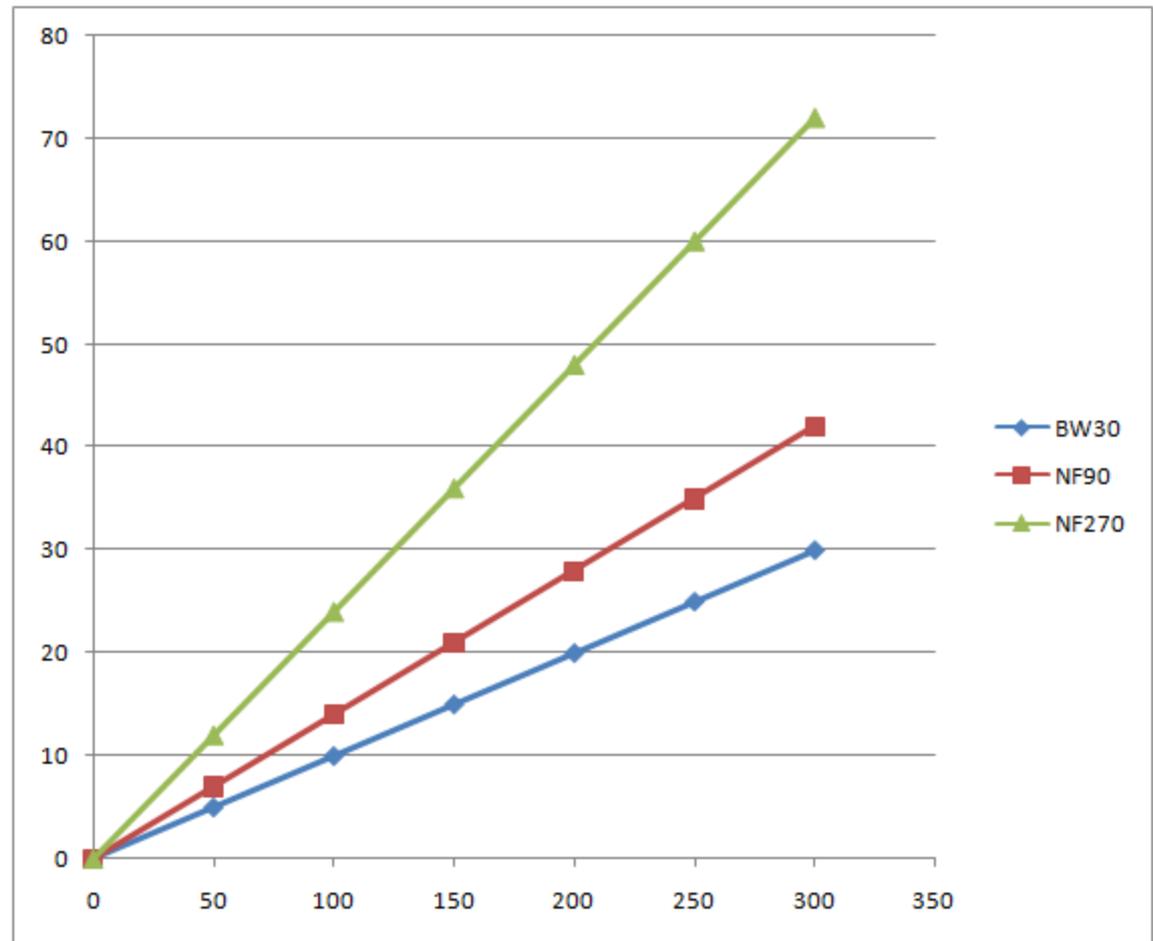


Quick & Dirty Guide to Preparing Effective Figures

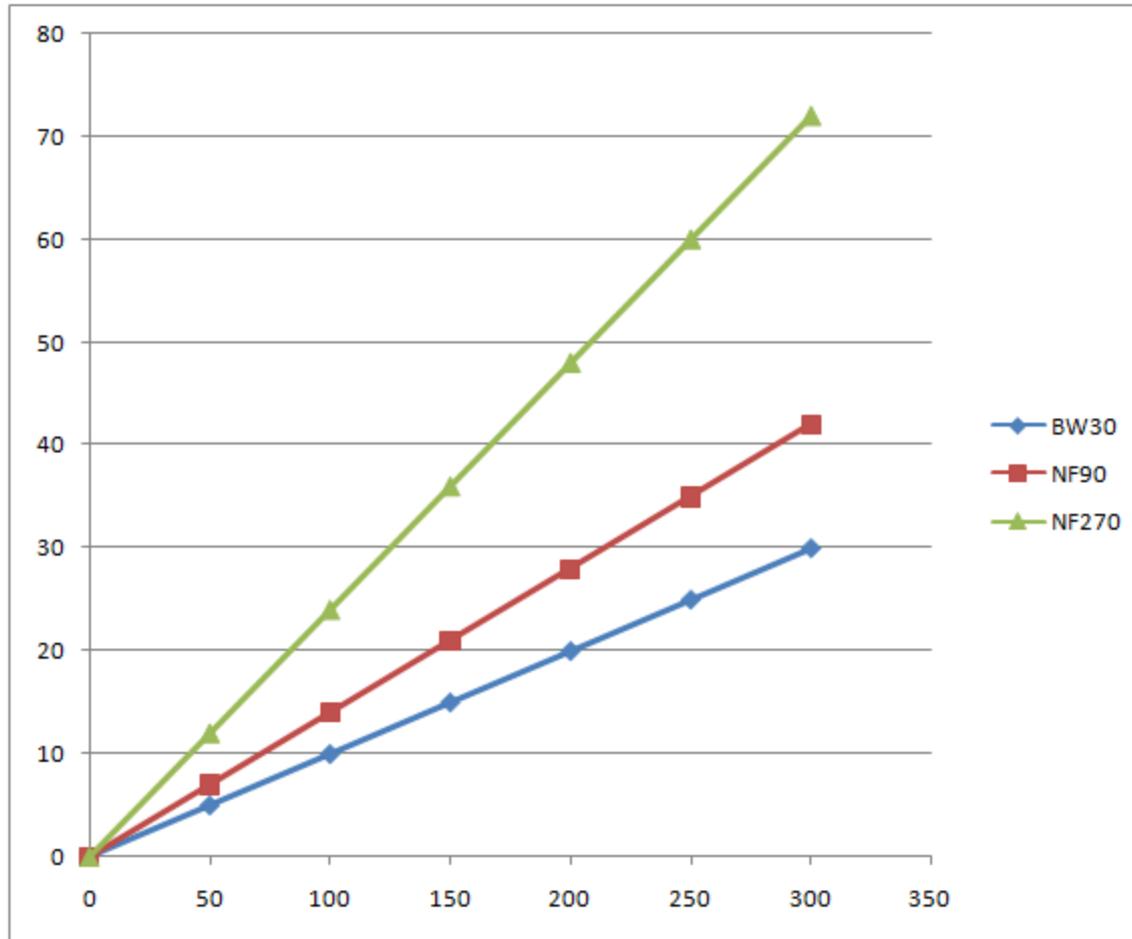
CHEG 4137W

