

# Stat645: Week 4

Perceptual properties of discrete variables: Gestalt principles and pre-attentive vision.

## Work in pairs

Recommended reading: <http://amzn.com/0205747469>

## Gestalt principles

Read through the tutorial at <http://bit.ly/gClewU>. Which of the grouping principles do you think most closely apply to data graphics? (You can read more at <http://bit.ly/gxzHuu> - the last example is particularly interesting)

What gestalt principle does <http://bit.ly/hja73p> rely on? Is it learned or innate?

## Clustering example

Run the code on the website to create data frames `clust1` and `clust2`.

**Draw a scatterplot of `x` and `y` for each dataset. Can you see clusters? Why/why not?**

**What aesthetics could you use to make the clusters more obvious? Why does adding this extra information make the clusters “pop” out?**

**Rank the aesthetics in order of how easy it is to perceive groups.**

**Imagine you had 10 clusters. Do you think you'd still be able to rely on these properties to quickly see different clusters? Why/why not?**

**The `chull` function in base R computes the convex hull of a set of points – the outermost points of a point cloud. Read the documentation for `chull`, then use `ddply` and `geom_polygon` to overlay convex hulls on the previous plots. How does this change your impression of the plot? Why?**

## **Pre-attentive vision**

**How would you design an experiment to test the number of colours where preattentive processing starts to break down?**