

i>clicker

Demonstration



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7 Apr 2017

Q: Your Experience with i>clickers

123

For how many courses have you used i>clicker remotes?
(Zero and non-integer answers are acceptable.)

To change the frequency to BB:

1. Press the orange button for 2-3 seconds until the letters blink.
2. Press the B button twice and wait. A checkmark should appear.

To answer a numeric question:

1. Press the blue button.
2. Scroll through 0-9 with the up & down arrows.
3. Switch between digits with the right & left arrows.
4. Once finished building your number, press the SEND button.



Uses of i>clicker Generally

- Initial question at beginning of lecture to focus students
- Preview question for transitions between topics
- Recap questions to see if they understood what was just presented
- Nudging students toward attending class through participation credit or extra credit
- Review sessions
- Can be used to do automatically scored in-class quizzes
- Surveys at the beginning of the term

Student's Perspective on i>clicker2

- Simple and intuitive to use
- Can be used seamlessly with original i>clicker systems
- Better feedback
 - Displays answer and checkmark when answer has been accepted
 - Displays error type and symbol when answer has not been accepted
- Much easier to change the remote frequency
- Impossible to lose remote code (displayed when powering on)
- Better battery indicator

Instructor's Perspective on i>clicker 2

- Infinitely larger space of possible questions and answers
- Quick **aggregation** of many student responses
- Allows students who are more reticent to speak in a large lecture setting to contribute
- Allows for questions that induce less priming of specific student responses (especially numeric questions)
- Can more easily poll students to schedule due dates, extra office hours, or other aspects of the course
- Just as easy to use as the original i>clicker system



Survey Questions at the Start of a Course

Q: (Survey Question Example #1)

abc
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Why are you taking this course?

- A. (Prospective) econ major/minor
- B. General Social Sciences major/minor
- C. Business school prerequisite
- D. Journalism prerequisite
- E. General education credit
- F. Recommendation of an advisor or friend
- G. Sounded like a good idea at the time
- H. Some other (mysterious) motive

Q: (Survey Question Example #2)

A-E

How comfortable are you with math?

- A. Truth be told, I'm functionally innumerate.
- B. I can do arithmetic well, but variables make me nervous.
- C. My algebra is solid, and I graph functions with confidence.
- D. I'm proficient with basic calculus.
- E. I solve partial differential equations for fun.

Q: Collegiate Angst

abc
123

Why are you here (in college, that is)?

- A. To signal to a future employer that I'm clever and hard-working so they will hire me
- B. To acquire skills that will help me be a more productive and valuable worker in the future
- C. Because everybody else was doing it (peer pressure)
- D. Because family expects me to do it (parental pressure)
- E. To have fun
- F. The joy of learning
- G. Had nothing better to do
- H. [Something else]

Q: Optimal Class Size

123

What do you think is the optimal class size for a college course?



Survey Questions on Course Logistics

Q: Preferred Homework Due Days

abc
123

In general, on what day of the week would you most prefer the online homework for this class to be due?

- A. Sunday
- B. Monday
- C. Tuesday
- D. Wednesday
- E. Thursday
- F. Friday
- G. Saturday

Q: Extra Office Hours Ahead of Final Exam

A-E

When would you like me to hold extra office hours in advance of the Final Exam (which is on Wednesday, June 8)?

- A. Monday, June 6, 5:00-7:00pm
- B. Monday, June 6, 6:00-8:00pm
- C. Tuesday, June 7, 5:00-7:00pm
- D. Tuesday, June 7, 6:00-8:00pm
- E. I am indifferent (either because I wouldn't attend or because any of those times would work for me).



Questions for Illustration or Transition

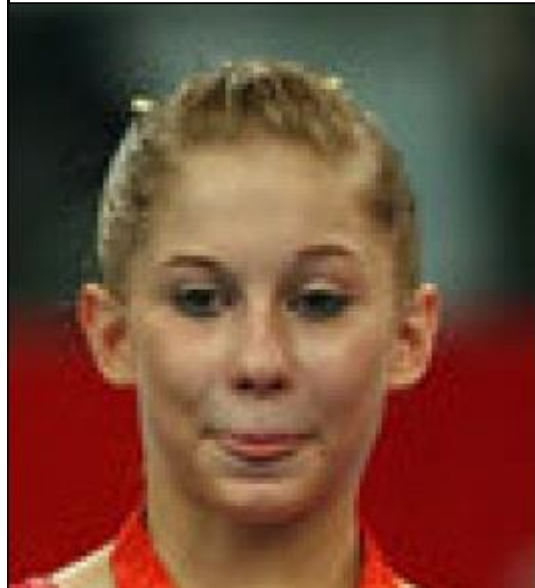
Q: Olympic Medals

A-E

Which of the two would make you happier?

