

1. Intro to Grammar of Graphics

Grammar of Graphics

Data visualizations are made up of layers. Each layer consists of three parts:

data	tabular dataset associated with the layer
geom	graphical element associated with each observation
aesthetics (aes)	mappings from properties of the plot that associate features in the dataset with elements of the geometry

Complex plots can be constructed by putting together multiple layers.

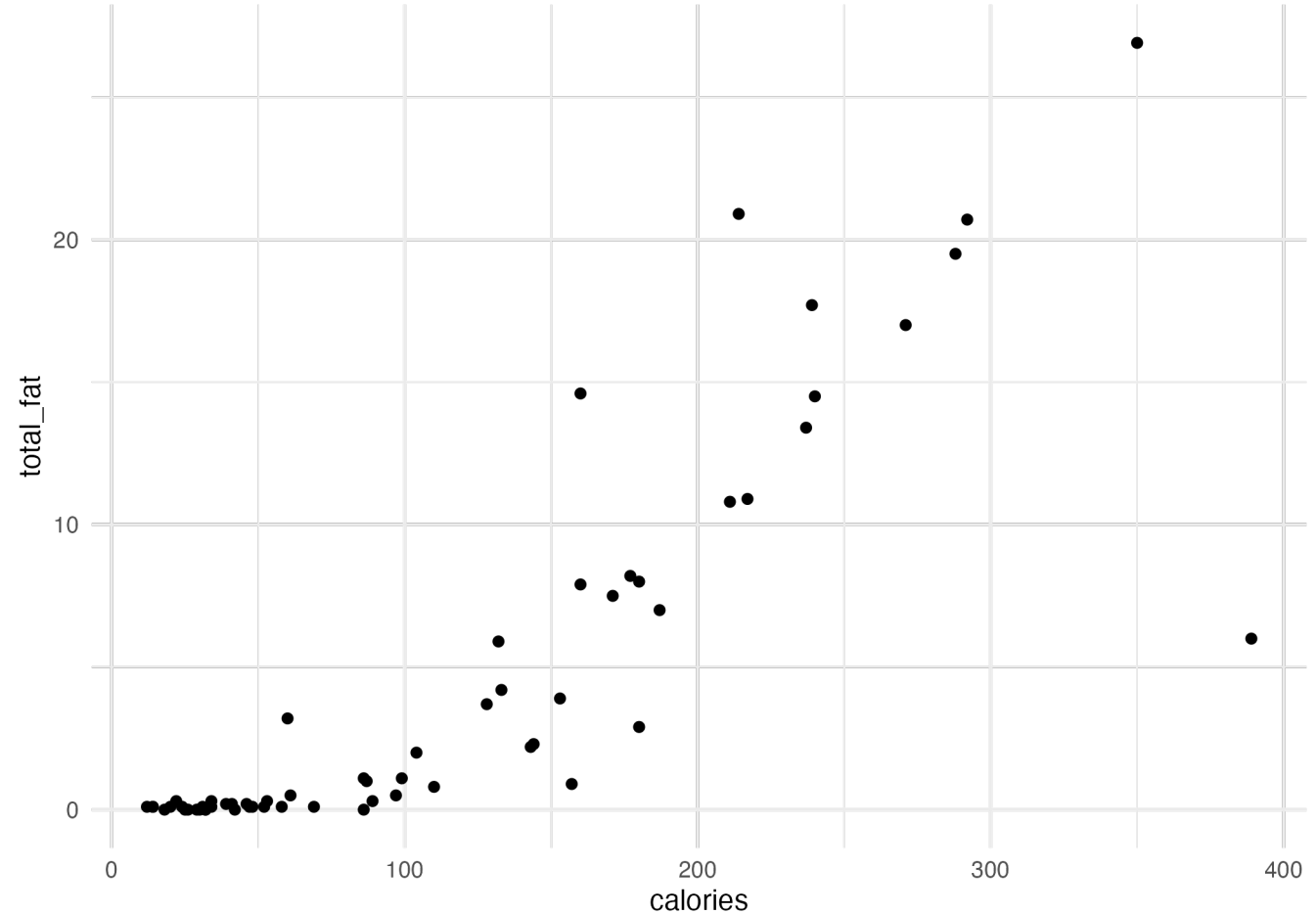
Scatter Plot Example

data: food

geom: point

aes: { x: calories, y: total_fat }

each **observation** in the food dataset is represented by a point



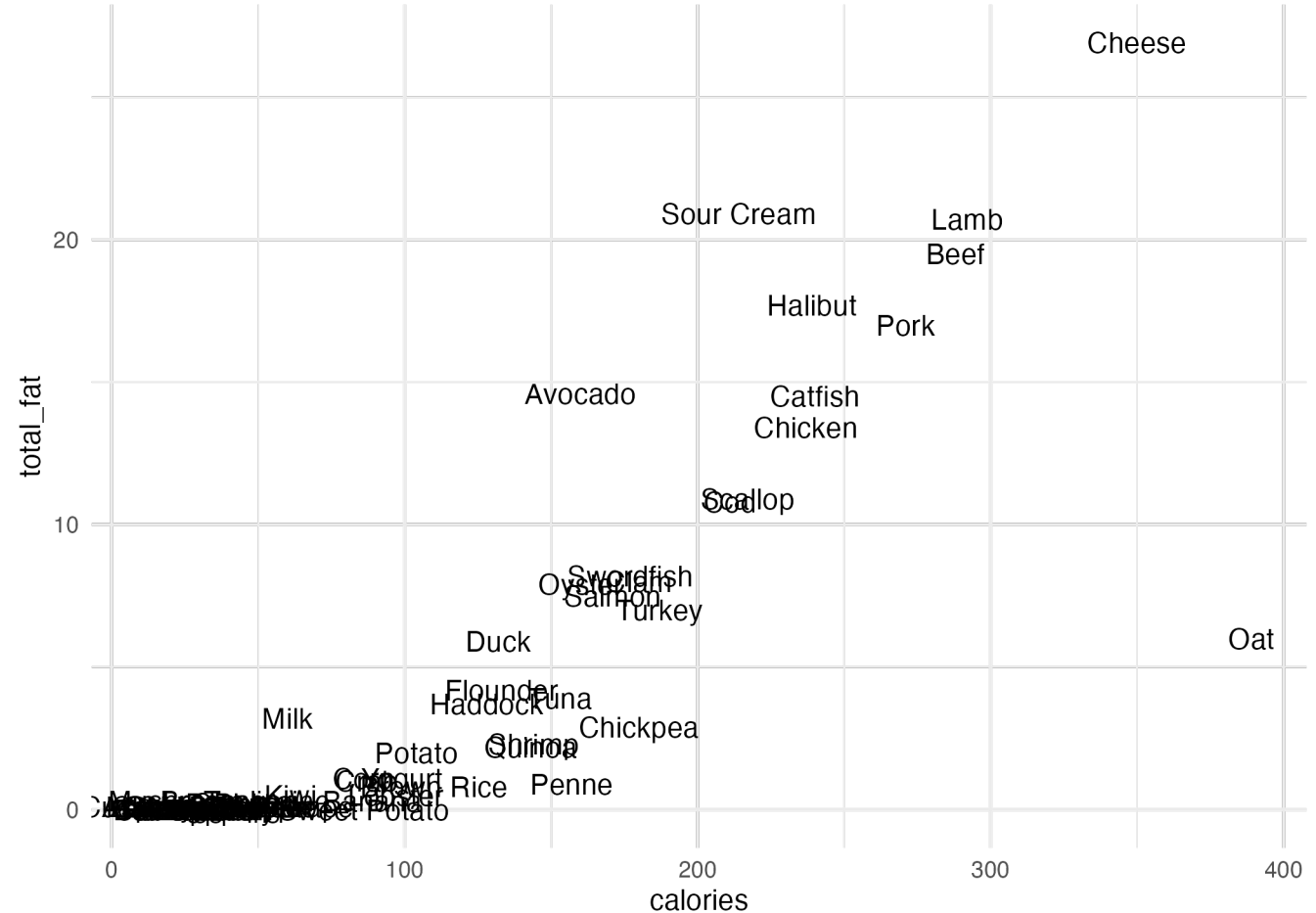
