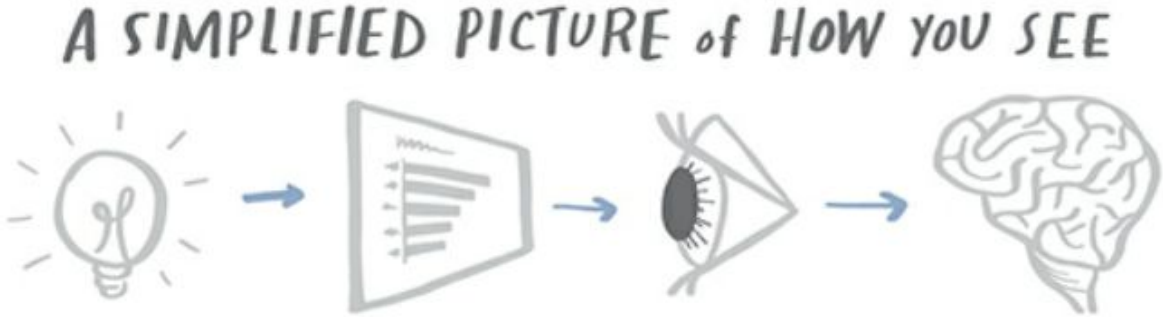
Data Storytelling

4) Focus attention

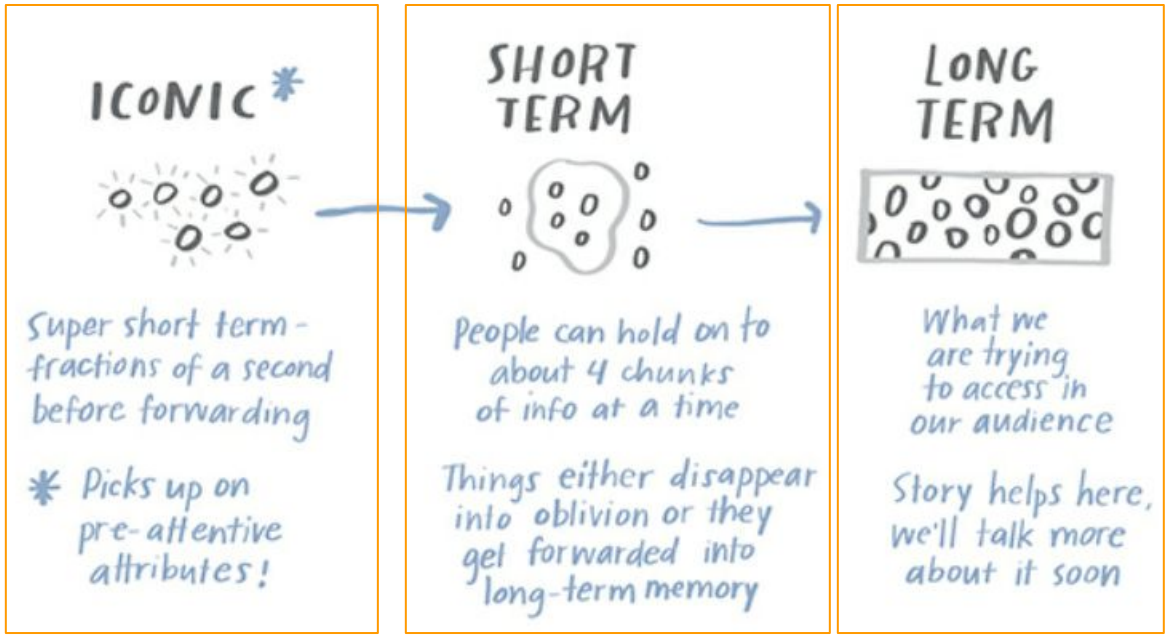
Prof. Dr. Jan Kirenz
HdM Stuttgart

YOU SEE with YOUR BRAIN



Source: Nussbaumer Knaflic (2020)

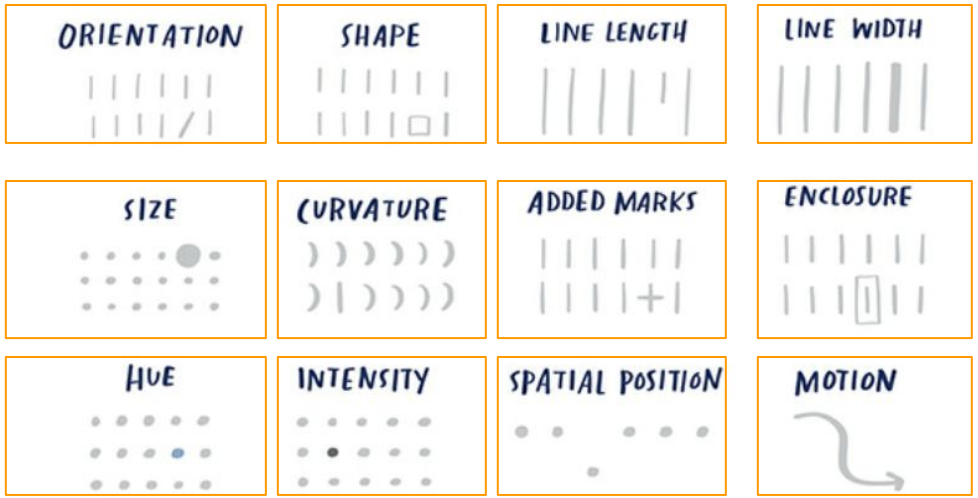
THREE TYPES of MEMORY



Source: Nussbaumer Knaflic (2020)

PREATTENTIVE ATTRIBUTES

SIGNAL WHERE to LOOK and create VISUAL HIERARCHY
to help ease the processing of information



Source: Nussbaumer Knaflic (2020)

BE AWARE

SPECIFIC ATTRIBUTES to REMEMBER

SIZE

Relative size can indicate relative importance

HUE (COLOR)

Used sparingly is the MOST STRATEGIC TOOL for directing our audience's attention

SPATIAL POSITION

Without other visual cues, we take in information starting at the top left and doing zig-zagging Z's across the page

Aim to work within this natural construct, placing important info at the top left – or making it clear what order to take it in otherwise

WHERE ARE YOUR EYES DRAWN?

A TEST to ASSESS whether YOU are using PREATTENTIVE ATTRIBUTES STRATEGICALLY

Close your eyes ...

... then look back at your slide / graph ...

take note of where your eyes go ...

this is where your audience's eyes will likely go

Evaluate & make changes as needed

Source: Nussbaumer Knaflic (2020)

4.1 Where are your eyes drawn?

Source: Nussbaumer Knaflic (2020)

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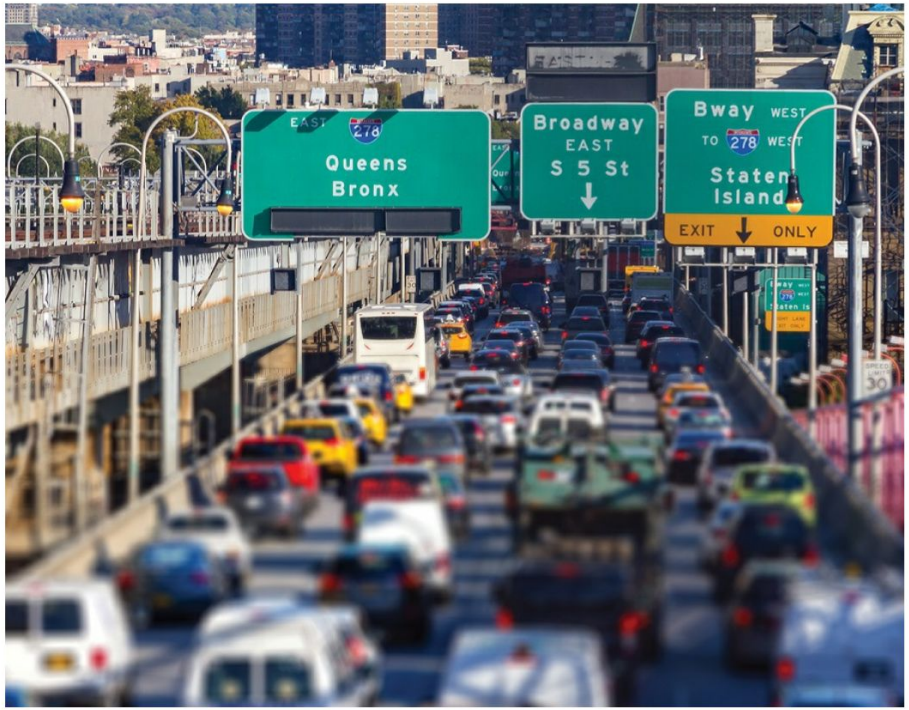

Source: Nussbaumer Knaflic (2020)

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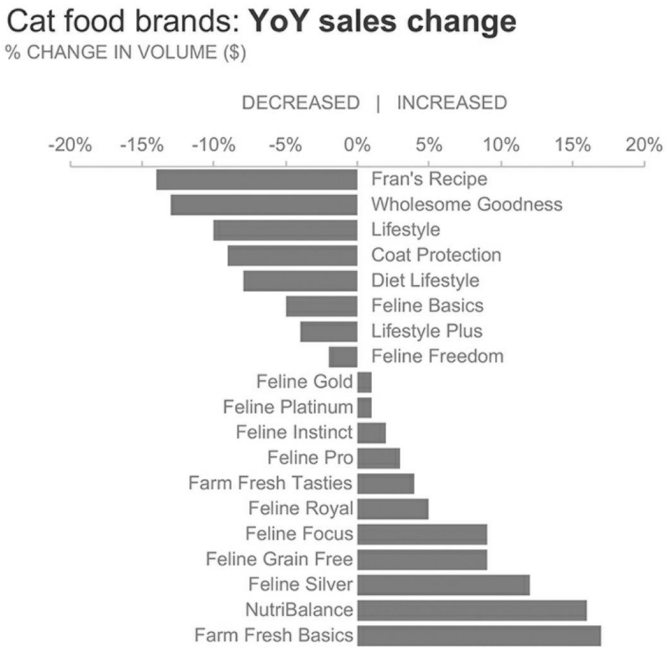
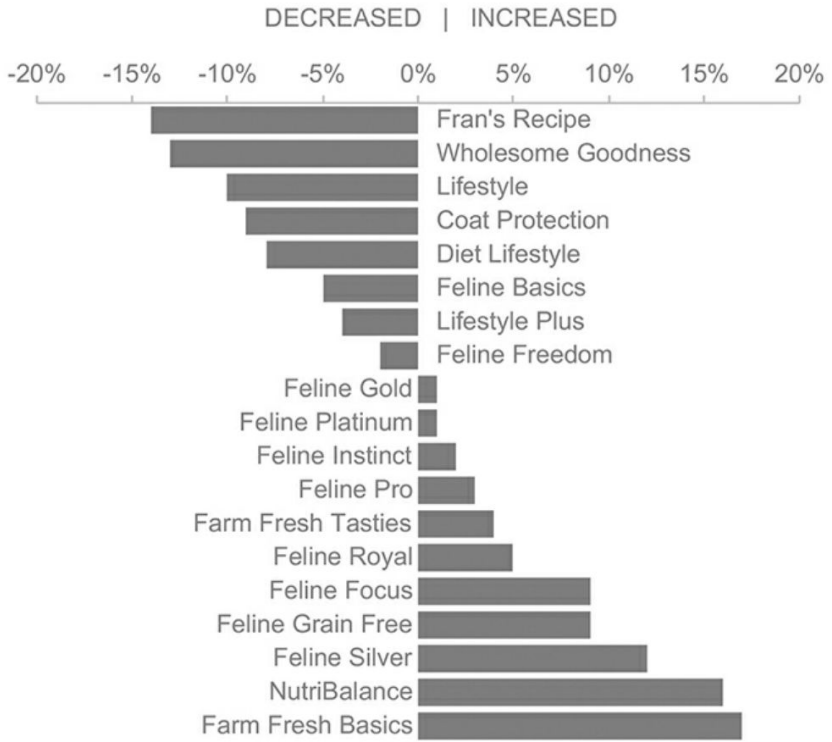
4.2 Examples

Let’s focus attention in this graph



Cat food brands: **YoY sales change**

% CHANGE IN VOLUME ($)



QUESTION 1:
Let's say you will be presenting this data live and want to begin by talking about the **Lifestyle brand line:** Lifestyle, Diet Lifestyle, and Lifestyle Plus.

QUESTION 2:
Assume you next want to talk about the **Feline brand** group, which includes all of the brands with "Feline" in their name. The branding for this line of cat food has a purple logo.

QUESTION 3:
Next, you want to discuss the brands that had year-over-year **declines**.

QUESTION 4:
Let's imagine that within the declining brands, you want to talk specifically about the **two** brands that **declined the most**:

QUESTION 5:
Assume you want to talk about the brands that had year-over-year **increases** in sales.