- A. Winning a silver medal in the Olympics
- B. Winning a bronze medal in the Olympics

Silver Medalist



Bronze Medalist



Q: Quidditch, Anyone?

123

How many photos do you think these soldiers had to take to get this perfect shot of them playing quidditch?



Q: North Korea

A-E

What the hell is wrong with North Korea?!

- A. Less physical capital
- B. Less human capital
- C. Fewer resources
- D. Less favorable climate
- E. Nothing—they just really hate light pollution.



Q: \$2000 Now or \$100 Per Year Forever

A-E

Imagine I gave you the following two options:

- \$2000 now
- \$100 per year—every year—forever

Which would you decide to take?

- A. \$2000 now
- B. \$100 per year—every year—forever
- C. I would be exactly indifferent between the two
- D. It depends...
- E. I realize this isn't completely relevant to this question, but wouldn't it be **awesome** if i>clicker2 remotes let you enter Greek letters?!



Questions For Formative Assessment

Activity #4: Great Scott!

- When the DeLorean DMC-12 (made famous in the *Back to the Future* trilogy) was first produced in 1981 it had an intended price of \$12,000 (hence “-12” in the model name). Based on the data in the CPI table on the activity sheet, how much is this in 2016 dollars?

$$\text{price in year } B = \text{price in year } A \cdot \frac{\text{CPI in year } B}{\text{CPI in year } A}$$



Q: Great Scott!

123

When the DeLorean DMC-12 (made famous in the *Back to the Future* trilogy) was first produced in 1981 it had an intended price of \$12,000 (hence “-12” in the model name). Based on the data in the CPI table on the exercise, how much is this in 2016 dollars?

$$\text{price in year } B = \text{price in year } A \cdot \frac{\text{CPI in year } B}{\text{CPI in year } A}$$



Activity #2: Rule of 70

- Using the “Rule of 70”, how many years would it take for an economy’s real GDP to **double** if the average annual growth rate were **7%**?
- How long would it take for the same economy’s real GDP to **quadruple** given the same average annual growth rate?
- How long would it take for the same economy’s real GDP to **octuple** given the same average annual growth rate?

Q: Quadrupling

A-E

Using the Rule of 70, how long would it take for the real GDP of a country to **quadruple** if its average annual growth rate were 7%?

- A. $(70/7) = 10$ years
- B. $(70/7) + (70/7) = 20$ years
- C. $(70/7) + (70/7) + (70/7) = 30$ years
- D. $(70/7) + (70/7) + (70/7) + (70/7) = 40$ years
- E. $(70/0.07)^*4 = 4,000$ years



Think-Pair-Share Questions

Q: Calculation of Present Value

A-E

Which of the following has a **higher** present value (PV)?

- getting a future payment (F) of \$100 one year from now when the prevailing interest rate is 20%
- getting a future payment (F) of \$100 two years from now when the prevailing interest rate is 10%

- A. \$100 in one year at an interest rate of 20%
- B. \$100 in two years at an interest rate of 10%
- C. They have the same present value.
- D. It depends...
- E. I'm not sure how to answer this.

