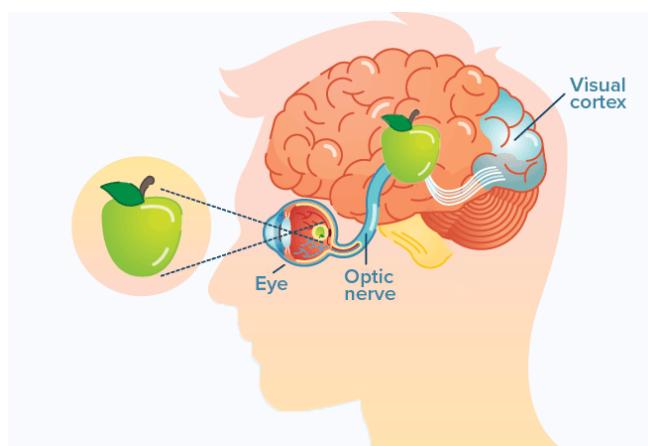


# Data Visualization

## Preattentive Attributes

We see with our brains



# Types of memory

- **Iconic memory** is super fast, happens unconsciously, and is piqued when we look at the world around us.
  - It is tuned to a set of preattentive attributes.
- **Short-term memory** has limitations. Specifically, people can keep about **four** chunks of visual information in their short-term memory at a given time.
- **Long-term memory** is built up over a lifetime and is vitally important for pattern recognition and general cognitive processing.

A decorative horizontal bar located below the list of memory types. It consists of three colored segments: blue on the left, orange in the middle, and red on the right. The number '3' is positioned above the orange segment.

3

## Short-term Memory

756395068473  
658663037576  
860372658602  
846589107830

A decorative horizontal bar located below the short-term memory examples. It consists of three colored segments: blue on the left, orange in the middle, and red on the right. The number '4' is positioned above the red segment.

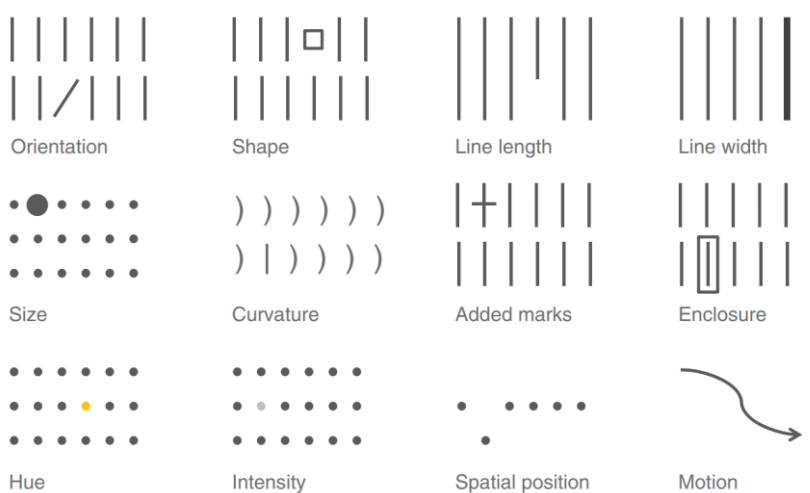
4

# Iconic Memory

756**3**9506847**3**  
 65866**3**037576  
 860**3**72658602  
 8465891078**30**

5

## Preattentive Attributes



6

# Preattentive Attributes

- If we use preattentive attributes strategically, they can help us *enable our audience to see what we want them to see before they even know they're seeing it!*
- Preattentive attributes can:
  - direct your audience's attention to where you want
  - be used to create a visual hierarchy of elements

7

# Preattentive Attributes in Text

## No preattentive attributes

What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.

You have a great company – keep up the good work!

## Bold

**What are we doing well?** Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.

You have a great company – keep up the good work!

## Color

What are we doing well? Great Products. **These products are clearly the best in their class.** Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.

You have a great company – keep up the good work!

## Italics

What are we doing well? Great Products. These products are clearly the best in their class. *Replacement parts are shipped when needed.* You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.

You have a great company – keep up the good work!

8

# Preattentive Attributes in Text

## Size

What are we doing well? Great Products. These products are the best in their class. Replacement parts are shipped when needed. You sent gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours. You have a great company – keep up the good work!

## Outline (enclosure)

What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.

You have a great company – keep up the good work!

## Separate spatially

What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask.

Problems are resolved promptly.

Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours. You have a great company – keep up the good work!

## Underline (added marks)

What are we doing well? Great Products. These products are clearly the best in their class. Replacement parts are shipped when needed. You sent me gaskets without me having to ask. Problems are resolved promptly. Bev in the billing office was quick to resolve a billing issue I had. General customer service exceeds expectations. The account manager even called to check in after normal business hours.

You have a great company – keep up the good work!

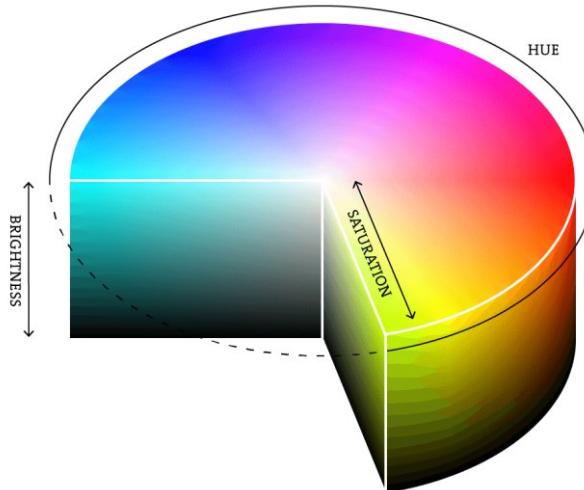
9

# Color

- Color is one of the most powerful tools you have for drawing your audience's attention.
- Resist the urge to use color for the sake of being colorful.
- Leverage color selectively as a strategic tool to highlight the important parts of your visual.
- The use of color should always be an intentional decision.
  - Never let your tool make this important decision for you!