Chemical Engineering Laboratory

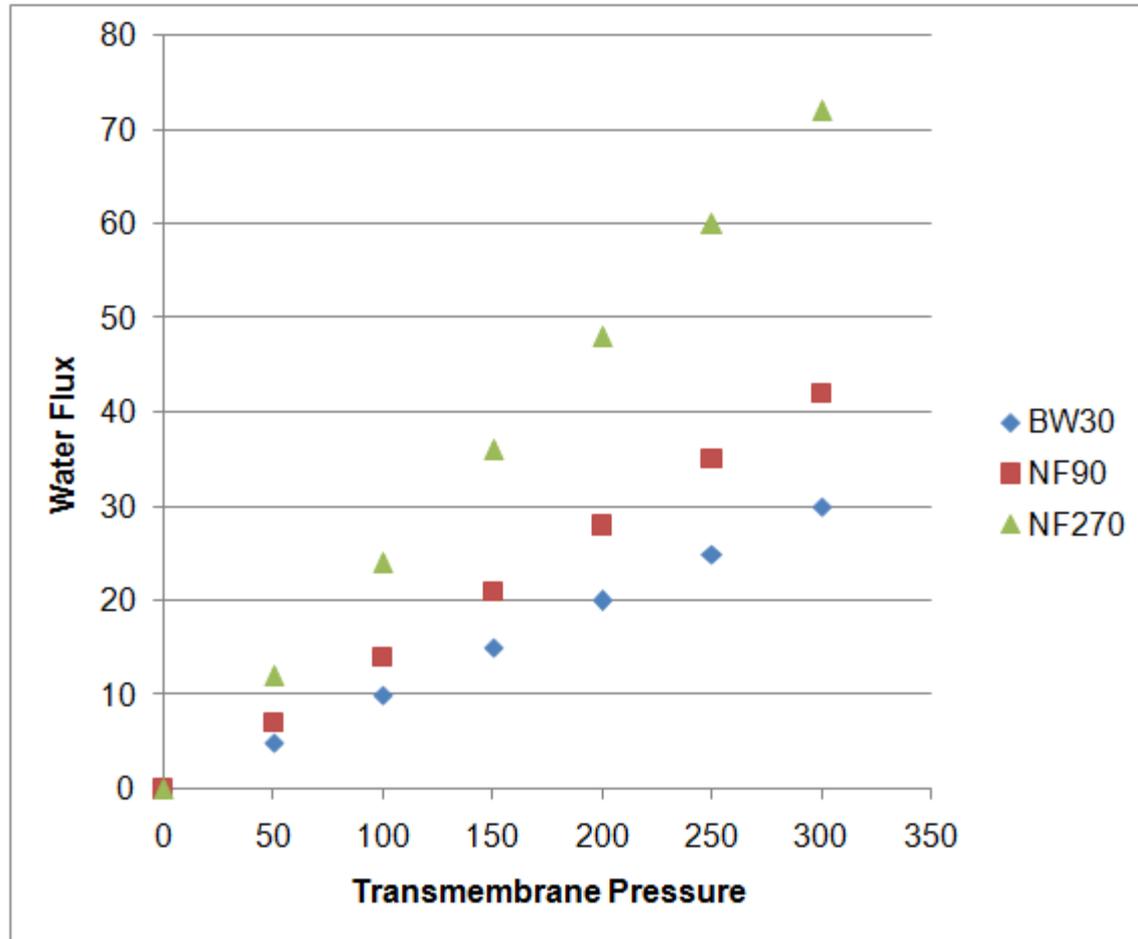
A Graph Excel Will Make



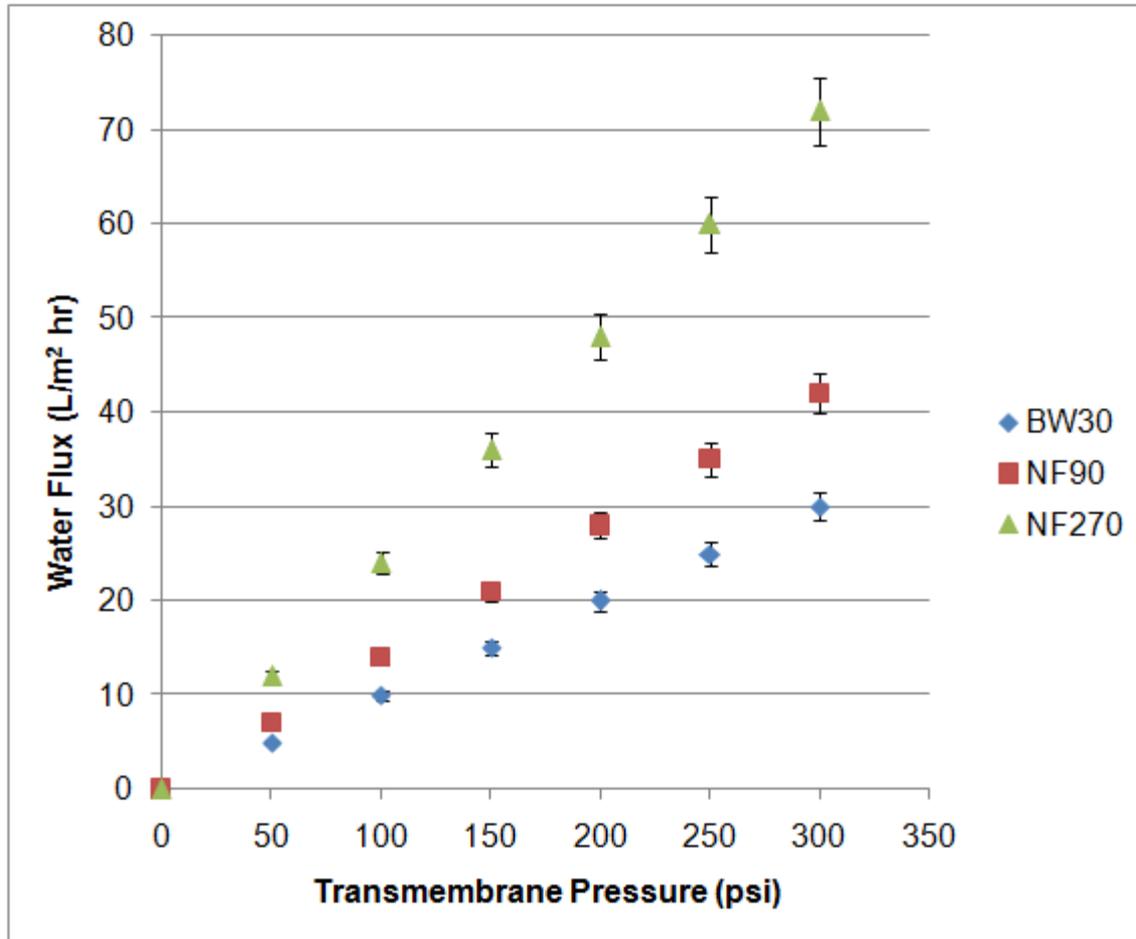
What's Wrong With This Graph?



