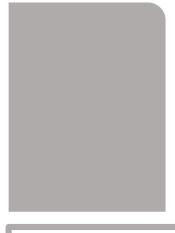
Sampling and Coverage

GOV 1010

Pre-Election Polls

A Sample of Problems









1936 Presidential Election

Franklin Delano Roosevelt (D) is first-term incumbent Elected in 1932 with 57.4% of vote

Alf Landon (R), Kansas Governor, is challenger

"People's Budget" vs Balanced Budget



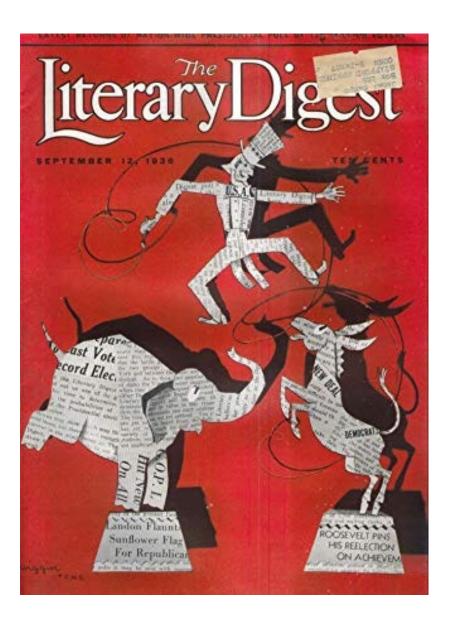


Pre Election Polls in 1936

Literary Digest and Gallup

- Literary Digest
 - Weekly Newsmagazine
 - Founded in 1890
 - Polls since 1916
 - 136 million mailings 1916 –
 1932
 - Predicted Roosevelt victory within 1% in 1932
 - "Uncanny accuracy"
- Methodology
 - Mail surveys
 - Large sample sizes
 - Mailed 10 million surveys in 1936
 - Auto owners / telephone directories

- George Gallup Ph.D.
 - Advertising Measurement specialist
 - "American Institute of Public Opinion"
 - New nationally syndicated newspaper column
 - Money-back guarantee (more accurate)
- Methodology
 - Face-to-face surveys with quota sampling
 - Also some mail polls



	-Just Mark Your Choic	
	DENT OFFICIALLY NOMINATED	Mark How You Votes
Put a Cross ⊠	For Pandent	
Name of President	ial Calldan efer	1 7002
John W. Air	The my of the	0.5
□ 1 10 d 1	Franklin D. Roosevelt	Did Not Vote:
eigh Colvin	Norman Thomas	Under Legal Age

GOOD YEAR POLL-O-MERE

For Recording iterary Digest

PRESIDENTIAL POLL-BROADCAST BY
THE GOODYEAR TIRE & RUBBER COMPANY, INC.
OVER NBC BLUE NETWORK EACH MONDAY, WEDNESDAY & FRIDAY EVENINGS, SEPT. 2-NOV. 2

FIRST WEEK-SEPT. 2				1932 RESULTS		Elec-		FINAL 1936 POLL—L.D.			ACTUAL VOTES 1936 ELECTION				
Popular Vote		EI	Electoral Vote		ROOSEVELT	HOOVER	Votes	STATES	Dem.	Rep.	Other	Dem.	Rep.	Other	
Dem.	Rep.	Other	Dem.	Rep.	Other	207,910	34,675	11	Alabama						Viner
764	5 16,050	967				79,264	36,104	3	Arizona						
1-1-	1 1/0, 00 E	1 10/	A Discontinue			189,602	28,467	9	Arkansas						
SECOND WEEK-SEPT. 9			1,324,157	847,902	22	California				of Contract					
			250,877	189,617	6	Colorado									
Popular Vote Electoral Vote			281,632	288,420	8	Connecticut						A Company			
Dem.	Rep.	Other	Dem.	Rep.	Other	54,319	57,073	3	Delaware						
					A	206,307	69,170	7	Florida						
33,423	61190	538/	34	155	0	234,118	19,863	12	Georgia						
THIRD WEEK-SEPT. 16			109,479	71,312	4	Idaho									
			1,882,304	1,432,756	29	Illinois									
Popular Vote Electoral Vote			862,054	677,184	14	Indiana									
Dem.	Rep.	Other	Dem.	Rep.	Other	598,019	414,433	11	lowa						
				1.7		424,204	349,498	9	Kansas						
28815	153,360	12,543	62 1	166	0	580,574	394,716	11	Kentucky						
THE RESERVE THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER.	FOURTH WEEK-SEPT. 23				249,418	18,853	10	Louisiana							
AND SO	JURIA	AAFEK.	- JEF	1 40		100 007	444.404			E MANUFACTURE OF THE PARTY OF T		ALL THE STATE OF T			-

The Literary Digest

Topics of the day

LANDON, 1,293,669; ROOSEVELT, 972,897

Final Returns in The Digest's Poll of Ten Million Voters

Well, the great hat the of the hallots in the Poll of her million voters, mattered throughout the furty-eight States of the Upies, is pow finished, and in the table below we record the flantes received up to the hone of going to press.

