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Designing the First Class in Challenging Quantitative Courses: A Roadmap with a Mark-and-Recapture Activity

The first class of a challenging quantitative course is high-stakes: students and instructors may feel anxious about unfamiliar interactions, and these early experiences can shape perceptions of the course, peers, and instructor. We present a replicable roadmap for the first class in undergraduate statistics, econometrics, and related quantitative courses. As one implementation of this roadmap, we adapt the ecological mark-and-recapture method into a brief in-class simulation that lowers barriers to participation, fosters peer interaction, and introduces recurring ideas in statistics and econometrics. The paper includes a complete protocol, student handout, instructor guide, discussion prompts, and implementation notes.

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1. Introduction

The first class of the semester plays a pivotal role in shaping a course. Emotions run high for both instructors and students, and first impressions formed in this session can influence engagement, persistence, and perceptions of the course throughout the term. For this reason, intentional planning of the opening class is especially important.

Quantitative courses like statistics and econometrics pose additional challenges: students often perceive them as abstract or intimidating, and a conventional syllabus review can leave them disengaged from the outset. Research on teaching similar courses recommends beginning with thought-provoking examples—such as the "birthday paradox" or the "Monty Hall problem." These examples are useful, but they often foreground a single probabilistic insight and rely on individual reasoning rather than cooperative work. In this paper, we adapt the ecological mark-and-recapture technique into a first-day classroom activity that provides an accessible entry point to several recurring ideas in statistics and econometrics, including random sampling, sampling variability, estimation, and inference.

This paper integrates established insights about first impressions, active learning, and mark-and-recapture into a structured, replicable framework for the first class in challenging quantitative economics courses. The framework uses a low-stakes collaborative activity to build early participation and make the syllabus discussion more meaningful by linking expectations to an experience students have just completed. Mark-and-recapture is therefore presented as one implementation of this broader first-day framework rather than as the only effective opening activity.

The remainder of the paper is organized as follows: Section 2 reviews the relevant literature, Section 3 outlines a suggested structure for the first class of the semester, Section 4 presents the proposed activity in detail, and Section 5 offers concluding remarks.

2. The Importance of the First Class of the Semester

The first class can shape how students interpret the instructor, the subject, and their own place in the course. Students form early judgments from limited evidence (Cavanagh, 2016; Lang, 2019), consistent with research on "thin slicing" showing that first impressions can be durable and hard to revise (Ambady & Rosenthal, 1993; Buchert et al., 2008; Mann & Ferguson, 2015). The opening class is also emotionally distinctive—often mixing excitement, uncertainty, and anxiety (Jafar, 2021)—and because emotion and cognition are tightly linked, acknowledging students' emotional states can make later engagement more accessible and meaningful (Immordino-Yang, 2015).

Pandemic-era disruptions and post-pandemic engagement patterns add urgency to intentional first-day design. In economics education, Wooten, Geerling, and Thomas (2020) argue that remote and online instruction reduced students' opportunities for social connection and propose an early-semester activity to foster social and academic ties. Evidence from introductory economics likewise suggests that online instruction made it harder for students to stay engaged and to develop classroom connections (Kofoed et al., 2024). COVID-era instruction also elevated course-related anxiety while highlighting the value of structure, communication, and support (Brown et al., 2021). Beyond the emergency period, national evidence suggests that collaborative learning, interactions with diverse peers, and perceptions of a supportive campus environment remained below pre-pandemic levels even after campuses returned to in-person learning (National Survey of Student Engagement, 2023). These concerns are especially relevant in quantitative courses, where students often enter with apprehension about mathematical content.

Active learning offers a practical way to respond to these first-day conditions. Rather than using the opening session only for logistics, instructors can use it to spark curiosity, build community, communicate expectations, and give students an immediate experience of how learning will work in the course (Lang, 2019)[1]. Evidence also suggests that dynamic first-day activities can increase satisfaction and foster a supportive classroom climate (Hermann, Foster, & Hardin, 2010; Meaders et al., 2021), aligning with economics pedagogy that emphasizes cooperative learning and interactive demonstrations (McGoldrick, 2012; Maier, 2012). While engaging first-day examples exist in statistics and the broader teaching-and-learning literature (Bennett, 2004; deLuse, 2018), economics-specific research on first-day strategies remains scarce. A notable exception is Dilden and Hobbs (2026), who offer a first-day lesson plan for introductory economics designed to help students see themselves as potential economists and to foster diversity in the major. This paper addresses that gap by translating these first-day teaching principles into a practical framework for statistics and econometrics courses.

