



MISTI Design System Guideline

The Design Guideline is a centralized resource that offers standardized components and branding rules to ensure usability, streamline development, and maintain consistency, while still allowing room for innovation.



Primary Button



MISTI Design System Guideline

Digital Transformation Unit

Publisher



ក្រសួងឧស្សាហកម្ម វិទ្យាសាស្ត្រ បច្ចេកវិទ្យា និងនវានុវត្តន៍
MINISTRY OF INDUSTRY, SCIENCE, TECHNOLOGY & INNOVATION


Foreword

The Ministry of Industry, Science, Technology & Innovation (MISTI) Design System Guideline marks an important milestone in the digital transformation efforts of the MISTI. This Guideline provides a clear and structured foundation for the design and development of digital platforms within MISTI, ensuring consistency, clarity, and a user-centered approach across all MISTI digital products.

As MISTI advances its digital transformation agenda, the need for a unified and coherent design system has become increasingly evident. Inconsistent visual standards, fragmented design practices, and duplicated efforts have limited efficiency and weakened the quality of public digital services. This Guideline addresses these challenges by establishing a common framework that aligns visual identity, design principles, and digital implementation under a single and consistent system for use across MISTI.

The Design System Guideline defines essential elements required for modern digital platforms, including logo usage, visual identity standards, color and typography systems, design components, layout principles, illustration and photography guidance, infographics, and digital application sample for websites and mobile applications. By providing clear and practical guidance, the Guideline enables digital teams within MISTI to work collaboratively and effectively, while ensuring that all digital outputs reflect institutional identity, professionalism, and public service values.

Developed through research, professional practice, and close collaboration across disciplines, this Guideline supports the creation of digital services that are accessible, inclusive, and adaptable to future technological developments. It strengthens internal coordination and enhances the ability of MISTI to deliver reliable and high-quality digital services.

I extend my sincere appreciation to all individuals and teams whose expertise and dedication made this Guideline possible. This Guideline shall serve as a trusted internal reference and a solid foundation for advancing digital excellence within MISTI, enabling the Ministry to deliver high quality digital services that support Government priorities and effectively serve the people. 

Phnom Penh,

2025

Minister



HEM Vanndy

Acknowledgements

The MISTI Design Guideline was developed to provide direction for establishing a consistent, accessible, and innovative design system across the Ministry of Industry, Science, Technology & Innovation (MISTI). Its completion would not have been possible without the invaluable contributions, dedication, and support of the team involved in this project.

We extend our sincere appreciation to H.E. Dr. TRY Sophal, Director General, whose leadership and guidance were instrumental in shaping the vision of this initiative, and to Mrs. SENG Molika, Deputy Director General, whose diligent management ensured the successful progress of the project from inception to completion.

Our gratitude is extended to Dr. CHEN Sovann, Director of Department, for his insightful oversight in defining the core principles of the Guideline, and to Mr. TEP Sovan, Deputy Director of Department, and Mr. THAN Sochetra, Chief Officer, for their expert contributions in developing and refining the document.

We acknowledge the significant role of Mr. EAP Seameorecsam, Deputy Chief Officer, and Mr. SRUN Khin, MISTI's Digital Transformation Unit (DTU) Staff, whose design expertise and meticulous attention to detail ensured clarity, consistency, and precision throughout the Guideline.

This document reflects the collective effort, creativity, and professionalism of all team members, whose dedication has made this Guideline a practical and valuable resource for MISTI.

Executive Summary

The MISTI Design System Guideline was developed to establish a unified and modern visual identity for the Ministry of Industry, Science, Technology & Innovation, ensuring consistency across all digital platforms. This framework standardizes design practices to improve user experience, streamline development, and accelerate product creation across all Ministry departments.

The Guideline responds to the growing need for standardization as the Ministry expands its digital presence and public communication. In the past, varied color applications, and non-uniform interface designs created confusion and increased production time. This document addresses these gaps by providing a centralized set of rules and assets that ensure all outputs reflect the Ministry's professional and strategic direction.

