



NYC DATA SCIENCE  
**ACADEMY**

# Choosing an effective visualization

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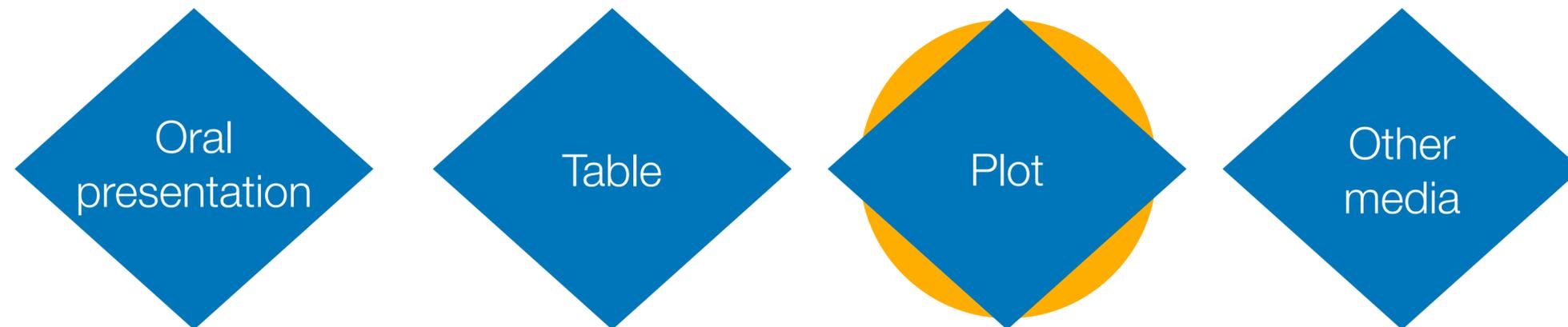
# Choosing an effective visualization

## Presenting your results

1) Question

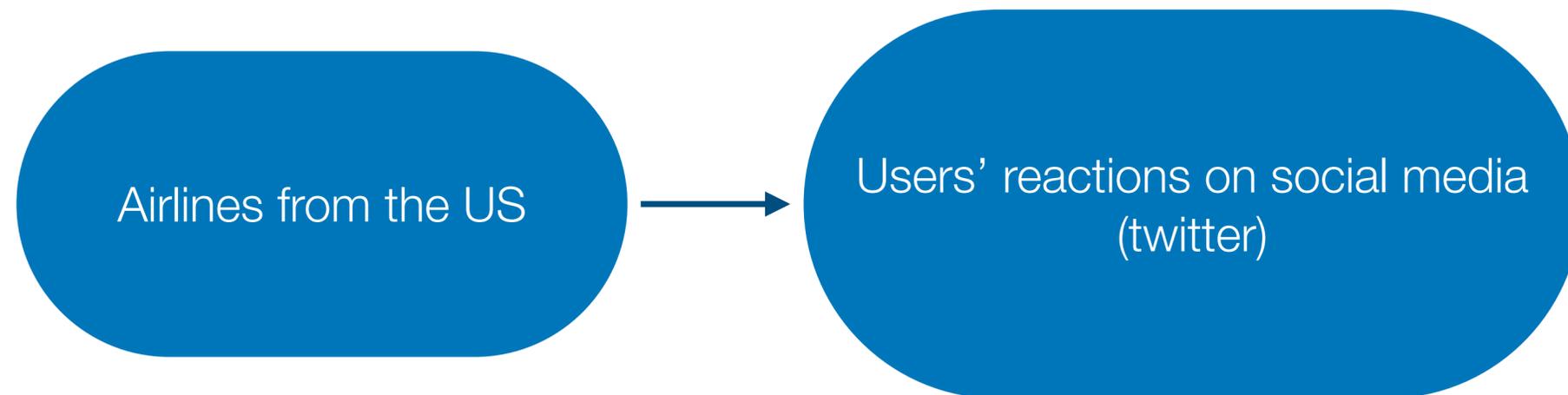
2) Relevant information

3) Target audience



# Negative sentiment on Airlines

- 1) We are a consulting company and want to sell a program to improve user experience to the airlines.  
What is the users satisfaction with the airlines in the US?
- 2) NLP of users' reactions on social media
- 3) Business team from American Airlines



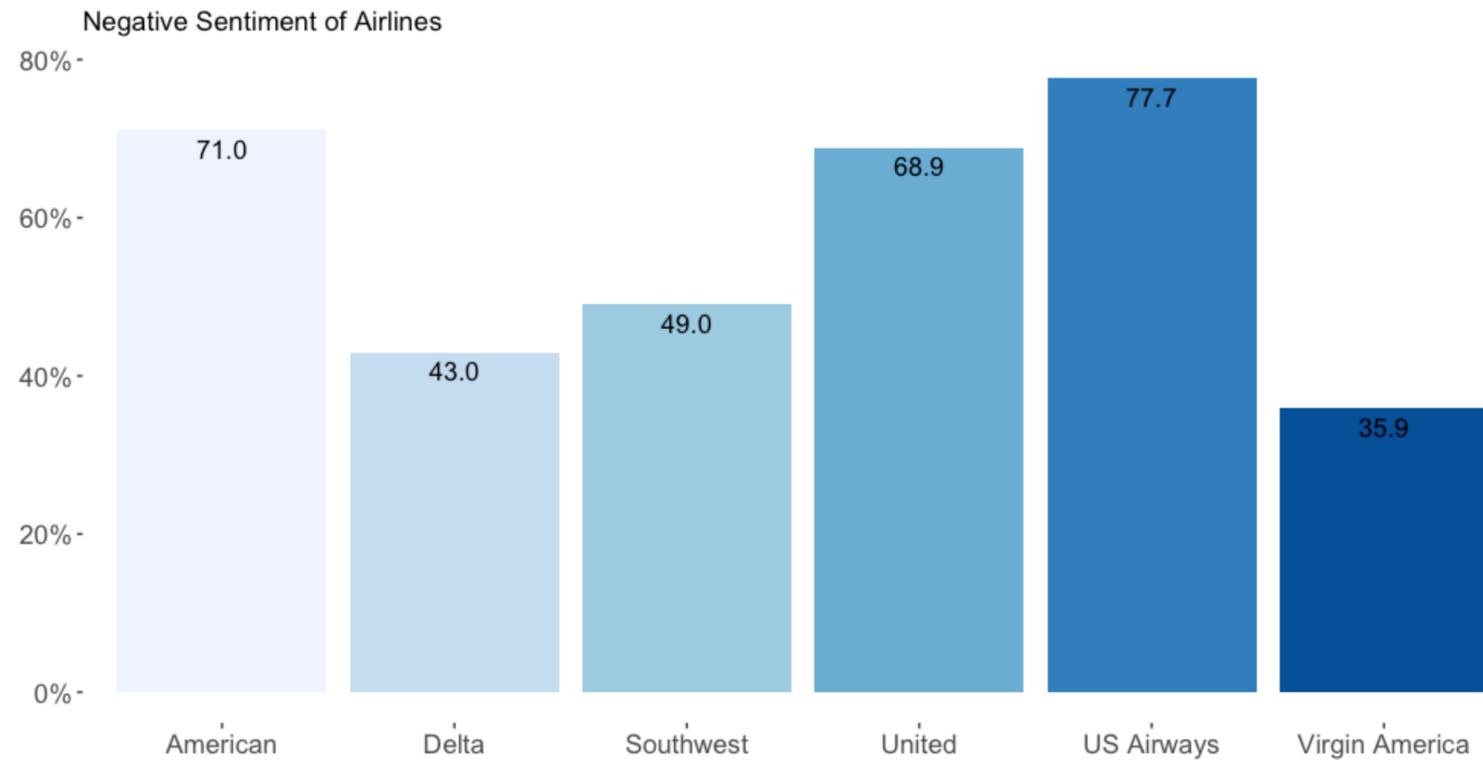
# Negative sentiment on Airlines

tweet_id	airline_sentiment	airline_sentiment_confidence	negativereason	negativereason_confidence	airline	airline_sentiment_gold	name	negativereason_gold	retweet_count	text
8966	neutral	1.0000		NA	Delta		JetBlueNews		0	@JetBlue's new CEO seeks the right
8965	negative	1.0000	Can't Tell	0.6503	Delta		nesi_1992		0	@JetBlue is REALLY getting on my
4326	negative	1.0000	Late Flight	0.3460	United		CPoutloud		0	@united yes. We waited in line for
4325	negative	1.0000	Late Flight	1.0000	United		brenduch		0	@united the we got into the gate a
6746	negative	1.0000	Customer Service Issue	0.3451	Southwest		VahidESQ		0	@SouthwestAir its cool that my ba
4324	negative	1.0000	Bad Flight	0.6707	United		brenduch		0	@united and don't hope for me ha
4323	negative	1.0000	Late Flight	1.0000	United		CRomerDome		0	@united I like delays less than you
4322	negative	1.0000	Customer Service Issue	0.3545	United		JustOGG		0	@united, link to current status of
6745	negative	1.0000	Customer Service Issue	1.0000	Southwest		mrshossruns		0	@SouthwestAir you guys there? Ar
4321	negative	1.0000	Customer Service Issue	0.6797	United		feliciastoler		0	@united I tried 2 DM it would not
4320	negative	0.6337	Flight Booking Problems	0.6337	United		markhlyon		0	Wanted to get my bag benefit, but
4319	negative	1.0000	Bad Flight	0.3611	United		DBsViewOnThings		0	@united please see a flight attend
4318	negative	1.0000	Customer Service Issue	0.6752	United		ljsbrooks		0	@united still waiting for a reply
4317	neutral	1.0000		NA	United		gwaki		0	@united even though technically a
11875	neutral	1.0000		NA	US Airways		ashenfaced		0	@USAirways how's us 1797 lookin
6744	positive	1.0000		NA	Southwest		rjp1208		0	@SouthwestAir nice work on the u