$$PV = \frac{F}{(1+r)^t}$$

Q: Selling Bonds and the Money Supply

A-E

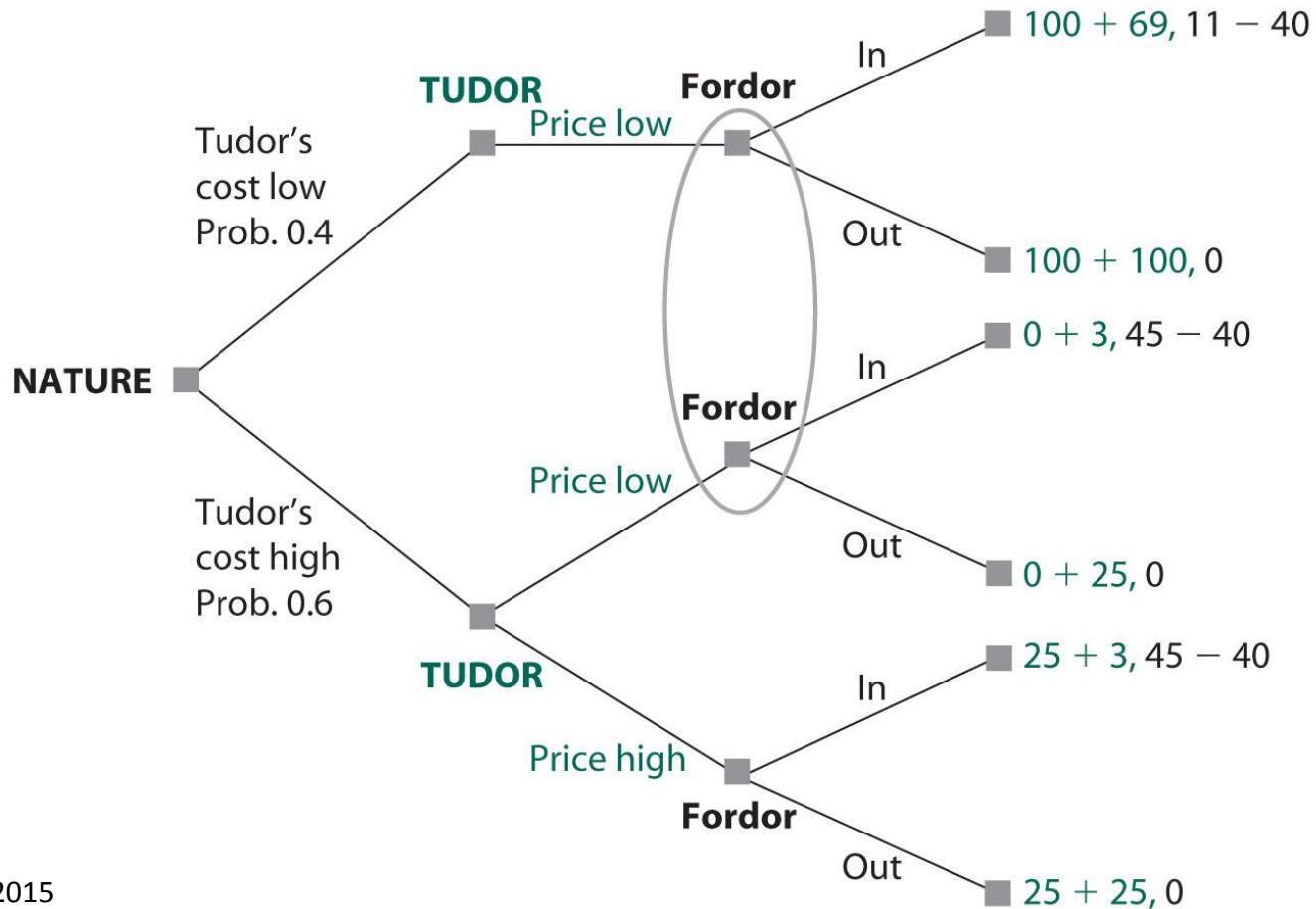
When the Federal Reserve **sells** bonds to banks what happens to the money supply?

- A. The money supply increases.
- B. The money supply decreases.
- C. The money supply stays the same.
- D. It depends on whether the bonds are from the U.S. Treasury or some other institution.
- E. It depends on the yield of the bonds.

Q: Number of Complete Strategies

123

How many complete strategies does Fordor have?





Questions to Promote Discussion

Q: (Un)Fairness

abc
123

Which of these examples of price discrimination strikes you as the **least** fair?

- A. Charging young males more for car insurance than young females
- B. Charging married young males less for car insurance than unmarried young males
- C. Need-based financial aid for college expenses
- D. Merit-based financial aid for college expenses
- E. Discounts on health insurance for non-smokers
- F. Discounts on health insurance for those who are genetically less likely to contract a particular chronic disease

Q: Selling One's Kidney

A-E

Do you think it should be legal to sell one's kidney?

