Advanced Dogfood Eating

Interactive graphics from R with Shiny and GoogleVis

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To Dos

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- Two modules ago homework
- Cover last module's homework
- Moving to interactive graphics
- googleVis
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- Next module's assignment

Announcemnents

- We will try to have an NYC meetup: http://whenisgood.net/e33cqb4
- Sorry for the slow grading

Two modules ago homework

- Generally very good!
- Common comments:
- 'Better Variable Naming'
- 'Break up lines'
- 'Try to show variability'

Last module's homework

- Thank you all for being great about installing software early
- How did you combine files? I used `csvkit` http://csvkit.readthedocs.org/
- load what we need

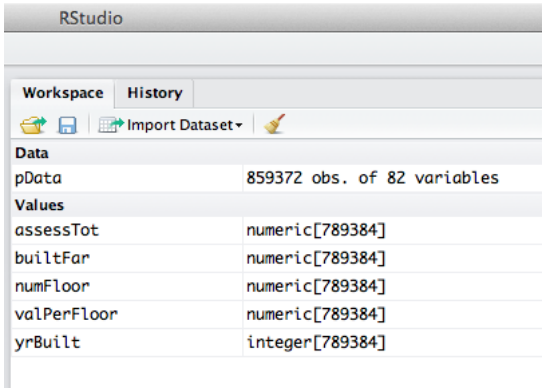
```
library("ggplot2")
library("plyr")
library("bigvis")

pData <- read.csv("/Users/josh.laurito/personal/cuny/all_PLUTO_data.csv")
```

Last week's homework - data cleaning

```
builtFar <- pData$BuiltFAR[pData$YearBuilt > 1850 & pData$NumFloors != 0  ]

numFloor <- pData$NumFloors[pData$YearBuilt > 1850 & pData$NumFloors != 0 ]

yrBuilt  <- pData$YearBuilt[pData$YearBuilt > 1850 & pData$NumFloors != 0 ]

assessTot <- pData$AssessTot[pData$YearBuilt > 1850 & pData$NumFloors != 0]

valPerFloor <- assessTot/numFloor
```

Last week's homework - lots of data

- You probably noticed that there was a lot of data
- Slows down analysis: viz becomes more important and harder to do