Mark-and-recapture offers a concrete implementation of this framework. Developed in ecology to estimate population size when a full census is impractical, the method uses the share of marked individuals in a follow-up sample to infer the size of the full population (Krebs, 1989). In the classroom, the logic is immediately accessible: students can physically observe sampling, variability, and estimation before encountering formal statistical terminology. The activity therefore provides a clear bridge from a proportionality argument to later course topics.

3. A Roadmap for the First Class

Building on the literature reviewed above, we translate general first-day teaching principles into a practical structure for the opening class in a statistics or econometrics course. Our aim is not to prescribe a single approach or to articulate a full conceptual framework for the semester, but to ensure that the first interaction with students is purposeful. A well-designed first class can establish participation norms, foster peer connections, reduce the perceived distance between students and quantitative material, and present the syllabus as a map for the course.

We propose structuring the first class in three stages. The session begins by creating a welcoming atmosphere and encouraging peer connections. In practice, this may include arriving a few minutes early, greeting students with a brief welcome message on a slide or blackboard, and using that time for informal conversation. At the start of class, we introduce ourselves and share why the subject excites us and how it has shaped our careers, signaling enthusiasm and relevance. Depending on class size, students can introduce themselves to the whole group or to nearby peers, and we encourage them to exchange contact information to start building support networks.

The second stage introduces course content through an active learning activity that engages students with core ideas from the discipline. The third stage concludes with a discussion of the syllabus that links the activity to course structure and expectations, followed by an invitation for students to provide brief, anonymous feedback on their first impressions. Figure 1 summarizes the three stages of the first class. The dashed callout identifies later course topics that instructors may refer to, but these are intended as touchpoints rather than a complete description of the course.

[1] For broader first-day teaching guidance, see Emerson et al. (1997), Lang (2008), Nilson (2016), Svinicki (2014), and Weimer (2015).

Figure 1: A three-stage roadmap for the first class in a challenging quantitative course.

