

PLAN 590

January 31, 2025

Communicating with data

Week 3

Schedule

Day 1: January 17

- Setting goals for your data visualizations
- Defining your audience
- Visual Processing & Cognitive Load
- How to choose the right visualization for your data (chart bootcamp)

Day 3: January 31

- Plain language: What it is, why it's important, and how to use it
- Writing about numbers
- What makes a compelling data story
- Mapping your data characters

Day 2: January 24

- XRAY discussion
- Data Visualization Research: What Works
- Enough color theory to get by
- Better legends in your data visualization
- Titles, annotations, and other texts
- “Fix my chart” exercise

Day 4: February 7

- Accessibility in data visualization
- Equity in data visualization
- Data visualization in the workplace
- Workshop time for memos

Final Memo

Choose an analytical topic and write a memo for a data stakeholder (e.g., a colleague, client, or elected official). Your memo should include:

1. **The question or problem** you are addressing.
2. **Your data sources** and the approach you used to analyze the data.
3. **Your findings** and any potential limitations.

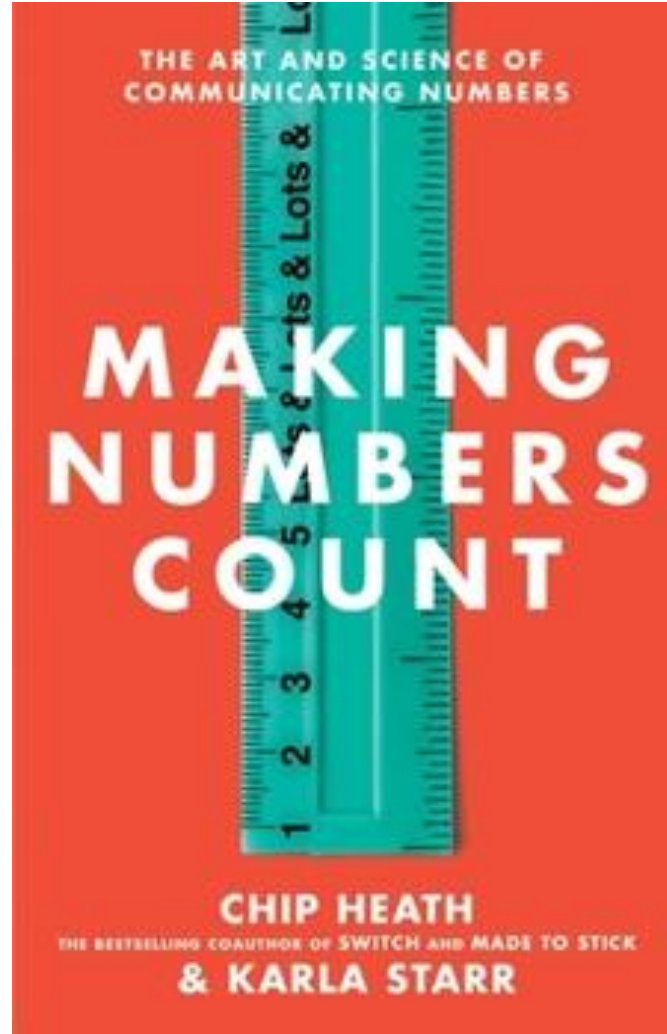
Due Date: February 21

Word Limit: No more than 2,500 words.

Use as many charts or visuals as needed, but only include those essential to telling your data story.

Writing about data

Making Numbers Count



First tip: Avoid numbers

A very small percentage of Fortune 500 CEOs are women.

Among Fortune 500 CEOs, there are more men named James than there are women.

Focus on one at a time

The U.S. national debt is \$27 trillion.

The U.S. national debt is \$27 trillion - \$82,000 per citizen.

Round with enthusiasm!