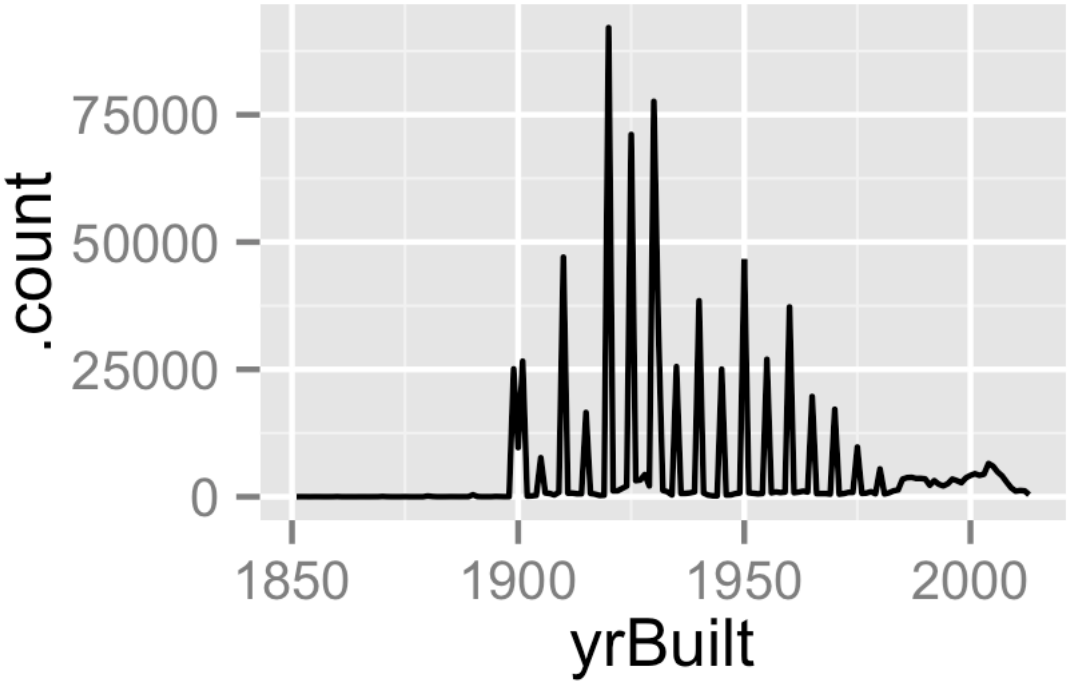


Last week's homework - building 'cut-off date'

- Poorly specified problem
- General concept: what does it mean to be an 'old building'
- We should start by checking when buildings were built

```
summary(yrBuilt)
yr <- condense(bin(yrBuilt, 1))
autoplot(yr)
ggsave('assets/img/yrBuilt.png',height=2, width = 3)
```

Last week's homework - building 'cut-off date'

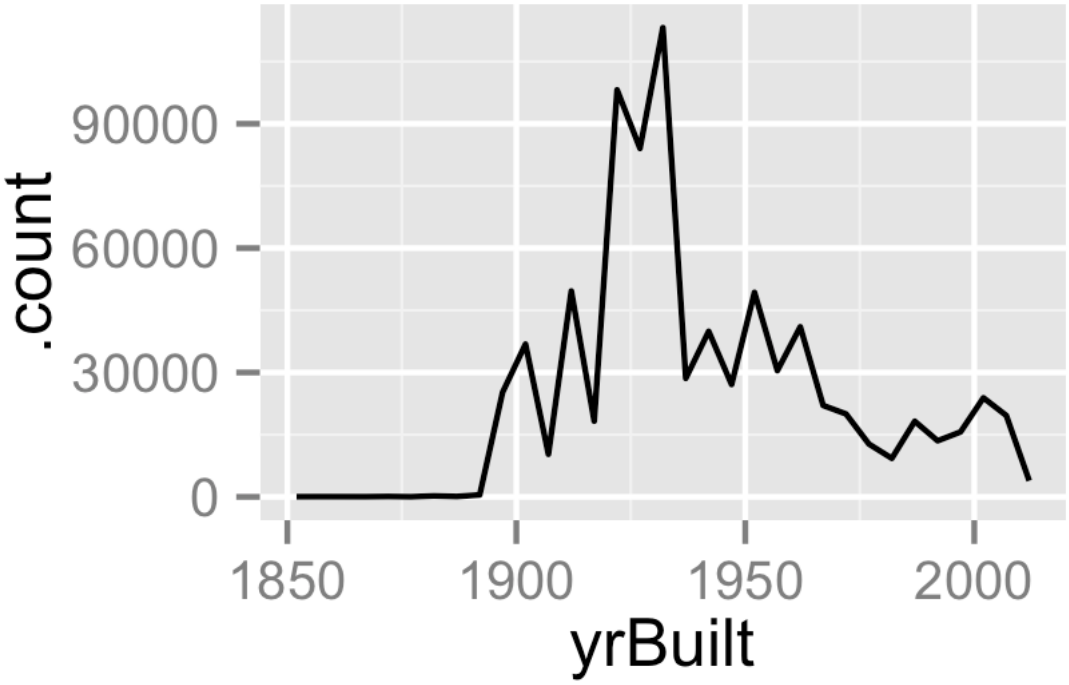


Last week's homework - building 'cut-off date'

