Data Science 410
Timeseries Models

PROFESSIONAL & CONTINUING EDUCATION
UNIVERSITY of WASHINGTON

Review

- SVD regularization
  - SVD transforms model matrix to orthogonal coordinate system
  - Singular values are the scaling of the data in coordinate system
  - Small singular lead to unstable inverse
  - Biased model eliminates small singular values
- L2 norm regularization
  - Add small bias (white noise) to covariance matrix
  - Ensures no eigenvalue is 0
  - Computationally efficient
- L1 norm regularization
  - L1 norm penalty is hard constraint on model coefficients
- One-hot coding of categorical variables
  - With no intercept each dummy variable is intercept for a category

Schedule

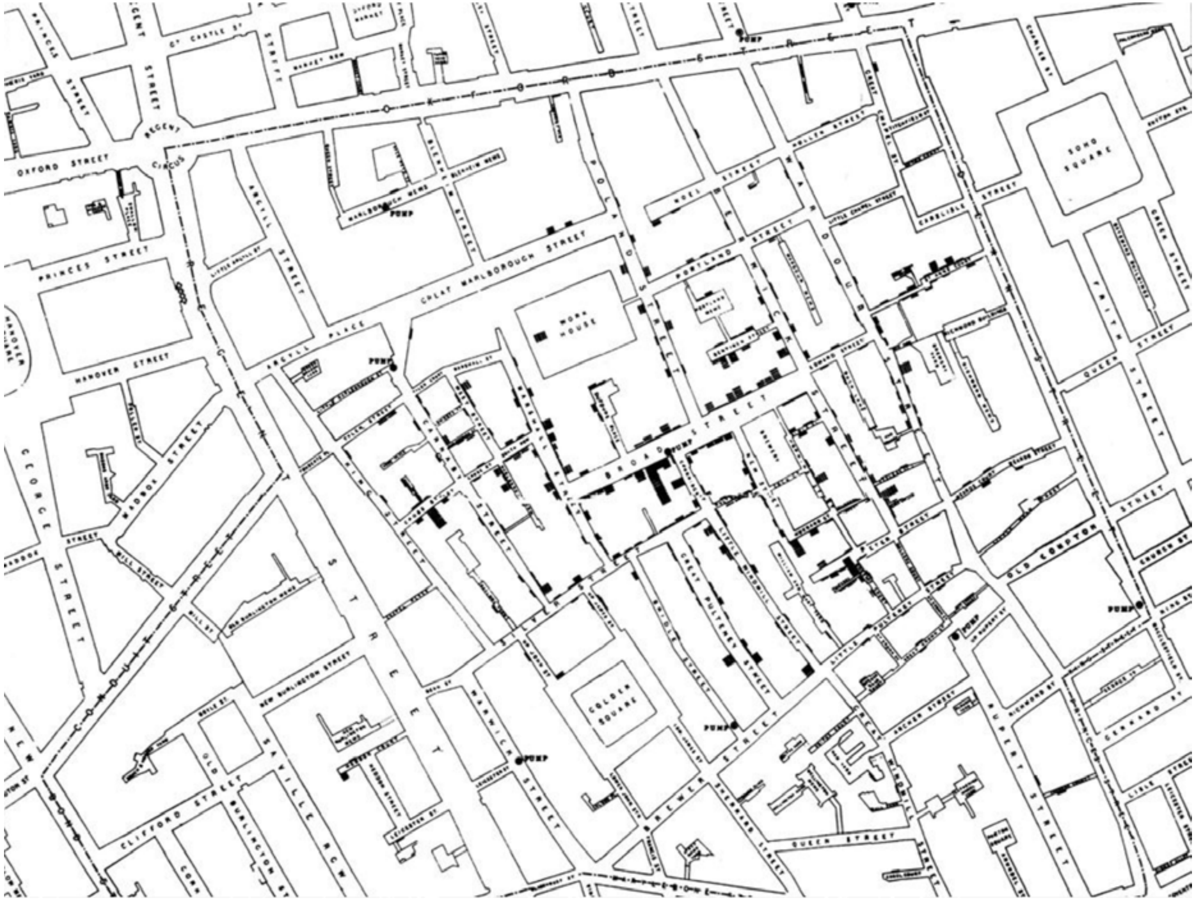
Part 1	Part 2	Part 3	Part 4
Lesson 1 Data Exploration 1	**Lesson 3** Combinatorics	**Lesson 6** Intro to Regression	**Lesson 9** Näive Bayes
Lesson 2 Data Exploration 2	**Lesson 4** Hypothesis Testing	**Lesson 7** Regularization	**Lesson 10** Basic Text Analysis
Milestone 1 Data Visualization	**Lesson 5** Intro to Bayes	**Lesson 8** Time Series Analysis	**Milestone 4** Independent Project
	Milestone 2 Hypothesis Sim	**Milestone 3** Regression Models	