What Else is Missing?



A Functional Figure



Aesthetically Optimized Graph

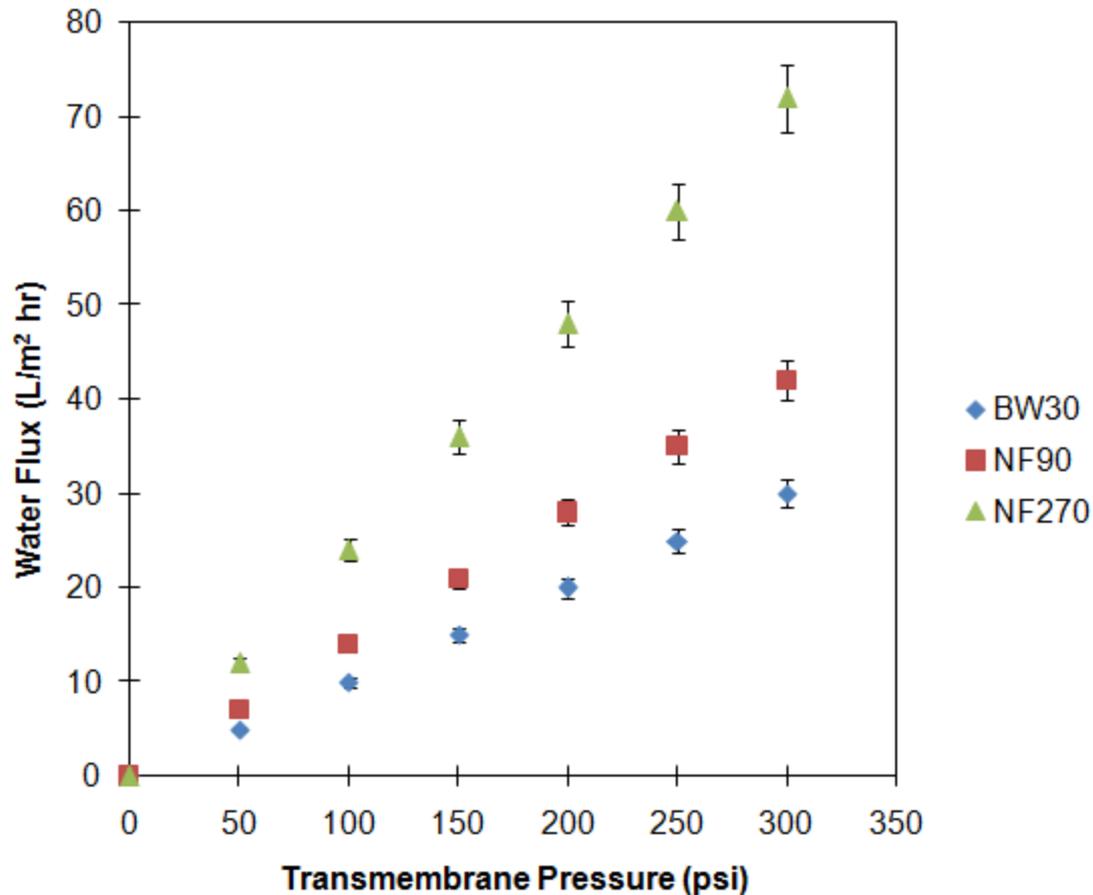
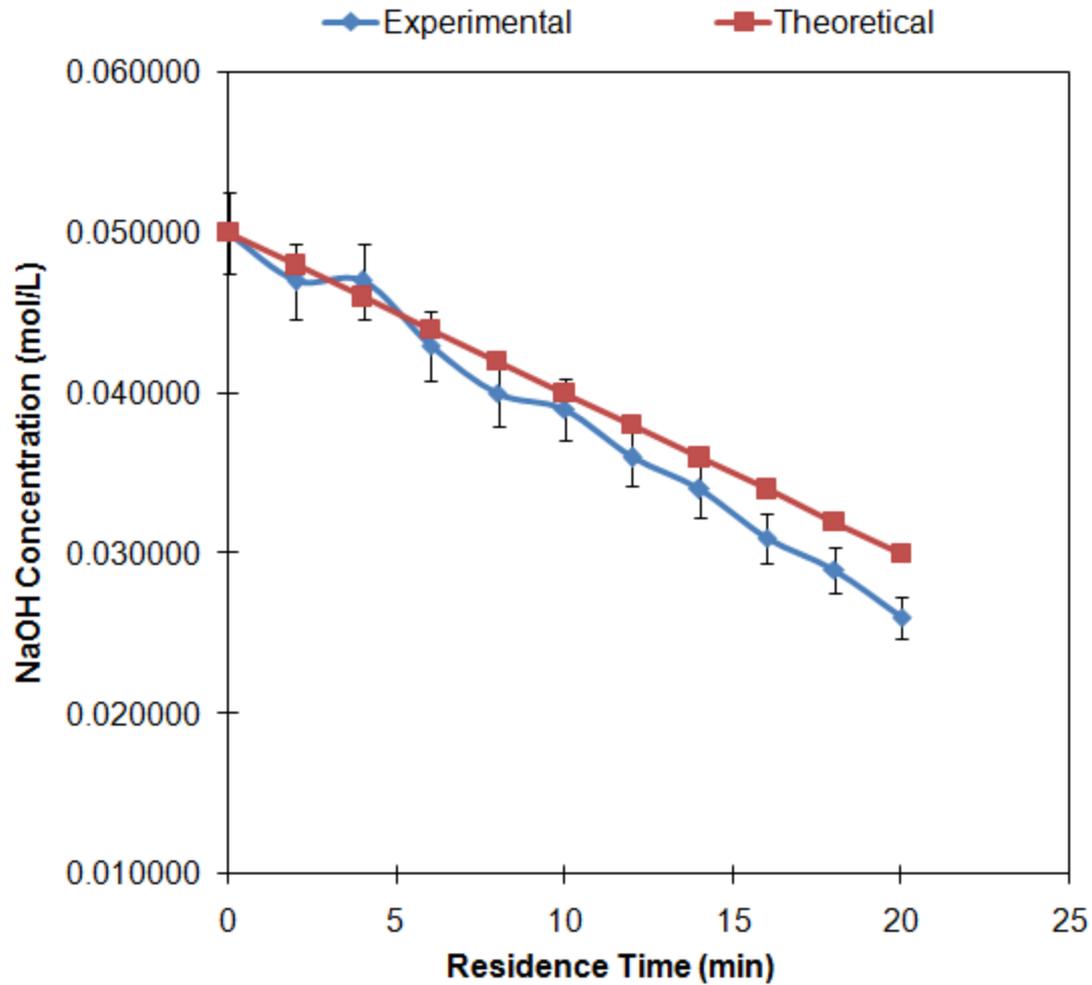
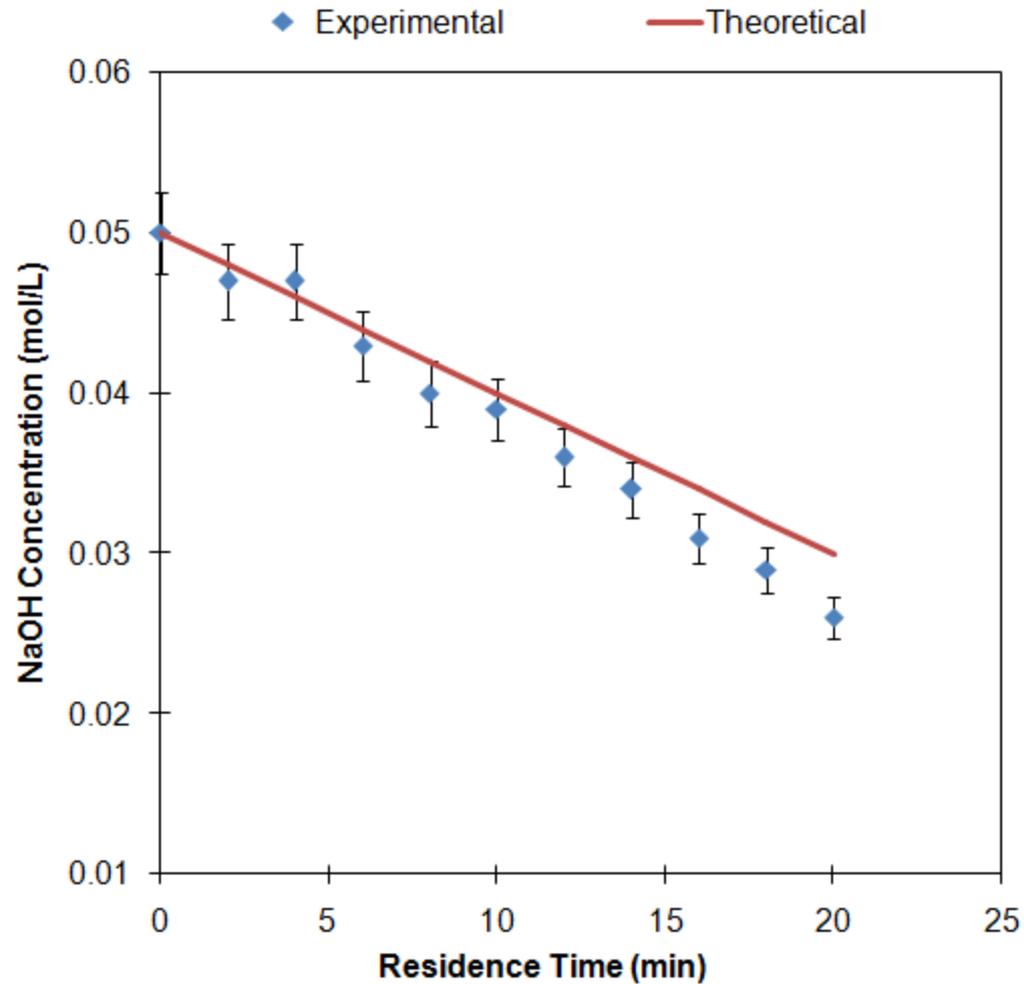