- A. Yes
- B. No
- C. Not sure
- D. It depends...
- E. [Something else]



Students Playing Games With Each Other

Q: Auction for a \$20 Bill [for real \$!]

123

Respond with the maximum number of dollars (and cents) that you would be willing to pay to obtain a \$20 bill.

The respondent who submits the highest response will receive the **difference** between \$20 and the value of their bid. **Really.**

[For a decimal point, press down immediately after pressing right to get to a new digit. You can also scroll through the numbers to get to a decimal point.]

Q: Guessing Game [for real \$!]

123

Right now you and everyone else are going to submit a number from the interval $[0, 100]$. (Any submissions below 0 or above 100 will be ignored.)

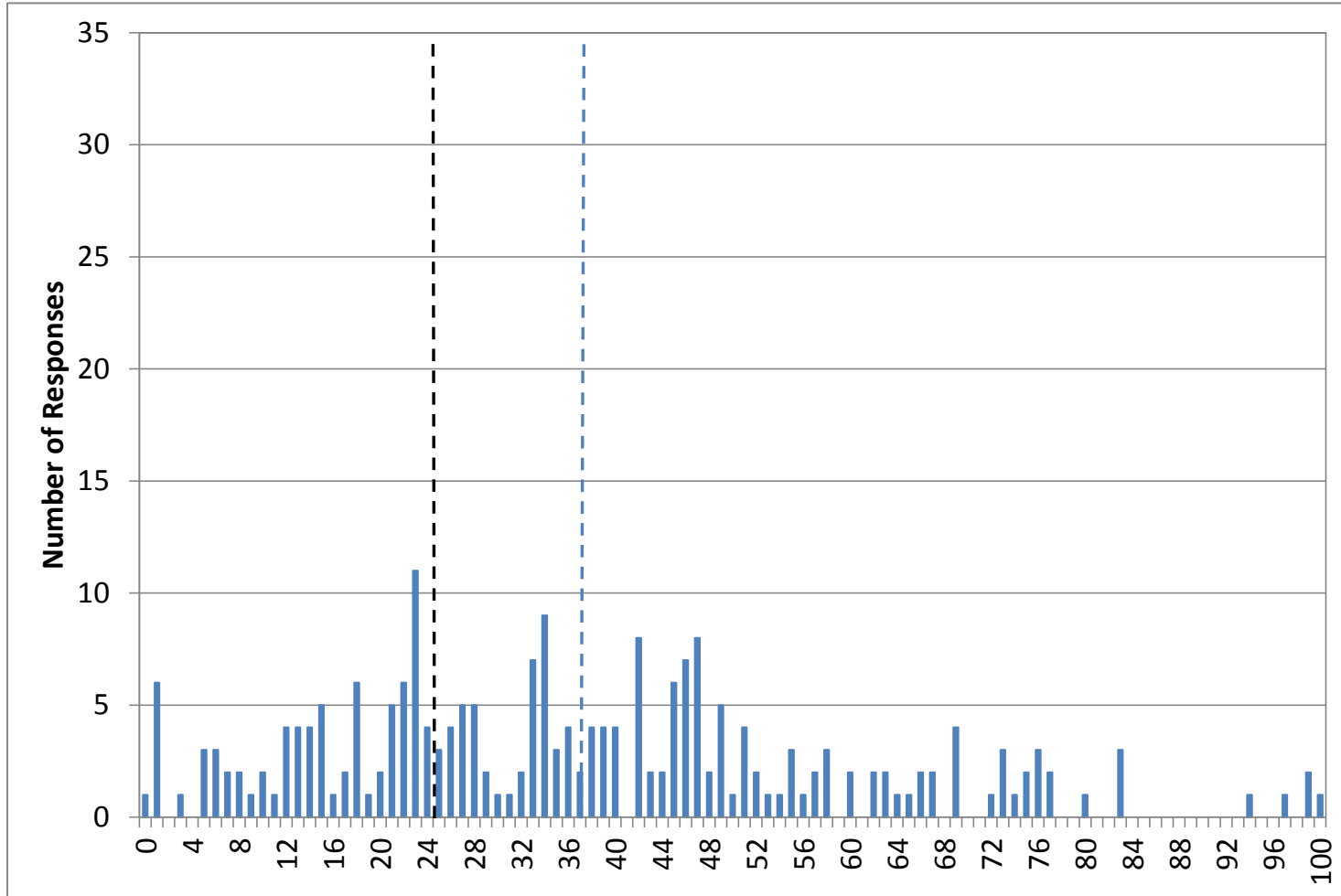
I will calculate the average (i.e., the mean) of all of the submissions within the interval $[0, 100]$.

