Statistics in Song

Sheila Weaver – University of Vermont

Stat 51: I Will Survive

[accompaniment](#)

At first I was afraid; I was petrified.
I just hadn't realized my data was skewed to one side.
And now I'd spent so many hours finding the mean and the SD,
But now I see, just how misleading they can be.

So now I'll go; walk out the door.
I'll get an F in here; I may not stay in college anymore.
I should have dropped this (stupid) class; I should have bought the answer key.
I should have thought for just one second, office hours were for me.

But no, I'll try, a new technique.
I'll rank the data, and the middle is the median I seek.
The middles of the halves are called the Quartiles 1 and 3,
Add the min and max – that's the five number summary.

Stat 51, I will survive
As long as I can pass this class, I know I'll be alive,
I've got all my life to live,
One semester's time to give:
I will survive, I will survive,
Hey, Hey....
-------------Dance Interlude---------------------
To put it in a graph, I'll draw a number line.
Make spacing even or interpretation's undermined.
Draw vertical lines at each number and connect the middle three,
And a boxplot will result to show the lack of symmetry.

And now I'll find the IQR.
It's Q3 minus Q1. If it's big, the data spreads out far.
If a number's more than 1.5 IQR from the box,
It gets a star, and you can call it an outlier.

And now I'm done.   My summary,
Is more appropriate for data that is lacking symmetry
The mean and the SD may be affected by the skew.
But my way's strong: It's more robust and it's not wrong....

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As long as I can pass this class, I know I'll be alive,
I've got all my life to live,
One semester's time to give:
I will survive, I will survive,
Hey, Hey....
-------------More Dancing---------------------

Distribution 1 *(sing to the tune of Revolution 1 by the Beatles)*
accompaniment

You say you've got a distribution
A bell, you know
We all want to know its name.

You draw the 2 points of inflection,
Both sides, you know,
It's where the curvature will change.

The middle's the mean and it's the median,
The area under the curve is exactly one.

And you know it's gotta be .... Normal ....
And you know it's gotta be .... A bell.....   .....   Normal ......

You find the standard deviation
And on each side
One, two and three s from the mean.

One sd out falls at the inflection,
And sixty-eight
Percent of the area's in between

And within two sd's you can find ninety-five,
99.7% are within three.

And you know it's gotta be .... Normal ....
And you know it's gotta be .... A bell.....   .....   Normal ......
---------Bridge--------------

A value on a distribution,
A bell, you know,
We all want to know its place.

The standard score gives its position
A Z, you know.
Just minus the mean and divide by S.

It's unusual if it's farther than 2 sd's,
If it's an outlier, you may want to count it out   (in)

And you know it's gotta be .... Normal ....
And you know it's gotta be .... A bell.....

Ho   (sing to the tune of Hey, Jude)
accompaniment

Ho, Assume you're true
Take some data; Compute a p-value
The number may be less than .05
Then we decide, Ha is better.

Ho, you're called the null.
The alternative, Ha, is not so dull.
It's greater, less than or unequal to,
We'll reject you, if Ha's better.

So find a t or find a z, and you will see
How many sd's Xbar is from mu.
Significance is found by p, the chance you'll see
Some data that's more extreme, assuming you.

Ho, we could be wrong.
False rejection's an error of Type I.
The error of false acceptance of you
Is called type II, sometimes it's better.

Before you test hypotheses, make sure you see,
Your sample is big, Your data's random, too.
And well you know that it's a fool, who'll use this tool,
And not check assumptions that must all be true.

Ho, Assume you're true
Take some data
Compute a p-value
The number may be less than .05
Then we decide, Ha is better.