Figure 1: Water flux at increasing transmembrane pressure for two nanofiltration and one reverse osmosis membrane. Error bars indicate one standard deviation based on three data points.

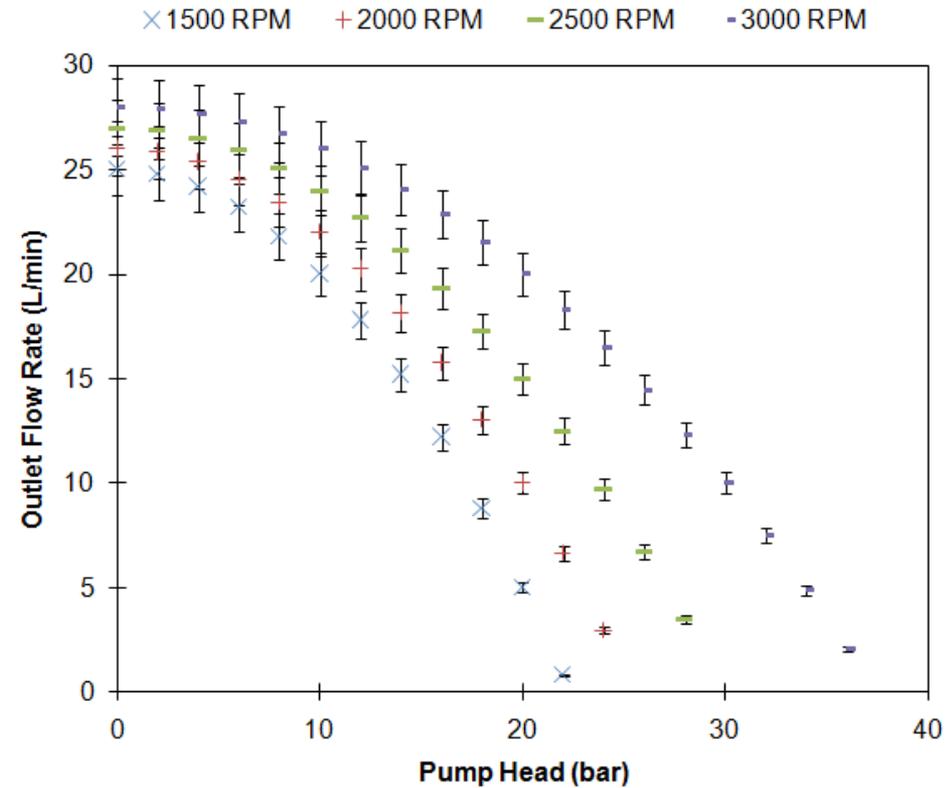
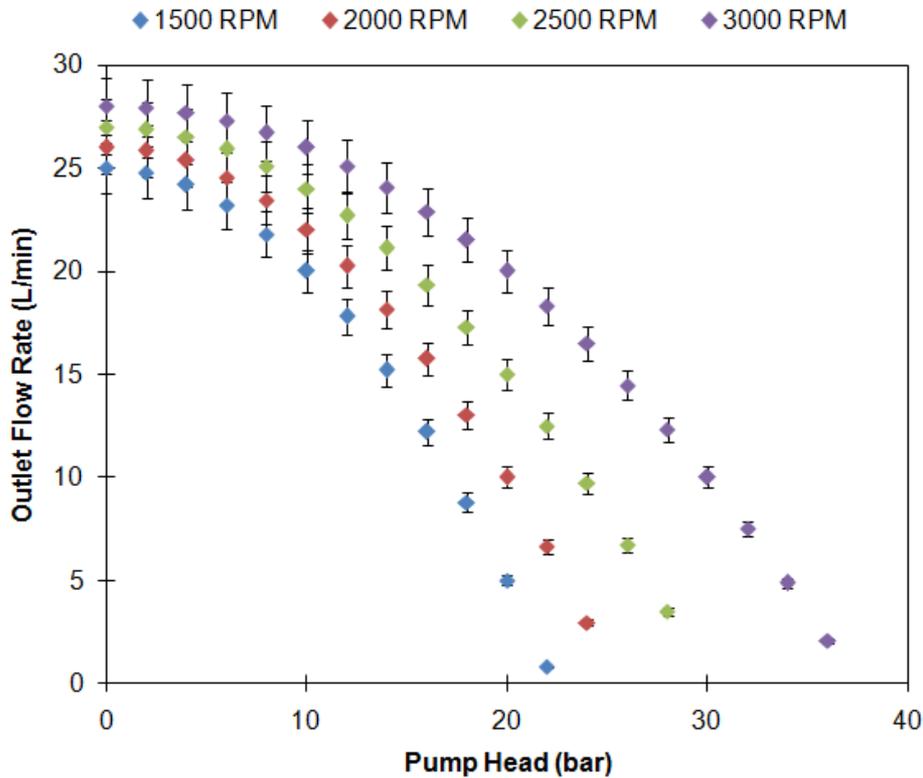
Data vs. Predictions