10

# HSB Model



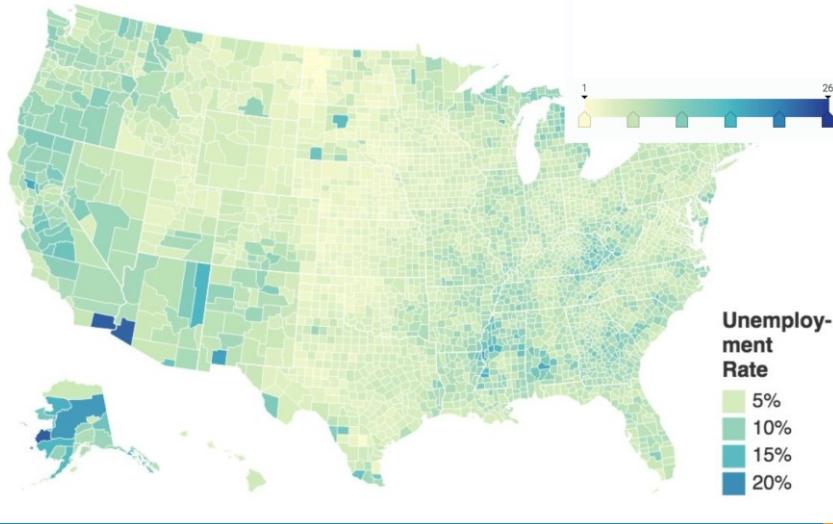
11

## Color Scales ([colorbrewer.org](http://colorbrewer.org))

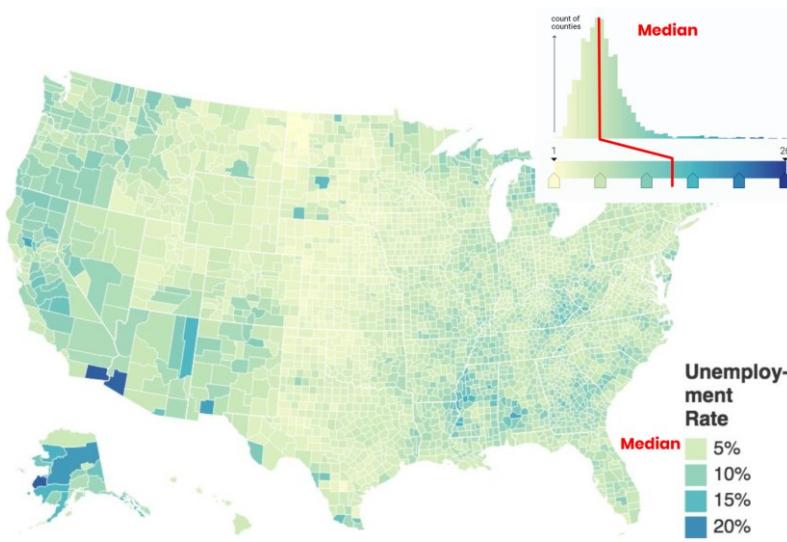
Diverging	Sequential	Qualitative
Spectral	YlOrRd YlOrBr YlGnBu YlGn	Set3
RdYIGn	Reds RdPu	Set2
RdYIBu	Purples PuRd	Set1
RdGy	PuBuGn PuBu	Pastel2
RdBu	OrRd Oranges	Pastel1
PuOr	Greys Greens	Paired
PRGn	GnBu BuPu	Dark2
PIYG	BuGn Blues	Accent
BrBG		

12

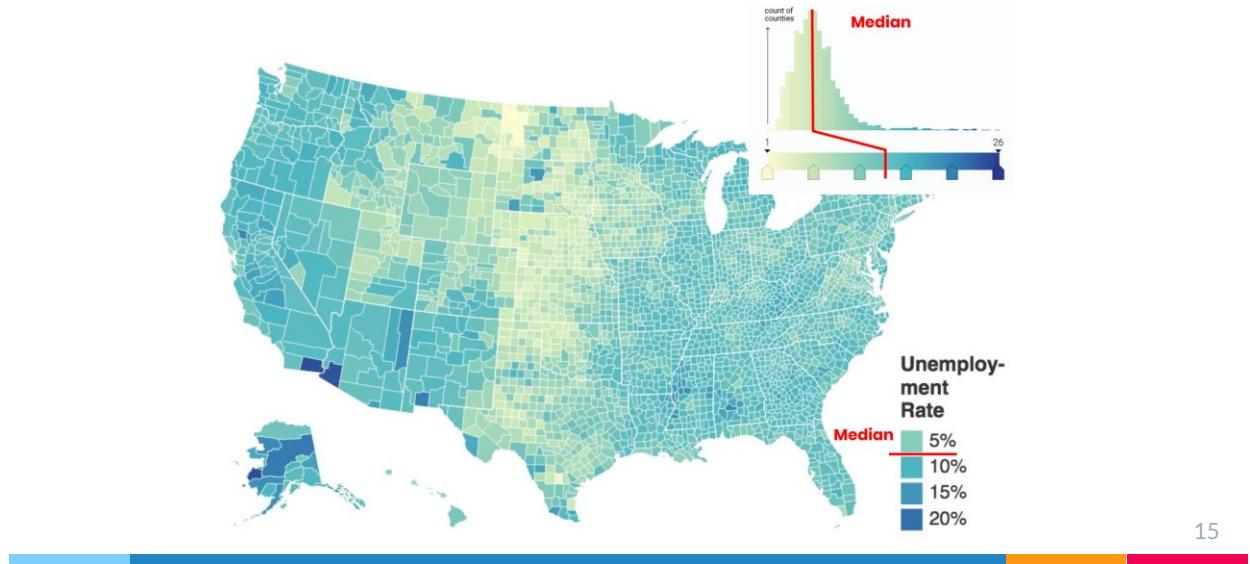
# Mapping Color Scales



# Mapping Color Scales



# Mapping Color Scales



# Use Color Sparingly

Country Level Sales Rank Top 5 Drugs

Rainbow distribution in color indicates sales rank in given country from #1 (red) to #10 or higher (dark purple)

Country	A	B	C	D	E
AUS	1	2	3	6	7
BRA	1	3	4	5	6
CAN	2	3	6	12	8
CHI	1	2	8	4	7
FRA	3	2	4	8	10
GER	3	1	6	5	4
IND	4	1	8	10	5
ITA	2	4	10	9	8
MEX	1	5	4	6	3
RUS	4	3	7	9	12
SPA	2	3	4	5	11
TUR	7	2	3	4	8
UK	1	2	3	6	7
US	1	2	4	3	5

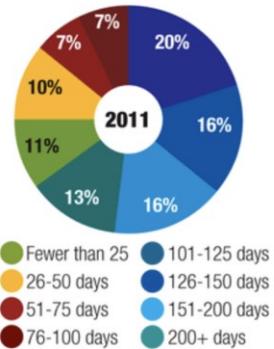
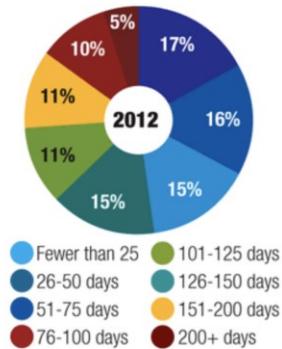
Top 5 drugs: country-level sales rank