Key specifications outlined in the Guideline include logo construction, spacing, and responsive adaptation, alongside usage rules to maintain visual identity cohesion. A systematic color palette, including primary, accent, and semantic variations, supports visual hierarchy and accessibility. A structured typography system using Hanuman and Source Sans 3 ensures clarity in both Khmer and Latin scripts. The Guideline also provides a comprehensive library of UI components, including buttons, tables, icons, forms, and data visualization standards, enabling designers and developers to work from a common foundation. Layout grids, spacing systems, and mobile-web adaptation rules provide the technical structure necessary for consistency across all platforms.

To ensure effective adoption, the Guideline recommends that all design and development teams treat it as the single source for official identity and interface creation. Project teams should integrate the design system into workflows and tools to improve efficiency and reduce duplication. The Ministry should also maintain a periodic review cycle to update components, visual rules, and digital patterns in response to technological developments and evolving user needs.

In summary, the MISTI Design System Guideline provides a strategic foundation to enhance the Ministry's credibility, strengthen institutional identity, and support the development of user-centered digital services. Consistent application of these standards will improve operational efficiency, ensure cohesive brand experiences, and reinforce the Ministry's commitment to professional and accessible digital communication.

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List of Abbreviations

MISTI	: Ministry of Industry, Science, Technology & Innovation	XYZ	: CIE XYZ Color Space
UI	: User Interface	HWB	: Hue, Whiteness, Blackness
UX	: User Experience	sRGB	: Standard Red Green Blue
CTA	: Call To Action	PNG	: Portable Network Graphics
RGB	: Red, Green, Blue	SVG	: Scalable Vector Graphics
CMYK	: Cyan, Magenta, Yellow, Key	JPG/JPEG	: Joint Photographic Experts Group
HSL	: Hue, Saturation, Lightness	PDF	: Portable Document Format
LAB	: Lightness, A*, B*	PX	: Pixel
LUV	:Lightness, U*, V*	iOS	: iPhone Operating System

01

Introduction

1.1. Ministry of Industry, Science, Technology & Innovation

The Ministry of Industry, Science, Technology & Innovation (MISTI) fulfills its mission as a government agency responsible for guiding and managing the development and governance of industry, science, technology, and innovation, including the integration of economic and environmental aspects of the Kingdom of Cambodia. As a key institution shaping the future of industry and technology, maintaining a consistent and scalable digital presence is essential for effective communication and engagement.

To achieve this, we have developed the Ministry's Design Guideline, a structured and adaptable framework that ensures cohesion, accessibility, and efficiency across all digital platforms and applications. This design guideline defines the use of the basic visual element of MISTI, ensuring a unified user experience across websites, applications, and digital tools.

The Design Guideline serves as a central resource for designers, developers, and stakeholders, providing standardized components and guidelines that enhance usability, streamline development, and provides clear guidelines on branding. It balances consistency with flexibility, allowing for innovation while maintaining a recognizable identity.

This ensures that visual content is not only aesthetically appealing but also effective in communication. Additionally, it incorporates principles for website and mobile app design, reinforcing a coherent, digital experience for users.

1.2. The Key Elements at Glance

Through regular use and key design features, the design guidelines create a distinctive and recognizable look, as shown in **Fig.1.2.1**.

Modernised logo

Its unique and timelessly elegant logo makes the MISTI recognizable at the national and international level across all the digital platforms.

Color palette

The main color of MISTI is cyan/aqua. A Blaze Orange, Jackson Purple, Fun Green, Tussock and Golden Yellow are secondary colors, but they will be main colors on each sector of MISTI.

Typeface

The typefaces “Source San 3” and “Hanuman” are clear, flexible, and visually appealing. They are well-suited for MISTI that operate nationally and internationally.

Adaptive design

Adaptive design makes more usable by responding to device, user, and environmental contexts.