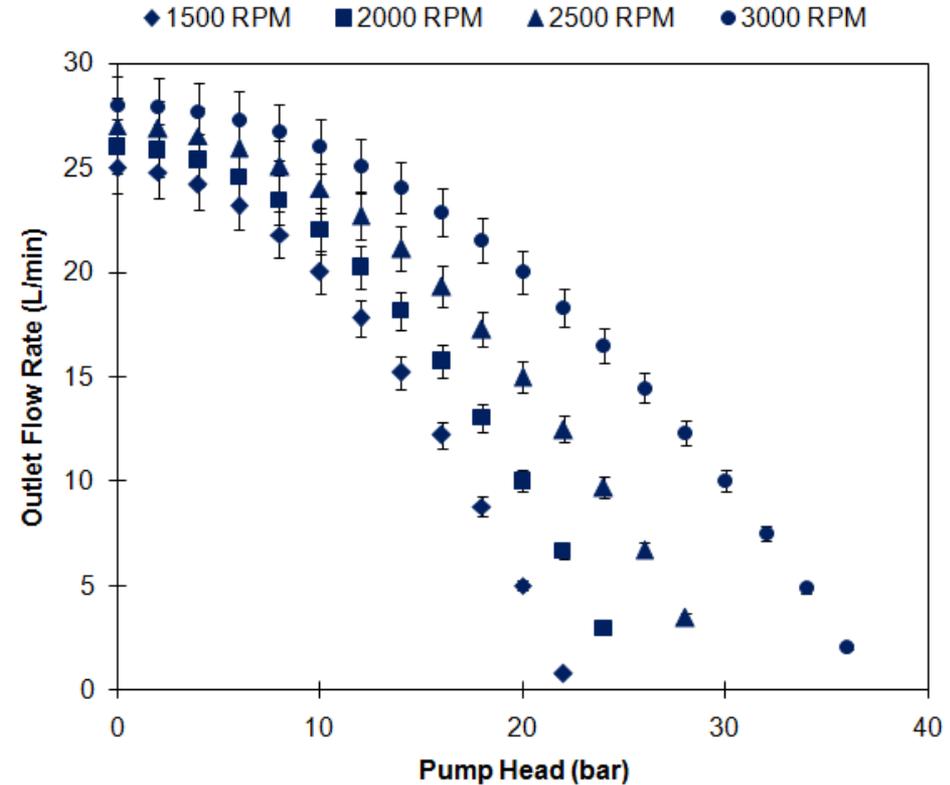
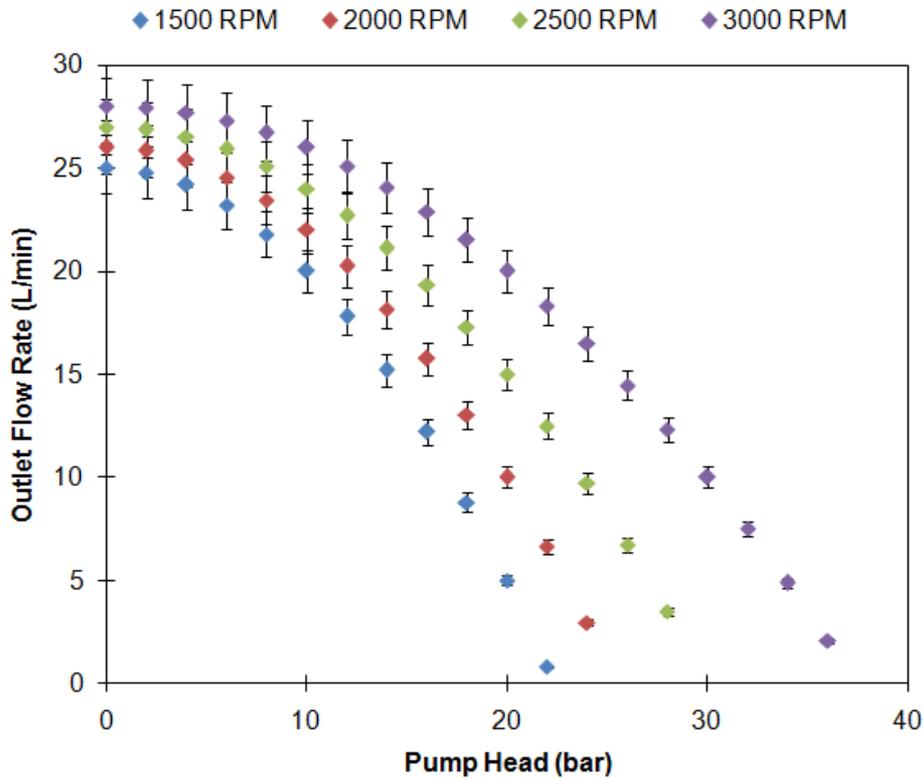
Distinguish Data & Predictions