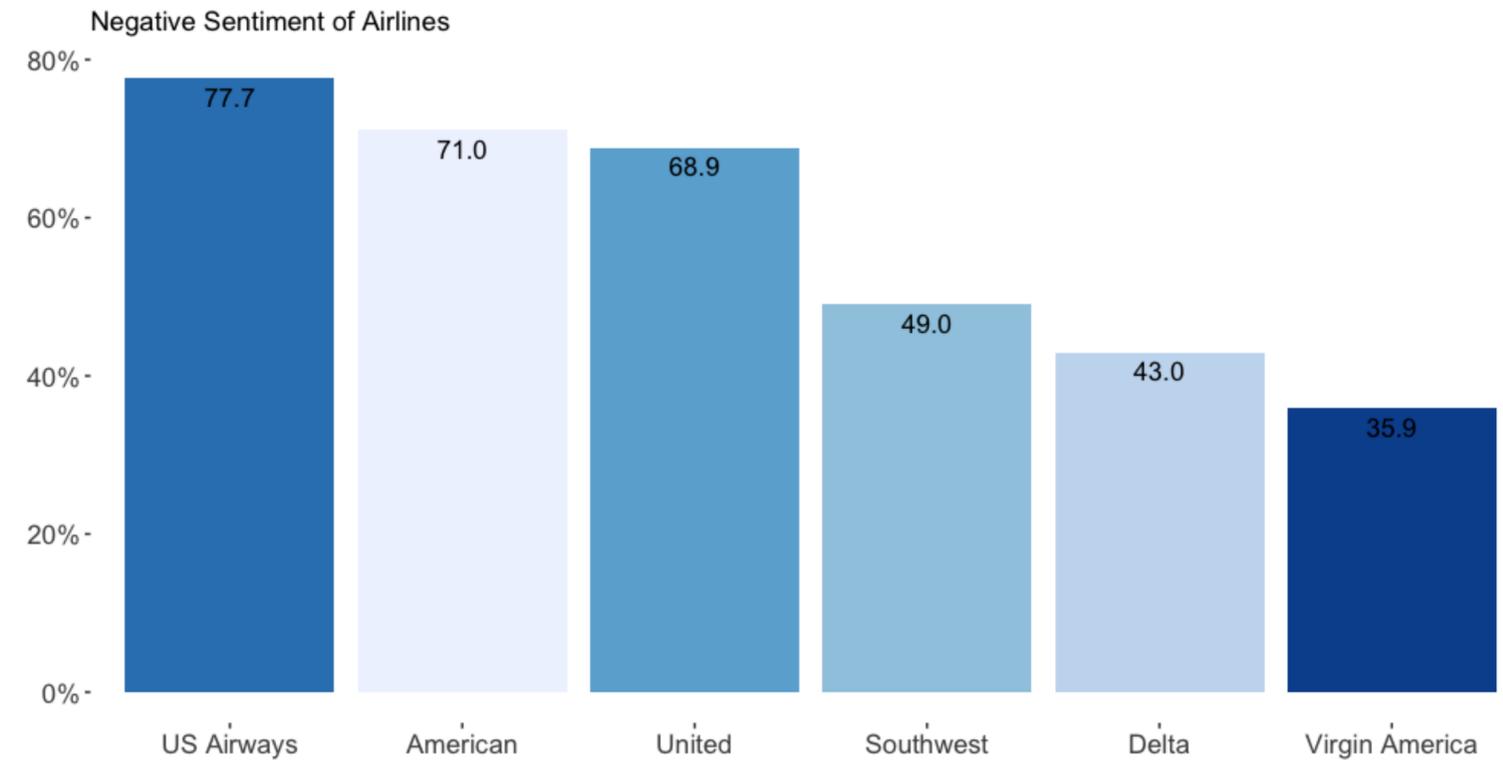
airline	n	percentage of negative tweets
American	2759	71.04
Delta	2222	42.98
Southwest	2420	49.01
United	3822	68.89
US Airways	2913	77.69
Virgin America	504	35.91

# Negative sentiment on Airlines

1



2



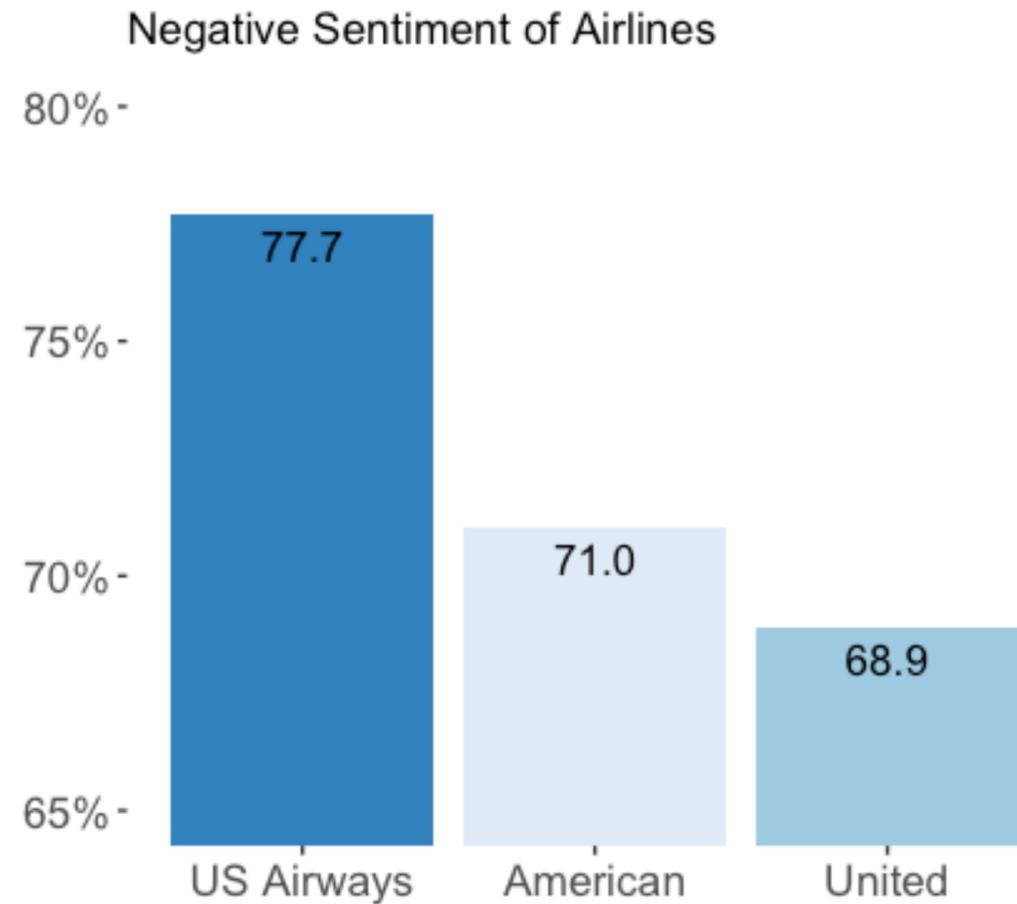
## Bar Chart

- Sorting categories gives the viewer a sense of order

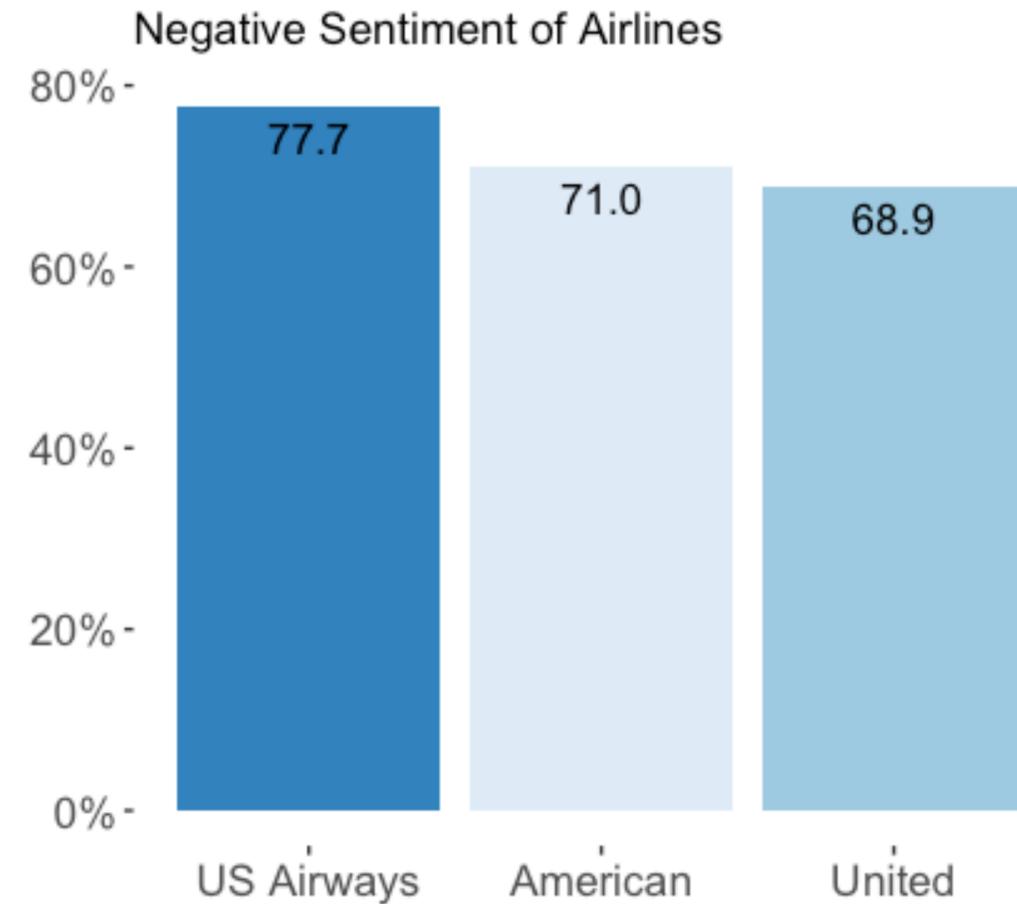
# Bar Chart

## In detail

- Because of the way our eyes compare the relative end points of the bars, it's important to have the context of the entire bar there in order to make a fair comparison
- If the business problem involves the specific differences, adjusting the axis can aid to make a point



