# Random Sampling, Platonic 

Math 5 Crew

Department of Mathematics
Dartmouth College

## First Platonic Sampling Model

You have a population of N objects. You select one at random, meaning that all N of your objects are EQUALLY LIKELY to be chosen. You record some data about your object. Repeat M times.

## First Platonic Sampling Model

You have a population of N objects. You select one at random, meaning that all N of your objects are EQUALLY LIKELY to be chosen. You record some data about your object. Repeat M times.

Margin of error is computed using this Platonic Model.

## First Platonic Sampling Model

You have a population of N objects. You select one at random, meaning that all N of your objects are EQUALLY LIKELY to be chosen. You record some data about your object. Repeat M times.

Name: Sampling with replacement.

## Second Platonic Sampling Model.

You have a population of N objects. You select a group of M objects randomly from your population, meaning that every possible collection of M objects is EQUALLY LIKELY to be chosen. You record some data about each of these M objects.

## Second Platonic Sampling Model.

You have a population of N objects. You select a group of M objects randomly from your population, meaning that every possible collection of M objects is EQUALLY LIKELY to be chosen. You record some data about each of these M objects.

Name: Sampling without replacement

## In Practice

If $N$ is a fair bit bigger than $M$ then these two procedures produce very nearly the same results.

## In Practice

If $N$ is a fair bit bigger than $M$ then these two procedures produce very nearly the same results.

In polling people, next to the reality of the equally likely assumption, this distinction is completely negligible.

## Margin of Error

What we claim: 19 out of 20 times we expect the true percent to be within the margin of error of the percent we quote.

## Margin of Error

What we claim: 19 out of 20 times we expect the true percent to be within the margin of error of the percent we quote.

Reality?

