

Data Storytelling

6) Tell a story

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DATA



SORTED



ARRANGED



PRESENTED
VISUALLY



EXPLAINED
WITH A STORY



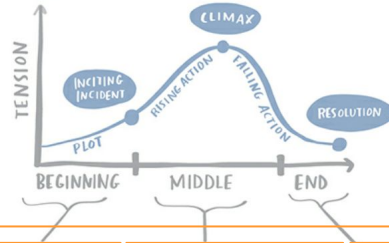
FIRST, LET'S RECAP LESSONS in STORYTELLING

RED RIDING HOOD

EVIDENCE of the KEY ELEMENTS
of STORY in PRACTICE



THE NARRATIVE ARC



- Introduce the plot
- Build context for the audience
- Answer "why should I pay attention?"

- Develop "what could be"
 - illustrate with examples
 - include data that demonstrates problem
 - articulate what could happen if no action is taken

- Call to action
 - Make it clear what you want your audience to do with the new understanding

NARRATIVE STRUCTURE

SPOKEN or WRITTEN WORDS (or both) that
TELL the STORY in an ORDER that MAKES
SENSE and GETS PEOPLE to PAY ATTENTION

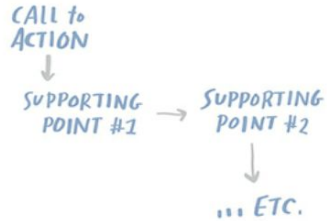
NARRATIVE FLOW

The ORDER of YOUR STORY...
the PATH on which YOU TAKE YOUR AUDIENCE

CHRONOLOGICAL



LEAD with the ENDING



SPOKEN vs. WRITTEN NARRATIVE

ARTICULATE CLEARLY the ROLE you WANT your AUDIENCE to PLAY

WRITTEN REPORT



Audience is on their own to make the content relevant...
use written narrative to make the "So what?" clear

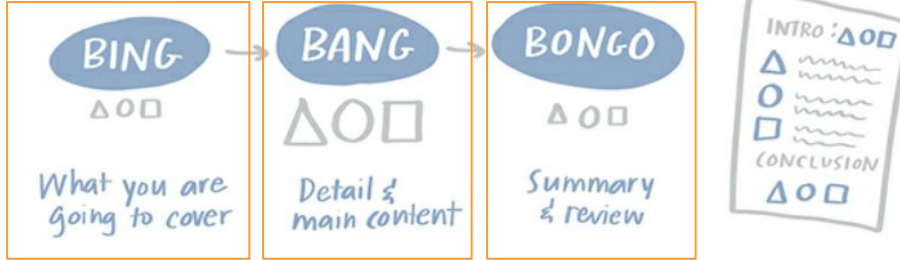
LIVE PRESENTATION



Make the "So what?" clear through the words you say, use visuals to reinforce

REPETITION

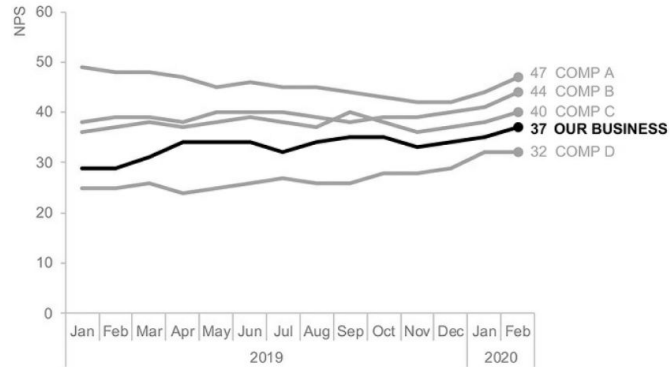
HELPS MOVE THINGS from SHORT-TERM to LONG-TERM MEMORY



Example 6.1

What's the story?

Net Promoter Score (NPS) over time



STEP 1:

- Create a **takeaway title** to answer the question posed at the top: "What's the story?"
- What does the title encourage your audience to focus on in the graph?

STEP 2:

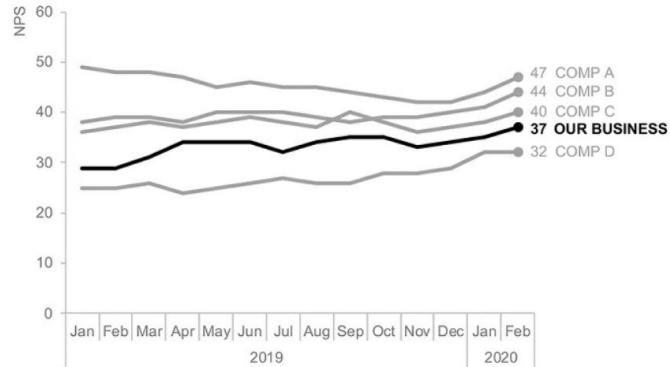
- Create a different takeaway title for this slide and repeat the other actions from Step 1.

STEP 3:

- Consider whether the takeaway titles you've created provide any sentiment for your audience
- Do they tell your audience how to feel about this data?
- If so, how?
- If not, how might you retitle to convey a positive or negative message?

NPS is increasing over time.

Net Promoter Score (NPS) over time

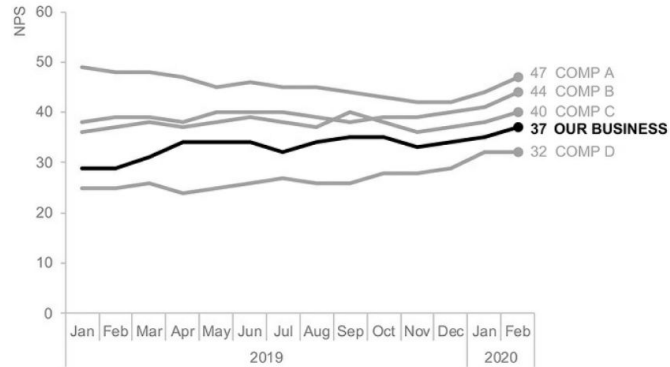


- Audience would read those words and then be primed to be looking for a **line increasing upwards** to the right.
- Upon seeing the graph, with attention drawn to **Our Business**, the words read in the title would be confirmed in the picture.

Create a different title

Give me another title.

Net Promoter Score (NPS) over time



STEP 1:

- Create a takeaway title to answer the question posed at the top: "What's the story?"
- What does the title encourage your audience to focus on in the graph?
- Write a sentence or two.

STEP 2:

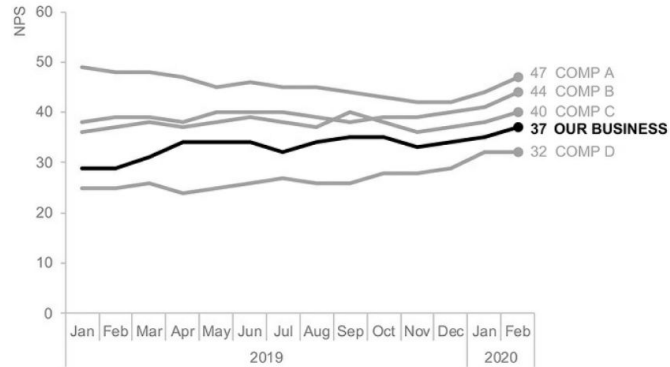
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- Consider whether the takeaway titles you've created provide any sentiment for your audience
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- If so, how?
- If not, how might you retitle to convey a positive or negative message?

NPS: we rank 4th among competitors.

Net Promoter Score (NPS) over time

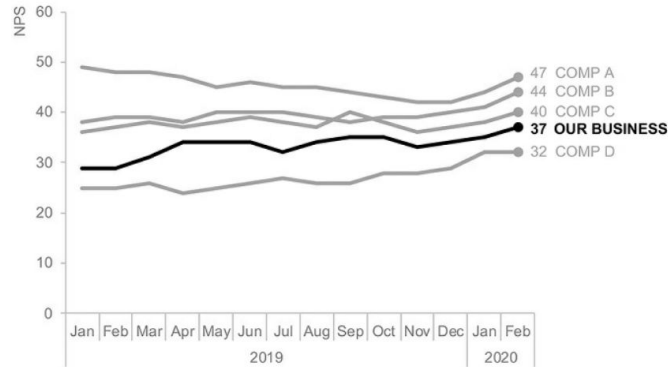


- This prompts readers to turn to the graph and start counting down the right-hand side.
- The words set a notion for what is to come in the graph and the graph reinforces the words in the title.

