Community-Engaged Learning in Introductory Statistics Workbook

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Contents

Workshop Schedule
June 24-25, 2021
Facilitators: Jana Asher (jana.asher@sru.edu) and Jeffrey Musyt (jeffrey.musyt@sru.edu)

By the end of this workshop, participants will be able to:
- Explain the public purpose of the field of statistics and develop examples of statistics being used for public policy and/or social good.
- Outline the attributes-based model for community-engaged learning employed at Slippery Rock University (SRU).
- List four areas of civic competencies addressed in a community-engaged course.
- Recognize elements in an elementary statistics course syllabus that indicate community-engaged pedagogy.
- Recognize the stages of development for faculty using community-engaged pedagogy and identify where they are along that spectrum.
- Apply the lessons of this workshop to their own syllabus for an elementary statistics course.

Day 1 – Thursday, June 24			
Time	Topic	Activities	Handouts
Module 1: Introduction to Community-Engaged Education			
11:00 AM – 11:30 AM	Welcome and Introductions	**Introductions:** Jana Asher and Jeffrey Musyt **Zoom Breakout Session 1:** Introductions within Small Groups.	1. Instructions for Zoom Breakout Session 1 (includes group breakdowns)
11:30 AM – 12:00 PM	Public Purpose of Statistics	**Zoom Breakout Session 2:** Small Group Discussions **Whole Group Discussion**	2. Instructions for Zoom Breakout Session 2
12:00 PM – 12:45 PM	The Six Attributes Community-Engaged Learning	**Interactive Lecture:** Jana Asher and Jeffrey Musyt	3. Slide Notes Handout 1 4. Reflection Worksheet 1
12:45 PM – 1:00 PM	Civic learning outcomes for Community-Engaged Learning	**Interactive Lecture:** Jana Asher	5. Slide Notes Handout 2 6. Reflection Worksheet 2

Module 2: Developing a Community-Engaged Elementary Statistics Course			
1:30 PM – 2:00 PM	Syllabus Review	**Zoom Breakout Session 3:** Small Group Review of Syllabus for Community-Engaged Elementary Statistics Course **Whole Group Discussion**	7. Instructions for Zoom Breakout Session 3 8. Copy of Jana Asher's STAT 152 Syllabus for Spring 2021
2:00 PM – 2:30 PM	Civic Competency in Elementary Statistics	**Worksheet:** What Topics Matter **Whole Group Discussion**	9. What Topics Matter Worksheet
2:30 PM – 3:00 PM	Reciprocal Partnerships in Elementary Statistics	**Zoom Breakout Session 4:** Case Study Review **Whole Group Discussion**	10. Instructions for Zoom Breakout Session 4
3:00 PM – 3:30 PM	The Power of Reflection	**Worksheet:** What do these reflections tell us about student learning? **Whole Group Discussion**	11. Reflections Worksheet
Homework Assignment			
Using an existing syllabus for your elementary statistics course, or the practice syllabus provided, make modifications to the course that allow one or more of the civics learning outcomes discussed in the workshop to be addressed/achieved.			12. Instructions for Syllabus Modification
Day 2 – Friday, June 25th			
Module 3: Making Community Engagement Part of Your Course			
11:00 AM – 11:30 AM	Syllabus review	**Zoom Breakout Session 5:** Syllabi Change Review **Whole Group Discussion**	13. Instructions for Zoom Breakout Session 5 14. Syllabus Review Worksheet
11:30 AM – 12:00 PM	Three Stages of Faculty Development	**Worksheet:** Where am I in my development? **Whole Group Discussion**	15. Development Worksheet
12:00 PM – 12:20 PM	How to Find a Community Partner	**Scavenger Hunt** **Whole Group Discussion**	16. Directions for Scavenger Hunt/Worksheet

12:20 PM – 12:40 PM	Overview of National, International, and Workshop-Provided Resources	**Zoom Breakout Session 6:** Resources available to me. **Whole Group Discussion**	17. Instructions for Zoom Breakout Session 6 18. Worksheet for Resources 19. Example Community Partnership Agreement 20. Example Confidentiality Statement 21. Example Interviewer Manual for Students 22. Example Survey 23. Example Refusal Recording Sheet 24. Example Pre- and Post-Assessment Survey for Civic Learning Outcomes 25. Example Template for Student Presentations 26. Example Directions for Student Final Papers
12:40 PM – 1:00 PM	Final Reflections and Wrap-Up	**Whole Group Discussion** **Post-workshop survey**	27. Post-Workshop Survey/Link

1. Instructions for Zoom Breakout Session 1

Group Leader/Reporter: The person whose first name is alphabetically first.

Objective: Get to know your workshop group and discuss some of the background and expectations.

Time Available: 20 minutes

Directions:

Take a few minutes to introduce yourself to each other by sharing your name, affiliated institution, and experience with community-engaged learning. After these brief introductions discuss the following three questions and have the Group Leader record some of the answers in the workshop Google Document.

1) Why did you choose to sign up for this workshop and what are you hoping to learn while attending?
2) How would you currently describe "community-engaged learning" and what makes it different from other types of learning?
3) What's one reason/concern that might make you not include community-engaged learning in your courses?

2. Instructions for Zoom Breakout Session 2

Group Leader/Reporter: The person that is *youngest* in your Zoom breakout room.

Objective: To decide, as a group, on a definition of the public purpose of statistics as a field.

Time Available: 20 minutes

Directions:

Spend the first ten minutes brainstorming on ideas as to what the public purpose of statistics is. How have you seen statistics used for the public good? How does the government use statistics to function? How are statistics used in various sectors of society – Education? Business? Finance? Governance? Non-profit/charitable?

Spend the last ten minutes working as a team to create a definition of the public purpose of statistics based on your brainstorming.

It might be helpful for the Group Leader to share their screen and type in the definition as it is developing using Microsoft Word or another document app.

When you have finalized your definition, please add it to the group chat in Zoom.

3. Slide Notes Handout 1

3. The Six Attributes

Attributes of High-Quality Service-Learning at Slippery Rock University

- Community Activities
- Civic Competencies
- Assessment
- Critical Reflection
- Diversity of Interactions and Dialogue
- Reciprocal Partnerships

Module 1: Introduction to Community-Engaged Education

Reciprocal Partnerships

Community engagement describes collaboration between institutions of higher education and their larger communities (local, regional/state, national, global) **for the mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity**.

There is a distinction between Outreach and Partnerships!

A reciprocal Partnership meets the needs of both the university and the community partner!

Reciprocal Partnerships are an ever evolving relationship!

What is **collaboration?**

Concern for outcomes

- Competition
- Collaboration
- Cooperation
- Avoidance
- Accommodation

Concern for relationships
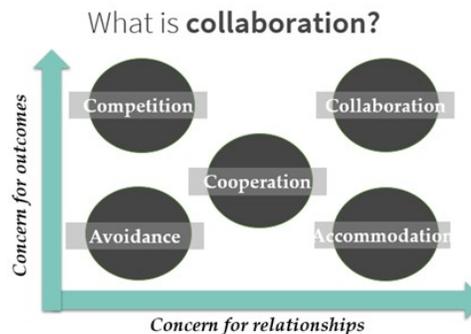
Module 1: Introduction to Community-Engaged Education

Community Activities

Choosing a community project is less about "What you do?" and more about "Why you do ...?"

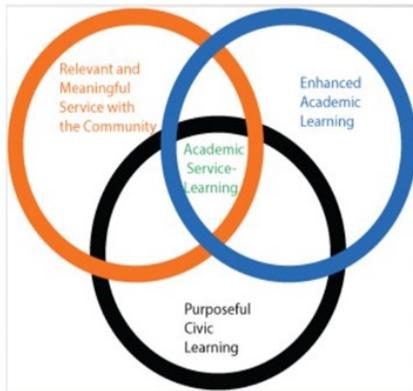## Criteria for Enhancing Academic Content

1. Service provided is relevant and meaningful to all stakeholders.

2. Enhances students' learning in the course.

3. Prepare students for active participation in a diverse democratic society.

Bridging the gap between learning outcomes and civic/service outcomes!

Civic Competencies

COURSE-RELATED CIVIC LEARNING OPPORTUNITIES:

- Learning drawn from the societal issue(s) identified in the course.

- Learning drawn from the public purpose of the profession or discipline.

- Learning drawn from the service and community context (i.e. commitment to service).

- Learning drawn from engagement with community partners (i.e. understanding importance, value, skills of reciprocal engagement as a democratic skill).

- Learning drawn from working across differences and diversity interactions
.

Diversity of Interactions and Dialogue

Exposure to difference (i.e. cultural, ethnic, class, race, socio-economic, life experiences and perspectives) is **INSUFFICIENT** to disrupt students' potential stereotypes, biases and prejudices.

Experiences must be **integrated with active engagement and dialogue with and across differences** and supported with critical reflection to effectively challenge pre-existing assumptions and beliefs.

Social Responsibility in Community engaged learning
- Representing more than just ourselves
- Creates expectations within the classroom and the community
- Following through on expectations
- Establish clear protocols for accountability

A brief note about vulnerable populations and clearances

Critical Reflection

The bridge between Service and Learning !

Employ multiple and multi-faceted reflection opportunities before, during and after the engaged experience.

Connected — Developing meaningful connections between the service experience and course content.

Reflection

Continuous

Challenging

Contextualized

Ensure that reflection activities are appropriate for the context and setting of the project. Consider students' knowledge, skills, attitudes, community needs, and course objectives.

Challenge students to critically explore issues in deep and integrated ways, including problem-solving associated with democratic community engagement (validates S-L as a high-impact practice).

National Service-Learning Clearinghouse: http://www.servicelearning.org/instant_info/fact_sheets/he_facts/he_reflection

Critical Reflection II

The Use of Powerful Questions!

- Generate **CURIOSITY** in the listener;
- **STIMULATE** reflective conversation;
- Are **THOUGHT-PROVOKING**;
- **SURFACE or ILLUMINATE** underlying assumptions;
- **INVITE** creative thinking and new possibilities;
- **GENERATE** energy and forward momentum;
- **TRAVEL WELL** – stays with participants beyond the moment;
- Have the potential to **PROVOKE** a deep meaning for someone;
- **STIMULATE** more questions.

Some general thought-provoking questions for elementary statistics!

- **What is the public purpose of statistics?**
- **How are statistics used to help people? To harm people?**
- **How are statistics created?**
- **Why are statistics created?**
- **What does it mean to describe another person "as a statistic"?**

Assessment

Things to assess

1. Service Outcomes
   1. Effectiveness and benefit of service to the community.
   2. Perceived level/degree of reciprocity in the outcomes.
2. Learning Outcomes
3. What else you would like to know?

Some best practices in assessment

- Collect both formative and summative feedback and use for course,
- curriculum, and service project improvement.
- Measure what is valued
- Align assessment strategies to learning and service goals.
- Use multiple forms of direct and indirect measures (student work; site-specific from community partner; student self-assessment).
- Evaluate the service project and partnership. (Shows evidence of community benefit and perceived sense of reciprocity)

4. Reflection Worksheet 1

Directions: Reflect on the six attributes to high-quality service learning that we briefly discussed: reciprocal partnerships, community activities, civic competencies, diversity of interaction and dialogue, critical reflection, and assessment.

Which of the attributes were you most surprised to see included?

How do you think the inclusion of this attributes can deepen student learning and service learning in an elementary statistics course?

Choose one of the attributes that you feel isn't already a strong focus in one of your courses. Brainstorm ways that you can more concretely make this attribute a more important pillar of your course and what benefits it might bring your students (even if you don't normally structure your course around community-engaged learning).

5. Slide Notes Handout 2

Civic Learning Outcomes

A socially cohesive and economically vibrant US democracy and a viable, just global community require informed, engaged, open-minded, and socially responsible people committed to the community good and practiced in "doing" democracy.

A Crucible Moment: College Learning & Democracy's Future by the National Task Force on Civic Learning and Democratic Engagement (2012).

Service-learning class: A course-based educational experience in which students participate in an organized service activity and reflect on the experience in such a way as to gain further understanding of course content, a broader appreciation of the discipline, and *an enhanced sense of personal values and civic responsibility.*

Association of American Colleges and Universities (AAC&U). (2009). *Inquiry and analysis VALUE rubric.* Retrieved from https://www.aacu.org/value/rubrics/inquiry-analysis

Module 1: Introduction to Community-Engaged Education

Civic Learning Outcomes

Civic Knowledge: Connects and extends knowledge (facts, theories, etc.) from one's own academic study/field/discipline to civic engagement and to one's own participation in civic life, politics, and government.

Civic Skills: Tailors communication strategies to effectively express, listen, and adapt to others to establish relationships to further civic action. Demonstrates ability and commitment to collaboratively work across and within community contexts and structures to achieve a civic aim.

Civic Values: Demonstrates evidence of adjustment in own attitudes and beliefs because of working within and learning from diversity of communities and cultures. Promotes others' engagement with diversity. Provides evidence of experience in civic-engagement activities and describes what she/he has learned about her or himself as it relates to a reinforced and clarified sense of civic identity and continued commitment to public action.

Civic Action: Demonstrates independent experience and shows initiative in team leadership of complex or multiple civic engagement activities, accompanied by reflective insights or analysis about the aims and accomplishments of one's actions.

Association of American Colleges and Universities (AAC&U). (2009). *Inquiry and analysis VALUE rubric.* Retrieved from https://www.aacu.org/value/rubrics/inquiry-analysis

Module 1: Introduction to Community-Engaged Education

6. Reflection Worksheet 2

Directions: We have provided you will a list of sixteen civic learning outcomes divided into four categories: civic knowledge, civic skills, civic values, and civic action. For each of these four categories, choose one that you are most likely to incorporate into your elementary statistics class by placing a star next to that outcome.

Civic Knowledge		
	CKO1	Learn about a particular community or population in the community.
	CKO2	Describe how individuals in a particular profession act in socially responsible ways.
	CKO3	Examine the relationship between individual, group, community and societal well-being.
	CKO4	Identify and analyze composition of off-campus community, including social, cultural, demographic, life-style, religious and other factors.

Civic Skills		
	CSO5	Learn skills and attitudes needed for learning from experience (subset of the following: observing, interviewing, asking questions).
	CSO6	Demonstrate the ability to work collaboratively with others.
	CSO7	Differentiate actions/ policies that enable and/ or constrain collaborative conflict resolution.
	CSO8	Appraise and confirm a sense of personal worth and confidence in one's ability to make a difference.

Civic Values		
	CVO9	Define and develop a sense of social responsibility and ethical integrity.
	CV10	Examine why the voices of underrepresented groups are needed to make sound community decisions.
	CV11	Analyze a community issue(s) in the context of systemic inequity, discrimination and social injustice.
	CV12	Evaluate and improve personal attitudes towards diversity, equity, and inclusion.

Civic Action		
	CA13	Demonstrate a commitment to future social responsibility, especially when holding leadership positions.
	CA14	Analyze and navigate systems (political, social, economic) in order to plan and engage in public action.
	CA15	Gain, evaluate and weigh meaningful feedback from the community.
	CA16	Assume responsibility for community-based projects.

List the four outcomes your starred in the chart below, and then choose two of those that you are most likely to incorporate into your elementary statistics class. Put a star next to those two outcomes.

My Choices		
Star	Code	Description

Reflect on the two learning outcomes that you chose. How would you incorporate those learning outcomes into your course? What challenges can you imagine? It is okay to not be quite sure how this will work yet! The idea is to just get started!

7. Instructions for Zoom Breakout Session 3

Group Leader/Reporter: The person whose first name is alphabetically last.

Objective: Discuss how various community-engaged learning attributes and civic learning outcomes might appear in a syllabus, and how they can be used to frame the purpose of the course.

Time Available: 20 minutes

Directions:

Review the copy of Jana Asher's STAT 152 syllabus and discuss some of the ways it includes/addresses/promotes both the community-engaged learning attributes and civic learning outcomes. How is the importance of community-engaged learning stressed in the course description, student learning outcomes, assessment, etc.?

After the breakout rooms, we'll ask the Group Leader to share one or two of the observations their group made.

8. Copy of Jana Asher's STAT 152 Syllabus for Spring 2021

| STAT 152-89 | Elementary Statistics I | Spring 2021 |
| CRN: 2196 | MWF/9am-9:50am | ONLINE |

SLIPPERY ROCK UNIVERSITY
Department of Mathematics and Statistics

I. **Who is my professor?**

Name: Dr. Jana Lynn Asher   **Telephone Number**: 724-738-2508/240-350-7155
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Office Hours: Monday- Friday 11am-noon at sru.zoom.us/j/3072619614
                        Or by making an appointment on https://professorasher.youcanbook.me

II. **What is this course about?**

I bet you logged in today expecting a class filled with formulas, math problems, quizzes and tests, and a lot of sitting, listening, and taking notes.

I'm sorry, but I'm going to have to disappoint you.

This is a course about numbers, that much is true. But this isn't *that* kind of math course.

This is a course about how data informs every aspect of your life, whether you are aware of it or not. Our story begins all the way back on September 17th, 1787: the day that the U.S. Constitution was signed. There's an important part to the constitution you might not be aware of, but it's right there in Article I, Section II, and it goes:

> *Representatives and direct Taxes shall be apportioned among the several States which may be included within this Union, according to their respective Numbers… The actual Enumeration shall be made within three Years after the first Meeting of the Congress of the United States, and within every subsequent Term of ten Years, in such Manner as they shall by Law direct.*

And with these words, the first official statistics of our country were mandated. The U.S. Census, which is a count of each person in the country, started in 1790 and has been taken every 10 years since.

So, what is so important about statistics that the founding fathers wrote them into the U.S. Constitution before they even got to describing the Supreme Court or the Executive Branch? The answer is both simple and complicated. The simple part is that without an accurate picture of the composition of our country, how is the government supposed to know how to create policy or allocate our shared resources? Who gets a new school, or fire station, or road? How much food production is needed to feed everyone?

Here's the complicated part: back in 1790, the first U.S. Congress counted up 3,929,214 people. They thought it was hard back then to figure out what their diverse population needed. HA! The 2010 Census counted over 309 million people, and the projection for 2020 is 333.5 million people. How exactly do we, as a country, balance the needs of 333.5 million people? *How can a democracy function when there are so many people, each of whom are supposed to have a voice in how our country is run?*

The answer lies in what data are collected, how they are collected, how they are interpreted, and how the possible error in those data is quantified and understood.

In this class, we will learn about all the ways in which data are used by business, governmental agencies, researchers, and practitioners to understand our world. Most of the time, the data only represent some of a population of interest, but if those data are collected carefully, they can be used

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to represent the entire population. We will learn some very basic rules of probability—that is, how to quantify the chance that something will happen—and then we will see how those rules of probability help us understand how certain we are of the statistics we create from the data we collect.

Finally, we will learn why we all have the responsibility to be participatory producers and critical consumers of statistics and data throughout our lifetime. In other words, we must work together to ensure our statistics are as accurate as possible. Statistics are being used to inform policy, make research decisions, and define the composition of our society—in short, to manage our democracy and ensure our basic human rights—as individuals and as a whole—are met. We each allow that to happen when we respond to surveys and carefully interpret the data and statistics produced from them.

Wait, so I won't have math problems to do?

I am afraid you will still have math problems to do, but you will be doing a great deal more than math problems.

What will I be doing in this course?

I'm glad you asked! The learning opportunities in this course are diverse.

1) We will be meeting during our regular course meeting time! You should plan to attend from 9am through 9:50am on Mondays, Wednesdays, and Fridays by going to ROCKonline at https://sru.desire2learn.com/d2l/home and clicking on our course (STAT-152-89-Elementary Statistics I). The D2L shell includes a link to Microsoft Teams application. Clicking on this link will bring you to either a login window (where you can use your regular SRU login and password), or directly to the STAT 152 Team. In the "Content" section of the D2L shell is a link to the 9am class meeting! Please note that attendance will be taken! If you end up with a "borderline" grade in this course – that is, a grade on the border between an "A" and a "B", or a "B" and a "C" – your attendance will be considered as I determine which way your grade should go!

2) The backbone of this course is a collaborative service-learning project involving the collection and analysis of data. Service learning, not surprisingly, involves activities designed to help make the world a better place—that is the service part. But it also involves you learning not just about statistics, but the connection between statistical knowledge and the healthy functioning of society. You can't truly understand the structure of statistics without understanding the process by which data are collected and compiled. And you can't understand the purpose of statistics without seeing how statistics can be used to inform and structure the public good. Most importantly, service learning helps you understand that each of us, as a member of our community, is responsible for helping that community thrive. Our partner this semester is the Slippery Rock Community Library; we will be collecting and analyzing data on how the library is currently used and what the local community would like to be available through the library. We will use the online system RockServe to coordinate our service project; more details on this platform will be provided to you later in the semester.

