We understand through both bottom-up (from what is in front of us) and top-down (what we’ve experienced and expect) processes. Below you can follow the process from seeing a data visualization to gaining an insight and understanding of it.

Working memory is the visual information we retain from one point of attention to the next. It holds three to five objects at a time.

Because of working memory’s limitation, it’s important to use integrated codings to allow the mind to take in the most information easily.

Pattern processing happens in the middle of top down and bottom up processes. It is driven by top-down visual queries. The gestalt principles tell us what some these basic patterns are.

Attention is a top-down driven process that essentially “grabs” information from the pattern processing properties and puts them into working memory.

Iconic memory is a high capacity but very brief memory storage system that realizes what is currently on the retina.

Long-term memory is our stored previous experiences with the world. Working memory and long-term memory aren’t actually distinct from each other, but instead working memory can include activated long-term memory. Further, a lot of information comes from “gist” which is activated information already stored in our long-term memory about our current environment.