Create a different title

Give me a title with sentiment.

Net Promoter Score (NPS) over time



STEP 1:

- Create a takeaway title to answer the question posed at the top: "What's the story?"
- What does the title encourage your audience to focus on in the graph?
- Write a sentence or two.

STEP 2:

- Create a different takeaway title for this slide and repeat the other actions from Step 1.

STEP 3:

- Consider whether the takeaway titles you've created provide any **sentiment** for your audience
- Do they tell your audience how to feel about this data? If so, how?
- If not, how might you **retitle** to convey a **positive** or **negative** message?

Great? Or more work ahead?

Great work! NPS is increasing over time.

More work ahead: we still haven't hit top 3.

- Set an expectation with the audience:
 - Is this a good thing?
 - Is it a bad thing?
- The words we put around our data visualizations are critically important.

After creating a graph,
come up with a
sentence that
describes the graph.

6.2 Put it into words

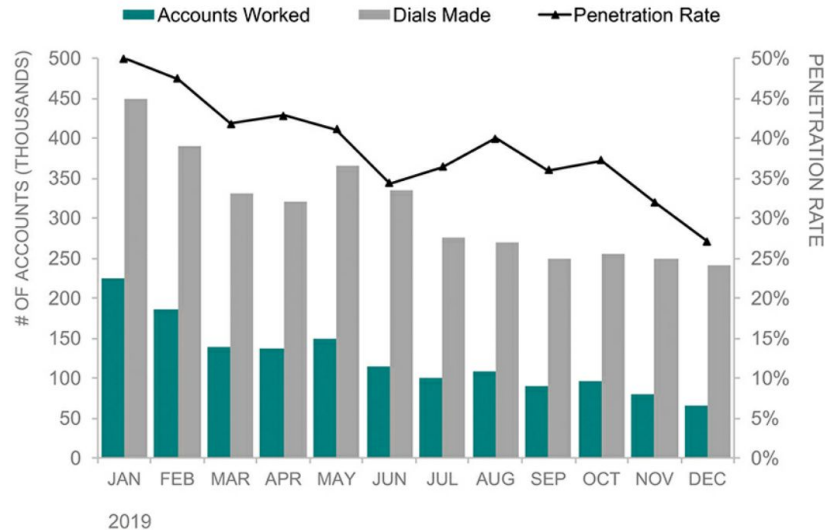
Scenario

- You work in a bank and analyze collections data.
- Collections departments use **dialers**, machines that automatically place calls.
- When someone does answer, the collections agent is connected so they can talk to the individual to work out a payment plan and the account has been **“worked.”**

- **Penetration rate**
 - Proportion of accounts worked relative to the total number of accounts dialed.

Exercise

Call breakdown over time



STEP 1:

- Write three sentences articulating three different observations from this data.
- You may think of these as three potential takeaways that you could highlight in this data.

STEP 2:

- Which of the three sentences you've written would you focus on if you were communicating this data? Why?
- Are there any aspects of the others you'd also want to include? How can you achieve this?

STEP 3:

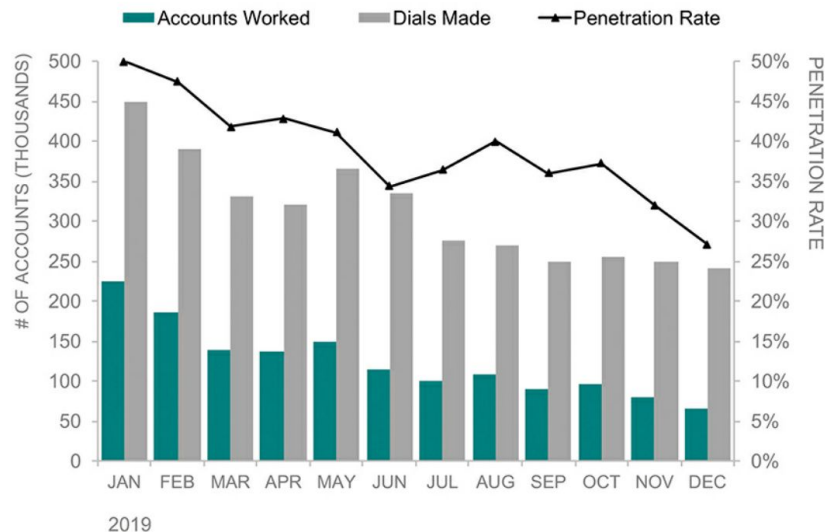
- Are there any changes you'd make to the visual to better focus the audience on the takeaway you've chosen to highlight? Outline these changes.

STEP 4:

- Download the data and make the changes you've outlined in the tool of your choice.

Three sentences

Call breakdown over time



Main takeaway:

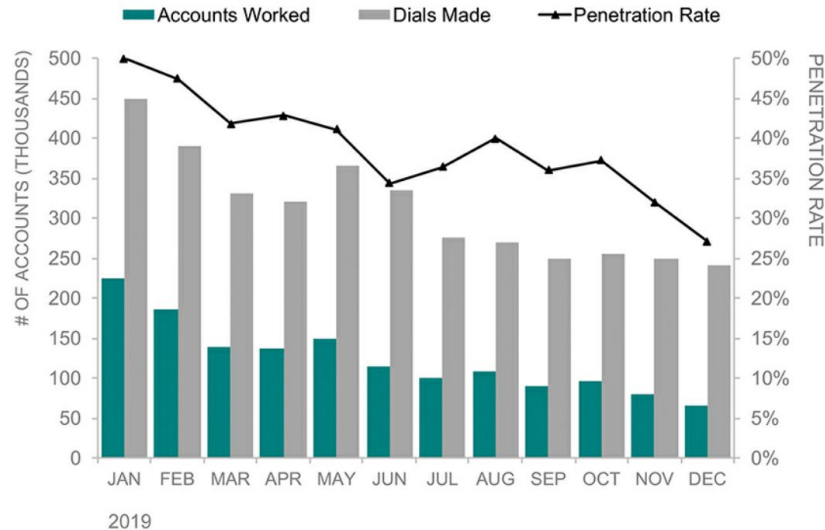
- When we look at the data, we see things generally decreasing over the course of the year.

There are three data series depicted, so we'll write one observation about each:

1. The number of **accounts** worked varies over time and has generally decreased over the course of the year.
2. **Dials** made decreased 47% between January and December, with roughly 250,000 dials made in December.
3. **Penetration rate** has decreased markedly over time.

Exercise

Call breakdown over time



STEP 1:

- Write three sentences articulating three different observations from this data.
- You may think of these as three potential takeaways that you could highlight in this data.

STEP 2:

- Which of the three sentences you've written would you **focus** on if you were communicating this data? Why?
- Are there any **aspects** of the others you'd also want to include? How can you achieve this?

STEP 3:

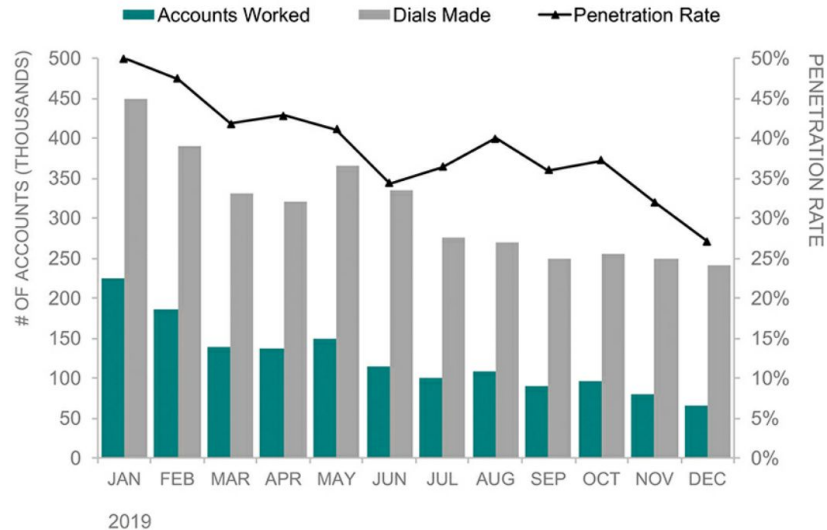
- Are there any changes you'd make to the visual to better focus the audience on the takeaway you've chosen to highlight? Outline these changes.

STEP 4:

- Download the data and make the changes you've outlined in the tool of your choice.