QUESTION 6:
You want to create a final comprehensive view to be distributed that highlights each of the takeaways outlined previously:

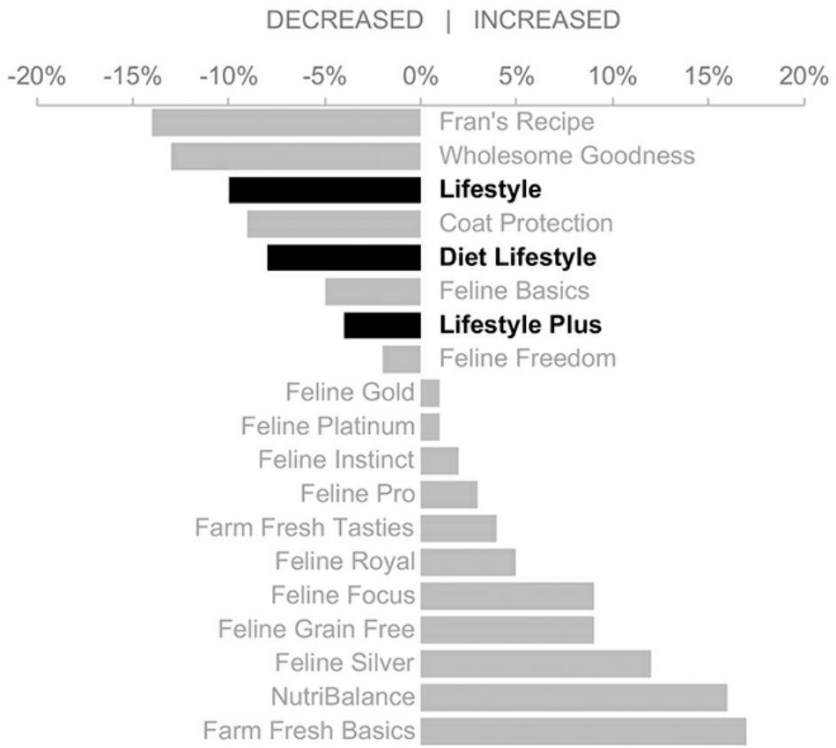
- Lifestyle brands,
- Feline brands,
- decreasing brands (differentiating those decreasing most), and increasing brands (highlighting those that increased most).

How would you achieve this? How would you pair this with explanatory text and make it clear how the text relates to the data.

Source: Nussbaumer Knaflic (2020); Starting point

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

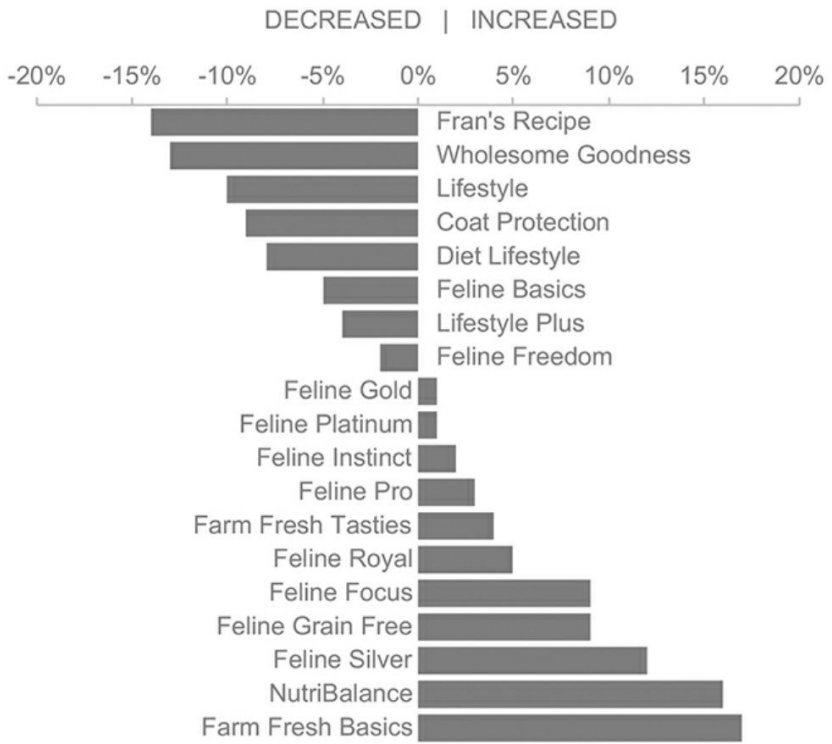
YEAR-OVER-YEAR % CHANGE IN SALES VOLUME ($)



Source: Nussbaumer Knaflic (2020); Q1: Focus on Lifestyle brand line

Cat food brands: **YoY sales change**

% CHANGE IN VOLUME ($)



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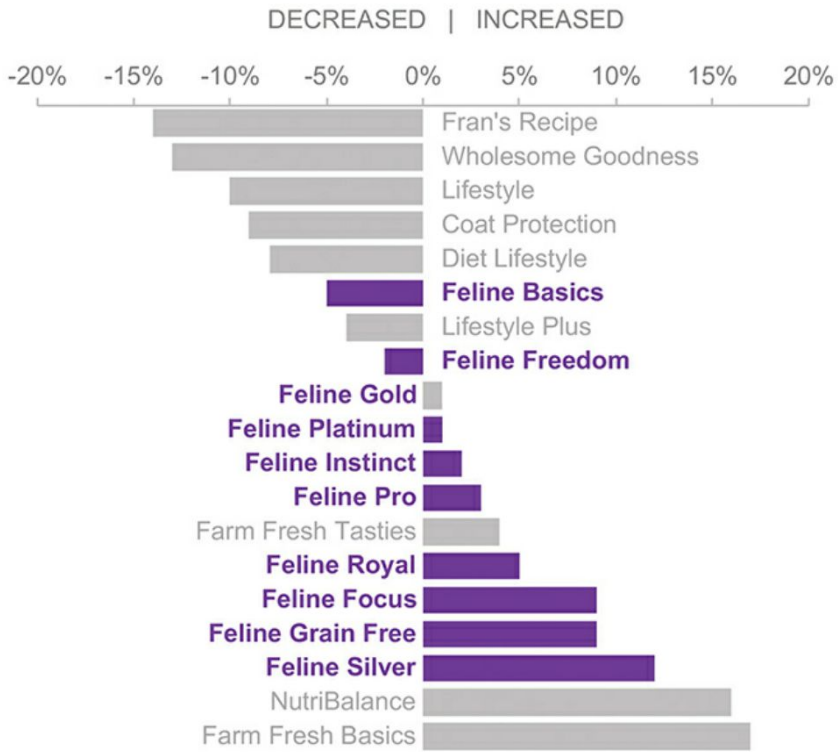
Source: Nussbaumer Knaflic (2020); Starting point

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

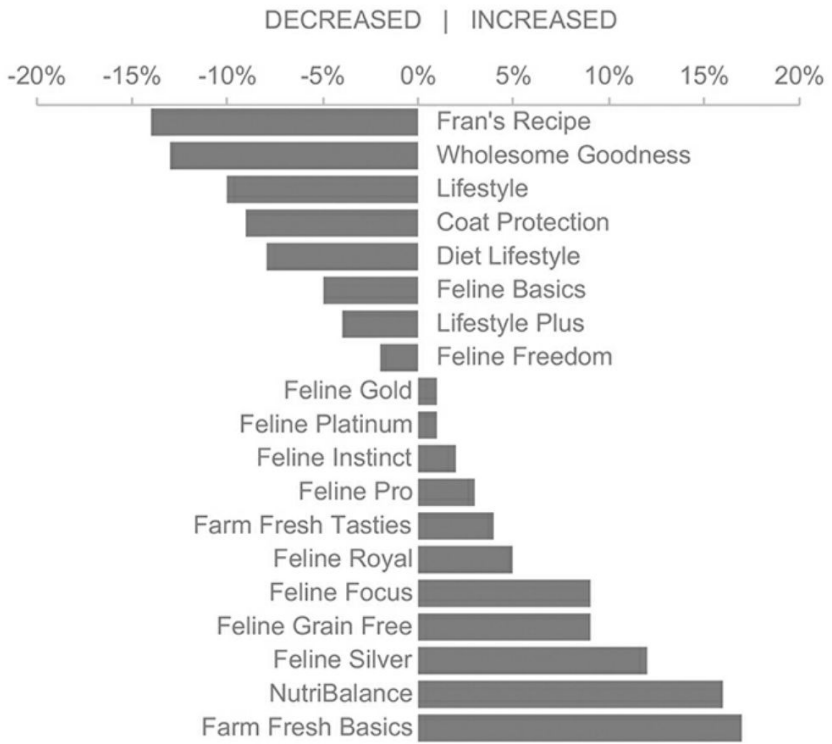
YEAR-OVER-YEAR % CHANGE IN SALES VOLUME ($)



Source: Nussbaumer Knaflic (2020); Q2: Focus on Feline brand line

Cat food brands: **YoY sales change**

% CHANGE IN VOLUME ($)



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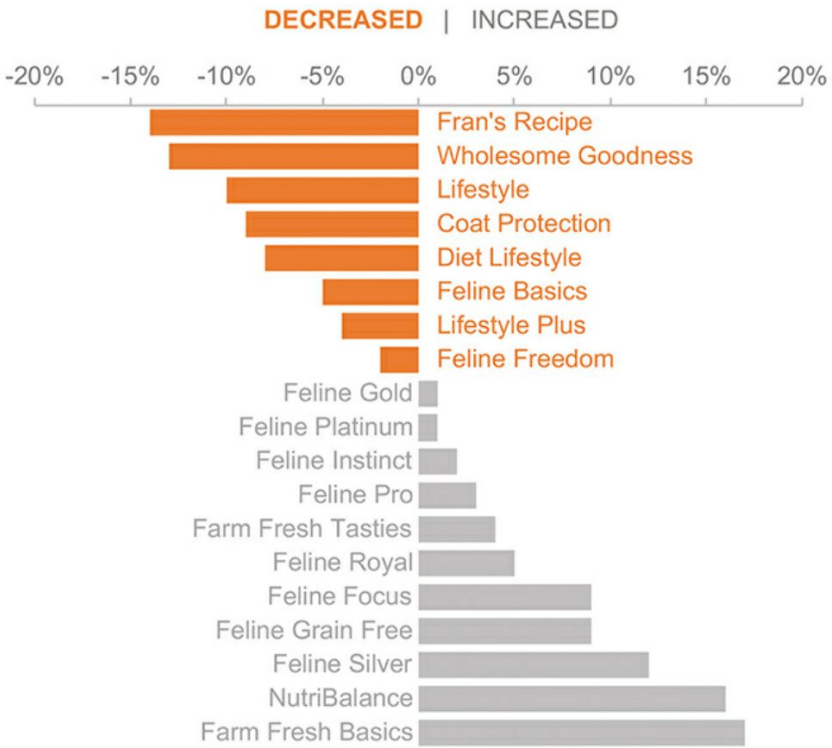
Source: Nussbaumer Knaflic (2020); Starting point

Cat food brands: 8 brands decreased in sales

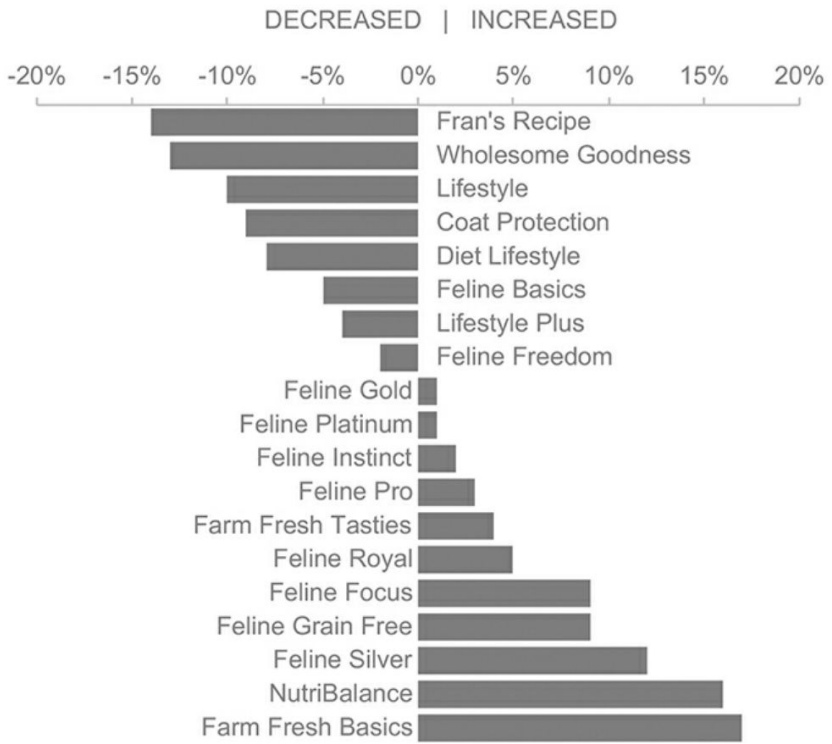
YEAR-OVER-YEAR % CHANGE IN SALES VOLUME ($)



Source: Nussbaumer Knaflic (2020); Q3: Focus on decreasing brands

Cat food brands: **YoY sales change**

% CHANGE IN VOLUME ($)



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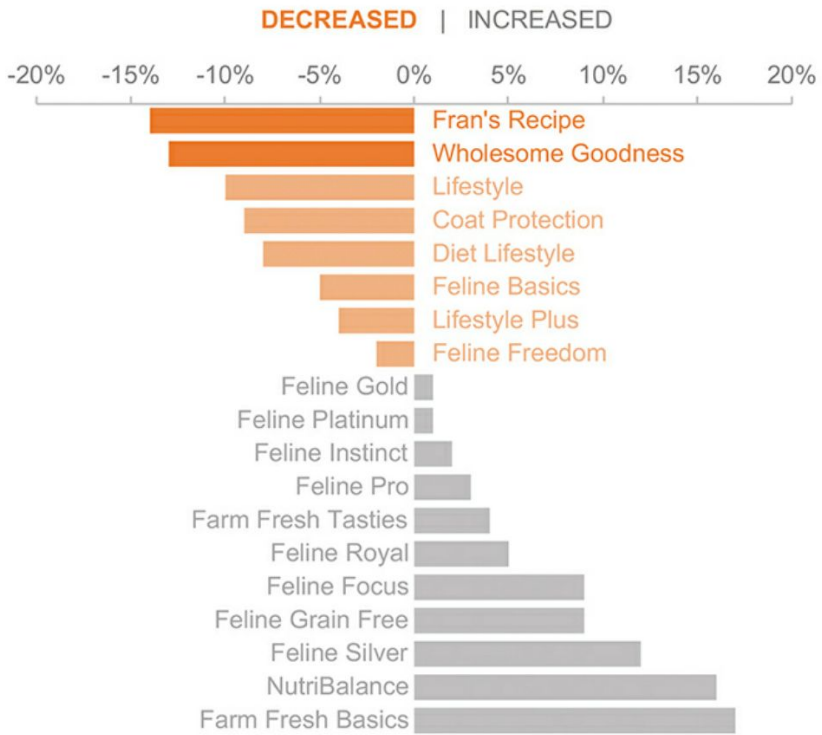
Source: Nussbaumer Knaflic (2020); Starting point

