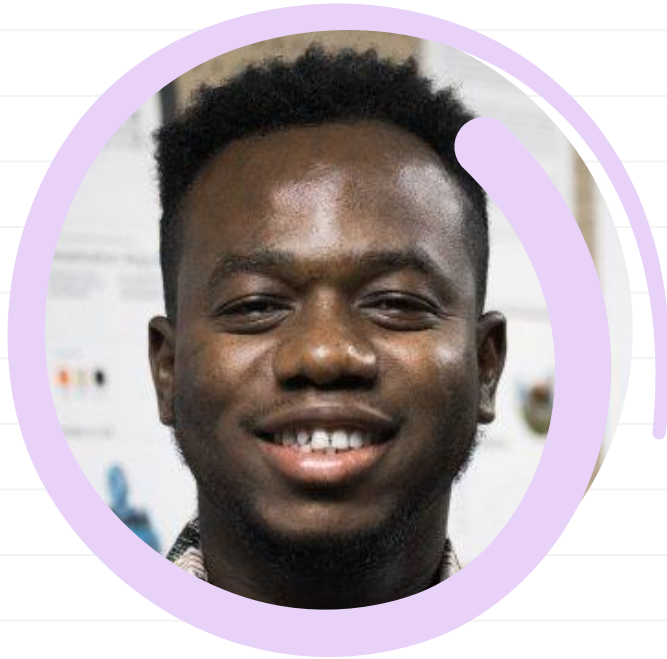


Technical Communication Series:

**Data Visualization and Creating
Impactful Visuals**



Hello! I'm...

Eugene Brown Agyei. Fourth year PhD candidate in the Rhetoric, Theory and Culture program. My research interest is at the intersection of new media media technologies and social movements.



Hello! I'm...

D-Jay Bidwell, third year PhD student in Rhetoric, Theory, and Culture. My interests are technical communication, usability, accessibility, and disability studies.



Hello! I'm...

Jordan Dagenais, 2nd year PhD student in Rhetoric, Theory, and Culture specializing in technical communication after the social justice turn and comics used as a communication/education tool.

Agenda

01 | Types of Visuals

02 | Audience

03 | Clarity

**04 | Design
Principles**

05 | Data Integrity

06 | Tools

Types of Visuals: Why Visuals

Generally, people do not like to read; they want content to be refined and structured so they can grasp the message instantly. Visuals are essential for addressing the questions that arise as readers engage with the information.

- Which information is most important?
- Where, exactly, should I focus?
- What do these numbers mean?
- What should I be thinking or doing?
- What should I remember about this?
- What does it look like?
- How is it organized?
- How is it done?
- How does it work?

Types of Visuals: Tables

Create tables to display quantitative and/or qualitative information







A table is a powerful way to display dense textual information such as specifications or comparisons.

Types of Visuals: Tables

No table should be overly complex for its audience. For people without the appropriate technical background, use fewer tables and keep them as simple as possible. All visuals should be created with audience and purpose in mind. For instance, an accountant doing an audit might need a table listing exact amounts, whereas the average public stockholder reading an annual report would prefer the “big picture” in an easily grasped bar graph or pie chart (Van Pelt 1).

Types of Visuals: Tables

SAMPLE TABLE #1: FINANCIAL ANALYSIS

		2016	2017	2018	2019 (est.)
Retail Partners		8	6	18	25
Gross Revenue		\$ 125,200	\$ 112,500	\$ 356,300	TBD
Research & Dev		\$ 8,200	\$ 5,600	\$ 20,200	\$ 25,000
Sales & Marketing		\$ 22,450	\$ 25,000	\$ 34,150	\$ 55,000
Materials Cost		\$ 5,500	\$ 6,000	\$ 9,000	\$ 14,000
Gross Profit		74,050	\$ 61,000	\$ 257,250	TBD
				Estimated GP:	\$ 1,020,640,000

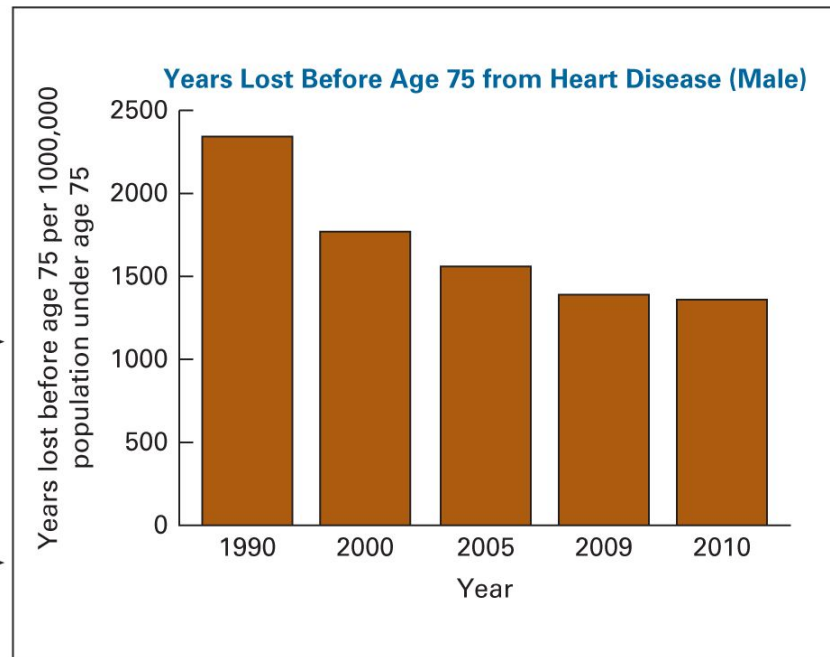
Types of Visuals: Graphs

Graphs translate numbers into shapes, shades, and patterns. Graphs display, at a glance, the approximate values, the point being made about those values, and the relationship being emphasized. Graphs are especially useful for depicting comparisons, changes over time, patterns, or trends.

