# Sampling

Data Analysis for Journalism and Political Communication (Fall 2024)

Prof. Bell

# 1970 Vietnam War Draft

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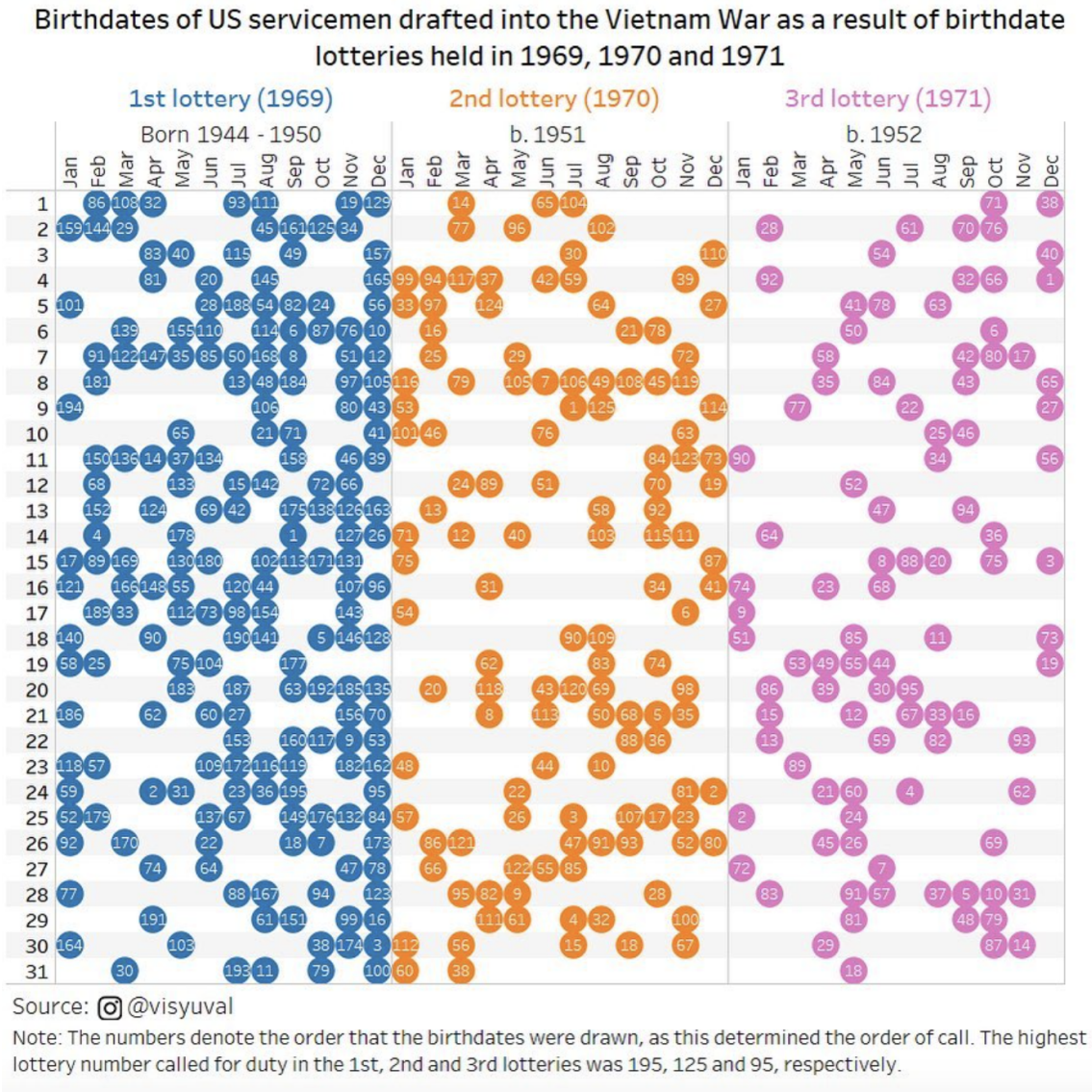

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- Our best guess about the population based on our sample is the **estimate**

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## Definition

The probability of any given unit being drawn from the population is uniform (the same)

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- The key to any data analysis project is a quality sample, which is determined by two elements:
  1. A **random sample** of the population
  2. The **sample size** is sufficiently large

# In-class exercise

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- In other words, there is a 5% chance that the true population value is outside of the **confidence interval**
- If we re-sampled the population 100 times, 95 of our estimates would fall within the confidence interval (let's see this in action!)