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

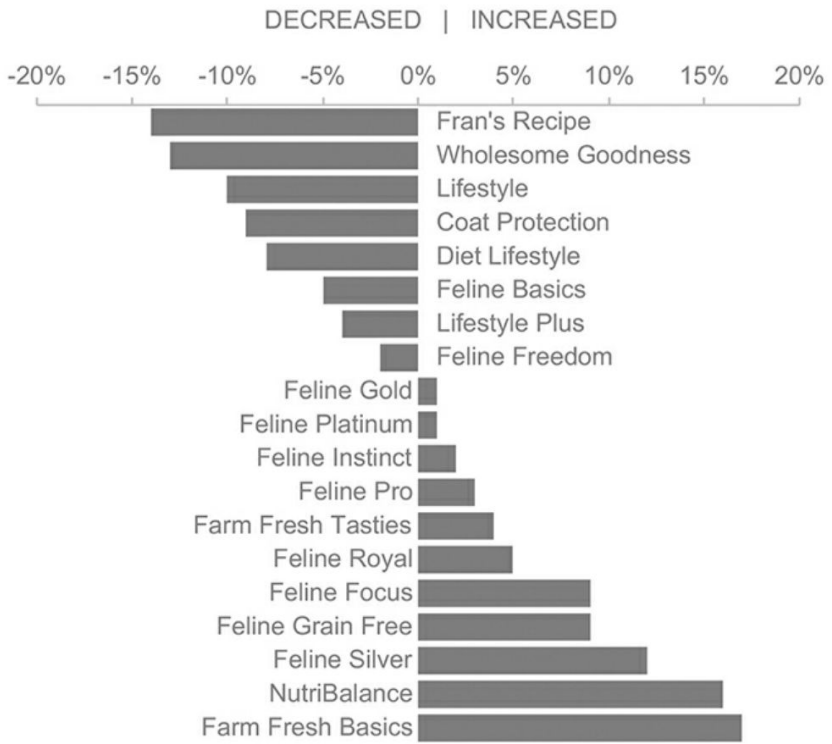
YEAR-OVER-YEAR % CHANGE IN SALES VOLUME ($)



Source: Nussbaumer Knaflic (2020); Q4: Focus on the brands that most decreased

Cat food brands: **YoY sales change**

% CHANGE IN VOLUME ($)



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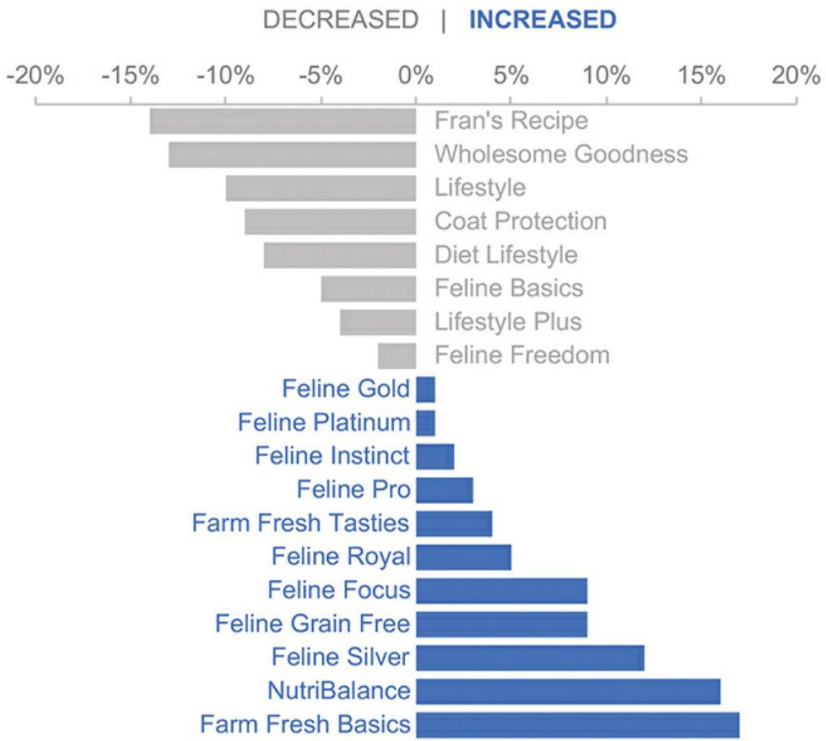
Source: Nussbaumer Knaflic (2020); Starting point

Cat food brands: **11 brands flat to increasing**

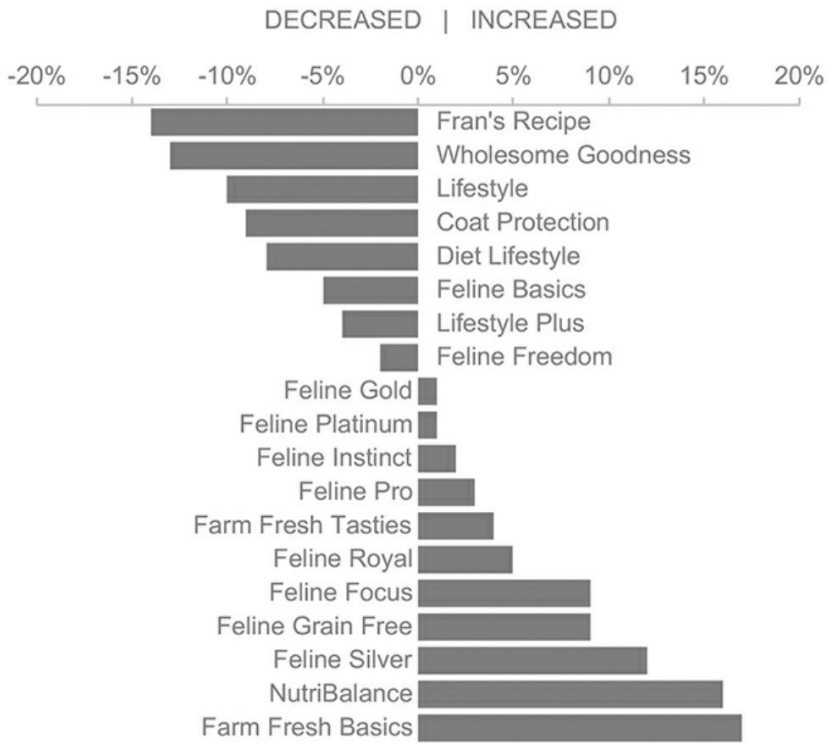
YEAR-OVER-YEAR % CHANGE IN SALES VOLUME ($)



Source: Nussbaumer Knaflic (2020); Q5: Focus on increasing brands

Cat food brands: **YoY sales change**

% CHANGE IN VOLUME ($)



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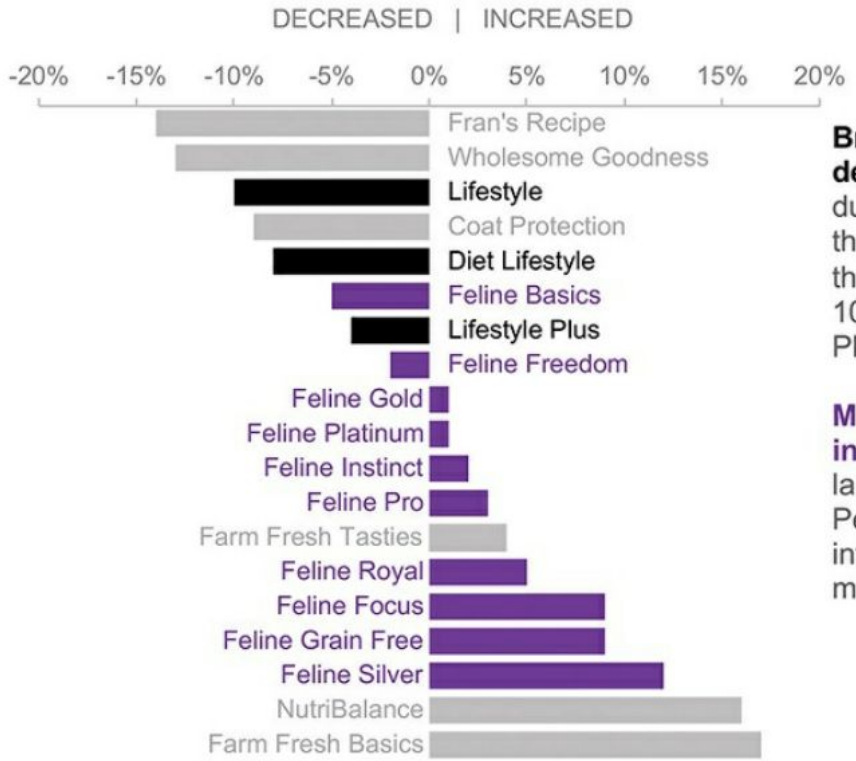
Source: Nussbaumer Knaflic (2020); Starting point

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

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



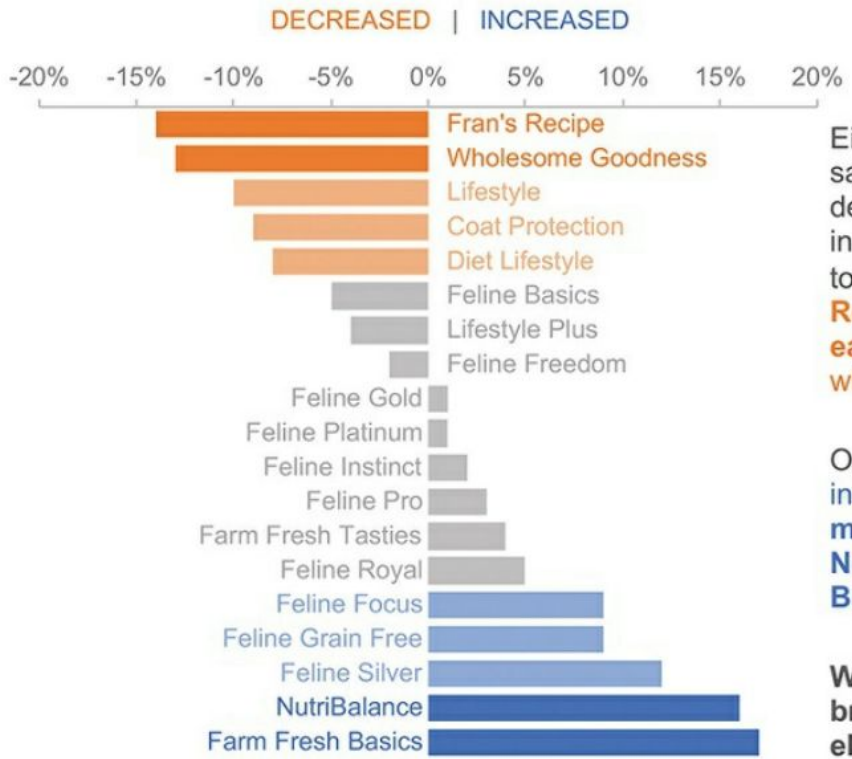
Brands in the Lifestyle line all decreased year-over-year, mainly due to a marketing shift away from these products. Classic Lifestyle had the biggest decrease in sales, down 10% year-over-year, while Lifestyle Plus had the smallest decrease (4%).

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.

Source: Nussbaumer Knaflic (2020); Q6: Comprehensive slide #1: Lifestyle and Feline brands

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.

