

**AGAINST ALL ODDS**  
**EPISODE 1 – “WHAT IS STATISTICS?”**  
**TRANSCRIPT**

## FUNDER CREDITS

Funding for this program is provided by Annenberg Learner.

## INTRO

### **Pardis Sabeti**

Hello, I'm Pardis Sabeti and this is "Against All Odds," where we make statistics count.

I'm a computational geneticist, which means I spend a lot of time trying to find patterns in piles and piles of data. I like to think of myself as pretty good with numbers but I need a way to figure out if what I think is a pattern really is. And that's when I turn to statistics. It's a way to organize and analyze the data I've gathered and draw conclusions from what I've found.

For me, statistics is essential for my work. But statistics certainly isn't just a fancy scientific tool useful only to PhDs. Statistics is vital to people at all levels of fields as wide-ranging as business, medicine, agriculture, politics...and yes all kinds of sciences including engineering. Even if winning a Nobel Prize in science isn't one of your long-term goals, understanding statistics is an important part of being an informed citizen and being able to evaluate decisions that affect you. Statistical literacy is a crucial part of modern life.

Here in *Against All Odds*, we'll show you how statistics is being done out in the world by real people. Military personnel measuring soldiers to find out what sizes of gear today's Army requires. Clerical workers analyzing salaries to fight for a fair pay structure. Resource managers predicting how much water they'll have in the spring based on how much snowpack they measure in the winter. These examples all use descriptive statistics; they collect, organize and summarize the data and do calculations to figure out what story it can tell.

A big part of descriptive statistics is presenting the data in an informative way. In *Against All Odds* we'll learn a variety of techniques to tease visual meaning from stacks of numbers. And you'll see statistics is flexible enough to apply in all kinds of contexts: from hot dog calorie counts, to a city's census findings, to bird migration dates.

Once we get a handle on descriptive statistics, *Against All Odds* continues on to inferential statistics. Inference is a powerful way to draw conclusions about a population based on a just a sample. Again we'll go on location to learn how this technique is actually being used out in the world.

We'll see how factories – like this potato chip plant – sample their products for quality control. After all, they can't test the quality of every chip or they'd have nothing left to sell!

At a survey center, pollsters sample citizens to estimate the entire public's opinion – since it's impossible to ask every single American how they feel about a particular issue or candidate.

And of course there are techniques to figure out how reliable these kinds of conclusions are. We'll investigate ways to quantify our confidence level and whether the results we come up with are actually significant.

Is there a real difference in the daily calories used by hunter-gatherers versus western office workers?

Did Shakespeare really write a newly discovered poem?

Was the chemical DDT responsible for crashing the peregrine falcon population?

Stay tuned and you'll see how statistics helps answer these questions.

We'll talk about probability too; that's the mathematical way of thinking about chance behavior. So come with us to the casino to learn about the odds of winning at the table. We'll also look at how probability helped the analysis of what went wrong when the space shuttle Challenger exploded, and how probability can assess the chance that a genetic trait shows up one family's children.

*Against All Odds* will provide you with a strong foundation to understand the statistics you'll encounter in your own life. Just reading the day's news, it's important to be able to decide whether the numerical claims in an article are reasonable. Does what you see in a chart or graph make sense? Sometimes you'll be faced with a choice along with data that could help inform your decision. You'll want to know how to weigh the information that a recommended medical procedure has a 20% rate of complications. Or the finding that only 30% of graduates in a certain major find jobs in their field right away. Or maybe you just want to put together a winning fantasy football team based on all the players' stats.

We're confronted with these kinds of data points all the time. Understanding how statistics works lets you use this kind of information effectively.

We live in a world of endless variability. And statistics is the art and science of making sense of it all. Gathering, organizing, analyzing and drawing conclusions from data is the name of the game. Stick with *Against All Odds* and we'll show you how it's done – in schoolwork, in careers, and in life.

I'm Pardis Sabeti and I'm excited to be your guide for this series! Stay tuned!

## PRODUCTION CREDITS

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- City & County of Denver – Media Services
- National Parks Service
- Lee McEachern
- Pond5/Swilso1
- Nick Dunlop
- Foxwoods Resort Casino
- National Aeronautics and Space Administration
- Pond5/Motion\_poland
- Pond5/ClipArea
- Pond5/LuAleks

- Pond5/Zanyzeus
- Pond5/manamatata
- Pond5/JumpCut
- Pond5/Goodluz

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DeWolfe Music Library

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