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Intro/How To build a Plot

Wickham begins by describing the defaults necessary to describe a basic plot to develop the concept of graphical grammar. A simple scatter plot may have aesthetics such as x & y coordinates & shape, and these must be mapped to physical units like pixel coordinates and shape icons. Finally the data (points), scales & coordinate system (axes), & plot annotations (title) are combined to form a plot.

Faceting, conditioning, trellising, and latticing all partition the data into subsets for graphs to be shown together. First data must be scale transformed so nonlinear scales can be applied without distortion, then after statistics are applied a training operation combines ranges from the facets and the aesthetic values are applied. This method of operating over the facets will allow us to apply statistical transformations or more complex training schemes.

The components of data & mapping, statistical transformation, and geometric objects, and position adjustment are grouped together as a layer. All the components described thus far makeup ggplot2 in R, separated so we can manipulate them independently. Statistics should be location-scale invariant to make sense graphically and conditional on the coordinate system. Geometric objects might be classified by their dimensionality, and some require specific outputs from a statistic. Position adjustments change positioning of geometric objects to better description and interpretation of a graph. Scales map data to aesthetic attributes