Whoever submits the number closest to two-thirds of this average wins \$20.

[**Really.** In the case of a tie the \$20 will be split proportionally among the winners.]

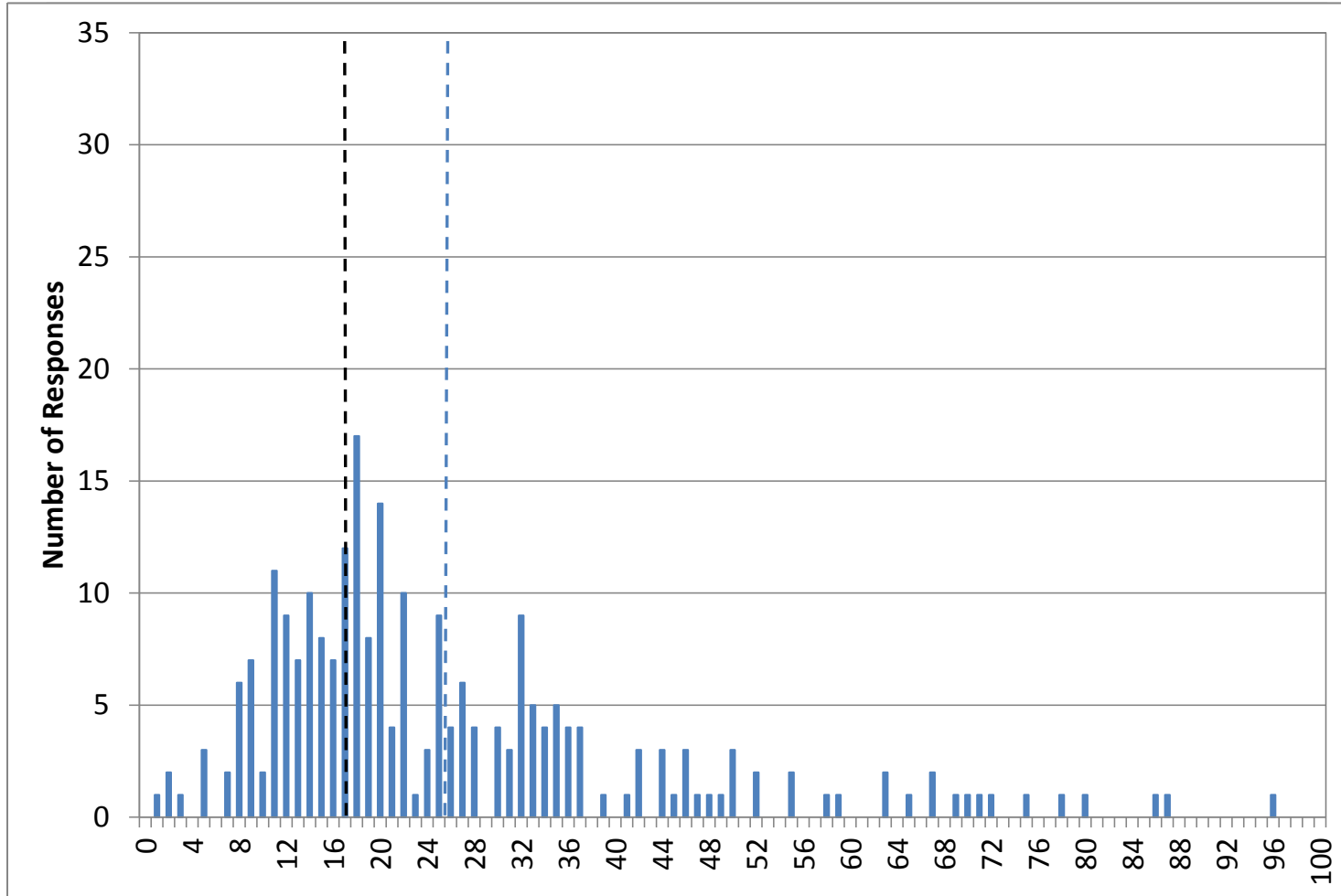
Guessing Game Results: 27 Jan 2016

mean of valid responses ≈ 37.074 two-thirds of mean ≈ 24.716