The products you create through your service-learning project comprise 25% of your grade in this course and begin within a few weeks of the beginning of class. Students will be divided into teams that will work on different aspects of developing the data collection plan. All students will be involved in the data collection, data entry, and data analysis portions of the project; these last three portions will be graded.

Specifically:

a. 5% of your grade in this course will be earned through the data collection portion of the service-learning project.

   b. **10% of your grade in this course will be earned through the preparation of a data analysis report** related to the service-learning project. Part of that data analysis report will be a reflection in which you answer the following questions:

     i. This project was done to help the Slippery Rock Community Library (slipperyrocklibrary.org/) learn about who uses the library and how much residents of Slippery Rock know about the library. Think about your role in this process. What did you learn about the public purpose of the field of statistics?

     ii. You will be asked to view your classmates' presentations over the final exam week. Do you understand what your classmates have presented? Does this surprise you?

     iii. Is what you learned in this course of use to you in your career and your life? Did your opinion about statistics change because of this course? How?

   c. **10% of your grade in this course will be earned through an oral presentation during our final exam period. There is no written final examination in this course.**

3) One class period during most weeks will be used for an in-class laboratory, during which you will use computers to explore the concepts you are learning about in class. The in-class laboratories will comprise a large portion of the collaborative learning process in the class.

Collaborative learning is the use of groups to enhance learning. Students not only learn the substantive material of the course; they also develop problem-solving skills, communication skills, and conflict resolution skills through working together. Within the in-class laboratories you will learn to use the Excel software package, and then use Excel to complete statistical analyses. You will always be working with real data, and by the end of the course, you will be analyzing the data you collected as part of your service-learning project.

There will be several written reflections about the collaborative process and the service-learning project included as part of the in-class laboratories throughout the semester. The in-class collaborative laboratories comprise 20% of your grade in this course and begin during the first week of class.

4) Yes, you will have homework. All of the homework assignments in this course are through the ALEKS online platform; you will be able to access these assignments through our D2L shell for the course. The homework assignments comprise 20% of your grade in this course and begin during the first week of class.

5) Because this is an online class, and I want you to interact with your fellow students, we will also have a video discussion board. Each week you will be asked to post one video and respond to two other students' videos. The topic of the video will be different each week! Your participation in the video discussion board comprises 5% of your grade in this course. You have participated in a given week if you have responded to the prompt for the discussion with your own video and commented on two additional posts created by students in your cohort.

6) The last 30% of your grade in this course is based on three in-class tests.

That sounds like a lot of work. I have to collect my own data and analyze it? I don't know how to do that!

Actually, you are only collecting a small part of the data we will be analyzing. As a class, we will, together, design a survey instrument and collect data based on the needs of our community partner. Each of us (yes, even your professor) will then participate in collecting information from the population of interest. We will all work on entering the data into a database together. Because we will work together, each of us will have a small amount to do, but the final dataset will be large enough for us to understand the population we are studying.

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This course will require work, but it is not designed to overwhelm you with work. Homework assignments are designed to take 30 minutes to 1 hour; students taking more time than this are strongly encouraged to meet with the professor to determine why. Laboratories are completed in-class; occasionally students might require extra time to complete them, but they will be encouraged to meet with the professor to do so. Tests are open note; the best preparation for the tests will be class attendance, lab completion and homework completion. Students who keep up with the class should find they need very little time to study for the tests. The service-learning project is expected to take 1-2 hours a week over the first 10 weeks of the semester, and progressively more time as the semester finishes. However, the last week of in-class time is devoted toward the service-learning project, as are several laboratories.

When it is time for us to analyze the data, you will pick one research question of many that can be answered. Each student will therefore be able to complete an individual final project, and it is that final project on which the last 20% of your grade will be based. More importantly, we will be answering questions our community partner needs to be answered to make the best policy decisions.

The service-learning project is interwoven with the other course material. While we are collecting data, we will also be learning about how to summarize and display data. As we are entering the data into a database, we will learn about probability rules and how to quantify the uncertainty we have about our resulting statistics. By the time you need to complete your final project, you will have the tools you need to turn statistics into knowledge.

What will those tools be?

Here's the official course description and the learning outcomes for the course. Since you asked.

Course description: This is a course about how data inform every aspect of our lives. Without statistics, how does a drug company know which medicine is best at curing cancer? How can the government know who needs a new school, or fire station, or road? How much food production is needed to feed everyone? How do we know, during a pandemic, if the rate of new cases of a disease is rising or ebbing? The answer lies in what data are collected, how they are collected, how they are summarized and interpreted, and how the possible error in those data is quantified and understood. In this class, we will learn about all the ways in which statistics are used by businesses, governmental agencies, researchers, and practitioners to understand our world. Prerequisite: ACSD 110 or equivalent. (3 credits)

Course outcomes:

1. Students will distinguish between multiple methods of data collection and distinguish between the different analysis techniques required for different data collection methods.

2. Students will create and critically analyze and interpret data displays and will be able to identify manipulative practices in data displays.

3. Students will calculate and interpret the meaning of the different descriptive measures of data, including measures of central tendency, dispersion, position, and correlation.

4. Students will distinguish between classical, empirical, and subjective probability, identify independent or mutually exclusive events, and determine probabilities of events through use of the fundamental counting principle and rules of probability.

5. Students will define a probability distribution, distinguish between discrete and continuous probability distributions, construct discrete distributions, and calculate probabilities and moments

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(expected value, variance, standard deviation) for discrete distribution tables and the binomial and normal probability distribution functions.

6. Students will define the distribution of a sample mean, calculate probabilities for the sample mean of a normal distribution, and calculate probabilities for sample means not derived from a normal distribution through the Central Limit Theorem.

7. Students will apply the Central Limit Theorem to calculate confidence intervals of means and proportions, correctly interpret the meaning of a confidence interval in relation to a population mean or proportion and distinguish between scenarios in which a z-statistic based confidence interval or a t-statistic based confidence interval is appropriate.

8. Students will be able to complete the hypothesis test for a sample mean or proportion appropriately, by:
   a. Determining which hypothesis should be the null hypothesis and which the alternative;
   b. Choosing the appropriate reference probability distribution;
   c. Accurately determining a test statistic and p-value; and
   d. Appropriately interpreting the results of the hypothesis test, including the meaning of the p-value.
Students will additionally:
   a. Identify and interpret Type I and Type II error;
   b. Describe the purpose of an alpha level/significance level and appropriately choose an alpha level for a particular scenario.

9. Students will have intermediate proficiency in Microsoft Excel, and will complete basic spreadsheet construction, sorting, function use, and descriptive data analysis through the Excel software package.

HIP-Service Learning Outcomes:

1. Students will be able to describe how individuals in the profession of statistics act in socially responsible ways.

2. Students will appraise and confirm a sense of personal worth and confidence in one's ability to make a difference.

HIP-Collaborative Learning Outcomes:

1. Students will demonstrate the ability to work with others with diverse personalities or learning styles.

2. Students will demonstrate accountability, integrity and responsibility for their role in collaborative assignments.

Can you explain how my grade is calculated again?

Homework: 20%
Collaborative Laboratories: 20%
Service-Learning Project: 25%
Video Discussion Boards: 5%
Tests: 30%
Attendance: borderline grade determination

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III. Okay, what do I need to get started?

Let's start with what you **don't** need: a textbook. But you can get one if that will make you more comfortable. The textbook for this course is: Elementary Statistics by William Navidi and Barry Monk, 3rd Edition, published 2019.

What you definitely need is an access code for ALEKS 360 for Elementary statistics; this has already been charged to your SRU account. You should be able to access your online portal for this course right away. Instructions for accessing the homework assignments will be explained in a separate document that will be posted in the Content section of our class D2L shell.

IV. Can you tell me a little bit more about the homework?

Your homework will be done online with ALEKS. Homework will be assigned every class period and will be due by the next class period, except when there will be a test the next class period. **You are responsible for the assignment even if you miss the class session and all assignments must be submitted on time.**

You will also need a notebook that is dedicated only to this class. Begin each assignment with the date, chapter and section number. Organize your scratch work in this notebook by labeling sections, making notes of problems you found difficult or needed learning aids to solve, and carefully writing out the solution for each problem before you enter the answer online. Since the professor provides handouts during most classes, a binder with loose-leaf notebook paper is ideal.

What if I miss a homework, or lab, or class?

If you miss a homework, talk to me.

There will be 12 laboratory sessions (labs) during the course; three of those labs will occur during the last three regular class periods. Your lowest laboratory score will be dropped. This will allow you the flexibility to miss a class if you are ill, if you have responsibility for someone who is ill, or if you have another commitment you must maintain. However, you should do your best to attend every class session for the entire period.

All tests must be taken at the appropriate time. If you have a legitimate excuse for missing an exam, contact me as soon as possible (before the exam preferably) to see if other arrangements can be made. If satisfactory arrangements cannot be made, then your missing score will be zero.

V. What else do I need to know?

I will communicate with you between classes by way of email announcements and through D2L. You should check your Slippery Rock University email regularly. **The best way to communicate with me between classes is by email;** you can normally expect a reply to an e-mail within a day. If you do not hear from me, assume I did not receive your email, and try again. Please include your full name and class number (STAT 152) in your emails.

MY EXPECTATIONS

1. Perfect or near perfect attendance. You are responsible for all material covered in class whether or not you were there. It is critical that you be in class on time and that you be in the classroom for the duration of the class.
2. Active productive participation in each class and respect for the learning environment.
3. If you run into trouble, I encourage you to seek extra help as soon as needed. You should:

- Use the study aids available in ALEKS.
- See me during office hours or by appointment.
4. **Ethical behavior.** We are completing a real data project; the data need to be as accurate as possible.

SOME NETIQUETTE RULES

During this course we will be interacting with each other quite a bit; we will be engaging in synchronous online sessions, as well as communicating via a video discussion board. We might also be sending emails to each other or chatting online. Each of these different methods of communication presents its own challenges, and we need a set of common guidelines to make sure everyone in the course feels safe and has a good experience.

For all forms of communication:
1. **Be inclusive.** It is important to be intentional about making sure we "see" each other in an online community. You can do this by making sure that everyone has at least one response. When you participate in the video discussion board, try to respond to at least one person that has not had a response to their post yet.
2. **Be on time.** For our synchronous sessions, we need to be able to start right at the beginning of the class period. Set up your equipment and log in at least a few minutes early! For our video discussion boards, all discussion occurs between Sunday midnight and Friday midnight of the same week. Your contributions to our discussions are important, but our learning community will not benefit from them unless you post on time. Tip: Set calendar reminders to make sure you contribute on time!
3. **Disagree respectfully.** Disagreement and different ideas are essential parts of learning, problem-solving, and creativity. However, in order for different ideas to be heard and shared, it is important to maintain a respectful stance even through vehement disagreement; otherwise communication may break down.
   Tip: You might start the conversation with a question to clarify or get more information before you explain your different perspective. For example, "Nathan, can you tell me more about what you meant when you said that recycling programs are a poor use of public resources?"
   Tip: Refrain from using judgmental evaluations of what someone posted, and instead present your own perspective supported by factual information. For example, instead of "Jamal, your analysis makes no sense," you can say, "Jamal, I interpreted the results of the study differently. As I see it, there was no statistically significant difference in the children's test scores, which implies that the new program is not working."

For synchronous learning sessions and video posts:
1. **We can see you!** Please don't attend class in your pajamas! If you wouldn't wear it to class in a face to face environment, then please don't wear it to class online.
2. **Put the distractions away and find a quiet space.** This includes cell phones (unless we are using them for an activity), other open windows on your screen, and if at all possible, your parents and/or children. I have had meetings with colleagues that went into their bathrooms to work in order to have a private space. Hey, if it works, it works!
   This is both for your benefit and for the benefit of your classmates. If we are engaging in a group discussion, it can be very distracting to see one of your classmates talking with someone off screen (even if the sound is turned off) or scrolling through their phone. And it makes me feel like I must be very boring! 😊
3. **Mute yourself when you are not talking.** I will not turn students on mute from my end, because I want you to be able to interrupt and ask a question if I am being unclear or make a mistake that needs correcting. But for the most part, please mute your microphone so we won't be distracted by any background noise.

For online written communication:
1. **Be concise.** Lengthy paragraphs are difficult for readers to digest. Keep your paragraphs short

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and your writing concise. Tip: Consider using bullet points to help highlight your main points or headings if your post needs to be lengthy.

2. Stay on topic. Off-topic comments can derail our conversation. You can post off-topic comments in our open discussion forum or one of the other communication modes we are using in the course.
3. **NO YELLING.** When you write in uppercase letters in online communication, it is usually interpreted as yelling.
4. **Add some emotion.** :-) Sometimes it helps communicate the tone of your message when you add an emoticon. However, only do so as necessary for it can also be annoying to readers if you use too many (which is probably the opposite of your intention).
5. **Use humor carefully.** Sarcasm in particular does not translate well in an online environment. It is best to avoid the potential pitfalls of misunderstood messages.

ACADEMIC INTEGRITY

All work that you submit for this course must be your own unless otherwise specified. Students are expected to know and adhere to the SRU student code of conduct as posted at http://www.sru.edu/offices/student-conduct/code-of-conduct.

DIVERSITY AND INCLUSION

The professor for this course strives to create a learning space that effectively serves students of diverse backgrounds. I know that the diversity students bring to our campus is a benefit and source of strength for our institution. However, I also acknowledge that course materials used across campus have originated from a predominantly white and male intellectual tradition.

For that reason, I pledge to:

1. Continuously re-evaluate the course format, materials, and outcomes to remove sources of implicit and/or explicit cultural, racial, ethnic, gender-based, disability-based, or sexuality-based bias;
2. Search out and represent, to the best of my ability, the contributions of underrepresented groups to the fields of mathematics and statistics; and
3. Present materials and activities that are respectful of sources of diversity, including gender, sexuality, disability, age, socio-economic background, ethnicity, race, and culture.

Your perspective is unique and desired, and your suggestions are encouraged and appreciated. Please let me knows ways to improve the effectiveness of the course for you personally and for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can plan your coursework around those events.

CORRECT PRONOUNS, NAMES, AND INCLUSION

I hope to create a space where students bring all aspects of their selves into the classroom in order to fully engage in this course. I support people of all gender expressions and gender identities and encourage students to use the name and set of pronouns which best reflect who they are. In this spirit, I welcome and expect all students to also use the correct name and pronouns of their classmates. I will do my best to respect and use the language you use to refer to yourself and will encourage other members of our classroom community to do the same. Please inform me if my documentation reflects a name or set of pronouns different from what you use, and if you have any questions or concerns, please contact me after class, by email, or during office hours.

SPECIAL ACCOMODATIONS

Any student who needs disability accommodations must see me as soon as possible during my office hours. A letter from the Office of Disability Support Services authorizing your accommodations will be

needed. The Office of Disability Support Services is in Room 105 of the University Union with hours of operation from 8:00 am until 4:30 pm during the semester and until 4:00 pm during spring, summer, and winter breaks. Their telephone number is 724-738-4877.

VETERAN'S SERVICES

Slippery Rock University Veterans Resources and the Student Veteran Center play a primary role in serving the University's growing community of veterans and military connected students. Our Veterans Resources provide information on admissions, financial aid, GI Bill°, and other various contacts and resources.

Slippery Rock University Student Veterans Center plays a primary role in serving the university's growing community of veterans and military connected students. It provides SRU student veterans, military affiliated and ROTC cadets a place to relax and share information and experiences. The center is located in 253 Smith Student Center and is equipped with computers, CAC-Smart Card Readers, printing capabilities, cable-TV and lounge space. The center can also be used to collaborate on academic programs or as a quiet place to study.

For more information, please contact George McDowell, Recruitment and Retention Strategist/Veterans Certifying Official Enrollment Management at 110 North Hall Welcome Center (george.mcdowell@sru.edu, 724-738-2702).

INCLEMENT WEATHER

If the decision is made to cancel classes or close the University, University Communication and Public Affairs will post the information to the SRU Web site (www.sru.edu), Facebook and Twitter; send e-mail alerts to all sru.edu addresses (faculty, staff and students); notify e2Campus subscribers; and notify the media.

TITLE IX

Slippery Rock University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment and to comply with Title IX of the Education Amendments of 1972 and guidance from the Office for Civil Rights, the University requires faculty members to report incidents of sexual violence shared by students to the University's Title IX Coordinator. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred to the person designated in the University protection of minors policy. Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth at: http://www.sru.edu/offices/diversity-and-equal-opportunity/sexual-misconduct-and-victim-resources.

GENERAL COURSE DATES TO KNOW

Tuesday, January 19: First Day of Classes for Spring 2021

Tuesday, January 26: Last day to Drop/Add in Campus Office or MySRU

Monday, February 1: Last day to Add course with Instructor Permission

Monday, March 29: WITHDRAW Deadline for Full Semester Courses

Monday, April 26: Last Day of Classes

Tuesday, April 27 - Saturday, May 1: Final Exam Period

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VI.   **CALENDAR**

Test dates may change as necessary, and any changes will be announced in class. For writing exercises, use complete sentences, and write clearly.

WEEK	DATE	SECTIONS	TOPICS
Week 1	01/20/2021	Intro	Syllabus Scavenger Hunt
	01/22/2021	LAB 1	Basic Ideas
Week 2	01/25/2021	1.1-1.4	Basic Ideas and Origins of Data
	01/27/2021	2.1	Graphical Summaries of Data
	01/29/2021	LAB 2	Organizing Data, Distribution Shapes (2.2-2.4)
Week 3	02/01/2021	2.2-2.3	Organizing Data, Distribution Shapes
	02/03/2021	2.4	Bad data displays!
	02/05/2021	LAB 3	Numerical Summaries of Data
Week 4	02/08/2021	3.1-3.2	Measures of Central Tendency and Variation, Empirical Rule
	02/10/2021	3.3-4.1	Measures of Position, Measures of Correlation
	02/12/2021	LAB 4	Least Squares Regression Line (4.2-4.3)
Week 5	02/15/2021	5.1-5.2	Probability Basics
	02/17/2021	Review Day	
	02/19/2021	TEST 1 (1.1-4.3)	
Week 6	02/22/2021	5.3	Contingency Tables & Conditional Probability
	02/24/2021	5.4	Independence, Counting Rules
	02/26/2021	LAB 5	
Week 7	03/01/2021	6.1	Random Vars & Discrete Prob. Distributions
	03/03/2021	6.2	The Binomial Distribution
	03/05/2021	LAB 6	
Week 8	03/08/2021	7.1	The Normal Distribution
	03/10/2021	7.2	More about the Normal Distribution
	03/12/2021	LAB 7	
Week 9	03/15/2021	7.3	Sampling Distributions & the Central Limit Theorem
	03/17/2021	7.4	The Central Limit Theorem for Proportions
	03/19/2021	TEST 2 (5.1-7.2)	
Week 10	03/22/2021	8.1-8.2	Confidence intervals for the Mean
	03/24/2021	8.3	Confidence intervals for the Population Proportion
	03/26/2021	LAB 8	
Week 11	03/29/2021	9.1	Introduction to Hypothesis Testing
	03/31/2020	9.2	Hypothesis Testing
	04/02/2021	LAB 9	
Week 12	04/05/2021	9.3	Hypothesis Testing
	04/07/2021	9.4	Hypothesis Testing for Population Proportions
	04/09/2021	10.1-10.3	Confidence Intervals for Two Populations
Week 13	04/12/2021	11.1-11.3	Hypothesis Testing for Two Populations
	04/14/2021	Review Day	
	04/16/2021	TEST 3 (7.3-11.3)	
Week 14	WORK ON FINAL PROJECTS (LABS 10, 11, 12)		
Week 15	WORK ON FINAL PAPERS; ALL MATERIALS DUE		

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9. What Topics Matter Worksheet

Directions: Complete the matrix below.