Focus

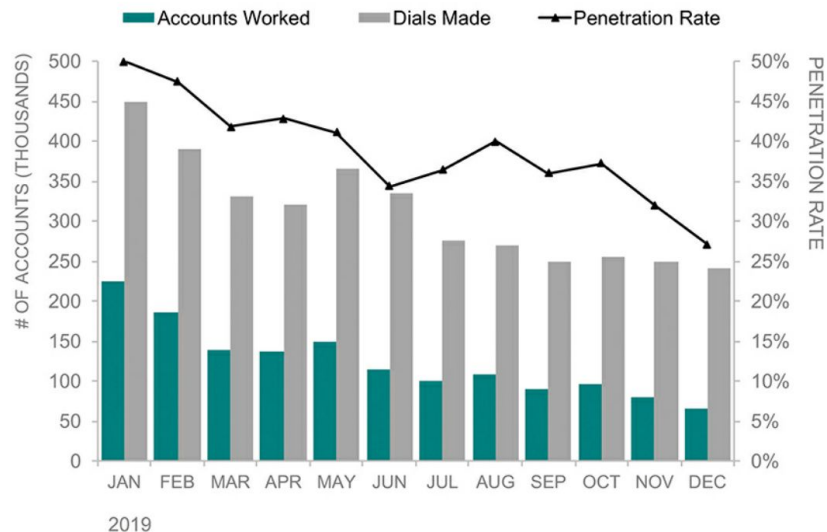
Call breakdown over time



- We could focus on the decrease in **Penetration Rate**
 - This reflects pieces of both of the other data series.
- Note that Penetration Rate has decreased in spite of decreasing **Dials Made**.
 - “Dials made decreased 47% between January and December, with roughly 250,000 dials made in December”

Exercise

Call breakdown over time



STEP 1:

- Write three sentences articulating three different observations from this data.
- You may think of these as three potential takeaways that you could highlight in this data.

STEP 2:

- Which of the three sentences you've written would you focus on if you were communicating this data? Why?
- Are there any aspects of the others you'd also want to include? How can you achieve this?

STEP 3:

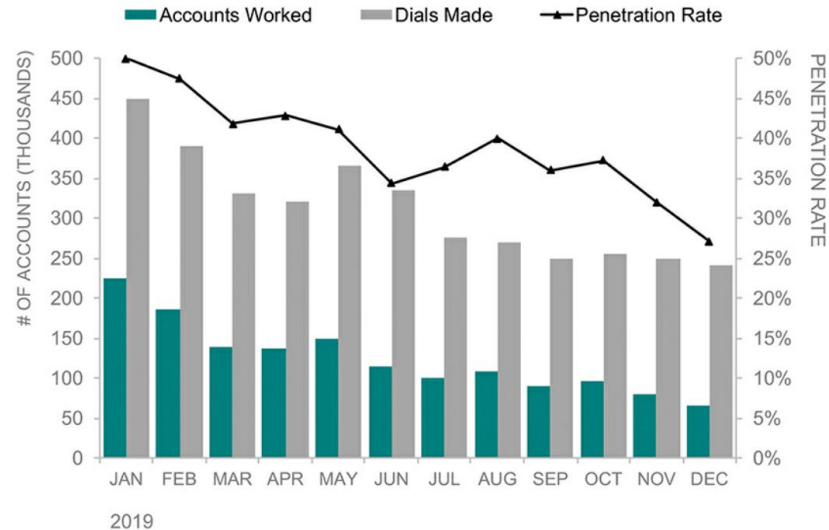
- Are there any changes you'd make to the visual to better focus the audience on the takeaway you've chosen to highlight? Outline these changes.

STEP 4:

- Download the data and make the changes you've outlined in the tool of your choice.

Possible changes

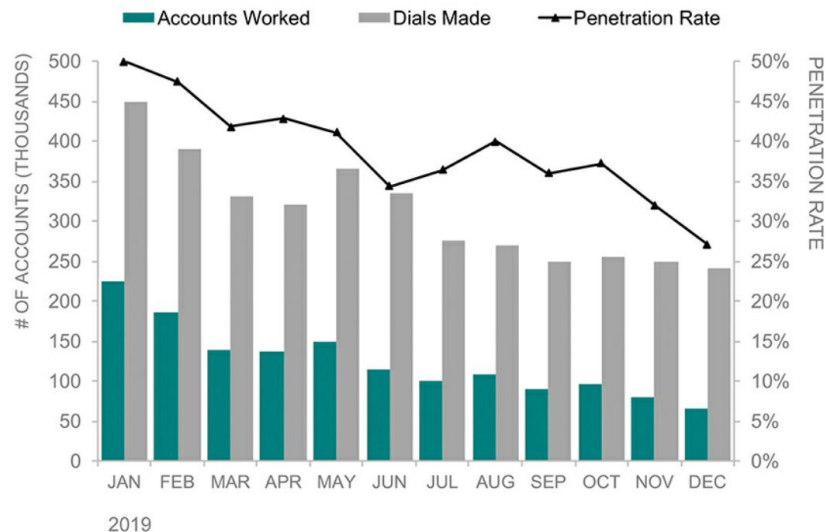
Call breakdown over time



- Both the legend at the top and secondary y-axis at the right mean the audience has to do work to figure out how to read this data.
- There is an opportunity to articulate some of the context in words so that we can focus on the Penetration Rate in the graph.

Exercise

Call breakdown over time



STEP 1:

- Write three sentences articulating three different observations from this data.
- You may think of these as three potential takeaways that you could highlight in this data.

STEP 2:

- Which of the three sentences you've written would you focus on if you were communicating this data? Why?
- Are there any aspects of the others you'd also want to include? How can you achieve this?

STEP 3:

- Are there any changes you'd make to the visual to better focus the audience on the takeaway you've chosen to highlight? Outline these changes.

STEP 4:

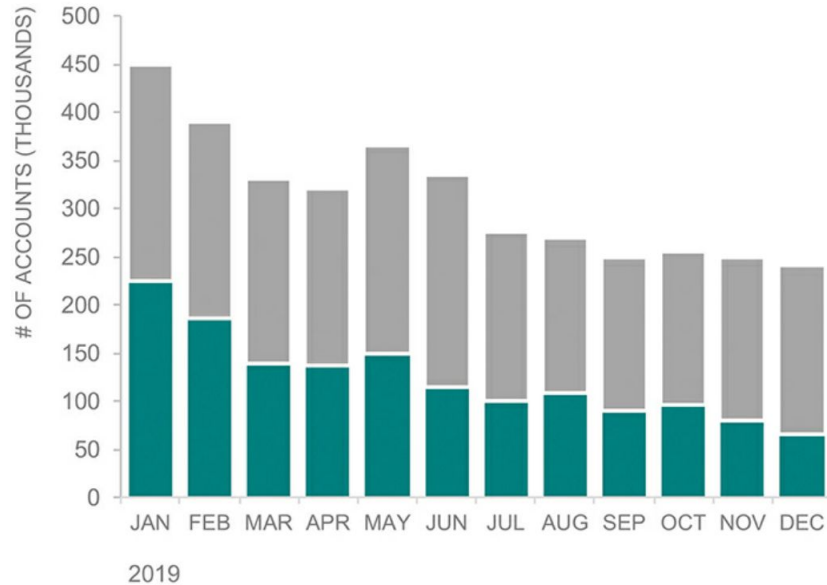
- Download the data and make the changes you've outlined in the tool of your choice.