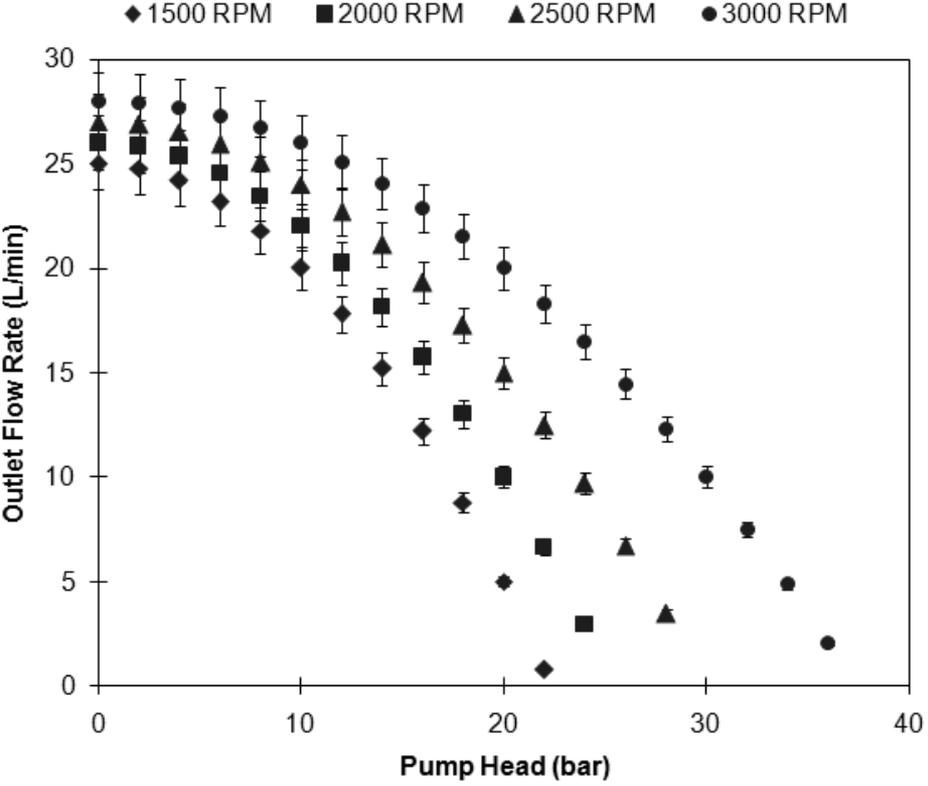
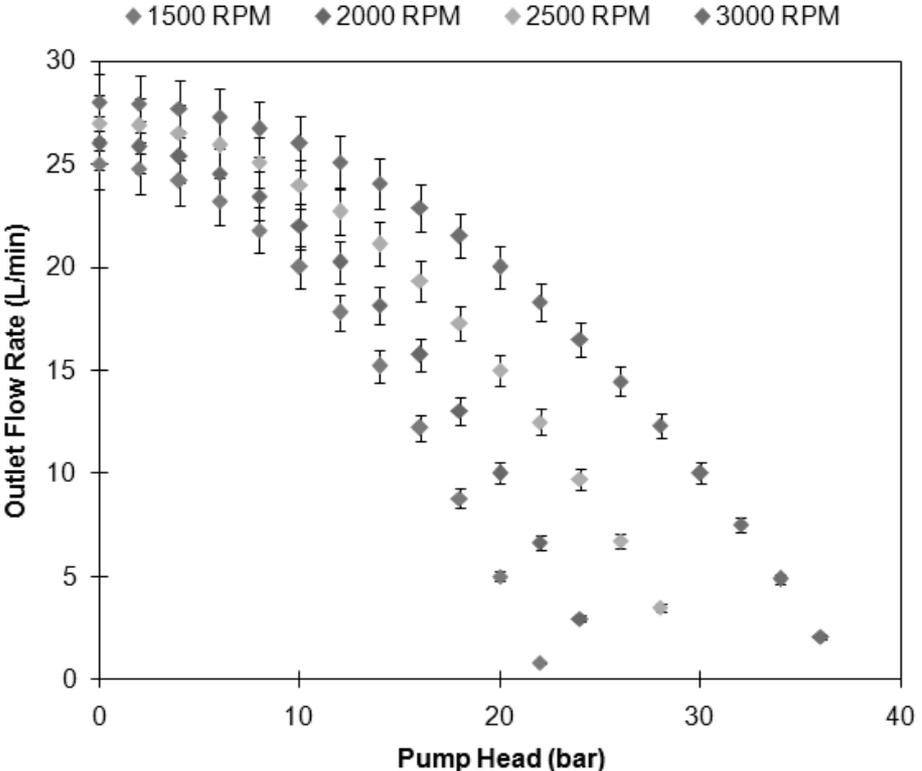
Make Your Points Visible