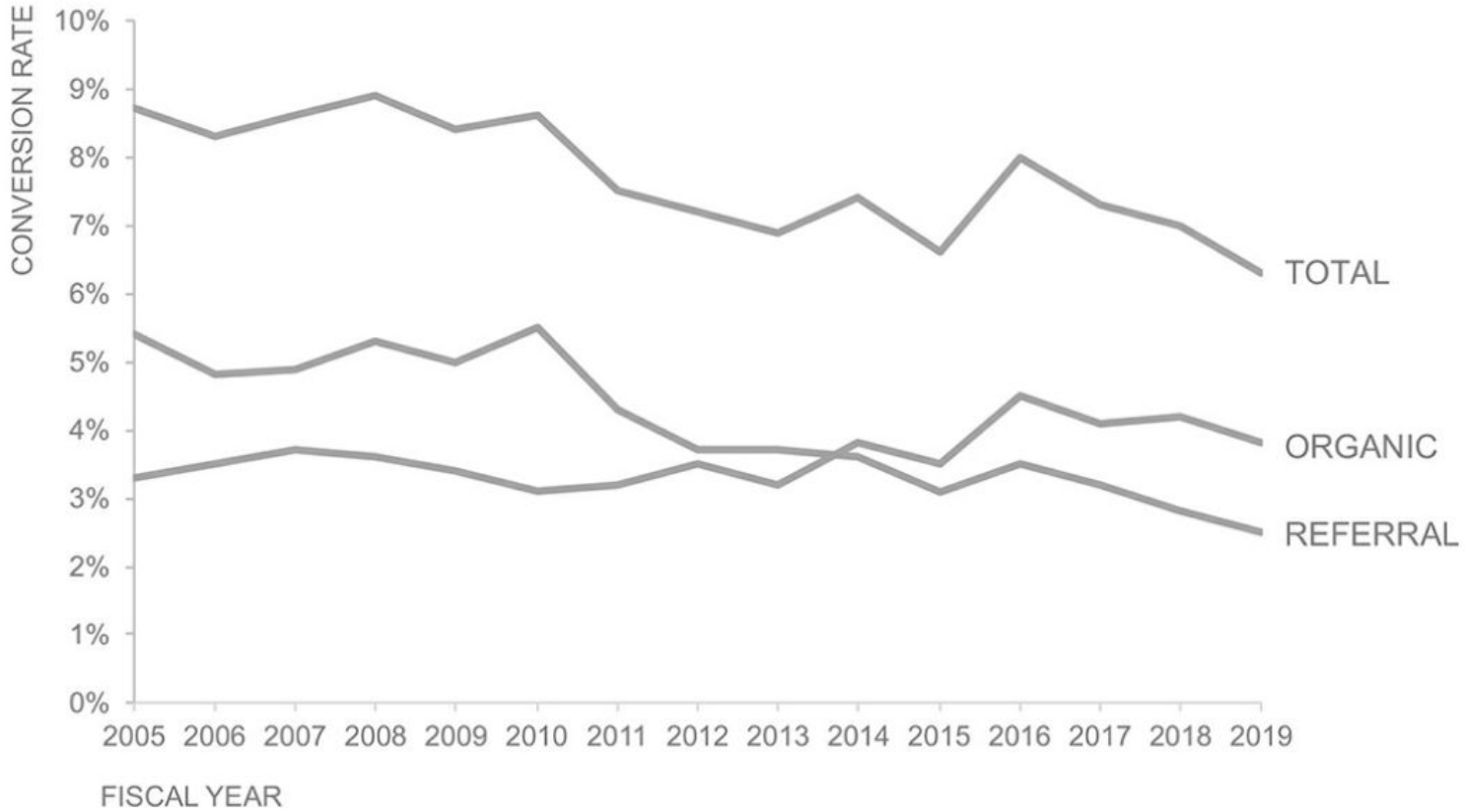
On the positive side, five brands increased 8%+ year-over-year, with **marked 16%+ increases for NutriBalance and Farm Fresh Basics**.

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

Source: Nussbaumer Knaflic (2020); Q6: Comprehensive slide #2: decreasing and increasing brands

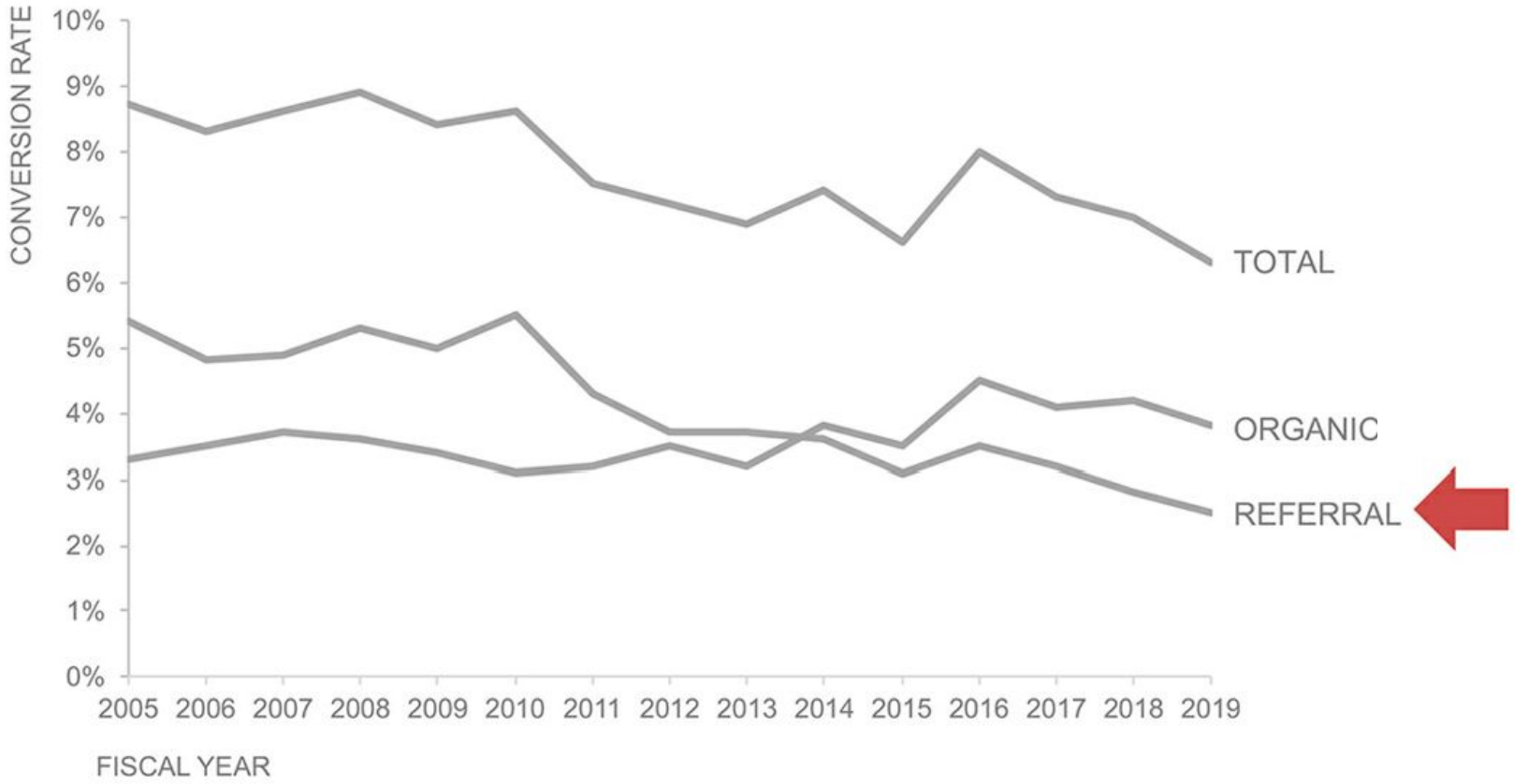
4.3 Example

Conversion rate over time



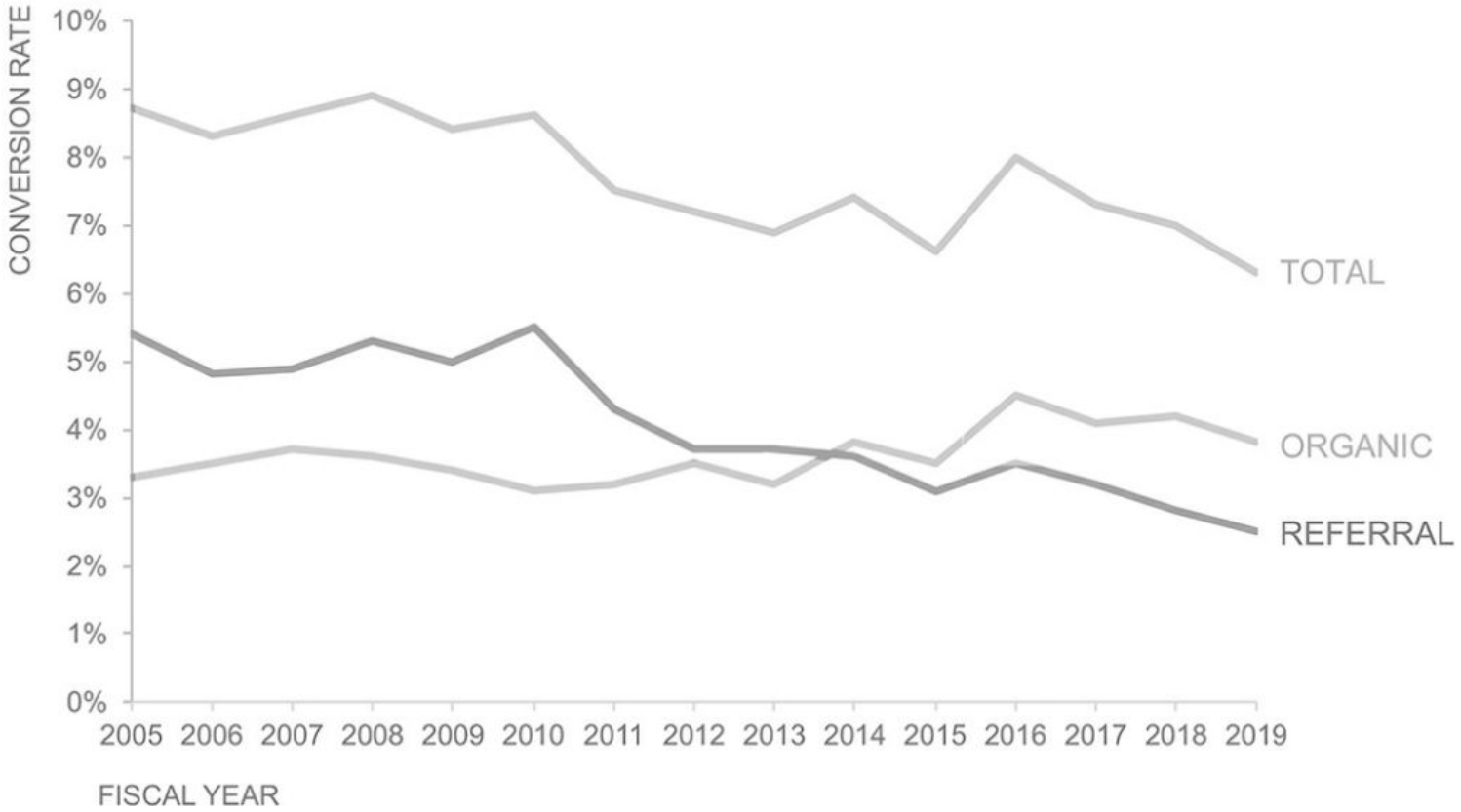
Source: Nussbaumer Knaflic (2020); **How could we focus attention on the Referral line in this graph?**

Conversion rate over time



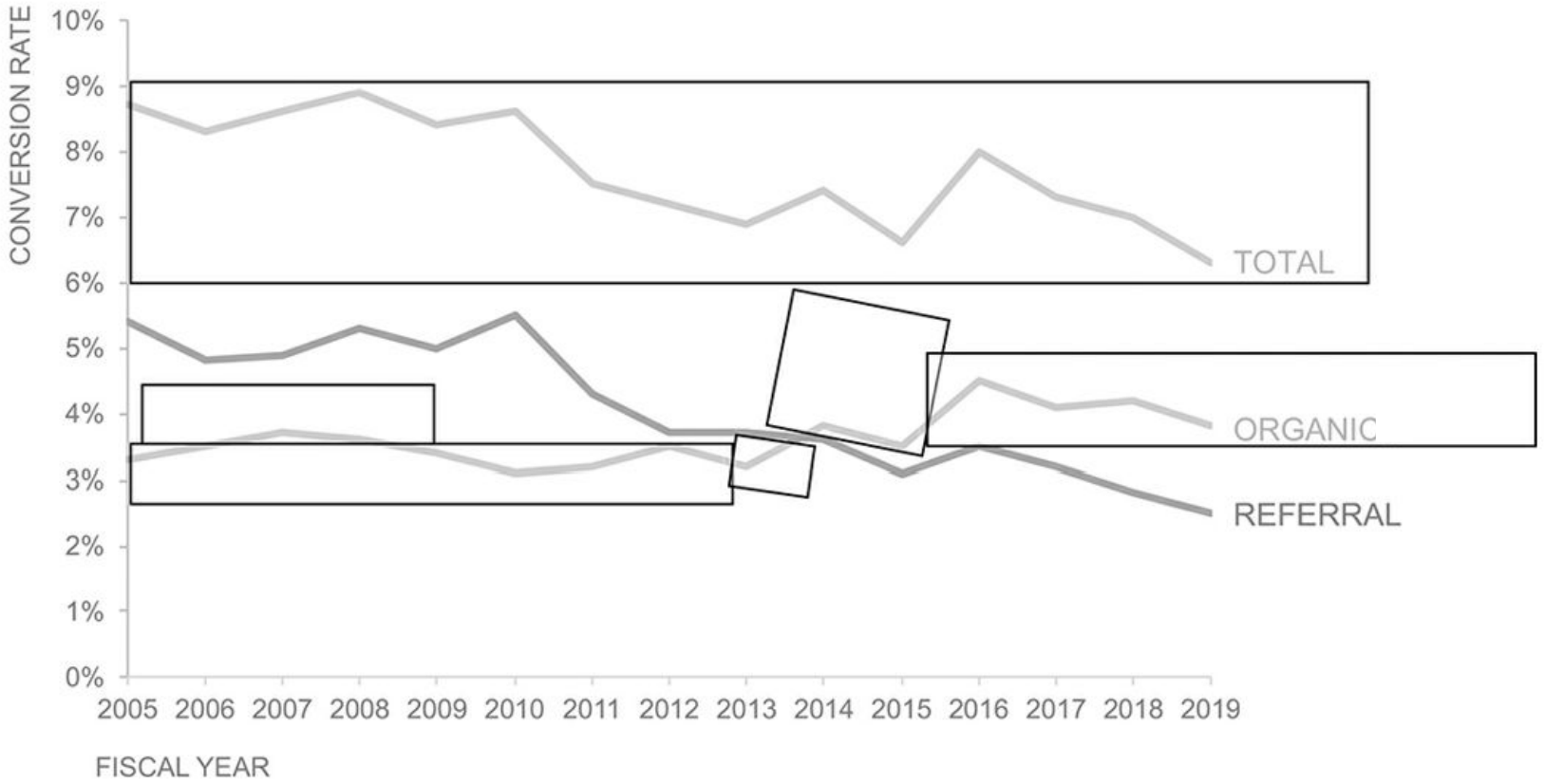
Source: Nussbaumer Knaflic (2020);The “look here” arrow