Those Series are exactly as received from more than one in every five roture polled in our country—they are neither weighted, adjusted nor interpreted.

Name before in an experience covering core than a quarter of a contury in taking polls have we received to many different carretion of pretional corace from many condensation from many others and yet it has been just of the same type that has come to us every time a Poll has been taken. in all these years.

A tologram from a mesopaper in Californin nelso. "In it must that Mr. Houset, has purchased Ton Lawrence Discour?" A. telephone raconge only the day before these lines were written: "Hen the Rough-

Rear National Committee surchard Tex-Legenauty Dissert" And all types and year. eties, including: "Have the Jove purchased Tax Littmany Dronet?" "Is the Pope of Rome a stockholder of Tax Lyrmany Descent And so it goes-all equally alssard and accusing. We could add more to this fat, and yet all of these questions in second days are but repetitions of what we have been experiencing all down the years from the very first Pull.

Problem - Name are the figures in this Pull. correct? In another to this question we will despite reder to a telegram we sent to a young man in Massachusetts the other day. or answer to his challenge to us to wager S100,000 on the accuracy of our Poll. We wheed him no follower.

"For nearly a quarter contary, we have been taking Polic of the voters in the fortyeight States, and especially in Presidential years, and we have always merely mailed the ballats, countril and recorded those returned and let the people of the Nation. show their conclusions on to our appropria

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Truncial server THE NATIONAL WEEKLY POLL SPENIE OPINION

Next Sunday The Riverson in Review

Election Will

Institute Forecasts the Re-election of Franklin D. Roosevelt, Gives Him 54% of Popular Vote, Minimum of 315 Electors

Major Party Percent " Aug w In 55.7: New York in. F.D.R. Sure' Column

No. of the last of

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1. The Assertion Section of Public Opinion produce the tradection of Prophilip II. Removal and John S.

pull indicates that Beingraft will render approximately MVs of the States party was limited parties electronical in 1976 for colone to London and Frank Sant, in 1980 The Provident constraint \$5.75 of the students.

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Navana Phones, florida condi-data, villi pall phone half or man-ration in 1985, when he manual majors.





Literary Digest versus Gallup Forecasts

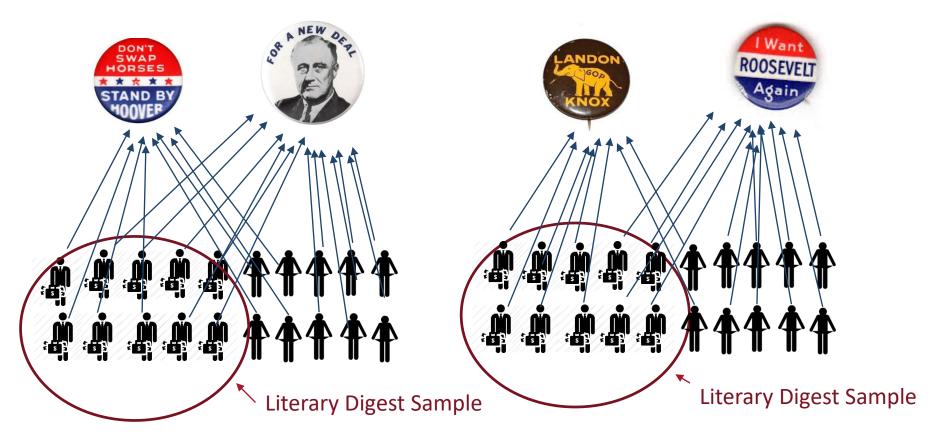
	Literary Digest	Gallup	Election	
Roosevelt	43%	56%	62%	
Landon	57%	43%	37%	
Roosevelt Electoral Votes	161	315+	523	
Sample Size	2,376,523	40,000 MAX		