Text Plot Example

data: food

geom: text

aes: { x: calories,
y: saturated_fat
label: item }

each **observation** in the food
dataset is represented by a
textual label



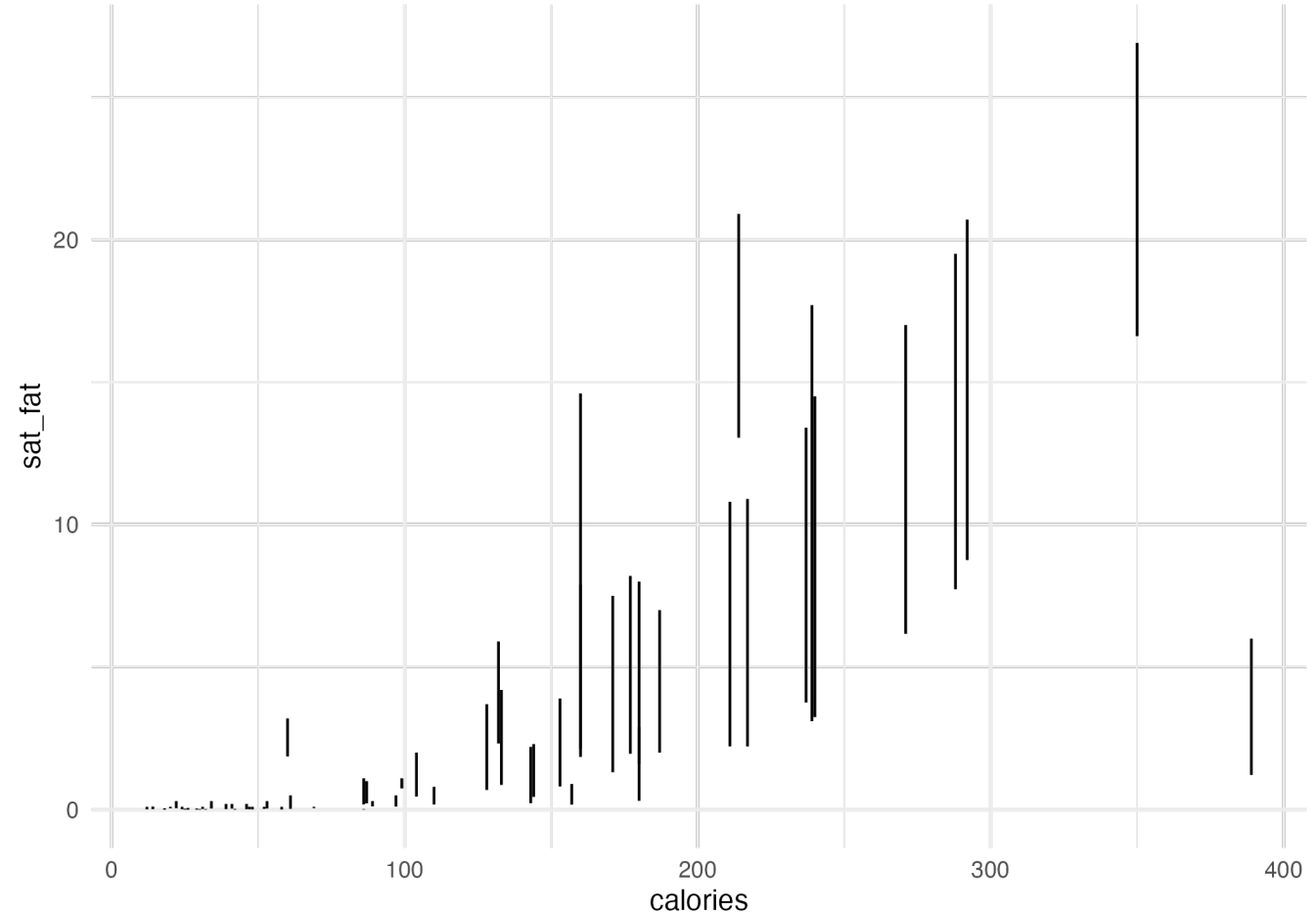
Segment Plot Example

data: food

geom: segment

aes: { x: calories,
y: saturated_fat
xend: calories,
yend: total_fat }