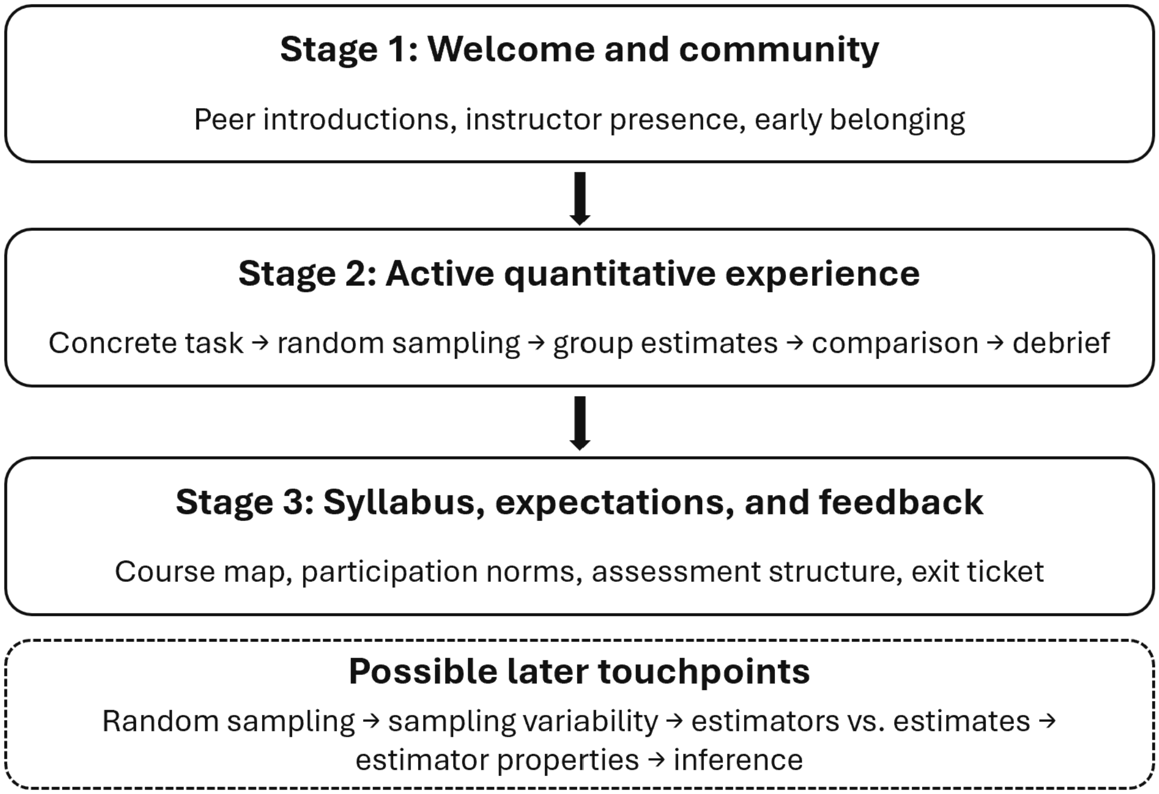

Table 1: Examples of first-day activities that can implement the three-stage roadmap.

Activity / representative source	**First-day purpose**	**Course connection**
Random Rectangles (Scheaffer et al., 1996)	Students estimate an unknown population feature from samples and compare judgment-based and random-sampling approaches	Sampling, bias, sampling variability, estimation
Birthday paradox (Bennett, 2004)	Students encounter a surprising probability result that challenges intuition	Probability, independence, combinatorics
Monty Hall problem (Feliciano-Semidei, Wu, & Chaphalkar, 2022)	Students debate a counterintuitive choice problem	Conditional probability, information, updating
Mark-and-recapture (Krebs, 1989)	Students work collaboratively to estimate an unknown population size	Random sampling, estimators, estimates, inference, syllabus transition

The next section presents mark-and-recapture as the worked example.

4. A proposed activity: mark-and-recapture

A. Goals and rationale

The activity uses a simplified mark-and-recapture simulation to create a low-stakes first interaction among students and to generate concrete touchpoints that instructors can draw on during the syllabus discussion and return to throughout the course. Its purpose is not to teach sampling, estimation, or inference formally on day one, but to give students an early encounter with the logic that underpins those topics.

B. Protocol

The activity works best in groups of three to six students. Each group receives an opaque bag containing, for example, 100 blue marbles (representing the population; the exact number should not be disclosed to students), a transparent bag with 20 red marbles (used for marking), and a handout with instructions and recording tables. The exercise unfolds in two parts, each with two rounds:

- Setup: Students introduce themselves within groups. The instructor motivates the exercise with a real-world example of mark-and-recapture, such as estimating fish in a pond, and explains the goal: to estimate the unknown size of the "population" represented by the marbles. We have previously drawn on locally familiar cases, such as media reports on koi populations in Roth Pond (Stony Brook University) or turtle populations in Morningside Park (New York City). Using local examples serves as an "emotional hook" that gets students wondering about the topic (Smith, 2017).

- Part 1: Students replace 10 blue marbles from the opaque bag with 10 red marbles (marking). Taking turns, each student draws a sample of 10 marbles, records the number of red marbles recaptured, returns the sample to the bag, and applies the Lincoln–Petersen estimator $\widehat{\mathrm{N}}$ to estimate the population size:

(1) $$\widehat{\mathrm{N}} = \frac{\mathrm{m} \times \mathrm{c}}{\mathrm{r}},$$

- where m is the number of individuals marked, c the number captured in a sample, and r the number of marked individuals recaptured. If $\mathrm{r} = 0$, students record the estimate as "undefined" rather than dividing by zero and note the case for the debrief. Each student records their estimate before passing the bag to the next person. Once all group members have completed the process, Round 1 ends. In Round 2, the procedure is repeated with samples of 20 marbles. Students save their results for the class debrief.

- Part 2: An additional 10 blue marbles are replaced with red marbles, so that 20 individuals are now marked while the total population size remains unchanged. The two rounds are then repeated: first with samples of 10 marbles, and then with samples of 20. Students again compute estimates using the Lincoln–Petersen formula, applying the same $\mathrm{r} = 0$ convention, and save the results for comparison with Part 1.