1



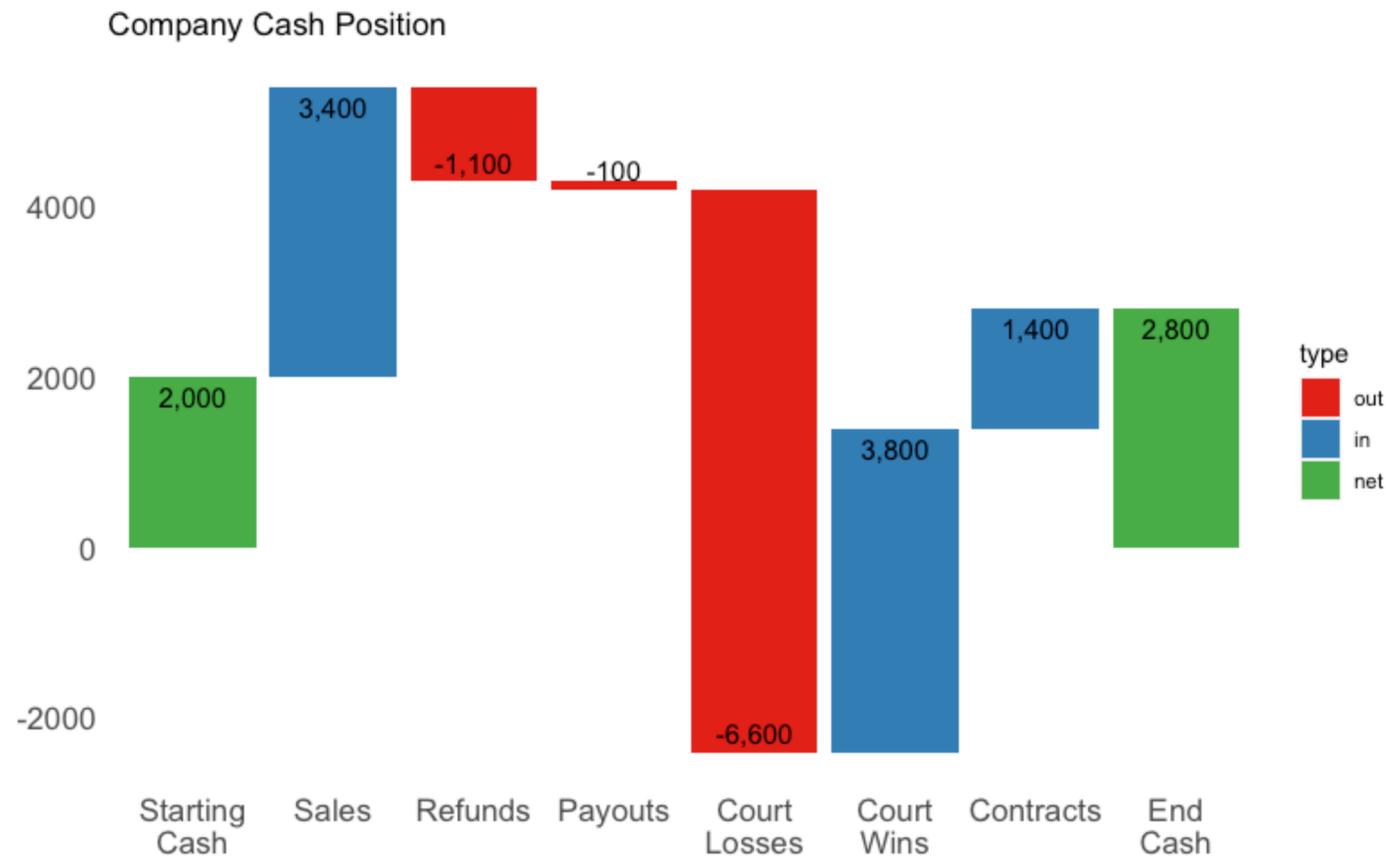
2

# Law firm finances

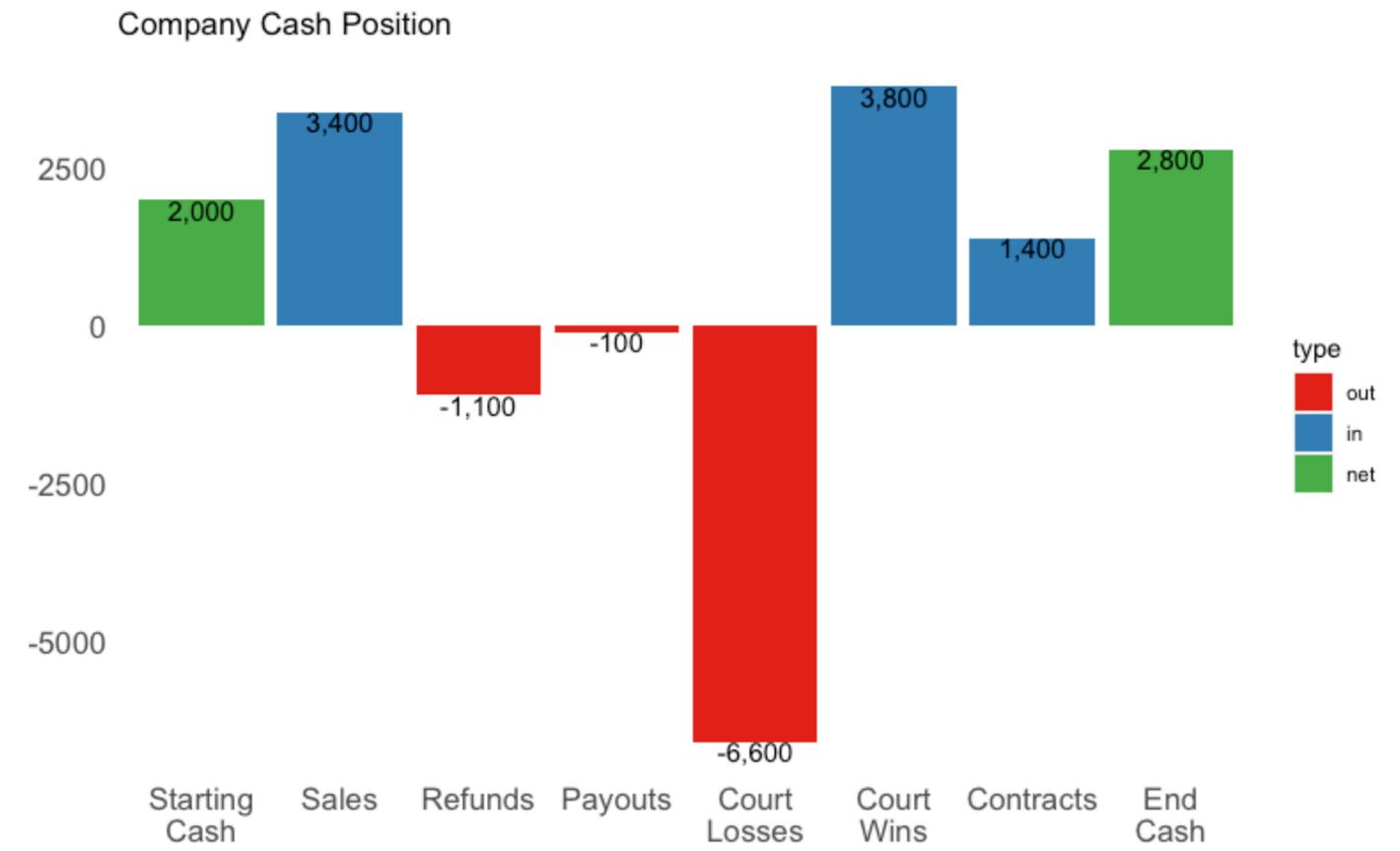
- 1) Impact of each transaction category on the cash position of the Company, to identify areas of improvement
- 2) Summary of the company's transactions
- 3) Multidisciplinary team at the company

	description	type	\$ amount
1	Starting Cash	net	2000
2	Sales	in	3400
3	Refunds	out	-1100
4	Payouts	out	-100
5	Court Losses	out	-6600
6	Court Wins	in	3800
7	Contracts	in	1400
8	End Cash	net	2800

1



2



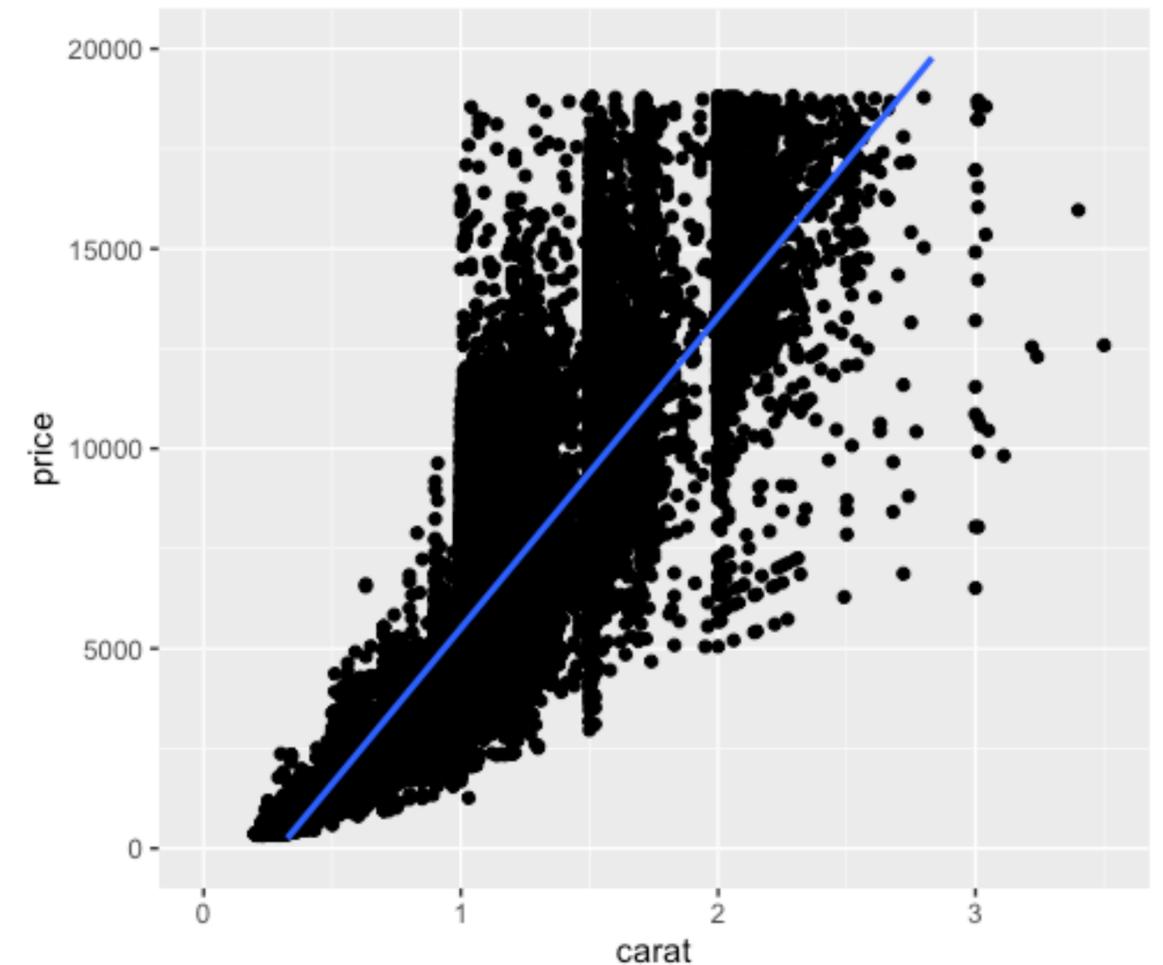
# Waterfall chart

- A waterfall chart shows the cash flow
- The final column represents the end cash after all the additions and deductions have been applied to the starting cash