2,842,900

5.73 times bigger

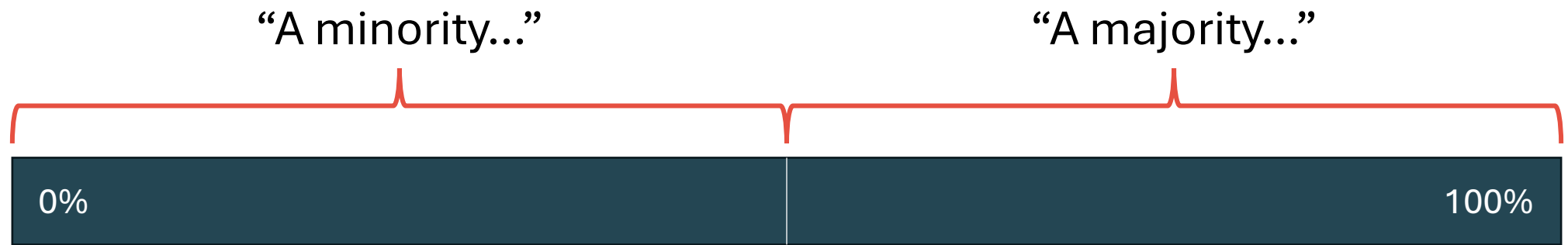
9/17

3 million

6 times bigger

1/2

But don't be too general...



Not very descriptive.

Favor User-Friendly Numbers

40% of U.S. adults do not always wash their hands after using the bathroom at home.

2 out of every 5 people you shake hands with may have not washed their hands between using the toilet and touching your hands.

Help people understand through simple, familiar comparisons

The geographic area of Pakistan is about the size of 5 Oklahomas.

The geographic area of Pakistan is about twice the size of California.

Help people understand through simple, familiar comparisons

In 2020, the global video games market reached \$180 billion. By comparison, in the movie business, world box office revenues were \$42 billion in 2019 (pre-COVID), while world music revenues were \$22 billion.

The video game industry is more than 4 times the size of the movie industry, and about 9 times the size of the music industry.

Measure in Small Equal Baskets

In its first 7 months, 7,857 troops died out of 13,095.

Nightingale's translate: We had 600 deaths per 1,000 troops.