Types of Visuals: Graphs

Column bars
are the same
width and shade
to prevent
confusion

Each axis is
clearly labeled



← Title gives readers
the big picture

← The decreasing
trend is easy to
see

Types of Visuals: Pie Charts

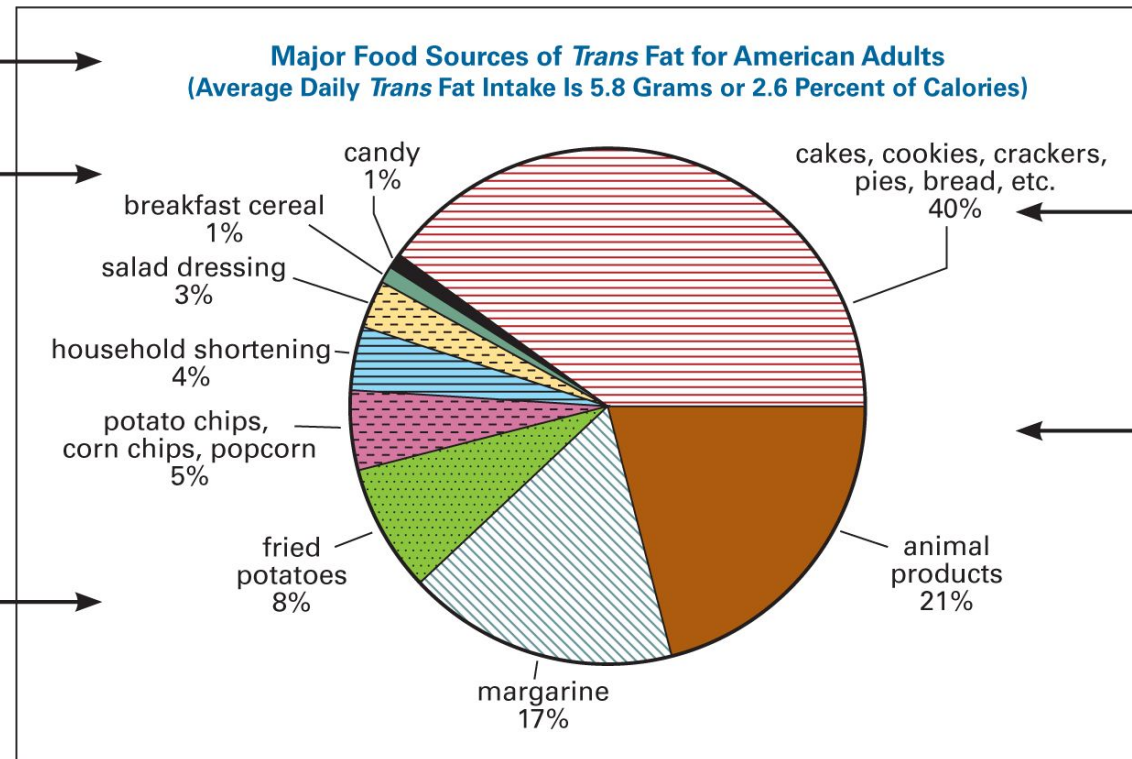
Easy for most people to understand, a pie chart displays the relationship of parts or percentages to the whole. Readers can compare the parts to each other as well as to the whole (to show how much was spent on what, how much income comes from which sources, and so on).