Modify the data so we can stack it

Call breakdown over time

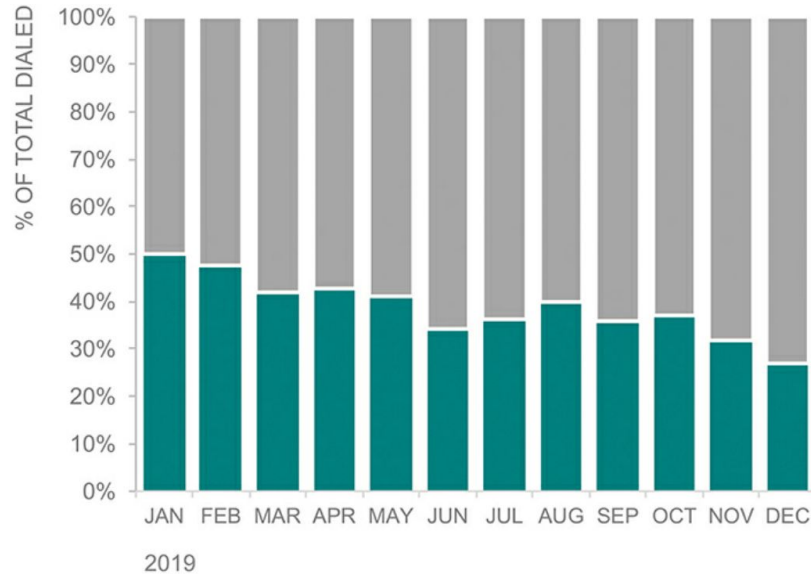
WORKED | NOT REACHED



Change to stacked 100% bars

Call breakdown over time

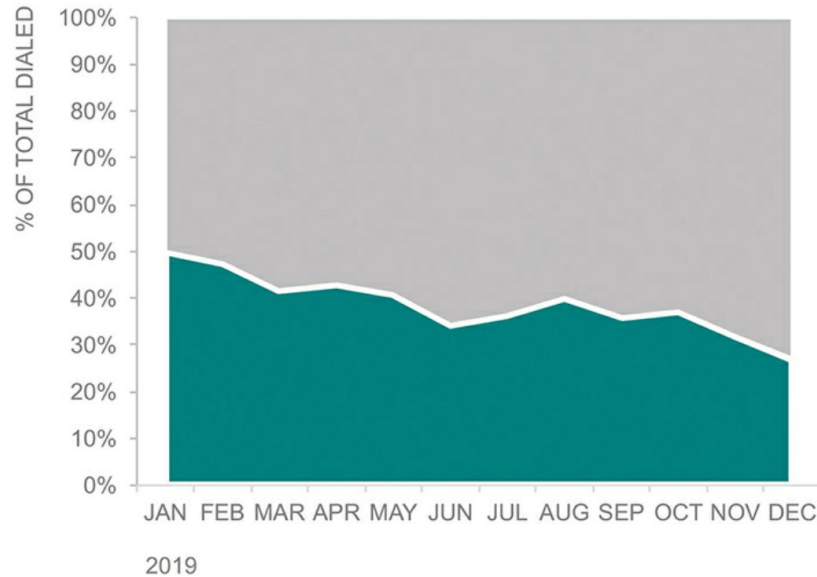
WORKED | NOT REACHED



Let's change to stacked area

Call breakdown over time

WORKED | NOT REACHED

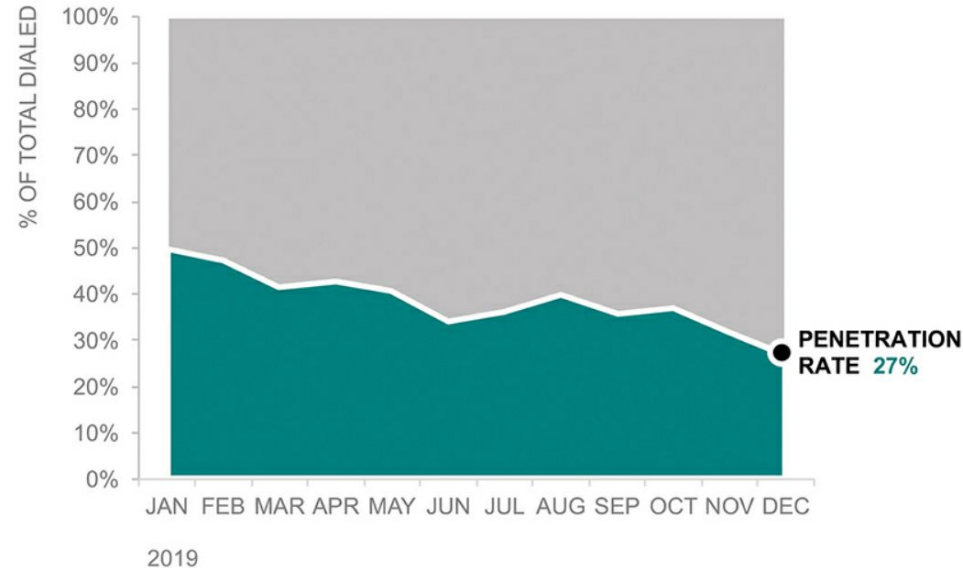


Put it into words!

Total accounts dialed decreased 47% from January to December to 250K.
During the same time period, **penetration rate has declined markedly.**

Call breakdown over time

WORKED | NOT REACHED



Identify the
tension

What tension exists for our audience?

1. **Identify the tension.**

- Big Idea: what is at stake?

2. **Identify an action**

- The given audience can take this action to resolve the tension you've identified.

Back-to-school shopping

Tension:

- There is inconsistency in service levels across stores.

Resolution:

- Devote resources to developing and conducting sales associate training

Attrition: directors leaving the company

Tension:

- Looking forward, we expect a shortage of directors given recent trends.

Resolution:

- Discuss and make a decision about what strategic change(s) we should make to fill roles at the leadership level.

Desired shift towards virtual communication

Tension:

- What's more important: efficiency or quality of care?
- The desired shift towards virtual encounters is happening, but how much more do we want to push?

Resolution:

- Use data together with physician input to set reasonable targets for the coming year to appropriately balance efficiency with quality of care.

6.4

Components of a story

The narrative arc



Back-to-school-shopping narrative arc



Back-to-school-shopping narrative arc



Pet adoptions narrative arc



Exercise 6.6

differentiate
between live &
stand-alone
stories

Two common scenarios

1. We are presenting **live** to our audience

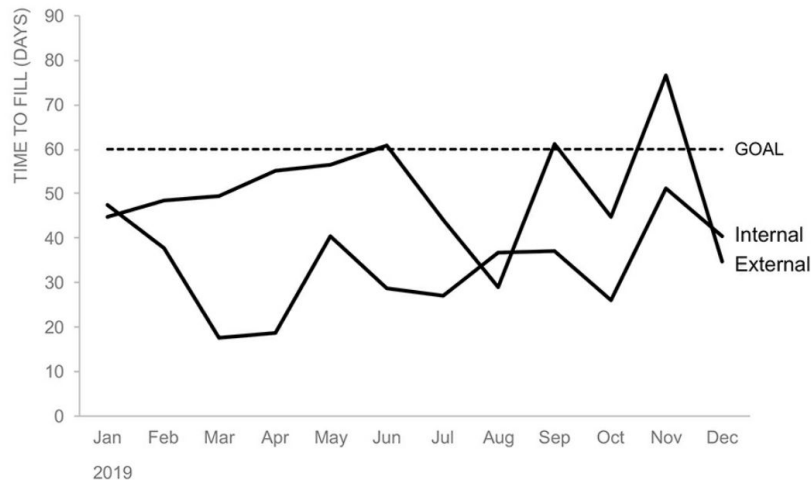
- a. in a meeting or presentation
- b. whether in person or virtually

2. We **send** something to our audience

- a. typically through email

Time to fill open roles

Time to fill



STEP 1:

- Let's say you will have an upcoming meeting with a steering committee.
- You have 10 minutes on the agenda to discuss time to hire.
- You'd like to take a couple of minutes to set the context by walking your audience through the data and use that to facilitate a conversation.
- Take advantage of the fact that you'll be live in person with your audience: rather than simply show the figure consider how you might build the graph one or a few elements at a time.
- Create a bulleted list of what you would show, step by step.

Step 1

1. Start with a **skeleton graph**

- a. that has x- and y-axis title and labels but no data.

2. Add the **Goal** line,

- a. sharing any known context about how it was set.

3. Build the **External line**.

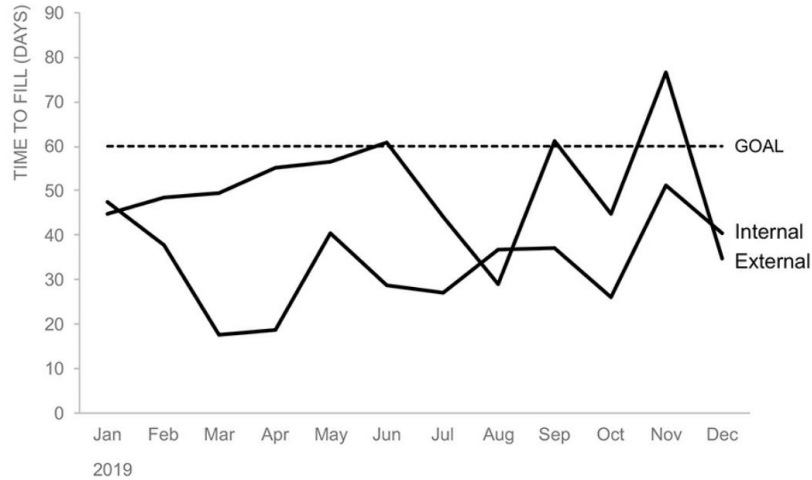
- a. Start with the first point in January, then add data through June and plan to talk through known context causing this trend.
- b. Then build the rest of the line, highlighting specific data you want to draw attention to.