Topic	Statistical Content			Community Engagement Content		
	Essential	Preferred	Optional	Essential	Preferred	Optional
Types of Data						
Quantitative v. Qualitative						
Nominal/Ordinal/Ratio/Interval						
Statistical Studies: Overall Steps						
Observational Study						
Structure						
Advanced Topics						
Case-Control Study						
Cross-Sectional Study						
Longitudinal Study						
Cohort Study						
Survey						
Survey Sample Design						
Simple Random Sample						
Stratified Sample						
Clustered Sample						
Multistage Sample						
Systematic Sample						
Quota Sample						
Convenience Sample						
Purposive Sample						
Snowball Sample						
Survey Questionnaire Design						
Common Issues (Double-Barreled)						
Open versus Closed Questions						

Topic	Statistical Content			Community Engagement Content		
	Essential	Preferred	Optional	Essential	Preferred	Optional
Sensitive Questions						
Order Effects (Question or Answer)						
Recall						
Social Desirability Bias						
Acquiescence Bias						
Nonresponse Bias						
Questionnaire testing methods						
Survey Implementation						
Mode (web/email/phone/face-to-face)						
Nonresponse Follow-up						
Interviewing techniques/training						
Confidentiality						
Census						
Purpose (in US)						
Public Policy Use (in US)						
Experiment						
Randomized Design						
Randomized Block Design						
Blind/Double-Blind						
Placebo						
Causation						
Pre-test/Post-test						
Simulation						
Found Data						
Administrative Records						
Pubic Policy Use (in US)						
Metadata						
Ethical Considerations						

Topic	Statistical Content			Community Engagement Content		
	Essential	Preferred	Optional	Essential	Preferred	Optional
Data Entry						
Data Cleaning						
Consuming Statistical Information						
Source of Research/Source of Funding						
Interaction between Researchers and Participants						
Who Was Studied and How They Were Selected						
How Measurements Were Made/Questions Asked						
In What Setting Measurements were Taken						
Unstated Characteristics of Groups Being Compared						
Magnitude of Claimed Differences/Effect						
Statistics for Governance						
U.S. Federal Statistical System						
Lower-level Data Collection and Aggregation						
Government Program Data (social security, welfare)						
Vital Statistics (birth, death)						
Health Statistics (COVID-19)						
The United Nations and International Statistics						
Evidence-Based Policy and Funding						
Diversity and Equity in Official Statistics						
Graphical Displays of Qualitative Data						
Tables						
Frequency, Relative Frequency, Cumulative Frequency						
Cross-classification Tables						
Bar Chart						
Pareto Chart						
Pie Chart						
Word Cloud						

Topic	Statistical Content			Community Engagement Content		
	Essential	Preferred	Optional	Essential	Preferred	Optional
Graphical Displays of Quantitative Data						
Dotplot						
Stem-and-leaf Plot						
Boxplot						
Histogram						
Symmetry/Skew						
Unimodal/Multimodal						
Scatterplot						
Association versus Causation						
Line plot						
Time series plot						
Population Pyramid						
Deceptive Data Display						
Extra Dimensionality						
Too Much Pie						
Too Much Data						
Improper Scaling or No Scaling						
Truncated or Inflated Display						
Extraneous Graphics/Information						
Implying Causality						
Going Against Convention						
Descriptive Statistics						
Mean/Median/Mode						
Standard Deviation/Variance/Range/IQR						
Quartiles/Percentiles						
Correlation/Covariance						

Topic	Statistical Content			Community Engagement Content		
	Essential	Preferred	Optional	Essential	Preferred	Optional
Probability						
Basic Definitions/Rules						
Classical, Empirical, and Subjective Probability						
Complements						
Addition Rule						
Mutually Exclusive Events						
Conditional Probability						
Multiplication Rule						
Independence						
Bayes' Theorem						
Counting and Permutations						
Tree Diagrams						
Venn Diagrams						
Random Variables						
Discrete Random Variables						
Probability Distribution Functions						
Cumulative Distribution Functions						
Mean/Expected Value for a Discrete Random Variable						
Variance/Standard Deviation for a Discrete R.V.						
Binomial Distribution						
Geometric Distribution						
Hypergeometric Distribution						
Poisson Distribution						
Discrete Uniform Distribution						
Continuous Random Variables						
Uniform Distribution						
Exponential Distribution						

Topic	Statistical Content			Community Engagement Content		
	Essential	Preferred	Optional	Essential	Preferred	Optional
Personal Probability Distortion						
Certainty Effect						
Pseudocertainty Effect						
Availability Heuristic						
Representativeness Heuristic						
Conjunction Fallacy						
Forgotten Base Rates						
Optimism, Conservatism, Overconfidence						
Coincidences and Expected Value for Rare Events						
Normal Distribution						
Distribution Characteristics						
Standard Normal Distribution						
Reading Standard Normal Tables to Find Probabilities						
Reading Standard Normal Tables to Find Z-scores						
Using Technology to Find Probabilities						
Using Technology to Find Z-scores						
Converting Normal Values to Z-Scores						
Sampling Distribution of a Sample Mean						
For Normal Distribution						
For Skewed Distribution						
Central Limit Theorem						
Sampling Distribution of a Sample Proportion						
Normal Approximation of Binomial Distribution						
Assessing Data for Normality						
Quantile-Quantile Plots						
Kolmogorov-Smirnov (K-S) test						
Shapiro-Wilk Test						

Topic	Statistical Content			Community Engagement Content		
	Essential	Preferred	Optional	Essential	Preferred	Optional
Confidence Intervals						
One Sample Mean Known Variance						
One Sample Mean Unknown Variance						
One Sample Mean Small Sample Size						
One Sample Proportion						
One Sample Variance/Standard Deviation						
Two Sample Mean Independent Samples/Shared Variance						
Two Sample Mean Independent Sample/Different Vars						
Two Sample Mean Paired Samples						
Two Sample Proportion						
Simulation-Based Inference for Confidence Intervals						
Model-Based Inference for Confidence Intervals						
Hypothesis Testing						
Determining Null and Alternative Hypotheses						
Type I and Type II Error						
Ethical Considerations						
Critical Values/Interpretation						
P-values/Interpretation						
Multiple Testing Problem						
Bonferroni Correction						
Reproducibility Crisis						
Practical versus Statistical Significance						
One Sample Mean Known Variance						
One Sample Mean Unknown Variance						
One Sample Mean Small Sample Size						
One Sample Proportion						
One Sample Variance/Standard Deviation						
Two Sample Mean Independent Samples/Shared Variance						

Topic	Statistical Content			Community Engagement Content		
	Essential	Preferred	Optional	Essential	Preferred	Optional
Two Sample Mean Independent Sample/Different Variance						
Two Sample Mean Paired Samples						
Two Sample Proportion						
Simulation-Based Inference for Hypothesis Testing						
Model-Based Inference for Hypothesis Testing						
Hypothesis Testing for Qualitative Data						
Chi-Square Distribution						
Test for Goodness-of-Fit						
Test for Independence, Test for Homogeneity						
Simpson's Paradox						
Odds Ratios, Relative Risk						
Linear Regression Analysis						
Finding the Best Linear Equation						
Predicted Values and Residuals						
Measure of fit (R-squared)						
Hypothesis Test for Slope of Regression Line						
Model Assumptions						
Residual Analysis						
Influential observations and outliers						
Interpreting the Results (in English)						
Multiple Linear Regression (all topics)						
Analysis of Variance						
The F Distribution						
One-Way Analysis of Variance						
Two-Way Analysis of Variance						
Logistic Regression						
Meta-Analysis						
Statistics and Eugenics						

10. Instructions for Zoom Breakout Session 4

Group Leader/Reporter: The person whose last name is alphabetically last.

Objective: To explore potential issues that can arise in reciprocal partnerships and brainstorm solutions to those issues.

Time Available: 20 minutes

Directions: Read the case study and answer the following questions as a group:

1) What problems did the professor encounter in the reciprocal relationship?
2) What were the strategies used by the professor when data collection did not go as expected? Were the strategies successful? Why or why not?
3) Reciprocal relationships between community partners and professors are intended ensure both parties are empowered to contribute to and complete a project that provides the desired benefit to the community. In this case study, is the power balanced between the two parties? Why or why not?

Case Study: The Youth Homeless Study

A partnership is initiated by a professor at a state (public) university with a coalition of governmental and nongovernmental organizations that serve local homeless youth. To provide evidence of the need of additional programming, the coalition plans to complete a youth homeless study which will involve face-to-face interviewing of local homeless youth age 16-24. In January 2020, the professor and a representative of the coalition sign a partnership agreement in which the coalition will develop the data collection protocol and choose the dates of data collection, and the professor will provide students to serve as interviewers, data entry, and data analysis. The professor subsequently plays an active role in developing the questionnaire, introducing cognitive testing into the questionnaire design process. However, the coalition adds two questions to the questionnaire in February 2020 that have not been tested.

In March of 2020, the month before the data collection process is to occur, the COVID-19 pandemic is declared and the data collection is cancelled. The professor is running two separate courses doing two separate projects, so she collapses

both courses into a single project regarding attitudes toward sustainability. She explains to the students the project change is due to the inability to interview the youth, and the students successfully transfer to the new project. The sustainability project results in a report that is submitted to the governance of the state's university system.

Over the Summer of 2020, the professor and coalition continue to discuss possible data collection strategies and settle on attempting a snowball sample via cellular phone. A new partnership agreement is signed for the Fall 2020 semester; the coalition agrees to provide a sample of cell phone numbers to start the snowball sample. The professor agrees that students will conduct telephone interviews and complete the data analysis at the end of the data collection process. The coalition provides a list of eight cell phone numbers to start the sample. Within her course, the professor assigns a single interview to each of eight students to being the sampling process; she plans to assign new students to interview respondents as new contact information is provided via the snowball sample. Only five new contacts are obtained through the snowball process, and the data collection is declared by the professor and the coalition to be unsuccessful.

The professor finds a newly-created dataset on mental health and coping mechanisms during the COVID-19 pandemic produced at the University of Chicago, and quickly develops a new project. The professor's students will analyze the new dataset focusing on student experiences, and policy recommendations will be provided to the university administration based on their findings. The professor explains the situation to the students and they successfully complete the new project; however, the professor fails to compile the student results and submit the report to the administration.

During the Summer of 2021, the coalition and professor reconvene to discuss next steps. They jointly decide to go back to the original study design, and tentatively agree to complete the study during the Spring 2022 semester. In the meantime, a new round of questionnaire testing is planned for the Fall 2021 semester, and the professor engages a single student research assistant (Math major/Statistics minor) to help with that effort. Monthly meetings are planned, to commence in August of 2021, between the coalition and the professor/student research assistant(s) to continue developing the plan for Spring 2022.

11. Reflections Worksheet

Directions: The reflections in this worksheet were collected at the end of the Fall 2019 semester and were in response to the following prompts:

- In this project you participated in a large data collection effort. What did you learn about how data are collected? How is the collection of data related to the analysis of data? What effects do the data collection processes have on the interpretation of the statistics created from the data?
- This project was done to help the ARC improve its offerings and better serve the students of Slippery Rock University. What did you learn about the public purpose of the field of statistics?
- Is what you learned in this course of use to you in your career and your life? Did your opinion about statistics change because of this course? How?

Review the reflection that matches with the last digit of your Small Group number (e.g., Zoom Breakout Room 1 should review Example Reflection 1; Zoom Breakout Room 13 should review Example Reflection 3). Answer the following questions:

1. One of the goals of this Elementary Statistics course is to improve student attitudes towards statistics. Does the reflection you reviewed suggest an improvement in attitude? How?

2. One of the reflection prompts asks the students what they have learned about the public purpose of statistics. How does the student discuss the public purpose of statistics in their reflection? How well do you think they "got" the public purpose of statistics?

3. Did the student reflection suggest that any of the sixteen civics learning objectives were achieved? Which one(s)?

Example Reflection 1: While doing this project, I learned that putting statistics into perspective of real-life events, it could be interesting and time consuming. I also learned that every answer matters and it must be entered correctly or the summary of the data will be messed up. Doing this study also made me realize how many people do not use the arc, even though it is included into our tuition. Putting statistics into life situations, made me understand the meaning of statistics, rather than just doing problems in class. Putting learning with situations like this is fun and you always get a result that could be interesting after.

The statistics that I learned in this course will be used in my career later, absolutely. Using excel is a major rule in a lot of careers these days. This class made me familiar with using a lot of functions that I never knew before and why to use them in certain situations. After doing the survey and seeing the results, it has made me see math as something more than just numbers. With the survey you get an outcome and after doing a survey for a few months like this one, it is a big accomplishment to see the results. I came into this class scared of what was ahead of me, but with learning new information and receiving assistance, I enjoyed statistics. Math is my least favorite subject and Dr. Asher was right, statistics is not math. Being able to be a part of a survey for my University's gym, is exciting. As someone who uses the arc provided to me regularly, I hope to see changes in the future.

Example Reflection 2: I learned something very appreciative about the public purpose of the field of statistics, and that is that all of the time-consuming energy and effort put into each project is to better communities and people's lives. I am not sure if everything in this course will be applicable to my future besides learning a lot on how to use excel, but my opinion did change because of this course. I can see now that because of this important field and the people that put so much into it, it allows for us to live better and find new answers to problems. The world really is a better place because of this interesting and potentially life-saving field.

Example Reflection 3: I learned a lot during doing this data collection project. The first thing that I learned is that collecting all this data was very time-consuming. It took me on average at least twenty minutes to complete a survey with a person. Then you had to upload all your information on to the site which took even longer for me because of the slow computer that I have. On average I would say it took at least a half-hour to upload all the questions of the surveys onto the site. So, based on my calculation it took a total of four hours and fifteen minutes to complete all of the surveys and about 4 hours to upload all of the data onto the survey entry site. The second thing that I learned from this project was that not everyone is willing to take surveys either. I was denied a lot when asking people to take the survey on campus, I ended up relying on people that I knew to take the survey because people were not willing to take time out of their busy days to complete a survey. The collection of the data is directly related to the analysis of the data. Without enough surveys taken the analysis of the data will not be good. To put it simply no data, no analysis. I also learned that statistic has a greater meaning than just numbers. I learned that I can be used to help understand problems and such. The data that we collect for the ARC is an example of it. ARC can now use the data that we collected and find out what they can do better on campus. I do believe what I learned from this class will benefit me in my journey through life. I learned a lot of valuable stuff in this class that goes hand and hand with my major. I am an industrial system engineering major here at Slippery Rock. A lot of the stuff that I have to do in my field is improving the engineering process and making them more efficient. I think what I learned from the data collection and analysis will help a lot in the future. I will admit my opinion on statistics did change from the start of the semester. I initially thought stats is just math, buts it's not. I truly did not think that I would like stats, but I will admit I did enjoy learning about it.

      To conclude, this project opened my eyes to the world of statistics. This project was beneficial to me as a student but also University as a whole. The University will improve from this project because the information given back to the ARC will play a major role in improving the campus. To be honest, there is not much to do in Slippery Rock and not even in Butler County, so making the ARC better will improve campus life drastically. I am really happy that I took this class.

Example Reflection 4: I learned a lot during this big final project. We collected a large amount of data. I learned that you need to be very patient with collecting data. I realized this when I was being denied from people to participate in the survey. It takes a lot of time just to find students to participate in the project. I had to be patient because if I did not stay patient my attitude would have changed and I would have become rude to people because I was frustrated. I also learned that you should never procrastinate on collecting data. I learned that if you do procrastinate, it can lead to a lot of errors and bad data. You will not enjoy doing the research if you procrastinate. Collecting data takes a very long time to do so I learned to start the process earlier rather than later. I also learned that the collecting data is very tedious work that gets tiring. If you procrastinate and do not start the project early then you have to do all this tedious work late and that will probably lead you to not liking research and making more errors. Another thing I learn was that you need good people skills. If I was not nice and presentable to a student, the student would not want to participate in the survey. I had to be able to seem nice just by the way I presented a question to a student. If I did not ask nicely or upbeat, the student would just blow off the question and may not give me a truthful answer. I also learned that research is very fun when you get the final results because sometimes the outcome can be very different than what you could have gotten. The collection of my data was put into a big portal with all the other data that students found. The portal then put the results of everyone's data into one big result for us to analyze. The collection of the data that I found is only a very small part of the whole analyzing of the data. I learned that if my data was not put into the portal, the results can be very different. So, the more data that is being collected, the more accurate the results will become. With less data, the results will be different.

I learned that the public purpose of the field of statistics is analyzing data that could help change issues in the world. Statisticians find data and computes the data to find a result that can help change an issue. With did this final project to help the ARC see what they can improve on and where they could be possibly making mistakes. So, the public purpose is to help improve and solve issues that could be answered through statistics.

What I learned through this course will be very beneficial in my career. My goal in life is to become a physical therapist and there is a lot of research that is involved with that. We use statistics just to understand the average amount of people that need to be treated. We can do research on people's income and see if the price of physical therapy is too expensive. We use stats to see the average amount of people we treated in one year and we try to improve that number the following year. We use statistics to see what are the most common injuries to rehab and how we can prevent those injuries in the future. Physical therapist also can-do research what other countries have the availability of physical therapist and see if there is a way we can change the world. My opinion on statistics changed a lot. On the first day of school this semester, my mind set was understanding that this was a very hard course and never understood the true purpose of it. After this final project, I realized that there is so much to appreciate from statistics. I realized that statistics can change people's lives. Statistics finds results to see how we can improve as a society. I never thought that was the purpose of statistics. I always thought it was boring and punching in numbers. The reason I went into physical therapy is to change people's lives around. Statisticians do that also. That gave me a complete different prospective on what statistics is. I have so much more respect for them and inspires me to be able to change the world in my own way. The job of a statistician is so important because in a way they do save lives and could change the world. I am so thankful for taking this course, especially with Dr. Asher because she pushed me to my limits and really inspired me to be the best person I could be and find a way to make a difference in the world.

Example Reflection 5: Participating in a large data collection effort was an experience that I never expected to have as an undergraduate student. Throughout the experience I was able to learn a lot about data collection and analysis. Collecting data is an artform that takes a lot of dedication to the confidentiality and validity of the data. The analysis of data is just as intricate as the collection of the data due to the calculations and inferences that must be drawn. I found that I enjoyed the data analysis more than the data collection which is not surprising for a mathematics major. The collection of the data seems as though it may alter the way the analysis is interpreted. Obviously, the calculations cannot be altered based off bias, but the interpretation of the numbers and the inferences drawn may be altered based off the people a specific interviewer questioned. For example, when I first saw the data, I thought it was odd because the specific people I interviewed did not follow the trend. My first reaction was to only think about the people I interviewed, but I had to step back and think about the big picture instead of focusing on the small sample I had to work with. It allowed me to think about other factors that might play into class standing and why someone would attend the ARC more frequently than someone else. Overall, it is extremely interesting to see how an opinion of data can be transformed after looking at a larger sample size from the original conclusions drawn after the interviews were completed.

The field of statistics has proven to be a useful tool to help serve the public through this service-learning project. After the presentations it is easy to realize that the people of the ARC benefitted from this data and our opinions. When we first started this project, I was skeptical that it was going to be beneficial to the ARC. I believed that it was going to be too much data, and they were going to disregard it and figure out their own solutions. When I was preparing for my presentation, I still believed that all this work was all for nothing because my data did not have any strong associations with it, and I foolishly assumed that most people had the same result. I was shocked by the data that other people were able to find and present. The data allowed me to realize that even though my part of this project was relatively insignificant, the impact that this data could have on how the ARC advertises and reaches out to all students on campus is staggering. I believe that the ARC will be able to use the data they have been given and better serve the students through better inclusion and advertising for events so that the students on campus can better utilize the facilities that their tuition is paying for.

Before this class, I had never taken a statistics class, so I was not sure what to expect. With a major in mathematics there was no doubt that I would have to take several statistics courses in my academic career. With hopes of becoming a high school teacher, I might have to teach this topic. Statistics is very important to my career and my life. I also believe that it is important to learn how to analyze data in any situation. This has been important to me as I have already had to conduct undergraduate research and I continue to as I advance in my education and career. Without knowing what to expect from a statistics course, I did not have much of an opinion about it. I knew it was a lot more definitions and concepts than a typical mathematics course. The way this course was setup was to help skills in more than statistics, and I appreciated learning how to use Excel through the labs. Because I was taking two statistics courses, I was overwhelmed by it. I believe that this contributed to the negative feelings I have about statistics because I enjoyed this class very much. Even though there were points that were challenging, I felt that I learned a lot and I am looking forward to Elementary Statistics next semester.