# Diamond market

- 1) We want to add diamonds to our inventory (small investment and big profit)
- 2) Database of diamond features and prices
- 3) Company's CEO

Variable	Description	Values
price	price in US dollars	\$326-\$18,823
carat	weight of the diamond	0.2-5.01
cut	quality of the cut	Fair, Good, Very Good, Premium, Ideal
color	color of the diamond	J, I, H, G, F, E, D

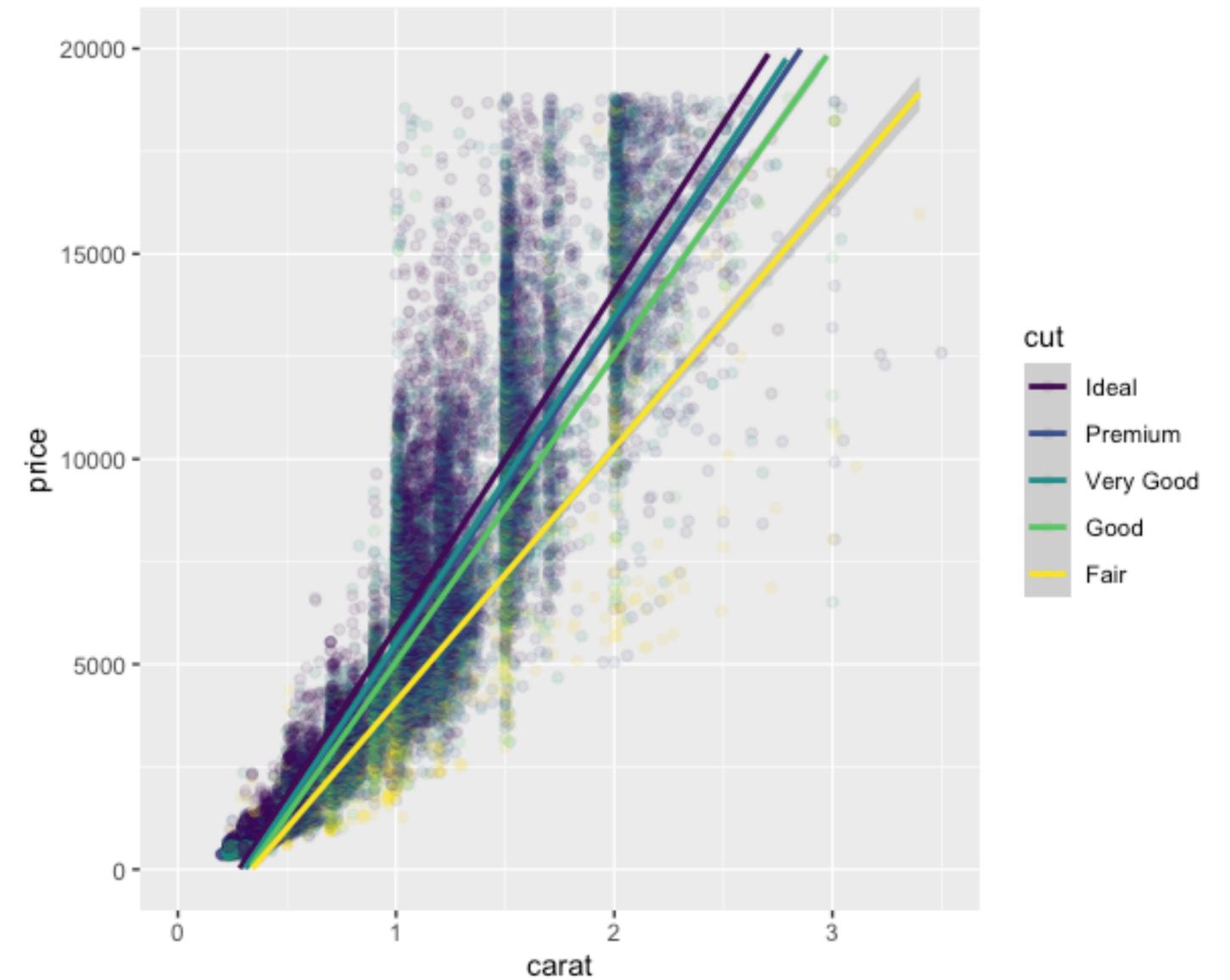
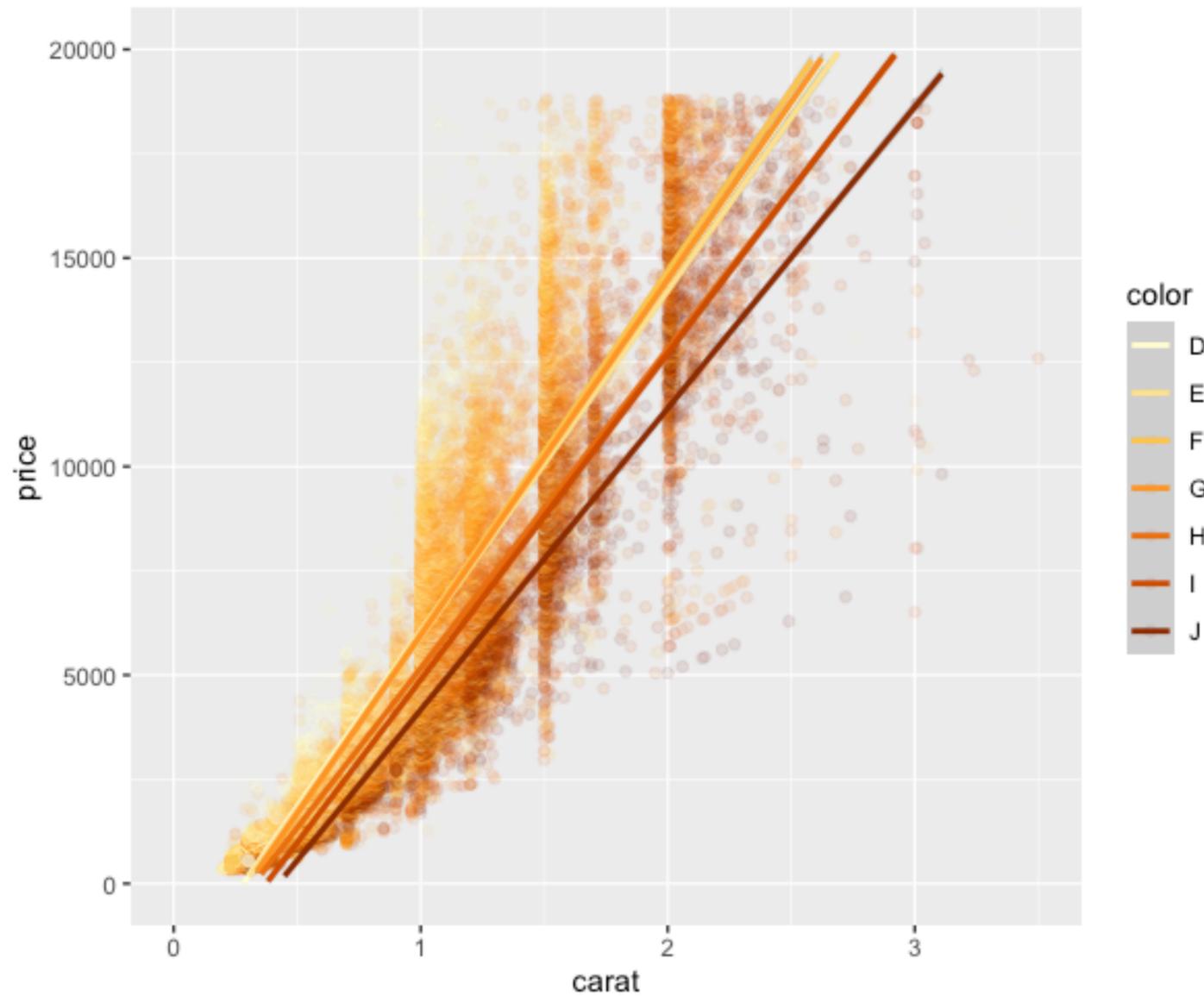


- Modify the ranges of x and y shown in the plot to “zoom-in”