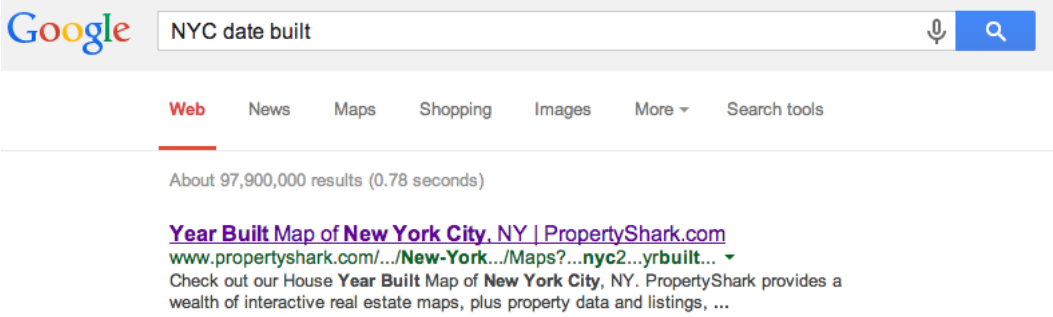
- Oh no! Our data stinks!
- Clearly estimated when year =< 1980
- Can we proceed? Depends on context of questions

```
yr <- condense(bin(yrBuilt, 5))
autoplot(yr)
ggsave('assets/img/yrBuilt5.png', height=2, width = 3)
```

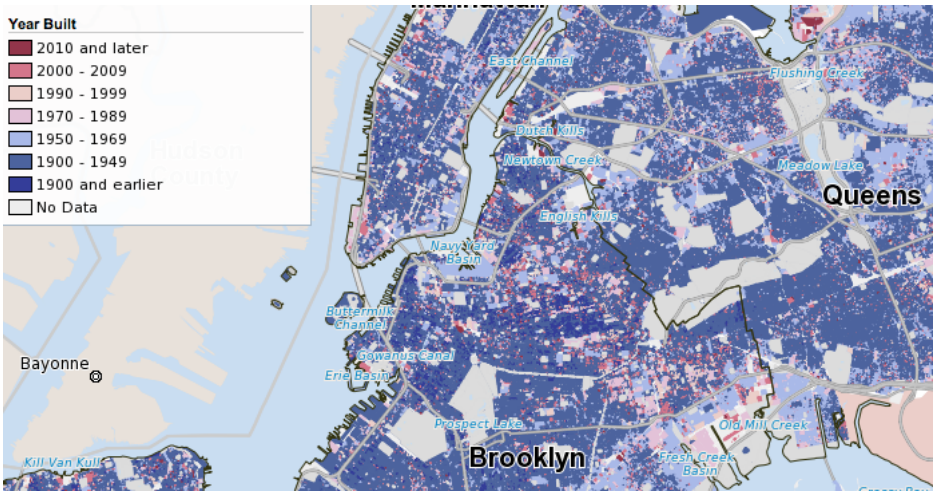
Last week's homework - building 'cut-off date'



Last week's homework - double check suspicious data



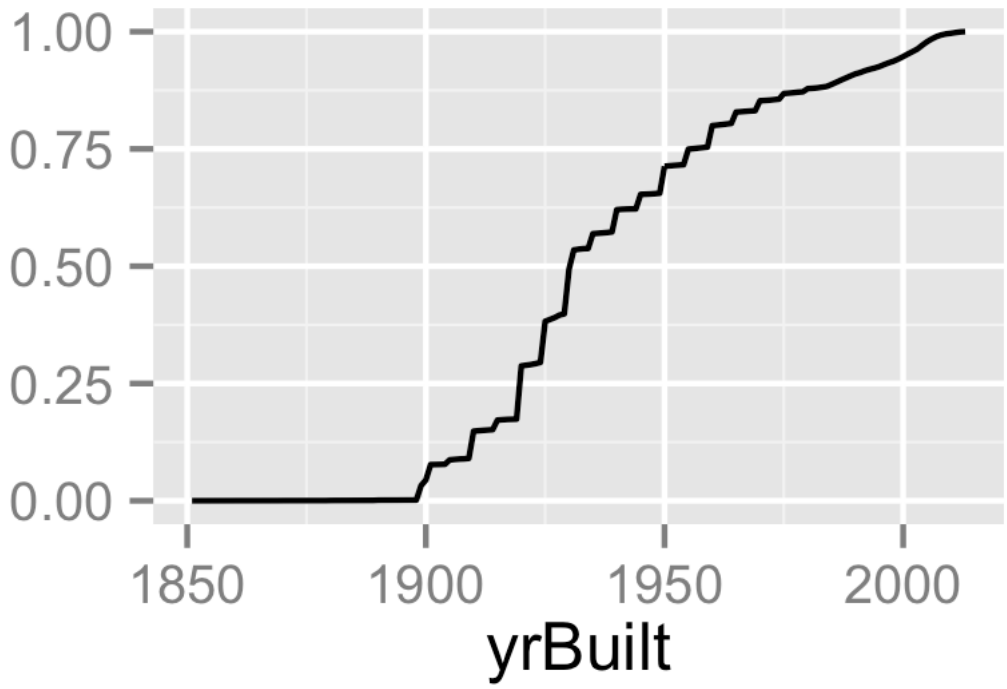
Last week's homework - double check suspicious data