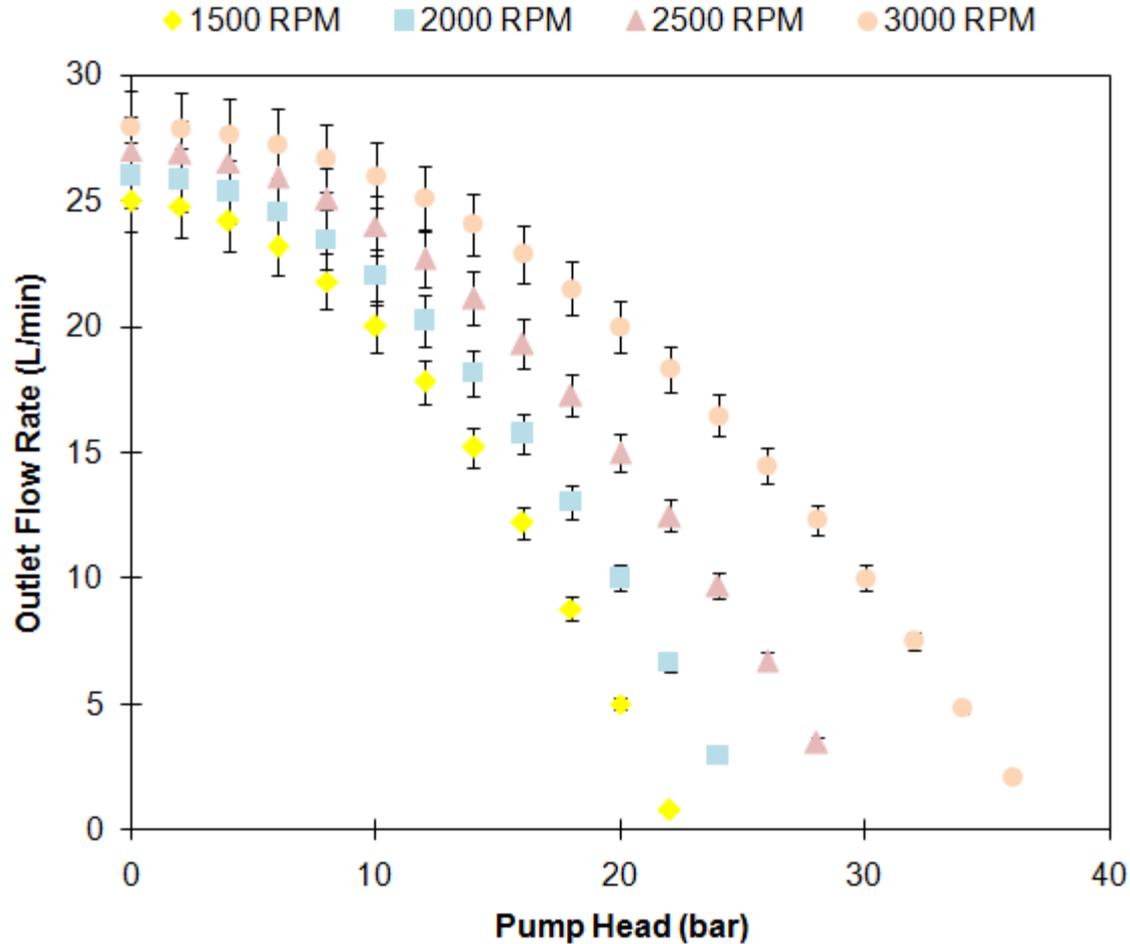
Point Shape vs. Color



Consider Your Graphs Without Color

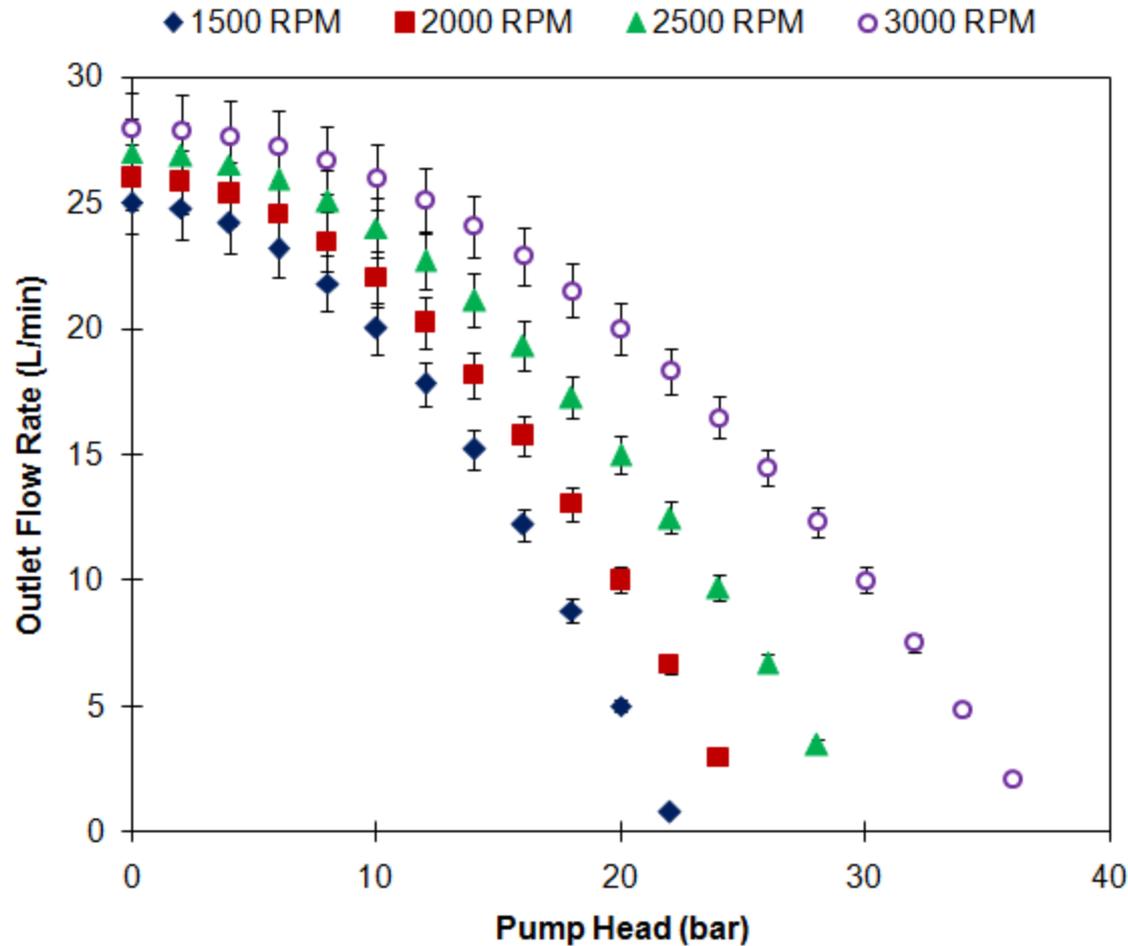


Use Visible Colors



(Hint: Don't use any of these)