Conversion rate over time



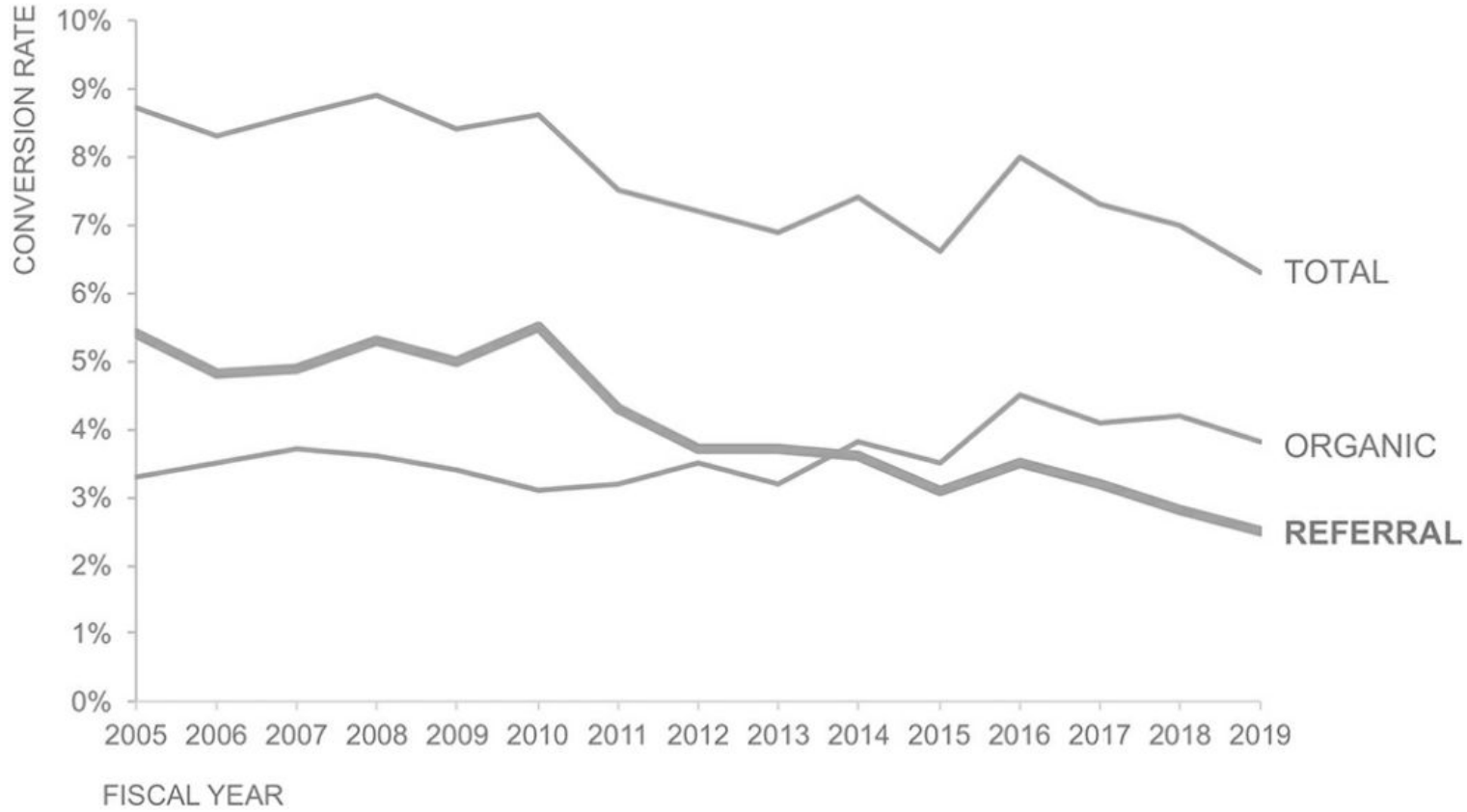
Source: Nussbaumer Knaflic (2020);Cover everything else up with transparent white boxes

Conversion rate over time



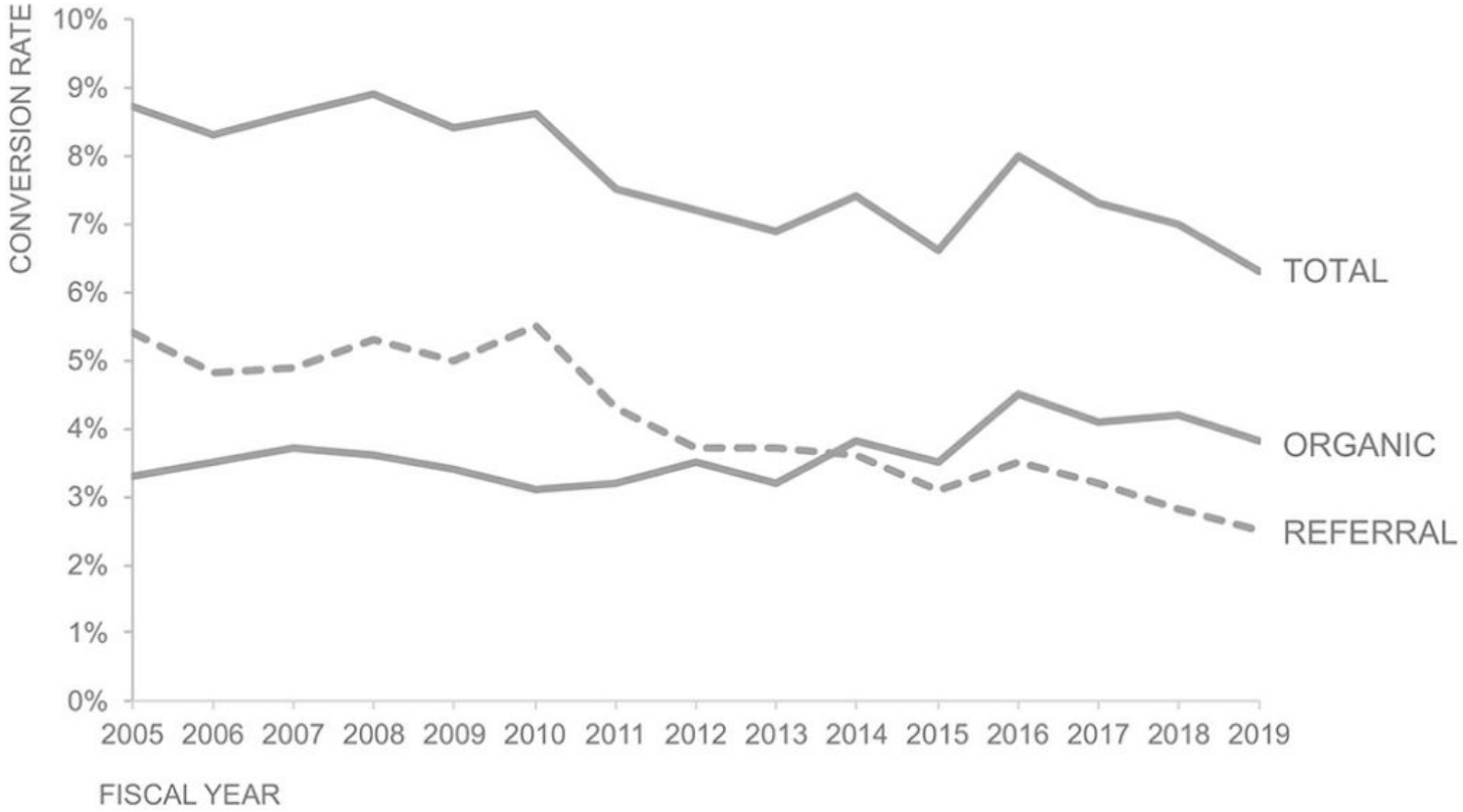
Source: Nussbaumer Knaflic (2020); Highlighting the transparent white boxes

Conversion rate over time



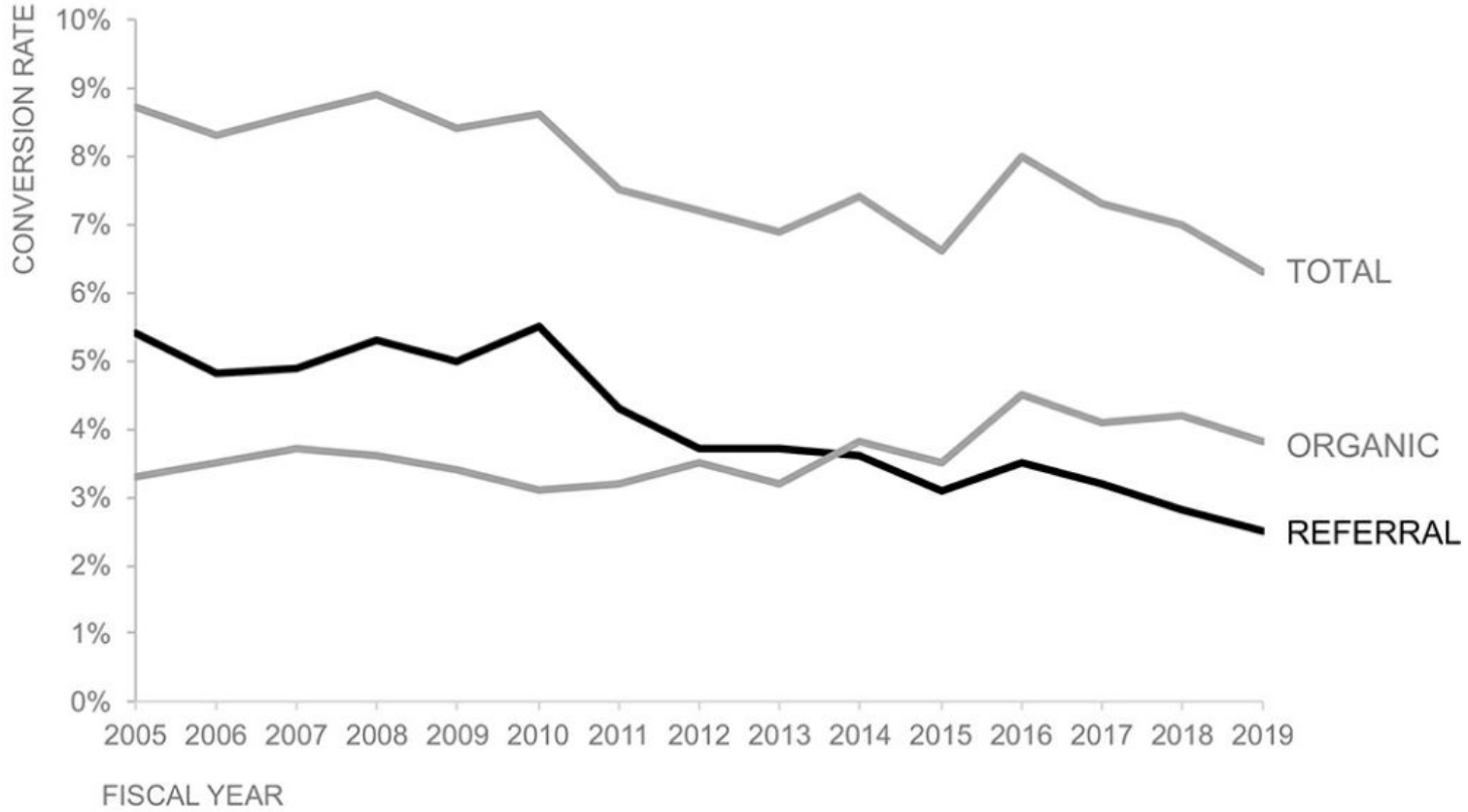
Source: Nussbaumer Knaflic (2020); Thicken the line