Last week's homework - finding cut-offs

```
yr2 <- condense(bin(yrBuilt, 1))
total <- sum(yr2$.count)
yr2$perc_built <- cumsum(yr2$.count)/total
ggplot(yr2, aes(x= yrBuilt, y=perc_built)) + geom_line() +ylab('')
ggsave('assets/img/cumcurve.png', height=2, width = 3, dpi = 100)
```

Last week's homework - finding cut-offs

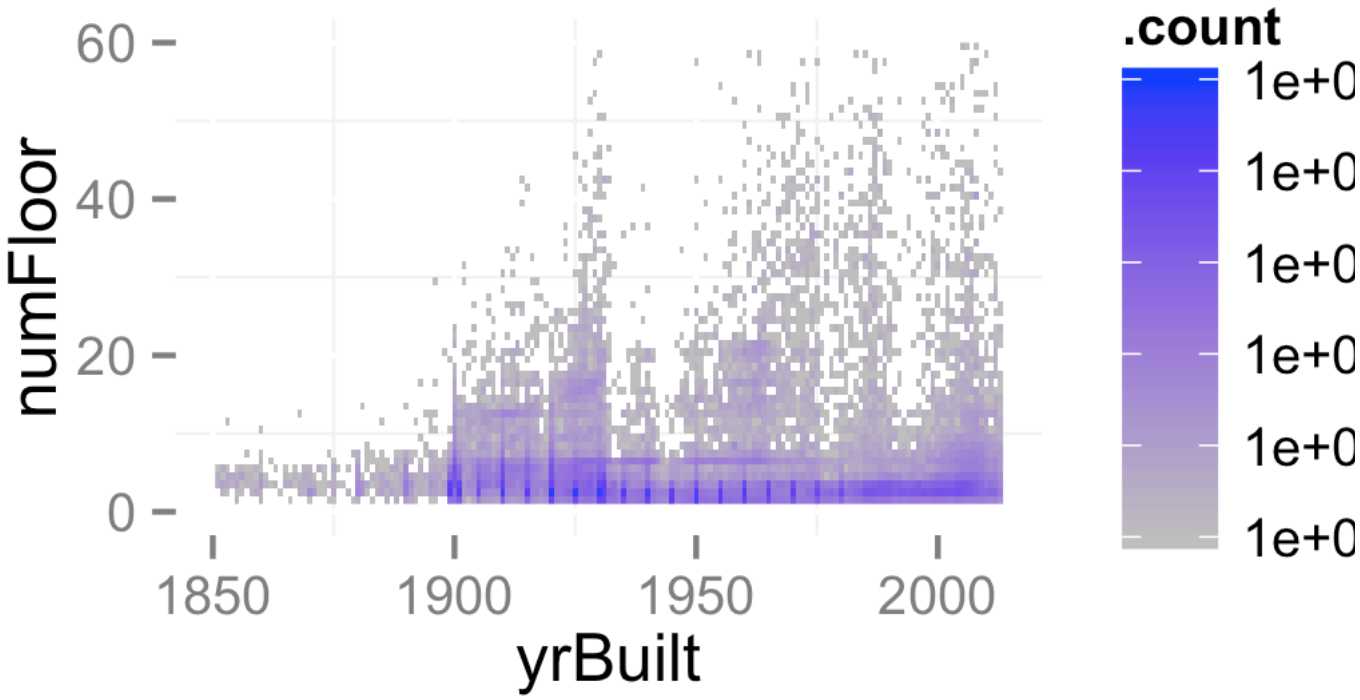


Last week's homework - cut-offs by group

- Similar question to previous, only with groups

```