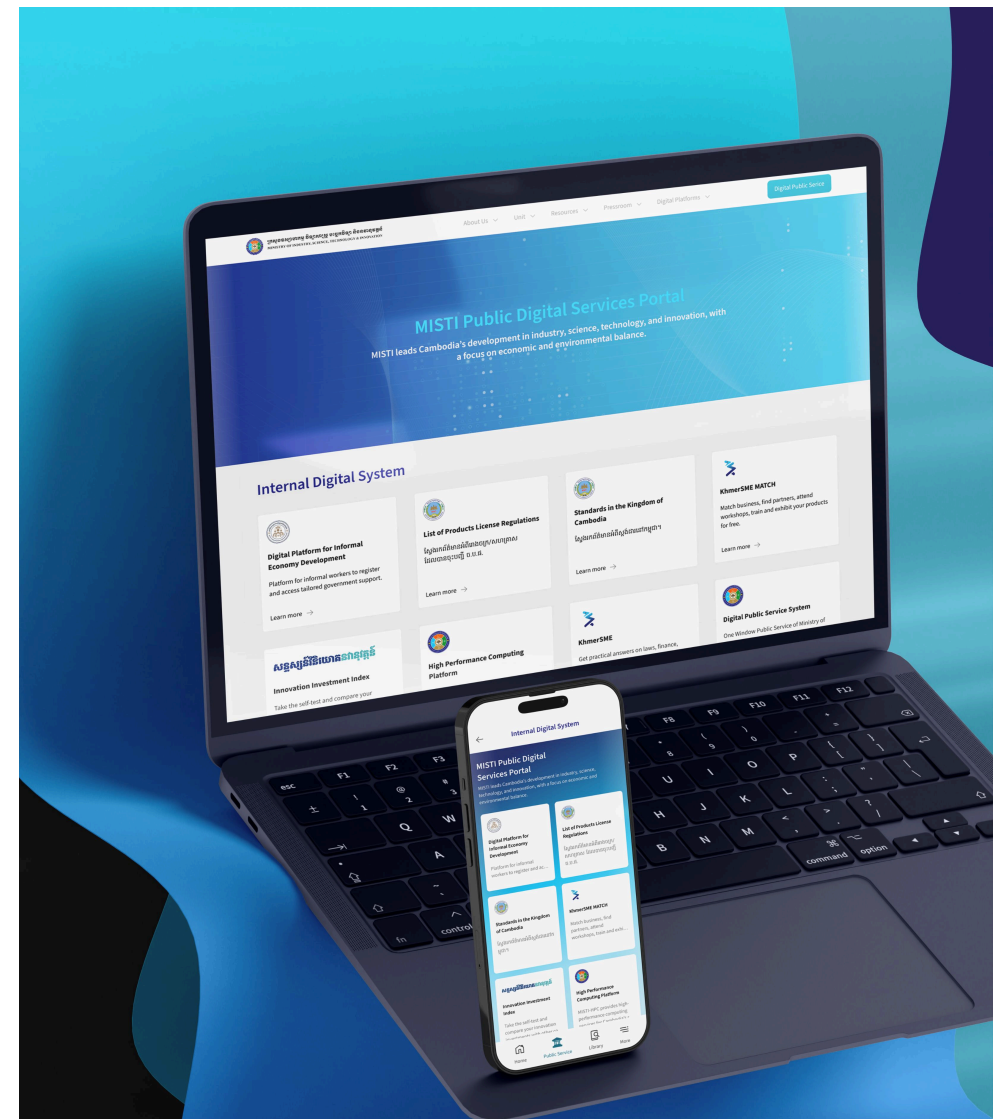


Fig.1.2.1 The Key Elements at Glance

02

Logo

2.1. Logo Usage

In the design guideline, the logo is one of the most important features used to represent the foundation across all communication media. In addition, the logo is a combination mark composed of graphic elements and a typographic element. The existed logo as had been formatted in two different fonts and weights of the corporate typefaces “Moul” and “Times New Roman”, emphasizing the key phrase: **“ក្រសួងឧស្សាហកម្ម វិទ្យាសាស្ត្រ បច្ចេកវិទ្យា និងនវានុវត្តន៍”** and **“MINISTRY OF INDUSTRY, SCIENCE, TECHNOLOGY & INNOVATION”**, as shown in *Fig.2.1.1 - Fig.2.1.3*.

In general, word/figurative marks are designed following the existing logo’s features, including proportions, colors, spacing, and fonts. The targeted and consistent use of these marks ensures the foundation remains easily recognizable across publications and communications.