## Scatter plot

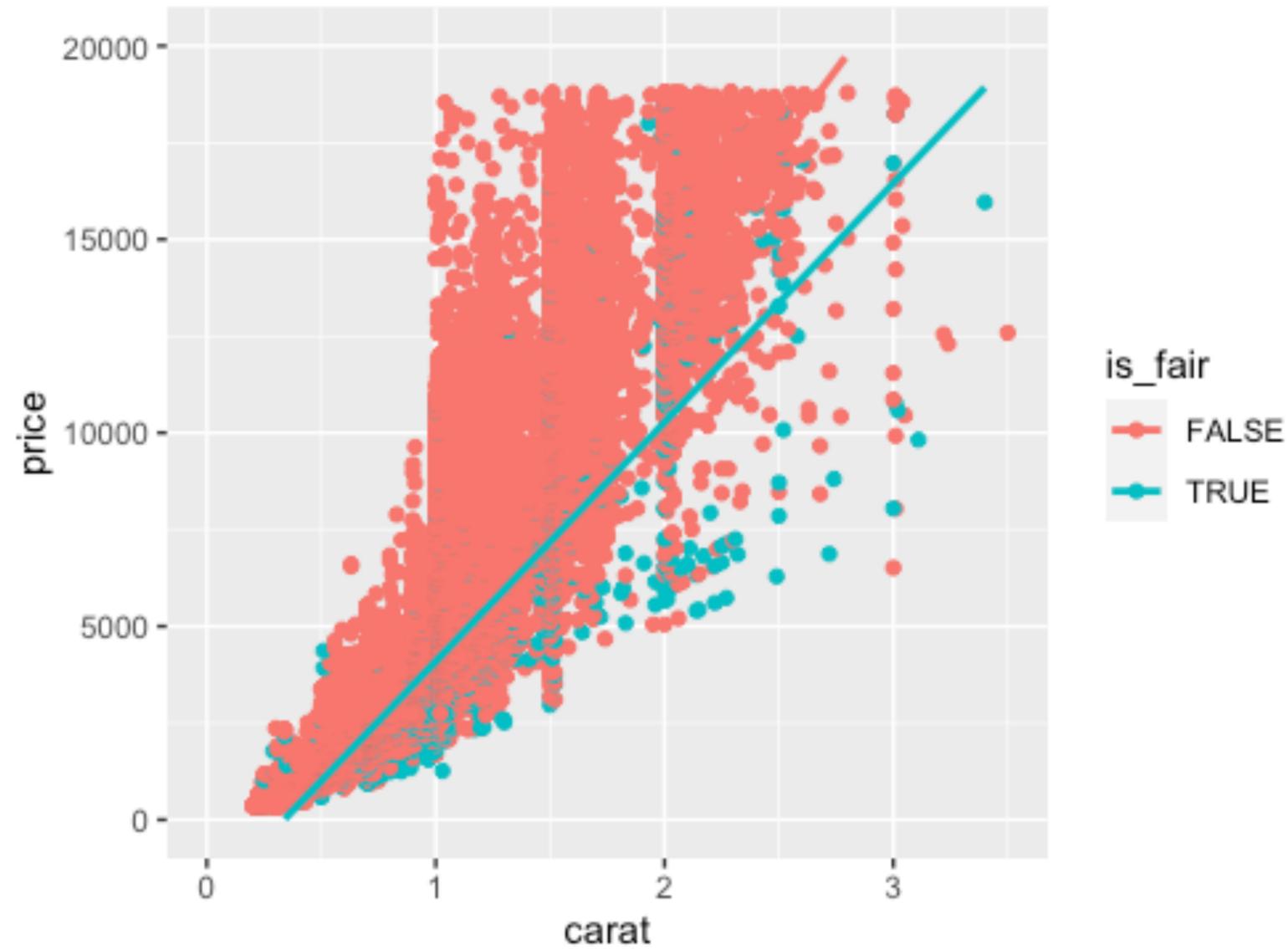
# Diamond market

Adding a categorical feature to get insights

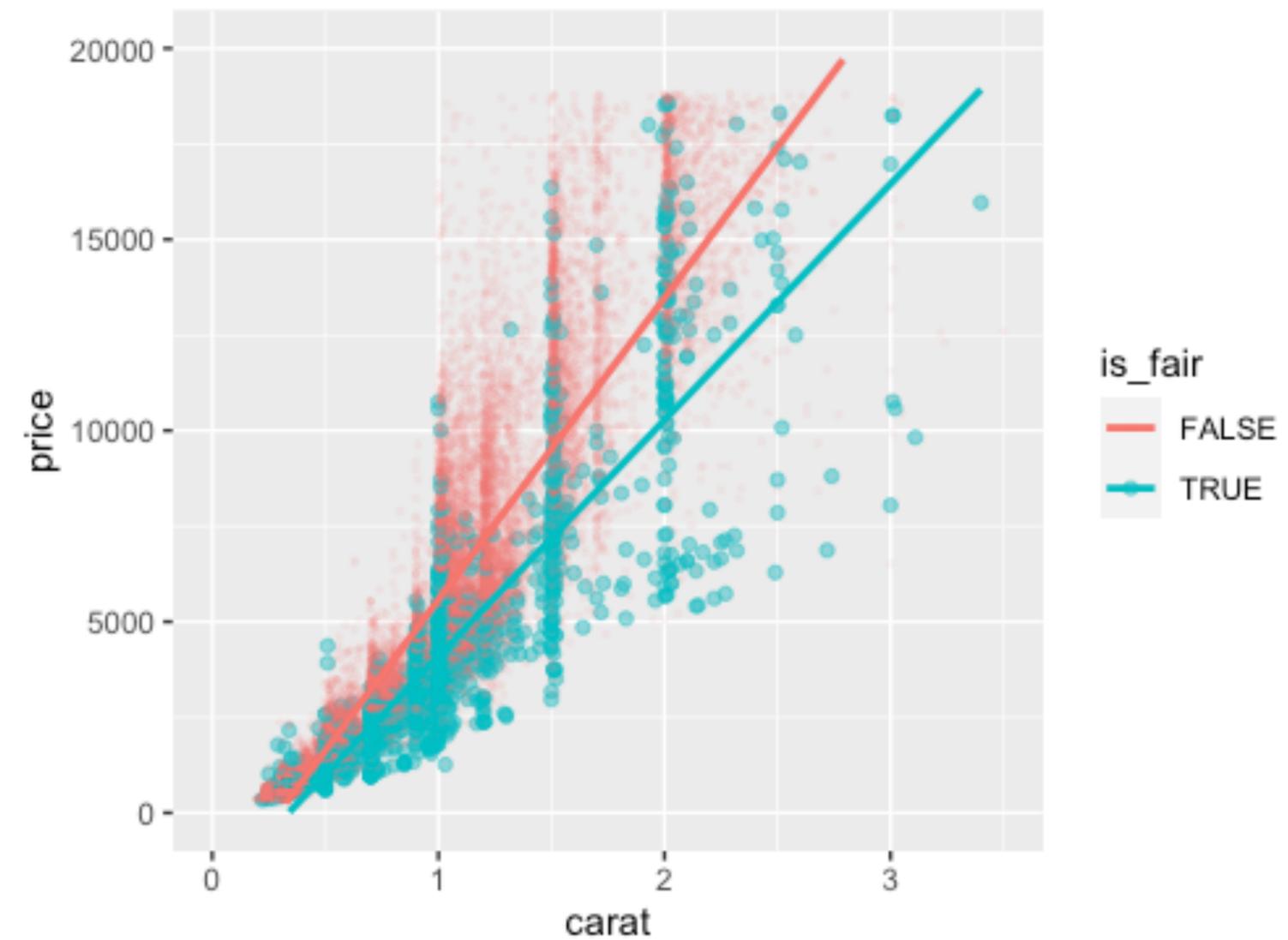


# Diamond market

Combining the categories



Adjusting transparency and size



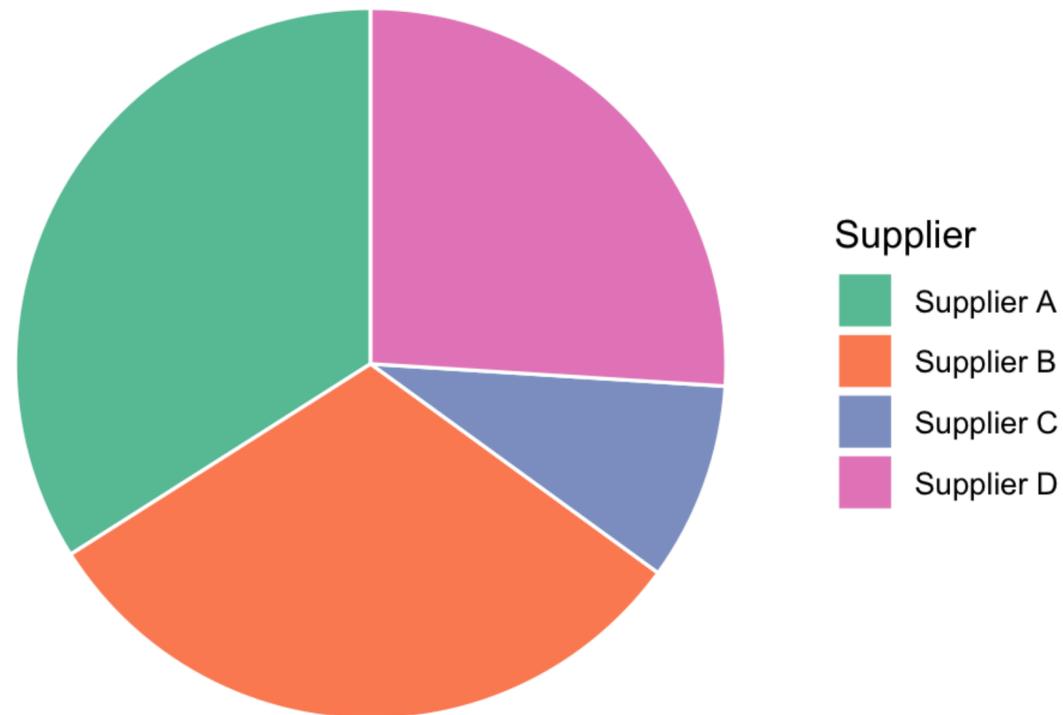
- Avoids overlapping, highlights the 'fair' category

# Supplier market share

- 1) We want to identify the largest supplier of our source materials
- 2) Summary of the supplier market share
- 3) Multidisciplinary team

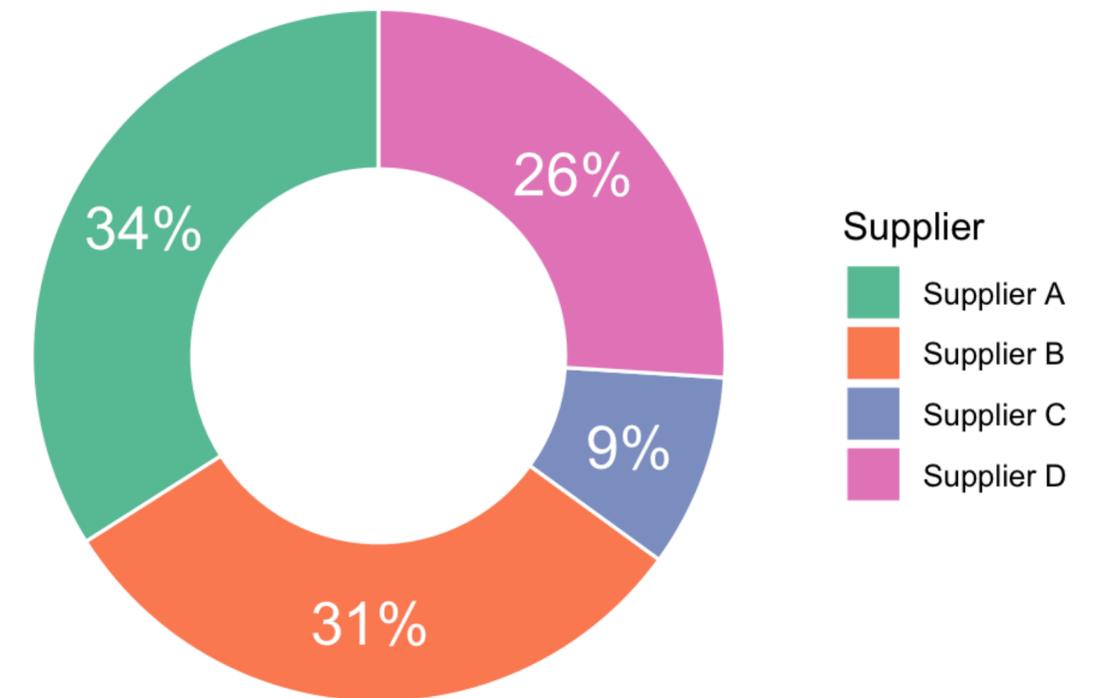
	Supplier	prop
1	Supplier A	34
2	Supplier B	31
3	Supplier C	9
4	Supplier D	26