flrVsYr <- condense(bin(yrBuilt, 1), bin(numFloor, 1))
p <- autoplot(flrVsYr) + theme(panel.background=element_rect(fill='white')) + ylim(0,60)
p + scale_fill_gradient(limits= c(1,100000),
                        low='grey',
                        high='blue',
                        trans="log",
                        breaks=myBreaks)
ggsave('assets/img/yr_v_flr.png', height=2, width = 4, dpi = 300)
```

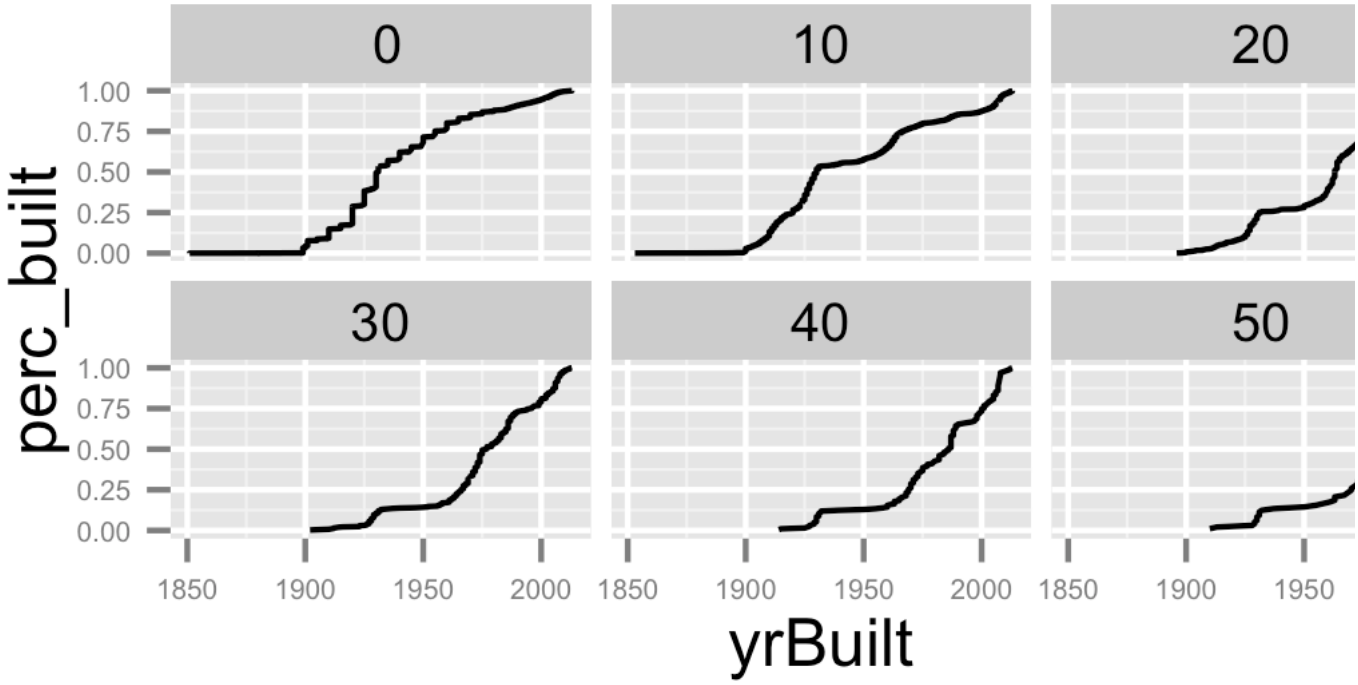
Last week's homework - cut-offs by group