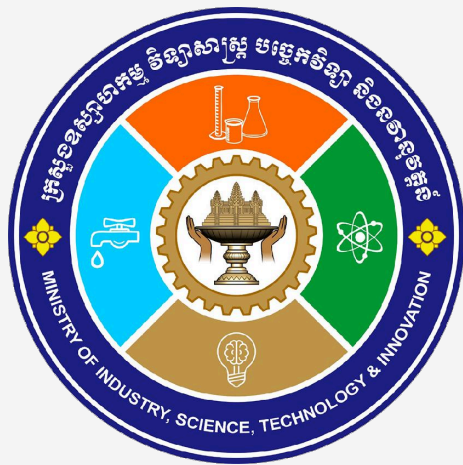


Fig.2.1.1 Primary Logo



ក្រសួងឧស្សាហកម្ម វិទ្យាសាស្ត្រ បច្ចេកវិទ្យា និងនវានុវត្តន៍
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Fig.2.1.2 Secondary Logo



ក្រសួងឧស្សាហកម្ម វិទ្យាសាស្ត្រ បច្ចេកវិទ្យា និងនវានុវត្តន៍
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Fig.2.1.3 Tertiary Logo

List Specification

Usage	Size (px)	Required file formats
Primary logo	200 x 200	PNG, SVG
Primary logo with padding	300 x 300	PNG, SVG
Secondary logo	1624 x 200	PNG, SVG
Secondary logo with padding	1724 x 300	PNG, SVG
Tertiary logo	600 x 286	PNG, SVG
Tertiary logo with padding	700 x 400	PNG, SVG

2.2. Component and Protection Zone

To ensure the logo maintains its visual impact and clarity, a minimum clear space must be maintained on all sides, as shown in **Fig.2.2.1 - Fig.2.2.3**. This clear space is equal to one-quarter ($\frac{1}{4}$) of the logo's total width. No other graphic elements, text, or logos should encroach upon this area.

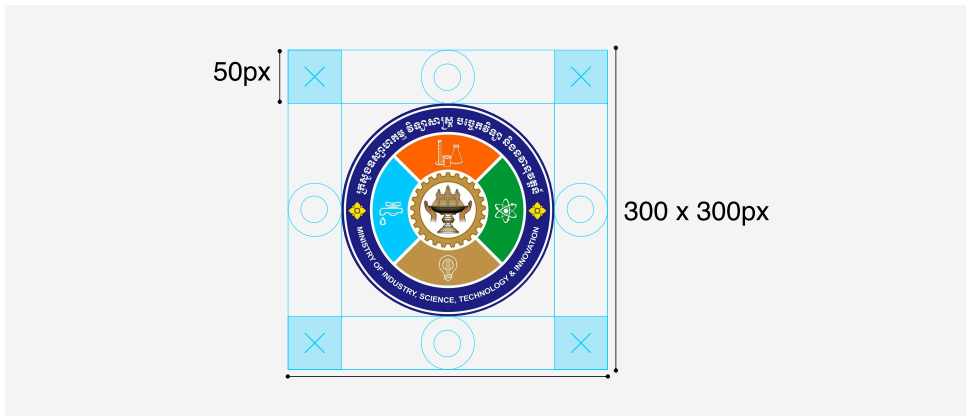


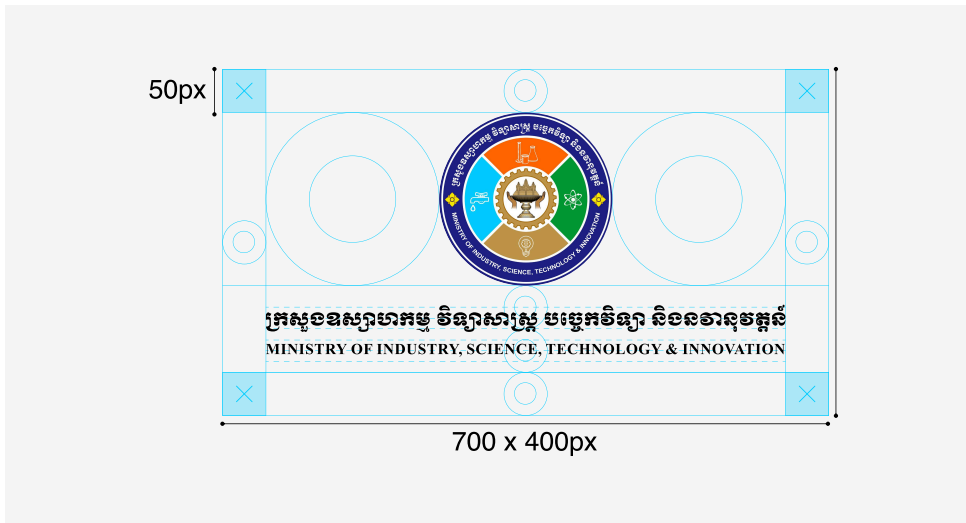
Fig.2.2.1 Primary Logo with Protection Zone