Example Reflection 6: I think that this project was a better alternative than an exam. As a class, we worked together and learned way more, even about the little things. We were able to grow confidence by asking random students about the ARC and their personal information. Having the one on one meetings also helped me understand how the information formed and how it was significant. Since we presented in front of the guy in charge of the ARC, I felt great sharing my thoughts and ideas. As a student, this was so beneficial because we used our voices to speak up for improving the ARC's offerings. After the presentations, I stated how it would be great if they sent out text notifications or have more bulletin boards near bus stops. I felt very included and great that I could help them out. I learned that in the field of statistics you can do anything. You can travel anywhere and gather the information that would benefit the world. Statisticians have to be compliant to the person's needs while conducting the questions while pushing them to give full effort to answer the questions. With that, maintaining patience and being very organized. As an example, you have to number every report and page used for each survey. If one gets lost, you could either track it down or add the missing page back to the packet. Moreover, I respect who is a statistician because they always have to put 110 percent effort complete the data and have it be successful when calculating all of it.

As for my future career, I can see this benefiting in the long run. As a future safety manager, I could take stats to get feedback from employees in the workplace. In addition, I conduct a stat report to prevent injuries if a certain machine or equipment kept causing the harm. If I went into the insurance industry, I could make reports based on risk management and take down how many incidents have happened in one year. Overall, learning how to talk to random people and gather the information helped me understand this whole process better. To sum it up, I could take a lot of issues or concerns to stats to figure out the answer. I have always enjoyed math classes. I found it very helpful that we had the chance of learning more about Excel and StatCrunch because no other class goes over that useful information. I would suggest to any student in my major to take stats over calculus.

Example Reflection 7: After finishing this project there were many things that I learned in field of statistics. One of the first things is that statistics can be used in many ways. I always thought that it was just a number and math type of things but after doing this project I am completely wrong. I also learned that even though this survey is put out there to want to improve the community of Slippery Rock University there were still some students who didn't want to participate in it or would complain about how long it was taking to complete it. I also learned that it can be hard to work with the community, but it is worth it when you know that the ARC staff wants to know what their community wants to be changed or improved at the ARC.

This is course is something that I will take with me in my future career and I am very thankful for that. I am applying to University of Pittsburgh MSW program and specializing in COSA which is to work with the community. So, this is something that I will have to do again when working with a community and trying to help them and see what their needs are and what the recourses are. My option of statistics changed so much. I never thought that I would be using stats after my undergrad, but now after doing this project I realized that it's a great way to help and understand what a community wants and I will most likely be using it in my future.

Example Reflection 8: While doing the surveys, I was shown how statistics can be applied in a public setting. For example, while submitting my data and viewing the results, it became clear to me that these results show just how knowledgeable some people are regarding the ARCs policies and facilities as compared to some people who are not as informed. It was also evident to me that statistics can be used practically by many different companies and people to gauge the public's interest on a variety of different subjects. Not only that, but it really shows the benefits as well as the downsides to a program.

I believe that this class will prove to be useful in my life and statistics because it really showed me how to go about collecting information from people and how to organize data and execute different functions in excel. Prior to taking this class I was unaware just how much I used statistics in my life and after taking this class I can say that I have a higher understanding of the need of statistics in my everyday life than I did prior to taking this class. My opinion for this course did change because I always wondered how I would use college math of any subject outside of a classroom but now I see that as a member of the safety management field that I will be using statistics far more than what I originally thought. I was never the biggest fan of statistics but I now have a new perception on the subject and what it means to apply the use of statistics to my everyday life.

Example Reflection 9: The public purpose of the field of statistics is to look at the data and see what the field can improve on and the strengths. The purpose of this study was to help the ARC improve in certain areas. The data provides the evidence as to where the strengths and weakness are for a certain area of the facility. These types of surveys provide people an opportunity to voice their opinion on the subject and that is important for people's voices to be heard. I learned that statistics can be a way for people to solve problems on complex issues. There are certain issues that can't be fixed quickly, so it is important to look at the numbers and see where the problems are. This can apply to almost anything such as sports, business, politics, etc. There can also be ways at looking statistics in a positive way such as an increase in sales for example. Sometimes looking that the numbers helps get things done, but other times the data can be seen, but there isn't anything that is done to fix the problem. Statistics is the bridge between the subject and the problem or solution in that specific subject.

This course taught me a lot of valuable lessons about life that I didn't think I would learn in a math class. I am not a math person so I thought it was only going to be a class where we would talk about numbers and equations. I liked how we looked at statistics in real life issues. I am a Psychology major, so there is a good chance that I will be analyzing data for psychology-related issues. It was valuable for me to learn that data can be a giant mess if not presented properly. This course taught me how to use critical thinking skills when looking at data and how to spot mistakes. It is important to make sure what you are analyzing is accurate and that it makes sense. My initial opinion of statistics is that it was only looking at numbers and charts. That is a big part of what statistics is, but I learned that it is a lot more than that. I learned that there is a process to it and that it involves formulating research questions that make sense. I like to think of statistics as real-life math because it involves looking at data that deal with issues in the world. I enjoyed this project because it gave me the opportunity to work on my social skills. I struggle with going up and talking to people I don't know on the spot and this project gave me another skill that I can use for the rest of my life. It was a good test for me to get out of my comfort zone and socialize with people. I liked how this project involved other aspects besides math. Overall, I enjoyed the course even though I really struggled on tests. This class made me realize that I am not as bad at math as I think I am and I am glad that I got the experience in working on this project.

Example Reflection 10: From the moment this project was announced, I had some trepidation about it for mainly two reasons. The first reason was, I had never done such a thing before. Reading through the vast interviewer manual, I was absolutely astounded by the rich process that successfully collecting data and doing it in a way that was conducive to people's privacy. With this, going through the manual, I was shocked that losing, misplacing, or general mistreatment of these surveys could amount with some trouble. Misplaced or lost surveys had to be reported immediately or the interviewer could run the risk of again, getting in trouble. All these little nuisance rules and regulations regarding this project got me initially thinking "Oh man, I wish our Professor would have just given us a test instead of this project". The second trepidation I had with the project was, I am a very shy person, so shy in fact, that I rarely raise my hand or speak to the other students in my class. It is something I have been working on, but to be forced into such a role kind of made my stomach turn just a little bit. As the project was kicked off, I started to realize that, with following the guidelines put in place and simply coming out of my shell a little bit, the two main trepidations I had coming into this were essentially nothing to worry about at all so a weight was lifted off my shoulders. I learned that data collection is a very detail oriented labor of love that with careful input and a somewhat trained interviewer, going off the manual, can be abundantly useful to the cause at hand which in this case, was collecting data for the ARC. The collection of data, I found, directly correlates to how the data is analyzed. Meaning, if the data was collected incorrectly, the data analyzation would be skewed, so a careful eye on this end is at utmost importance for the interviewer for the overall correctness of the data. Once the data is collected, it has to be cleaned up in order for the interpretation of the statistics to be created. Cleaning up the data is removing any discrepancies and putting it in such a way that is nice, neat and trimmed up so that the process of reading such data comes easy as opposed to a big, jumbled mess. Without proper data collection, essentially, the interpretation of the statistics created from the data would be skewed and less than optimal. I learned, through this process, that the public purpose of the field of statistics is actually invaluable. Without statistics and the whole process mentioned in the latter sentences, the Aebersold Recreation Center would have not been able to obtain this invaluable data. With this data, the Aebersold Recreation Center sees its pros and its cons and from there can make an informed decision as to where to go next with improvements to make their facilities as good as they possibly can be. I previously could not see a correlation with my future career and statistics but, throughout this journey of the final project, my thoughts have changed significantly and have got some gears turning as to how I can actually put this to use a few years down the line. Throughout my life, I hope to become a fitness advocate through nutrition and general strength training with the end goal of opening my own practice. I started this journey to better myself and hopefully I can do the same with other people. With that being said, statistics could actually play an important part with the line of work I want to go down through taking in data about general health trends that people follow, or just general health information that they know and go through a similar process that we did, as a class, to get relatively unskewed, unbiased answers that will further better the help I can give my clients through the relative accuracy of statistics. My opinion about statistics has definitely changed, but I believe that it completely falls in line with how this course was taught. I get a lot of anxiety when it comes to math and I have never been the most proficient in it, as most of my math grades suggest. I believe all math courses should be taught like this one- if you put in the time and actually try, you will pass with a relatively good grade. Since there was not as much anxiety due to how this course was ran, statistics class and statistics as a whole was a very welcomed changed and has slightly changed my opinion about math/math classes in general. The real-world-approach to this class made me see that statistics is all around us and it is not something to be feared.

12. Instructions for Syllabus Modification

Directions: Using an existing syllabus for your elementary statistics course, or the practice syllabus provided, make modifications to the course that allow one or more of the civics learning outcomes discussed in the workshop to be addressed/achieved.

Hints:
1) We started with the public purpose of statistics. What learning activities will allow students to learn more about that public purpose?
2) We then reviewed the six attributes of community-engaged learning. Do not focus on a service learning project; instead, explore the other aspects of community-engagement such as civic competencies, diversity of interactions/dialog, and critical reflection.
3) You chose two specific civic learning outcomes at the end of the first Module; use these to focus your work.
4) Think about the topics we explored in the What Topics Matters worksheet. Would highlighting or adding a topic or two help you to achieve one of the civic learning outcomes?

STAT 152-02/-18/-19   **Elementary Statistics I**   Fall 2019
CRN: 10429/11655/11656   MWF/10am-10:50am   Room # VSC202

SLIPPERY ROCK UNIVERSITY
Department of Mathematics and Statistics

I.   **Instructor Information**

Name: Dr. Jana Lynn Asher   Telephone Number: 724-738-2508
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Office Hours: Monday-Friday 11am-noon in VSC 200
        Feel free to email me about getting together at another time, if you can't
        make it during my regular office hours.

II.   **Course Content**

Catalog Description: Introduction to statistics: descriptive statistics, bivariate data, elementary probability, random variables, normal and binomial probability distributions, Central Limit Theorem, confidence intervals, and hypothesis Testing. MINITAB will be used.

Contents: Statistics involves organizing, summarizing, and analyzing data. Two important uses of statistics are generalizing about data and decisions based on data. Indeed, statistics are effectively used to make decisions about populations when it is impossible to test each object in the population. For example, statisticians can predict who will win a major election by judiciously polling a small percentage of the population. Pharmaceutical companies use statistics to show that a new drug is more effective than others based on a relatively small number of experiments. Since these decisions involve a certain amount of error, some method for quantifying the error is necessary. This will be done using the theory of probability. Thus, we will develop fundamental concepts of probability that will enable us to make inferences about populations using statistics. In your text, we will cover most of the material in chapters 1-9, 12, and 14.

Learning Outcomes: Upon completion of this course you should be able to do the following
1. Compute, interpret, and apply descriptive statistics including frequency distributions, histograms, stem plots, boxplots, dot plots, mean, median, mode, standard deviation, z-scores, percentiles, and other measures of central tendency and dispersion.
2. Be able to set-up, solve, and interpret probability problems using probability rules, contingency tables, conditional probability, independent events, and counting techniques including the basic counting rule, permutations, and combinations.
3. Know how to create and interpret scatterplots, interpret and compute regression lines and correlation, be able to explain and identify the difference between association and causation, and demonstrate the ability to complete a residual analysis.
4. Interpret and explain probability distributions, how to use them to solve and interpret problems involving discrete distributions—especially the binomial distribution, and continuous distributions—especially normal distributions, be able to use the normal distribution to approximate binomial probabilities.
5. Be able to compute the expected value/mean and standard deviation of discrete and continuous distributions and be able to interpret them within the context of application problems.
6. Understand sampling distributions, especially for the sample mean and sample proportion and be able to solve probability problems involving those including applications of the Central Limit Theorem.
7. Be able to compute and interpret confidence intervals for the population proportions and mean using both the normal and t–distributions and know when to use them.

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8. Be able to conduct tests of hypotheses and be able to interpret the results using both classical and P-value techniques involving both the normal and t-distributions, and demonstrate an understanding of, and be able to compute, type I and type II errors, and the power of a test.
9. Use Minitab software or another similar software package to compute descriptive statistics in numerical and graphical forms, simulate probability distributions, and compute regression lines, and correlation, confidence intervals, and test of hypotheses.
10. Demonstrate the ability to interpret and make informed decisions and analyses involving probability and statistics presented in the media.

III.   **Texts and Supplies**

- **MyStatLab:** You are required to have purchased an access code for MyStatLab prior to the second class period on **August 28, 2019.** You can purchase the access code at the University bookstore with the textbook or separately, or you can purchase MyStatLab directly online when you register for it or after the temporary access period has expired for around $105. **(See Getting Started with MyStatLab below.)**
- **OPTIONAL:** Weiss, Neil A., *Introductory Statistics*, *10th ed.*, Pearson (2016). You are NOT required to purchase this book.

IV.   **Technology**

This course requires the use of **MyStatLab**, an interactive website that allows you to enter solutions to your homework and provides a printable electronic version of your textbook. You must go to www.pearson.com/mylab or www.mystatlab.com to access the software, use course ID asher57179.

MyStatLab provides immediate feedback with helpful hints and allows you to attempt each exercise multiple times until you complete it correctly. Do not wait until the night before an assignment is due to contact me with questions. The two best browsers to work with MyStatLab are Google Chrome and Firefox. Internet Explorer versions 8-11 and Internet Edge should also be supported but run the browser check in MSL to make sure. The browser check will automatically tell you what needs to be installed (updated flash and Acrobat) if your browser is missing anything. There is no need to install the Test-Gen software as I do not use it.

All homework assignments appear on the calendar at the top of the MyStatLab (MSL) page once you've logged into the site. A note-page icon will display on the calendar when assignments are available. Each assignment has its own symbol (circles for homework, squares for quizzes, thumbtacks for announcements, etc.) A clock symbol will appear on the calendar to indicate that an assignment is due. Hovering over an icon on the calendar with your mouse will show you what is assigned or due. I can always give extensions if you have a good reason for needing one. However, this privilege cannot be abused.

To register for STAT 152 Elementary Statistics I **in MyStatLab:**

1. Go to www.pearson.com/mylab.
2. Under Register, select Student.
3. Confirm you have the information needed, then select OK! Register now.
4. Enter your instructor's course ID: asher57179 and Continue.
5. Enter your existing Pearson account username and password to Sign In.

You have an account if you have used a Pearson product, for example: MyMathLab, MyITLab, MyPsychLab, MySpanishLab or Mastering, such as MasteringBiology. If you don't have an account, select **Create** and complete the required fields.

6.   Select an access option.
- Use the access code that came with your textbook or that you purchased separately from the bookstore.
- Buy access using a credit card or PayPal account.
- Get 14 days temporary access. (The link is near the bottom of the screen.)

7.   From the **You're Done!** page, select **Go To My Courses.**

8.   On the My Courses page, select the course tile **STAT 152 Elementary Statistics I** to start your work.

To sign in later:

1.   Go to www.pearson.com/mylab.
2.   Select **Sign In.**
3.   Enter your Pearson account username and password, and **Sign In.**
4.   Select the course name **STAT 152 Elementary Statistics I** to start your work.

To upgrade temporary access to full access:

1.   Go to www.pearson.com/mylab.
2.   Select **Sign In.**
3.   Enter your Pearson account username and password, and **Sign In.**
4.   Select **Upgrade access** for **STAT 152 Elementary Statistics I.**
5.   Enter an access code or purchase access with a credit card or PayPal account.

For a registration overview, go to www.pearsonmylabandmastering.com/students/get-registered. Scroll down to **Need a little help?** and select a video.

Get Your Computer Ready

View the system specifications for your computer and run the Browser Check: http://www.mymathlab.com/contactus_stu.html

Get Help

Contact Pearson 24/7 Support: http://247pearsoned.custhelp.com/ or call them directly at (844) 292-7015.

Tips for a Great Learning Experience:

1. Watch these Videos for help getting started with MyMathLab: http://bit.ly/13I8yOw

2. Review the MyMathLab Interactive Student User Guide: http://bit.ly/1dY1wH9

In addition to using MyStatLab, you might be required to use the Minitab software package. All students can obtain a copy of Minitab 18 from my D2L site when it is available. Select the folder that says Minitab. Minitab 18 does not run on a Mac, so if you have a Mac, you will need to use one of the machines in our labs, VSC 202, VSC 204 (usually available after 3pm), VSC 121, or the Math Lab in Bailey Library once it is available. These are software programs, so they must be downloaded to a device that runs computer software. They are not *Apps*! D2L can be accessed by selecting MySRU on the SRU homepage and selecting RockOnline after entering your username and password.

V.   **Grading**

Homework – 20%
Labs – 20%   (Lowest lab grade is dropped)
Tests – 30%
Final Project – 30%
The grading scale for this class is as follows; A 90-100, B 80-89, C 70-79, D 60-69, F below 60.

Please note that the total points assigned to in-class tests is only 30%. This means that if you attend class, complete labs, complete homework, and do your final project, you have a very high probability of passing the course no matter how you do on the tests.

HOMEWORK INSTRUCTIONS

Your homework will be done online with MyStatLab. Check the MyStatLab announcements each day to know what your assignments are and to be alerted to upcoming tests and changes to our class calendar. Homework will be assigned every class period and will be due by the next class period, except when there will be a test the next class period. You are responsible for the assignment even if you miss the class session and all assignments must be submitted on time.

You will also need a notebook that is dedicated only to this class. Begin each assignment with the date, chapter and section number. Organize your scratch work in this notebook by labeling sections, making notes of problems you found difficult or needed learning aids to solve, and carefully writing out the solution for each problem before you enter the answer online. Since the professor provides handouts during most classes, a binder with loose-leaf notebook paper is ideal.

MAKEUP POLICY

All tests must be taken at the appropriate time. If you have a legitimate excuse for missing an exam, contact me as soon as possible (before the exam preferably) to see if other arrangements can be made. If satisfactory arrangements cannot be made, then your missing score will be zero.

There will be 12 laboratory sessions (labs) during the course; there will be no make-up labs. Three of those labs will occur during the last three regular class periods. Your lowest laboratory score will be dropped. This will allow you the flexibility to miss a class if you are ill, if you have responsibility for someone who is ill, or if you have another commitment you must maintain. However, you should do your best to attend every class session for the entire period.

A student who misses a lab, for whatever reason, will receive a zero on that lab. Your lowest lab score will be dropped.

VI.   **Classroom Policies**

COMMUNICATION

I will communicate with you between classes by way of announcements on MyStatLab and email sent through MyStatLab or D2L. You should check your Slippery Rock University email regularly. The best way to communicate with me between classes is by email; you can normally expect a reply to an e-mail within a day. If you do not hear from me, assume I did

not receive your email, and try again. Please include your full name and class number (STAT 152) in your emails.

MY EXPECTATIONS

1. Perfect or near perfect attendance. You are responsible for all material covered in class whether or not you were there. It is critical that you be in class on time and that you be in the classroom for the duration of the class.
2. Active productive participation in each class and respect for the learning environment.
3. If you run into trouble, I encourage you to seek extra help as soon as needed. You should
   - Use the study aids available in MyStatLab.
   - See me during office hours or by appointment.
4. I reserve the right to request that electronic devices be turned off and stored either prior to or during class.

ACADEMIC INTEGRITY

All work that you submit for this course must be your own unless otherwise specified. Students are expected to know and adhere to the SRU student code of conduct as posted at http://www.sru.edu/offices/student-conduct/code-of-conduct.

CORRECT PRONOUNS, NAMES, AND INCLUSION

I hope to create a space where students bring all aspects of their selves into the classroom in order to fully engage in this course. I support people of all gender expressions and gender identities and encourage students to use the name and set of pronouns which best reflect who they are. In this spirit, I welcome and expect all students to also use the correct name and pronouns of their classmates. I will do my best to respect and use the language you use to refer to yourself and will encourage other members of our classroom community to do the same. Please inform me if my documentation reflects a name or set of pronouns different from what you use, and if you have any questions or concerns, please contact me after class, by email, or during office hours.

SPECIAL ACCOMODATIONS

Any student who needs disability accommodations must see me as soon as possible during my office hours. A letter from the Office of Disability Support Services authorizing your accommodations will be needed. The Office of Disability Support Services is in Room 105 of the University Union with hours of operation from 8:00 am until 4:30 pm during the semester and until 4:00 pm during spring, summer, and winter breaks. Their telephone number is 724-738-4877.