4. Build the **Internal line**.

- a. Push the External line back so it doesn't compete for attention, then build the Internal line in a similar fashion, highlighting and planning to raise points of interest along the way.

Time to fill open roles

Time to fill



STEP 2:



- Download the data and create the progression you outlined in Step 1 in the tool of your choice.

Step 2

Let me take a few minutes to share with you recent data concerning time to hire.

I'm going to use this to frame a conversation about some potential decisions you could make to impact time to hire going forward.

Start with a skeleton graph

First, let me set up for you what we'll be looking at before distracting you with any data.

On the vertical y-axis, I'll be plotting time to fill. This is the average number of days from an open job being posted to a successful hire for hires made in the given month.

On the x-axis, I'll plot time. We're looking at data from 2019, starting with January on the left and going through December on the right.

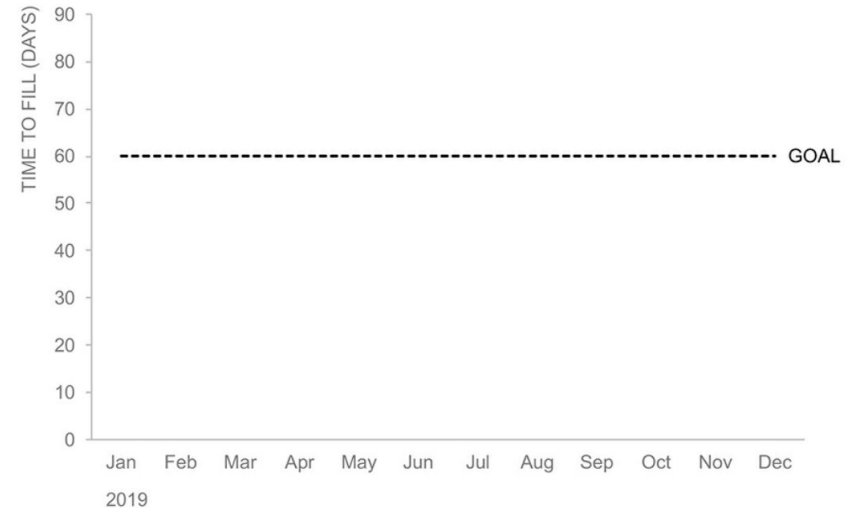
Time to fill



Introduce the goal

The company-wide goal is to fill roles within 60 days.

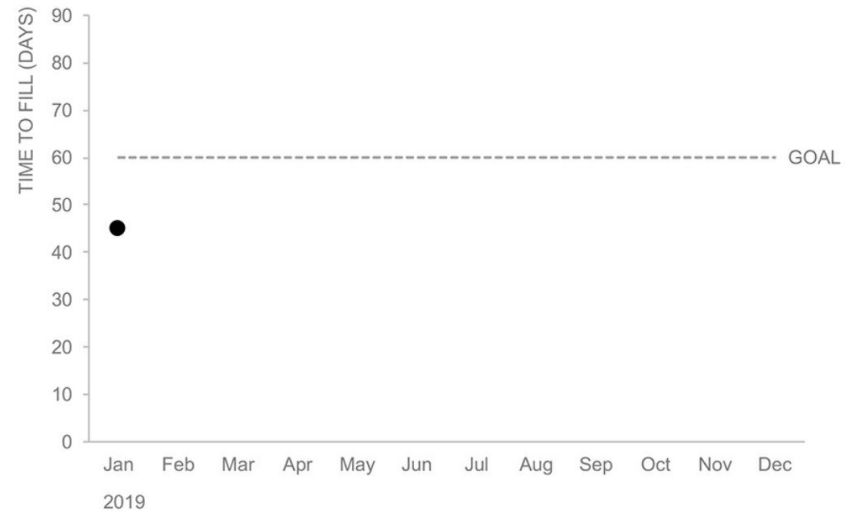
Time to fill



Show first data point

Let's look at external hires first. Average time to hire in January was just under 45 days, well under our 60-day goal.

Time to fill



First point of external line

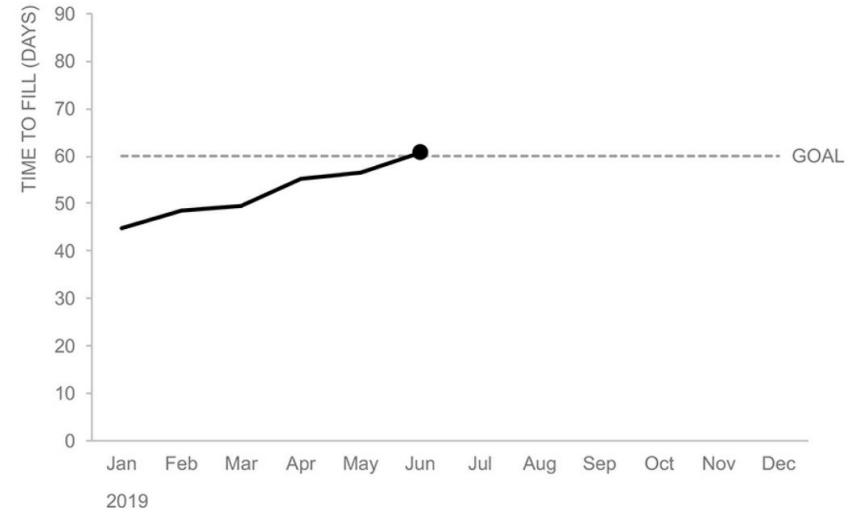
However, this increased steadily over the first half of the year.

This coincides with increasing average number of interviews per candidate.

As one may expect, the more interviews there are, the longer the hiring process.

This led us to be just above goal in June, with average time to fill role of 61 days.

Time to fill



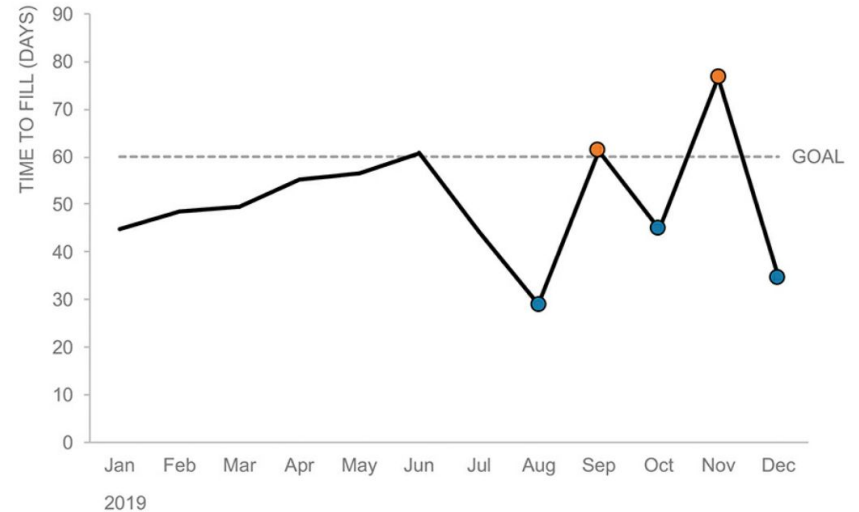
External time to fill increased in first half of year

Monthly time to fill for external hires varied quite a lot over the second half of the year.

We found that those months having lower time to hire—denoted by blue markers—had fewer interviews per candidate on average.

Both a greater quantity of interviews and interviewer vacation schedules likely contributed to the months above goal—designated by the orange markers.