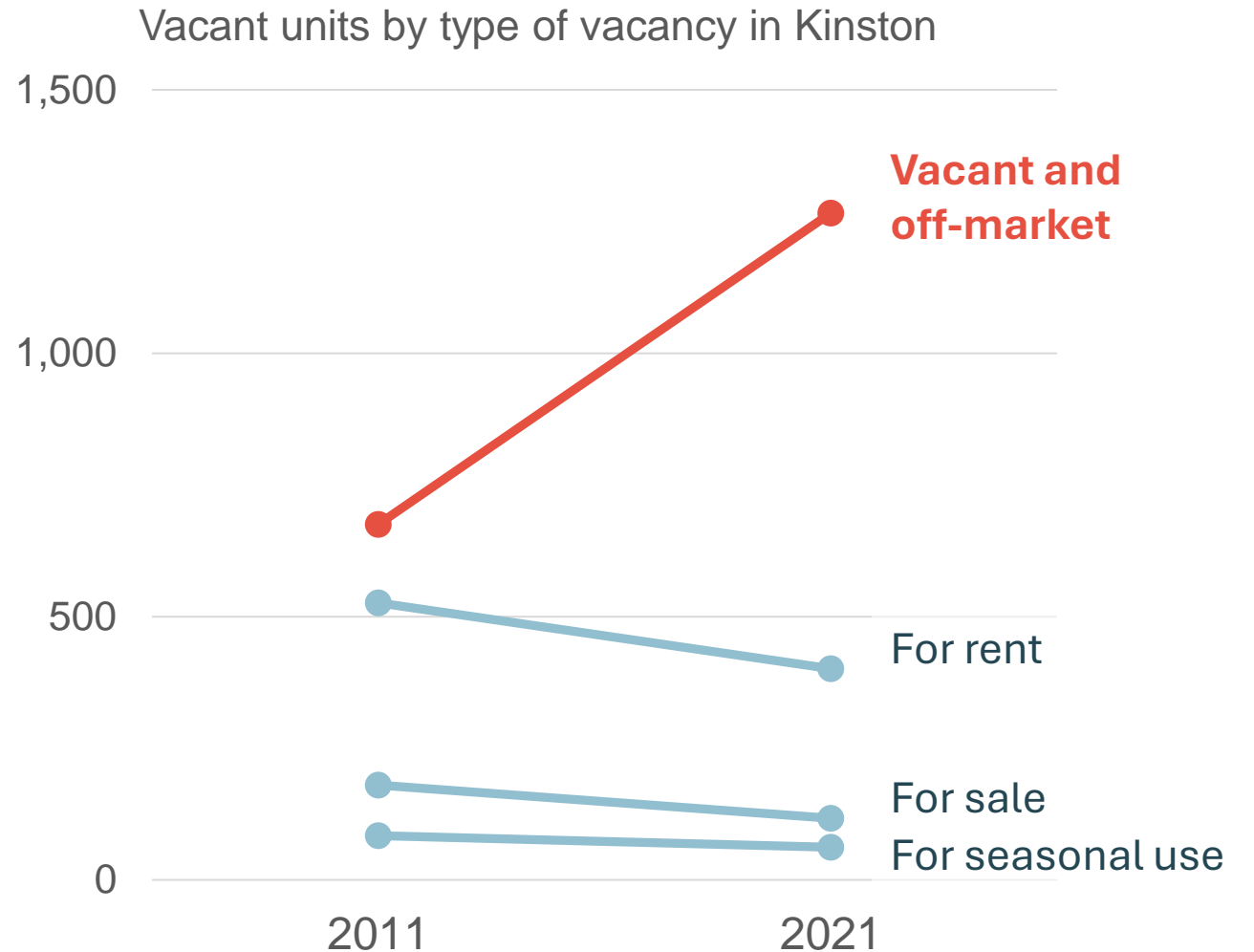


Let the visual do the talking

The number of vacant and off-market housing units in Kinston nearly doubled over the past 10 years.

Color and **emphasis** drive the point home.

You don't need to use words like "explosive" or "off the charts".



Use the one-two method

- Sentence 1: Declare something without data.
- Sentence 2: Evidence.

Use the one-two method

1. Despite substantial job growth, housing construction in Jacksonville has lagged over the past decade.
2. According to Census estimates, Jacksonville permits the same number of units as Swansboro and North Topsail Beach, despite having more than ten times the population.

Plain Language

Public Law 111–274
111th Congress

An Act

To enhance citizen access to Government information and services by establishing that Government documents issued to the public must be written clearly, and for other purposes.

Oct. 13, 2010
[H.R. 946]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Plain Writing Act
of 2010.
5 USC 301 note.

SECTION 1. SHORT TITLE.

This Act may be cited as the “Plain Writing Act of 2010”.

SEC. 2. PURPOSE.

5 USC 301 note.

The purpose of this Act is to improve the effectiveness and accountability of Federal agencies to the public by promoting clear Government communication that the public can understand and use.

SEC. 3. DEFINITIONS.

In this Act:

(1) AGENCY.—The term “agency” means an Executive agency, as defined under section 105 of title 5, United States Code.

(2) COVERED DOCUMENT.—The term “covered document”—
(A) means any document that—

(i) is necessary for obtaining any Federal Government benefit or service or filing taxes;

(ii) provides information about any Federal Government benefit or service; or

(iii) explains to the public how to comply with a requirement the Federal Government administers or enforces;

(B) includes (whether in paper or electronic form) a letter, publication, form, notice, or instruction; and

(C) does not include a regulation.

(3) PLAIN WRITING.—The term “plain writing” means writing that is clear, concise, well-organized, and follows other best practices appropriate to the subject or field and intended audience.

The easiest way to use plain language
is to **write like you talk.**

Use simple words and phrases

Avoid hidden verbs

<p>To trace the missing payment, we need to carry out a review of the Agency's accounts so we can gain an understanding of the reason the error occurred.</p>	<p>To trace the missing payment, we need to review the Agency's accounts so we understand the reason the error occurred.</p>
<p>If you cannot make the payment of the \$100 fee, you must make an application in writing before you file your tax return.</p>	<p>If you cannot pay the \$100 fee, you must apply in writing before you file your tax return.</p>
<p>This means we must undertake the calculation of new figures for the congressional hearing.</p>	<p>This means we must calculate new figures for the congressional hearing.</p>
<p>The production of accurate statistics is important for the committee in the assessment of our homelessness policy.</p>	<p>Producing accurate statistics is important to the committee in assessing our policy on homelessness.</p>

Avoid hidden verbs

To trace the missing payment, we need to carry out a review of the Agency's accounts so we can gain an understanding of the reason the error occurred.

If you cannot make the payment of the \$100 fee, you must make an application in writing before you file your tax return.

This means we must undertake the calculation of new figures for the congressional hearing.

The production of accurate statistics is important for the committee in the assessment of our homelessness policy.