Types of Visuals: Pie Charts

Title explains the big picture

Labels and numeric percentages are provided for each slice

Percentages add up to 100%



Each slice of the pie is proportional to its percentage

Different colors (or shades) make each slice distinct

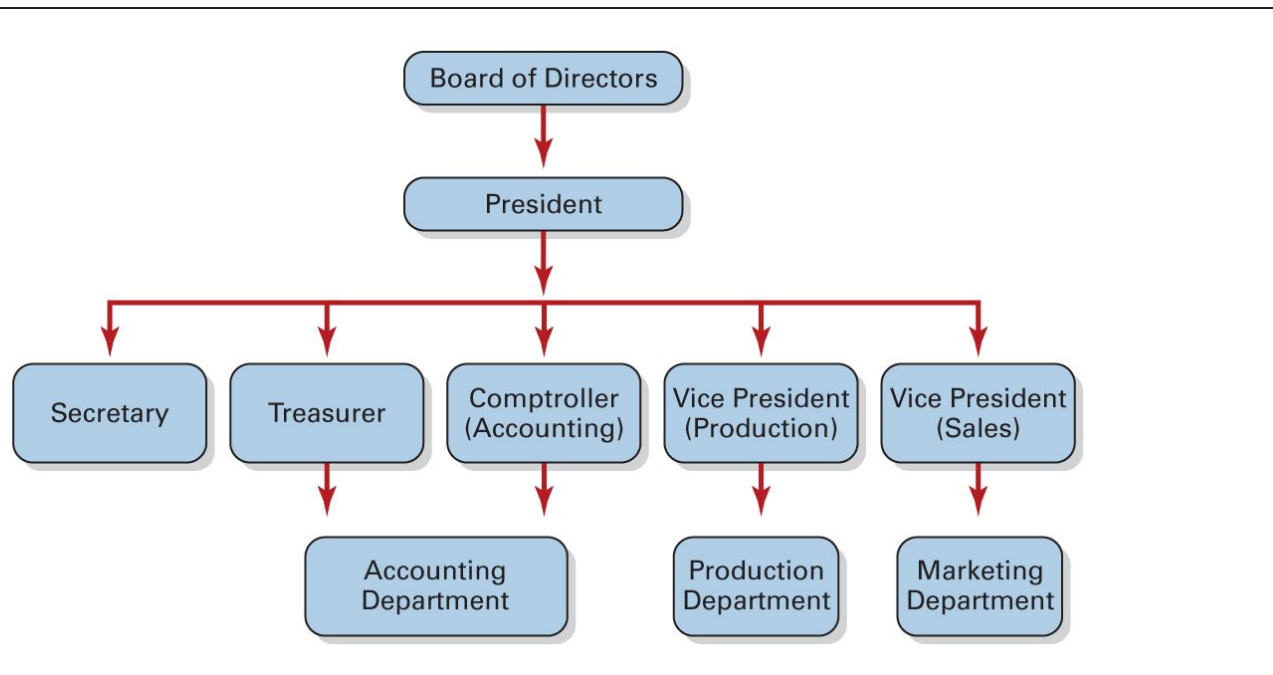
Types of Visuals: Organizational Chart

The primary benefit of communicating with an organizational chart is that it provides a clear visual representation of a company's structure, making it easy for employees to understand who to contact for specific issues, identify reporting lines, and navigate communication channels within the organization, ultimately improving overall clarity and efficiency in communication.

Types of Visuals: Organizational Chart

Upper box represents the top of the hierarchy

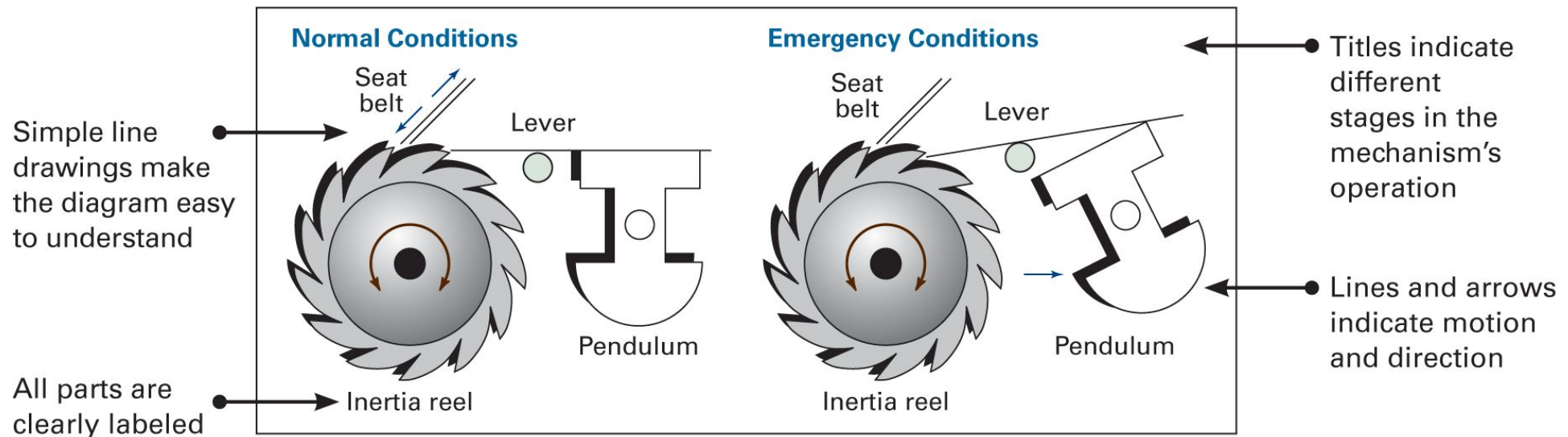
Arrows show top-down relationships



Types of Visuals: Graphic Illustration

Illustrations can range from simple drawings to diagrams, photographs, maps, icons and symbols, infographics, or any other visual that relies mainly on pictures rather than on data or words. For example, the diagram of a safety-belt locking mechanism (shown on the next slide) accomplishes what the verbal text alone cannot: It portrays the mechanism in operation.