Last week's homework - cut-offs by group

```
flrVsYr$stories <- 10*trunc(flrVsYr$numFloor/10)
flrVsYr$stories <- sapply(flrVsYr$stories, min, 50)
flrVsYr$num_built <- ave(flrVsYr$.count,flrVsYr$stories, FUN=cumsum)
flrVsYr$perc_built <- flrVsYr$num_built/ ave(flrVsYr$.count,flrVsYr$stories, FUN=sum)
ggplot(flrVsYr, aes(x=yrBuilt, y=perc_built, group=stories)) + geom_line() +
facet_wrap(~ stories) + theme(axis.text=element_text(size=5))
ggsave('assets/img/stories.png', height=2, width = 4, dpi = 300)
```

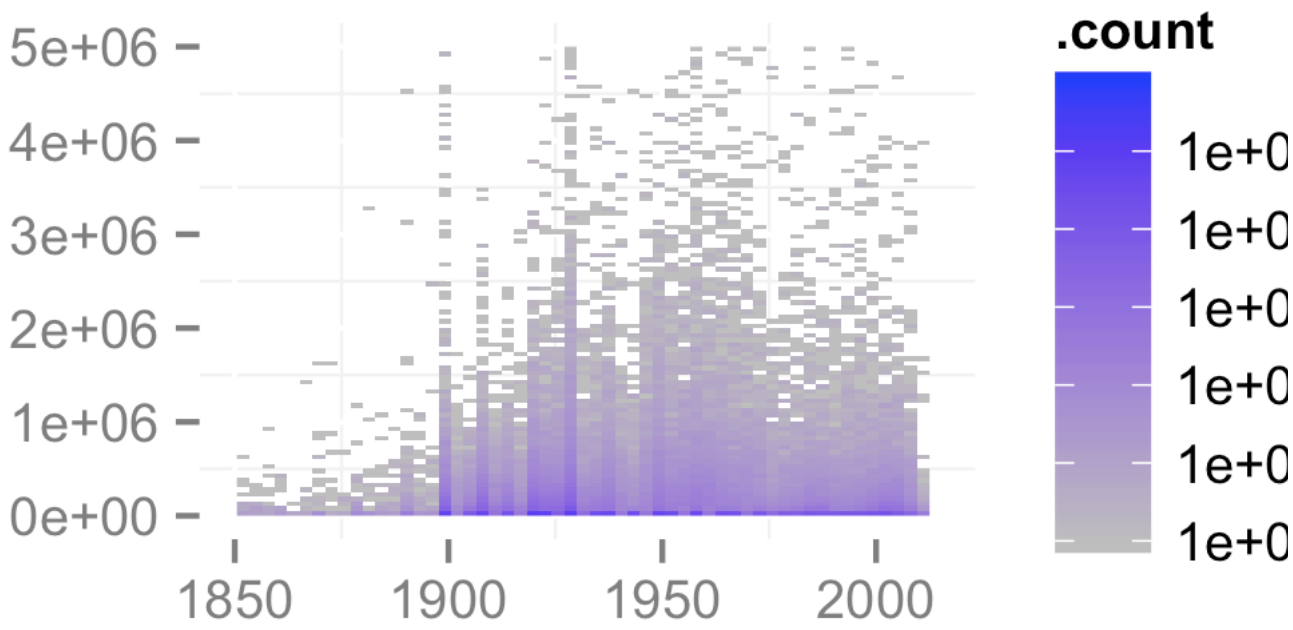
Last week's homework - cut-offs by group



Last week's homework - cut-offs by group

```
assessVsYr <- condense(bin(yrBuilt[assessTot < 5000000],3), bin(valPerFloor[assessTot < 5000000
p <- autoplot(assessVsYr) + theme(panel.background=element_rect(fill='white')) + xlim(1850,2015
p + scale_fill_gradient(limits= c(1,1000000),
                        low='grey',
                        high='blue',
                        trans="log",
                        breaks=myBreaks)
ggsave('assets/img/assess.png', height=2, width = 4, dpi = 300)
```