Avoid hidden verbs

<p>To trace the missing payment, we need to carry out a review of the Agency's accounts so we can gain an understanding of the reason the error occurred.</p>	<p>To trace the missing payment, we need to review the Agency's accounts so we understand the reason the error occurred.</p>
<p>If you cannot make the payment of the \$100 fee, you must make an application in writing before you file your tax return.</p>	
<p>This means we must undertake the calculation of new figures for the congressional hearing.</p>	
<p>The production of accurate statistics is important for the committee in the assessment of our homelessness policy.</p>	

Avoid hidden verbs

<p>To trace the missing payment, we need to carry out a review of the Agency's accounts so we can gain an understanding of the reason the error occurred.</p>	<p>To trace the missing payment, we need to review the Agency's accounts so we understand the reason the error occurred.</p>
<p>If you cannot make the payment of the \$100 fee, you must make an application in writing before you file your tax return.</p>	<p>If you cannot pay the \$100 fee, you must apply in writing before you file your tax return.</p>
<p>This means we must undertake the calculation of new figures for the congressional hearing.</p>	
<p>The production of accurate statistics is important for the committee in the assessment of our homelessness policy.</p>	

Avoid hidden verbs

<p>To trace the missing payment, we need to carry out a review of the Agency's accounts so we can gain an understanding of the reason the error occurred.</p>	<p>To trace the missing payment, we need to review the Agency's accounts so we understand the reason the error occurred.</p>
<p>If you cannot make the payment of the \$100 fee, you must make an application in writing before you file your tax return.</p>	<p>If you cannot pay the \$100 fee, you must apply in writing before you file your tax return.</p>
<p>This means we must undertake the calculation of new figures for the congressional hearing.</p>	<p>This means we must calculate new figures for the congressional hearing.</p>
<p>The production of accurate statistics is important for the committee in the assessment of our homelessness policy.</p>	

Avoid hidden verbs

<p>To trace the missing payment, we need to carry out a review of the Agency's accounts so we can gain an understanding of the reason the error occurred.</p>	<p>To trace the missing payment, we need to review the Agency's accounts so we understand the reason the error occurred.</p>
<p>If you cannot make the payment of the \$100 fee, you must make an application in writing before you file your tax return.</p>	<p>If you cannot pay the \$100 fee, you must apply in writing before you file your tax return.</p>
<p>This means we must undertake the calculation of new figures for the congressional hearing.</p>	<p>This means we must calculate new figures for the congressional hearing.</p>
<p>The production of accurate statistics is important for the committee in the assessment of our homelessness policy.</p>	<p>Producing accurate statistics is important to the committee in assessing our policy on homelessness.</p>

Use active voice

✗ Passive voice	✓ Active voice
The lake was polluted by the company.	The company polluted the lake.
New regulations were proposed.	We proposed new regulations.
The following information must be included in the application for it to be considered complete.	You must include the following information in your application.
Bonds will be withheld in cases of non-compliance with all permits and conditions.	We will withhold your bond if you don't comply with all permit terms and conditions.
The permit must be approved by the agency's state office.	Our state office must approve your permit.

Add useful headings

Question headings

Question headings are useful if you know what questions your audience will ask. Most people come to government documents with questions. If you know those questions, use them as headings. They will help the audience find the information they are looking for quickly. Using the question-and-answer format helps your audience scan the document and find specific information.

Example:

Why do we use headings?

Use lists

✗ Before

Each completed well drilling application must contain a detailed statement including the following information: the depth of the well, the casing and cementing program, the circulation media (mud, air, foam, etc.), the expected depth and thickness of fresh water zones, and well site layout and design.

✓ After

With your application for a drilling permit, provide the following information:

- Depth of the well
- Casing and cementing program
- Circulation media (mud, air, form, etc.)
- Expected depth and thickness of fresh water zones
- Well site layout and design

Highlight important concepts

You can also add **bold** and *italics* to emphasize important concepts within a particular section. While it is difficult to use visual emphasis in regulations, it helps bring out important information in other writing. Only emphasize important information, otherwise you'll dilute its impact.

PUTTING EVERYTHING IN CAPITAL LETTERS IS NOT A GOOD EMPHASIS TECHNIQUE. ALTHOUGH IT MAY DRAW THE USER'S ATTENTION TO THE SECTION, IT MAKES IT HARDER TO READ. AND ONLINE, IT'S CONSIDERED SHOUTING.

Similarly, underlining will draw the user's attention to the section, but it makes it hard to read.

Besides, when reading online, people expect underlined text to be a link. It's better to use **bold** and *italics* for important issues.

Data Storytelling



The path of your analysis does not have to be your story. Just because you made one leap from one idea to another doesn't mean that is the most compelling way of showing information.

The universal story structure: And, But, Therefore

Act 1 (agreement) – Set the scene. The main character is introduced, along with any necessary story context.