RANK	1	2	3	4	5+
COUNTRY   DRUG	A	B	C	D	E
Australia	1	2	3	6	7
Brazil	1	3	4	5	6
Canada	2	3	6	12	8
China	1	2	8	4	7
France	3	2	4	8	10
Germany	3	1	6	5	4
India	4	1	8	10	5
Italy	2	4	10	9	8
Mexico	1	5	4	6	3
Russia	4	3	7	9	12
Spain	2	3	4	5	11
Turkey	7	2	3	4	8
United Kingdom	1	2	3	6	7
United States	1	2	4	3	5

16

# Use Color Consistently

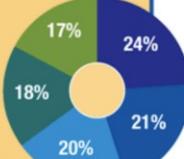
How many nights do you typically stay away from home due to work?



## Who Took The Survey?

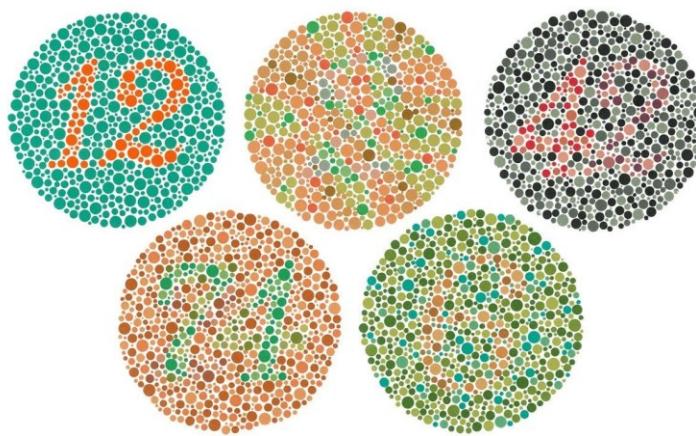
Overall, 170 consultants took our annual Best Places to Stay survey in the spring of 2012.

- CEO/Managing Director
- Director/Senior Partner
- Partner/Vice President
- Manager/Senior Manager
- Consultant



17

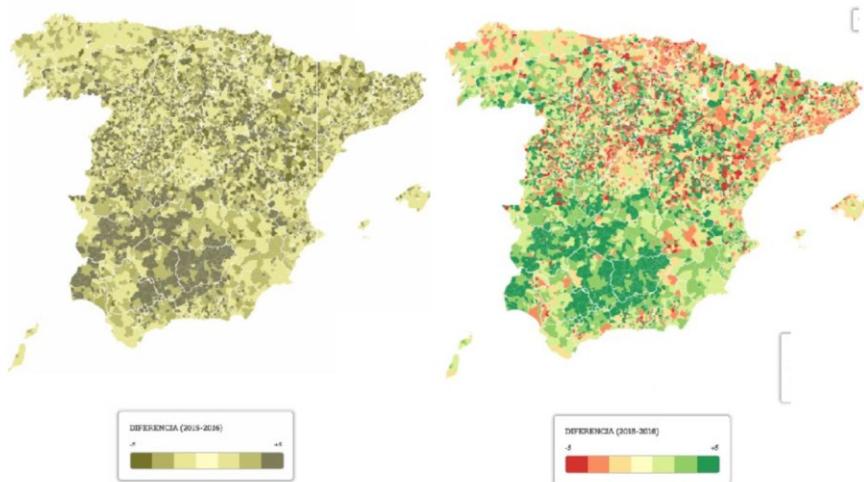
# Design with colorblind in mind



[vischeck.com](http://vischeck.com)

18

# Design with colorblind in mind



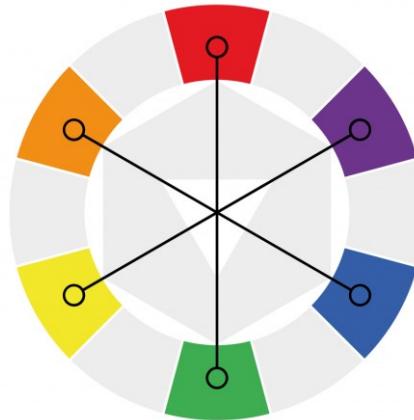
19

# Consider the tone color conveys

Red	Orange	Yellow	Green
Power Deciding Strength Love Passion Energy	Energy Enthusiastic Creativity Friendliness Positivity	Optimistic Exciting Happiness Positivity	Health Wealth Hope Growth Fresh Nurturing
Danger Anger Rebellious Violence Warning	Deceitful Overpowering Warning	Sickness Anxiety Warning Cowardice	Materialistic Greed Envy Hazardous Sickness
Blue	Purple	Pink	Brown
Trust Loyalty Peace Calm Stability	Luxury Spirituality Quality Sophistication Creative	Romance Love Nurturing Sweetness	Earthiness Comforting Wholesome Approachable Stable
Sadness Loneliness Rigidity Passiveness Coldness	Arrogance Superiority Moodiness Introversion Suppression	Neediness Immature Naivety	Boring Predictable Dull
Black	Grey	White	
Impartial Professional Mature Classic Stable Flexible	Indecisive Inert Depressing Negative Isolation		
Inert Depressing Negative Isolation	Lack of energy		

20

# Complementary Colors



21

Where are your eyes drawn?