Step-by-step instructions appear in the student handout (Appendix B).

C. Instructor note: statistical properties and first-day framing

We use the Lincoln–Petersen estimator because its underlying proportionality logic (i.e., $\mathrm{m}/\mathrm{N} \approx \mathrm{r}/\mathrm{c}$) is transparent for students on the first day of class. Two statistical caveats are worth noting for instructors. First, the simple Lincoln–Petersen estimator is biased in the standard two-sample mark-and-recapture setting; the bias can be substantial when the number of recaptured marked individuals is small. Second, because r appears in the denominator, estimates can change sharply when r is small, and the estimator is undefined when $\mathrm{r} = 0$. In the baseline classroom setup for Part 1, Round 1 ($\mathrm{N} = 100, \quad \mathrm{m} = 10, \quad \mathrm{c} = 10, \quad \mathrm{r} = 0$) occurs with probability about 0.33; increasing m, c, or both reduces this probability. Instructors can treat zero-recapture draws as a teaching opportunity rather than errors; they illustrate that some samples contain too little information to support a meaningful estimate. Instructors who wish to extend the discussion can introduce the Chapman adjustment (Chapman, 1951),

(2) $$\widehat{\mathrm{N}}_{\mathrm{C}} = \frac{(\mathrm{m}+1)(\mathrm{c}+1)}{(\mathrm{r}+1)} - 1,$$

as a bias-reducing modification of the simple Lincoln–Petersen estimator that is often used in small-sample settings. Unlike the simple estimator, the Chapman adjustment remains defined when $\mathrm{r} = 0$. This extension also helps illustrate how statisticians modify intuitive estimators to improve their statistical properties.

The activity also relies on standard mark-and-recapture assumptions: a closed population, thorough mixing, equal capture probabilities, and no effect of marking on recapture. These assumptions mirror field applications, but the classroom simulation makes them easier to see because the population is fixed, can be mixed deliberately, and does not respond to marking. In ecological settings, by contrast, the assumptions are substantive and may be violated by migration, births and deaths, heterogeneous capture probabilities, tag loss, or behavioral responses to marking. This contrast provides a useful bridge to later discussions of sampling, bias, estimator properties, and identification.

We recommend treating these points as instructor-facing guidance rather than material to develop fully on day one. If instructors want to gauge prior knowledge, they can start with a brief private prompt (e.g., "What information would you need to estimate the number of objects in an opaque bag?") and then invite small-group discussion. To keep the activity low-stakes, groups can report patterns they noticed rather than provide technical explanations; formal properties can be deferred to later modules.

D. Discussion and debriefing

After completing the sampling, students compare results within groups and across rounds. This discussion naturally raises ideas such as probability distributions, variability in estimates, and properties of estimators. The instructor's role is to circulate, answer questions, and encourage participation, while allowing students to notice key patterns themselves. The debrief also links directly to the syllabus, positioning probability theory, estimation, and inference as modules that build on the activity. Instructors may further use the debrief to point toward broader goals of econometrics and statistics, such as causal inference or forecasting.

E. Adaptation and extensions

The activity is flexible and can be adapted to different classroom contexts. Group sizes, number of rounds, population sizes, sample sizes, and the number of marked individuals can all be modified. Parameters can even differ across groups to illustrate how variation affects precision. In large or online courses, instructors may use virtual simulations that replicate the mark-and-recapture process[2]. Alternative materials such as beans or seeds can replace marbles[3], and small prizes can be offered for particularly accurate predictions. Appendices A–D provide the full protocol, student handout, instructor guide, and discussion prompts for implementation[4].

5. Reflections and Implications

The roadmap proposed here illustrates how the first meeting can begin the semester's intellectual work rather than focus solely on procedural matters. The mark-and-recapture activity demonstrates this by engaging students in a collaborative simulation that previews recurring ideas in statistics and econometrics and helps establish a participatory classroom climate.