Supplier Market Share



1

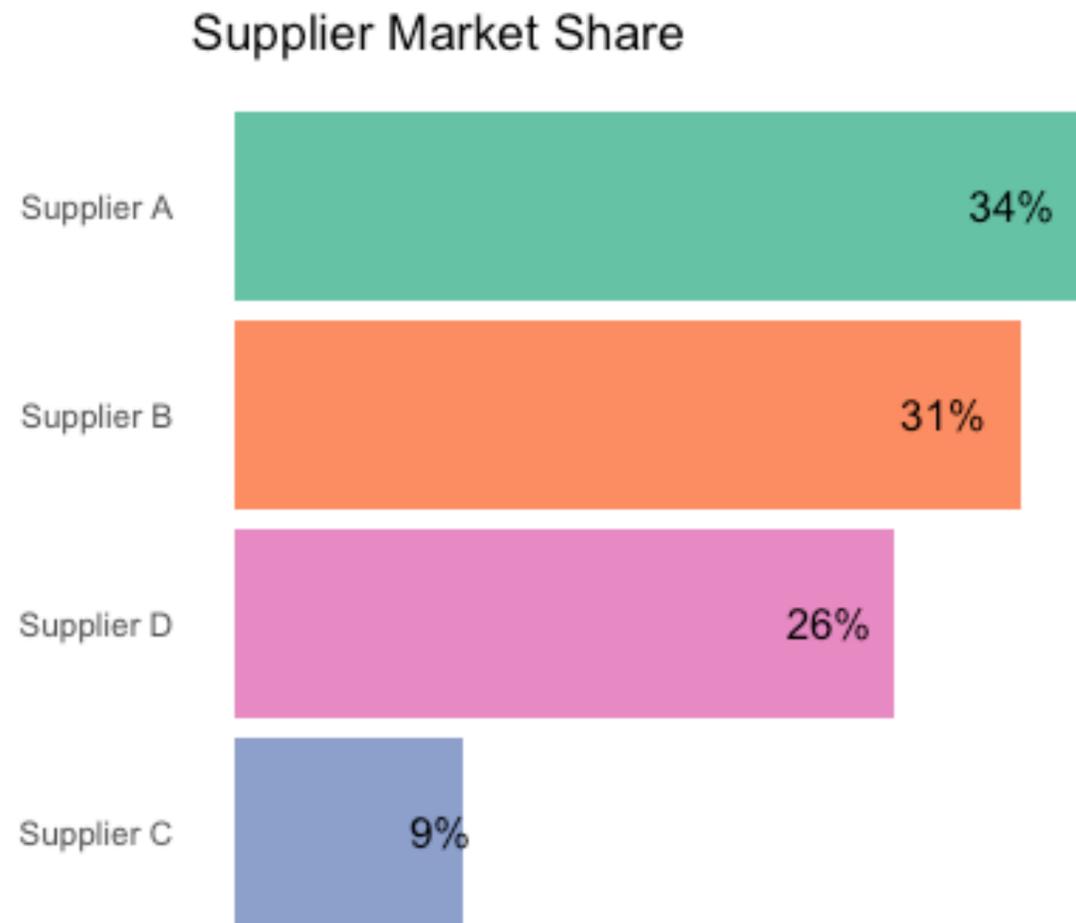
Supplier Market Share



2

# Supplier market share

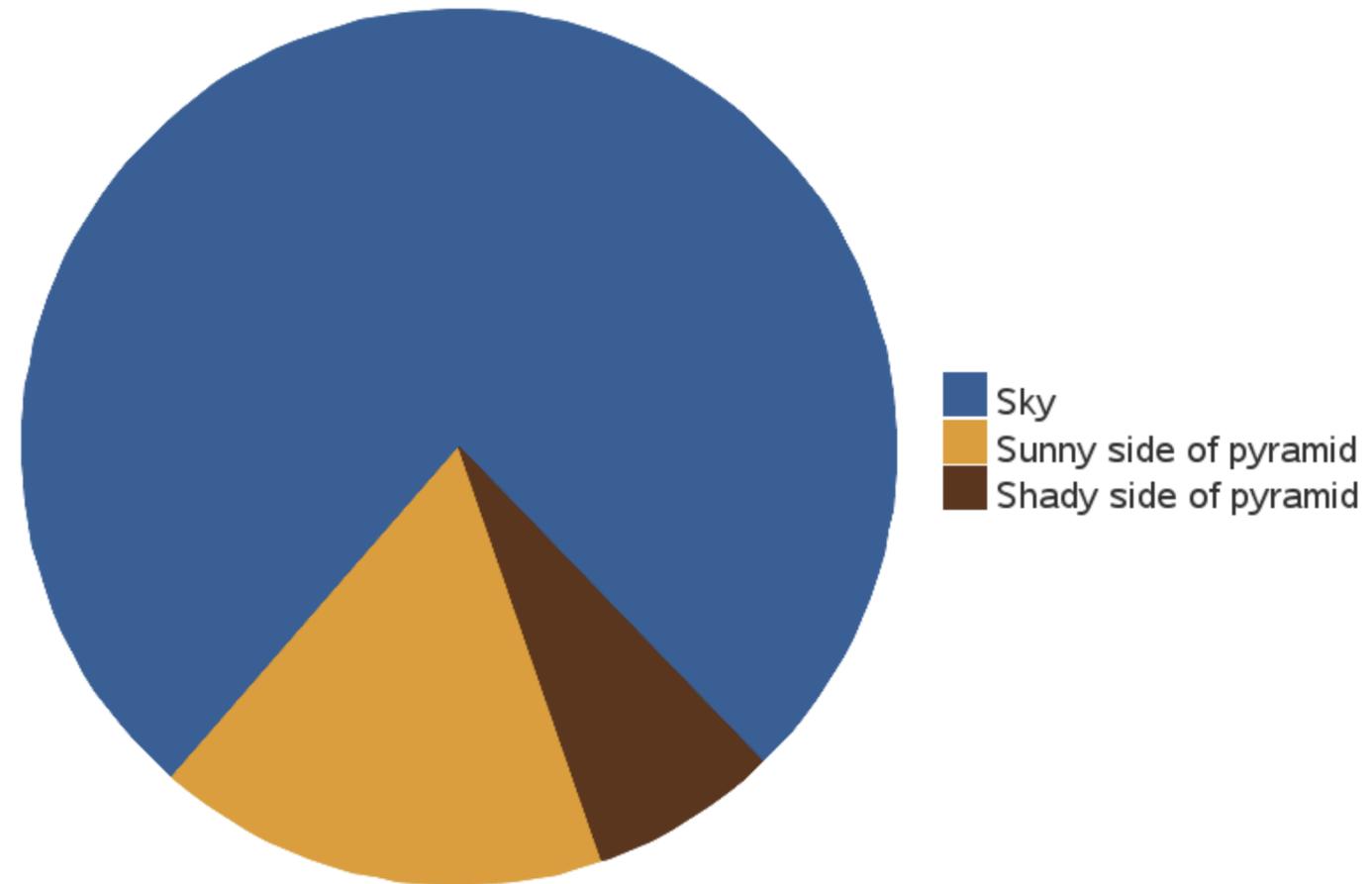
A substitute for pie charts



- Our eyes compare the end points
- Easy to access relative size
- Easy to see how one segment is incrementally larger than other segments
- Labels are right where they're needed

# Pie charts

Own a joke category



# US financial demographics

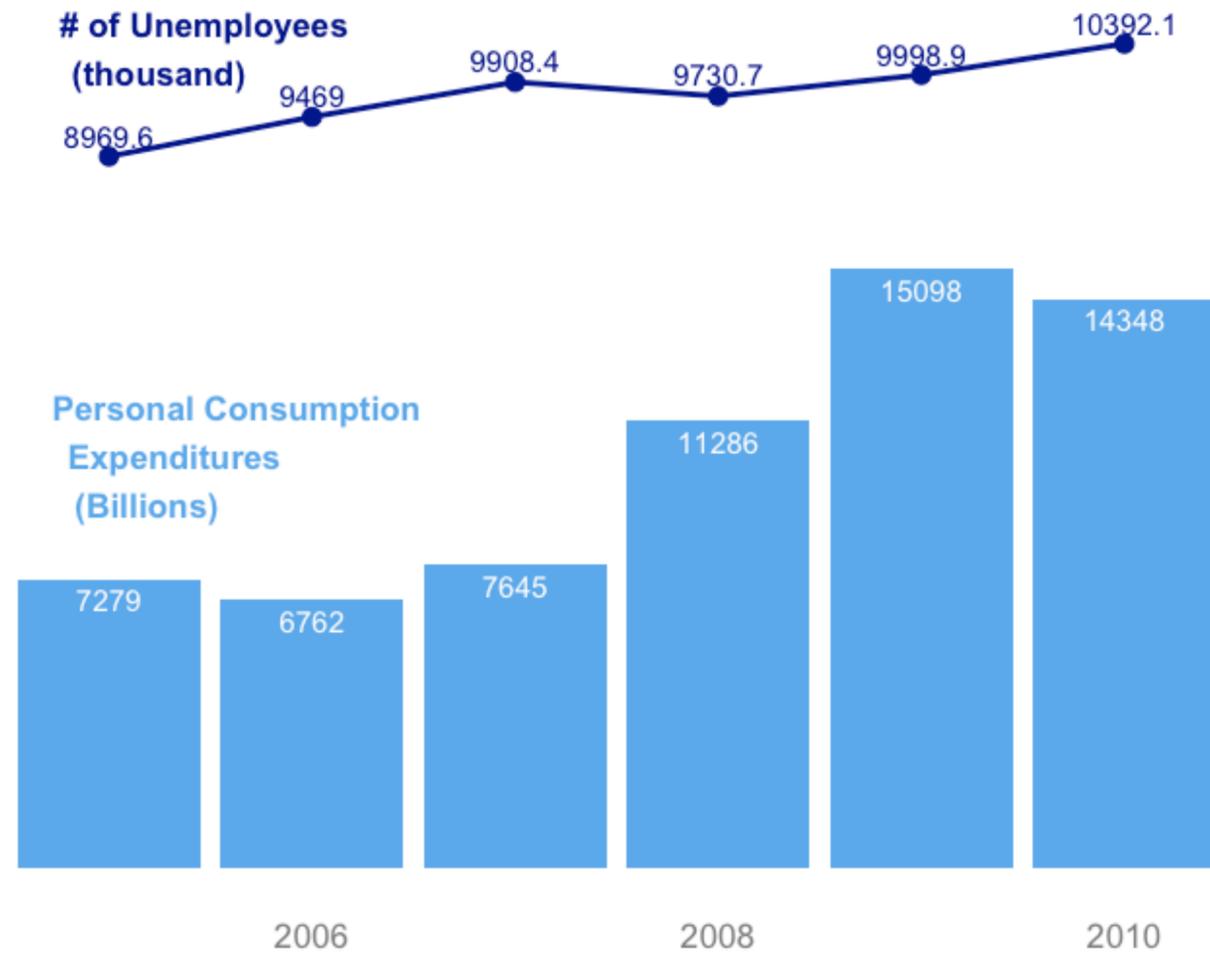
- 1) Are unemployment rates and consumption expenditures negatively correlated?
- 2) US economic time series from Federal reserve bank
- 3) General public