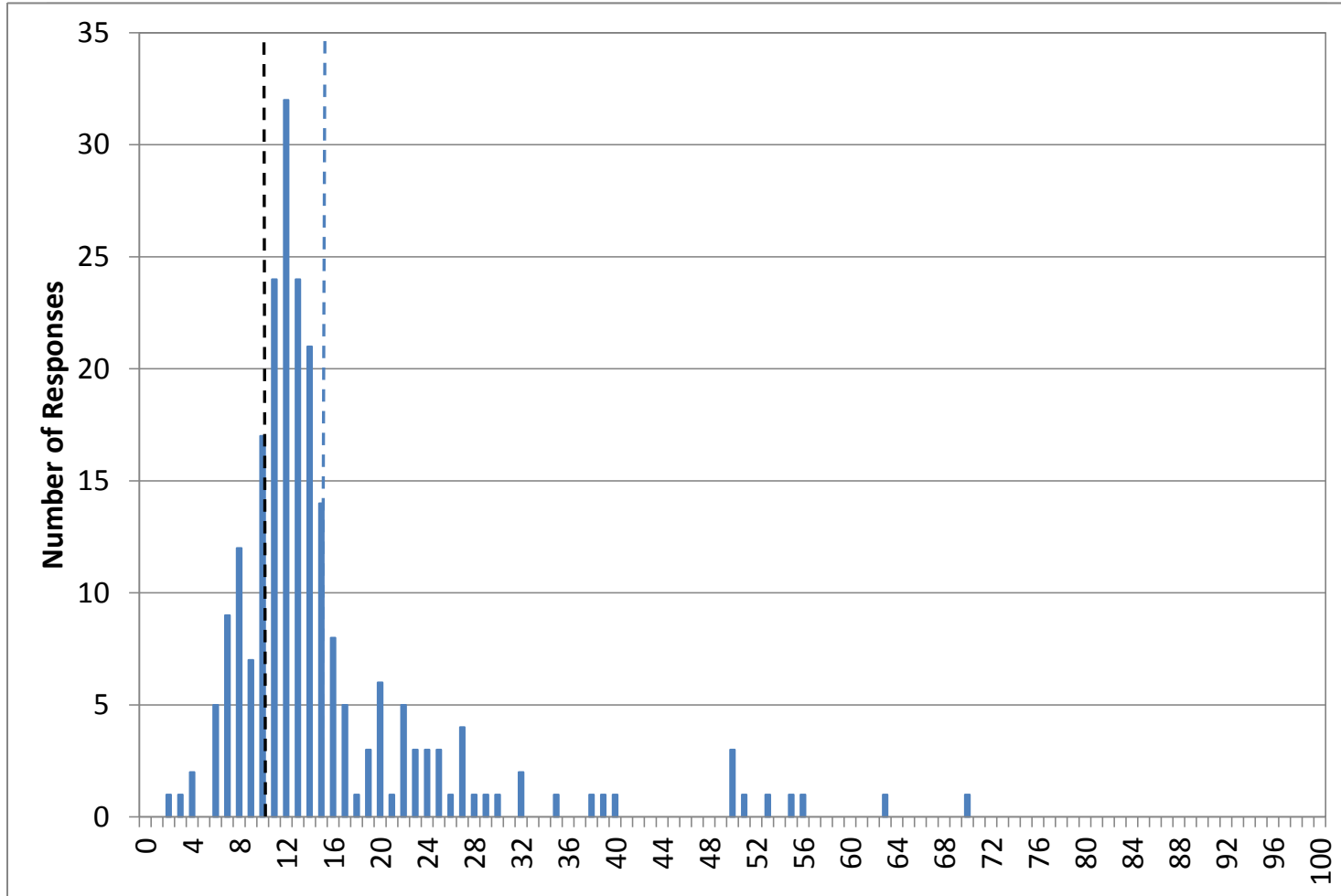
Guessing Game Results: 1 Feb 2016

mean of valid responses ≈ 25.578 two-thirds of mean ≈ 17.052



Guessing Game Results: 8 Feb 2016

mean of valid responses ≈ 15.252 two-thirds of mean ≈ 10.168



Q: Stake a Claim [for real \$!]