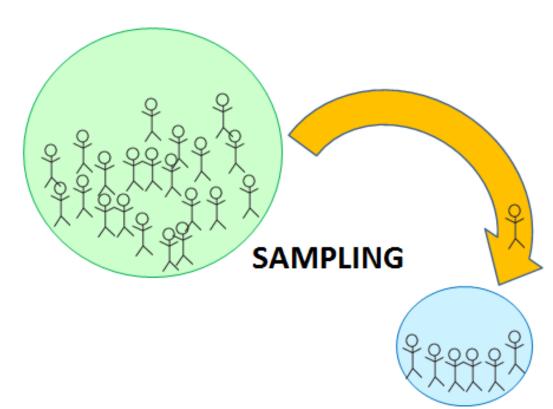
Differences Between 1932 and 1936

1932
Few Differences on Vote by Income

1936 Large Differences on Vote by Income







Populations in Surveys

Population of Inference

- The general set of persons to whom one wishes to generalize results.
- This population may be infinite

Target Population

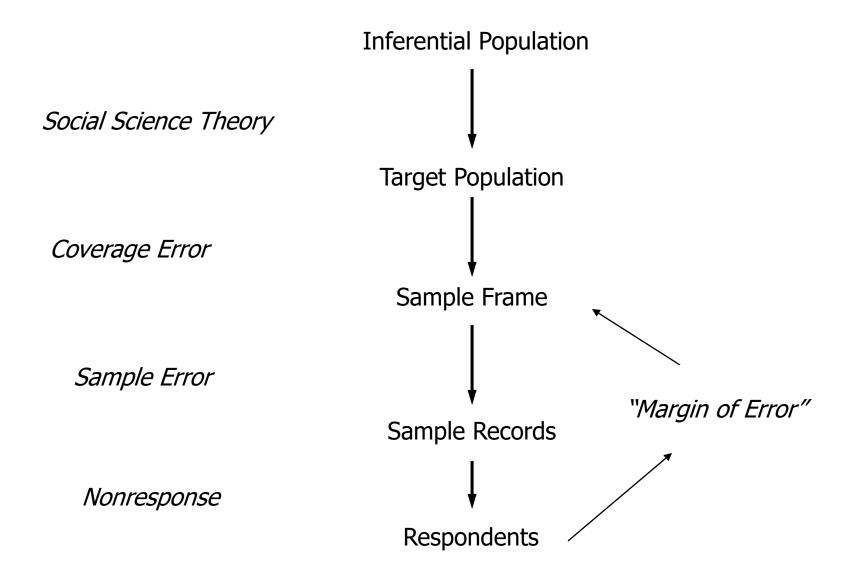
- The inferential population as operationalized by the researcher.
- Bounded by time
- Observable (i.e. can be reached)

Frame Population

- Population that could be measured by the sample frame
- Generally, all members of the frame
- Or... all members who could be enumerated by the sample frame

Survey Population:

• The set of people who can be reached through your sample frame as implemented in the survey



All Americans Social Science Theory All American Adults Home at Some Point Aug 19 – Aug 20, 2018 Coverage Error Americans with Domestic Telephone Service Sample Error Approximately 5,000 (valid) Telephone Numbers Sampled Nonresponse

1,001 Americans who Responded to Survey



List, or





Set of procedures



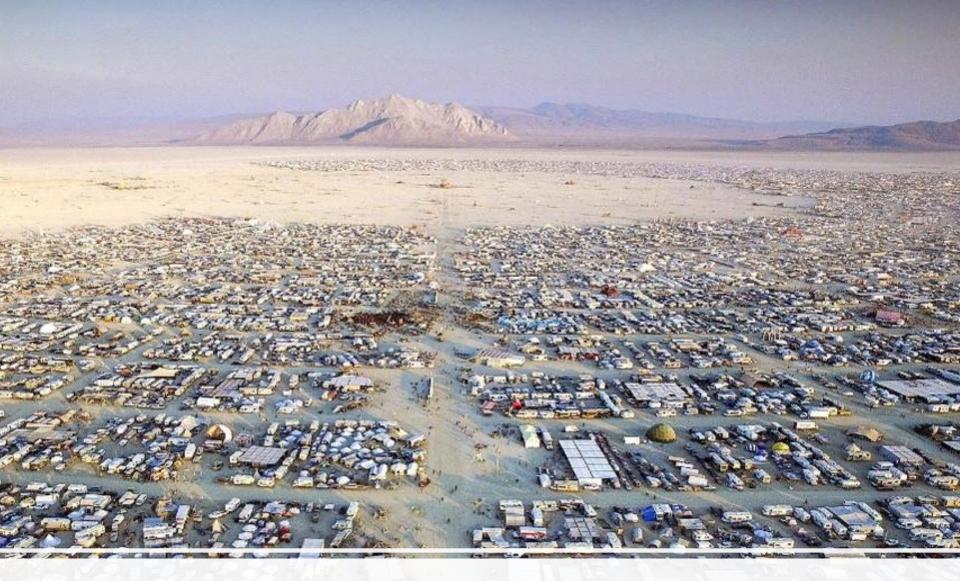
Sometimes requires two or more stages of selection



