

conditions for anova

Conditions for ANOVA

1. ***Independence:***
 - ✓ **within groups:** sampled observations must be independent
 - ✓ **between groups:** the groups must be independent of each other (non-paired)
2. ***Approximate normality:*** distributions should be nearly normal within each group
3. ***Equal variance:*** groups should have roughly equal variability

(I) independence

sampled observations must be independent of each other

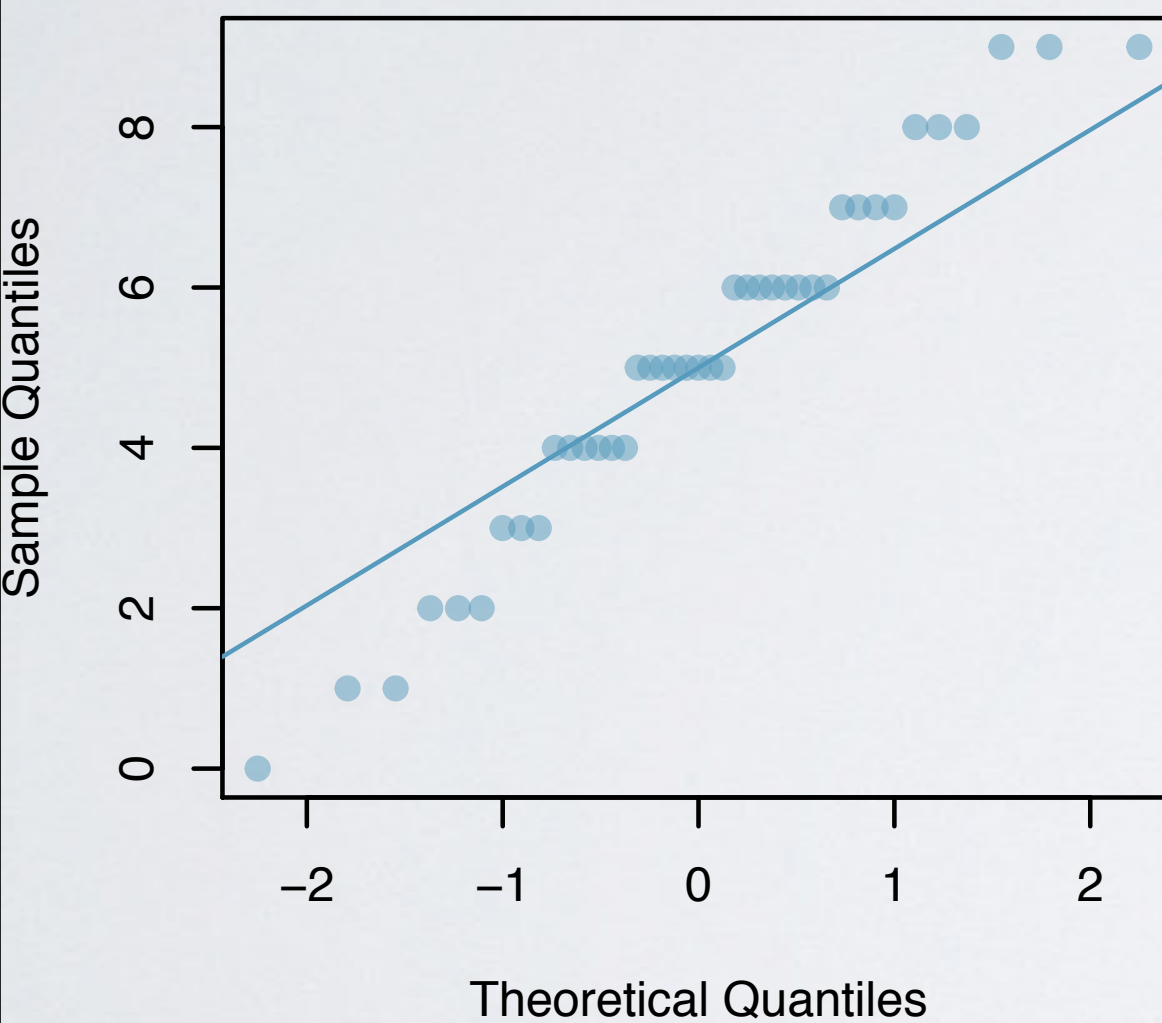
- ▶ random sample / assignment
- ▶ each n_j less than 10% of respective population
- ▶ carefully consider whether the groups may be independent (e.g. no pairing)
- ▶ always important, but sometimes difficult to check

