate for change.

### ***Be Intentional With Material Selection***

Related to our previous point, be purposeful when selecting course material. Materials should help students understand course content, while simultaneously including diverse perspectives and experiences. Selecting materials that “tick all the boxes” can be difficult, but do not compromise. For example, while writing our manual, we prioritized open-source datasets from published research articles for full access to educational content. This made finding the “right” material challenging. Throughout the writing process, we reached out to colleagues, searched open-access journals and open-science databases, and branched out to research institutes such as the Pew Research Center’s (2023) Dataset Downloads to find materials for inclusion. Our searches comprised of terms related to the course content (e.g., names of statistical tests) as well as ADDRESSING model terminology (e.g., age, culture, and gender) to locate research covering a variety of diversity topics, while keeping the focus on the course learning objectives. The more thought that goes into the planning, the better the final product will be.

### ***Teamwork Makes the Dream Work***

In our experience, working as a team provided several advantages, including having colleagues available to catch errors and make recommendations for improvement. Additionally, working with colleagues who are experts in different areas (in our case, industrial/organizational, cognitive, social, and developmental) can be beneficial when reviewing the final product, but also for infusing multiple subdisciplines in the creation of examples/materials. Relatedly, our team consisted of members with many shared values, but also some diversity in our own worldviews, allowing for discussions on how to reach a greater variety of students in an inclusive way. A team approach was also advantageous in accessibility and readability—having a team to catch jargon helped us create content that was more accessible conceptually. Finally, it is simply

helpful to work with a supportive team when you are approaching new and challenging endeavors.

### ***Time Management Is Key***

Integrating diversity topics while balancing other course goals is time-intensive, requiring strategic planning and time management. For example, finding open-source datasets that allowed us to conduct statistical analyses taught in an undergraduate statistics course while covering a breadth of diversity topics, took much longer than anticipated (thanks, *planning fallacy*; Buehler et al., 1994). When working with a team, we recommend setting regular touch-base meetings; these helped with imposing hard deadlines and being able to trouble-shoot any hurdles that arose that could be relevant to the whole group.

### ***Your Work Is Never Done***

Science is like a living organism that grows and changes to reflect new knowledge; as other instructors of diversity courses have noted, keeping materials up to date to reflect the growth of knowledge in the field, is a continual process (Morgan & Marin, 2022). It is important to approach this work with cultural humility. Cultural humility is a lifelong process of openness, self-awareness, humility, self-reflection, and critique to learn about yourself as well as others with diverse identities and experiences (Barnes & Slaton, 2020; Foronda et al., 2016). This approach can facilitate teaching “practices that can affirm and respect all cultural identities” (Barnes & Slaton, 2020, p. 63). In practice, this means course materials will need periodic revision as new knowledge is created. Try building in manageable strategies for course updating, such as keeping a list of desired changes throughout the semester, recruiting help from undergraduate or graduate teaching assistants, and attending trainings to ensure materials reflect how language continues to evolve surrounding these topics.

### ***Supplemental Resources Are Your Friend***

Provide resources and recommend additional content for students who are interested in learning more about diversity topics. Are there websites, social media accounts, open educational resources, films/books, etc., that are relevant to the topic being covered? Send those to students. There may already be a compilation of these resources available through sources such as your university resource librarian, local or national organizations, or APA Divisions. Furthermore, are there local organizations in your area that are doing work (e.g., direct service, grassroots organizing, and volunteering) related to the topic? Find out! Taking this approach will reinforce how diversity is integrated not just in the social sciences, but across disciplines, and in everyday life.

### ***Solicit Student Feedback***

Ask for student and instructor feedback about the integration of diversity topics into the course. Knowing which examples were



harder to comprehend, or when the diversity content was failing to support the learning objectives, is critical. When students and instructors come to you with concerns, listen, ask for their recommendations, and consider how—if at all—the materials need to be adapted. Is their concern an opportunity for their personal growth as a student or instructor? Or is it an opportunity for you to employ cultural humility to improve the way you integrate diversity into your course? Importantly, do not wait for them to come to you. When implementing new diversity-focused content, asking for anonymous feedback to assess how the content supported the course learning objectives is necessary. This will also allow you the opportunity to learn from students who may not feel comfortable approaching you with their concerns.

Most of the qualitative feedback we have received from students who have taken the course has been positive. When we solicited suggestions for additional topics from students, the majority responded with topics that are already included in our manual (Madden et al., 2023). New topic suggestions were incorporated with the development of our OER materials (e.g., culture and religion). Most students' open-ended responses noted an increase in their knowledge, understanding, and awareness of diversity issues. Quantitative data was mixed. When students were asked to retrospectively consider how their knowledge of diversity, interest in diversity, and importance of diversity has changed over the semester, there was evidence students perceived an increase on average; however, pre-post comparisons showed no significant difference in knowledge of diversity or diversity importance. There was a decrease in diversity interest, albeit with a weak effect size ( $d = 0.16$ ). We will continue to collect additional assessment data to guide further course development.

