



Start of Block: required_masder_consent

masder_consent **Title of research study:** Developing Validated Instruments to Measure Student/Faculty Attitudes in Undergraduate Statistics and Data Science Education **IRB #:** IRB-FY2025-79 **Investigator:** Michael A. Posner, Professor of Statistics and Data Science, michael.posner@villanova.edu, 610-519-3016 **Key Information:** This study involves research and is voluntary. You can stop at any time without penalty. **Purpose of the Research:** We are gathering data on attitudes toward statistics. We are interested in (1) what these attitudes are, and (2) how attitudes relate to student and instructor characteristics and classroom environment. The following survey asks demographic information and about your attitudes towards teaching statistics. The long term goal of this research is to improve instruction in statistics courses. **Procedures:** The entire survey should take about 15 minutes to complete. We request that you complete every item, but you are not required to do so. Your survey responses may be linked with other data collected as a part of this study. You have been asked to give us your name and email address. The purpose is to verify your participation in this study, and to link your survey responses with any other responses you complete as part of this project. A dataset that excludes all personal identifying information will be made publicly available for educational researchers. The study investigator may grant access to approved researchers to use identifiable data for validated studies after a Data Use Agreement has been signed. **Risks / Discomforts:** This study is educational research and does not have any known associated risks. **Benefits to Prospective Subjects and/or to Others:** By filling out this survey, you may be better able to identify your feelings toward teaching statistics. Your responses may also aid statistics education researchers in improving instruction in statistics courses. For Villanova-specific resources and other mental health resources, visit the Villanova IRB website. To view these online, navigate to irb.villanova.edu and click “Participating in a Research Study.” As a participant in research, you have rights. Visit the Villanova IRB website to read the Participant Bill of Rights. To read online, navigate to irb.villanova.edu and click “Participating in a Research Study.” **Consent will be given through clicking “I accept” on Qualtrics surveys, by selecting one of the following options:** I have read and understand the terms and conditions of this research study and



agree to participate. I understand my participation is voluntary and that I may withdraw at any time without penalty. By clicking "yes" I am indicating my permission to participate in this study.

- ☐ Yes: I agree to participate. (1)
- ☐ No: I do not agree to participate. (2)

End of Block: required_masder_consent

Start of Block: required_constructs

construct_directions

Directions The statements below are designed to identify your attitudes about **teaching undergraduate-level introductory statistics**. Each item has 7 possible responses. The responses range from "Strongly Disagree" through "Neither Agree Nor Disagree" to "Strongly Agree". Please read each statement. Mark the ONE response that most clearly represents your degree of agreement or disagreement with that statement. Try not to think too deeply about each response. Record your answer and move quickly to the next item. Please respond to all of the statements.





Items

	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neither Agree Nor Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
Teaching statistics is boring. (is_intenj_1)	☐	☐	☐	☐	☐	☐	☐
Teaching statistics brings me great joy. (is_intenj_2)	☐	☐	☐	☐	☐	☐	☐
I have minimal interest in teaching statistics. (is_intenj_3)	☐	☐	☐	☐	☐	☐	☐
I would much rather teach a class other than statistics. (is_intenj_4)	☐	☐	☐	☐	☐	☐	☐
Teaching statistics is exciting for me. (is_intenj_5)	☐	☐	☐	☐	☐	☐	☐
I dread teaching statistics. (is_intenj_6)	☐	☐	☐	☐	☐	☐	☐
Being a good statistics teacher is important to my sense of self. (is_attain_1)	☐	☐	☐	☐	☐	☐	☐
I would feel respected if my colleagues came to me for advice about teaching statistics. (is_attain_2)	☐	☐	☐	☐	☐	☐	☐
Positive feedback about my teaching from students is important to me.	☐	☐	☐	☐	☐	☐	☐



(is_attain_3)

Positive feedback about my teaching from my colleagues is important to me. (is_attain_4)

Statistics teaching is a crucial part of my identity. (is_attain_5)

Teaching statistics is a part of who I am. (is_attain_6)

Being an exceptional statistics teacher is my aspiration. (is_attain_7)

I can teach statistics well. (is_expectancy_1)

I am confident in my ability to help students learn statistics. (is_expectancy_2)

I can teach students how to explain statistical results. (is_expectancy_3)

I struggle when teaching others statistical concepts. (is_expectancy_4)

I can teach my students how to critique a statistical result. (is_expectancy_5)

I teach statistics to help my students better understand the world.

☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐
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☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐



(is_utilitystud_1)

Teaching statistics helps students make informed decisions.

(is_utilitystud_2)

Teaching statistics helps create critical thinkers in the world.

(is_utilitystud_3)

I teach statistics to prepare students for successful careers.

(is_utilitystud_4)

Teaching statistics is my way of contributing to the world. (is_utilityinstr_1)

The only reason I teach statistics is to make a living. (is_utilityinstr_2)

I get anxious when I think about teaching statistics.

(is_cost_1)

Finding real-world examples/data is too time consuming. (is_cost_2)

I prioritize other work tasks over teaching statistics. (is_cost_3)

Teaching statistics is rewarding. (is_cost_4)

I feel insecure when teaching statistics.

☐	☐	☐	☐	☐	☐	☐
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☐	☐	☐	☐	☐	☐	☐



(is_cost_5)

Teaching statistics well takes too much time away from personal priorities.

(is_cost_6)

I would rather teach statistics than other courses. (is_cost_7)

It is challenging to teach statistics. (is_difficulty_1)

Getting students to develop statistical thinking is difficult. (is_difficulty_2)

Teaching statistics well takes a lot of hard work. (is_difficulty_3)

Teaching statistics is hard for a new instructor. (is_difficulty_4)

Teaching statistics well is easy for any instructor. (is_difficulty_5)

Teaching statistics is easier than teaching other courses. (is_difficulty_6)

Being a good statistics teacher helps me achieve my career goals. (is_goals_1)

I am only teaching statistics because it is part of my job. (is_goals_2)

☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐
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☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐



I want to win an award for
teaching statistics.
(is_goals_3)

☐	☐	☐	☐	☐	☐	☐
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Teaching statistics is very
satisfying to me.
(is_goals_4)

☐	☐	☐	☐	☐	☐	☐
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Positive feedback about
my teaching is important
to me. (is_goals_5)

☐	☐	☐	☐	☐	☐	☐
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I am primarily teaching
statistics to please my
boss/chair/dean.
(is_goals_6)

☐	☐	☐	☐	☐	☐	☐
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I am good at clearly
explaining difficult
statistics concepts.
(is_statsc_1)

☐	☐	☐	☐	☐	☐	☐
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When I teach statistics, I
create an environment
where students are
encouraged to ask
questions. (is_statsc_2)

☐	☐	☐	☐	☐	☐	☐
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If I cannot explain a
statistics concept well, I
find different ways and try
again. (is_statsc_3)

☐	☐	☐	☐	☐	☐	☐
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I devise multiple ways to
elicit student
performance/engagement.
(is_statsc_4)

☐	☐	☐	☐	☐	☐	☐
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I am able to modify my
statistics teaching when
the need arises.
(is_statsc_5)

☐	☐	☐	☐	☐	☐	☐
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Teaching comes naturally to me. (is_statssc_6)	☐	☐	☐	☐	☐	☐	☐
I became a teacher because it is fulfilling. (is_goalsgenteach_1)	☐	☐	☐	☐	☐	☐	☐
It is important to me to be a good teacher. (is_goalsgenteach_2)	☐	☐	☐	☐	☐	☐	☐
Teaching is satisfying. (is_goalsgenteach_3)	☐	☐	☐	☐	☐	☐	☐
I feel successful when my students succeed. (is_goalsgenteach_4)	☐	☐	☐	☐	☐	☐	☐
I want to teach well so that my students do well. (is_goalsgenteach_5)	☐	☐	☐	☐	☐	☐	☐
Teaching can be emotionally draining for me. (is_costgenteach_1)	☐	☐	☐	☐	☐	☐	☐
Being a good teacher requires sacrificing other parts of my job. (is_costgenteach_2)	☐	☐	☐	☐	☐	☐	☐
Teaching well is too time consuming. (is_costgenteach_3)	☐	☐	☐	☐	☐	☐	☐
Teaching well is exhausting. (is_costgenteach_4)	☐	☐	☐	☐	☐	☐	☐
It takes too much effort to teach well. (is_costgenteach_5)	☐	☐	☐	☐	☐	☐	☐



My personal life suffers
from my job as a teacher.
(is_costgenteach_6)

☐☐☐☐☐☐☐

End of Block: required_constrcuts

Start of Block: required_demographics



gender What gender do you identify with?