Types of Visuals: Graphic Illustration

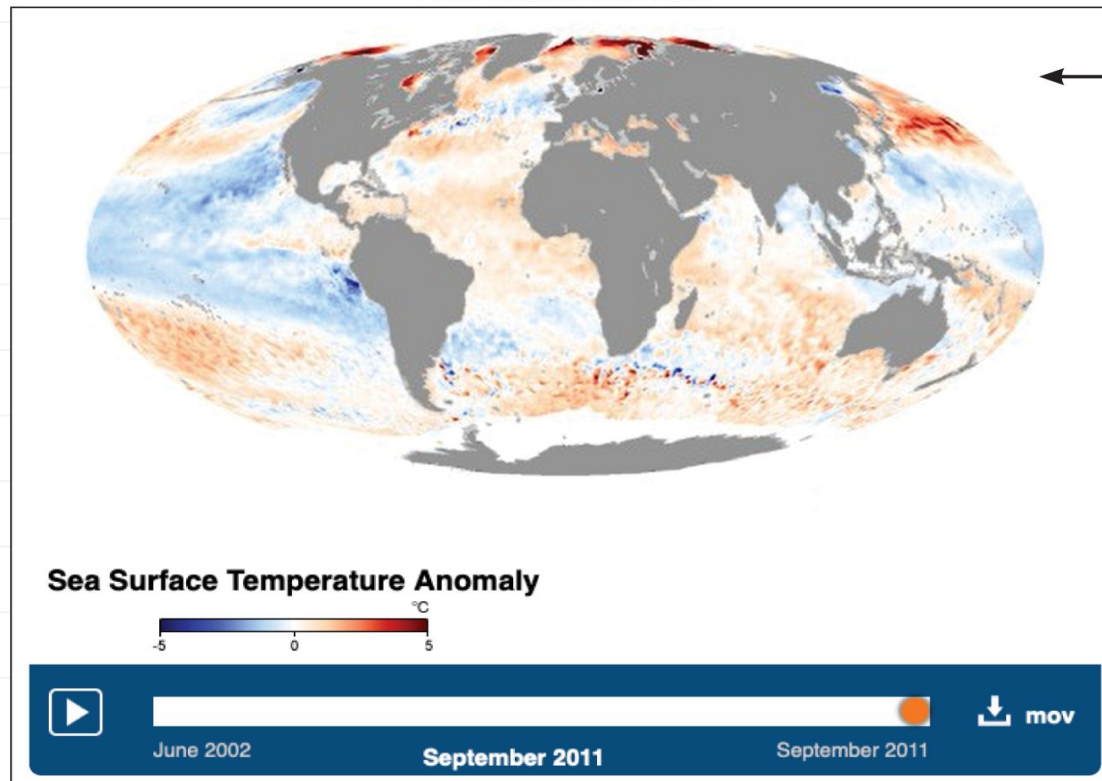


Types of Visuals: Using Color

Color often makes a presentation more interesting, focusing viewers' attention and helping them identify various elements. Color can also make complex data and relationships easier to understand. The example on the next slide uses color to highlight temperature anomalies in the Earth's global sea surface. Because this map is an online interactive visual, readers can drag the slider bar to see differences over a select time range.

Types of Visuals: Using Color

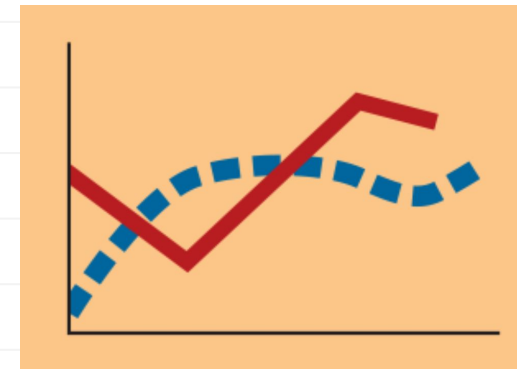
Time Series: 2002-2011



Color and shading help readers see changes over time

Audience

- Not all audiences are the same. Consider the following:
 - What information does my audience need?
 - Why do they need the information?
 - Is a visual the best way to present my information?
 - Creator-centered
 - Is a visual the best way for my audience to understand the information?
 - User-centered



Audience

- Focus on user-centered solutions
- Consider creating a persona to identify your audience's needs
- A persona identifies the audience's:
 - Demographics
 - Behaviors
 - Goals
 - Needs
 - Pain points



Lucas Mellor

AGE: 31
OCCUPATION: Content Manager
STATUS: Single
LOCATION: London, UK
TIER: Early Adopter
ARCHETYPE: The Creator

Practical | Adaptable
Spontaneous | Active

MOTIVATIONS

CONVENIENCE: ██████████
WELLNESS: ██████████
SPEED: ██████████
PREFERENCES: ██████████
COMFORT: ██████████
DIETARY NEEDS: ██████████

PERSONALITY

INTROVERT ██████████ EXTROVERT
INTUITION ██████████ SENSING
FEELING ██████████ THINKING
PERCEIVING ██████████ JUDGING

BEHAVIOUR & HABITS

- Lucas usually had meals out before the lockdown, as he wasn't very keen on cooking. He relied on ready meals and takeaways.
- He is technology savvy and has ordered all his meals exclusively online in the comfort of his home.
- During the lockdown, he began taking part in online HIIT exercise sessions and started to implement changes to enjoy a healthier lifestyle.
- Lucas works from home during the lockdown and finds it hard to balance work and his newfound healthy lifestyle.
- While purchasing meals online, he always looks to select the healthiest options.
- He orders a takeaway about 3 to 4 times a week.

GOALS & NEEDS

- To enjoy a healthy diet and lifestyle during the lockdown.
- To have all the information, he needs to select a healthy takeaway meal.
- To select takeaways based on his dietary needs.
- To have the convenience of takeaways swiftly delivered.

