Video: “Transposing an array” (02:55)

Slide 1 “Linear Representation (columns end-to-end)” (00:00):

Now I want to plot measles as a time series, with the values ordered by time. MATLAB has something called linear representation which puts columns end to end. Unfortunately, that order isn’t quite right for measles. It puts all the Januaries followed by all the Februaries followed by all the Marches and so on.

Slide 2 “Transpose (flip rows and columns)” (00:29)

In order for this to work, we’re going to need to flip all the rows of measles. This is called the transpose operation. Once we do that, we can use the linear representation to put things in the right order.

Slide 3 “Rows end-to-end (transpose + linear rep) (00:34)

The linear representation of measlesFlip has all the values from 1931 in chronological order followed by all the values of 1932 and so on. Let’s look at the measles time series in MATLAB.

Video (00:55)

I’ll create a new cell and label it. I’ll define the variable measlesFlip to be the transpose of measles. The transpose interchanges rows and columns and is denoted by a ‘. I’ll create a figure and plot the linear representation of measlesFlip.

(01:18)

I’ll save the script and evaluate the cell. The graph is much smoother because of the better time resolution, but the values aren’t scaled and the graph isn’t labeled. I’ll scale the data to give cases in thousands. I’ll use a y-label of “Cases (in thousands)”, and I’ll use an x-label of “Year”.

(01:50)

I’ll need a title to give an overview of the graph. This is “Measles in NYC : 1931-1971”. I’ll evaluate the cell, and I see I’m almost there. The only problem is the scale is given in months despite the x-label. I’m now going to provide x values to force it to be years. I’ll create a variable called yearScale. I want it to start at 1931, I want it to go in increments of 1/12 (which is a month), and I want it to go to December of 1971 which is really 1972-1/12 (nineteen seventy-two minus a twelfth). This is the value I’m going to use for the x when I plot. Now when I view the scale, I see it’s correctly scaled to be 1931-1971.