Ready-to-use first-day protocols may be particularly valuable for graduate students and novice instructors, many of whom teach undergraduate economics courses with limited formal pedagogical training (Walstad & Becker, 2003; Allgood, Walstad, & Siegfried, 2015; McGoldrick, Hoyt, & Colander, 2010). Research-informed approaches to the opening class, such as the protocol developed here, offer a structured way to support both student learning and instructor development.

The present paper is best understood as a theoretically grounded teaching protocol rather than a causal evaluation of effectiveness. Systematic evidence would be needed to assess its effects on anxiety, belonging, participation, or learning. Still, informal feedback from course evaluations and student conversations suggests that students often find the activity memorable and useful—frequently describing it as providing a "big picture" view of the course. One practical approach to building evidence could proceed in three stages: a brief exit ticket at

[2] For example, our web app https://yinghsuanchaotw-sudo.github.io/Mark-and-Recapture/ automates the procedure using the related Schnabel method (Schnabel, 1938).

[3] The idea of illustrating the activity with beans was inspired by Professor Walter Sosa Escudero, who, in his book *¿Qué es (y qué no es) la estadística?* (Sosa Escudero, 2019), offers an engaging, nontechnical introduction to statistics and, with characteristic humor, recommends using beans.

[4] Additional supporting materials are available from the authors upon request.

the end of the opening session (see Appendix D for sample items); a midterm or end-of-course follow-up assessing recall, perceived usefulness for later topics such as sampling variability, estimation, or inference, and comfort participating in class; and, when multiple sections or repeated offerings are available, comparisons with syllabus-focused opening sessions or alternative first-day activities using pre/post measures of belonging, anxiety, and attitudes toward statistics or econometrics. Outcomes could include participation, attendance, persistence, and performance on later assessments tied to the activity's core concepts.

Finally, the activity presented here is intended as an example rather than a prescription. More generally, we argue that the first class should be designed deliberately as both an intellectual and social entry point into the course.

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Appendix A: Detailed activity protocol

This appendix provides a step-by-step protocol with setup, materials, timing, and discussion points for direct classroom use.

Materials

- One opaque bag per group containing a hidden population (e.g., 100 blue marbles)[5].
- One transparent bag containing 20 red marbles (for marking).
- Student handouts (Appendix B) for recording and reflection.

Setup (5 minutes)

1. Divide students into groups of 3–6.
2. Provide each group with an opaque bag, a transparent bag, and handouts.
3. Ask students to introduce themselves to group members.
4. Motivate the activity by briefly describing how ecologists estimate wildlife populations (e.g., fish in a pond). Instructors may also draw on locally familiar examples to stimulate their interest.

Part 1: 10 Marked Individuals (10–12 minutes)

Round 1

Each group replaces 10 blue marbles with 10 red marbles, mixes thoroughly, and students take turns drawing 10 marbles without looking. They record the number of red marbles recaptured (r), return the sample, and apply the Lincoln–Petersen estimator

$$\text{(A1)} \left(\widehat{\mathrm{N}} = \frac{\mathrm{m} \times \mathrm{c}}{\mathrm{r}}\right),$$

to compute an estimate of the population size ($\widehat{\mathrm{N}}_{\mathrm{e}}$). If $\mathrm{r} = 0$, students record the estimate as "undefined" rather than dividing by zero and note the case for the debrief. Each student records their estimate before passing the bag to the next person.

Round 2

Repeat the procedure with samples of 20 marbles. Students again calculate $\widehat{\mathrm{N}}_{\mathrm{e}}$ using the same $\mathrm{r} = 0$ convention and compare their results.

Discussion

Groups compare estimates within and across rounds, focusing on sampling variability and the effect of sample size.

[5] The exact number should not be disclosed to students.

Part 2: 20 Marked Individuals (10–12 minutes)

Round 1

Replace an additional 10 blue marbles with red marbles in the opaque bag, so that 20 marbles are now marked while the total population size remains unchanged. Each student draws 10 marbles, records (r), and applies the Lincoln–Petersen estimator as before, using the same $\mathrm{r}=0$ convention.

Round 2

Repeat with samples of 20 marbles.

Discussion

Compare estimates across students and rounds, focusing on how increasing the number of marked individuals affects accuracy and variability.