Total dimensions	300 x 300px
Logo dimensions	200 x 200px
Aspect ratio	1:1
Padding	50px
Color space	sRGB
File format	PNG, SVG



Fig.2.2.2 Secondary Logo with Protection Zone

Total dimensions	1724 x 300px
Logo dimensions	1624 x 200px
Aspect ratio	8.12:1
Padding	50px
Color space	sRGB
File format	PNG, SVG



Total dimensions	700 x 400px
Logo dimensions	600 x 286px
Aspect ratio	2.12:1
Padding	50px
Color space	sRGB
File format	PNG, SVG

Fig.2.2.3 Tertiary Logo with Protection Zone

2.3. Logo Variants

Color Logo

As illustrated in **Fig.2.3.1 - Fig.2.3.3**, MISTI logos should be placed on white or clean, bright backgrounds that offer sufficient contrast to preserve the logo's visibility and legibility. Backgrounds that reduce contrast or compromise the clarity of the logo colors must be avoided.



Fig.2.3.1 Primary Logo used on Light Background



Fig.2.3.2 Secondary Logo used on Light Background



Fig.2.3.3 Tertiary logo used on Light Background

White Wordmark Version

The MISTI logos may also be used on solid color areas or dark backgrounds. In these instances, a white wordmark version of the logo must be used to maintain optimal visibility and contrast. Examples are provided in **Fig.2.3.4 - Fig.2.3.6**.

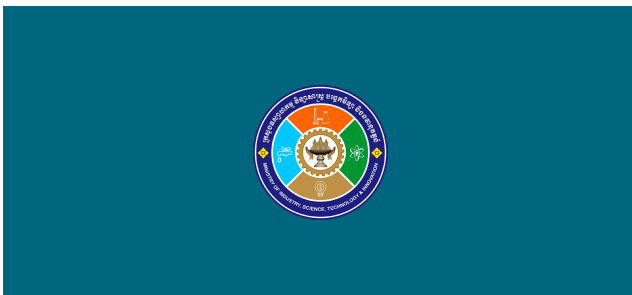


Fig.2.3.4 Primary Logo used on Color Area or Dark Background



Fig.2.3.5 Secondary Logo used on Color Area or Dark Background



Fig.2.3.6 Tertiary Logo used on Color Area or Dark Background

Black and White Logo

In exceptional cases where color printing is not technically feasible, a black and white version of the MISTI logos, as illustrated in **Fig.2.3.7 - Fig.2.3.9**, may be used. This version ensures brand recognition is maintained even under printing limitations.



Fig.2.3.7 Primary Logo in Black and White Version

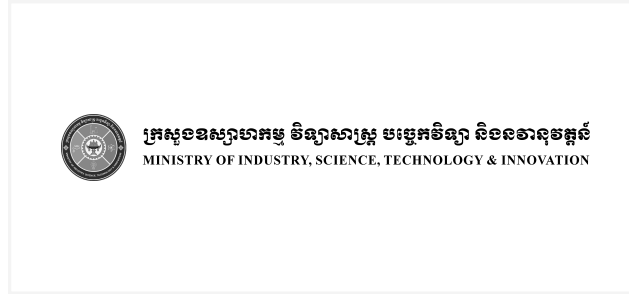


Fig.2.3.8 Primary Logo in Black and White Version



Fig.2.3.9 Primary Logo in Black and White Version

2.4. Responsive Logo (Proportions, Size and Placement)

A responsive logo is a flexible version of the identity that adapts in size and complexity to ensure legibility and recognition in limited spaces. The MISTI logo, which combines graphic elements with a wordmark, is detailed and may lose clarity when scaled down for smaller screens. In such cases, simplified or responsive versions of the logo may be used to maintain brand recognition and readability.

