HYPOTHESIS TESTING USING BEAN-SORTING

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I did not create this activity. I looted it from a colleague.

It’s just such a great and fun activity that needs to be shared, though!
OVERVIEW

This is a hands-on (literally!) activity designed to engage students in hypothesis testing.
MATERIALS REQUIRED

- Several bags of dried beans (pinto, great northern, black, kidney, lentils, etc.), mixed together
- Gloves (washable or disposable)
- Small cups or baggies for the beans
DESIGNING THE EXPERIMENT

Students can help design the parameters of the experiment, or the instructor can provide pre-determined instructions.
SCENARIO

You are an employee at a bean-sorting facility. Your job title is *Bean Sorter*, and your pay is dependent on your productivity level.
SCENARIO

One day, OSHA drops by for a visit.

They notice that employees are sorting beans with their bare hands (ewww).
From now on, it’s mandated that you must wear gloves when sorting beans.
HYPOTHESIS?

Do you think wearing gloves will affect your productivity? If so, how?
DESIGN THE EXPERIMENT

Again, you can involve the students as much or as little as you’d like in this step.
DESIGN THE EXPERIMENT

The goal is to collect matched-pairs data with and without gloves.
QUESTIONS TO CONSIDER

- Should you conduct the experiment with both hands or just one?
- Gloves first or no gloves?
- How much time should you allow for bean-sorting?
PERFORMING THE EXPERIMENT

When I do this experiment, I have students use one hand (their dominant one) and they get two minutes per trial.
PERFORMING THE EXPERIMENT

When the timer starts, students (gently!) dump their cup of beans onto the table and begin sorting into piles.
PERFORMING THE EXPERIMENT

When time is up, they count the total number of beans they sorted and record this data.
The experiment is then repeated either with or without the gloves (whichever scenario has not yet been utilized).
HYPOTHESIS TESTING

Compile all of the data and perform the matched-pairs hypothesis test using the statistical software of your choice.
AFTER THE EXPERIMENT

- Was your hypothesis correct?
- What went well?
- What would you do differently next time?
THINGS I’VE LEARNED

- Students come up with very creative company names!
  
  Beans R’ Us
  
  Bean-O-Matic
  
  Cardi Beans
THINGS I’VE LEARNED

- No one ever seems to question why we’re even sorting beans in the first place
THINGS I’VE LEARNED

- The cleaning crew hates lentils
THINGS I’VE LEARNED

- TSA is super-confused by a giant bag of beans in a suitcase
QUESTIONS?