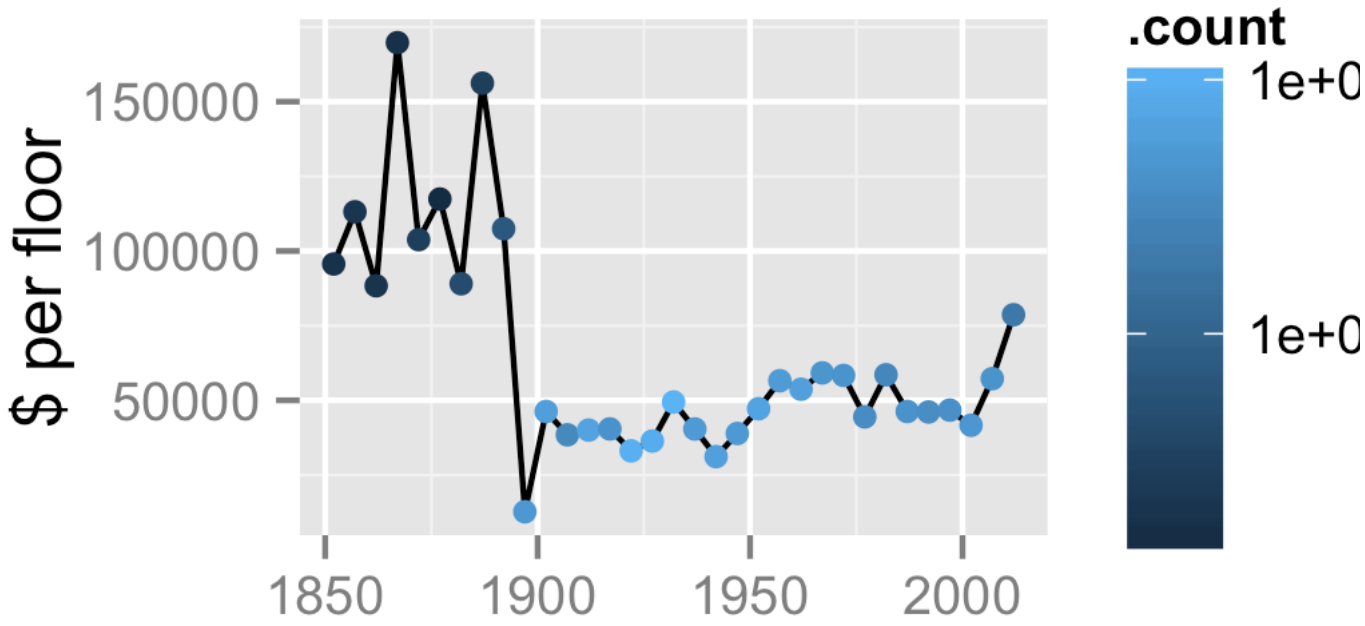
Last week's homework - cut-offs by group



Last week's homework - wartime

```
flrVal <- condense(bin(yrBuilt[assessTot < 5000000],5), z =valPerFloor[assessTot < 5000000] )
autoplot(flrVal) +xlab('') + ylab('$ per floor')
ggsave('assets/img/flrVal.png', height=2, width = 4, dpi = 300)
```

Last week's homework - cut-offs by group



Moving to interactive graphics

- Painful to create multiple different charts for investigation
- We are moving away from statistics here and towards design
- `ggplot2` is doing this too- moving to `ggvis`

Moving to interactive graphics - terms

- 'Server-side': what happens on the server (back-end, database)
- 'Client-side': what happens on the user's computer (Browser, JS)
- Scalable: how a site handles many visits at once

googleVis

- Often known as 'Hans Robling style charts'
- Interface to Google Chart API
- Compiles to HTML/Javascript
- Great demo by running `demo('googleVis')`

googleVis - advantages

- Fast and Easy
- Output is interactive and in-browser
- Very simple to combine charts

googleVis - drawbacks

- Warning: not all google charts are secure
- Need web access to run
- Risky: Google has history of deprecating projects

shiny

- Sponsored by RStudio: similar to googleVis but has a server-side component
- Can be integrated with googleVis
- Open Source

Next module's reading

- All on Blackboard

Next module's assignment

- CDC Wonder Data http://wonder.cdc.gov/controller/datarequest/D76