Designed to cover target population

Sampling Harvard Graduates





Sampling People at Burning Man Festival (Black Rock City)

Ideal Sample Frame

- Simple list
- Available and accessible
- All Members of target population are on list
- All members of list are eligible respondents
- Contact information available for all elements of frame

Example of Typical Sample Frame

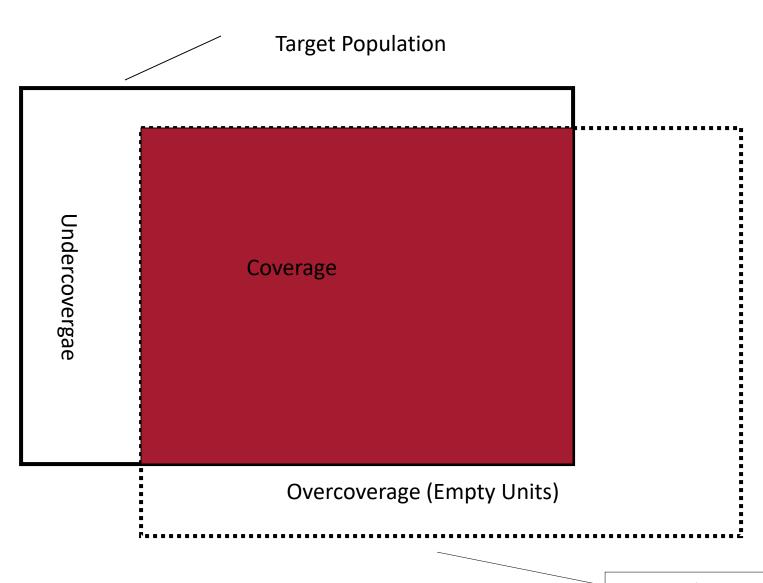
```
Population Sample
Ed Ash
        → 617-555-1234
Peggy Birch → 617-555-1235
Tony Birch
Marie Chestnut → 617-555-1236
               *617-555-1237
Philip Elm
               (No telephone)
(Not Assigned) 617-555-1238
```

Relationship Between Target Population and Sample Frame

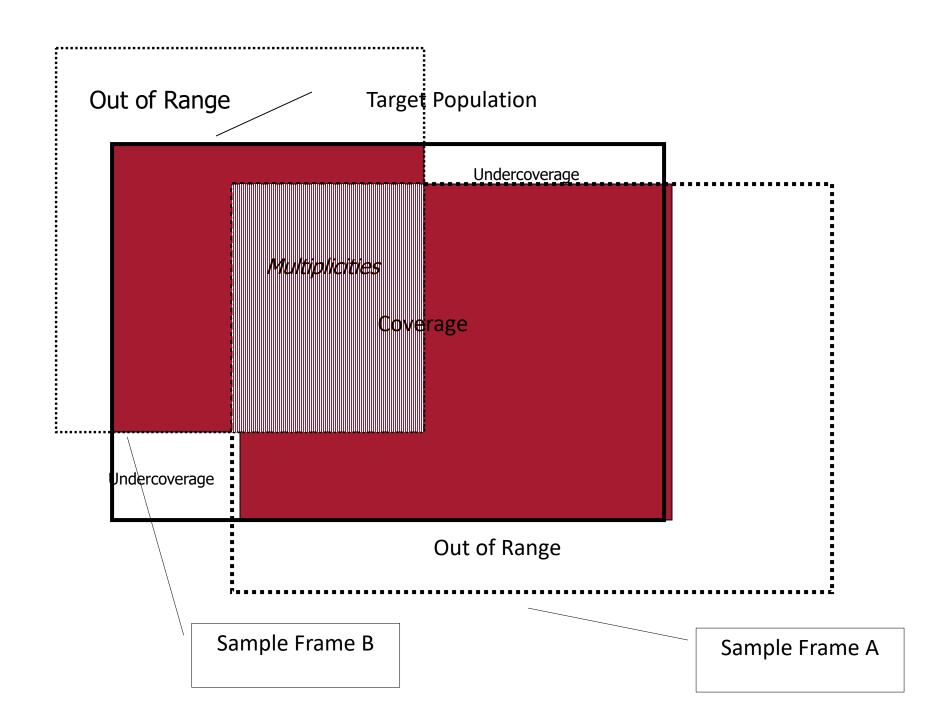
Relationship	Name	Problems
One-to-one	Perfect	None
One-to-None	Undercoverage	Bias
None-to-One	Low Incidence	Cost-Effectiveness
One to Many	Multiplicity	Probabilities
Many to One	Clustering	Probabilities