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- The confidence interval for a proportion is also called the **margin of error (MOE)**
- The 95% MOE is calculated as:

$$1.96 * \sqrt{p * (1 - p)/n}$$

where $p$ is the proportion and $n$ is the sample size

# Sample Size and the Margin of Error

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- This means that there is a 5% chance that the true population proportion is outside of about 30-36%. *(Note: this does not mean that every value in the MOE is equally likely!)*
- Typically, pollsters will use a proportion ($p$) of .5 to calculate an MOE for the entire poll, rather than individual questions

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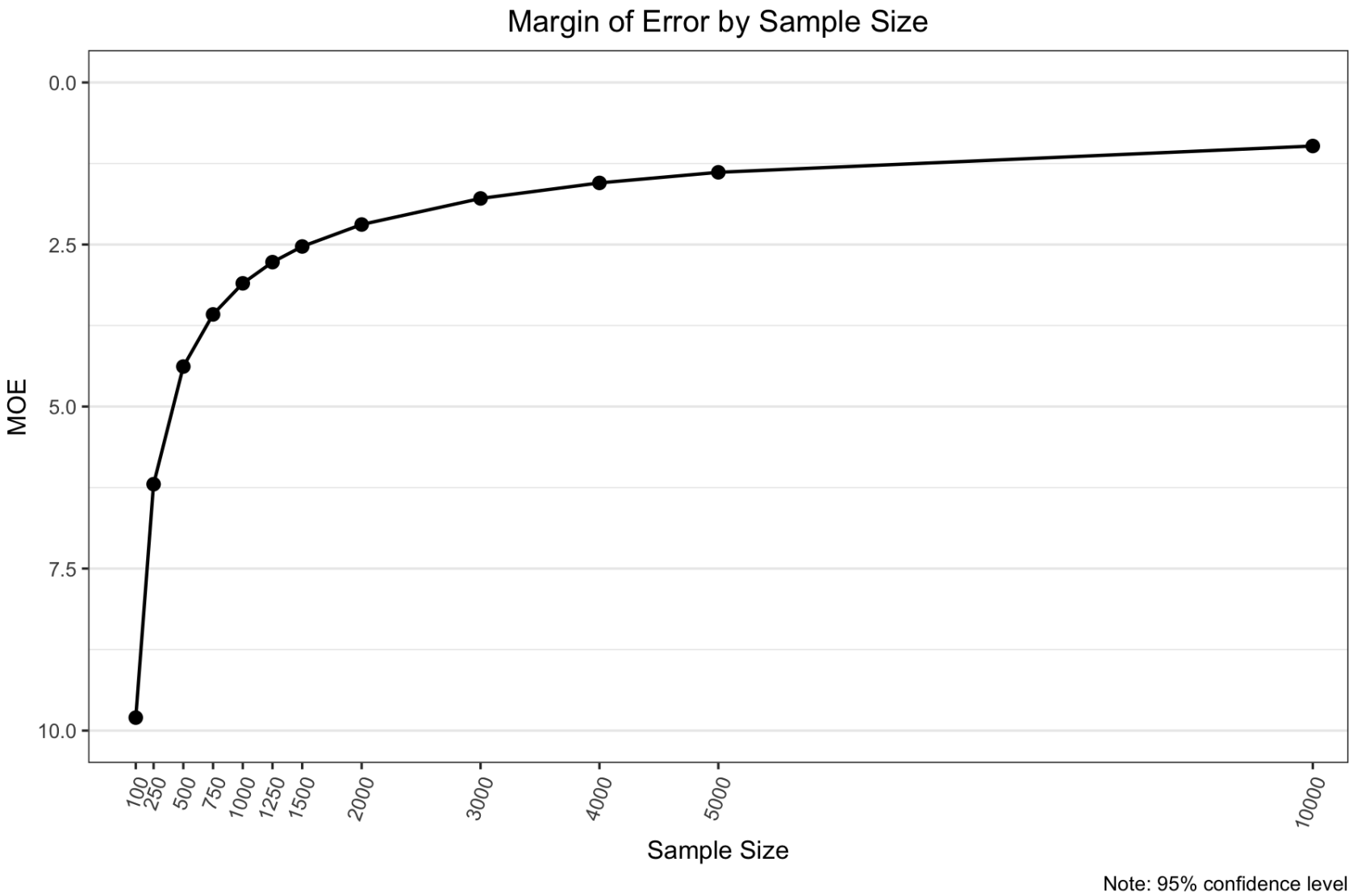