VETERAN'S SERVICES

Slippery Rock University Veterans Resources and the Student Veteran Center play a primary role in serving the University's growing community of veterans and military connected students. Our Veterans Resources provide information on admissions, financial aid, GI Bill°, and other various contacts and resources.

Slippery Rock University Student Veterans Center plays a primary role in serving the university's growing community of veterans and military connected students. It provides SRU student veterans, military affiliated and ROTC cadets a place to relax and share information

and experiences. The center is located in 253 Smith Student Center and is equipped with computers, CAC-Smart Card Readers, printing capabilities, cable-TV and lounge space. The center can also be used to collaborate on academic programs or as a quiet place to study.

For more information, please contact George McDowell, Recruitment and Retention Strategist/Veterans Certifying Official Enrollment Management at 110 North Hall Welcome Center (george.mcdowell@sru.edu, 724-738-2702).

INCLEMENT WEATHER

If the decision is made to cancel classes or close the University, University Communication and Public Affairs will post the information to the SRU Web site (www.sru.edu), Facebook and Twitter; send e-mail alerts to all sru.edu addresses (faculty, staff and students); notify e2Campus subscribers; and notify the media.

If the decision is made to open the university on a 2-hour delay, this class will meet from 11:30am – 12:05pm in VSC 202.

TITLE IX

Slippery Rock University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment and to comply with Title IX of the Education Amendments of 1972 and guidance from the Office for Civil Rights, the University requires faculty members to report incidents of sexual violence shared by students to the University's Title IX Coordinator. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred to the person designated in the University protection of minors policy. Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth at: http://www.sru.edu/offices/diversity-and-equal-opportunity/sexual-misconduct-and-victim-resources.

GENERAL COURSE DATES TO KNOW

Tuesday, 09/03/2019:	Last day to Drop courses in a University office or on MySRU
Monday, 09/09/2019:	Last Day to Add with Professor's Approval on Add Card & Last Day for Grade Option
Wednesday, 11/06/2019:	"W" Deadline for Full Semester Classes

VII.   CALENDAR

Test dates may change as necessary, and any changes will be announced in class. For writing exercises, use complete sentences, and write clearly.

WEEK	DATE	SECTIONS	TOPICS
Week 1	08/26/2019	Intro	Why Statistics?
	08/28/2019	1.1-1.3	Statistics Basics and Origins of Data
	08/30/2019	LAB 1	Data Classification (1.2-1.4)
Week 2	09/02/2019	NO CLASSES	
	09/04/2019	2.1	Variables and Data
	09/06/2019	LAB 2	Organizing Data (2.2, 2.3)
Week 3	09/09/2019	2.4	Distribution Shapes
	09/11/2019	2.5	Bad data displays!
	09/13/2019	LAB 3	
Week 4	09/16/2019	3.1	Measures of Central Tendency
	09/18/2019	3.2, 3.3	Measures of Variation, Empirical Rule
	09/20/2019	LAB 4	
Week 5	09/23/2019	3.4	Measures of Position
	09/25/2019	3.5	Parameters versus Statistics
	09/27/2019	LAB 5	
Week 6	09/30/2019	4.1	Probability Basics
	10/02/2019	4.2, 4.3	Events, Probability Rules
	10/04/2019	TEST 1 (1.1-3.5)	
Week 7	10/07/2019	NO CLASSES	
	10/09/2019	4.4, 4.5	Contingency Tables & Conditional Probability
	10/11/2019	4.6, 4.8	Independence, Counting Rules
Week 8	10/14/2019	5.1, 5.2	Random Vars & Discrete Prob. Distributions
	10/16/2019	5.3, 5.4	The Binomial and Poisson Distributions
	10/18/2019	LAB 6	
Week 9	10/21/2019	6.1, 6.2	The Normal Distribution
	10/23/2019	6.3, 6.4	More about the Normal Distribution
	10/25/2019	LAB 7	
Week 10	10/28/2019	TEST 2 (3.5-5.4)	
	10/30/2019	7.1, 7.2	Sampling Error and the Sample Mean
	11/01/2019	7.3	Sampling Distribution of Sample Mean
Week 11	11/04/2019	8.1-8.3	Confidence intervals for the Mean
	11/06/2019	9.1	Introduction to Hypothesis Testing
	11/08/2019	9.2, 9.3	Hypothesis Testing
Week 12	11/11/2019	LAB 8	
	11/13/2019	9.4, 9.5	Hypothesis Testing
	11/15/2019	12.1	Confidence Intervals for Pop. Proportions
Week 13	11/18/2019	12.2	Hypothesis Testing for Pop. Proportions
	11/20/2019	14.1-14.4	Correlation and Linear Regression
	11/22/2019	LAB 9	
Week 14	11/25/2019	TEST 3 (6.1-12.2)	
	11/27/2019	NO CLASSES	
	11/29/2019	NO CLASSES	
Week 15	WORK ON FINAL PROJECTS (LABS 10, 11, 12)		
Week 16	12/11/2019	Project Presentations 10:30am – 12:30pm	

7

13. Instructions for Zoom Breakout Session 5

Group Leader/Reporter: The person whose last name is alphabetically first.

Objective: Review the changes you made to your (practice) syllabus to better include and address one or more of the civic learning outcomes.

Time Available: 20 minutes

Directions:

Share the changes you made to your syllabus and discuss as a group which civic learning outcomes were being included/addressed. Following along with the Syllabus Review Worksheet, record some of the following: what feedback did other members of your group share about the changes to your syllabus, what changes made by others could you also include in your syllabus, and how do these changes better support your ability to facilitate community-engaged learning. We'll ask the Group Leader to share one of their group's favorite changes in our whole group discussion.

14. Syllabus Review Worksheet

Directions: Fill out this table during the group discussion on the syllabus you modified.

Which civic learning objective did you incorporate into your syllabus?	
Were your colleagues able to determine that this civic learning objective had been incorporated?	
What comments did your colleagues make about your syllabus modifications?	
What ideas did your colleagues share for future modifications of your syllabus?	

Fill in this table during the group discussion on other colleagues' syllabi.

What modifications did your colleagues make to their syllabi that you would like to try?	
What ideas did your colleagues share during the review of other syllabi that could be helpful for your community engagement efforts?	

15. Development Worksheet

Directions: For each of the six attributes, carefully read the descriptions of the different faculty development levels. Choose a score between 1 and 6 that characterizes your current level of practice in that area and record it in the first column.

Attribute	Competency Building: 1-2	Quality Building: 3-4	Advanced Integration: 5-6
Reciprocal partnerships and processes shape the community activities and course design. **Enter a Score that Characterizes Your Current Practice in this Area (1-6 from table above):**	**Example:** The instructor contacts a community organization to host students and provides a brief overview of the course (e.g., learning outcomes, syllabus) and the purposes of the community activities.	**Example:** The instructor meets with the community partner(s) to discuss the course (e.g., preparation/orientation of students, learning outcomes, syllabus), and to identify how the community activities can enrich student learning and benefit the organization.	**Example:** The instructor collaborates with and learns from the community partner(s) as co-educator in various aspects of course planning and design (e.g., learning outcomes, readings, preparation/orientation of students, reflection, assessment) and together they identify how the community activities can enrich student learning and add to the capacity of the organization.
[HELPFUL HINT]: The purpose of this critical self-reflection is to determine the level of reciprocity that exists in you or your students' engagement with community, specifically in terms of planning and decision-making related to actions and priorities associated with the service-learning course. Community voice should be illustrated by examples of actual community influence on actions and decisions, <u>not</u> mere advice or attendance at events or meetings.			
Community activities enhance academic content, course design, and assignments. **Enter a Score that Characterizes Your Current Practice in this Area (1-6 from table above):**	**Example:** The instructor includes community activities as an added component of the course, but it is not integrated with academic content or assignments. The syllabus does not address the purposes of the community activities.	**Example:** The instructor utilizes the community activities as a "text" to provide additional insight into student understanding of academic content and ability to complete assignments. The syllabus describes the relationship of the community activities to learning outcomes.	**Example:** The instructor integrates the community activities and relevant social issue(s) as critical dimensions for student understanding of academic content and ability to complete assignments. The syllabus provides a strong rationale for the relationship of the community activities to learning outcomes.
[HELPFUL HINT]: The purpose of this critical self-reflection is to illustrate the enhanced learning outcomes possible in service-learning by virtue of the community context. Enhancement is illustrated by describing the relationship between community activities and learning outcomes that would be precluded in a traditional classroom setting. Common learning outcomes enhanced through community activities in service-learning can include academic, personal (i.e. career, leadership, etc.), and civic learning outcomes.			

Attribute	Competency Building: 1-2	Quality Building: 3-4	Advanced Integration: 5-6
Diversity of interactions and dialogue with others across difference occurs regularly in the course. **Enter a Score that Characterizes Your Current Practice in this Area (1-6 from table above):**	**Example:** The instructor and the course and community activities offer students limited opportunities for interaction and dialogue with others across difference.	**Example:** The instructor and the course and community activities engage students in periodic interactions and dialogue with peers across a range of experiences and diverse perspectives.	**Example:** The instructor and community partner(s) engage students in frequent interactions and dialogue with peers and community members across a range of experiences and diverse perspectives.
[HELPFUL HINT]: The purpose of this critical self-reflection is to ascertain the ways in which fostering human connections disrupts cognitive biases and builds students' capacities for empathy, compassion, and understanding. Mere exposure is not enough to ensure student learning and development; students must actively engage with diverse perspectives and utilize reflective practice to actively link interactions and conversations to academic, personal, professional, civic, or other outcomes			
Civic competencies (i.e. knowledge, skills, dispositions, behaviors) are well integrated into student learning. **Enter a Score that Characterizes Your Current Practice in this Area (1-6 from table above):**	**Example:** The instructor focuses on discipline-based content with little attention/priority given to civic learning or development of civic competencies.	**Example:** The instructor focuses on discipline-based content and connects to civic learning and civic competencies when relevant to the community activities.	**Example:** The instructor focuses on the integration of discipline-based content with civic learning and civic competencies and emphasizes the relevance of the community activities to the public purposes of the discipline.
[HELPFUL HINT]: The purpose of this critical self-reflection alludes to the unique opportunity that service-learning creates in promoting democratic norms and values among students. Reflect upon the ways in which your course leverages or employs learning strategies to increases student efficacy as well as interest in and positive attitudes and behaviors toward civic engagement. Consider the relevance of civic competencies to academic comprehension as well as its relevance to the public purpose of the discipline in society.			

Attribute	Competency Building: 1-2	Quality Building: 3-4	Advanced Integration: 5-6
Critical reflection is well integrated into student learning. **Enter a Score that Characterizes Your Current Practice in this Area (1-6 from table above):**	**Example:** The instructor asks students, on a limited basis, to create reflective products about the community activities, usually at the end of the semester.	**Example:** The instructor structures reflection activities and products about the community activities that connect the experience to academic content, require moderate analysis, lead to new action, and provide ongoing feedback to the student throughout the semester.	**Example:** The instructor builds student capacity to critically reflect and develop products that explore the relevance of the experience to academic content, use critical thinking to analyze social issues, recognize systems of power, lead to new action, and provide ongoing feedback to the student throughout the semester.
[HELPFUL HINT]: The purpose of this critical self-reflection is to illustrate what specific reflective learning strategies (i.e. assignments, activities, journals) are employed within your service-learning course and consider their overall effectiveness in helping students examine critical and social issues related to their community-based activities, connect their service experience to course content, enhance the development of civic values, social responsibility, and ethical problem-solving, and assist students in finding personal relevance and meaning in the work. Effective integration of critical reflective strategies should be based on their alignment with specific learning outcomes and being embedded with course assignments, as opposed to mere "add-ons" to what already exists.			
Assessment is used for continuous course improvement. **Enter a Score that Characterizes Your Current Practice in this Area (1-6 from table above):**	**Example:** The instructor articulates student learning outcomes, but no measurement tool is in place for assessing the service learning component of the course.	**Example:** The instructor articulates student learning outcomes and uses a measurement tool to assess the service learning component of the course.	**Example:** The instructor and community partner(s) articulate student learning outcomes, and use measurement tools to assess the service learning component of the course and its influence on community outcomes.
[HELPFUL HINT]: The purpose of this critical self-reflection is to show evidence of impact among multiple stakeholders and consider how findings have been utilized for the purpose of continuous quality improvement, including teaching, learning, partnership, and community outcomes.			

Created from Service Learning Self-Assessment of the Office for Community-Engaged Learning of Slippery Rock University

16. Directions for Scavenger Hunt/Worksheet

Directions: Need a community partner? Hopefully this worksheet will help! Use the web to look up information to fill in the following table *for your local community*.

Potential Community Partner	Contact Name/Office	Website/contact information
College/University Offices (examples include campus security, alumni office, campus recreation, campus radio station, student government… and many more!)		
Local Governance (could be Mayor, Executive Board, or County Government)		
Local Public Library		
Local Parks/Recreation		
Local Humane Society/ Animal Shelter		

Potential Community Partner	Contact Name/Office	Website/contact information
Local Fire Department (professional or volunteer?)		
Local Sanitation Office (public or private?)		
Local Environmental Protection Office		
Local Red Cross Branch		
Local Special Olympics Branch		
Local Audubon Chapter		
Local Sierra Club Chapter		
Local ACLU Chapter		
Local Retirement Community/ Senior Center		
Local Homeless Shelter		
Local Food Bank		

17. Instructions for Zoom Breakout Session 6

Group Leader/Reporter: The person that is *oldest* in your Zoom breakout room.

Objective: To complete the Worksheet for Resources for each person's individual geographic location and situation.

Time Available: 15 minutes

Directions:

Within your groups, research the regional Campus Compact structure and find your local group. Record the website or contact information in your worksheet.

Then, turn to your own institution's website; determine if you have an office for Service Learning, Community Engagement, or Community Service. Record the website or contact information in your worksheet.

Finally, if you have time, determine which office on your campus is responsible for risk management. Record the contact information for that office on your worksheet.

If you are having trouble with any of these tasks, turn to your Zoom group for support – you are hopefully friends now!

18. Worksheet for Resources

Subject	Resource	Website/contact information
Site-specific Resources	On-campus Office for Service Learning, Community Service or Community Engagement	
	Office Responsible for Risk Management	
	Campus Compact for Your Region	
National Resources	National Campus Compact	https://compact.org/
	Center for Engaged (Service) Learning at Elon University	https://www.centerforengagedlearning.org/resources/service-learning/
Scholarship of Community-Engaged Teaching and Learning	International Journal of Research on Service-Learning and Community Engagement	https://ijrslce.scholasticahq.com/
	Journal of Community Engagement and Scholarship	http://jces.ua.edu/
	Journal of Higher Education Outreach and Engagement	https://cetl.kennesaw.edu/journals/journal-higher-education-outreach-and-engagement
	Michigan Journal of Community Service Learning	https://ginsberg.umich.edu/mijournal
	Community Development Society	https://www.comm-dev.org/
	Stylus Publishing (Search for IUPUI)	https://styluspub.presswarehouse.com/browse/catalog?SearchString=IUPUI&page=1
Community-Based Research	In It Together: Community-Based Research Guidelines for Communities and Higher Education	https://kdp0l43vw6z2dlw631ififc5-wpengine.netdna-ssl.com/wp-content/uploads/large/2015/06/CRC-Guidelines-May-12-2021.pdf
Syllabus Construction	Best Practices for Service-Learning Syllabi	https://www.misericordia.edu/uploaded/documents/offices/servicelearning/best_practices_for_service_learning_syllabi.pdf
	What is Service Learning?	https://www.uwsp.edu/Caese/Documents/Service%20Learning%20Definitions%20and%20Benefits.pdf

Subject	Resource	Website/contact information
Reciprocal Partnerships	**Blog post on service learning and creating reciprocal partnerships**	https://servelearn.co/blog/reciprocity-how-to-go-about-setting-up-sustainable-partnerships/
Civic Competencies	**A Crucible Moment: College Learning and Democracy's Future**	https://www.aacu.org/crucible
	Civic Learning through Service Learning: Conceptual Frameworks and Research	http://blogs.mtroyal.ca/isotl/files/2016/05/civic-learning.pdf
	The Civic Promise of Service Learning	https://www.aacu.org/publications-research/periodicals/civic-promise-service-learning
	A Practical Guide for Integrating Civic Responsibility into the Curriculum	https://www.google.com/books/edition/A_Practical_Guide_for_Integrating_Civic
	Fostering Civic Responsibility through Service Learning	https://eric.ed.gov/?id=ED449066
	Civic Engagement VALUE Rubric	https://www.aacu.org/civic-engagement-value-rubric
	Civic Learning in the Major by the Numbers	https://www.aacu.org/sites/default/files/files/peerreview/PR_FA17_infographic.pdf
Reflection	**Service Reflection Toolkit**	https://www.usf.edu/engagement/documents/nwtoolkit.pdf
	Bringing the Gap between Service and Learning	https://digitalcommons.unomaha.edu/cgi/viewcontent.cgi?article=1027&context=slceeval
	Reflection Activities for the College Classroom	https://digitalcommons.unomaha.edu/cgi/viewcontent.cgi?article=1064&context=slceeval
Reflection/ Assessment	**Bradley's Criteria for Assessing Levels of Reflection**	https://www.csum.edu/community-engagement/media/bradleys-guidelines-for-assessing-reflection.pdf
	Rubric to Assess Academic Service-Learning Reflection Papers	https://www.stjohns.edu/sites/default/files/uploads/asl-rubric-grading.doc
Assessment	**Enhancing student development in service-learning with performance-based assessment rubrics**	https://digitalcommons.unomaha.edu/cgi/viewcontent.cgi?article=1049&context=slcedt

19. Example Community Partnership Agreement

Community-Engaged Research Partnership Outline

Between

| Slippery Rock Community Library | AND | Jana Asher
Assistant Professor
Department of Mathematics
and Statistics
Slippery Rock University (SRU) |

Contact:
Karen Pierce
kpierce@bcfls.org
724.738.9179

Contact:
Jana Asher
jana.asher@sru.edu
724.738.2508

This is a partnership agreement that outlines the tasks agreed upon by Karen Pierce and Jana Asher for the execution of a community-engaged research project associated with the service-learning course STAT 153. The purpose of the project is to work together on a study assessing Slippery Rock borough and town resident knowledge of and experiences at the Slippery Rock Community Library (SRCL). The study will involve a survey of members of the Slippery Rock community via an online (Qualtrics) survey, production of a dataset, and a final report of the findings.

Section 1: Goals

The goals of this project are as follows:
1. Research that will assist the Slippery Rock Community Library in answering the following questions:
    a. Are members of the Slippery Rock community aware of the SRCL, know when it is typically open, and know how to access the SRCL during this pandemic?
    b. Do members of the Slippery Rock community utilize the SRCL? If so, what do they use the SRCL for? If not, why?
    c. Do members of the Slippery Rock community know what the SRCL offers in terms of checkouts, services, and programming?
    d. How do members of the Slippery Rock community obtain information about the SRCL?
    e. Are members of the Slippery Rock community aware of how funds are obtained by the SRCL? Are they aware that no state or county library funds are allocated to the SRCL? Are they aware that local money, donations, book sales, small grants, and other fundraisers account for the SRCL budget?
    f. Are members aware of the SRCL connection to the Butler Library system and that the SRCL is a part of the courier service and county catalog?

Community Partnership Agreement between SRCL and SRU   1

2. The following learning outcomes for the students of the Fall 2020 Elementary Statistics II course:
   a. Investigate complex social research questions through the process of data collection and analysis (Departmental Program Outcomes 1 and 3; SRU University Outcome 4).
   b. Communicate statistical information to both technical and non-technical audiences (Department Program Outcome 4; SRU University Outcome 1).
   c. Relate the process of a statistical study to the public purpose of the profession (Department Program Outcome 5; SRU University Outcome 8).
   d. Contribute to the betterment of society (SRU University Outcome 7).
   e. Examine the efficacy of partnership and reciprocity in solving complex problems (SRU University Outcome 7).

Section 2: Communication

Jana Asher will provide at least weekly written communication to Karen Pierce as to the progress of the data collection and analysis. Zoom meetings will be arranged as needed to discuss progress on the development of the sample frame and survey response rates; in general, these meetings will occur twice a month or as needed.

Section 3: Schedule

This research will be a collaboration between Karen Pierce, SRCL, and students enrolled in Elementary Statistics II at SRU in the Fall 2020 semester. The schedule for the partnership is as follows:

Karen Pierce will attend the 08/20/2020 meeting of Elementary Statistics II at 9:30am by Zoom; she will describe the goals of the project and answer student questions. Jana Asher will provide the Zoom link for that meeting.

