

Review for Midterm:

Ch 1 - Intro

Shortcomings of Ordinary Histograms and Scatter Plots for Data Analysis

Ubi Exercise – Coping with flawed data collection

- Use of dummy variables

- Linear spaces as approximations

- Exploration vs Confirmation

- Dealing with Outliers and Skewed Distributions

- Graphical summary

- Preprocessing of data with index formation

Ch 2 - Univariate Data

- Multi-panel graphs

- Quantiles and Quantile Plots, interpolation

- Q-Q plots and Normal Q-Q Plots

- m-d plot

- box plot

- Fits and Residuals – Understanding the process

- Monotone Spread

- Additive and Multiplicative shifts

- Power Transformations and Log Transformation

- r-f plot, s-l plot

Mercedes Exercise – Forecasting a time series

- nonparametric smoothing for trend fitting

- seasonal patterns, non-seasonal patterns

- residual analysis in time series context

Ch 3 – Bivariate Data

- Banking to 45° - aspect ratio

- Loess Details – choice of alpha, weight function, grid

- Weighted Least Squares

- Bisquare – robust fitting – role of weighting

Histo exercise: Density estimation – kernel estimation

- weight function role, grid

- Jittering

- Slicing, choosing overlapping slicing intervals

- Role of variables – prediction vs fitting the data

- Time Series examples

 - Iterative residual analysis

 - Cut-and-stack plots

 - Cycle Plots

- Brushing and Labeling

Ch 4 – Trivariate Data

Matrix Plots

Coplots of Z on X_1 and X_2

Interaction of X_1 and X_2 on Z - two coplots

Brushing again

Coplots of Fitted Surfaces

Cropping – why?

Bimbo Exercise – simulation for analyzing data

Censored Data

Density Families

ECDF comparison and Q-Q plots

Simulation to replace missing data

Graphical Output for fitting and optimization

Tentative parameter values to illustrate method

Level Plots

Improvisation (using context to adapt methods)

Contour Plots – method of producing from grid

- use of colour

- choice of number of contours

- effect of smoothing

Level Plots of (Fitted, usually) Surfaces

Wireframe Plots

- varying perspective