Discussion and Debrief (10 minutes)

- Compare results across parts and groups.
- Highlight effects of larger samples (c) and more marked individuals (m).
- Connect to course modules on probability, estimation, and inference.
- Invite a brief written reflection on learning and relevance.

Adaptations

- Scale: For large or online courses, use a simulation tool.
- Materials: Beans, seeds, or coins can substitute for marbles.
- Parameters: Adjust group size, population size, m, or c; vary across groups to show effects on precision.
- Parts/rounds: The number of parts or rounds can be modified to accommodate time constraints.
- Engagement: Consider small prizes to reward accuracy.

Appendix B: Sample student handout for the mark-and-recapture activity

Students' Names ______________________________

Purpose

Estimate the size of an unknown population using mark-and-recapture. Work with your group, follow instructions, record data, and reflect on results. The true population size (N) will not be disclosed during the activity.

Key terms

- Population parameter (N): True population size (unknown).
- Marked individuals (m): Number tagged before sampling.
- Sample size (c): Number drawn per sample.
- Recaptured marked (r): Tagged individuals observed in a sample.
- Estimator ($\widehat{\mathrm{N}}$): Rule or function used to estimate N (here, Lincoln-Petersen).
- Estimate ($\widehat{\mathrm{N}}_{\mathrm{e}}$): Numerical value computed from data.

Estimator

$$\widehat{\mathrm{N}} = \frac{\mathrm{m} \times \mathrm{c}}{\mathrm{r}}.$$

Instructions

- When it is your turn, draw the required number of marbles (c) without looking.
- Record the number of red marbles (r) in the table.
- Use the estimator above to calculate ($\widehat{\mathrm{N}}_{\mathrm{e}}$). If $\mathrm{r} = 0$ write "undefined" and note this case for the debrief.
- Return all marbles to the bag before passing it on.
- Complete both rounds for each part.

  Part 1: m = 10 marked marbles. Round 1 uses c = 10; Round 2 uses c = 20.

  Part 2: m = 20 marked marbles. Round 1 uses c = 10; Round 2 uses c = 20.

Recording tables[6]

For each sample (row), record the number of recaptured marked (red) marbles (r) and compute your estimate ($\widehat{\mathrm{N}}_{\mathrm{e}}$) using the estimator ($\widehat{\mathrm{N}}$) above.

[6] Sample recording tables for groups with four students.

Table B1. Recording Table for Part 1: $\mathrm{m} = 10$ (10 marked individuals)

Sample/Student	**Round**	c	r	$\hat{N}_e$
1	1	10	_______	_______
2	1	10	_______	_______
3	1	10	_______	_______
4	1	10	_______	_______
1	2	20	_______	_______
2	2	20	_______	_______
3	2	20	_______	_______
4	2	20	_______	_______

Table B2. Recording Table for Part 2: $\mathrm{m} = 20$ (20 marked individuals)

Sample/Student	**Round**	c	r	$\hat{N}_e$
1	1	10	______	______
2	1	10	______	______
3	1	10	______	______
4	1	10	______	______
1	2	20	______	______
2	2	20	______	______
3	2	20	______	______
4	2	20	______	______

Please return this handout at the end of class.

Appendix C: Instructor's quick guide for the mark-and-recapture activity

This quick guide summarizes steps and timing. For rationale, see Section 4; for student materials, see Appendix B.

Preparation (before class)

For each group (3-6 students), prepare:

- One opaque bag containing 100 blue marbles (the population to be estimated; the number can be varied across groups).
- One transparent bag containing 20 red marbles (to serve as marked individuals; additional marbles may be included, but only 20 will be used).
- Student handouts (Appendix B).

Arrange the room for small-group interaction (rearrangeable seats are ideal; otherwise, some students may need to stand).

Class timeline (approx. 30-35 minutes)

- Setup (5 minutes): Form groups, distribute materials, and briefly introduce the real-world application (e.g., estimating fish populations).
- Part 1: 10 marked (10 minutes)
  - Round 1: each student samples 10 marbles.
  - Round 2: each student samples 20 marbles.
- Part 2: 20 marked (10 minutes)
  - Round 1: sample 10 per student.
  - Round 2: sample 20 per student.