Time to fill

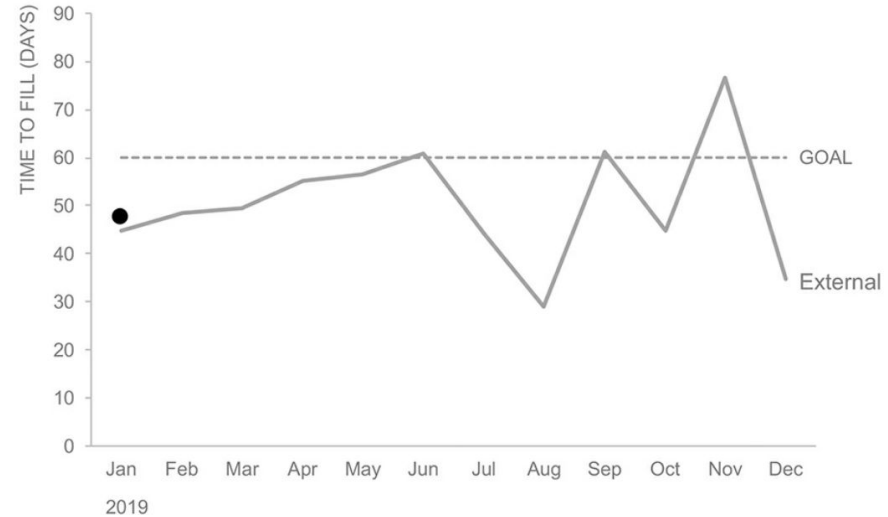


Add first point of internal line

Let's shift next to look at internal time to fill—these are those roles being filled by internal transfers.

We started the year beating goal at 48 days to hire.

Time to fill

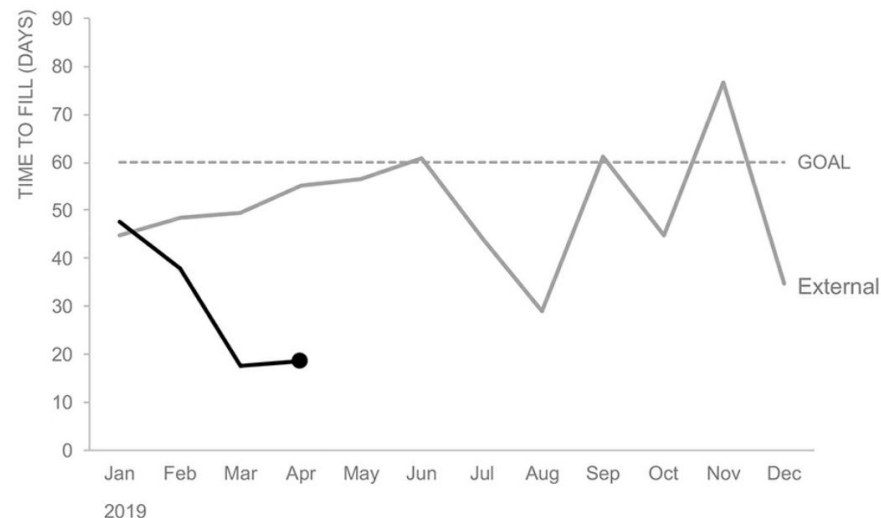


Internal time to fill low first few months of year

Time to fill with internal candidates improved, decreasing the first few months of the year.

In March and April, time to fill was under 3 weeks for internal candidates—this is impressively fast!

Time to fill

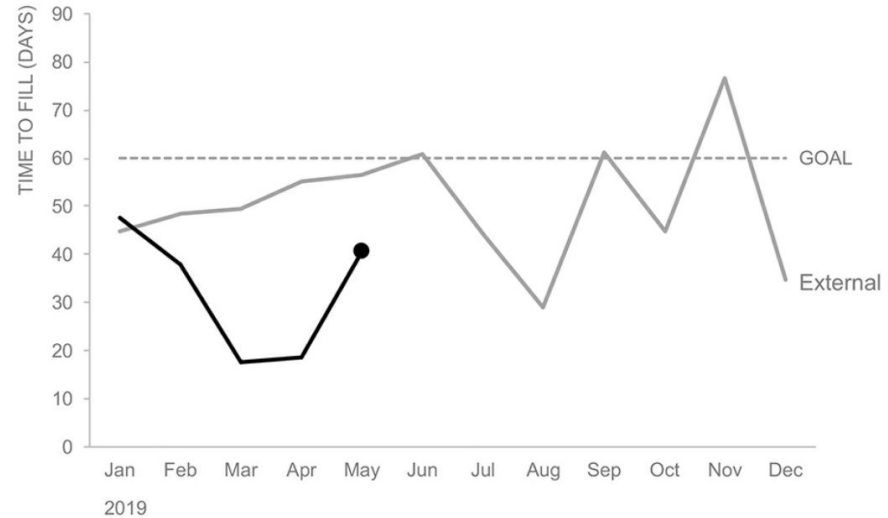


Increased April to May

Time to hire increased in May.

This coincided with an increase in the number of internal transfers, indicating that our processes might not be able to efficiently handle greater numbers of transfers.

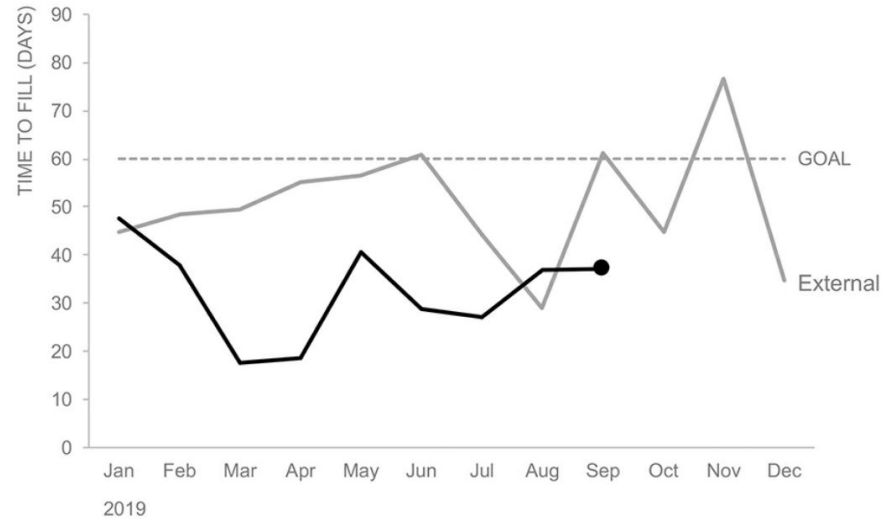
Time to fill



Another dip and increase

After May, there was a slight dip followed by another increase.

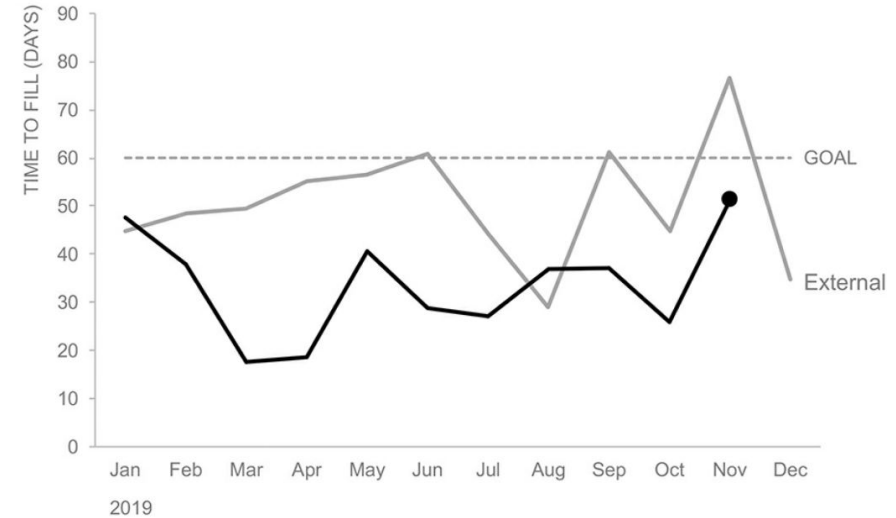
Time to fill



Yet another dip and increase

September to November saw another dip then increase.

Time to fill

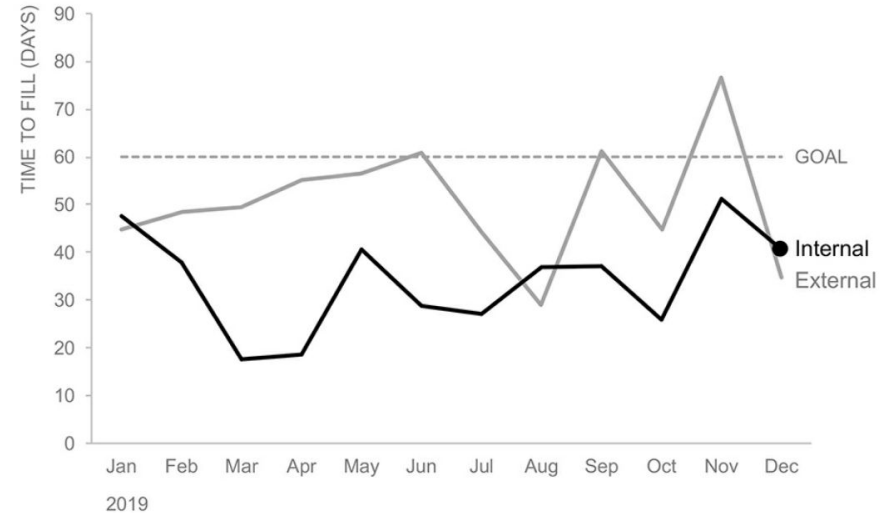


Internal ends the year above external

Though down from November to December, internal time to fill was higher than external in December.

