Lab 11
Freeway Detector Data & Greensheild's Model (2)

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Announcements

- Report 3 grade statistics:

Mean	Max	Min	Median
3.45(86%)	4.00	0.69	3.68(92%)

- Report 4 due on Apr. 24.
- Last meeting date is Apr. 25.
- Lab Report 5.
- TranspoTalk May 1st.

Objectives

- Calculate the density, flow, and speed from detector data
- Fit the Greenshield's Model (flow-density, speed-density)
- Understand how data aggregation methods can change results

Correction

- Vehicle counts are the total counts for all detectors
- When calculating the flow, need to divide by number of detectors in the set

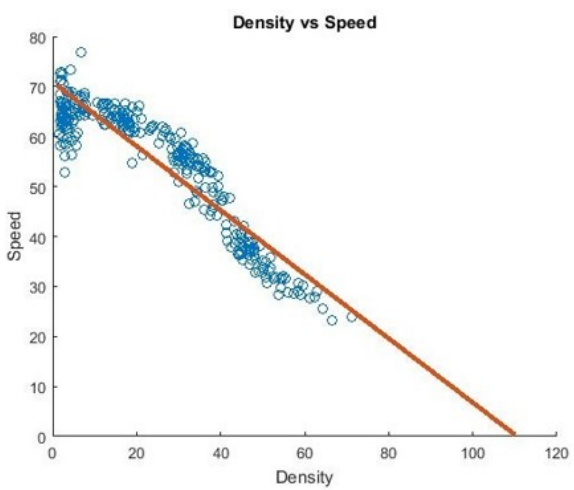
```
1 S103$Flow <- S103$Volume * 12 / 3
```

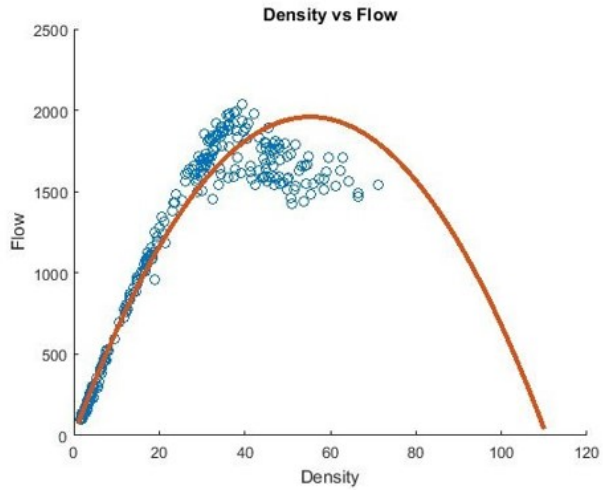
Greenshield's Model

$$u = u_f(1 - {}^{k}/_{k_j})$$

$$q = u_f(k - {}^{k^2}/_{k_j})$$

$$q = k_j(u - {}^{u^2}/_{u_f})$$





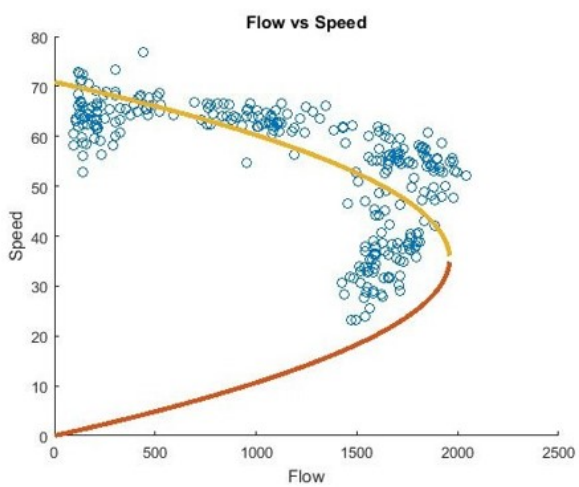


Figure: Greenshield's Model

Fit quadratic models

```
1 qm <- lm(y~poly(x, 2, raw=TRUE), data=dataset)
```