Social Media Profile

Circular and square versions of the MISTI logo have been developed specifically for use as profile pictures or thumbnails in digital platforms. These formats are optimized for social media applications such as Facebook, X (formerly Twitter), LinkedIn, TikTok, YouTube, and Instagram, ensuring consistent brand presence across various screen formats and aspect ratios. Example is provided in **Fig.2.4.1**.



Logo dimensions	400 x 400px, Square
Color space	sRGB
File format	PNG

Fig.2.4.1 Social Media Profile Example Mock Up

Social Media Logo Placements

In design collateral, the ideal placement for the circular logo is the top right corner, while the rectangular logo is best positioned in the top left. Alternative placements, as demonstrated in **Fig.2.4.2 - Fig.2.4.3**, may also be applied depending on the format and layout. These recommended positions help maintain consistency and legibility, particularly when logos are placed over images or graphics across various formats (portrait, landscape, square, etc.). A minimum margin of 50px must be maintained around the edges of the design to ensure clear spacing and visual balance.

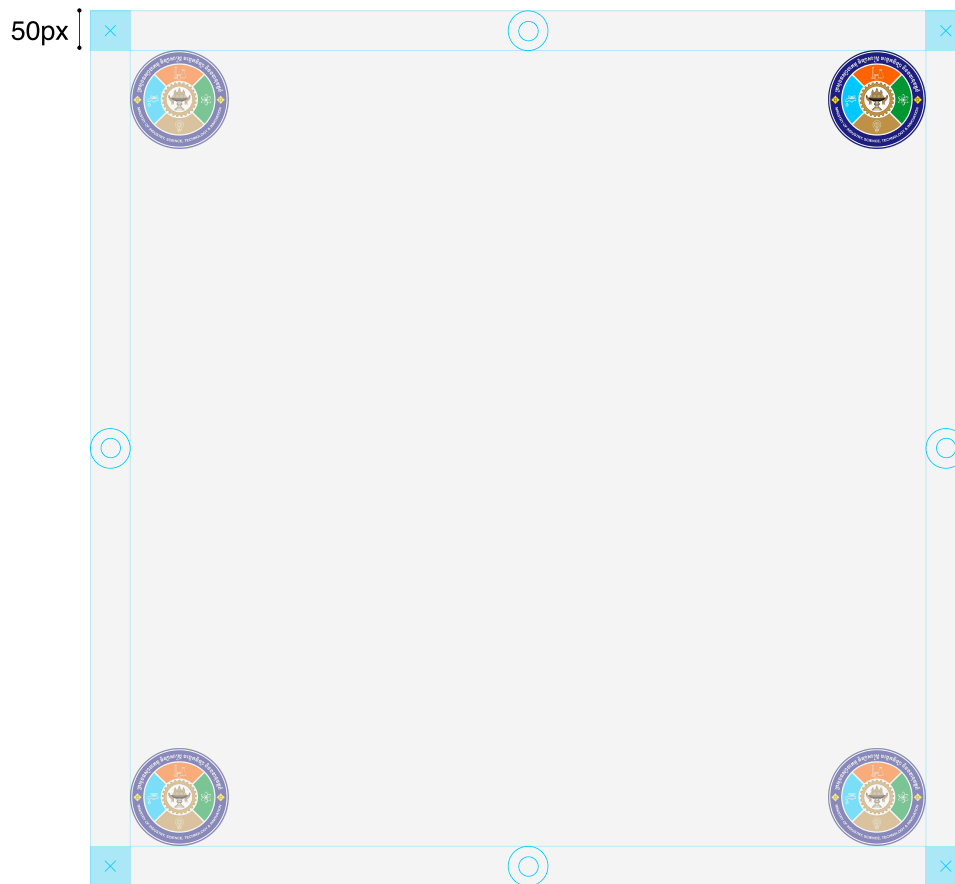


