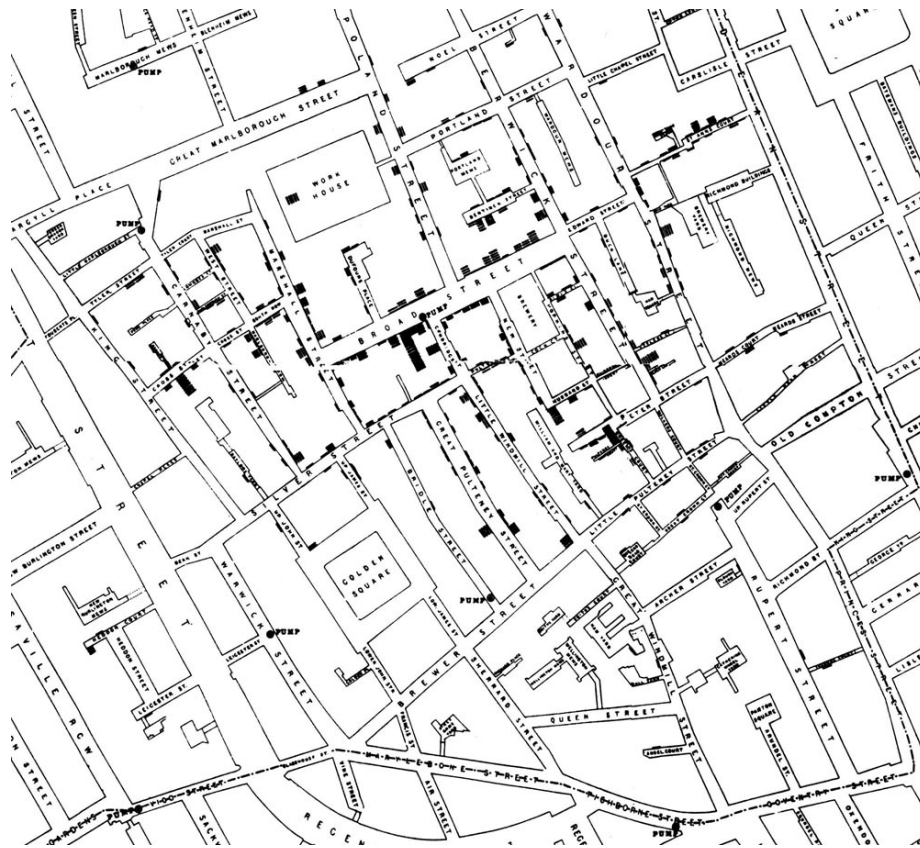# Visualization

author: Jeffrey Chrabaszcz date: 3 January 2014 width: 1024 height: 768

Outline

- **Graphic examples**
- Grammar of graphics
- Constructing ggplot2 graphics

===

Anscombe's quartet (1973)

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```
1 2 3 4
9 9 9 9

  1   2   3   4
7.5 7.5 7.5 7.5

  1   2   3   4
3.3 3.3 3.3 3.3

1 2 3 4
2 2 2 2

   1    2    3    4
0.82 0.82 0.82 0.82
```

Three ways to plot a relationship

Better to keep them on the same axes

Maybe transform data

Final destination (McCandless, 2009)

Outline break

- Graphic examples
- **Grammar of graphics**
- Constructing ggplot2 graphics

```
==========================================================
==========================================================
==========================================================
==========================================================
==========================================================
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```

Fully-specified plot

```
p <- ggplot(diamonds, aes(x = carat))
p <- p + layer(
  geom = "bar",
  geom_params = list(fill = "steelblue"),
  stat = "bin",
  stat_params = list(binwidth = .01)
)
```

===

Outline break

- Graphic examples
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- **Constructing ggplot2 graphics**

Measles plots (categorical)

```
p <- ggplot(a, aes(center, RT))
p + geom_boxplot(outlier.size = 0) + geom_jitter(color = "firebrick", alpha = .05) +
  theme_bw(base_size = 28) + facet_wrap(~gain) + xlab("center (digits)") + ylab("rt (ms)")
```

Recast as continuous

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```
p <- ggplot(a[a$Gain == 1,], aes(Center, RT))
p <- p + geom_jitter(alpha = .05) + geom_smooth(formula = y ~ log(x), method = "lm", se = F/
```