22

# Where are your eyes drawn?



23

# Where are your eyes drawn?



24

# Where are your eyes drawn?



25

# Where are your eyes drawn?



26

# Where are your eyes drawn?

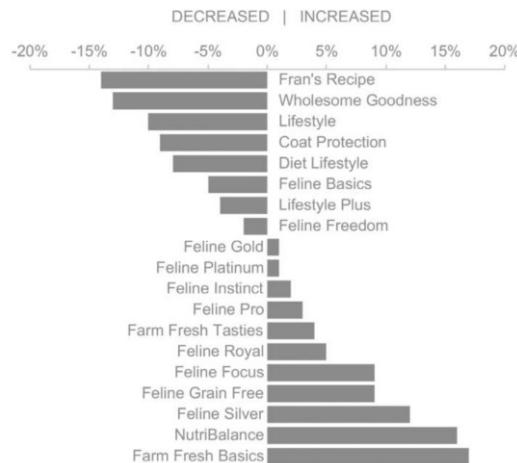


27

# Focus Attention

Cat food brands: YoY sales change

% CHANGE IN VOLUME (\$)

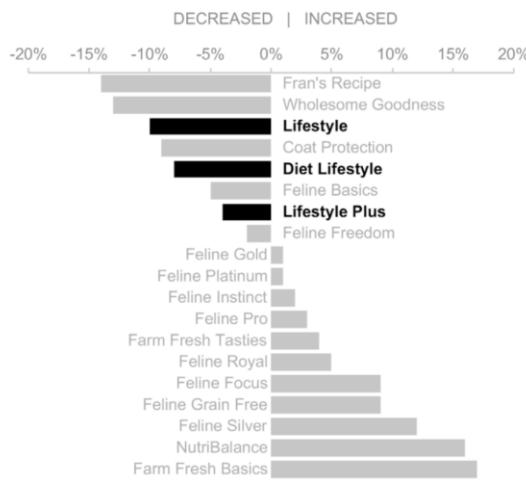


28

# Focus Attention

Cat food brands: **Lifestyle line brands declined**

YEAR-OVER-YEAR % CHANGE IN SALES VOLUME (\$)

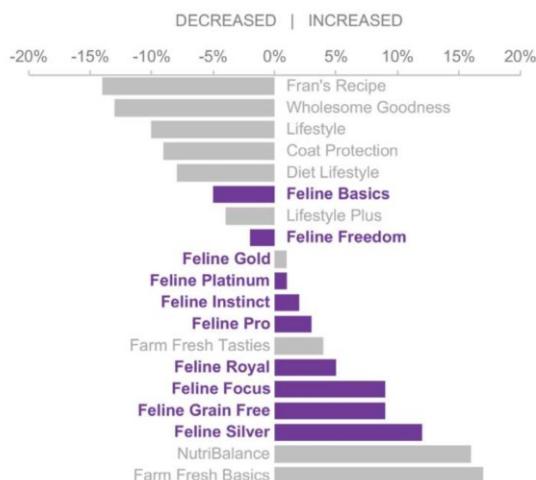


29

# Focus Attention

Cat food brands: **most in Feline line increased**

YEAR-OVER-YEAR % CHANGE IN SALES VOLUME (\$)

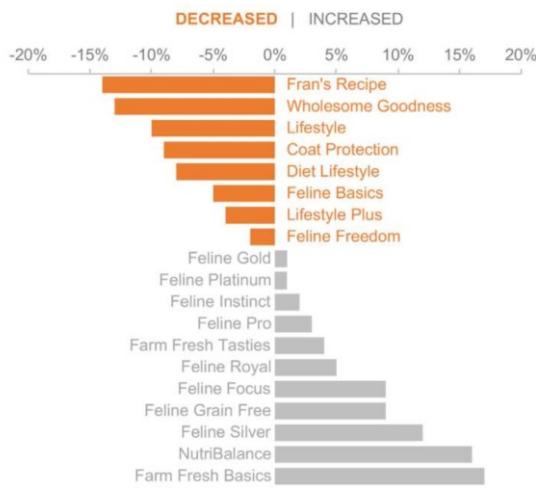


30

# Focus Attention

Cat food brands: **8 brands decreased in sales**

YEAR-OVER-YEAR % CHANGE IN SALES VOLUME (\$)

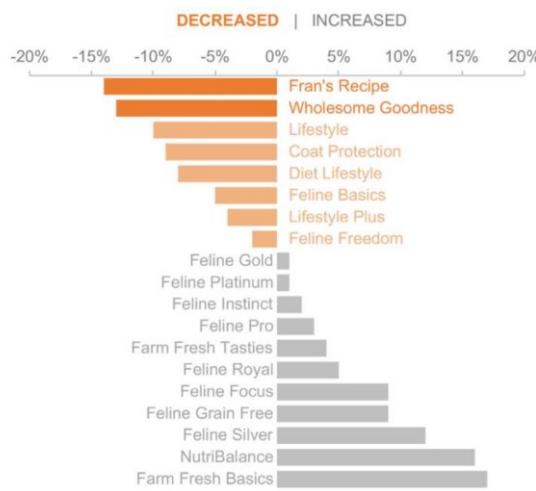


31

# Focus Attention

Cat food brands: **2 brands decreased the most**

YEAR-OVER-YEAR % CHANGE IN SALES VOLUME (\$)

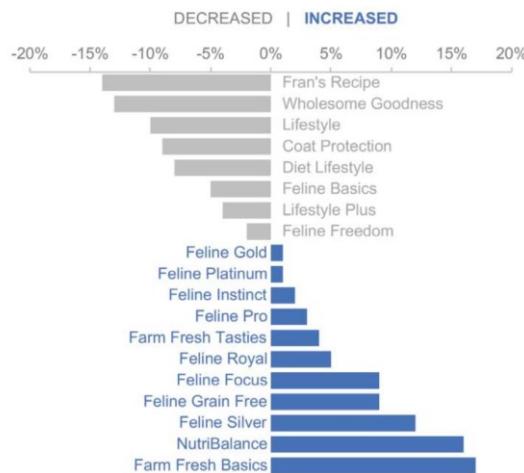


32

# Focus Attention

## Cat food brands: 11 brands flat to increasing

YEAR-OVER-YEAR % CHANGE IN SALES VOLUME (\$)

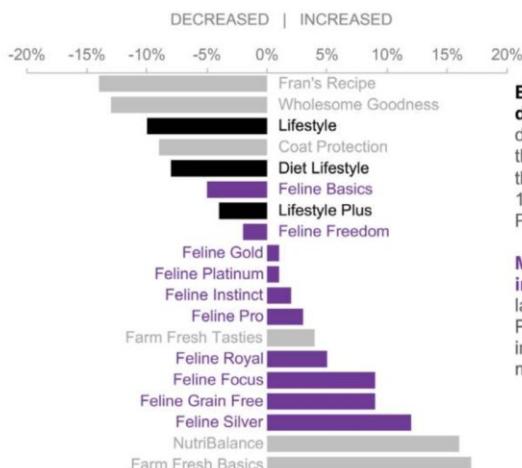


33

# Focus Attention

## Cat food brands: mixed results in sales year-over-year

YEAR-OVER-YEAR % CHANGE IN SALES VOLUME (\$)



**Brands in the Lifestyle line all decreased year-over-year**, mainly due to a marketing shift away from these products. Classic Lifestyle had the biggest decrease in sales, down 10% year-over-year, while Lifestyle Plus had the smallest decrease (4%).