FRUSTRATIONS

- Wasting time scrolling menu items because of a lack of images or descriptions.
- Can't find a category for healthy meals on the cuisine section.
- Don't know the contents of the meals ordered for takeaway.
- Restaurants offering pre-order delivery only aren't marked as such on the homepage.
- Restaurant menus are confusing, I'm not sure if it's the contents page or menu items?

"I want to spend less time ordering a healthy takeaway and more time enjoying my meal."

Principles of Design (C.R.A.P)

- **Contrast:** Size, color, font, shapes, emphasis
- **Repetition:** Create a sense of identity and unity. Eg. headings, colors, borders etc.
- **Alignment:** Creates structure and balance of a document.
- **Proximity:** Organize content by bringing ideas, images and illustrations that are related together.



Contrast

- Place emphasis on key elements, i.e hierarchy.
- Lead the viewers eyes to the most important information.
- Make designs visually appealing and simplifies navigation.

Resource: Coolors.com



SIZE CONTRAST

Add variation on scale of graphic elements, being the bigger ones the most important.



COLOR CONTRAST

Use complementary color combinations to drive attention to the focal point which will be the brighter color.



SHAPE CONTRAST

When you have a repetition of the same shape in your design layout use a different shape to focus the attention there.



TYPE CONTRAST



Pair two different fonts where the most notorious will contain the title and for body text use a font with good readability.

Repetition

- Breeds familiarity between your audience and your document/designs.
- Smart use of repetition also shows the reader how to interact with your document.
- Although simple, applying this to your designs can be tricky.



Diversity & Inclusion Terminology

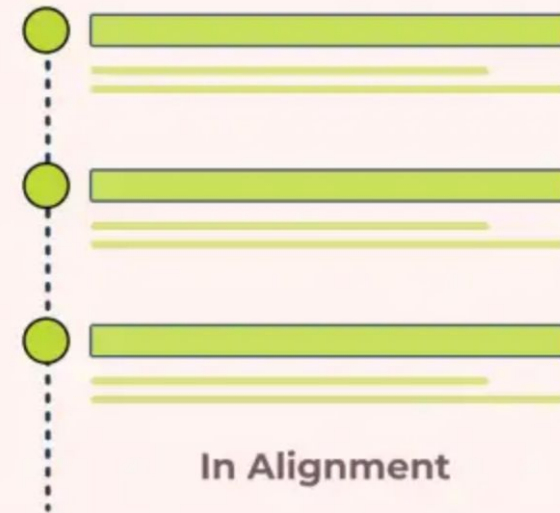
 Ally Noun: Advocates for people from underrepresented or marginalized groups. An ally takes action to support as an people outside of their own group.	 Emotional Tax Noun: The combination of being on guard to protect against bias, feeling different at work, and the associated effects on health, well-being, and ability to thrive.
 Equity Noun: Working toward fair outcomes for people or groups by treating them in ways that address their unique advantages or barriers.	 Equality Noun: Treating everyone the same way, often while assuming that everyone also starts out on equal footing or with the same opportunities.
 Intersectionality Noun: The intertwining of social identities (i.e. such as gender, race, ethnicity, religion, sexual orientation, etc) which can result in unique opportunities, experiences, and/or barriers.	 Unconscious Bias Noun: An implicit association, whether about people, places, and/or situations, which are often based on mistaken, inaccurate, stereotypical prejudice or incomplete information.

 DIVERSITY GROUP

For more information on diversity and inclusion, visit us at www.diversitygroup.org
Source: <https://www.catalyst.org/2019/05/30/12-diversity-inclusion-terms-you-need-to-know/>

Alignment

- A good alignment establishes the order and organization of various elements in the document.
- Pay attention to how text boxes, photos and others elements align with your margins.



Proximity

- **Principle of proximity:** Items close together are likely to be perceived as part of the same group — sharing similar functionality or traits.
- Bring related objects together
- Readers connect easily with related items grouped together.



HEALTH CONDITIONS THAT NEUROLOGISTS TREAT

There are many common and severe health conditions and diseases that neurologists treat. These are broadly categorized into three categories:



DISORDERS

In 2016, neurological disorders were the second leading cause of death globally. Neurologists treat disorders of the peripheral and central nervous system. The most common disorders include:

- Parkinson's Disease
- Brain Tumors
- Brain Trauma
- Tourette's Syndrome
- Amyotrophic Lateral Sclerosis
- Epilepsy
- Alzheimer's Disease
- Stroke
- Migraine
- Multiple Sclerosis



DISEASES

Neurologists treat diseases that attack the nervous system. These diseases include infections, such as fungi, bacteria and viruses. Neurologists also treat cancers in benign and/or malignant.



SYMPTOMS

Your primary care physician may refer you to a neurologist if you are experiencing one or more of the following symptoms:

- Headaches
- Chronic Pain
- Dizziness
- Numbness or Tingling
- Weakness
- Movement Problems
- Seizures / Consciousness
- Vision Problems
- Memory Problems
- Speech Difficulties



For more information, contact us at info@bda.com or call us at 325-643-4451

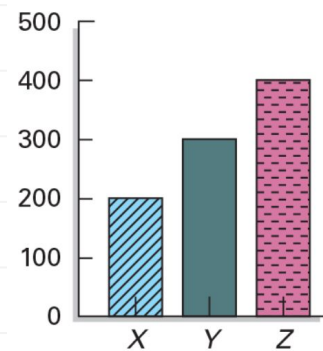
Information Clarity

The goal of visualizing data is to present complex information in simple, clear and concise manner.

