PLAN STA402/MAT924 2017

Week	Rough description	Details	Reading
1	Introduction, Notation, R, ...	Formalities, syllabus, notation, R/Rstudio, parametric model, statistical workflow	HSB 1, p 363
2	Statistical model and estimation	MoM, LS, similarities, bias, variance	Various places in HSB
3	Likelihood	Definitions, transformations	HSB 2.1 (w/o2.1.4), 2.2, 2.3.1
4	Asymptotics and comparing estimators	Asymptotic approximation, sufficiency, unbiasedness, consistency	HSB 2.4, 2.5, 3.1
5	Point and Interval estimates	Score and its distribution, confidence interval, pivot	HSB 3.2 (w/o 3.2.5), 4.1 (w/o 4.1.4)
6	Distribution of the MLE	Consistency of the MLE, constructing tests	HSB 4.2
7	Statistical tests	P-values, significance tests, similarity tests confidence intervals	HSB 3.3, 4.1.4, 4,4
8	Special cases	Extended likelihood, uniform, Laplace. Misspecification and other odds and ends	HSB 2.1.4, 3.2.5, 4.3, 4.5, 4.6
9	Multiparameter models	Score function, Fisher information, standard error, profiling	HSB 5.1, 5.2, 5.3
10	Multivariate tests	Score and Wald statistic, LRT and GLRT	HSB 5.4 5.5
11	Model Selection	Linear regression, Occam's razor AIC, Kullback-Leibler	HSB 7.1
12	Predictions	Best predictor, plugin prediction, likelihood prediction, assessing prediction.	HSB 8.1, 8.2, 8.4
13	Bayesian Modeling	Bayes vs frequentist, prior/posterior, choice of prior,	HSB 6.1, 6.2, 6.3, 6.5.1
14	Statistical models	Linear model, projections Links to various other lectures	Various places in HSB