Effective Use of Shapes & Color



Lies My Axis Told Me

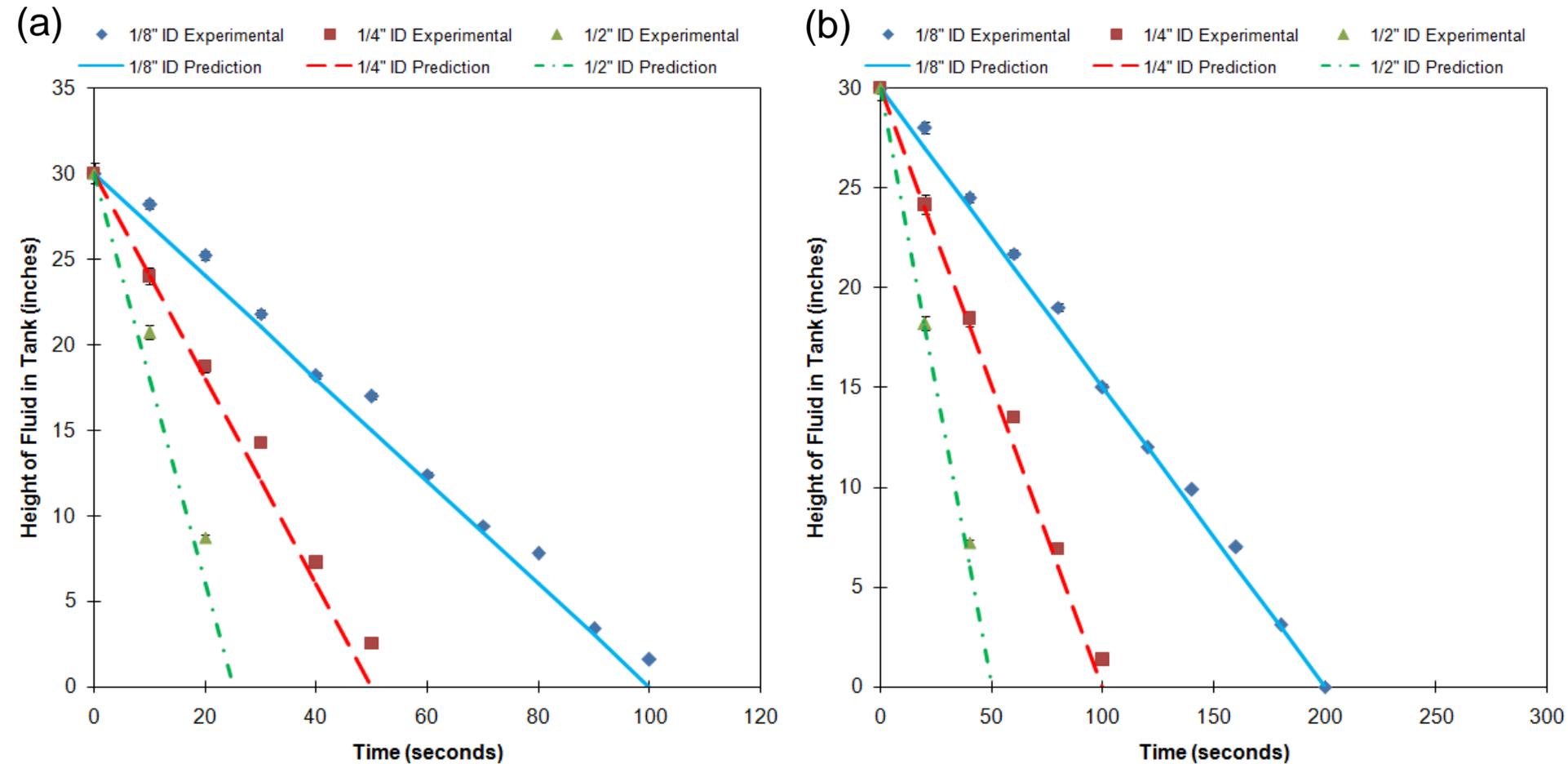


Figure 4: Height of water (a) or 50% weight glycerol solution (b) in a cylindrical tank with pipes of various diameter attached to the bottom. Points indicate the average of three measurements, and lines indicate predicted height based on a model.

Comparing Graphs

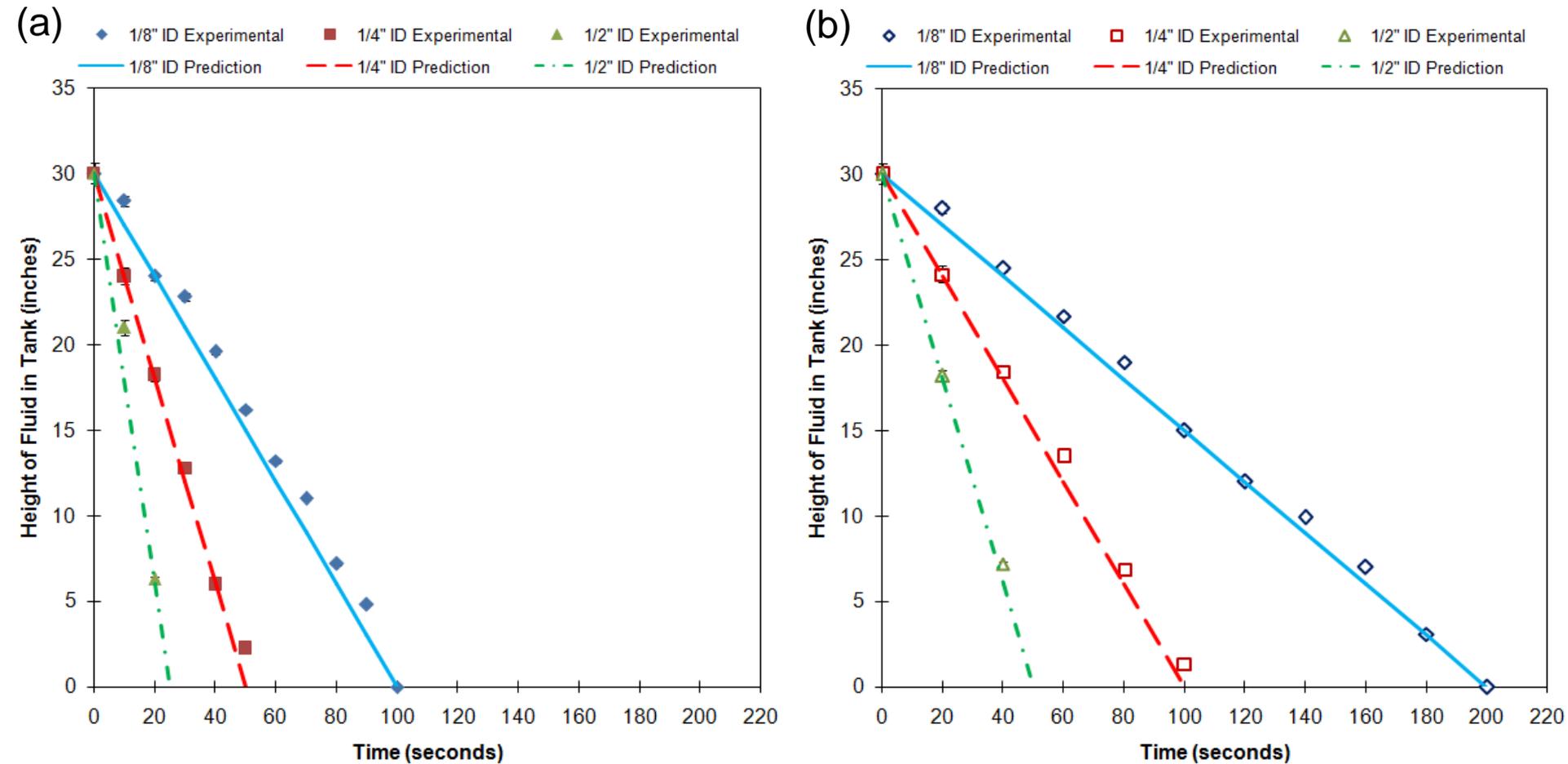


Figure 4: Height of water (a) or 50% weight glycerol solution (b) in a cylindrical tank with pipes of various diameter attached to the bottom. Points indicate the average of three measurements, and lines indicate predicted height based on a model.

Summary

- Points & Colors
 - Make points large enough to see
 - Use color & shape **intelligently** to distinguish data sets
 - Experimental data are **only points**
 - Predictions based on models/theory are **only lines**
 - Sometimes it's better to vary pattern or shape instead of color
 - **Always remember your error bars**

Summary

- Axes and Labels
 - Label all axes with descriptive titles and units
 - Make graph axes legible
 - Control your significant figures
 - When comparing multiple graphs, keep all x- and y-axis ranges the same for each graph
- Aesthetics
 - Avoid gridlines
 - Graph area should be enclosed, not entire figure