→ *repeated
measures anova*

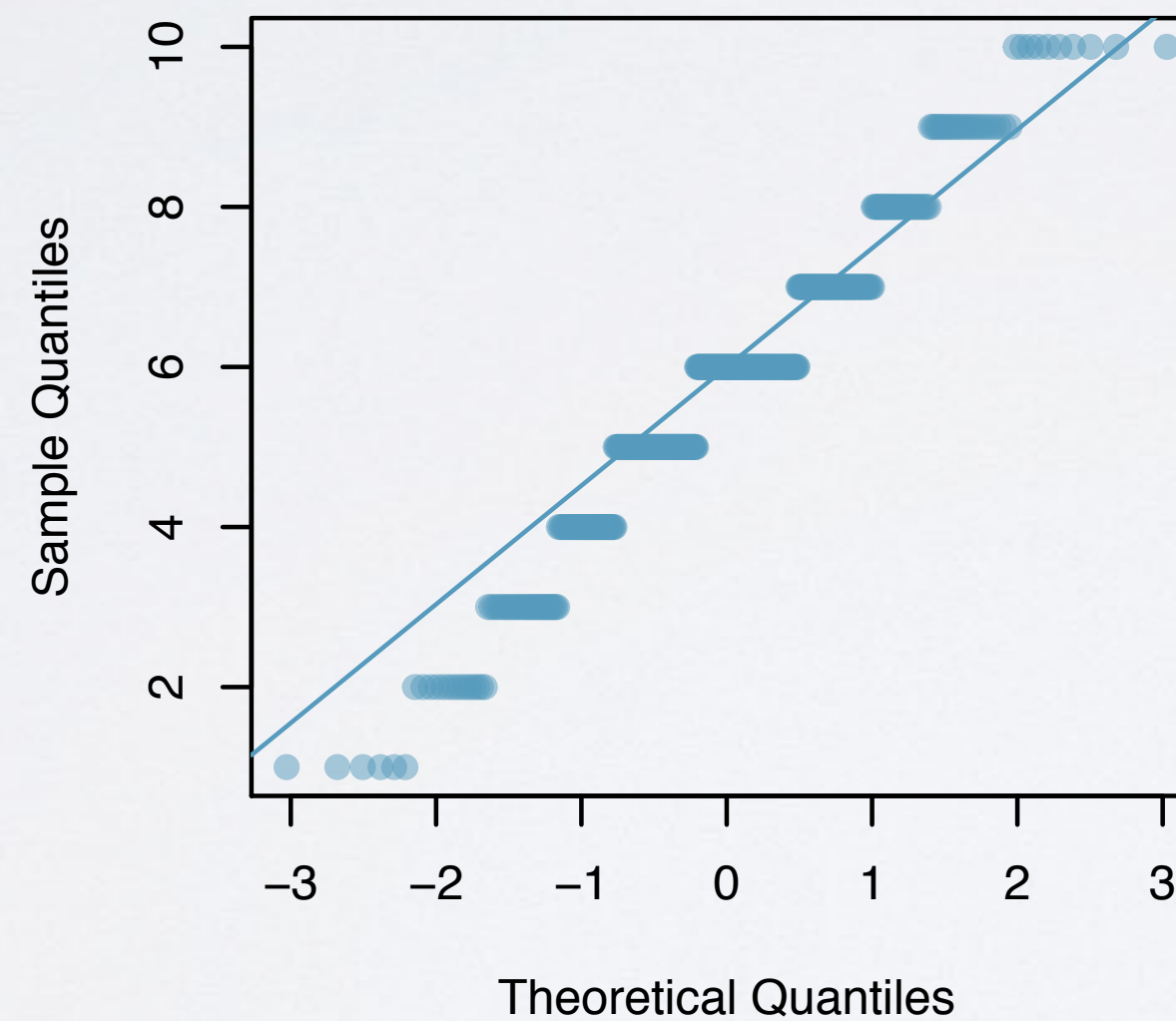
(2) approximately normal

- ▶ distribution of response variable within each group should be approximately normal
- ▶ especially important when sample sizes are small