	date	pce	pop	psavert	uempmed	unemploy
1	2015-04-01	12193.8	320402.3	7.6	11.5	8526
2	2015-03-01	12158.3	320230.8	7.4	12.0	8504
3	2015-02-01	12082.4	320074.5	7.9	12.9	8610
4	2015-01-01	12046.0	319928.6	7.7	13.2	8903
5	2014-12-01	12062.0	319746.2	7.6	12.9	8717
6	2014-11-01	12051.4	319564.2	7.3	13.0	9090
7	2014-10-01	12023.0	319353.7	7.2	13.6	8990
8	2014-09-01	11957.4	319125.3	7.4	13.4	9262
9	2014-08-01	11944.3	318893.8	7.2	12.9	9599
10	2014-07-01	11860.5	318662.4	7.5	13.1	9608
11	2014-06-01	11817.0	318464.2	7.4	13.8	9460
12	2014-05-01	11748.4	318269.5	7.4	14.6	9859
13	2014-04-01	11702.6	318089.2	7.4	15.7	9702
14	2014-03-01	11643.0	317917.2	7.4	15.8	10380
15	2014-02-01	11566.2	317753.9	7.3	15.9	10349
16	2014-01-01	11512.5	317593.9	7.1	15.4	10202

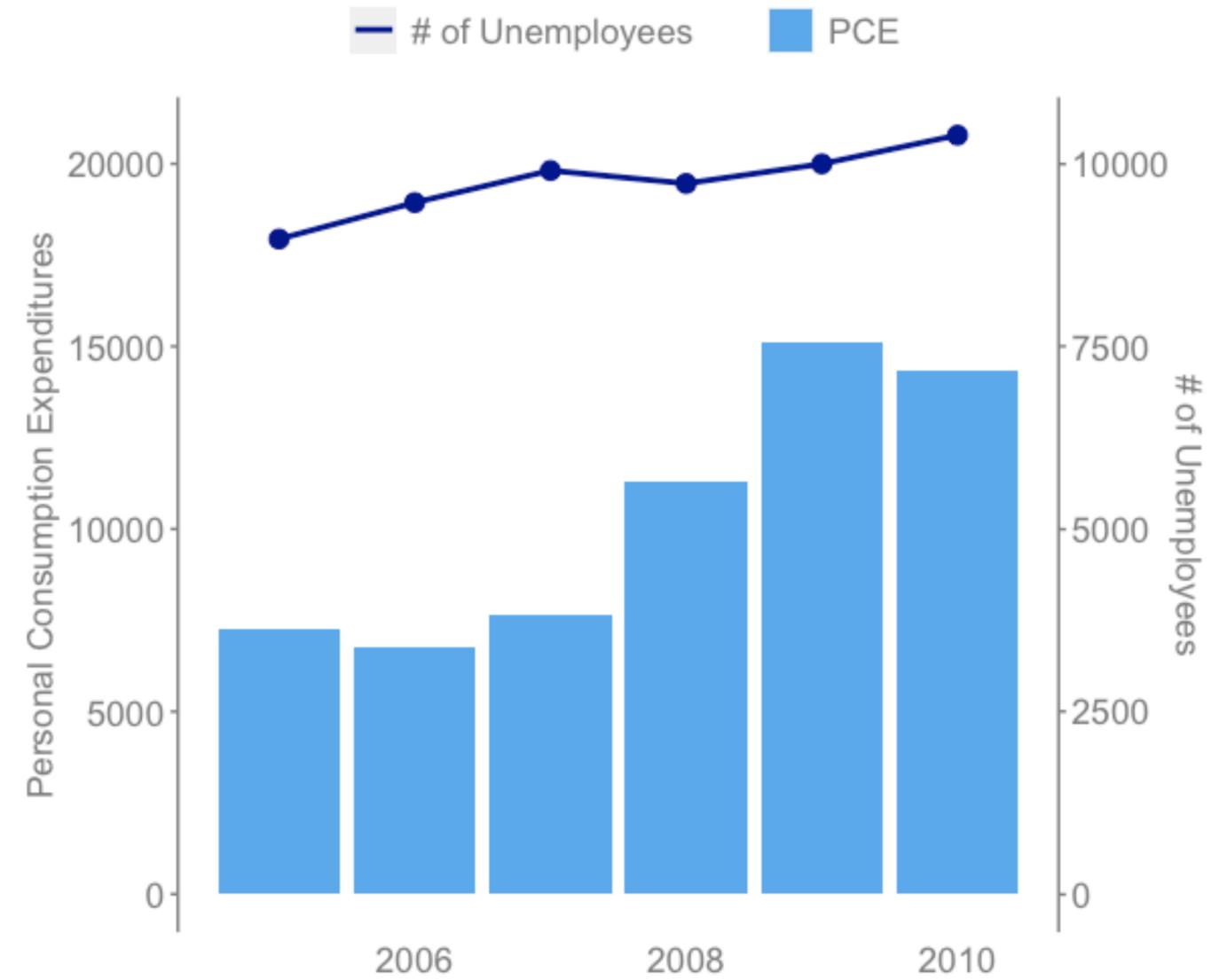
# US financial demographics

Avoid displaying a secondary y-axis or a right-hand y-axis

- label the data points that belong on this axis directly
- or
- pull the graphs apart vertically



1



2

# Employee satisfaction

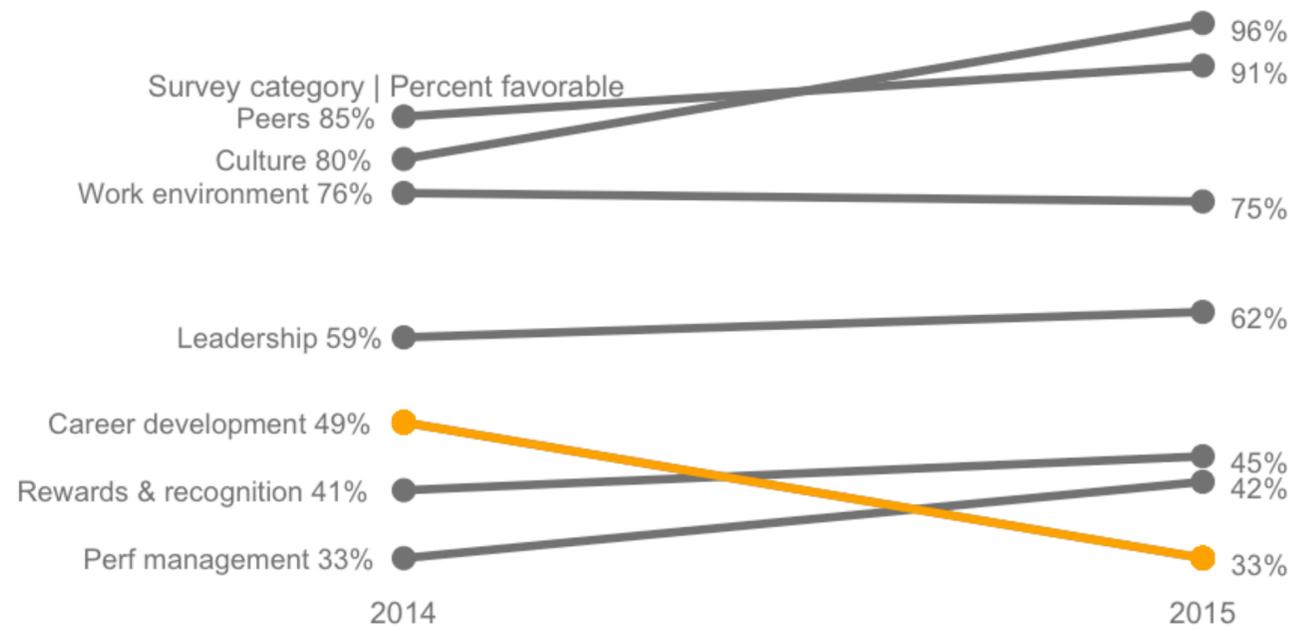
- 1) Explore if our strategies to improve employee satisfaction have made a positive impact
- 2) Results of the satisfaction survey
- 3) HR department

	year	category	Satisfaction percent
1	2014	Peers	0.85
2	2014	Culture	0.80
3	2014	Work environment	0.76
4	2014	Leadership	0.59
5	2014	Career development	0.49
6	2014	Rewards & recognition	0.41
7	2014	Perf management	0.33
8	2015	Peers	0.91
9	2015	Culture	0.96
10	2015	Work environment	0.75
11	2015	Leadership	0.62
12	2015	Career development	0.33
13	2015	Rewards & recognition	0.45
14	2015	Perf management	0.42