- ☐ Woman (1)
- ☐ Man (2)
- ☐ Non-binary (3)
- ☐ Prefer not to disclose. (4)
- ☐ Prefer to self-describe: (5)





race What is your race, ethnicity, or origin? Select all that apply.

- ☐ **White:** German, Irish, English, French, etc. (1)
- ☐ **Black or African-American:** African American, Haitian, Nigerian, etc. (2)
- ☐ **Hispanic, Latino or Spanish origin:** Mexican, Mexican American, Puerto Rican, Cuban, Argentinean, Dominican, Salvadoran, Spaniard, etc. (3)
- ☐ **Middle Eastern or North African:** Lebanese, Egyptian, Turkish, Iranian, etc. (4)
- ☐ **American Indian or Alaskan Native:** Navajo, Mayan, Tlingit, etc. (5)
- ☐ **Asian:** Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Hmong, Laotian, Thai, Pakistani, Cambodian, etc. (6)
- ☐ **Native Hawaiian or Pacific Islander:** Native Hawaiian, Guamanian, Samoan, Fijian, etc. (7)
- ☐ **Some other race or origin:** Provide race(s) or origin(s) below. (8)
-
- ☐ **Prefer not to answer** (9)





teaching_language What is your level of fluency for the language in which you typically teach?

- ☐ I am a native speaker. (1)
 - ☐ I am fluent, but not a native speaker. (2)
 - ☐ I am proficient. (3)
 - ☐ I am conversant at an intermediate level. (4)
 - ☐ I have only basic or little knowledge. (5)
 - ☐ I have no knowledge. (6)
-

teach_level At what level do you teach?

- ☐ Post-Secondary Level (College/University) (1)
- ☐ Secondary Level (High School) (2)
- ☐ Both (3)
- ☐ Other (4)

Skip To: degree If At what level do you teach? = Secondary Level (High School)

job_directions The following are questions about your post-secondary teaching role. For these questions, when asked about your job, please answer reflecting a typical year. (Ignoring sabbaticals, leaves of absence, etc.).



rank Recognizing that titles vary greatly across institution, which of the following **best** describes your academic rank?

- ☐ Graduate student (1)
- ☐ Post-doc (2)
- ☐ First rank (e.g., lecturer, assistant professor, etc.) (3)
- ☐ Second rank (e.g., associate professor, etc.) (4)
- ☐ Third rank (e.g., senior lecturer, full professor, etc.) (5)
- ☐ Retired (Answer the following questions reflecting the position from which you retired.) (6)
- ☐ Adjunct (7)
- ☐ Other (8) _____





teaching_research Which of the following best describes your job responsibilities?

- ☐ Teaching-focused with no research obligations (1)
 - ☐ Teaching-focused with some research obligations (2)
 - ☐ A roughly equal balance of teaching and research (3)
 - ☐ Research focused with some teaching obligations (4)
 - ☐ Research focused with no teaching obligations (5)
 - ☐ Other (6) _____
-

full_time Is your current position full-time or part-time?

- ☐ Full-time (1)
 - ☐ Part-time (2)
 - ☐ Other (3) _____
-





tenure Are you, or have you ever been, tenured?

- ☐ Tenured (currently or previously) (1)
- ☐ Tenure track, but not tenured (2)
- ☐ Not on the tenure track, and I have never been tenured (3)
- ☐ Tenure is not available at my institution (4)
- ☐ Other (5) _____





dept Identify the discipline names that best describe the department in which you have your primary appointment. (For example if you are in the “Department of Mathematics and Statistics”, choose “Mathematics” and “Statistics”.)

- ☐ Statistics (1)
- ☐ Biostatistics (2)
- ☐ Mathematics (3)
- ☐ Computer Science (4)
- ☐ Data Science (5)
- ☐ Psychology (6)
- ☐ Education (7)
- ☐ Business/Economics/Finance (8)
- ☐ Health/Life Sciences (including pre-med, pre-vet, etc.) (9)
- ☐ Engineering (10)
- ☐ Other (11) _____

Page Break



degree What is the highest degree you have earned?