Between 8/20/2020 and 10/1/2020, Karen Piece will prepare a list of e-mail addresses of current SRCL patrons to be transferred to Jana Asher under requirements of confidentiality. She will additionally solicit e-mail addresses from other local community organizations. On 10/01/2020, Karen will transfer all email addresses obtained to Jana Asher.

Between 08/27/2020 and 09/07/2020, the students of Elementary Statistics II will design a questionnaire based on SRCL's research questions.

Between 09/08/2020 and 09/17/2020, the questionnaire will undergo review by Karen Pierce and at least one external expert on questionnaire design, as well as student review.

Between 09/23/2020 and 09/30/2020, the questionnaire will undergo two rounds of cognitive interviewing to test the quality of the individual questions, and revisions will be made based on that process.

Between 10/1/2020 and 10/9/2020, the questionnaire will undergo additional review and testing by students. Karen Pierce's approval of the questionnaire is required before the survey is launched.

Between 10/1/2020 and 10/10/2020, Jana Asher will unduplicate the email addresses provided by Karen Pierce and then port the email addresses into the SRU Qualtrics platform. Jana Asher will additionally determine local listservs and other vehicles for advertising the survey.

Between 10/10/2020 and 10/31/2020, the survey will be available on the SRU Qualtrics platform; Jana Asher will monitor the response rate and send followup emails to nonrespondents. If warranted, students will attempt phone call followup for respondents that have not completed the survey.

Between 11/01/2020 and 11/09/2020, Jana Asher will clean the resulting dataset and remove identifying information (i.e., email addresses).

Between 11/10/2020 and 11/20/2020, Jana Asher will direct and her students will perform the analysis of the data and the preparation of a presentation of the results.

By 11/24/2020, the presentation will be available for Karen Pierce to review, and Karen Pierce will complete an assessment of the community-engagement process.

By 12/31/2020, Jana Asher will provide a written report outlining the analysis.

Section 4: Assessment

Karen Pierce will provide feedback on the community engagement process through a survey provided by the SRU Office of Community-Engaged Learning. Jana Asher will be responsible for assessing student participation. Jana Asher will follow up with Karen Pierce six months and one year after the project is complete to obtain information about the impact and outcomes of the project.

Signatures verify an agreement by all signing parties.

_____   _____

Jana Asher, SRU

_____   _____

Karen Pierce, SRCL   Date

20. Example Confidentiality Statement

SlipperyRock University
of Pennsylvania

Interviewer/STAT 153 Student
Confidentiality Agreement

_____ (print name), acting in the capacity of an
Interviewer for the STAT 152 Fall 2019 ARC Survey, agree to work on the ARC survey in accordance with
the guidelines and restrictions specified below. I understand that compliance with the terms of this
agreement is part of my class grade and that failure to comply with these terms may result in a failing
grade and additional action with the Office of Student Conduct at Slippery Rock University.

1) I agree to treat as confidential all information obtained while working on this survey and related
matters. I further agree that this covenant of confidentiality shall survive the termination of this
agreement.
2) To fulfill confidentiality obligations, I will:
    a) Discuss confidential survey information only with other members of Professor Asher's STAT 152
    classes, and ONLY when in a private location or during class time.
    b) Store interview forms and confidential survey information as specified by survey protocols.
    c) Safeguard containers and locations that secure confidential survey information, including
    backpacks and dormitory rooms.
    d) Safeguard confidential survey information when in actual use; keep all documents safe and out
    of view.
    e) Immediately report any alleged violations of the security procedures to Professor Asher.
    f) Not photocopy or record by any other means any confidential survey information unless
    authorized by Professor Asher.
    g) Not in any way compromise the confidentiality of survey participants.
    h) Not allow access to any confidential survey information to unauthorized persons.
    i) Report any lost or misplaced confidential survey information to Professor Asher immediately.

_____   _____/_____/_____
     FIELD INTERVIEWER SIGNATURE   DATE

21. Example Interviewer Manual for Students

STAT 152/153
Interviewer Manual

Version 1.0
October 2019

> **STAT 152/153 ARCS Interview**
> **Comprehensive Standard Protocol**
>
> **Fall 2019 ARC Survey Questionnaire**
> Core Questionnaire
> Question by Question Specifications
>
> **Fall 2019 ARC Survey Fieldwork Implementation**
> Interviewer Manual
>
> **Fall 2019 ARC Survey Data Management**
> Data Entry Training Guide

Suggested Citation

Asher, Jana. *STAT 152/153 Interviewer Manual, Version 1.0*. Slippery Rock, PA: Slippery Rock University, 2019.

Please note that this interviewer manual is strongly based on the following document:

Global Adult Tobacco Survey Collaborative Group. *Global Adult Tobacco Survey (ARCS): Interviewer Manual, Version 2.0*. Atlanta, GA: Centers for Disease Control and Prevention, 2010

Contents

1. Introduction

The *Fall 2019 ARC Survey* (ARCS) was developed at the request of the Aebersold Recreation Center at Slippery Rock University for the following reasons:

- To determine if the ARC is currently meeting the needs of the students that utilize it; and
- To determine why some students on campus are not using the ARC.

In addition, ARCS is collecting two types of information to determine if there is a pattern of usage indicating differential use of the ARC facilities:

- Demographic information related to underrepresented groups on campus, including age, class standing, race, ethnicity, religious affiliation, disability, gender, sexuality, and living situation.

The schedule for the data collection and data entry process for ARCS is as follows:

- **Monday, October 4th, 2019 to Tuesday, October 5th, 2019**: Confidentiality forms are signed by STAT 152/153 students.
    - Confidentiality of data is an absolute requirement for all students. **Failure to maintain confidentiality of the interview forms and survey data can result in student failure of the class and a report to the Office of Student Conduct of Slippery Rock University.**
- **Thursday, October 17th, 2019 to Friday, October 18th, 2019**: Students are trained on appropriate interview techniques.
- **Saturday, October 19th, 2019 to Monday, November 4th, 2019**: Data collection
    - Each student is required to collect data from 10 students at Slippery Rock University.
    - Each student is only allowed to participate in the survey one time.
    - Current STAT 152/153 students of Professor Asher may participate, but only if they are interviewed by a different STAT 152/153 student.
- **Thursday, November 7th, 2019 to Wednesday, November 13th, 2019**: Initial Data Entry
    - Students will enter the data they have collected through the approved data entry portal provided by Professor Asher.
    - After data entry, students are **required** to return every interview form they were assigned prior to data collection.
- **Thursday, November 14th, 2019 to Monday, November 18th, 2019**: Secondary Data Entry
    - Students will be assigned a second set of interview forms to enter into the approved data entry portal provided by Professor Asher.
    - Students will be given the class period on Thursday or Friday, plus any additional time required over the weekend, to complete the data entry.
    - After data entry, students are **required** to return every interview form they were assigned for secondary data entry.

1.1 Overview of the STAT 152/153 Fall 2019 ARC Survey

This manual describes the responsibilities and tasks that Interviewers are expected to follow when conducting ARCS. This chapter provides the general schedule for ARCS. Next, the manual provides guidance on how to locate respondents; how to obtain participation; how to administer the questionnaire; and how to ensure that high-quality data are collected. The last few chapters of the manual describe general administrative and reporting protocols that Interviewers are typically expected to follow, as well as protocols for keeping data secure. Adherence to prescribed procedures and duties is extremely important to the success of this survey.

2. Your Job as an Interviewer

2.1 Introduction

As a member of Professor Asher's STAT 152/153 classes, you, the Interviewer, play an extremely important role in the overall success of this survey. You are the connection to the student, who will provide valuable information on the use of the ARC on campus. You are the person who will develop rapport with other students, assure them that their participation is vital, make them feel important, and obtain their full cooperation. This chapter discusses several issues related to the successful completion of interviews.

Many factors make an ARCS interviewer successful. The key is to combine your knowledge of ARCS protocols and procedures with courtesy, tact, polite assertiveness, and careful listening. Some general guidelines are as follows:

- Follow all procedures and instructions carefully.
- Know the survey.
- Be convinced of the importance of the survey.
- Listen and reply to respondents' needs and concerns.
- Protect the confidentiality of all respondent information.
- Maintain open communication with Professor Asher.

Other skills crucial to success organization, attention to detail, and persuasiveness. This chapter outlines these and other Interviewer responsibilities and shows, in general, how the above factors come together for a successful interviewing experience.

2.2 Your Role as an Interviewer

As an Interviewer, you are expected to be knowledgeable about the survey, including its purpose and the interview process. You are also expected to be able to communicate this information effectively to respondents.

As an Interviewer, you must always maintain the highest ethical standards (see **Section 2.3**). You must collect data with objectivity and treat all of the information you observe or gather with complete confidentiality. Furthermore, you must follow all questionnaire administration procedures.
By doing so, you ensure that a respondent's confidentiality is preserved and that you have obtained high-quality data, that is, a respondent's truthful responses.

2.3 Professional Ethics and Respondents' Rights

Ethics can be broadly defined as a set of moral values or principles of conduct governing an individual or group. As an ARCS Interviewer, you are expected to show integrity, honesty, and responsibility in all aspects of your work. All ARCS Interviewers are expected to protect the rights of survey respondents. These rights include the following:

- The *right of informed consent*, which refers to the requirement that respondents be given complete and accurate information so that they can make an informed decision about their participation in the survey.

- The *right to refuse*, which refers to an individual's right to decline to participate in the survey or to refuse to answer individual questions once an interview has begun.

- The *right to accurate representation*, which requires honesty in dealing with respondents and answering their questions about the survey. For example, you cannot tell the respondent that an interview will take only a few minutes if you know it will last considerably longer.

All students involved in the collection, processing, and analysis of ARCS survey data must be continually aware of the important responsibility to safeguard the rights of survey participants. Because Interviewers are in direct contact with these respondents, you must demonstrate high ethical standards in all of your contacts related to this survey.

2.4   Importance of Confidentiality

Some of the data collected during the ARCS interview may be considered personal, such as the gender and/or sexuality of the respondent. Be aware of the sensitivity issue and of the need to treat any information you learn about respondents as confidential, whether you receive the information directly from a response or through casual observation.

Respondents can be assured that all identifying data, such as their name and email address, will never be made available to anyone outside the ARCS team. All answers will be used for analysis and cannot be used for any other purpose. Furthermore, respondents' names and email addresses will never be associated with their interview responses, and all respondents' answers will be combined with those of other participants.

All of Professor Asher's STAT 152/153 students share the commitment to protect the confidentiality of the respondents and must follow these guidelines:

- Never discuss any aspect of a particular respondent with anyone other than Professor Asher. Also, discussions among STAT 152/153 students regarding ARCS should take place only when necessary for the accurate and timely completion of work. If you need advice or support regarding a respondent, speak with Professor Asher.

- Never give survey-specific information to unauthorized persons, either in writing, by phone, or in person.

- Keep all documents safe and out of view. This guideline means that survey forms must be kept in a safe and secure location.

- Keep all project-related materials in a secure location at all times.

Procedures for protecting data are detailed in **Chapter 12**.

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2.5 Performance Expectations

The data collection effort is vital to the success of any survey. Data collection procedures are standardized to maximize the quality of the data. We are depending on you to follow the procedures described in this manual.

Performance expectations for Interviewers encompass much more than conducting interviews. For example, Professor Asher will expect you to do the following:

- Complete a mutually agreed-upon number of interviews. You and Professor Asher will work together to determine realistic goals.

- Act as a professional Interviewer at all times. You are expected to follow all survey procedures. Doing so will ensure the data you collect are of the highest quality. By providing high-quality data for analysis, you and other students will know that the conclusions drawn from the data are accurate.

- Be an efficient Interviewer by carefully planning your activities. Be prepared, have the necessary materials, and be organized. If you are thoroughly familiar with the survey and procedures, you can complete assignment activities quickly without sacrificing accuracy.

- Talk with Professor Asher about progress and problems as you complete your interviews.

3. Contacting the Respondent

3.1 Introduction

Being well prepared before making initial contact with potential survey respondents is important. You must know the purpose of ARCS and be familiar with the interviewing procedures, as well as with all the survey materials. You must also be organized, which means you must have all of the materials needed to screen and conduct interviews. This chapter contains detailed instructions on how to approach a potential respondent and how to obtain cooperation.

3.2 Scheduling Interviews

You must plan fieldwork carefully to maximize the effectiveness of your time. The following are general rules for planning your schedule:

- Plan several times during the interviewing period to go to places where students are not actively engaging in schoolwork. Locations might include the student center, the student union, or eating areas such as the front area of the Bailey Library. Your dormitory might also be a location to find students.

- If you desire, you may work with a partner from the STAT 152/153 class, but you will still each need to collect 10 unique responses.

- If your respondent runs out of time or refuses to continue with the survey, mark the appropriate outcome on the front of the survey form and discuss with Professor Asher.

Do not wait until the last minute to do these interviews. Plan at least four time periods during which you will approach students to ask them to participate. Because we are interested in a diverse response pool, please interview at least some students that are not in your direct group of friends.

3.3 Assembling Field Materials

Each day, before you start, you must verify that you have all of the equipment and documents you will need. You will need the following materials during data collection:

- Statement of Confidentiality
- Interview forms
- Clipboard (if available)
- pens or pencils
- Professor Asher's contact information
- **ARCS Interviewer Manual**
- **ARCS Question by Question Specifications**

Statement of Confidentiality

The intent of the Statement of Confidentiality is to provide legitimacy and authenticity to the survey. The statement ensures that you will keep confidential all of the information you observe. Use the Statement of Confidentiality to assure respondents that any potentially identifying information cannot be released to anyone who is not directly connected with the survey. A copy of the Statement of Confidentiality that you have signed will be made available to you.

3.4   Establishing Rapport

Rapport is one of the most important tools of any Interviewer. You establish rapport by being sensitive to the respondent's situation. Rapport begins as you introduce yourself and the survey and continues throughout the interviewing process. Establish rapport early and maintain it throughout your interview. The rapport you develop during the initial contact will determine the tone of your interview. Be aware of how you are being received. When you are alert and responsive to the resident's reactions, you will be more successful in avoiding refusals and better equipped to counter respondent objections with appropriate responses.

Be businesslike, courteous, and confident. Do not, however, become aggressive. Bullying students into participating is not appropriate. Conversely, an Interviewer who is too passive will not be successful. Passivity will not motivate a resident who is neutral or uninterested in cooperating. In these instances, you must be prepared to convince the resident by explaining the survey's purpose and the importance of participating in it.

A good Interviewer must possess a rare combination of sensitivity to individuals and an ability to remain objective while interacting with interview respondents. The respondent must feel that the Interviewer is genuinely sensitive to their concerns and feelings; yet, the Interviewer must maintain objectivity to prevent biased responses.

3.5   Overcoming Objections

Many people have strong opinions and feelings about smoking and the use of tobacco products. Although most individuals are friendly and willing to cooperate, you can expect a few individuals to have concerns, objections, or fears. Some respondents may fear they are being judged. What may appear to be a refusal to cooperate is only an expression of concern, or a need for more information about the procedures or the background of the survey. The following points will be helpful in reducing or eliminating refusals when making contacts:

- Be positive and optimistic. Assume most residents will cooperate. (In fact, most will.) An air of apology or defeat can sometimes trigger a refusal. Do not invite refusals.

- A friendly, confident, and positive manner, assertive but not aggressive, will usually yield positive effects.

- Listen carefully to the respondent's comments, and try to determine the basis for their concerns or objections. Then, target your responses to those concerns or objections. Listening is one of the most important skills of successful Interviewers.

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Acknowledge the truth or accuracy in the respondent's statements, and then build on the statement with additional information that addresses the concern. Sometimes the best technique is simply to ask, "Is there a concern about your participation in this survey that I can address?"

Exhibit 3-1 lists some common questions and concerns that respondents have regarding survey participation in general. Carefully read over the responses to these questions and concerns so that you become skilled at using the information to obtain a respondent's participation. Listen to the respondent's comments and tailor your response to their need for information. Your objective is to be completely comfortable when explaining the project, in your own words, to respondents.

3.6 Dealing with Refusals

If, despite your best efforts, the person will not consent to an interview, accept the refusal courteously and thank the person for their time. Do not pressure, argue, or otherwise alienate him or her. Your goal should be *to leave the door open* for you or someone else to approach the student at a later date and secure a completed interview. Be sure to note the refusal on the refusal recording sheet. Doing so will help you to describe the situation to Professor Asher.

Exhibit 3-1.   Responses to Common Concerns about Participation

Common Concern	Response
"I'm not feeling very well."	In these cases, you have caught the person at a bad time, but the situation is temporary. The respondent is likely to agree to be interviewed at another time. Say that you do the interview later.
Lack of trust/invasion of privacy or confidentiality.	Assure the respondent of confidentiality. Show him or her the Statement of Confidentiality. Remind the respondent that the information he or she provides is combined with information from other interviews and is reported in summary form.
"My opinions don't matter."	Explain that the respondent's opinion is important and represents the opinions of many other people like them, so their opinions do matter. Also explain that this is an opportunity both to participate in a project that will contribute to the understanding of the use of the recreation center and allow the ARC to create programs students want to see.
"I don't care about that issue."	They do not have to be interested in the subject of the ARC to participate. Their information is valuable anyway.
"I'm too busy."	Stress to potential respondents that the interviewing process requires only a small amount of their time and that you will be flexible in working around their schedules. Arrange for a more convenient time to meet them.
"I don't like surveys. They are a waste of time and money."	Stress the importance of this survey for trying to understand ARC use across the student body. Stress that this is the respondent's opportunity to contribute to the success of the project.
"Why are you meddling in our business?"	Explain the importance of participation by indicating that each selected respondent represents others like him or her and cannot be replaced. Also emphasize confidentiality and that respondents have the right to refuse to answer any question they consider too personal.

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4. General Interviewing Techniques

4.1 Introduction

As an Interviewer working on ARCS, you are responsible for ensuring that the interview is administered properly. It is extremely important that you adhere closely to all procedures and that you administer the questionnaire *exactly as it is written*. This chapter will present the standard procedures for properly conducting the ARCS interview.

> Administer the questionnaire exactly as it is written.

All of the information covered in **Chapter 2** (pertaining to your role as a professional Interviewer who conducts their work with utmost confidentiality and professionalism) and **Chapter 3** (pertaining to your role in obtaining participation and building rapport) are relevant to this chapter as well. Please review these sections if you are unclear about the duties expected from a professional Interviewer, or about obtaining participation from persons selected for ARCS. Your performance will determine whether the survey is successful. You must be properly prepared.

4.2 General Questionnaire Conventions

ARCS is a face-to-face personal interview. You will ask the selected respondent each question and record the appropriate responses on a survey form. The questionnaire uses several different conventions, discussed below. You must become familiar with these conventions so that you use them correctly.

Rule #1   Text that is bolded and italicized is a direction to the interviewer. Do not read this text out loud.

Rule #2   Text that is bolded but not italicized must be read out loud, exactly as written, to the respondent. You may show the respondent the form as you read the questions out loud, but you must read them.

Rule #3   Answer choices that are not bolded should not be read to the respondent; instead, the interviewer must listen to the response and pick the most appropriate category on the survey form.

4.3 Standardization of Questionnaire Administration

Every Interviewer must administer *every* question in the questionnaire to *every* respondent *in the same way*. This consistency helps to eliminate variability and Interviewer bias, two factors that can seriously undermine the validity of the data gathered from a survey. Follow the guidelines listed below to ensure that you are administering the questionnaire in a nonbiased, standardized manner.

> Consistent, nonbiased administration strengthens the validity of the data collected.

Asking the Questions

The following is a list of protocols to which you must adhere when administering either the *Household Questionnaire* or the *Individual Questionnaire*.

- **Ask the questions using the exact words.** All questions must be read exactly as they appear in the questionnaire; to do otherwise risks invalidating the survey.

- **Read the questions slowly.** As you become familiar with ARCS questions, it is tempting to begin reading through the questions more quickly. Remember, however, that this is the first time the respondent has heard these questions. You must read slowly enough to allow the respondent time to understand everything you are asking. A pace of approximately two words per second is recommended.

- **Ask every question that is specified in the questionnaire.** Never presume that the answer to an upcoming question has already been provided by a previous answer. The answer received in the context of one question may not be the same answer in the context of another.