Example of Sample Frame

Population Sample Ed Ash *→* 617-555-1234 *Peggy Bolton* → 617-555-1235 Clustering Tony Bolton *David Chandler* → 617-555-1236 **Multiplicity** 617-555-1237 Philip Elm (Not Assigned) 617-555-1238 Empty Record



Sample Frame



Measuring the Effect of Coverage Error on Population Estimates:

$$Y = \frac{N_c}{N} Y_c + \frac{N_{nc}}{N} Y_{nc}$$

Y=The value of the statistic in the target population

N_c=Number in the target population covered by the frame population

N=Total number in the target population

Y_c=Value of the statistic for those covered by the frame population

Y_{nc}=Value of the statistic for those not covered by the frame population

In Words:

The Population Value of a Statistic The proportion of the population included in your frame

X The value of that statistic for those people The proportion of the population *Not Included* in the frame The value of the statistic for the people not included in the frame

X

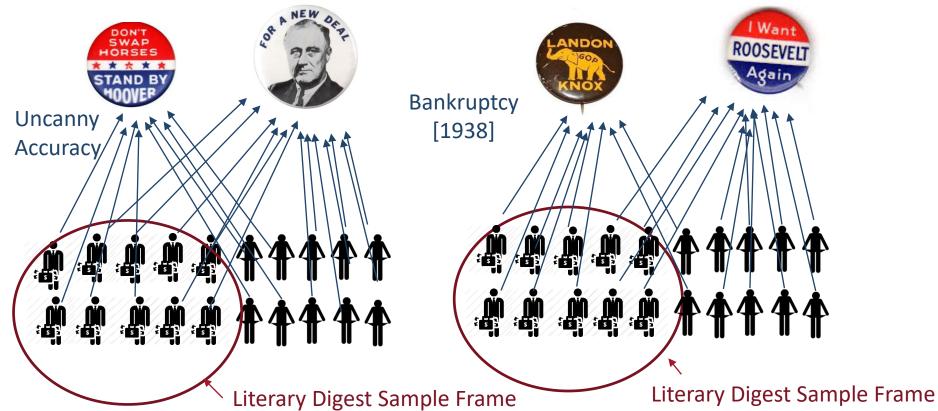
Thus the impact of coverage error is based on two things:

- The percent of the total population excluded from the sample frame
- The difference on the statistic of interest between those included in the frame and those excluded

Differences Between 1932 and 1936

High Noncoverage
Low Differences Between Covered and
Non-covered

High Noncoverage
High Differences Between Covered and
Non-Covered



Considerations in Design

- What frames might be available for population?
 - Lists
 - Sets of procedures
- What is relationship of unit of frame to population?
- What is coverage of population in potential sample frames?
- What is incidence of respondents in potential sample frames?

General Populations

- Broad populations of residents
- No list available
- No easy way to target

Special Populations

- Narrow definition
- Lists may be available
- Targeted frames may be feasible

General versus Special Populations

Levels of analysis

Sometimes the conceptual population to which we infer our data doesn't match the survey population from which we collect information.

Contents:

One survey may gather information about different things

Example: A survey of fast-food customers may yield information about different visits to fast food restaurants, people who eat fast food, households who eat fast food

Units

One survey may gather information about a different conceptual unit than the person

Example: A survey of households may interview a head of household or other household member

Example: A survey of land use may interview landowners to infer to acreage.

Example: A survey to estimate the number of job applicants who receive pre-employment drug tests might interview human

resource officers at businesses.

Time-Frames

A survey may gather information about more than one time period

Example: A survey of investors might look at current and past ownership of investment instruments

Examples of Special Populations

- Usage customers, visitors, participants, etc.
- Occupations
 - Journalists
 - Firefighters
 - People wo work three jobs
 - Jazz Musicians
 - People who barter at flea markets
- Employees
- Companies