Africa's animal kingdom is ruled by lions, **AND** Simba is a young lion who will succeed his father (Mufasa) as king.

Act 2 (contrast) – Provide the tension. It causes the narrative to change direction in some way.

BUT when Simba's uncle Scar murders Mufasa, Simba is tricked into thinking he is responsible and flees his homeland.

Act 3 (consequences) – Explain the consequences of what happened in Act 2, and the story comes to some kind of resolution.

THEREFORE, Simba needs to overcome his guilt before he can take his rightful place as king.

Hey, I just met you, **AND** this is crazy.
BUT here's my number, **SO** call me, maybe.

Agreement

And
Also
Equally
Identically
Uniquely
Like
Moreover
As well as
Furthermore
Likewise
Similarly

Contradiction

But
Despite
However
Yet
Conversely
Rather
Whereas
Although
Otherwise
Instead
Albeit

Consequence

Therefore
So
Thus
Consequently
Hence
Thereupon
Accordingly
As a result
Henceforth
For this reason
In that case

The ABT Narrative Structure (of this class)

Planners are increasingly asked to solve complex problems

AND provide data to help guide decisions.

BUT these efforts sometimes fall short because not enough emphasis is placed on effectively communicating the results to diverse audiences, leaving key stakeholders uninformed or misinformed.

THEREFORE, I'm teaching this class to help students better communicate data and make their analysis more actionable and impactful.



North Carolina State Climate Office

September 30, 2024 | Climate Blog, Events

Rapid Reaction: Historic Flooding Follows Helene in Western NC

By Corey Davis

At 5 pm on Wednesday, September 25, Hurricane Helene was at Category-1 strength with its center just north of Cancun, Mexico, more than 500 miles and 30 hours away from its eventual landfall along the coast of Florida.

But it was already raining in Asheville by then, as a line of slow-moving showers along a stalled cold front – fed by tropical moisture from the fringes of Helene to the south – had set up from Atlanta through the southern Appalachians.

By midnight on Thursday, the Asheville Airport totaled 4.09 inches, and stream flows were already running at daily record high levels in upstream, upslope parts of the French Broad River basin.

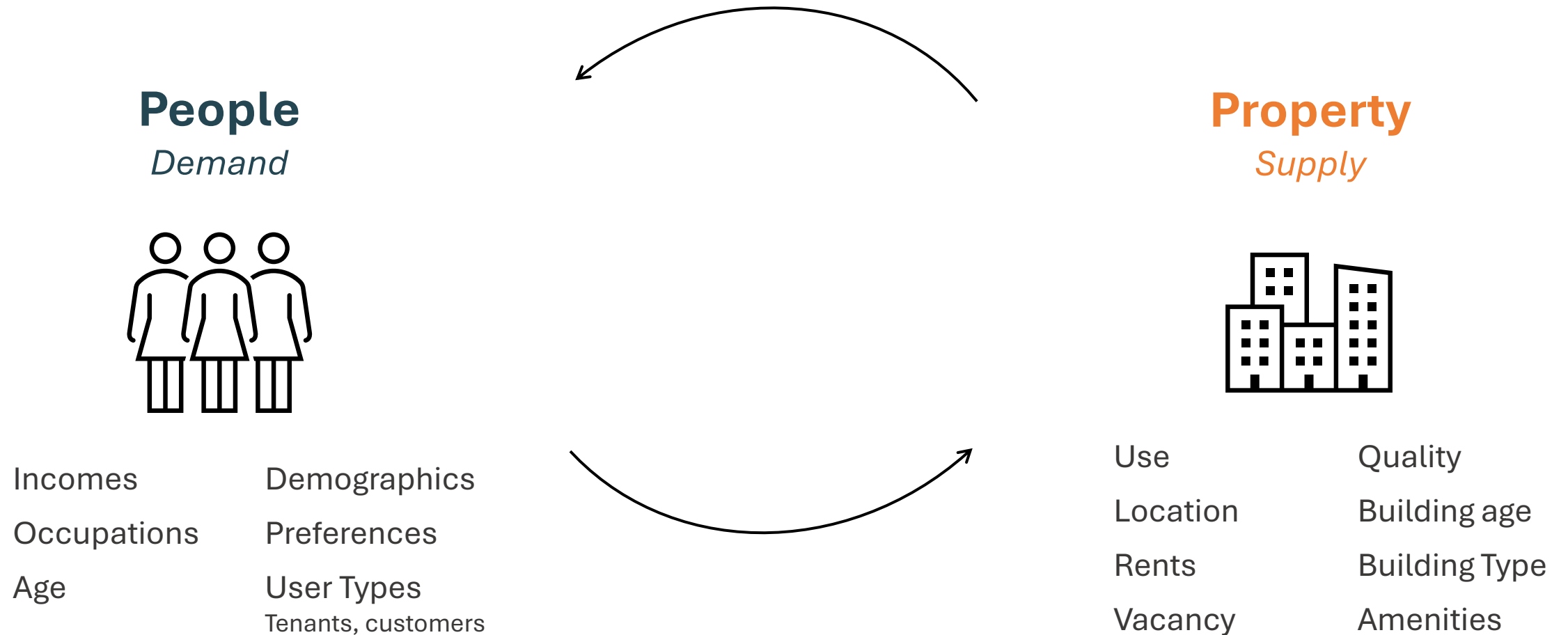
So the rain continued all day on Thursday as the frontal boundary had barely moved and Helene’s outer rain bands were closing in, adding even more moisture to the mix. More than nine inches fell that day across southern Yancey County.