- **Read the complete question as displayed.** The respondent may interrupt you and answer before having heard the complete question. When this happens, read the question again, making sure the respondent hears the question through to the end. Do not assume a premature response applies to the question as written. You may politely inform the respondent that in order to do your job you must read the entire question.

- **Repeat questions that are misinterpreted or misunderstood by the respondent.** The respondent might tell you that he or she did not understand the question, or he or she might look confused when trying to answer the question. The respondent also might give an answer that seems illogical or irrelevant to the question. In any of these circumstances, you should simply repeat the question exactly as it is written. If the respondent asks you a specific question about what a question means (for example, "What do you mean by foosball?"), refer to the **ARCS Question by Question Specifications**, if available for that question. However, if there is no specific guidance provided in the manual about the question, you should not offer any explanations beyond what is provided in the questionnaire. If there is no additional information to define the terms, you should politely respond, "Whatever 'foosball' means to you."

- **Do not suggest answers to the respondent.** As you proceed through the interview, you will come across questions that you might think you know the answers to based on prior information you have heard. You may feel the urge to suggest answers to the respondent. Resist this urge. Read the question as written.

- **Read introductory and transitional statements as they appear in the questionnaire.** These statements often contain instructional material for the respondent.

- **Responses must represent the respondent's own opinions without bias introduced by the Interviewer.** Do not influence a respondent's answers with your behavior (that is, with your body language, your attitude, your tone of voice, or any other way).

By observing these rules of questionnaire administration, you ensure that the survey is administered to each respondent in exactly the same way and that the responses given by the participant accurately represent their experiences and opinions. This practice will guarantee that scientific principles are followed in the administration of the questionnaire and that the data are of the highest quality.

Probing

Probing is a technique used to help ensure that the answers given by a respondent are as accurate and as complete as possible. Effective probes serve two purposes: (1) they encourage a respondent to express him or herself completely, and (2) they help the respondent focus on the specific requirements of the question. To know when to use a probe, you must be thoroughly familiar with the questionnaire and know the objectives of each question; that is, you must know what is being measured and what constitutes an acceptable response. Otherwise, you will have difficulty judging the adequacy of a response.

> Use neutral nonbiasing probes to elicit a more complete or accurate response from the respondent.

Only neutral or nondirective probes (those that do not influence the respondent) should be used in the ARCS interview. Some examples of proper probing techniques follow.

- **Neutral questions or statements.** These probes encourage a respondent to explain further or elaborate on a response without leading or directing the respondent to a particular answer. These must be stated in a neutral or nonchallenging tone. Some examples of neutral probes include the following:

  – *"What do you mean?"*

  – *"Please explain that."*

  – *"Which would you say is closest?"*

- **The silent probe.** A timely pause is the easiest and often the most useful type of probe. This pause lets your respondent know that you are expecting or waiting for additional information.

- **Clarification.** Use clarification probes when you judge the respondent's answer to be unclear, inconsistent, ambiguous, or contradictory. You must take care, however, not to appear to challenge the respondent. Instead, tactfully express concern over not completely understanding the nature of the response. Some examples include the following:

  – *"I'm not quite sure I understand what you mean by that. Could you tell me a little more?"*

  – *"I'm sorry, but a few minutes ago I thought you said you had been homeless at some point during the last 12 months. Could you clarify this for me?"*

- **Encouragement.** This technique involves conveying to the respondent that you understand what he or she has said, and you would like to hear more. Nonverbal probes of this nature include a nod of the head or an expectant expression. Some examples include the following:
  - *"I see…"*
  - *"That's interesting…"*

- **Repetition.** Repetition could be either repeating the question or repeating the response. Repeating the question is useful when it appears that the respondent may have misunderstood the question or has deviated from the topic at hand. Repeating the response may produce additional comments or explanation from the respondent, especially if you say it in the form of a question.

  For example, if you ask, "How often do you visit the Recreation Center," and the respondent says, "A lot," you could look at him or her and say, "A lot?"
  You are likely to get additional details or information, such as, "Well, I'd say at least once a day." It may also be helpful simply to repeat the response options so the respondent knows that you need one of the listed responses.

"Don't Know" Responses

When the respondent says, "I don't know," it can mean two things: (1) either he or she is not sure of an answer and needs more time to think, or (2) he or she actually does not know how to answer the question. You must be prepared to distinguish between the two.

A respondent may say, "I don't know," when asked to offer an opinion or attitude. He or she may find it difficult to put feelings into words. If you suspect this is the case, you should put him or her at ease by saying, "There is no right or wrong answer. Just tell me how *you* feel about this." Similarly, if a respondent is unsure about an answer choice, you should encourage him or her to provide a best estimate.

When a respondent is uncomfortable answering such questions, he or she may respond, "I don't know," in an effort to avoid the question. If this appears to be the case, you again must make every effort to put your respondent at ease, reassuring him or her that the answers are confidential and are very important to the survey.

In the end, the respondent may insist that he or she does not know how to answer a particular question. Once you have properly probed for an answer, you should accept the response in the interest of not alienating the respondent, even if you believe he or she may be avoiding the question. Remember that there may be times when a respondent actually does not know the answer to one or more specific questions.

Many of the same rules apply when a respondent says, "I don't want to answer that question—I refuse." When a respondent is uncomfortable answering such questions, he or she may respond, "I don't want to answer that question," or "I'm uncomfortable answering that," in an effort to avoid the question. If this appears to be the case, you should make every effort to put your respondent at ease, reassuring him or her that the answers are confidential and are very important to the survey.

Despite your efforts to assure the respondent, he or she has the right to refuse to answer any question. You should not bully or harass the respondent to answer a question. Rather, you should accept the response in the interest of not alienating the respondent, even if you believe he or she may be avoiding the question.

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5.   Best Practices for Administering the Questionnaire

5.1   Preparation for Interview

The best way to achieve high response rates and to be efficient is *always* to complete the individual interview in one attempt. If you must postpone the completion of the interview, be sure to schedule a meeting time with the respondent.

Under ideal circumstances, you should interview the respondent in a well-lighted, reasonably quiet area, without distraction from other people. It is preferable to interview the respondent alone and in a private setting that will allow the respondent to feel comfortable responding honestly to the questions.

As you ask the questions, follow the specific guidelines outlined in the **ARCS Question by Question Specifications** manual. Make use of all proper interviewing techniques outlined in **Chapter 4**, maintaining a professional, task-oriented approach. Please give special attention to any Interviewer instructions in bold and italic as you administer the questions.

5.2   Informed Consent Procedures

When you attempt to complete the *Questionnaire*, you will first need to gain verbal informed consent.

Before you can accept a respondent's consent to complete the interview, you must be sure that we have provided to the respondent's satisfaction all the information necessary to make an informed and knowledgeable decision. Once you have answered the respondent's questions and they have consented to participate in the interview, you will affirm their consent on the *Questionnaire*.

5.3   The ARCS Individual Questionnaire

The ARCS *Individual Questionnaire* surveys a respondent's use, knowledge, awareness, and perceptions of the ARC. The content of each section of the *Individual Questionnaire* is briefly described below:

- Usage of the ARC
- Satisfaction with the ARC
- Common recreational activities
- Knowledge of ARC programming
- Demographic information

You can view the specific questions that comprise this questionnaire in the **ARCS Question by Question Specifications** manual.

5.4   Quality Control Processes

Quality control is important at all stages of the data collection process. Your ability, preparedness, and willingness to properly perform your data collection tasks are the most important components of the overall quality control process. This chapter discusses the quality control procedures that are in place to help you do your job to the best of your ability.

During the Interviewer training session, you will be given detailed training on locating respondents and conducting interviews, as well as training on all administrative procedures. By the end of the training session, you will have been able to practice every step involved in being an effective Interviewer. You will be trained on the structure of the survey; presentation skills, including reading and pacing the questions and maintaining eye contact; skills in gaining cooperation; reading of the informed consent to respondents; administration of *Questionnaire*; and recording of data.

Verification of Interviews

To provide continuing feedback to you and to assess the quality and accuracy of household screenings and individual interviews, your work will be subject to a verification process. We must be certain that *all* data collection procedures are being implemented properly. To verify your work, Professor Asher will conduct verification interviews of randomly selected respondents.

Data Quality

The validity of the survey will depend on the quality of the data collected. Throughout data collection, Professor Asher will perform a number of steps to assess quality. Specifically, she may do any or all of the following:

- Review data from key interview items to identify any potential problems with interview routing or "missing" data.
- Identify questions with higher than expected rates of "don't know" or "refused" responses.
- Identify questions with higher than expected rates of "other" responses, rather than one of the precoded answer choices.

To ensure that we collect the highest quality data possible, you must adhere to ARCS data quality procedures. Of particular importance are strictly adhering to general questionnaire administration procedures.

General Questionnaire Administration Procedures

Throughout this manual, a number of references have been made to the techniques you must use to administer interviews properly. Deviating from these prescribed techniques *negatively affects* data quality. For this reason, we stress again the key procedures listed below:

- Have your *ARCS Interviewer Manual* readily available and refer to it as needed to make sure you are completing tasks as directed.
- Read all questions and answer choices exactly as they are written. Do not suggest answers or in any way bias the respondent's interpretation of, or answer to, the question.
- Use the probing techniques described earlier in this manual to elicit more accurate and complete responses. Be careful, however, that you do not appear to pass judgment on, or agree or disagree with, the respondent's comments.

Trust the Instrument

Remember that you are to administer every item on the questionnaire and that *you are to read questions and answer choices exactly as they appear on the form*, even if the question numbers appear to be out of order.

6. Data Security and Confidentiality

6.1 Introduction

Data collected through this survey are confidential. It is your responsibility as a professional Interviewer to maintain the integrity and confidentiality of the data entrusted to you. This chapter outlines the procedures and protocols for all Interviewers to ensure data security and confidentiality.

At training, you will be asked to sign a ARCS Statement of Confidentiality, which certifies that you will carry out all project procedures precisely. Your signature on this agreement will affirm your understanding of project policies and your agreement to comply with all of them.

6.2 Security of Data

Detailed protocols have been developed that reduce the risk of compromising the confidentiality of survey participants and the security of the data. The following sections describe several methods to help you protect the data.

> Unauthorized access or loss of materials could compromise the confidentiality of survey participants.

Safeguarding Data and Equipment in the Field

You have the *legal* and *ethical* obligation at all times to safeguard participant confidentiality and to secure the survey forms from unauthorized access or use. Paper materials could contain identifying information that can easily be read by anyone.

Store all project materials in a secure location when not in use, even at home. Do not store paper forms in your car overnight, even in a locked trunk. At home, securely store all materials and equipment out of sight of family members and visitors. When traveling by road (e.g., car or jeep) *during the day*, store all materials in the locked trunk, out of sight.

Using Personal E-mail Accounts

Do not use personal e-mail accounts to send or receive confidential survey information. Personal e-mail accounts may only be used to discuss nonconfidential information, such as rescheduling a meeting. When in doubt, call Professor Asher to discuss any survey information.

6.3 Reporting Unanticipated Problems Involving Data Security and Confidentiality

An unanticipated problem is defined as any activity that potentially compromises the confidentiality of survey participants and the security of the data. An unanticipated problem may constitute the loss or theft of any confidential information that involves risks to survey participants. Loss or theft of any paper documents containing sample information is considered an unanticipated problem. Similarly, the electronic transmission of any confidential information through your personal e-mail is considered an unanticipated problem.

> An unanticipated problem is any activity that potentially compromises the confidentiality of survey participants and the security of the data. Unanticipated problems must be reported to Professor Asher.

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Other situations may also constitute an unanticipated problem. If you are unsure whether a situation needs to be reported as an unanticipated problem, ask Professor Asher.

Communication protocols for reporting the loss or theft of physical survey materials have been developed. If you lose any survey materials or equipment that contain confidential information, notify Professor Asher by phone as soon as you realize something is missing. Whatever the situation may be, you must contact Professor Asher immediately. You can take time to search for any missing items after you have notified Professor Asher.

Be prepared to give Professor Asher as much information as possible about the loss or theft. Professor Asher will need (1) a detailed description of the incident; (2) a comprehensive list of missing equipment, materials, and data for each affected household; and (3) identifying information, if any, that was in the materials (e.g., participant names). If your iPAQ is missing, Professor Asher will need to know whether the iPAQ password information was included in any of the missing materials. Professor Asher will let you know if any further documentation of the loss is necessary.

6.4   Monitoring Field Staff Compliance with Data Collection Protocols

Interviewer compliance with all the data collection protocols will be monitored closely. To minimize follow-up efforts with interviewers on any possible noncompliance of protocol, *be proactive about reporting any justifiable circumstances or situations that prohibit you from performing tasks according to protocol.*

6.5   Retrieving Materials and Equipment When Field Staff Leave the Project

All equipment is the property of the ARCS project. When you complete the project, Professor Asher will be responsible for ensuring that all survey forms are promptly returned.

Professor Asher will keep an inventory of all materials that are in your possession and will closely monitor the return of all survey forms. Appropriate follow-up action will be taken if items are not returned within a specified period of time.

Best wishes for success with your important work!

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Appendix A: Interviewer Tips

DOs

- **Make a good impression by being prepared and organized.**

  Make a good impression by being prepared for interviewing activities. This demonstrates your professionalism and increases the likelihood that households will participate in the survey. If you are thoroughly familiar with the survey and procedures and have all the materials you need, you can complete assignment activities quickly without sacrificing accuracy.

- **Maintain communication with your supervisor.**

  Regular communication with your supervisor ensures that you stay on track to complete your assignments on time and according to specified procedures. Professor Asher can provide advice for completing difficult cases and tips for improving your Interviewer skills.

- **Be courteous and sympathetic to concerns.**

  Interviewers often work long hours in difficult conditions, but it is important to meet each household or potential respondent with a courteous attitude. Be sympathetic to concerns and answer questions honestly and with confidence. Although surveys are commonplace to you, some people might have questions about why you are visiting them and about the survey process in general. Your demeanor will go a long way toward establishing trust and rapport.

- **Be positive and persuasive, but not aggressive.**

  Be businesslike, courteous, and confident. An Interviewer who is too passive will not be as successful at motivating people to participate as one who is confident. You must be prepared to convince the resident of the survey's importance by explaining its purpose and the participant's role in it. Be positive in your outlook. Assume that people will be interested and want to participate. Approaching a household or a respondent with an air of apology or defeat can sometimes trigger a refusal. Do not, however, become aggressive. Bullying residents into participating is not appropriate.

- **Be proactive.**

  Identify and address problems early. Preempt trouble by looking ahead and being prepared. Don't delay or wait for problems to improve on their own. When in doubt, discuss issues with Professor Asher before they become a problem.

- **Listen.**

  Listen carefully to the participant's comments, and try to determine the basis for their concerns or objections. Then, target your responses to those concerns or objections. Listening is one of the most important skills of successful Interviewers.

- **Be flexible and keep to the schedule.**

  Respondents are being generous by sharing their time and thoughts with us. It is important that you keep all scheduled appointments. If you show up for a scheduled appointment and the respondent isn't there or is too busy to keep the appointment, be flexible and find a time when you both can meet.

- **Maintain accurate records.**

  The ARCS project team relies on information from you to correctly manage the survey and to interpret the survey results. Be thorough when recording the outcome of each visit to a household or respondent, even if you have no direct contact with a person. Keep both the iPAQ's Case Management System and the paper Assignment Control Form up to date. Stay current with all your reporting responsibilities.

- **Be open to feedback about your performance.**

  Professor Asher wants you to be a successful interviewer. After all, the data rely on the good work that you do. Be open to improving your technique. Be open to discussing your performance with Professor Asher, and accept advice on ways to improve your performance even more.

- **Record the respondent's complete answer.**

  Some questions require you to type the respondent's answers to questions. For these questions, you must record the respondent's complete and full answer. Don't worry about trying to clean up the respondent's grammar or try to minimize colloquialisms or words. Also, don't paraphrase the response. Do the best you can to record the full answer exactly as it was spoken. If you are unsure if you have captured what the respondent said, simply say, "I want to make sure I got your full answer. Is this correct?," and then read the answer you have to the respondent. Doing so allows the respondent to make any edits necessary.

- **Interview the respondent in a private environment.**

  For the *Individual Questionnaire*, make every effort to interview the respondent in private, so that others cannot hear the interview. Privacy ensures the confidentiality of the respondent's answers and allows the respondent to be honest in their answers. If possible, it is best to interview in a well-lit area without distractions or other people. However, cultural norms should guide whether or not it is possible to interview the respondent alone.

- **Be neutral in your words, actions, and demeanor.**

  The goal of your job as interviewer is accurately to record the respondents true answer to each and every question. Your actions and behavior may lead or direct a respondent to a particular answer. Be conscious of subtle changes in your body posture, tone of voice, or facial expressions. Do not have a questioning expression, nod your head, or appear surprised by a respondent's answers.

DON'Ts

- **Do not screen or interview someone you know personally.**

  It is unethical for you to interview or screen someone you know personally. Contact your supervisor if you know someone at one of the households in your assignment.

- **Do not discuss confidential information with unauthorized persons.**

  Never discuss any aspect of respondents or their answers with anyone outside of project staff, including the respondent's family or neighbors. To do so is a violation of the ARCS code of confidentiality and privacy. Likewise, discussions among project staff should take place only when necessary for the accurate and timely completion of work. If you need advice or support regarding a respondent, speak with Professor Asher.

- **Do not share details on the purpose of your visit.**

  Do not reveal to others why you need to visit a respondent or a respondent's home. If you are having trouble locating a house, ask for directions to the specific address. If asked about the nature of your visit, say that you are contacting the residents about participation in an important survey, but do not mention the specific nature or name of the survey.

- **Do not "help" the respondent answer the questionnaire.**

  Some respondents may not immediately understand a question. If this occurs, repeat the question, and give the respondent time to think. Respect the respondent's right to give their answer in their own words. Do not rush the respondent to give an answer. Also, do not help the respondent answer by rewording the question, suggesting answers, or setting expectations (through words or body language) that the respondent should answer in a particular manner.

22. Example Survey

FALL 2019 STAT 152/153 CLASS SURVEY

Survey Control Number:_____   Date:_____

Name of Interviewer:_____   Time Started:_____

Signature of Interviewer:_____   Time Ended:_____

What happened?   ◇ Survey Completed   ◇ Survey Interrupted
                   ◇ Survey Refused   ◇ Return to complete

_____

Please read the following:

We would like to invite you to be in a research study being conducted by the students of Professor Asher's Stat 152 classes. This study will focus on student experiences in sports and recreation on campus. Participation in this research is voluntary; you don't have to take part if you don't want to.

If you decide to take part, you will be asked the questions on this survey. Participation in the study will take approximately 20 minutes and you will not be compensated for your time. We believe there are no risks connected to participating but there may be some of which we are not aware. The information we collect in this study will be used to create a statistical report for the Aebersold Recreation Center. All information collected will remain confidential unless we feel that the information provided suggests that the respondent is in danger of self harm.

If you have any questions about the study, you can contact the study director, Professor Jana Asher, at jana.asher@sru.edu.

1. Do you agree to participate in the study?   ◇ Yes   ◇ No

   1a. In order to avoid duplication, may I please have the three digit and four number code used for your email address? This information will be kept confidential and deleted once data entry is complete.