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- Remember that the MOE only takes into account the sample size, not the potential for selection bias

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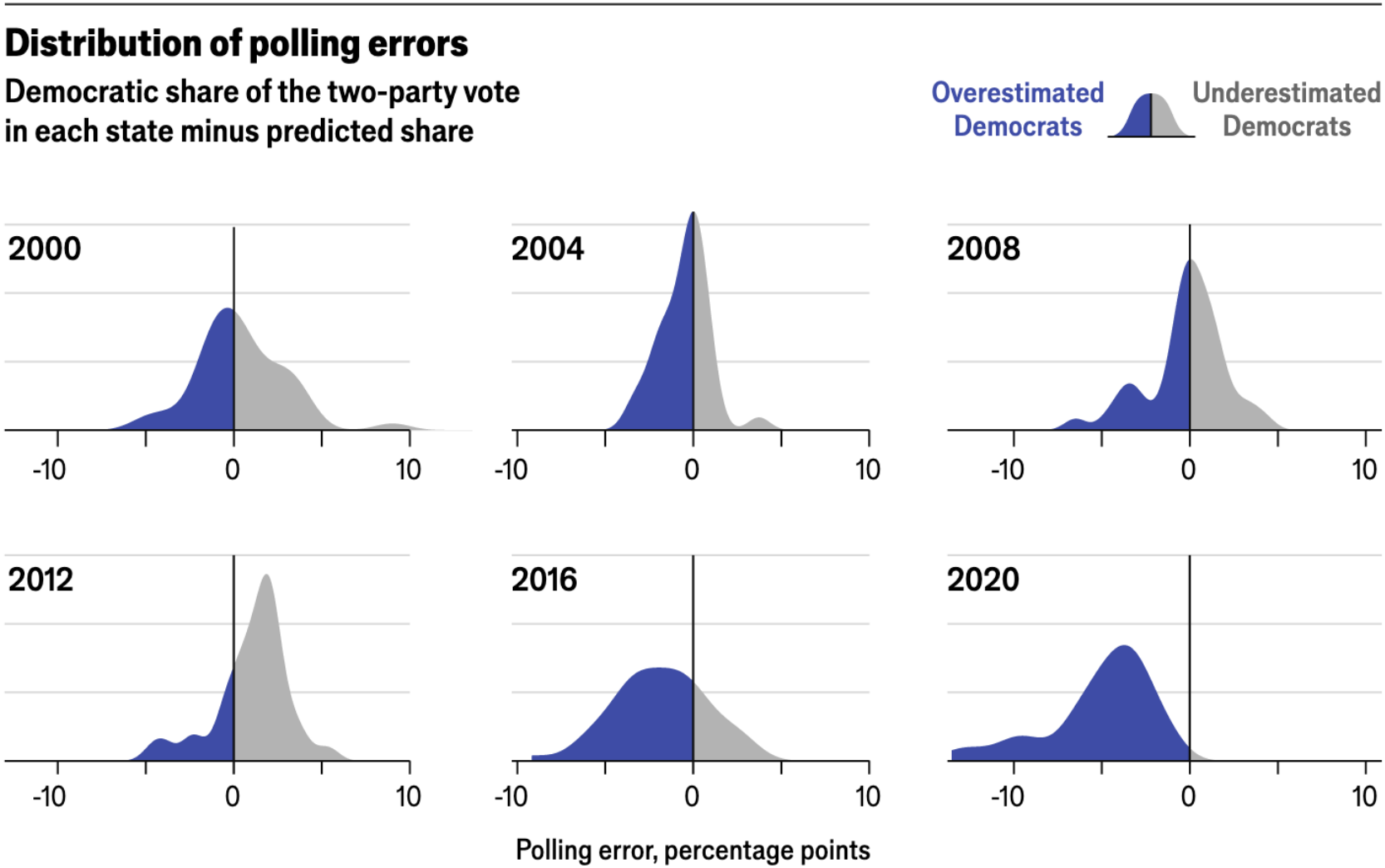


Source: The Economist

# Getting a Random Sample

How would you generate a random sample of American voters?

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- **Non-probability/Quota Sampling**: Pseudo-randomly selecting, from an opt-in pool of respondents, a sample that approximates the make-up of the general population