Conversion rate over time



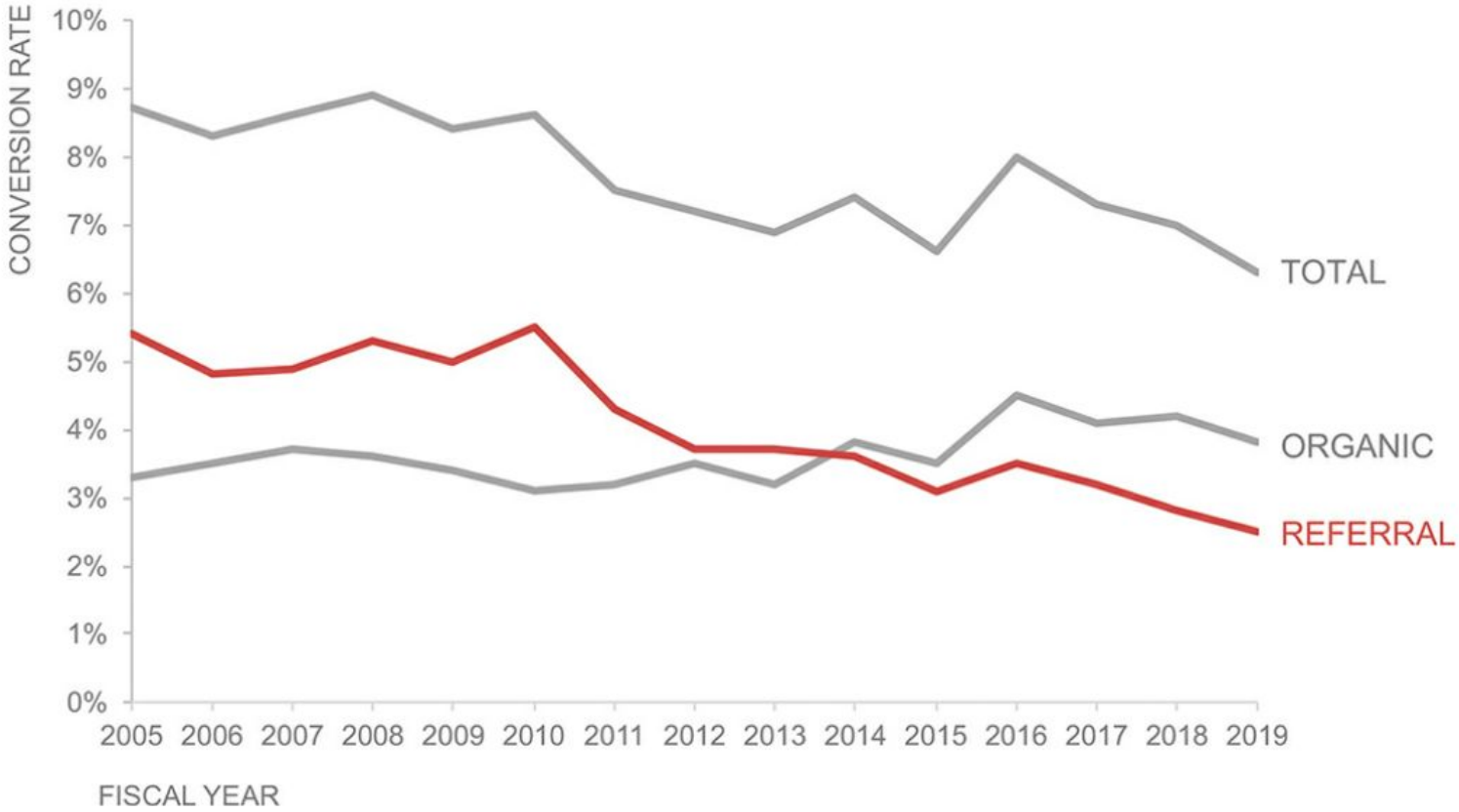
Source: Nussbaumer Knaflic (2020); Change the line style

Conversion rate over time



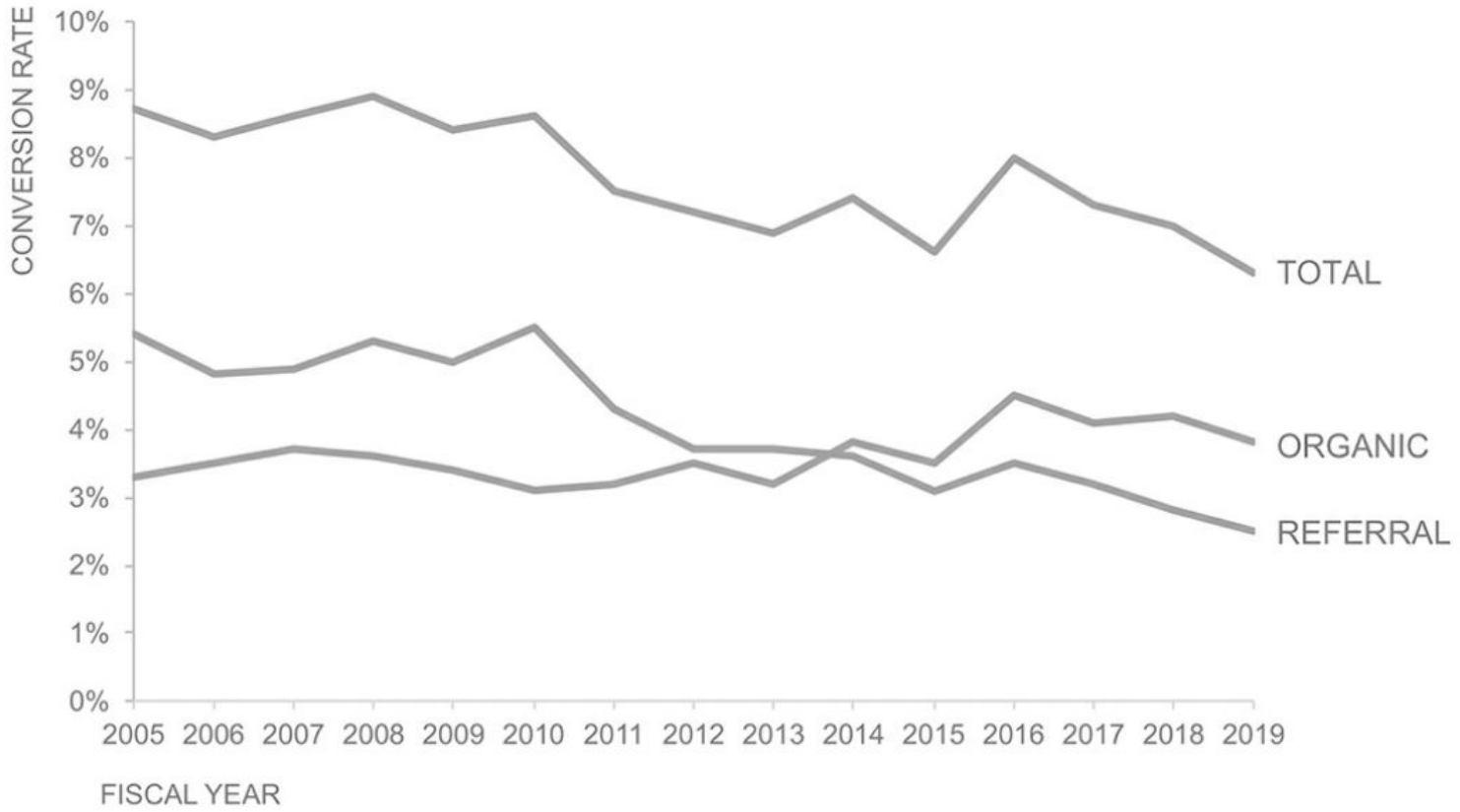
Source: Nussbaumer Knaflic (2020); Change the line style

Conversion rate over time



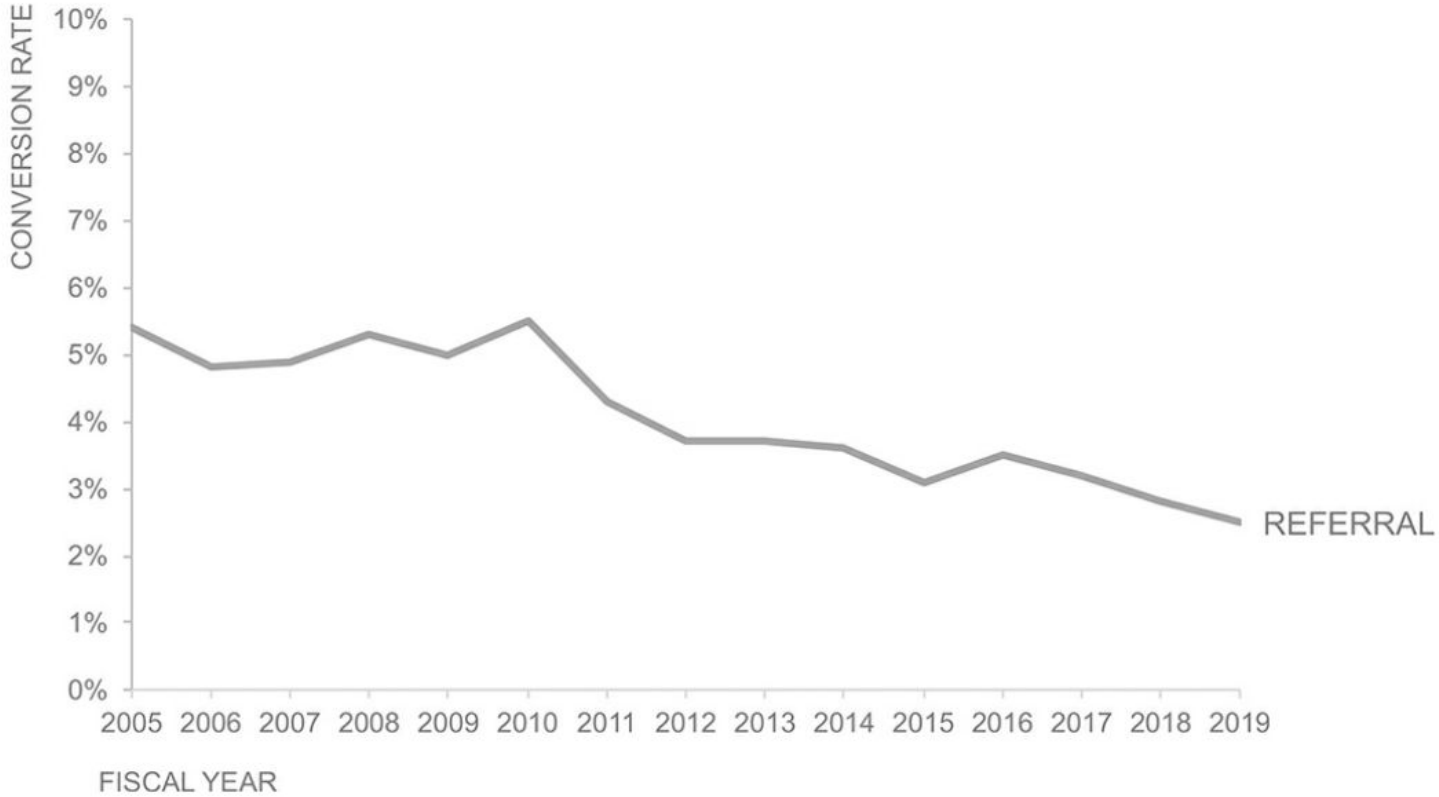
Source: Nussbaumer Knaflic (2020); Change the hue

Conversion rate over time: Referral decreasing markedly since 2010



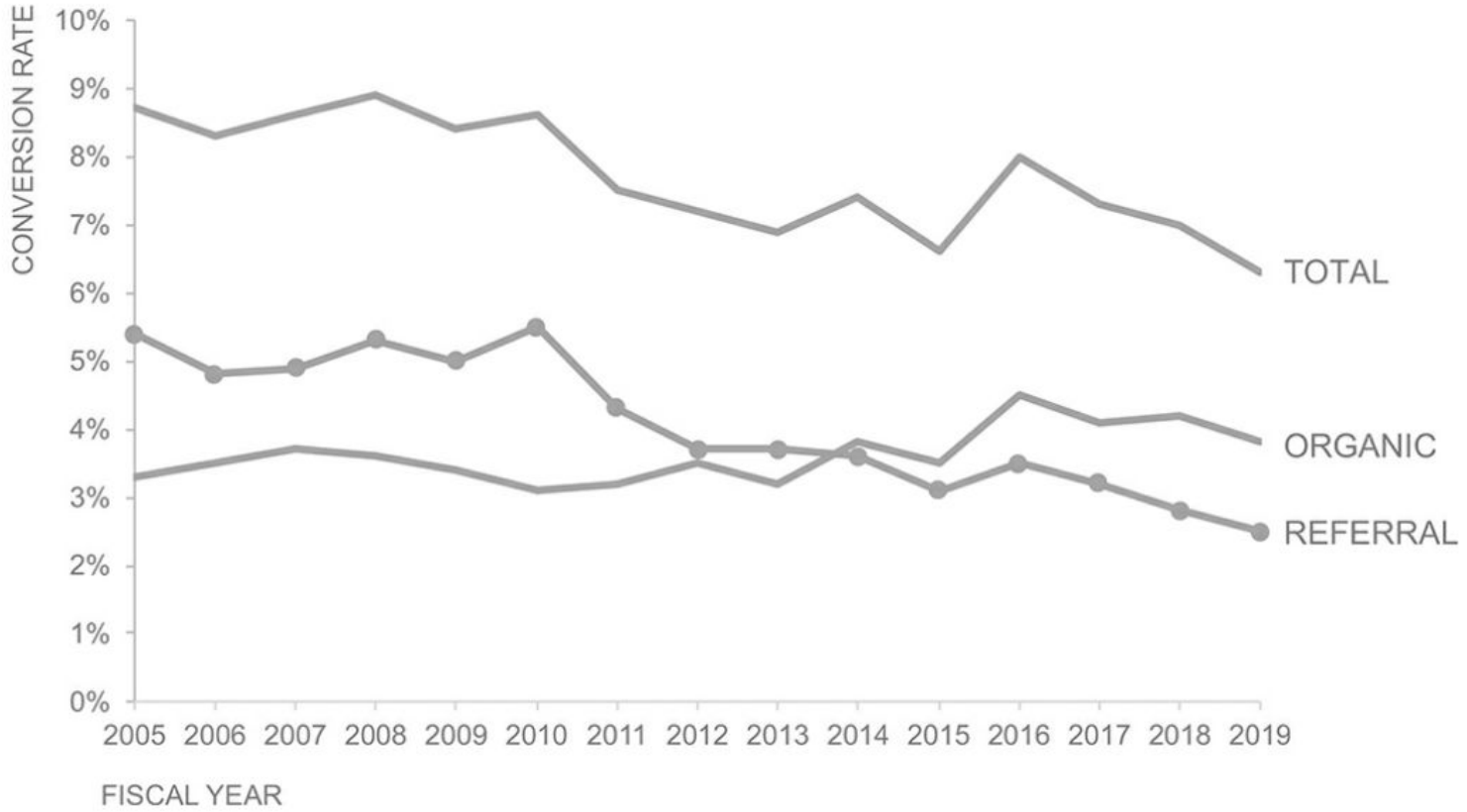
Source: Nussbaumer Knaflic (2020); Use title words to prime audience