Though a bit noisy month-to-month, there was a general increase in time to fill internal hires in the second half of the year.

Time to fill



Let's discuss the implications looking forward

Let's look at the full picture and summarize.

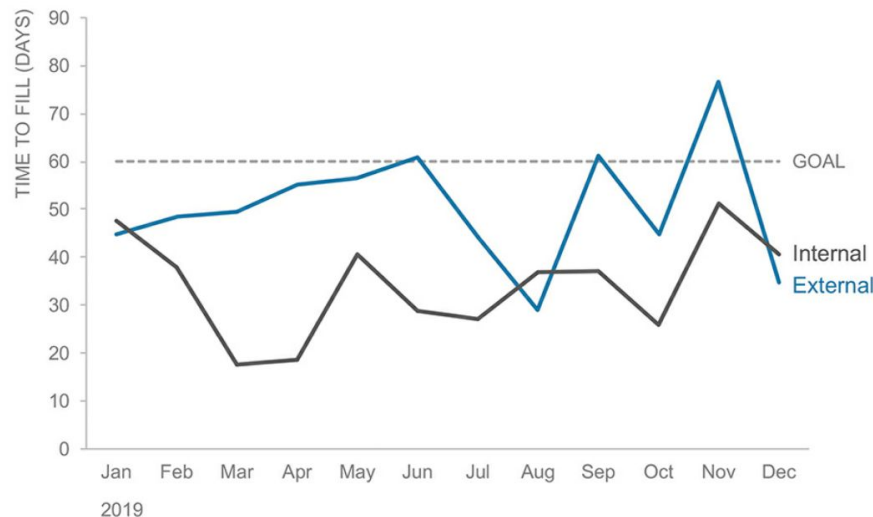
Both external and internal time to fill roles have varied over the past year. While both beat the 60-day target in most of the year, we have seen time to fill generally increase over the latter part of 2019.

Probably not unexpectedly—more interviews lead to longer time to fill roles. Vacation schedules also contribute to delays.

On the internal side, things take longer when we have more internal candidates, suggesting there could be some process improvements for better handling larger quantities.

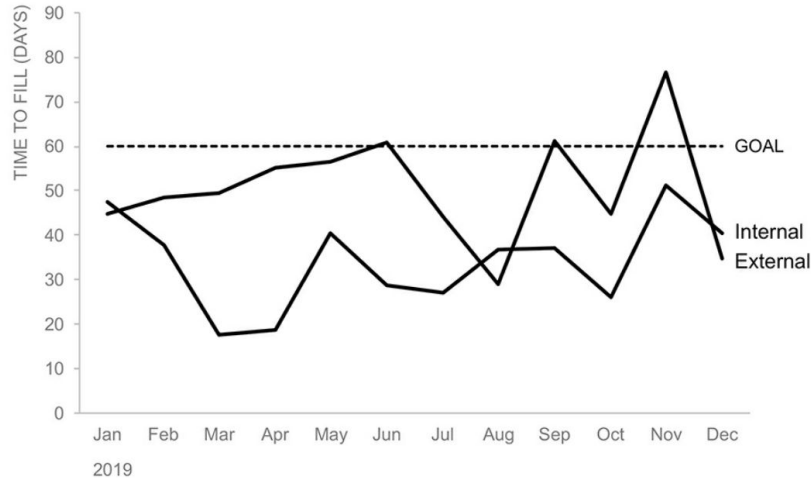
Let's discuss: what does this mean for the coming year? Are there any changes you'd like to make?

Time to fill



Time to fill open roles

Time to fill



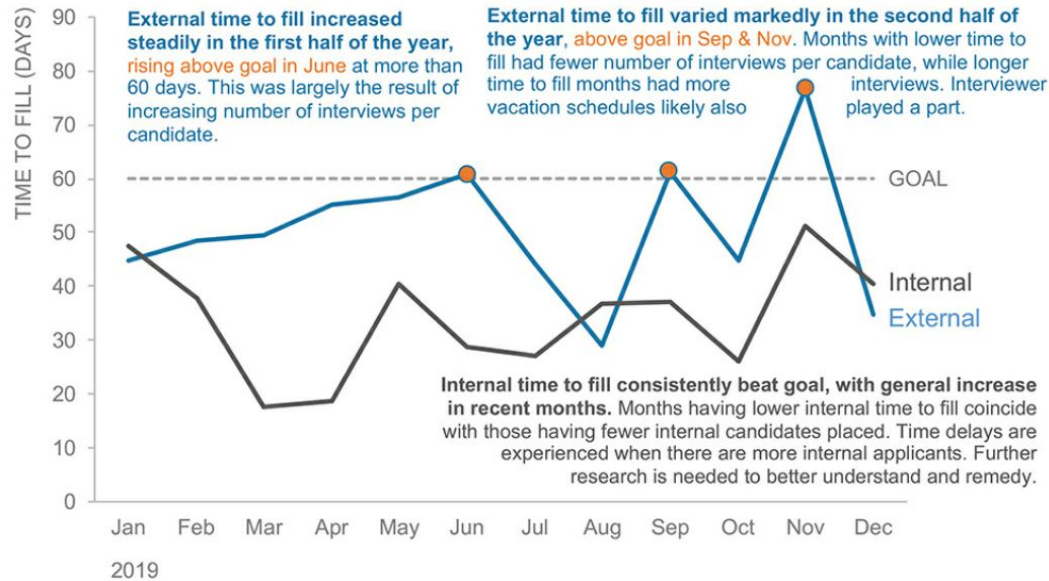
STEP 3:

- You anticipate the steering committee will want your visuals after the meeting.
- Rather than share the progression you went through, you've decided to build a **single comprehensive graph** (or slide).
- This will serve as a reminder of what you shared and will also be a good resource for anyone who misses the meeting.
- Create a visual to meet this need in the tool of your choice.

Time to fill role discussion needed: where do we go from here?

Both **External** and Internal time to fill have varied in the past year. Understanding contributing factors—number of interviews, vacation schedules, and current internal transfer volume constraints—can help us better plan for the future.

Time to fill



LET'S DISCUSS: Should we put stricter guidelines around maximum number of interviews? How can we keep vacation schedules from impacting time to hire? What can we do to improve efficiency of internal transfer process in order to better handle higher volumes?

Exercise 6.7: transition from dashboard to story

Transition from dashboard to story

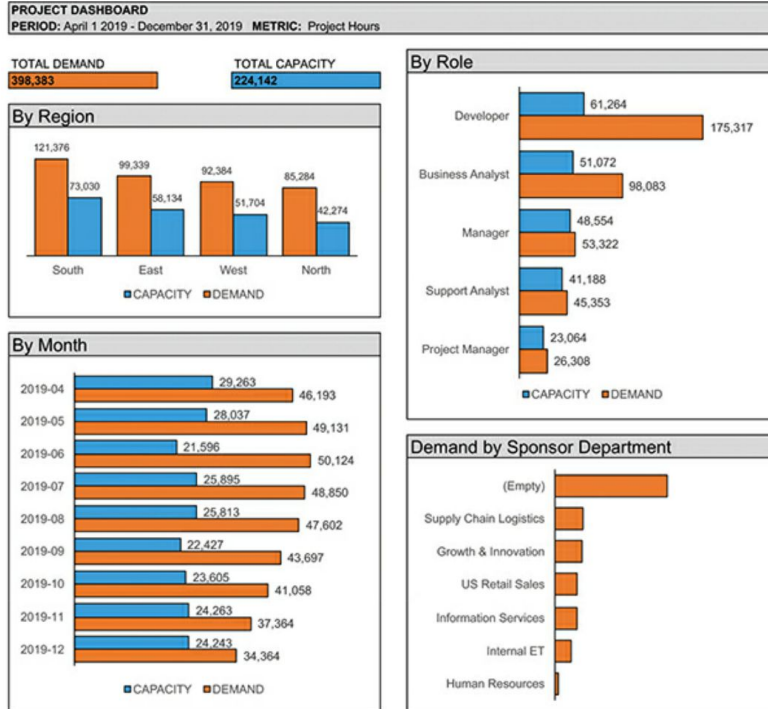
Exploratory is what you do to understand the data

- Dashboards are a useful tool in the exploratory part of the process.