   _____

2. Since the beginning of the academic year, have you visited the Aebersold Recreation Center?

   ◇ Yes   *GO TO QUESTION 03 ------->*

   ◇ No   *GO TO QUESTION 10 ------->*

   ◇ I don't know   *GO TO QUESTION 10 ------->*

3. How often do you visit the Recreation Center?

   ◇ Daily   ◇ Once a week or more   ◇ 2-3 Times a month

   ◇ Once a month   ◇ Every 2-3 Months   ◇ 2-3 Times a year

0   Survey Control Number:

4. **Please answer the following questions on the programming you have participated in at the recreation center over the last 12 months.**

	Yes	No	I don't know	Not Applicable
a. I have participated in an intramural sport through the recreation center.	◇	◇	◇	◇
b. I have used the rock climbing wall at the recreation center.	◇	◇	◇	◇
c. I have participated in an exercise class at the recreation center.	◇	◇	◇	◇
d. I have participated in a safety certification class at the recreation center.	◇	◇	◇	◇
e. I have reserved and borrowed equipment from the recreation center.	◇	◇	◇	◇
f. I have reserved and used a physical space from the recreation center.	◇	◇	◇	◇
g. I have been involved in an outdoor activity organized by the recreation center.	◇	◇	◇	◇
h. I have been involved in another activity at or through the recreation center (*please describe*):	◇	◇	◇	◇

5. **Thinking about the *last* activity you completed with the recreation center, please tell me how strongly you agree or disagree with the following statements.**

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Not Applicable
a. The Recreation Center staff is knowledgeable and professional.	◇	◇	◇	◇	◇	◇
b. I feel like I have a good relationship with the Recreation Center staff.	◇	◇	◇	◇	◇	◇
c. Overall I am very satisfied with the Recreation Center's Programs.	◇	◇	◇	◇	◇	◇
d. The Recreation Center is making a positive contribution to my life.	◇	◇	◇	◇	◇	◇
e. The Recreation Center's indoor facilities are sufficient to meet my needs.	◇	◇	◇	◇	◇	◇
f. The Recreation Center's outdoor facilities are sufficient to meet my needs.	◇	◇	◇	◇	◇	◇
g. The hours that the Recreation Center is open are sufficient to meet my needs.	◇	◇	◇	◇	◇	◇
h. The recreation center facilities are kept in good repair.	◇	◇	◇	◇	◇	◇

1   Survey Control Number:

6. What recommendations would you offer for improving our facilities?

_____

_____

7. What recommendations would you offer for improving our programming?

_____

_____

8. What recommendations would you offer for improving our customer service?

_____

_____

9. Is there anything else you would like to tell us about the Recreation Center or its programming?

_____

_____

GO TO QUESTION 11 ------------->

10. Why haven't you used the Aebersold Recreation Center this Academic Year? *Please indicate all that apply.*

◇ I am too busy   ◇ I am not interested in the ARC's offerings

◇ I don't really know what I can do through the Recreation Center

◇ The recreation center is too difficult to get to

◇ The recreation center is not open at the times I would be able to use it

◇ I don't like the recreation center

◇ Other (please explain):_____

_____

Survey Control Number:

11. Over the past 12 months, which of the following activities have you participated in at Slippery Rock University? *Please indicate all that apply.*

◇ Varsity Baseball   ◇ Varsity Men's Basketball   ◇ Varsity Women's Basketball

◇ Varsity Men's Cross Country   ◇ Varsity Women's Cross Country

◇ Varsity Football   ◇ Varsity Men's Soccer   ◇ Varsity Women's Soccer

◇ Varsity Men's Track & Field   ◇ Varsity Women's Track & Field

◇ Varsity Field Hockey   ◇ Varsity Women's Lacrosse   ◇ Varsity Softball

◇ Varsity Tennis   ◇ Varsity Volleyball   ◇ None of the above

12. Not including Varsity Team involvement, in what recreational activities have you participated over the last 12 months either at SRU or elsewhere?

	I never do this activity.	At least once per week during the appropriate seasons.	2-3 Times a Month during the appropriate seasons.	Monthly during the appropriate seasons.	Less than once per year	I don't know what that is
a. Lap swimming	◇	◇	◇	◇	◇	◇
b. Open swimming	◇	◇	◇	◇	◇	◇
c. Diving	◇	◇	◇	◇	◇	◇
d. Pool deck fitness	◇	◇	◇	◇	◇	◇
e. Golf	◇	◇	◇	◇	◇	◇
f. Minigolf	◇	◇	◇	◇	◇	◇
g. Bowling	◇	◇	◇	◇	◇	◇
h. Paintball	◇	◇	◇	◇	◇	◇
i. Cornhole	◇	◇	◇	◇	◇	◇
j. Horseshoes	◇	◇	◇	◇	◇	◇
k. Bocce ball	◇	◇	◇	◇	◇	◇
l. Curling	◇	◇	◇	◇	◇	◇
m. Ultimate Frisbee	◇	◇	◇	◇	◇	◇
n. Football	◇	◇	◇	◇	◇	◇
o. Flag Football	◇	◇	◇	◇	◇	◇

3   Survey Control Number:

Not including Varsity Team involvement, in what recreational activities have you participated over the last 12 months either at SRU or elsewhere?

	I never do this activity.	At least once per week during the appropriate seasons.	2-3 Times a Month during the appropriate seasons.	Monthly during the appropriate seasons.	Less than once per year	I don't know what that is
p. Baseball	◇	◇	◇	◇	◇	◇
q. Softball	◇	◇	◇	◇	◇	◇
r. Tennis	◇	◇	◇	◇	◇	◇
s. Volleyball	◇	◇	◇	◇	◇	◇
t. Grass Volleyball	◇	◇	◇	◇	◇	◇
u. Basketball	◇	◇	◇	◇	◇	◇
v. Wheelchair basketball	◇	◇	◇	◇	◇	◇
w. Badminton	◇	◇	◇	◇	◇	◇
x. Pickleball	◇	◇	◇	◇	◇	◇
y. Inline hockey	◇	◇	◇	◇	◇	◇
z. Ice hockey	◇	◇	◇	◇	◇	◇
aa. Deck hockey	◇	◇	◇	◇	◇	◇
bb. Floor Hockey	◇	◇	◇	◇	◇	◇
cc. Soccer	◇	◇	◇	◇	◇	◇
dd. Futsal	◇	◇	◇	◇	◇	◇
ee. Dodgeball	◇	◇	◇	◇	◇	◇
ff. Boxing	◇	◇	◇	◇	◇	◇
gg. Kickboxing	◇	◇	◇	◇	◇	◇
hh. Weightlifting	◇	◇	◇	◇	◇	◇
ii. Strength training	◇	◇	◇	◇	◇	◇
jj. Aerobic training	◇	◇	◇	◇	◇	◇
kk. Walking	◇	◇	◇	◇	◇	◇

4

Survey Control Number:

FALL 2019 STAT 152/153 CLASS SURVEY

Not including Varsity Team involvement, in what recreational activities have you participated over the last 12 months either at SRU or elsewhere?

	I never do this activity.	At least once per week during the appropriate seasons.	2-3 Times a Month during the appropriate seasons.	Monthly during the appropriate seasons.	Less than once per year	I don't know what that is
ll. Jogging	◇	◇	◇	◇	◇	◇
mm. Running	◇	◇	◇	◇	◇	◇
nn. Rollerblading	◇	◇	◇	◇	◇	◇
oo. Indoor rock climbing	◇	◇	◇	◇	◇	◇
pp. Outdoor rock climbing	◇	◇	◇	◇	◇	◇
qq. Horseback Riding	◇	◇	◇	◇	◇	◇
rr. Backpacking	◇	◇	◇	◇	◇	◇
ss. Camping	◇	◇	◇	◇	◇	◇
tt. Canoeing	◇	◇	◇	◇	◇	◇
uu. Kayaking	◇	◇	◇	◇	◇	◇
vv. Whitewater rafting	◇	◇	◇	◇	◇	◇
ww. Sailing	◇	◇	◇	◇	◇	◇
xx. Paddleboating	◇	◇	◇	◇	◇	◇
yy. Archery	◇	◇	◇	◇	◇	◇
zz. Biking	◇	◇	◇	◇	◇	◇
ab. Mountain biking	◇	◇	◇	◇	◇	◇
bc. Stand-up paddle boarding	◇	◇	◇	◇	◇	◇
cd. Snow-boarding	◇	◇	◇	◇	◇	◇
de. Cross- country skiing	◇	◇	◇	◇	◇	◇
ef. Downhill skiing	◇	◇	◇	◇	◇	◇
fg. Ice skating	◇	◇	◇	◇	◇	◇

5

Survey Control Number:

13. **To the best of your memory, what equipment is available for check-out from the Campus Recreation? Please indicate all that apply, and please do not guess: just let us know what you remember.**

General

◇ Basketball   ◇ Outdoor Basketball Net (Freestanding)   ◇ Badminton Racquet

◇ Badminton Nets   ◇ Bow/Arrows   ◇ Cones   ◇ Floor Hockey Puck/Ball

◇ Goalie Equipment   ◇ Cornhole   ◇ Golf Clubs   ◇ Golf Balls

◇ Table Tennis   ◇ Softball Helmet   ◇ Soccer Nets   ◇ Volleyball

◇ Volleyball Net   ◇ Indoor Soccer ball   ◇ Hockey Sticks   ◇ Hockey Helmet

◇ Hockey Goals   ◇ Pinnies   ◇ Football   ◇ Flag Football Flags

◇ Paddle   ◇ Softball Bat/Ball   ◇ Baseball Bat/Ball   ◇ Dodgeball Equipment

◇ Kayak   ◇ Canoe

Aquatics/Aerobics Equipment

◇ Steps   ◇ Dyna-bands   ◇ BOSU   ◇ Medicine Balls   ◇ Plyometric Balls

Other

◇ Score Board   ◇ Sound System   ◇ Golf Cart   ◇ Water Cooler   ◇ Portable Bleachers

14. **To the best of your memory, what indoor spaces are available to reserve from Campus Recreation? Please indicate all that apply, and please do not guess: just let us know what you remember.**

◇ Gymnasium   ◇ Pool   ◇ Rock Wall   ◇ Fitness Center

◇ Lobby   ◇ Track   ◇ Pool Patio   ◇ Conference Room

◇ Kitchen   ◇ Multi-purpose Room   ◇ Gaming Room   ◇ Ballroom

◇ Ski Lodge

15. To the best of your memory, what outdoor spaces are available to reserve from Campus Recreation? Please indicate all that apply, and please do not guess: just let us know what you remember.

◇ Softball Field   ◇ Multi-Sport Field   ◇ Rugby Field   ◇ Deck Hockey Field
◇ High Ropes Course   ◇ Low Ropes Course   ◇ Challenge Course ◇ Disk Golf Course
◇ Basketball Court   ◇ Outdoor Pavilion

16. To the best of your memory, what fitness classes are available through Campus Recreation? Please indicate all that apply, and please do not guess: just let us know what you remember.

◇ Introductory Climbing Clinic   ◇ Advanced Climbing Clinic   ◇ Aqua Fit – Deep Water
◇ Body Conditioning   ◇ BOGA Fit - Water   ◇ Cardio Sculpt
◇ Hip Hop & Abs   ◇ MOVE-IT   ◇ HardCore
◇ Spin   ◇ Total Body Fitness   ◇ Yoga

17. To the best of your memory, what certification classes are available through Campus Recreation? Please indicate all that apply, and please do not guess: just let us know what you remember.

◇ First Aid/CPR/AED   ◇ Lifeguard   ◇ Water Safety Instruction
◇ Wilderness First Responder   ◇ EMT

7   Survey Control Number:

18. To the best of your memory, what activities are available through Campus Recreation? Please indicate all that apply, and please do not guess: just let us know what you remember.

◇ Lap swimming ◇ Open swimming ◇ Diving ◇ Pool deck fitness

◇ Golf ◇ Minigolf ◇ Bowling ◇ Paintball

◇ Cornhole ◇ Horseshoes ◇ Bocce ball ◇ Curling

◇ Ultimate Frisbee ◇ Football ◇ Flag Football ◇ Baseball

◇ Softball ◇ Tennis ◇ Volleyball ◇ Grass Volleyball

◇ Basketball ◇ Wheelchair basketball ◇ Badminton ◇ Pickleball

◇ Inline hockey ◇ Ice hockey ◇ Deck hockey ◇ Floor Hockey

◇ Indoor Soccer ◇ Outdoor Soccer ◇ Futsal ◇ Dodgeball

◇ Kickball ◇ Boxing ◇ Kickboxing ◇ Weightlifting

◇ Strength training ◇ Aerobic training ◇ Walking ◇ Jogging

◇ Running ◇ Rollerblading ◇ Indoor rock climbing

◇ Outdoor rock climbing ◇ Horseback Riding ◇ Backpacking ◇ Camping

◇ Canoeing ◇ Kayaking ◇ Whitewater rafting ◇ Sailing

◇ Paddleboating ◇ Biking ◇ Mountain biking ◇ Ice skating

◇ Stand-up paddle boarding ◇ Snowboarding ◇ Downhill skiing ◇ Cross-country skiing

Survey Control Number:

FALL 2019 STAT 152/153 CLASS SURVEY

Thank you for your patience. We just have a few more questions.

19. What is your date of birth? __ __ / __ __ / __ __ __ __
                                                     m m / d d / y y y y

20. What is your class standing?

◇Freshman ◇Sophomore ◇Junior ◇Senior ◇Graduate Student

◇Other (please explain)_____

Thank you; we just have a few more questions. Some of these questions might be sensitive and we appreciate your candor. We will keep these data completely confidential; because there is concern on campus that all members of our community feel welcome, we wish to identify members of underrepresented groups to determine if the ARC is specifically meeting their needs.

21. What is your race? *Check all that apply.*

◇African-American ◇Asian ◇Caucasian ◇Pacific Islander ◇Native American

◇Other (please explain)_____

22. What is your ethnicity?

◇Hispanic ◇Non-hispanic ◇Prefer not to respond

23. What religion do you practice or feel affiliated with? *Please indicate all categories that apply.*

◇Protestant ◇Catholic ◇Mormon ◇Orthodox Christian

◇Jehovah's Witness ◇Other Christian ◇Jewish ◇Muslim

◇Buddhist ◇Hindu ◇Agnostic ◇Atheist

◇Other (Please indicate)_____

24. Do you have a physical or sensory disability?

◇Yes ◇No ◇Prefer not to respond

25. What is your gender?

◇Male ◇Female ◇Non-binary ◇Transgenderd ◇Other ◇No response

Survey Control Number:

26. **What is your sexuality?**

   ◇Heterosexual   ◇Other   ◇Prefer not to respond

27. **Where do you live during the academic year?**

   ◇On-campus housing   ◇Off-campus housing   ◇With a parent/guardian

   ◇Other (Please explain)_____

28. **We are aware that some students do not have a permanent home and may go without housing for part of or the entirety of the academic year. Within the last 12 months, was there any time period during which you did not have a residence?**

   ◇Yes   ◇No   ◇Prefer not to respond

   ◇Other (Please explain)_____

   If the student responds "Yes" or "Other" to Question 28, please ask the following questions:

   28a. To the best of your memory, what was the length of time you spent without housing?

   _____

   28b. Is there anything else you would like to tell us about the time you spent without housing?

   _____

   _____

Thank you again for participating in this study - we are all done! If you are interested in receiving a copy of the results, please let me know your name and email address. This information will be kept confidential.

Name:_____

Email Address:_____

10   Survey Control Number:

23. Example Refusal Recording Sheet

Your name:_____

Date	Number of Refusals (tick marks)

STAT 152/153 Fall 2019 Refusal to Participate Tally Sheet

24. Example Pre- and Post-Assessment Survey for Civic Learning Outcomes

ROCK SERVE (/group/159214-Slippery-Rock-University)

Elementary Statistics*

Civic Learning Post-Assessment

Your Information   Not You? (/logout?return=%252Fsurvey%252Ftake%252F1oiYfvzARilaJtwlhVJE)

First Name *

Jana

Last Name *

Asher

Email Address *

jana.asher@sru.edu

Phone Number

724-738-2508

Spring 2021 STAT 153 Civic Learning Post-Assessment

First and Last Name: *

This is a post-assessment for the civic engagement outcomes for this course. My answers will only be shared with others in aggregate form so that my privacy will be preserved. I agree to answer these questions as honestly as possible. *

○ Yes
○ No

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Please indicate your agreement with the following statement: I am a valuable member of my community. *	○	○	○	○	○
Please indicate your agreement with the following statement: I can make a difference in my community. *	○	○	○	○	○
Please indicate your agreement with the following statement: I am able to use my professional skills for the betterment of my community. *	○	○	○	○	○
I believe I have a civic responsibility to the greater public. *	○	○	○	○	○
I understand how statistics as a profession can promote societal well-being or societal justice. *	○	○	○	○	○

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
I understand how statistics as a profession can harm societal well-being or societal justice. *	○	○	○	○	○

Describe a way in which statisticians can promote well-being or social justice through their profession. *

Describe a time or historical period during which statistics were used to harm a cultural, religious, racial or ethnic group. *

<<   >>

Elementary Statistics*

Civic Learning Post-Assessment

Your Information

First Name *

Jana

Last Name *

Asher

Email Address *

jana.asher@sru.edu

Phone Number

724-738-2508

Spring 2021 STAT 153 Civic Learning Post-Assessment

First and Last Name: *

This is a post-assessment for the civic engagement outcomes for this course. My answers will only be shared with others in aggregate form so that my privacy will be preserved. I agree to answer these questions as honestly as possible. *

◯ Yes
◯ No

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Please indicate your agreement with the following statement: I am a valuable member of my community. *	○	○	○	○	○
Please indicate your agreement with the following statement: I can make a difference in my community. *	○	○	○	○	○
Please indicate your agreement with the following statement: I am able to use my professional skills for the betterment of my community. *	○	○	○	○	○
I believe I have a civic responsibility to the greater public. *	○	○	○	○	○
I understand how statistics as a profession can promote societal well-being or societal justice. *	○	○	○	○	○

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
I understand how statistics as a profession can harm societal well-being or societal justice. *	○	○	○	○	○

Describe a way in which statisticians can promote well-being or social justice through their profession. *

Describe a time or historical period during which statistics were used to harm a cultural, religious, racial or ethnic group. *

<<   >>

25. Example Template for Student Presentations

Your Name Here

Research Question and Survey Questions

- General research question here. I will provide a list of research questions to choose from.

  Example: Is household composition associated with which services of the SRCL were used during the last visit to the SRCL?

Q9 During your or your household member's last visit to the SRCL, which of the following services did you use? Please select all that apply.

  - Black and White Printing (1) / Color Printing (2) / Books to check out (3) / Books on CD to check out (4) / Music CDs to check out (5) / DVDs to check out (6) / Magazines to check out (7) / Computers for public use (8) / Other (9)

Q24 Please indicate the ages of any children under 18 that live in your household. Please select all age categories that apply.

  - 0-2 years old (1) / 3-5 years old (2) / 6-8 years old (3) / 9-11 years old (4) / 12-14 years old (5) / 15-17 years old (6) / There are no children under 18 in my household. (7)

Results

- Confidence interval or hypothesis test results here. Discuss best presentation strategy with professor.

Conclusions

- What are your conclusions?
- What recommendations do you have based on your analysis?

26. Example Directions for Student Final Papers

STAT 152-01 Spring 2021 Instructions for Individual Topic Presentations 1
Directions for Final Paper

Structure for Paper

1. Introduction

- Summary of the study and data, as well as any relevant substantive context, background, or framing issues.
- The research question answered by your data analysis, and summaries of your conclusions about these questions.
- Brief outline of remainder of paper.

2. Body

- Basic statistics regarding the questions you are analyzing – mean, standard deviation, anything else interesting for each of the questions that you use in your analysis.
- Results of your analysis – the material you put on slide 2 of your presentation. Yes, include your tables!!!!!!

3. Conclusion(s)/Discussion

- The conclusion should reprise the questions and conclusions of the introduction, and include a discussion of the results of your analysis – what do they mean? Do you have a suggestion as to how to address any issues brought up by your analysis?

4. Reflections

- This project was done to help the Slippery Rock Community Library understand their customers better and better provide for their needs. Think about your role in this process. What did you learn about the public purpose of the field of statistics?
- You will be asked to view your classmates' presentations over the final exam week. Do you understand what your classmates have presented? Does this surprise you?
- Is what you learned in this course of use to you in your career and your life? Did your opinion about statistics change because of this course? How?

Grading of Presentation and Paper

Your presentation will be graded on the following:

1. Whether it contains all of the elements required, as given in the PowerPoint template.
2. Accuracy of interpretation of results.
3. The clarity of your presentation.

Your paper will be graded on the following:

1. Appropriate structure. The paper should include all of the elements listed above.
2. Clarity of writing. The paper should be clear enough for another undergraduate student to be able to understand the technique.
3. Appropriate Spelling/Grammar/Sentence Structure. I think this one is self-explanatory.
4. Length. You need enough space to cover each of the topics, but please don't write abook. Somewhere between 3 and 5 pages should be sufficient.

Some Advice

- Don't try to dazzle us. The goal is for the library staff to understand what you are telling them–don't get too technical, but be accurate!

27. Post-Workshop Survey/Link

Thank you for your participation!

If you are willing to share your contact information (email address) for a contact list, please do so in the chat now.

Please complete our post-workshop survey by going here:
https://sru.co1.qualtrics.com/jfe/form/SV_eyRE1TyrF7yopP8