As mountain streams became overrun with moisture, that water rushed down the rivers and into towns such as Asheville, all while the heaviest rain from Helene was just beginning to fall.

Market analysis fundamentals...

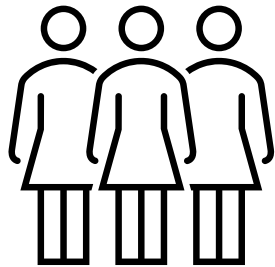


Real estate market analysis is about how **people** interact with **property**.



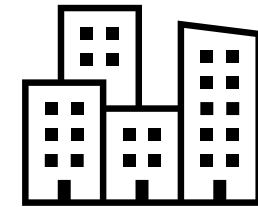
Real estate market analysis is about how **people** interact with **property**.

People
Demand



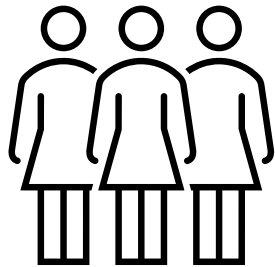
A third of **housing units are short-term rentals** and unavailable to **year-round renters**.

Property
Supply



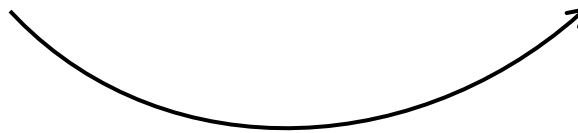
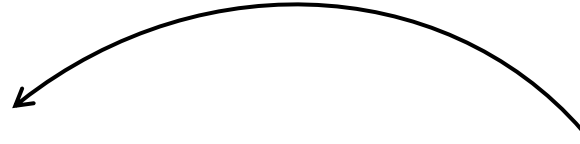
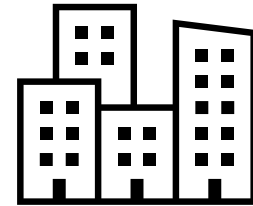
Real estate market analysis is about how **people** interact with **property**.

People
Demand



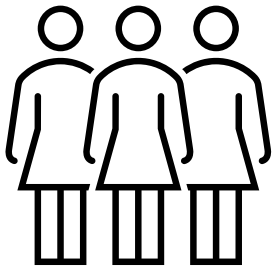
Every year, **shoppers spend** about \$300 million at **retail establishments outside of the market area.**

Property
Supply



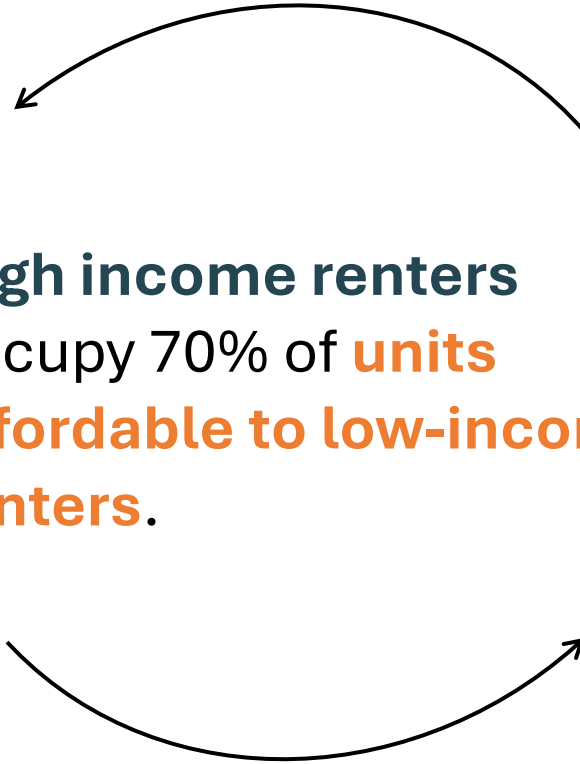
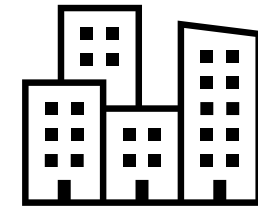
Real estate market analysis is about how **people** interact with **property**.