Explanatory is what you do to communicate something about the data to someone else.

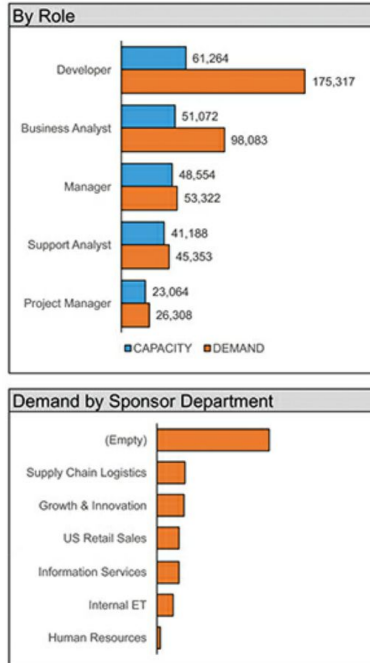
- Once we've found those interesting things, we should communicate them.

Project dashboard

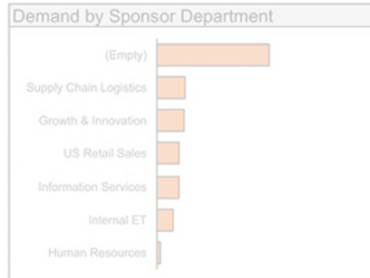
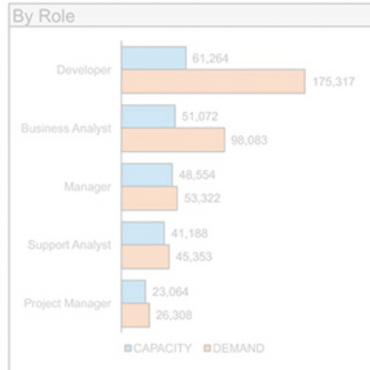


STEP 1:

- Write a sentence describing a takeaway from each component of the dashboard

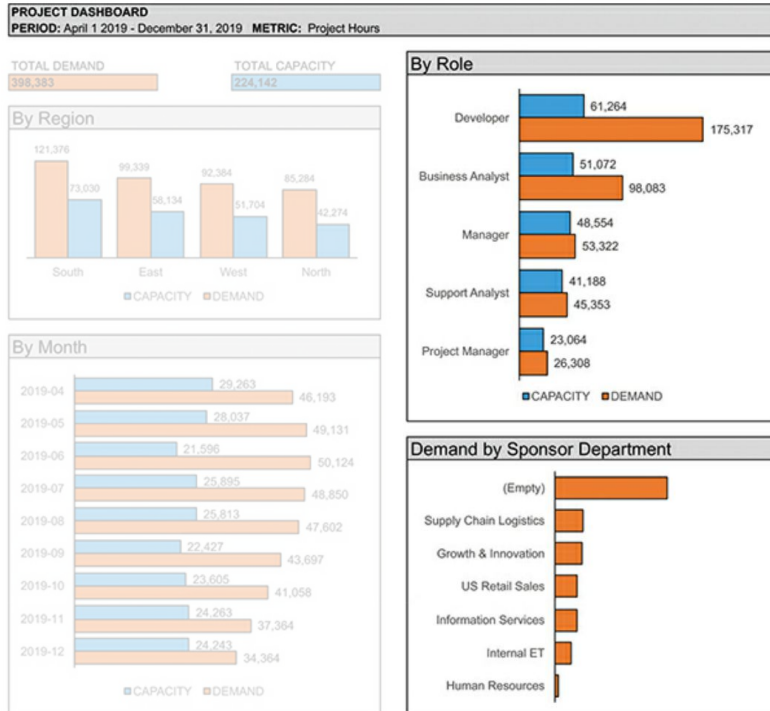


Step 1: summarize the main takeaway



- **Summary stats at top:**
 - Demand far exceeds capacity in the period 4/1/19 to 12/31/19.
- **By Region:**
 - Demand exceeds capacity across all regions in roughly similar magnitudes.
- **By Month:**
 - The gap between capacity and demand, which was largest in June and generally quite high through Q2 and Q4, narrowed over the latter part of the year.

Step 1: summarize the main takeaway



- **By Role:**

- Demand exceeds capacity the most for Developers;
- the gap between capacity and demand is also high for Business Analysts.

- **By Sponsor Department:**

- We are missing a lot of data related to the source of demand—or perhaps not all projects have a sponsor department?

Project dashboard



STEP 2:

- Do we need all of this data?
 - It may be important to look at project hours cut by each of these dimensions as part of our exploration of the data
 - But not all of the data is equally interesting when it comes to communicating it to our audience.
- Imagine you need to tell a story with this data:
 - Which parts of the dashboard would you focus on
 - Which would you omit?

Step 2

First **eliminate** things we don't want to include:

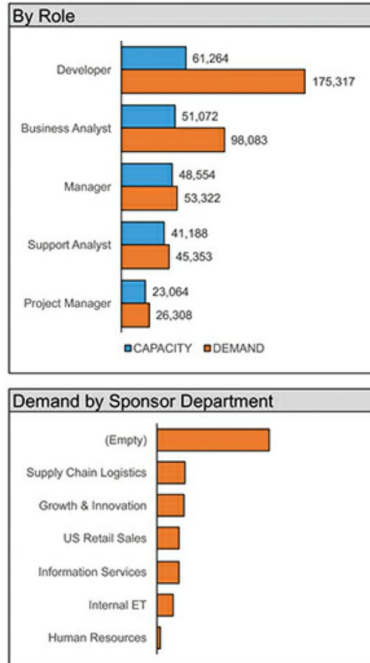
- Where things are pretty **consistent** or where we are **missing data** might be obvious aspects to omit (unless these vary from our expectations)
- We do see some interesting things happening over **time** and by **role**
- In terms of changes to how the data is shown, I'll want to
 - focus on the decreasing gap over time and also
 - more clearly illustrate the difference between capacity and demand by role.
- Put more words around the data—both to make it clear what we are looking at, as well as to help walk the audience through the story.

Project dashboard



STEP 3:

- Create a visual story with the elements you selected to include in Step 2.
- Make assumptions as needed for purposes of the exercise.
 - How would you show the data?
 - How will you incorporate words?
 - Decide whether you'll present live or send the information off to be consumed on its own.



Expect continued progress towards meeting demand

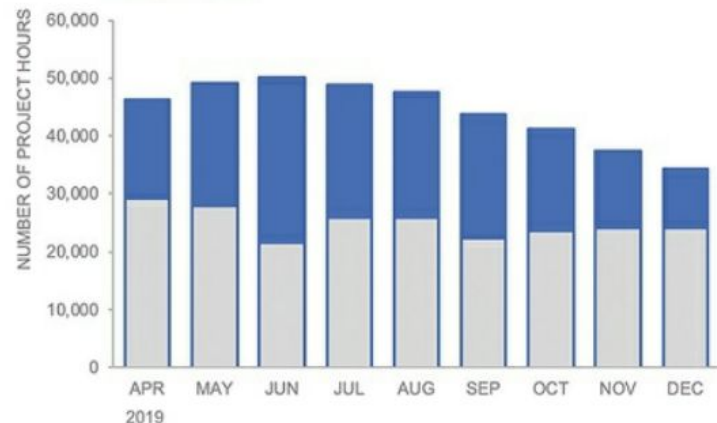
OVER TIME: GAP DECREASING, BUT PERSISTS

Demand continues to exceed capacity as of year end.

In 2019, we reduced the gap between demand and capacity markedly, mainly by clearing backlog of requested projects that aren't possible given current team structure and competing priorities.

Demand vs capacity over time

CAPACITY | UNMET DEMAND



BY ROLE: BIGGEST GAP IN 2 AREAS

The biggest areas that have been over capacity are Developers and Business Analysts.

Planned targeted hiring of these roles is expected to continue to reduce overall gap over time. We will continue to monitor and report.

Demand vs capacity: breakdown by role

NUMBER OF PROJECT HOURS



All resources (exercises & solutions)

Data and solutions for all exercises

Download