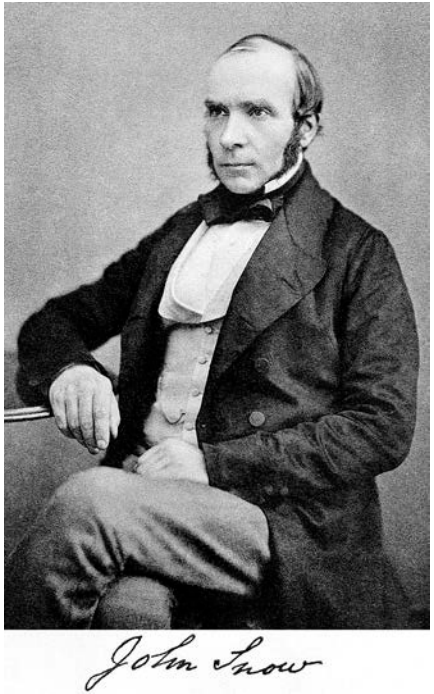
Reminders!

- Quiz 08 due March 9
- Discussion 09 must be completed by March 9
- Milestone 03 due March 13 – no extension possible!
- No Milestone 04
- Assignment 08 due March 10

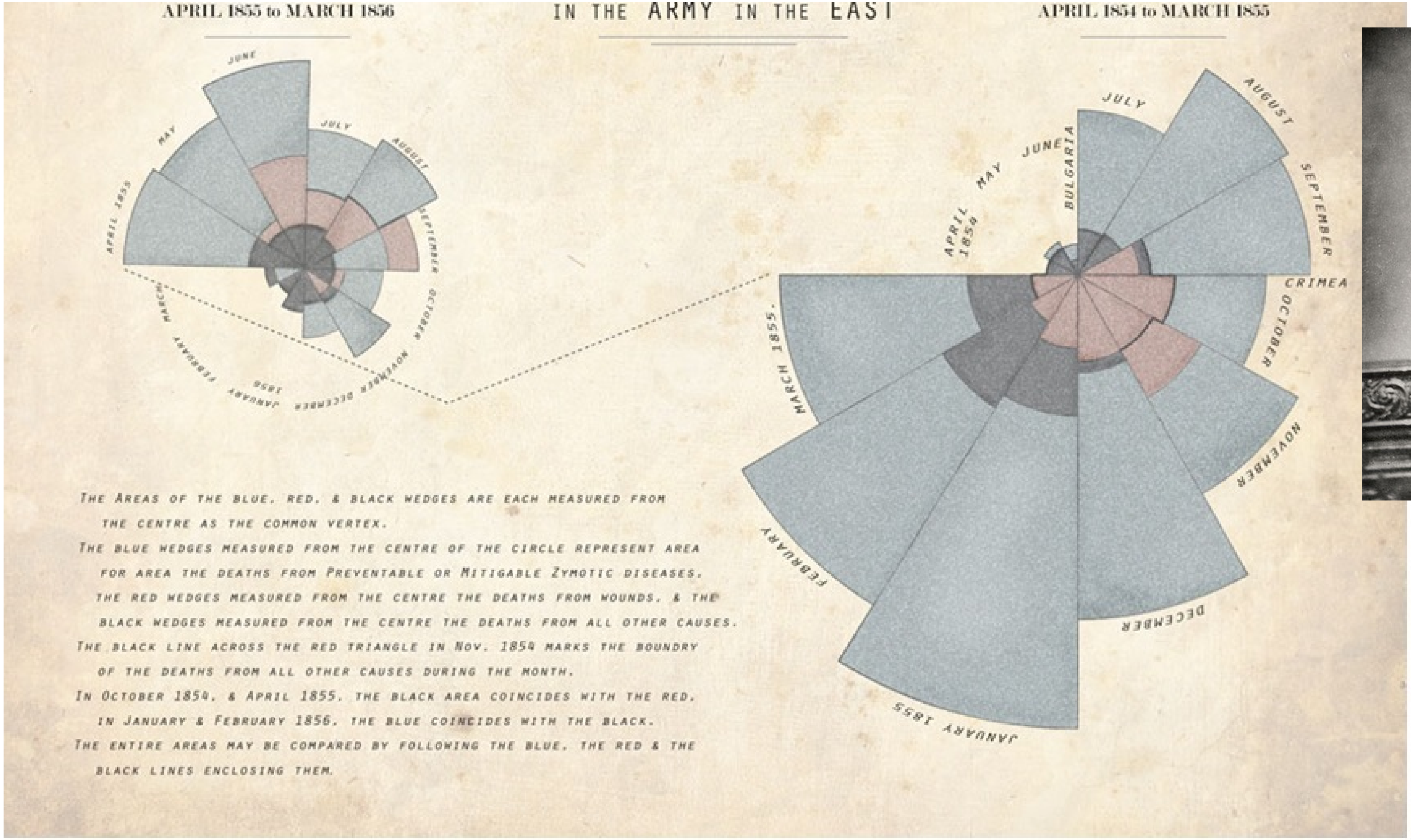
It is your responsibility to manage your time for overlapping deadlines!

John Snow's Map of Cholera Cases, London, 1854





Florence Nightingale’s Analysis of Crimean War, Death, 1854-1856



Timeseries Plot of Florence Nightingale's War Death Data, 1854-1856