Estimation & Debrief (5–10 minutes): Apply $\widehat{\mathrm{N}} = \frac{\mathrm{m} \times \mathrm{c}}{\mathrm{r}}$; discuss how c and m affect accuracy; connect to course modules (probability, estimation, inference). If any group obtains $\mathrm{r} = 0$, emphasize that this is not a mistake: the sample contains no recaptured marked individuals, so the estimator is undefined. This provides a simple example of how limited sample information can prevent reliable inference. Later in the semester, instructors can return to this example when discussing properties of estimators and inference.

Appendix D: Sample prompts and reflection questions

This appendix provides flexible prompts that instructors can use to facilitate discussion during or after the mark-and-recapture activity. Prompts may be included directly in the student handout to guide *within-group* discussion, or they can be presented on slides or verbally to encourage *whole-class* or *cross-group* reflection. The goal is to help students connect their hands-on work with key statistical concepts and consider broader applications. *These prompts are intended as flexible options: instructors may select, adapt, or expand them depending on course goals, class size, and available time.*

Quick checks

These questions can be posed during or immediately after each round:

1. In each round, what is the population parameter? What is the random variable?
2. If $\mathrm{r} = 0$ in a draw, what does that imply? Why does the formula break down, and how might your group address it?
3. How did increasing the sample size (c: 10 to 20) affect your estimates?
4. How did increasing the number marked (m: 10 to 20) affect your estimates?
5. What kind of inference about the population size can you make from your sample? How confident are you in that inference?

Reflection (2-3 sentences each)

These prompts can be assigned as short written reflections or used to launch discussion:

1. Compare your estimates across rounds. What patterns do you observe? What explains those patterns?
2. How does this activity help you distinguish between parameters, estimators, and estimates?
3. Where might this method be useful in real research? List one strength and one limitation.
4. How does today's activity illustrate statistical inference when using sample data to draw conclusions about an unknown population?
5. Which course topics did you encounter today (e.g., probability, distributions, estimation, inference)?

Optional cross-group comparison

If time allows, invite groups to compare their estimates with one another. Were your group's estimates similar to or different from another group's? What does this suggest about sampling variability?

Practical limitations

Prompts can also highlight the real-world limitations of mark-and-recapture methods. For example, populations are rarely constant over time, not all individuals may have the same probability of being captured, and marking may affect the likelihood of recapture. In addition, repeated sampling can be costly in terms of researcher resources and may impose stress on animals. Reflecting on these issues encourages students to think critically about the underlying assumptions of the estimator and the challenges of applying statistical methods in practice.

Optional extension: the Schnabel estimator

With additional time, instructors might ask students how to combine the multiple estimates produced in each round. This provides a natural opening to introduce the Schnabel estimator, which treats the samples as a series of Lincoln–Petersen experiments (Schnabel, 1938):

(D1)
$$\widetilde{\mathrm{N}} = \frac{\sum_{\mathrm{i}=1}^{\mathrm{K}} \mathrm{m_i} \times \mathrm{c_i}}{\sum_{\mathrm{i}=1}^{\mathrm{K}} \mathrm{r_i}},$$

where $\widetilde{\mathrm{N}}$ is the Schnabel estimator for K samples and m, c, and r denote marked, captured, and recaptured respectively. By pooling information across sessions, the Schnabel method reduces the variability of any single estimate and offers a more robust approach when repeated samples are available. It can also serve as a bridge to discussing properties of estimators.

Optional exit ticket (Reflection and Activity Pulse Check)

A one-minute exit ticket (e.g., "One concept I learned today; one question I still have") can provide the instructor with a quick snapshot of student understanding while also encouraging metacognitive reflection. Responses can be used to clarify misconceptions and guide the focus of the next class.

Instructors can also use the exit ticket as a brief, instructor-facing pulse check on the activity (i.e., informal evidence rather than a causal evaluation). For example, students might be asked to respond to one or two of the following items:

"I can name at least one classmate I could contact about the course." (Yes/No)

"Right now, this course feels: less intimidating / about the same / more intimidating."

"Today's activity gave me a clearer sense of what this course will involve."

"I feel comfortable participating in class discussion."

"I feel confident distinguishing a parameter from an estimate."

For the final three statements, instructors may use a five-point agreement scale: 1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, and 5= strongly agree.