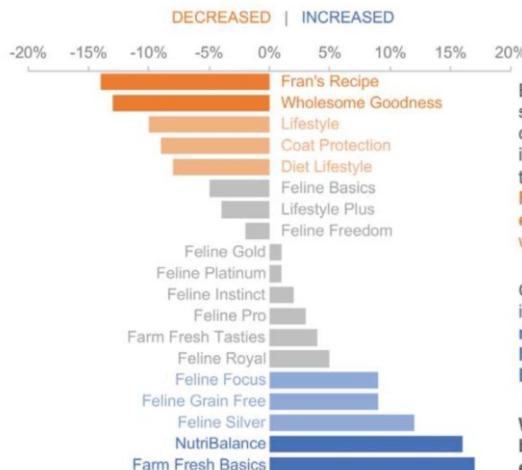
**Most brands in the Feline line increased in sales year-over-year**, largely due to the partnership with PetFriends retailers that we entered into mid-year. We anticipate continued momentum in the coming year.

34

# Focus Attention

## Cat food brands: mixed results in sales year-over-year

YEAR-OVER-YEAR % CHANGE IN SALES VOLUME (\$)



Eight key cat food brands declined in sales year-over-year, with five brands decreasing 7%+. This was expected in some cases due to focus shift toward higher margin brands. **Fran's Recipe and Wholesome Goodness each declined by more than 13%**, which was more than expected.

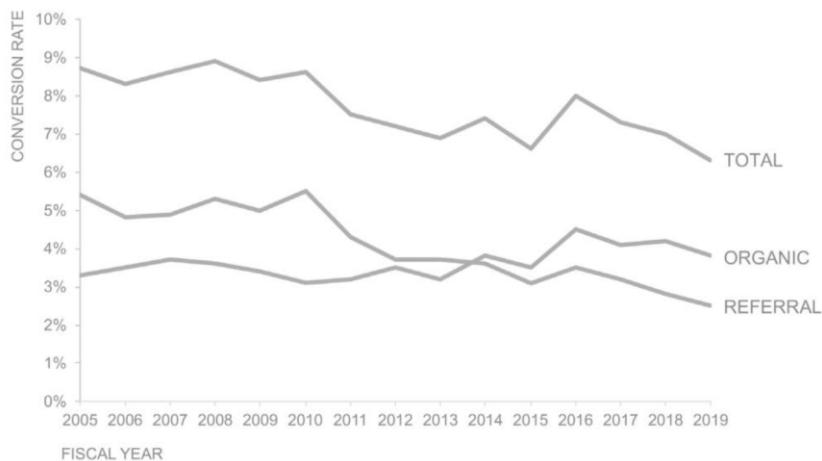
On the positive side, five brands increased 8%+ year-over-year, with **marked 16%+ increases for NutriBalance and Farm Fresh Basics**.

What can we learn from increasing brands that we can apply elsewhere? Let's discuss next steps.