each observation in the food
dataset is represented by a
vertical line segment



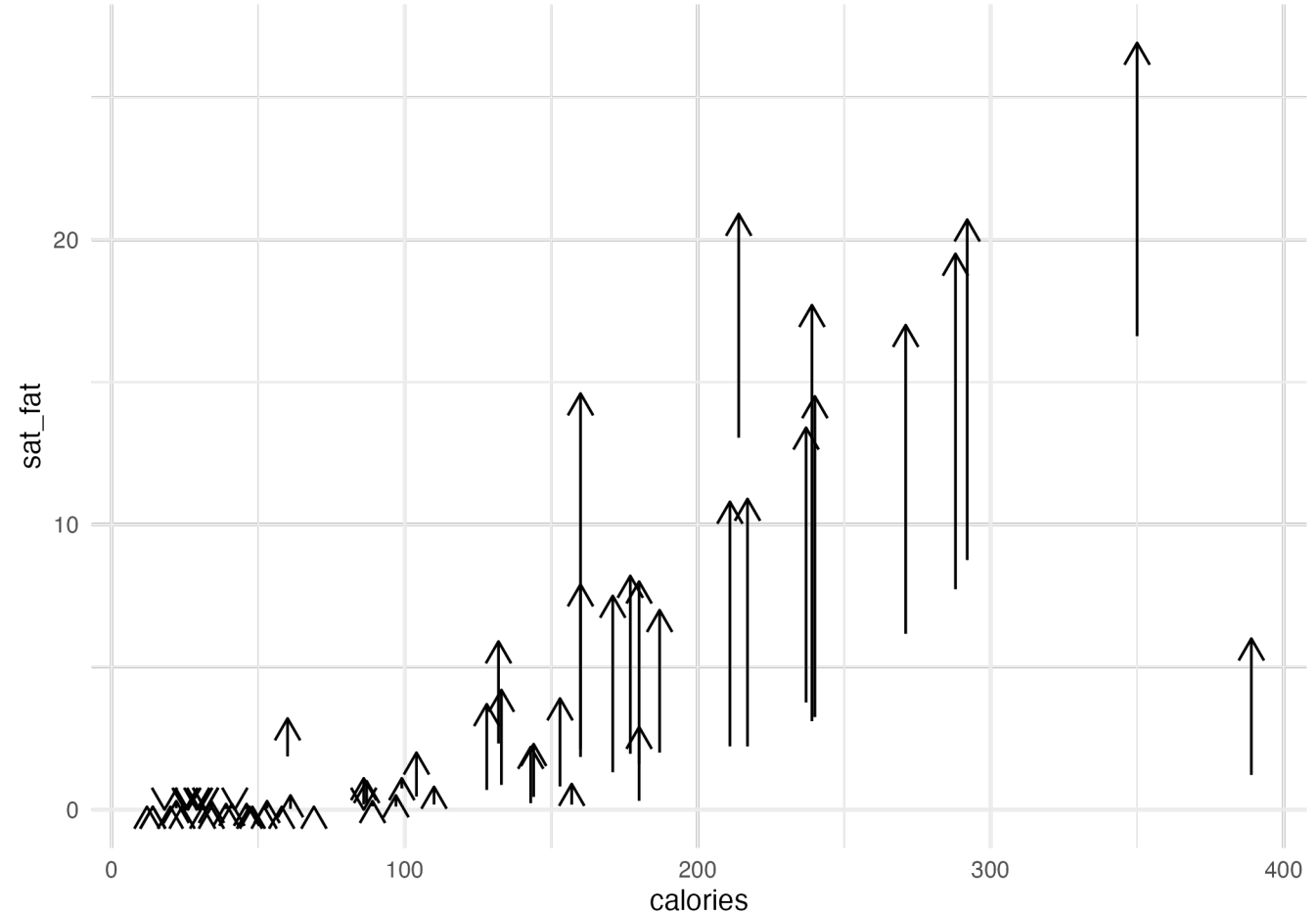
Arrow Plot Example

data: food

geom: arrow

aes: { x: calories,
y: saturated_fat
xend: calories,
yend: total_fat }

each observation in the food
dataset is represented by a
vertical line segment plus an
arrow!