# Employee satisfaction

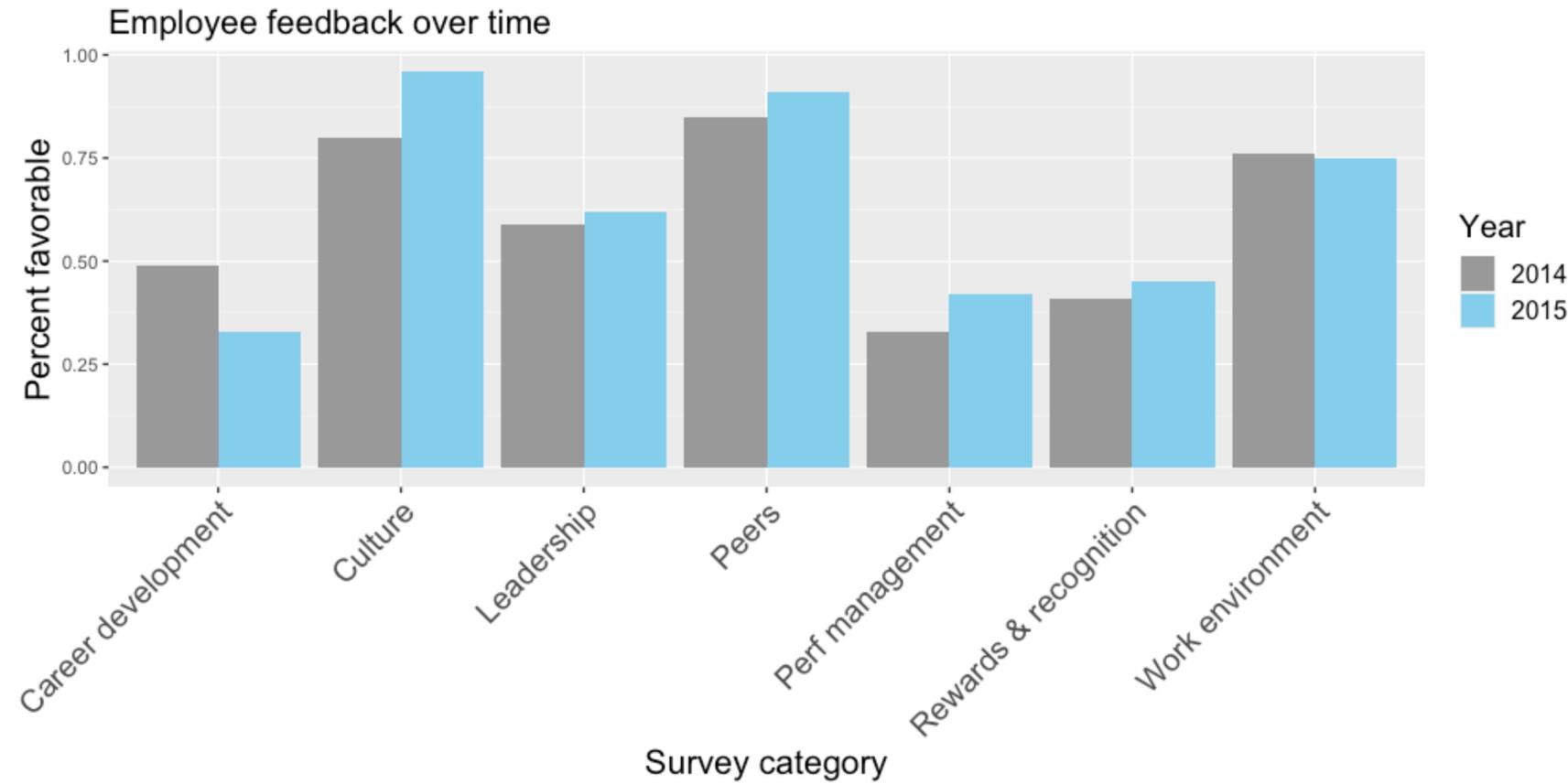
1

Employee feedback over time



## Slopegraph

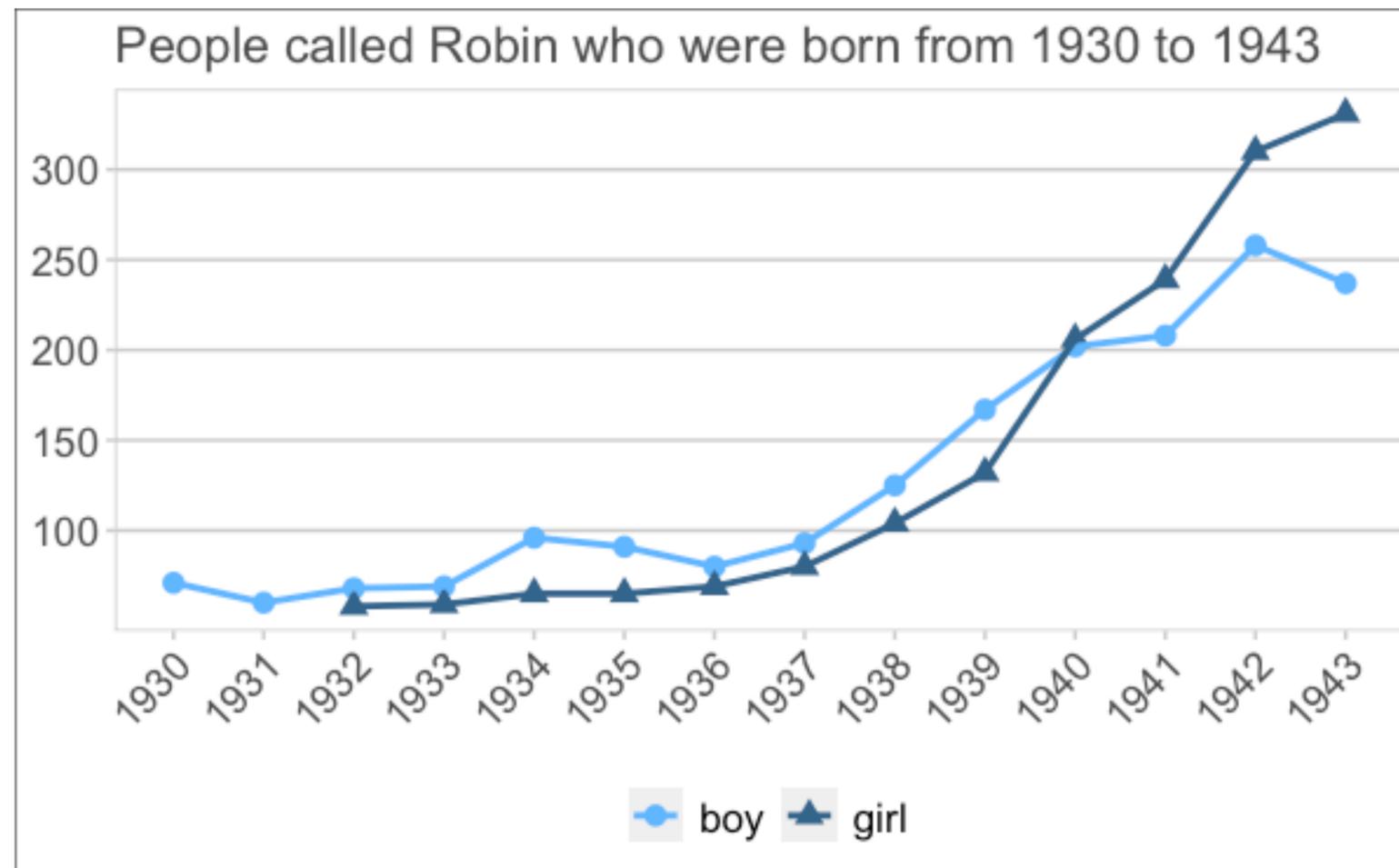
2



- When you have two time periods of comparison
- Want to quickly show relative increases and decreases

# Plot aesthetics

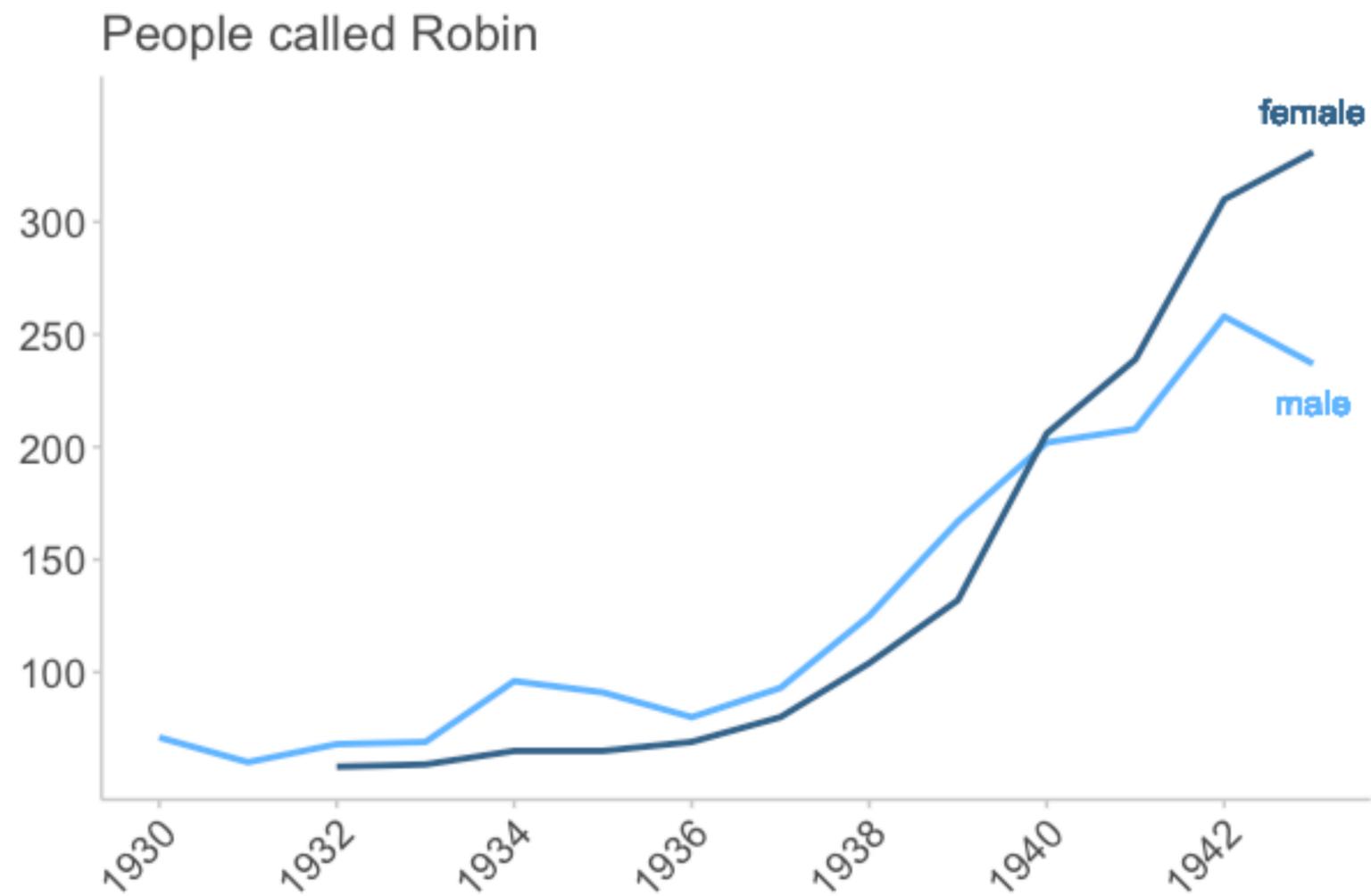
Cluster is your enemy....in general



- Chart border
- Gridlines
- Data markers
- Axis labels
- Redundant title

# Plot aesthetics

Cluster is your enemy....in general



- Label data directly
- Leverage consistent color

Questions?