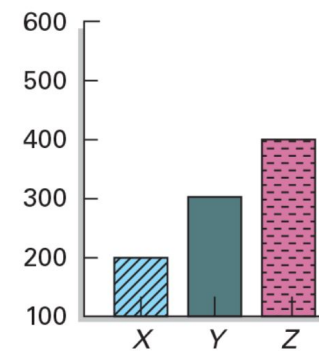
- Consider your **audience first**.
- Simplify data and only present essential information to avoid clutter
- **Use visual aids**: Present data using charts, graphs, and other visual aids.
- **Choose chart types wisely**: Use bar charts for comparisons, line charts for trends, and pie charts for percentages.
- **Consider accessibility**: Use colors that contrast and include descriptive text to make the content understandable for everyone.

Data Integrity

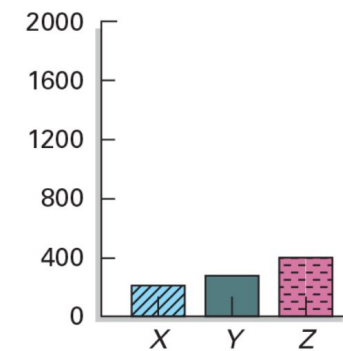
- Present your data accurately, even if the results don't match what you wanted
- Avoid distorting the data with overly complex visuals



A. Accurate (Visual relationships reflect numerical relationships.)



B. Overstated ("Z shows dramatic growth in relation to X.")



C. Understated ("X, Y, and Z show hardly any change.")

Data Integrity

- How do you avoid data misrepresentation?
 - Select the right visual type for your data
 - Wherever you use a visual, explain it in the text of the report
 - Ask a friend to interpret the visual and see if their analysis matches yours
 - Basically, can you data speak for itself accurately?
 - Label axes, use proper units, and provide a detailed title

Use the Right Tools for the Job

Key Factors to Consider When Choosing a Tool

- **Ease of Use:** How intuitive is the tool for beginners?
- **Data Source Compatibility:** Does it integrate well with your data sources (e.g., Excel, SQL databases)?
- **Interactivity:** Do you need static or interactive visualizations?
- **Customization:** How much control do you need over the appearance and functionality?
- **Collaboration:** Does it allow team collaboration or cloud sharing?
- **Cost:** Consider free vs. premium features and whether the tool fits within your budget.

Use the Right Tools for the Job

Beginner-Friendly Tools

These tools are great if you're new to data visualization and want something easy to use with minimal learning curve.

- **Canva**: A popular graphic design tool that offers pre-built templates for charts, infographics, and reports. Great for creating polished, visually appealing graphics.
- **Piktochart**: Specializes in creating infographics and reports with drag-and-drop functionality. It's user-friendly and doesn't require coding knowledge.
- **Venngage**: Focused on infographics, presentations, and reports. Ideal for non-designers looking to create professional visuals quickly.
- **Google Data Studio**: Free and easy to use for creating dynamic, interactive dashboards using data from Google Sheets, Analytics, and other sources.

Use the Right Tools for the Job

Intermediate Tools

- **Tableau**: Known for its ability to create interactive, high-quality visualizations. It can handle large datasets and integrates well with various data sources. Suitable for both beginners and advanced users.
- **Microsoft Power BI**: Great for creating interactive dashboards and reports. It's well integrated with Microsoft products, making it a popular choice for businesses using Excel and other MS tools.
- **Infogram**: Ideal for creating interactive charts, maps, and infographics. It's particularly useful if you want to embed visualizations into websites or presentations.
- **Chart.js**: A JavaScript-based library for creating interactive charts. Requires basic coding knowledge but is highly customizable.

Use the Right Tools for the Job

Tools for Creating Diagrams, Flowcharts, and Concept Maps

These are useful for non-data-specific visual content, such as planning, brainstorming, or explaining complex concepts.

- **Miro**: A collaborative whiteboard platform for mind mapping, wireframing, and diagramming.
- **Lucidchart**: A versatile tool for creating flowcharts, organizational charts, and network diagrams.
- **Coggle**: Focuses on mind maps and concept diagrams, great for brainstorming sessions.
- **Diagrams.net (formerly Draw.io)**: Free and open-source tool for creating flowcharts, diagrams, and concept maps.

***Looking for more specific
help? Schedule an
appointment at the Writing
Center
(Walker 107):***

www.mtu.mywconline.com



Thank you!

Do you have any questions?

Stay tuned for
more soft skills
events from GSG!



***Koalas are
even more
lazy than
cats.***

Koalas don't have much energy and, when not feasting on leaves, they spend their time dozing in the branches. Believe it or not, they can sleep for up to 18 hours a day!

Did you know?

Did you know that dogs can smell your feelings?

Dogs can pick up on subtle changes in your scent, which can help him figure out how you are feeling, such as by smelling your perspiration when you become nervous or fearful.