35

# Direct Attention to the Referral line

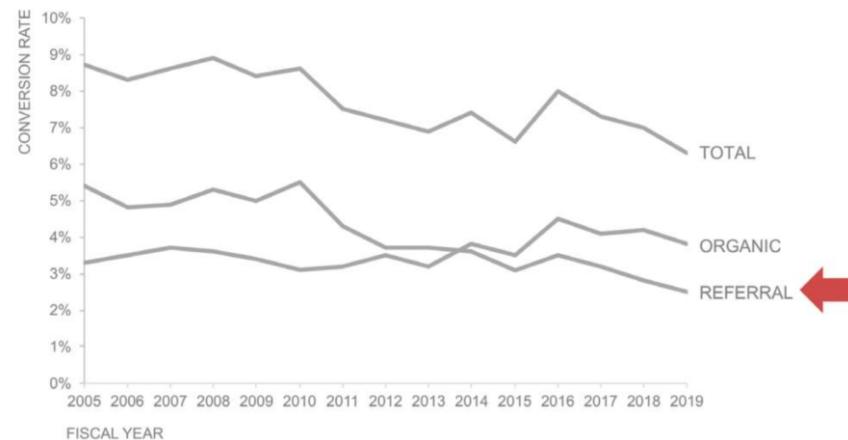
Conversion rate over time



36

# Direct Attention to the Referral line

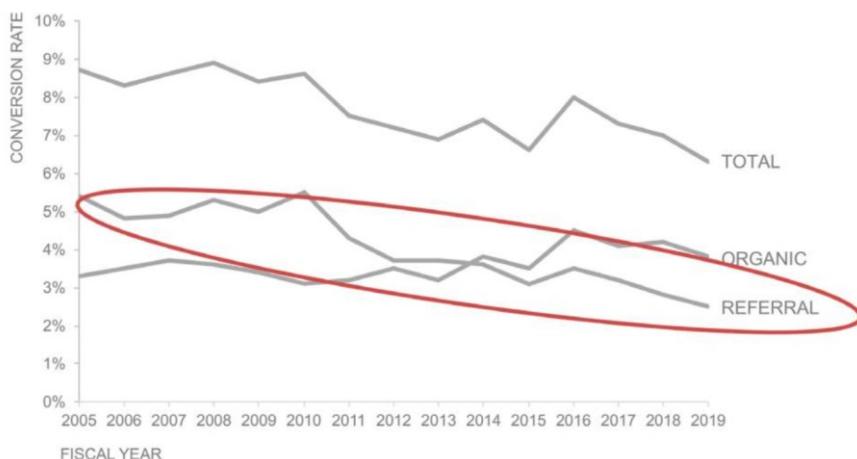
Conversion rate over time



37

# Direct Attention to the Referral line

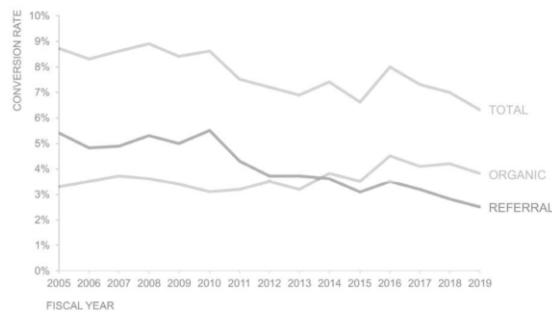
Conversion rate over time



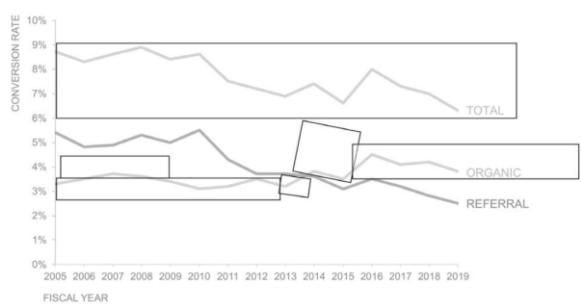
38

# Direct Attention to the Referral line

Conversion rate over time



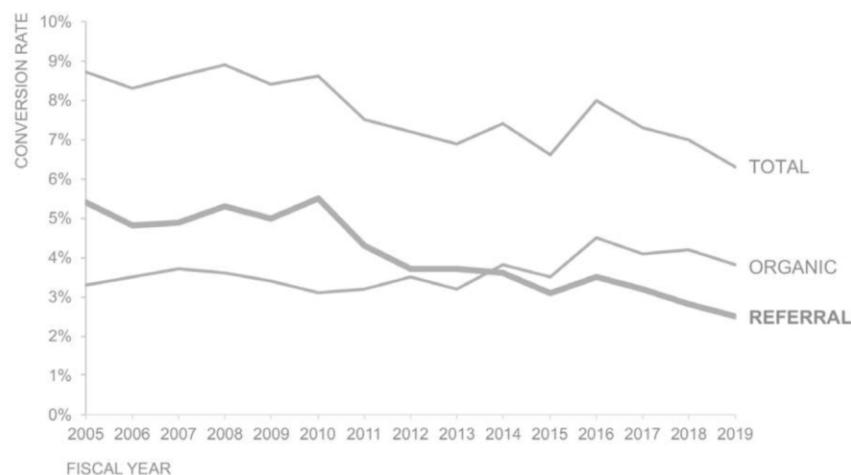
Conversion rate over time



39

# Direct Attention to the Referral line

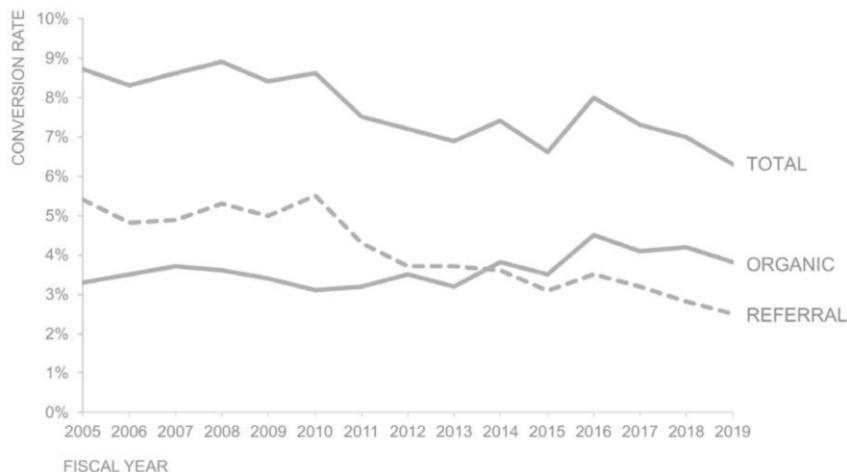