Syntax

data: food
geom: point
aes: { x: calories, y: total_fat }

```
food %>%  
  ggplot() +  
    geom_point(aes(x = calories, y = total_fat))
```

data: food
geom: text
aes: { x: calories,
 y: saturated_fat
 label: item }

```
food %>%  
  ggplot() +  
    geom_text(aes(x = calories, y = total_fat,  
                  label = item))
```

2. Fixed Aesthetics

Fixed Aesthetics

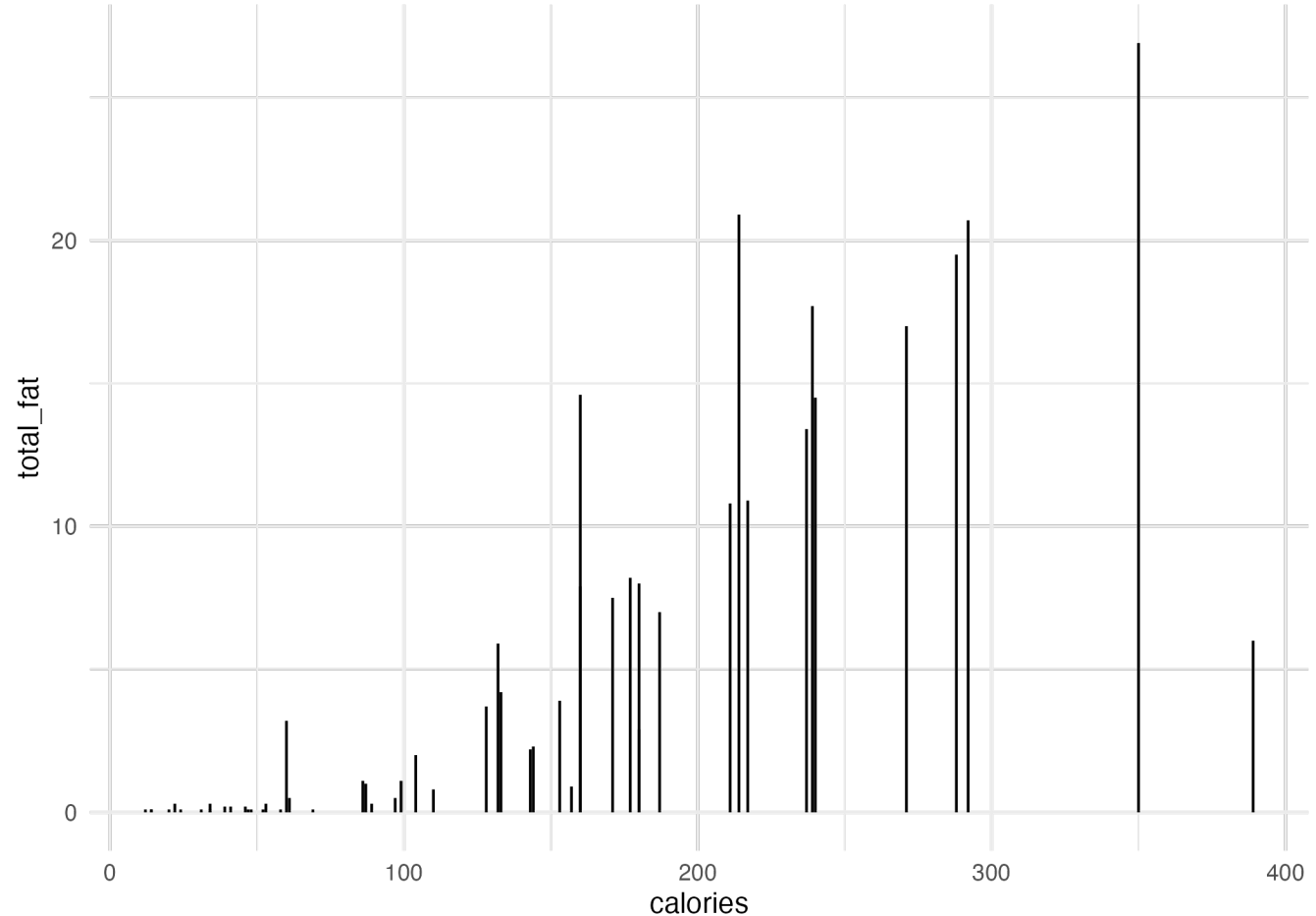
data: food

geom: segment

aes: { x: calories,
y: 0,
xend: calories,
yend: total_fat }

we can map an aesthetic to a
fixed value rather than a feature

we will see even better examples
of why this is useful next time!



Fixed Aesthetic Syntax

data: food

geom: segment

aes: { x: calories, y: 0, xend: calories, yend: total_fat }

```
food %>%  
  ggplot() +  
  geom_segment(aes(x = calories, xend = calories, yend = total_fat), y = 0)
```

fixed aesthetics go OUTSIDE the aes function
but inside the geom_* function