### *Make It Accessible*

Finally, it is important to make incorporating diversity topics into courses inclusive and accessible to all students. Consider elements of universal design (e.g., alternative text for images), use software that is accessible to most devices (i.e., why we chose JASP for our statistical software), prioritize open-source information (published research, datasets, etc.), and make no assumptions about people's prior knowledge of these diversity topics coming into the course (JASP Team, 2023). We would like to point out that jamovi, a similar open-source statistical software, is ahead of JASP with screen reader accessibility for people who are blind or visually impaired (jamovi, 2023).

### *Implementation*

When incorporating diversity-focused datasets into our courses, we began by giving students a summary of the diversity topic being studied ahead of time. The published article was discussed (e.g., procedure and measures) prior to working with the data, and students were encouraged to create their own hypotheses for what they thought would happen with the variables we worked with. This opened opportunities to correct misinformation (e.g., perceptions that older adults are

depressed). After analyzing the results, we would discuss the implications of the results and what they mean for the study topic. This also created opportunities to critique methods and discuss suggestions for future directions - helping students see how statistics are linked to methods and how there are always avenues for improvement.

### **Need for Instructor Development**

Previous researchers have noted a lack of instructor preparation for teaching diversity-related content (Morgan & Marin, 2022; Prieto, 2018). Our statistics lab is team-taught by graduate students, requiring training instructors in two different domains: the statistical content and the diversity content. Simply giving instructors the materials and telling them to “learn it so that they can teach it” may reinforce some of the barriers that prevent instructors from discussing diversity in their courses. Thus, we provided our instructors with PowerPoint slides that included suggestions on how to introduce and discuss the topic. Supplemental PowerPoint slides are also available for our OER walk-through examples to assist instructors who are interested in adopting these materials (Walker et al., 2022). For example, we introduce independent-samples  $t$  tests by reviewing research on college student expectations for gender bias in the workplace by Sipe et al. (2009). After walking students through the research questions, hypotheses, and results, we include a slide to discuss the study implications and how students would recommend improving the study. In the PowerPoint slide notes, we include information from the article to help instructors through this discussion (e.g., sampling concerns, time of measurement concerns, and concerns about using “non-White” as a comparison group).

We also met with our instructors weekly to address any content before it was taught and to touch base regarding the previous week. These meetings provided the instructors with a sense of community, and a place where they could get help with their approach to addressing the diversity content corresponding to the statistical material. Instructors can create their own supportive communities to discuss challenges and successes when teaching courses with new diversity content by partnering with faculty at their institution or joining online communities (e.g., Teaching of Psychology Facebook Group).

Additionally, certain topics come with a host of misinformation and/or emotionally charged reactions. Providing context early on may be effective. For instance, in the first chapter of our lab manual (Black et al., 2021), we said:

We are not trying to change your mind or persuade you about these topics. You are entitled to your beliefs, attitudes, and worldviews. We are simply trying to highlight research on diversity topics to increase awareness of these issues and highlight often underrepresented identities in psychological research and science. If you experience a conflict between your personal views and the topics covered, not only is that okay, but it is also normal and expected.

Furthermore, we suggest that you utilize training at your institution to assist instructors with handling discomfort that

may arise in response to diversity topics. Especially helpful are “lunch-and-learn” style group trainings or prerecorded content that gives novice and inexperienced instructors tips and resources. For instructors interested in learning more, we have published a list of recommended readings and resources with our OER materials (Walker et al., 2022).

## Conclusion

Integrating diversity-related content into statistics and research methods is challenging; it will take effort and you will probably make mistakes along the way. However, the effort is worth it, particularly if integrating diversity content into required courses may be the only exposure to diversity students get. Further, integrating diversity into courses required early in a student’s career, as statistics courses often are, can prepare a student and ignite interest in upper-level electives that will dive deeper into diversity. More research is needed to assess the impact of integrating diversity content on student attitudes toward diversity as well as student mastery of course content (e.g., statistical understanding). Our advice for those interested in incorporating diversity content into your courses: start simple, even if it is just bringing in one new dataset to your research methods class or talking about the generalizability of findings that include homogenous samples. If we can bring diversity to statistics, of all topics, you can find ways to integrate diverse examples, case studies, and activities into any psychology course and encourage others to do the same!

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## Open Practices



For publishing their material, Walker et al. received badges for open materials and open data. The public content may be retrieved from <https://scholar.utc.edu/open-textbooks/1/>.

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