People
Demand



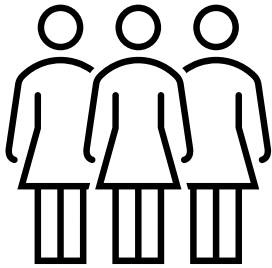
High income renters
occupy 70% of **units**
affordable to low-income
renters.

Property
Supply



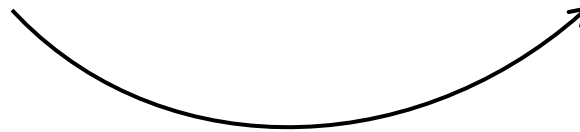
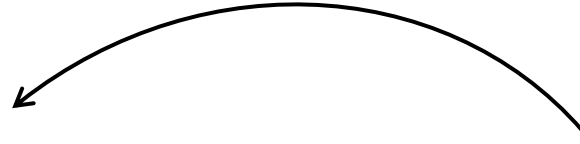
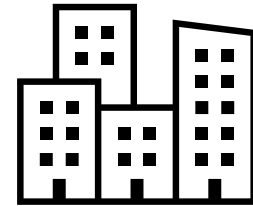
Real estate market analysis is about how **people** interact with **property**.

People
Demand



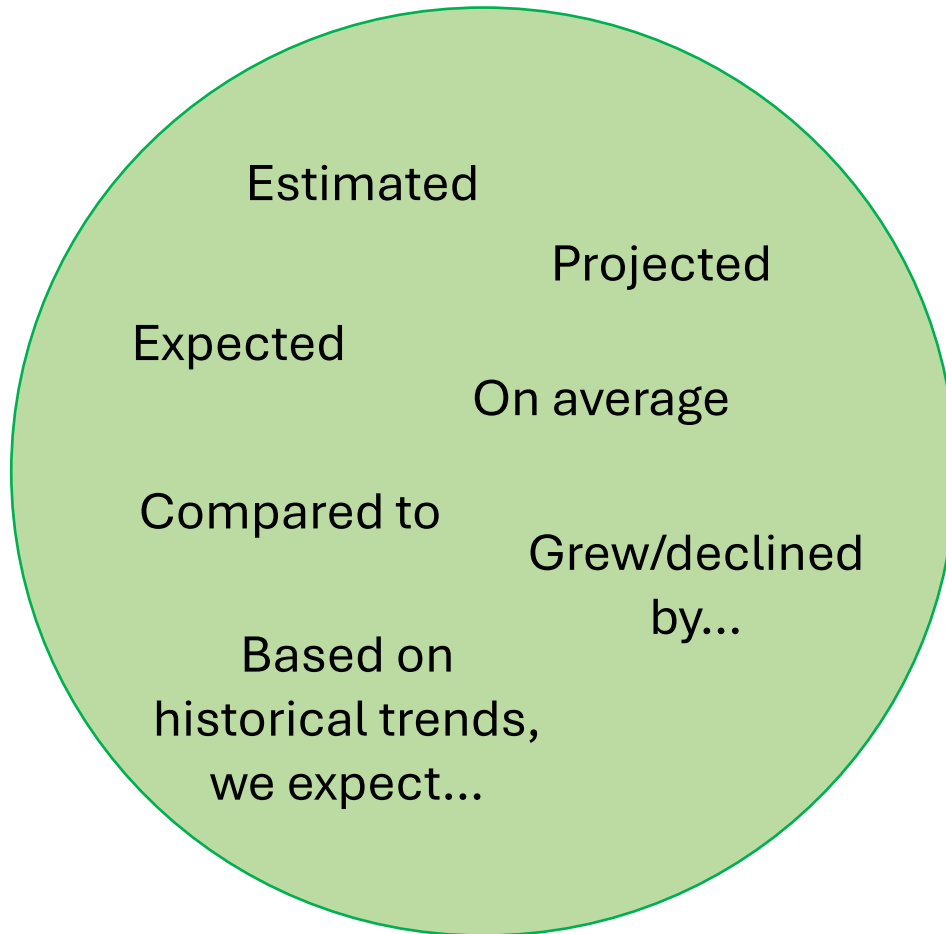
Tech companies are willing to pay a 10% premium for **office space on transit lines**.

