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## Smooth Density Plots

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# smooth density plots



**RAFAEL IRIZARRY:**  
Smooth density plots  
are similar to  
histograms,

but are aesthetically  
more appealing.

Here's what a smooth  
density plot looks like for  
our male heights data.

We're going to learn how  
to make these plots and  
what they mean.

Note that we no longer  
have sharp edges at the



## Video

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## Textbook link

This video corresponds to the [textbook section on smooth density plots](#).

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## Key points

- *Smooth density plots* can be thought of as histograms where the bin width is extremely or infinitely small. The smoothing function makes estimates of the true continuous trend of the data given the available sample of data points.
- The degree of smoothness can be controlled by an argument in the plotting function. (We will learn functions for plotting later.)
- While the histogram is an assumption-free summary, the smooth density plot is shaped by assumptions and choices you make as a data analyst.
- The y-axis is scaled so that the area under the density curve sums to 1. This means that interpreting values on the y-axis is not straightforward. To determine the proportion of data in between two values, compute the area under the smooth density curve in the region between those values.
- An advantage of smooth densities over histograms is that densities are easier to compare visually.

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## A further note on histograms

Note that the choice of binwidth has a determinative effect on shape. There is no "correct" choice for binwidth, and you can sometimes gain insights into the data by experimenting with binwidths.

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