Conversion rate over time



40

# Direct Attention to the Referral line

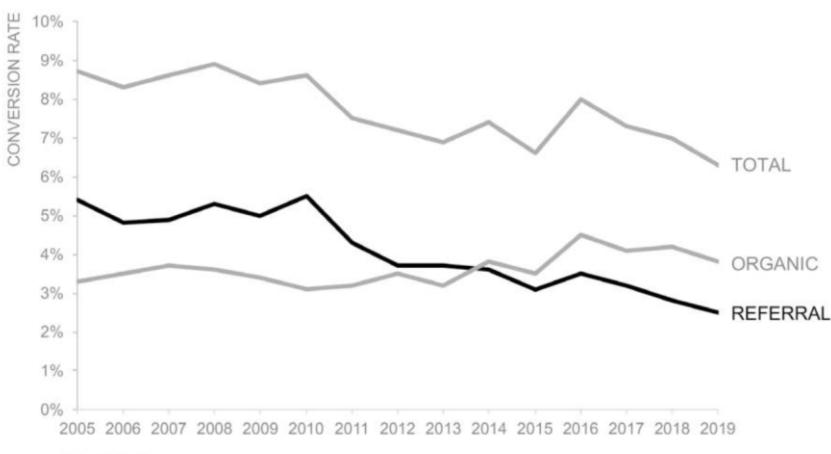
Conversion rate over time



41

# Direct Attention to the Referral line

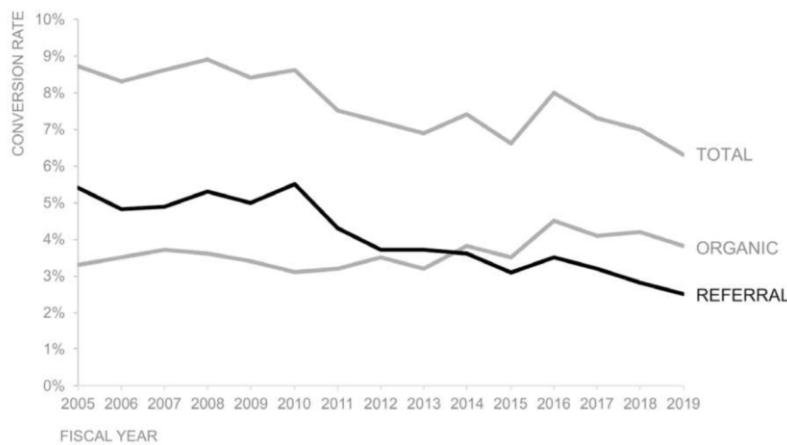
Conversion rate over time



42

# Direct Attention to the Referral line

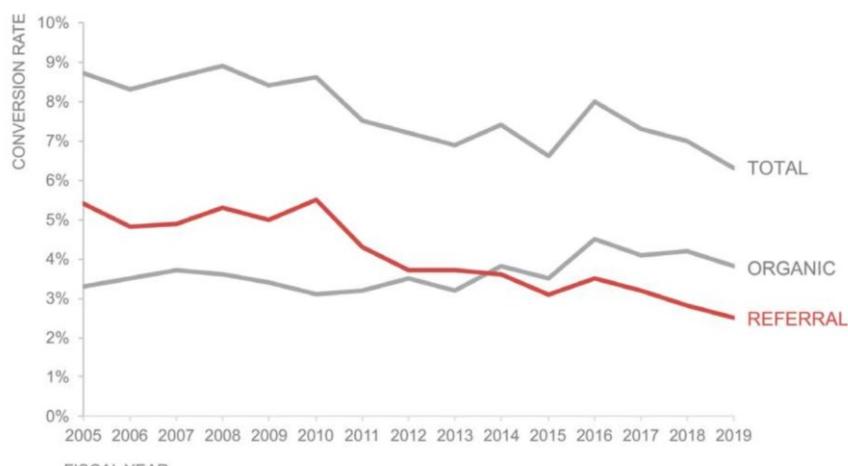
Conversion rate over time



43

# Direct Attention to the Referral line

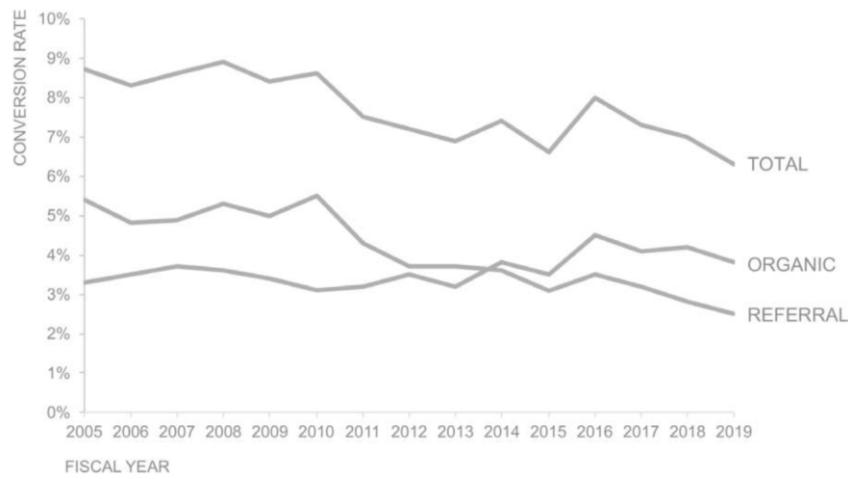
Conversion rate over time



44

# Direct Attention to the Referral line

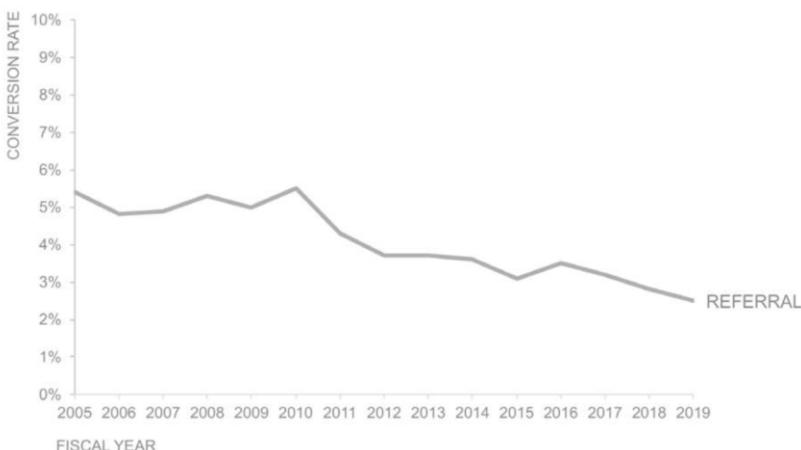
Conversion rate over time: Referral decreasing markedly since 2010