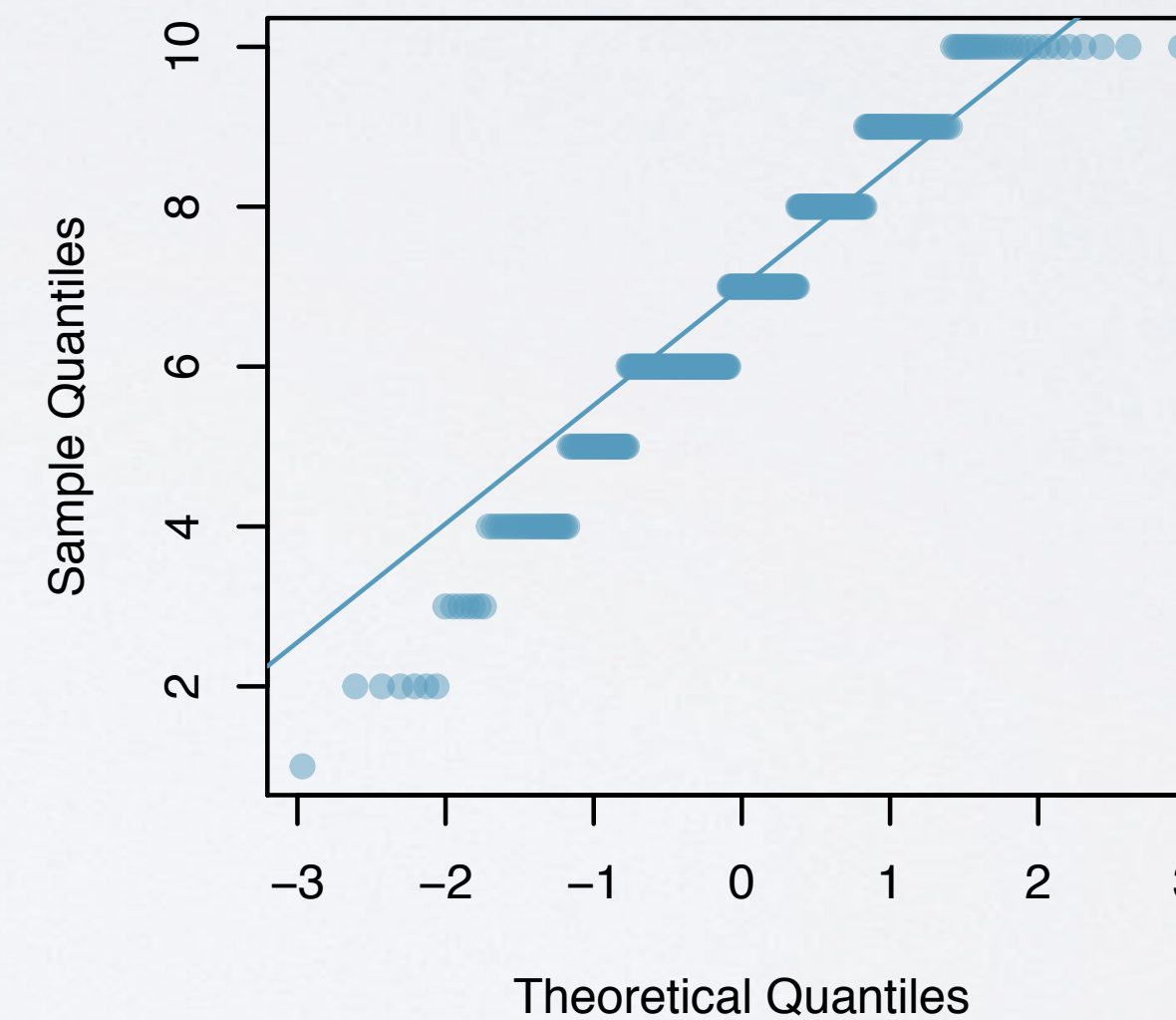
Lower class



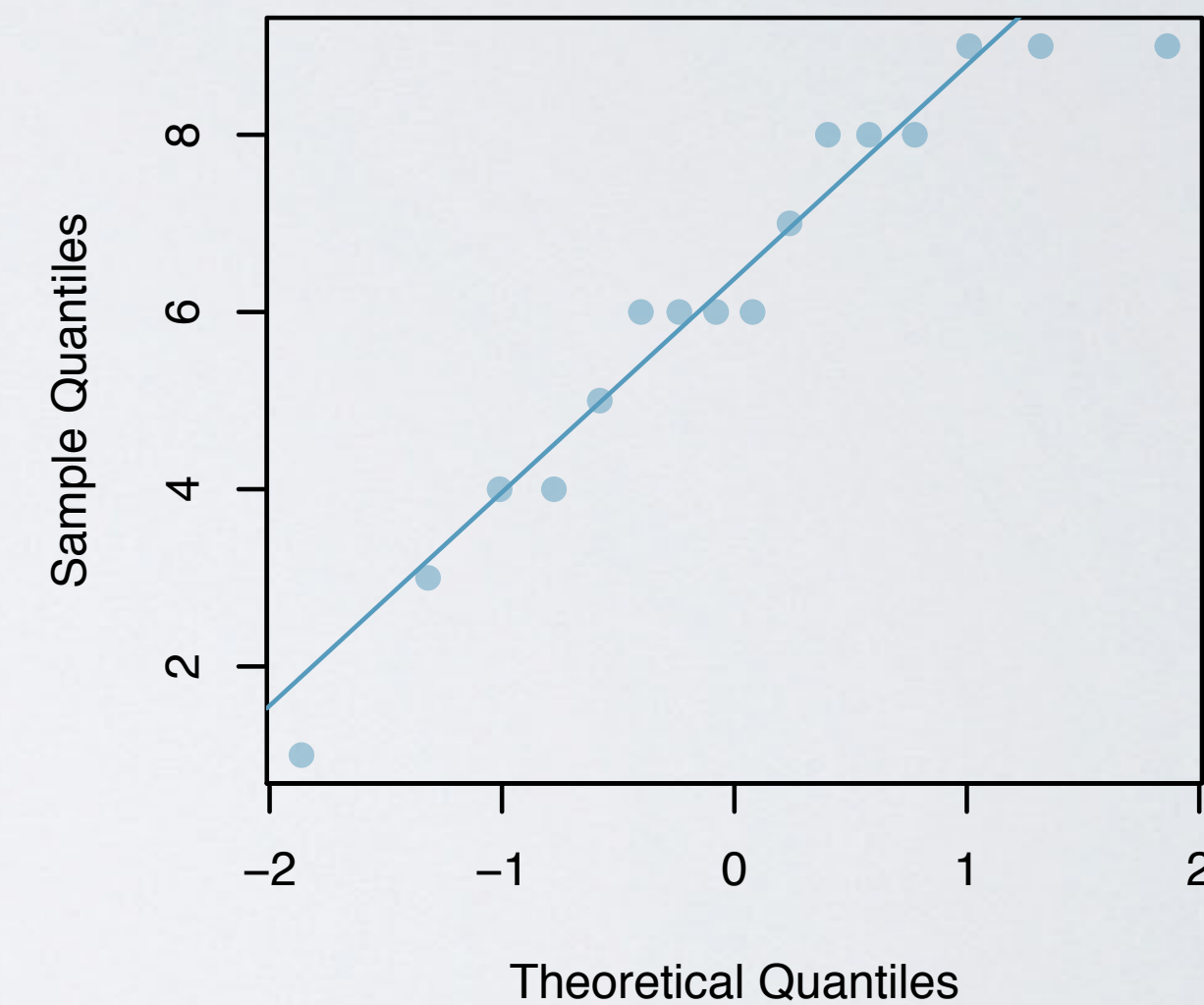
Working class



Middle class



Upper class



(3) constant variance

- ▶ variability should be consistent across groups: **homoscedastic** groups
- ▶ especially important when sample sizes differ between groups

	n	sd
lower class	41	2.24
working class	407	1.87
middle class	331	1.89
upper class	16	2.34
overall	795	1.98