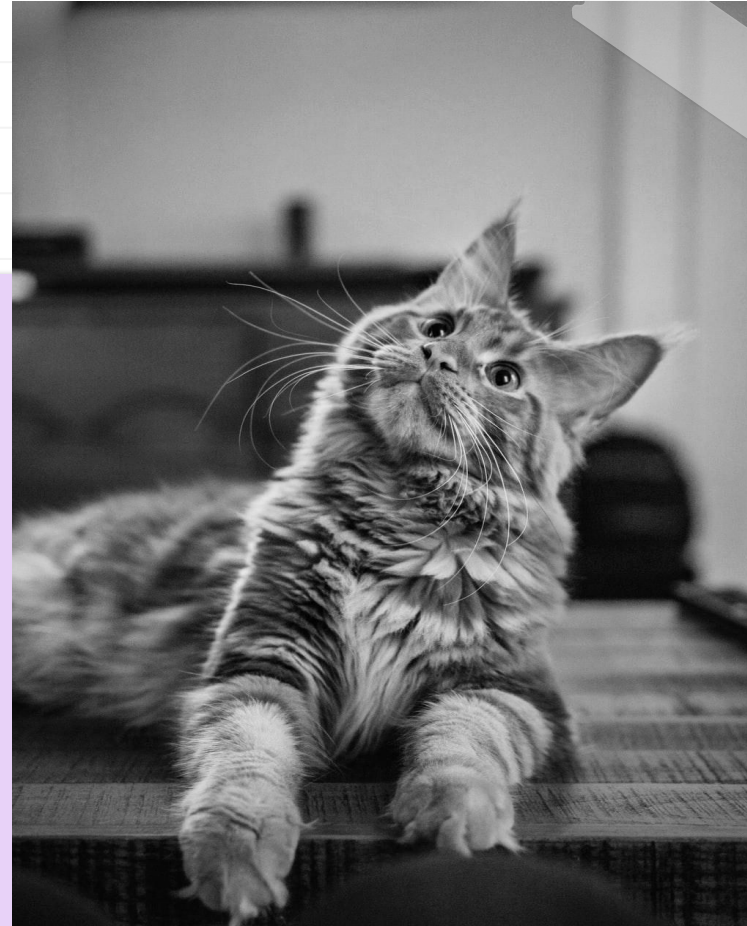
Did you know that a cat uses its whiskers as feelers to determine if a space is too small to squeeze through?

Also, cats love to sleep. A fifteen-year-old cat has probably spent ten years of its life sleeping.

Cats love to sleep.

A fifteen-year-old cat has probably spent ten years of its life sleeping.

Also, cats use their whiskers as feelers to determine if a space is too small to squeeze through.



Add your title here.

01

Something One

Lorem ipsum dolor sit amet, consectetur adipiscing elit.

02

Something Two

Lorem ipsum dolor sit amet, consectetur adipiscing elit.

03

Something Three

Lorem ipsum dolor sit amet, consectetur adipiscing elit.