45

# Direct Attention to the Referral line

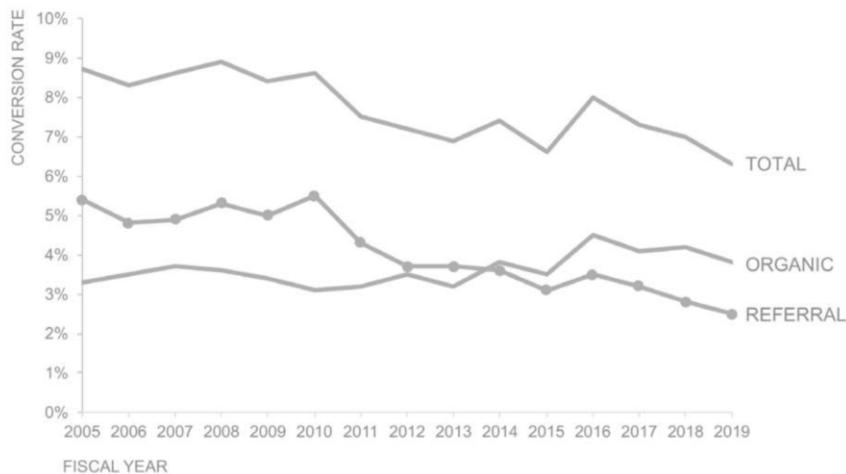
Conversion rate over time



46

# Direct Attention to the Referral line

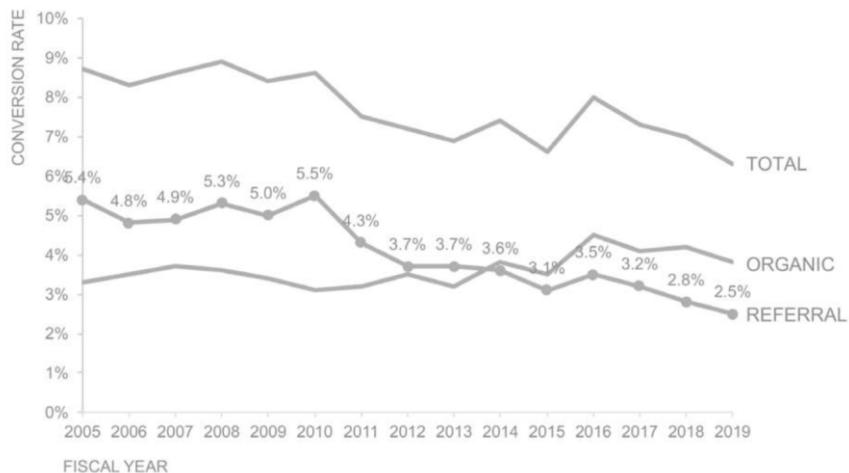
Conversion rate over time



47

# Direct Attention to the Referral line

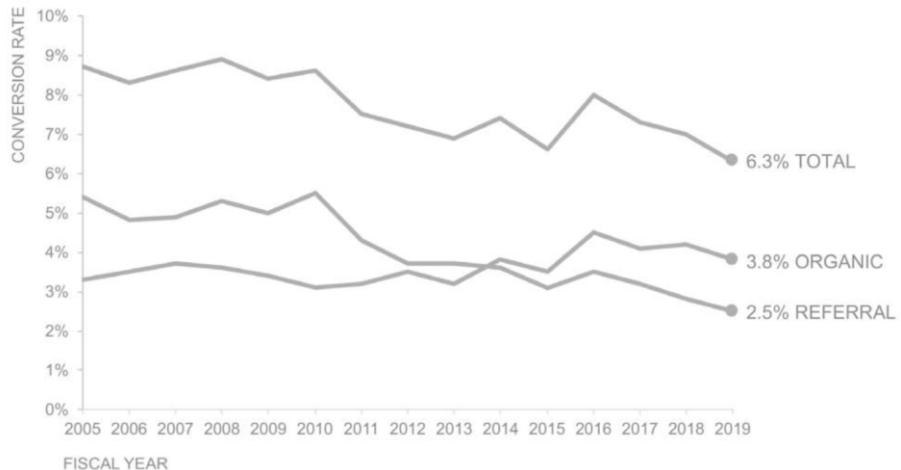
Conversion rate over time



48

# Direct Attention to the Referral line

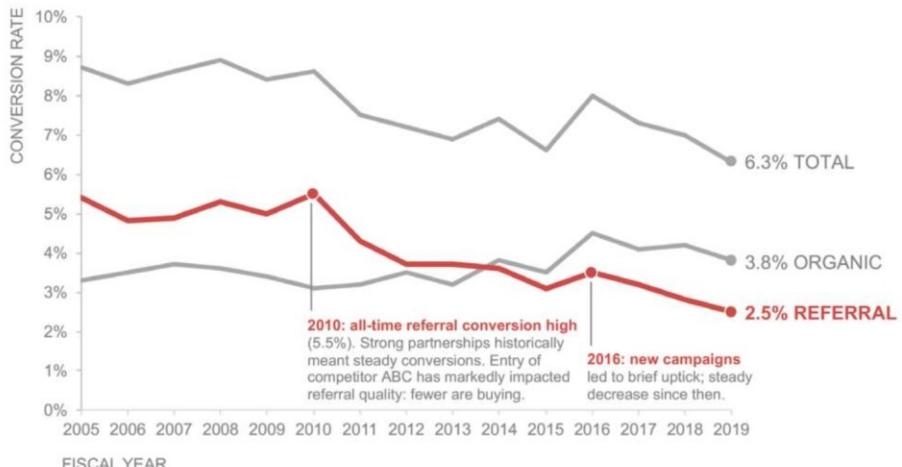
Conversion rate over time



49

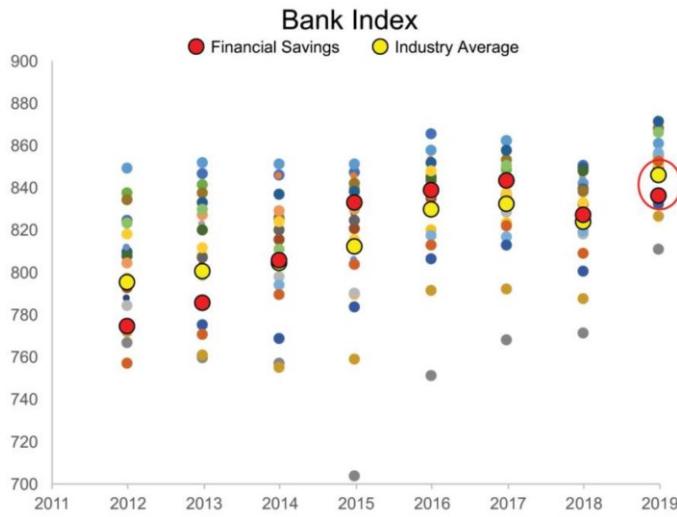
# Direct Attention to the Referral line

Conversion rate over time: **referral decreasing markedly since 2010**



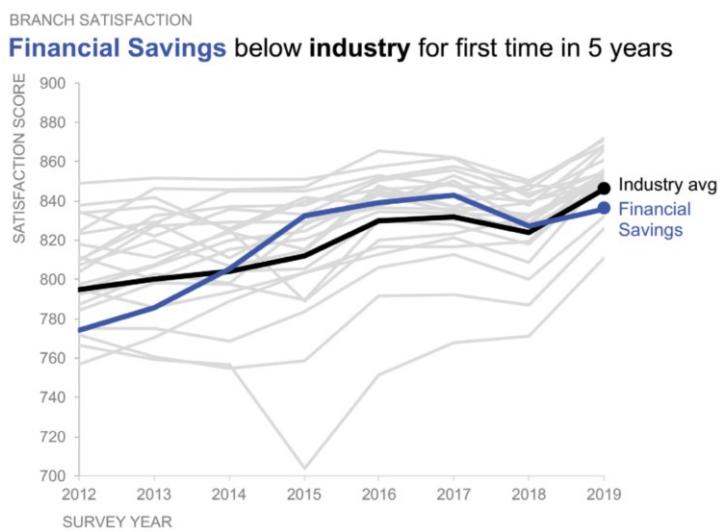
50

# Visualize All the Data



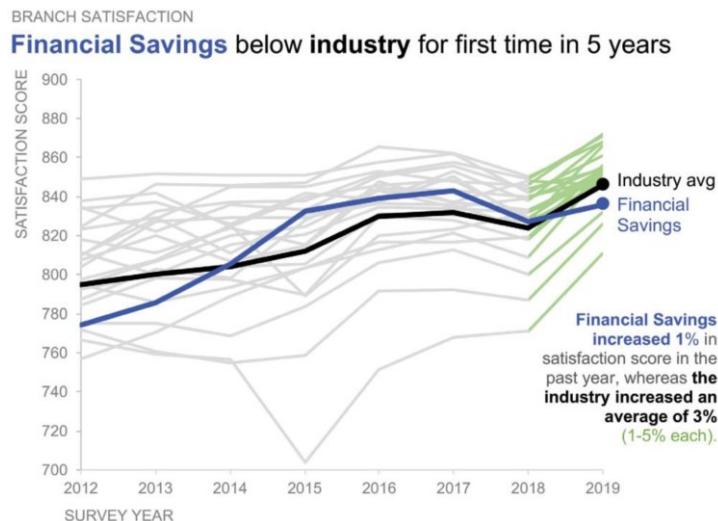
51

# Visualize All the Data



52

# Visualize All the Data



53