Conversion rate over time



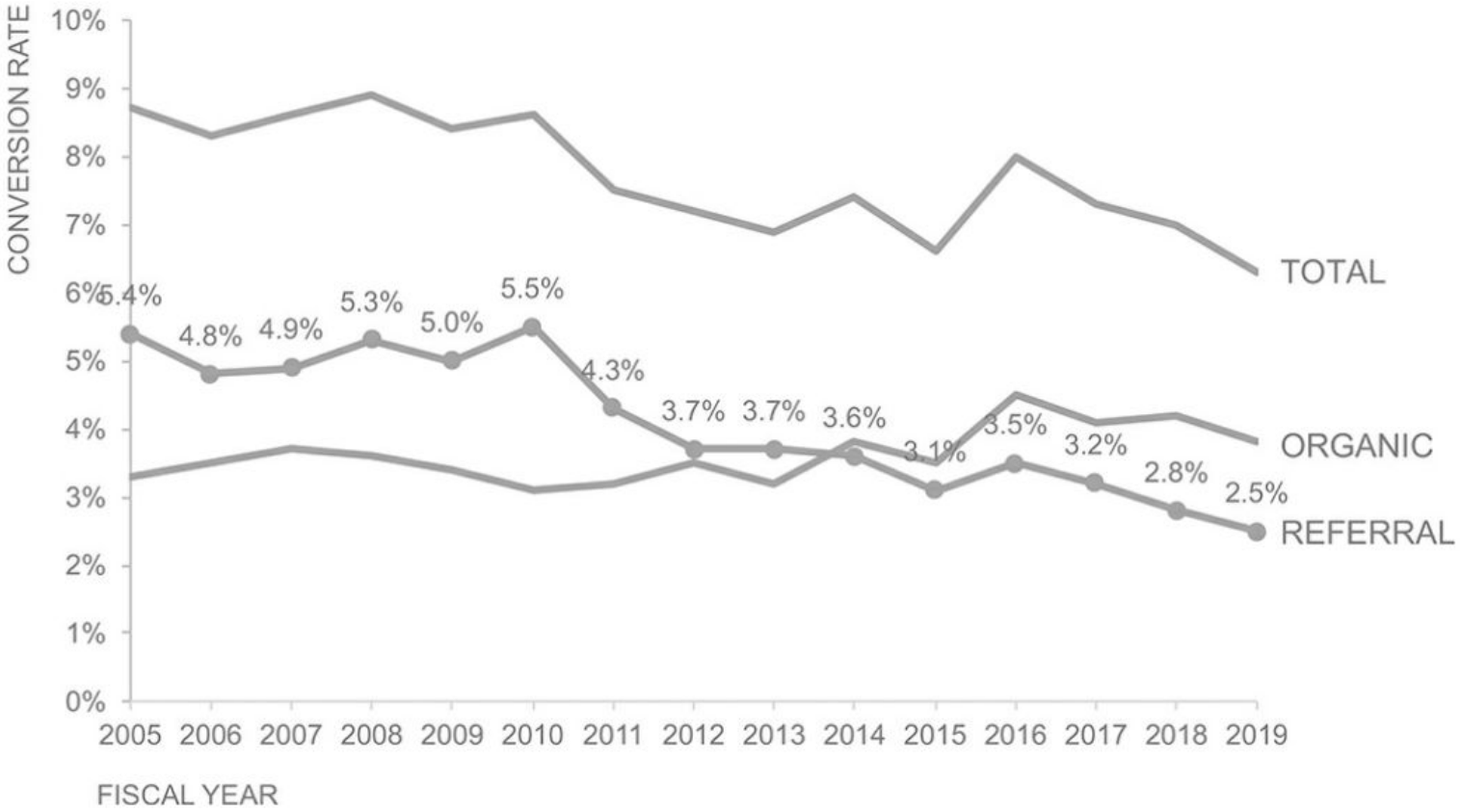
Source: Nussbaumer Knaflic (2020); Eliminate other data

Conversion rate over time



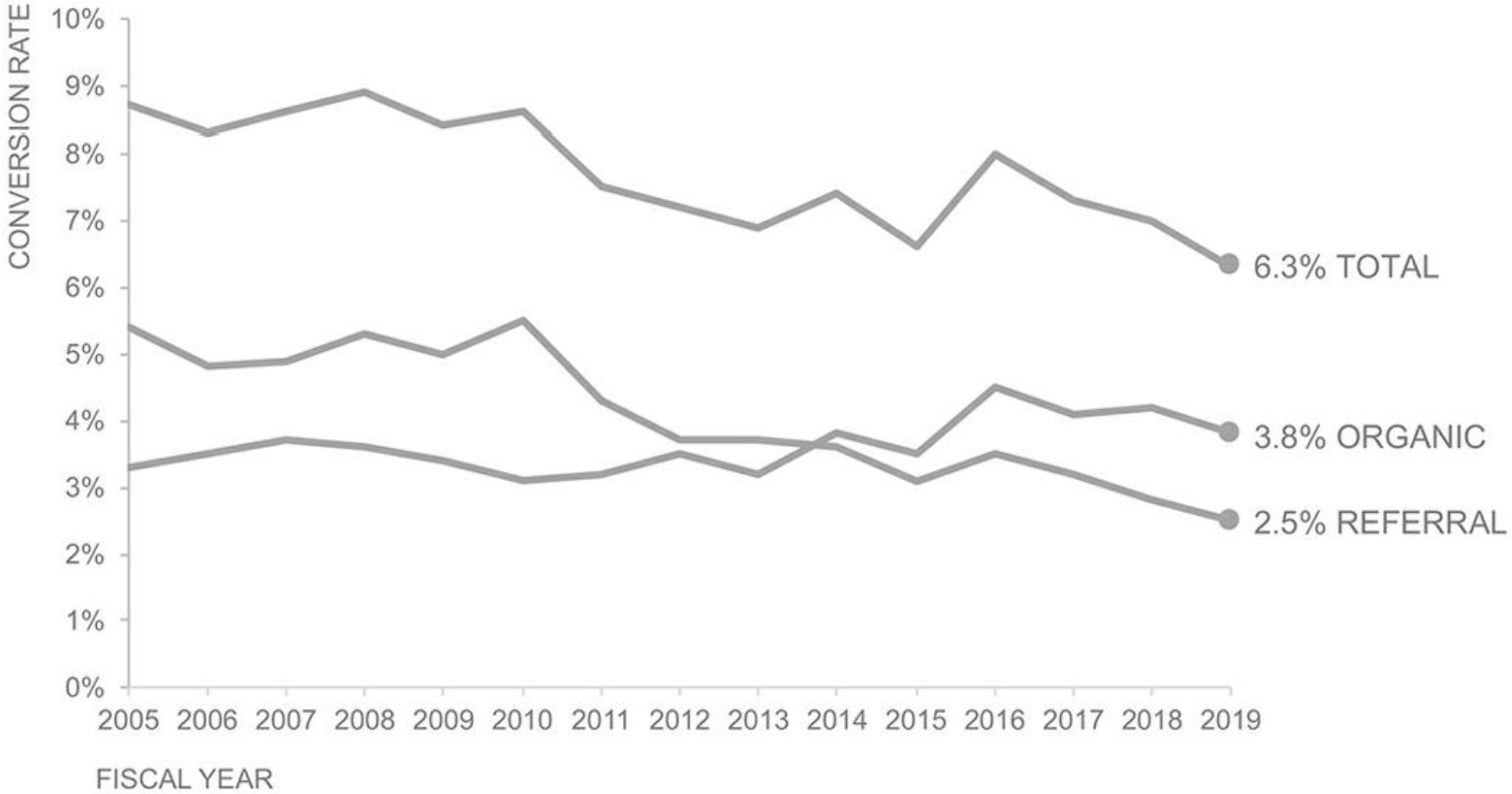
Source: Nussbaumer Knaflic (2020); Add data marker

Conversion rate over time



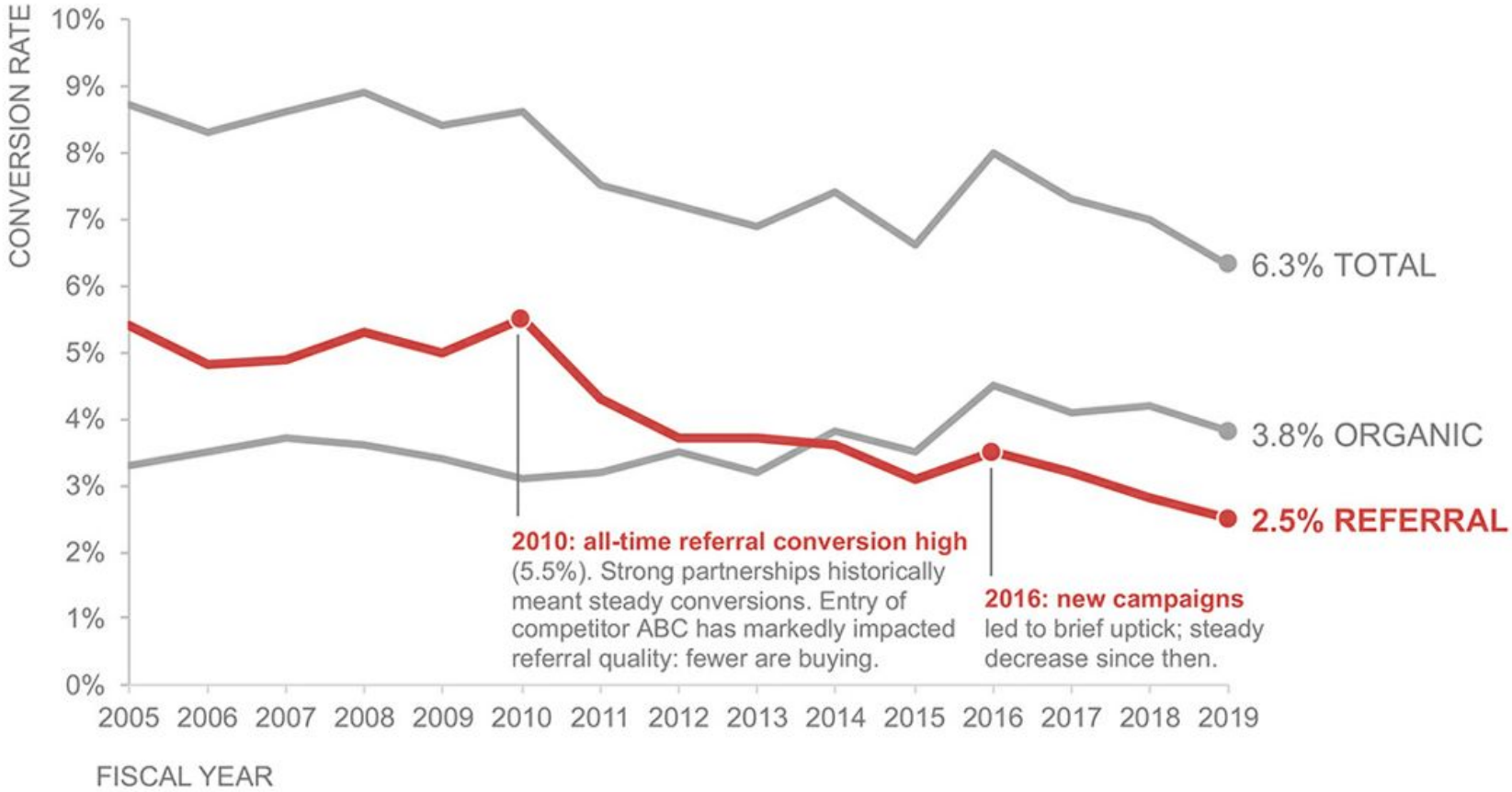
Source: Nussbaumer Knaflic (2020); Add data labels

Conversion rate over time



Source: Nussbaumer Knaflic (2020); Employ end markers and labels

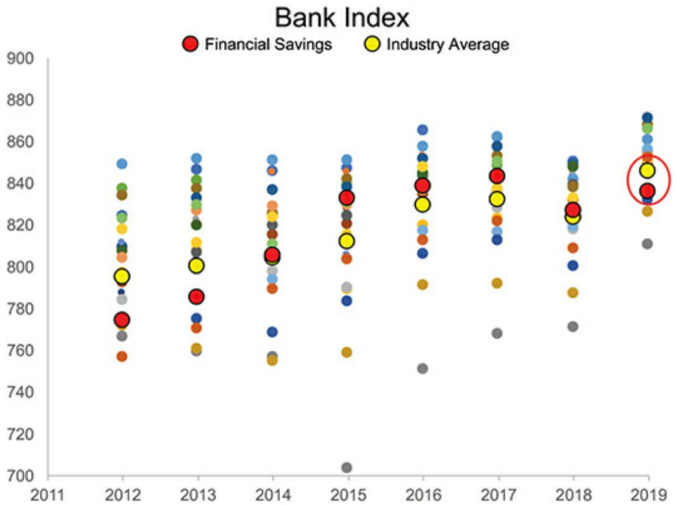
Conversion rate over time: **referral decreasing markedly since 2010**