123

You are going to be matched randomly with one other player. Each of you will submit a value between 0 and 5 (fractions are acceptable).

For each randomized pair of players, if the sum of the two responses is less than or equal to 5 each of the players will receive the value of their response in dollars.

If the sum of the two responses is more than 5, neither player will receive any money for this game.

Q: Stake a Claim (2)

A-E

Which of these classic games is the Stake a Claim game most similar to?

- A. Prisoners' dilemma
- B. Coordination games (including assurance games like the Stag Hunt)
- C. Chicken
- D. Battle of the Sexes
- E. Tennis (or, as we'll see later, Matching Pennies)

Q: Stake a Claim (3)

123

How many Nash equilibria does the Stake a Claim game have?

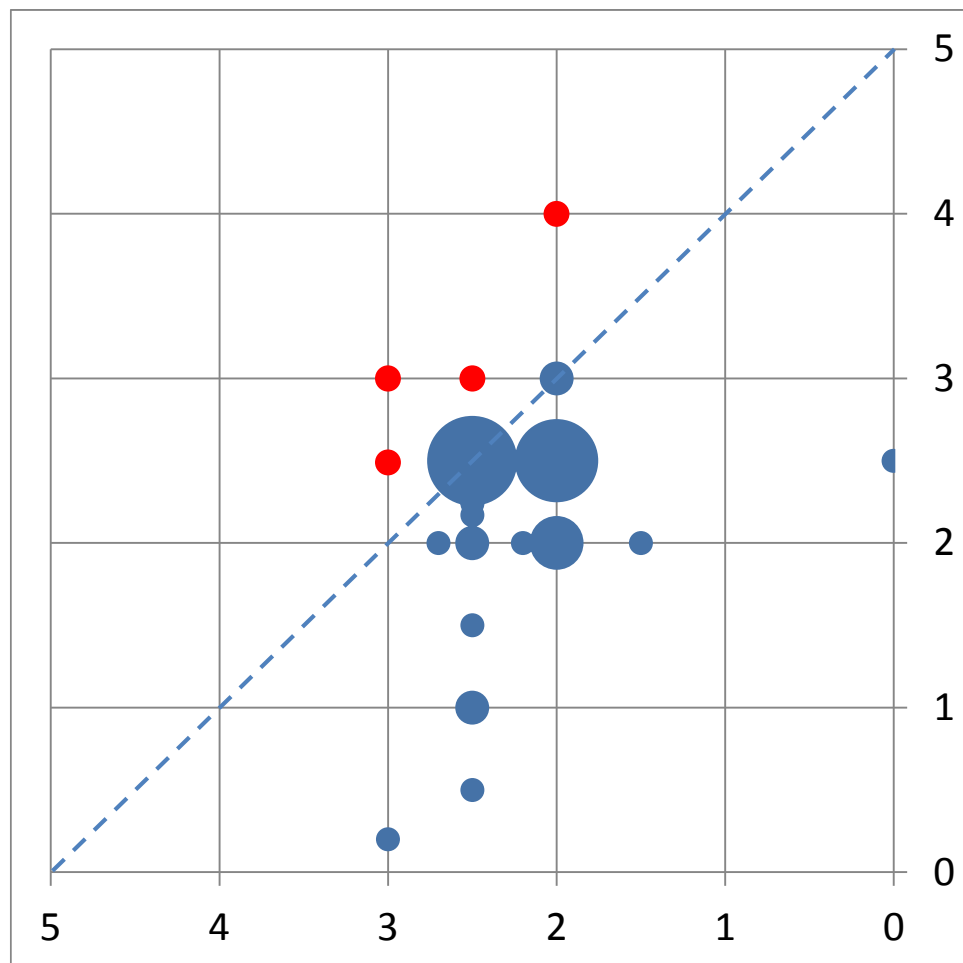
Q: Stake a Claim (3)

123

How many Nash equilibria does the Stake a Claim game have?

Results of the Stake a Claim Game

- The size of the bubbles represents the number of pairs at that respective set of claims.
- The dashed line indicates the set of Nash equilibria.
- The **red** bubbles are the pairs that “busted”. That is, the sum of the claims was more than 5, so the payoff to each was 0.



Thanks!



Feel free to stick around
and ask any questions you
might have.