Property
Supply

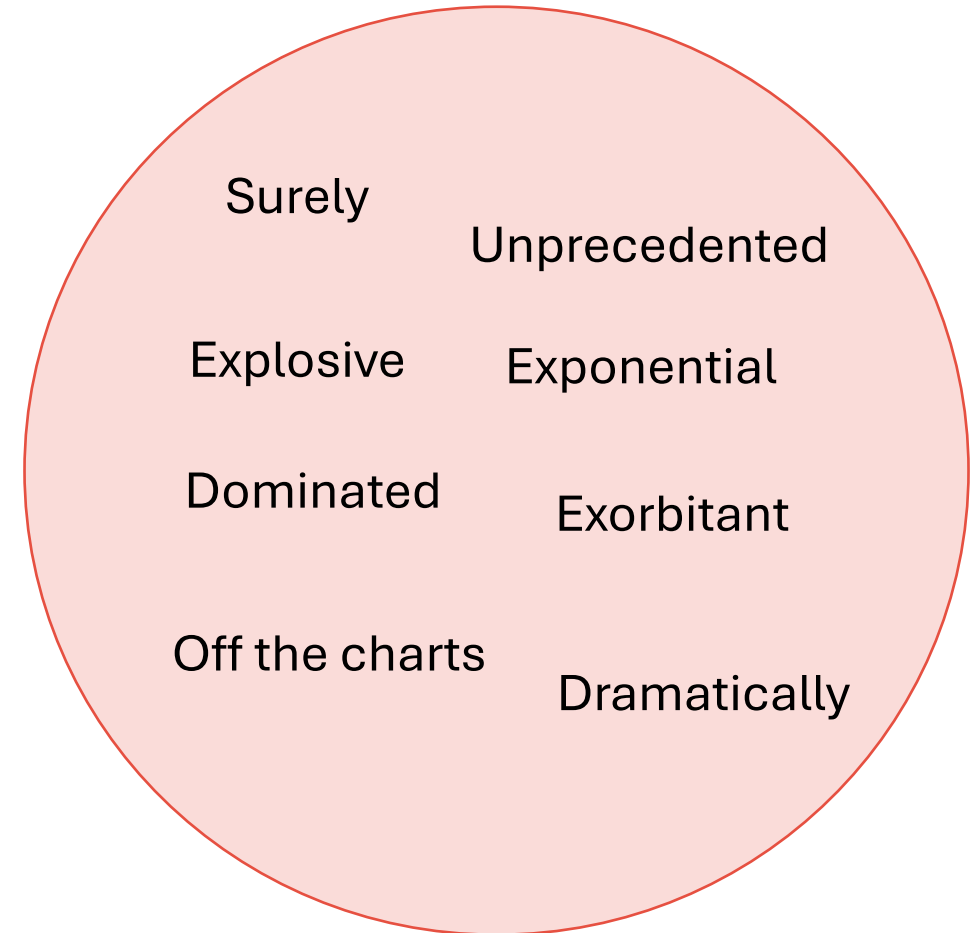
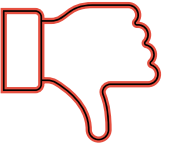


Effective market
communication must balance
uncertainty and **storytelling**.

Market analysis words



Used car salesman words



This sentence has five words. Here are five more words.
Five-word sentences are fine. But several together become monotonous. Listen to what is happening. The writing is getting boring. The sound of it drones. It's like a stuck record. The ear demands some variety.

Now listen. I vary the sentence length, and I create music. Music. The writing sings. It has a pleasant rhythm, a lilt, a harmony. I use short sentences. And I use sentences of medium length. And sometimes when I am certain the reader is rested, I will engage him with a sentence of considerable length, a sentence that burns with energy and builds with all the impetus of a crescendo, the roll of the drums, the crash of the cymbals—sounds that say listen to this, it is important.

So write with a combination of short, medium, and long sentences. Create a sound that pleases the reader's ear. Don't just write words. Write music.

