

1. Statisticians: Making our world a better place.
2. Statistics are numbers. You don't see the people. This story is about the people.
3. This story is about AIDS, the drug AZT and the volunteers in the first drug trial.  
I think those volunteers were heroes: unsung heroes.
4. In the 1980s, AIDS was a death sentence.
5. The drug AZT was tested in a randomized clinical trial. Part of that drug trial was in San Francisco.
6. The number of volunteers was over-whelming. They weren't motivated to advance medicine.  
They knew they were dying. They wanted a cure.
7. Half of the volunteers were randomly-assigned to the placebo group.  
Everyone knew those in the placebo group were certain to die.
8. Very quickly, the researchers realized that this trial was not going as planned!
9. Some participants exchanged drugs. They wanted improve their chance of getting the real drug.
10. Some went to pharmacies, found out their pill was a placebo, and they quickly dropped out.
11. The researchers had to persuade these volunteers to follow the protocol...
12. Don't exchange drugs. Don't take drugs to pharmacies. Don't drop out!
13. Otherwise the researchers would never know whether the drug worked.
14. These patients – facing certain death if assigned to the placebo group – agreed
15. The drug, AZT, was found to be effective.
16. As a result of their sacrifice, US cases peaked in 1992 and then fell by 95%.
17. I hold these earliest volunteers – half facing certain death – as real heroes.
18. The sacrifice of these unsung heroes helped make our world a better place.
19. So how did the statisticians help in this drug trial? What about that 50% "drop" in opportunistic infections?  
What about that 80% "drop" in deaths? Who needs a statistician when the evidence is so obvious?
20. Statisticians are the judge and jury in clinical trials. The drug company wants their drug to be successful. In the AZT trial, the US government wanted the drug to be successful -- they needed to show progress against AIDS.  
But the statistician needed to be convinced that the observed effect was really due to the drug.
21. Could the sample be so small that the difference was just coincidence? Is this difference statistically significant?  
Could the observed difference just be due to timing? Might the percentages be a lot closer together a week later?  
Could this difference be unique to San Francisco? Was it observed at other locations?
22. Could the researchers influence the outcome; could they "stack the deck"? Could the researchers figure out which patients were getting the real drug and give those patients better care?  
  
These are things that statisticians think about.
23. What if AZT was really no better than a placebo? How many people have died using fake treatments? How many people have been scammed into paying big bucks for worthless cures? Someone has to set and enforce standards to separate the good from the bad.
24. Statisticians may be few in number, but they "punch above their weight" Statisticians uphold high standards.  
Statisticians protect us against false hopes and fake cures.  
Statisticians are working hard to make our world a better place.

Text at [www.StatLit.org/pdf/2015-Schield-USCOTS-AIDS-Text.pdf](http://www.StatLit.org/pdf/2015-Schield-USCOTS-AIDS-Text.pdf)

Video: [www.StatLit.org/V/2015-Schield-USCOTS-AIDS.mp4](http://www.StatLit.org/V/2015-Schield-USCOTS-AIDS.mp4) Slides: [www.StatLit.org/pdf/2015-Schield-USCOTS-AIDS.pdf](http://www.StatLit.org/pdf/2015-Schield-USCOTS-AIDS.pdf)