04

Something Four

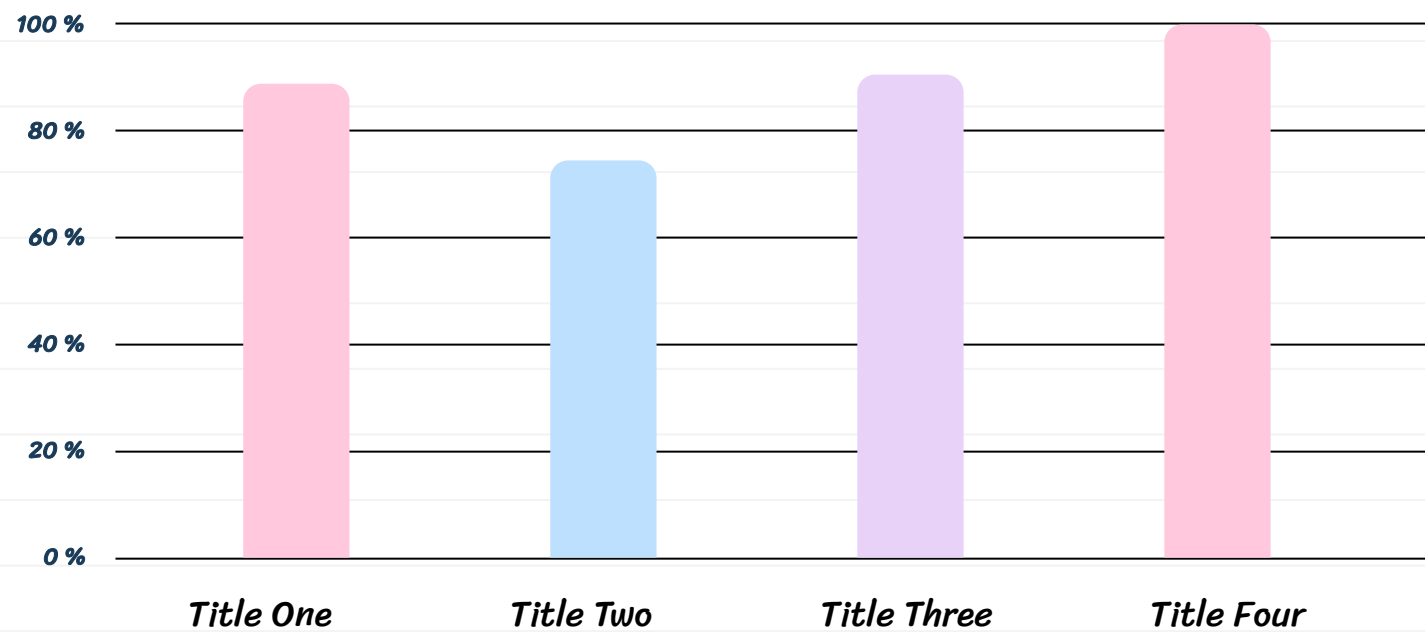
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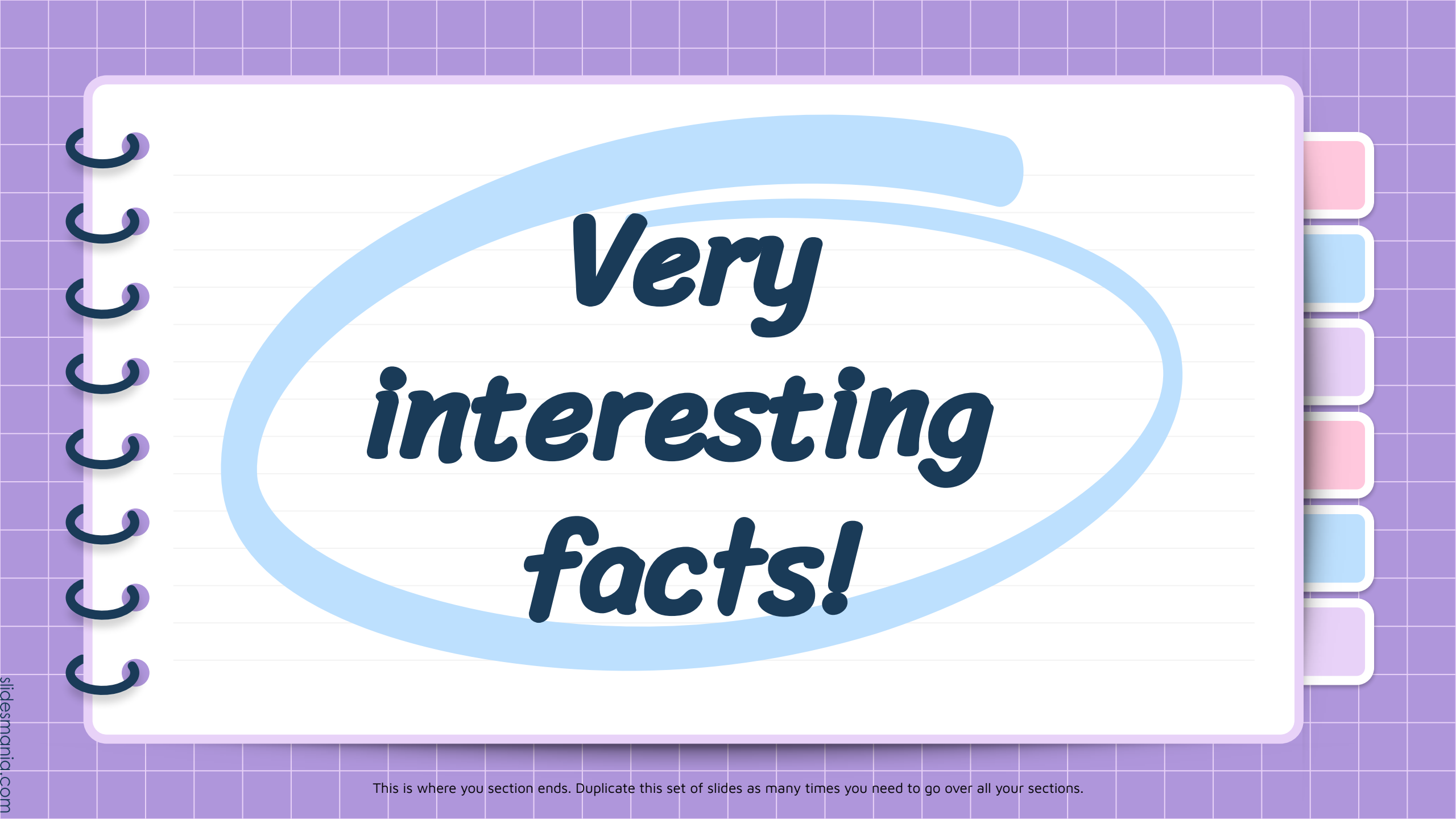


2,543,456

Add your text here.

Chart title.





***Very
interesting
facts!***

This is where you section ends. Duplicate this set of slides as many times you need to go over all your sections.



Dogs can smell feelings.

Add your title here.

***Something about
this.***

Far far away, behind
the word mountains,
far from the countries
Vokalia and
Consonantia, there live
the blind texts.

***Something about
that.***

Far far away, behind
the word mountains,
far from the countries
Vokalia and
Consonantia, there live
the blind texts.

***Something about
this.***

Far far away, behind
the word mountains,
far from the countries
Vokalia and
Consonantia, there live
the blind texts.

This is our team.



Erika V.

Lorem ipsum dolor sit
amet, consectetur
adipiscing elit.



John S.

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amet, consectetur
adipiscing elit.



Marie M.

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adipiscing elit.

This is a timeline.

2000

2005

2015

2019

2024

Subtitle One

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Subtitle Two

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Credits.

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Fonts used in this presentation: Maven Pro and ***Sriracha***.

Editable Icons.