- ☐ High School or equivalent (1)
- ☐ Undergraduate/Bachelors (2)
- ☐ Masters (3)
- ☐ Doctorate (4)
- ☐ Other (5) _____

field_study Pick the field of study that **best** describes your highest degree.

Category (1)

Field of Study (5)

▼ Math / Stat / CS (1) ... Other ~ Other (Please Specify) (69)

Display this question:

If Pick the field of study that best describes your highest degree. = Other ~ Other (Please Specify)

field_study_other Please specify the field for your highest degree.



years_stat_teach Prior to this semester/term, for how long have you been **teaching statistics** at the undergraduate or equivalent level?

- ☐ I have never taught a statistics class. (1)
- ☐ Less than 1 year (2)
- ☐ 1-2 years (3)
- ☐ 3-5 years (4)
- ☐ 6-10 years (5)
- ☐ 11-20 years (6)
- ☐ Over 20 years (7)

Display this question:

*If Prior to this semester/term, for how long have you been teaching statistics at the undergraduate...
= I have never taught a statistics class.*



ta How many times have you been a teaching assistant for a statistics class?

- ☐ Never (1)
 - ☐ 1 (2)
 - ☐ 2-3 (3)
 - ☐ 4-9 (4)
 - ☐ 10 or more (5)
-

years_teach Prior to this semester/term, for how long have you been **teaching (any subject)** at the undergraduate or equivalent level?

- ☐ I have never taught an undergraduate class before. (1)
 - ☐ Less than 1 year (2)
 - ☐ 1-2 years (3)
 - ☐ 3-5 years (4)
 - ☐ 6-10 years (5)
 - ☐ 11-20 years (6)
 - ☐ Over 20 years (7)
-



stat_beyond How many statistics courses beyond the Introduction to Statistics course have you successfully completed as a **student**?

- ☐ None (1)
- ☐ 1-2 (2)
- ☐ 3-4 (3)
- ☐ 5-10 (4)
- ☐ 11 or more courses (5)



gaise Are you familiar with the GAISE (Guidelines for Assessment and Instruction in Statistics Education) recommendations?

- ☐ Yes, I use them as a guide for curricular decisions. (1)
- ☐ Yes, I have seen or read them, but do not use them in curricular decisions. (2)
- ☐ No (0)





arti_conf Over the past five years, in what ways, if any, have you participated in learning about statistics education? Select all that apply.

- ☐ I have not participated in learning about statistics education. (0)
- ☐ I read books and/or articles about statistics education. (1)
- ☐ I attend conference sessions about statistics education. (2)
- ☐ I attend workshops about teaching statistics. (3)





leadership In the past five years, in what ways, if any, have you participated in leadership in the statistics education community? Select all that apply.

- ☐ (0) I have not participated in leadership in statistics education in the last five years.
 - ☐ I publish or referee articles about statistics education. (1)
 - ☐ (2) I organize and/or lead statistics education workshops or conference sessions.
 - ☐ I present about statistics education at conferences. (3)
 - ☐ I serve on a statistics education committee, editorial board, etc. (4)
 - ☐ I produce learning materials used by other statistics educators. (5)
 - ☐ Other (please explain) (6)
-





data_analysis Typically, how often have you analyzed data outside of your coursework in statistics (e.g. in your own research, consulting, etc.)

- ☐ Never (0)
 - ☐ Not more than once a year (1)
 - ☐ A few times per year (2)
 - ☐ I am typically working on a data analysis project (or projects) (3)
-

numerical_beliefs Indicate the method of computing numerical solutions to problems that you believe helps students learn statistics best.

- ☐ All solutions computed by hand (1)
 - ☐ Most solutions computed by hand (2)
 - ☐ Equal amounts of computing solutions by hand and using statistical software or applets (3)
 - ☐ Most solutions computed using statistical software or applets (4)
 - ☐ All solutions computed using statistical software or applets (5)
-





stat_info Where do you get statistical information when you are stuck? Select all that apply.

- ☐ Nowhere (1)
- ☐ Blogs (2)
- ☐ Academic Journal Articles (3)
- ☐ Online Search (4)
- ☐ Statistics Textbook (5)
- ☐ Artificial Intelligence (6)
- ☐ Other Faculty (7)
- ☐ Other (8) _____

End of Block: required_demographics