Source: Nussbaumer Knaflic (2020); Combine multiple preattentive attributes

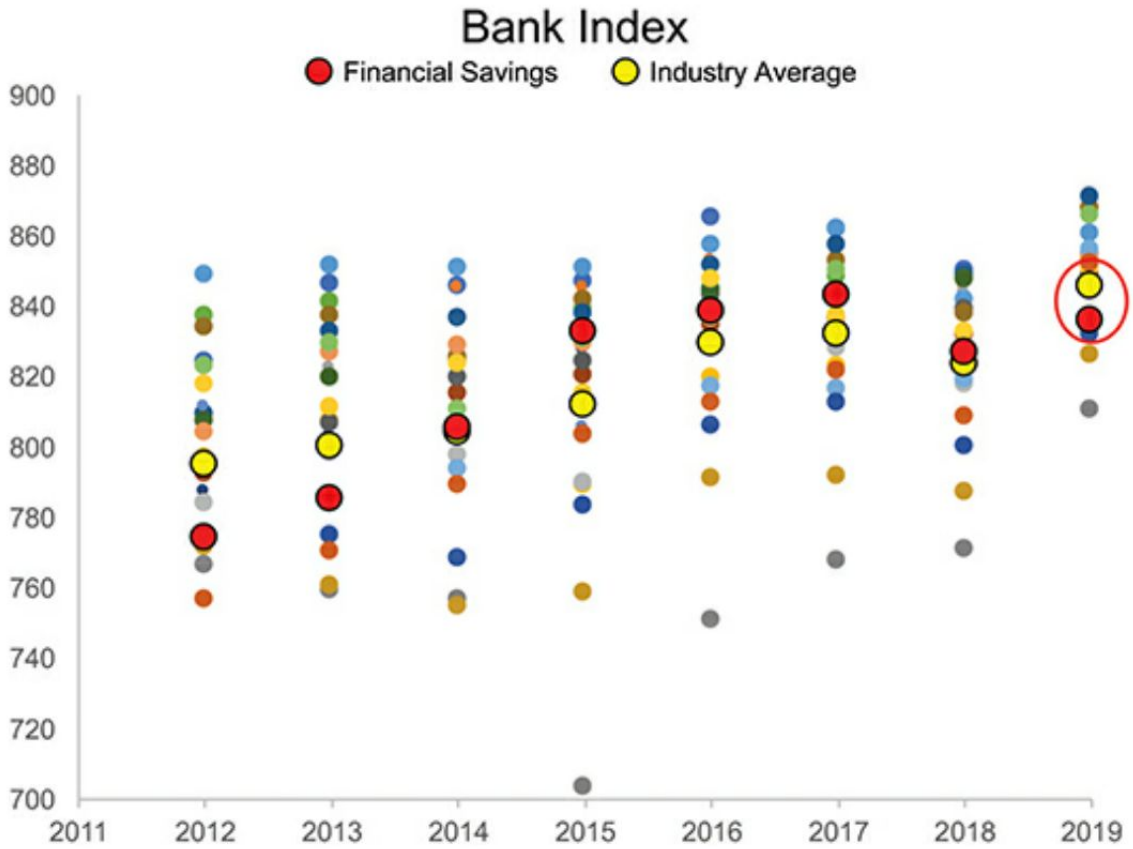
4.4 Visualize all the data

Show all the data



- We previously looked at an approach where we changed from this dot plot to a line graph and summarized all of the competitor data with a single average line
- But what if we want to **show all the data**?
- How could we achieve this without it being overwhelming?

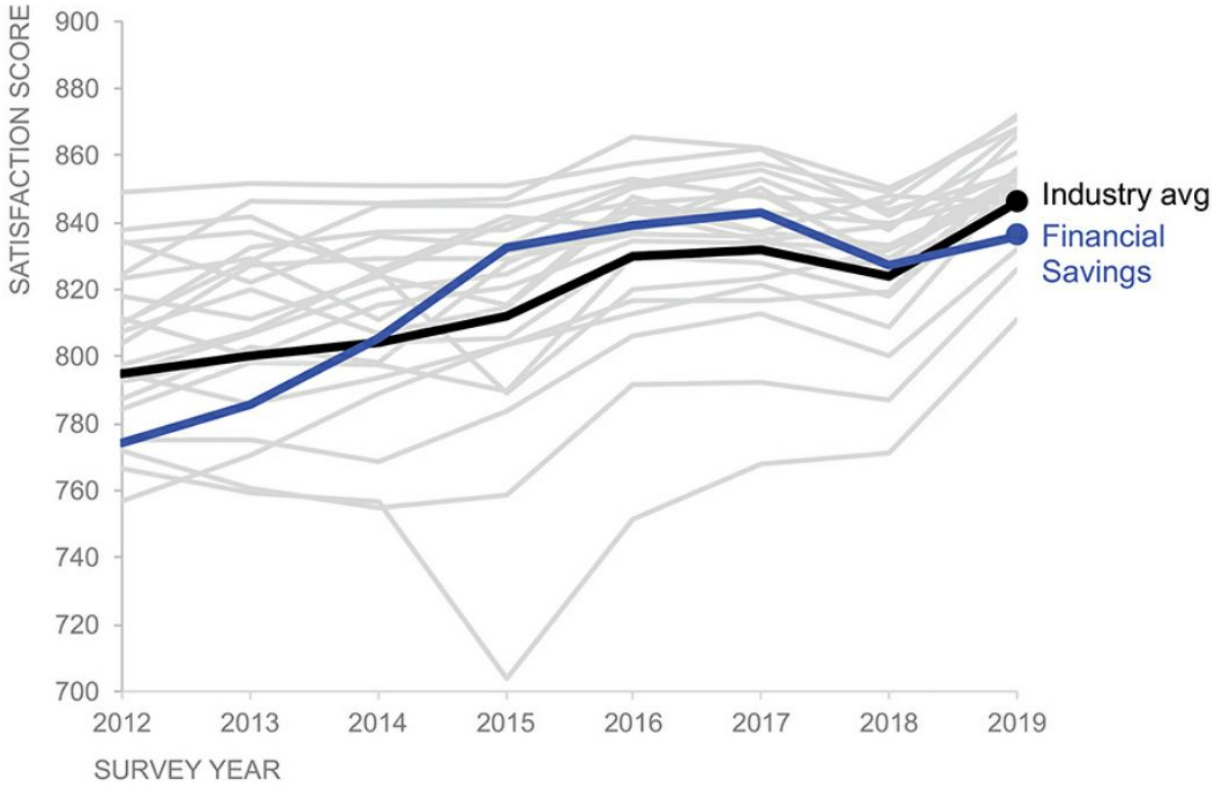
Source: Nussbaumer Knaflic (2020)



Source: Nussbaumer Knaflic (2020); Bank index

BRANCH SATISFACTION

Financial Savings below industry for first time in 5 years



Source: Nussbaumer Knaflic (2020); Can show all the data if we push most of it to the background

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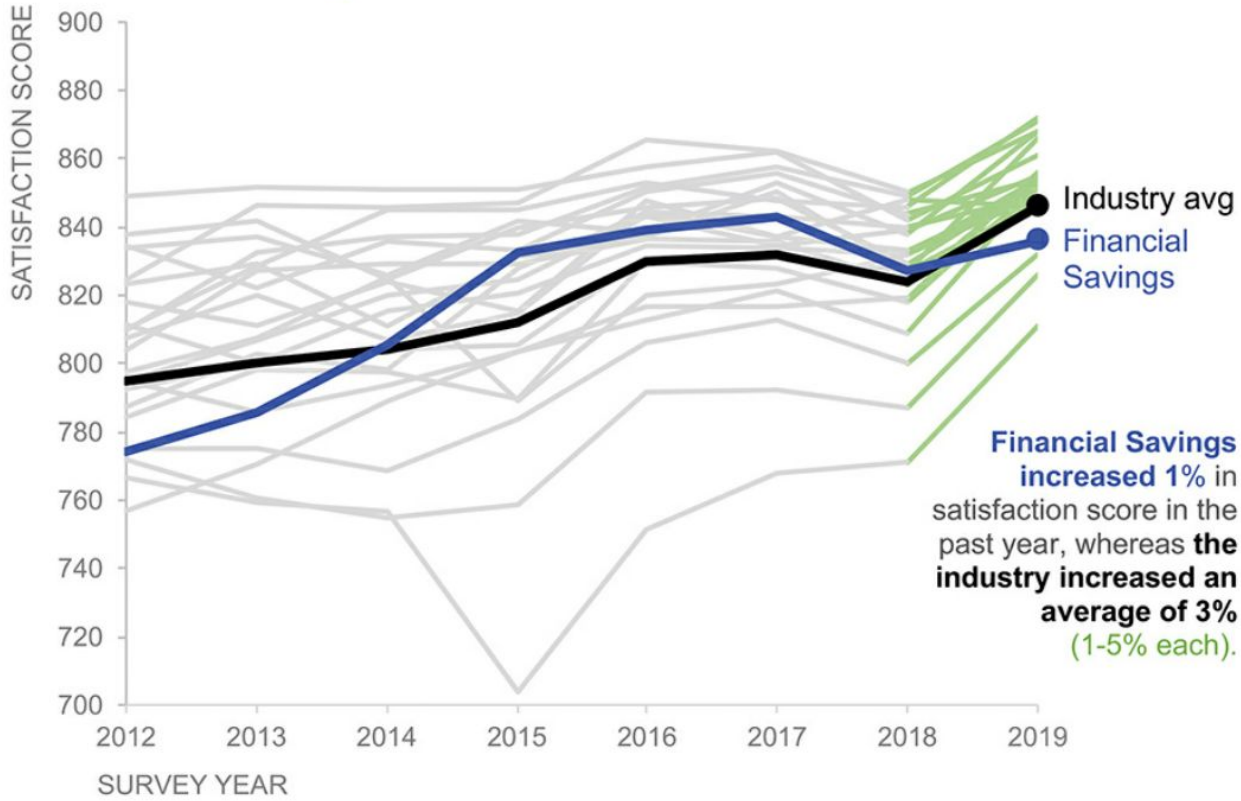
Financial Savings below **industry** for first time in 5 years



Source: Nussbaumer Knaflic (2020); Could focus on latest year-to-year period of time

Practice **differentiating** in Python

Figure out how to achieve the following in Python

Bold & thick

- Pick a text element within your graph and make it bold.
- Make a single line or bar thicker than those around it.

Source: Nussbaumer Knaflic (2020)

Color

- Start by making everything grey.
- Pick a single line or series of bars and make them blue.
- Pick another and make it match your organization’s primary brand color.
- Figure out how to take an individual data point—a point in a line graph or a single bar in a series—and change the color of just that point.

Source: Nussbaumer Knaflic (2020)

Position

- Let’s practice moving things around.
- If you are working with a bar chart, reorder the bars: make them ascending and then descending.
- If you are working with a line graph and have lines that cross each other, pick one and figure out how to move it in front of or behind the others.

Source: Nussbaumer Knaflic (2020)

Dotted or dashed line -----

- Are there any lines in what you’re showing that you can make dotted or dashed?
- If you are working with a line graph, figure out how to change the line style of one of the lines.
- If faced with a bar chart, determine how you could do this for the outline of one (or more) of the bars.

Source: Nussbaumer Knaflic (2020)

Intensity

- Vary intensity by rendering some data in full intensity and the rest in a lesser intensity.
- You can do this by applying transparency, a pattern, or simply picking a less intense color.
- Consider both how you can do this by modifying the formatting of the data directly, as well as whether or how you could use transparent boxes or other shapes to achieve this effect.

Source: Nussbaumer Knaflic (2020)

Label data points

- Start by adding labels to an entire data series.
- Next, figure out how to move them around.
- On a line graph, position the labels above the data series, then below.
- In a bar chart, label them on top of bars, then pull the labels inside the ends of the bars.
- Next, determine how you’d approach it if you only wanted to label a single data point (or a couple of data points).

Source: Nussbaumer Knaflic (2020)

Where do I focus checklist

Focus checklist

- When is it appropriate to **aggregate** the data?
- When and how should you **disaggregate** the data?
- What is the right time **frame** to consider? How far back should you go?
- How does it make sense to break the data down?
    - Look at things by line of business, region, product, tenure, or other categories.
    - Where are things similar? Where are they different? Why is that?

Source: Nussbaumer Knaflic (2020)

Focus checklist

- Do things align with what you **expect**? In what instances are they **different**?
- How do different things **relate** to each other? Do some things drive others?
- What **comparisons** are meaningful or will lead to potential insight?
- What **context** may be useful that you don’t have? Who can you ask about this?
- What **questions** could someone else looking at this data have?
- What **assumptions** are you making? How big of a deal is it if those assumptions are wrong?

Source: Nussbaumer Knaflic (2020)

Focus checklist

- What is **missing**? Data doesn’t typically tell the whole story. How can you address or understand the missing pieces?
- Is **history** likely to be the same or different as the **future**?

Source: Nussbaumer Knaflic (2020)

Some questions to reflect on

1. What design elements do we have at our disposal for directing attention when visualizing and communicating with data? Which do you find most effective and why?
2. What is the “Where are your eyes drawn?” test? When and why would you use it?
3. There are numerous ways to direct attention in text, tables, points, lines, and bars. What are common ways to indicate to your audience where you want them to focus? How are the means by which you can achieve this across various graph types different?

4. What things are important to keep in mind when choosing the color(s) you use in your graphs? Are there any color combinations you will embrace or avoid going forward? Why is that?
5. How is sparing emphasis for explanatory communications different from how you would design a dashboard where the data is meant to be explored? How might you approach the use of color in a dashboard compared to when there is a specific takeaway you want to highlight?

6. What is visual hierarchy? Why is it useful to create visual hierarchy in your data visualizations and the pages that contain them?
7. Why does emphasis need to be sparing to be effective?

All resources (exercises & solutions)

Data and solutions for all exercises

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