Fig.2.4.2 Example of Primary Logo Placement

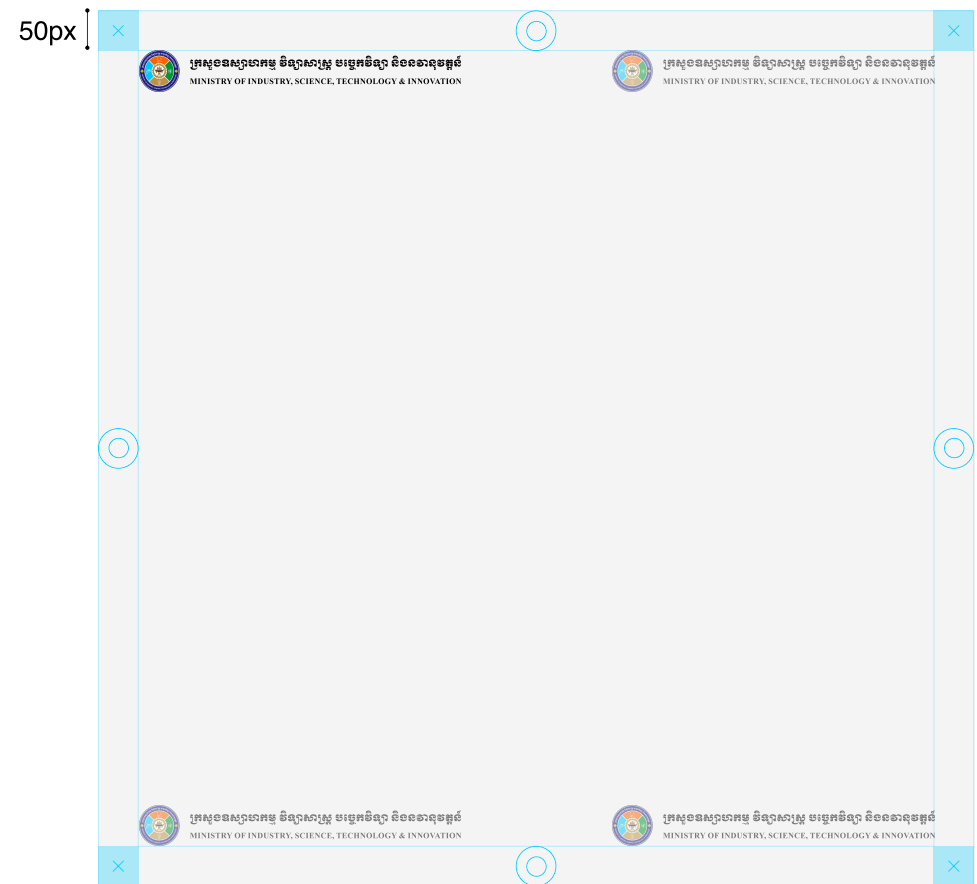


Fig.2.4.3 Example of Secondary Logo Placement

Primary Logo

Recommendation size	100px height, logo should never be smaller than 70 pixel
Color space	sRGB
Background	Transparent
File format	PNG, SVG

Secondary Logo

Recommendation size	50px height, logo should never be smaller than 40 pixel
Color space	sRGB
Background	Transparent
File format	PNG, SVG

Favicon

A favicon is a small icon associated with a website, typically displayed to the left of browser tabs, bookmarks, hyperlinks, and search results. It helps users quickly identify and recognize the website across various browsing contexts, as shown in **Fig.2.4.4**.

Recommendation size	16 x 16px, 32 x 32px, 48 x 48px
Color space	sRGB
Background	Transparent
File format	PNG, SVG

Logo Header

Left alignment is the most common and recommended placement for MISTI logos in headers, particularly for websites using left-to-right reading languages, as shown in **Fig.2.4.5**. This alignment supports natural visual flow and enhances brand recognition.

Recommendation size	250px, 350px, 400px, width
Color space	sRGB
Background	Transparent
File format	PNG, SVG

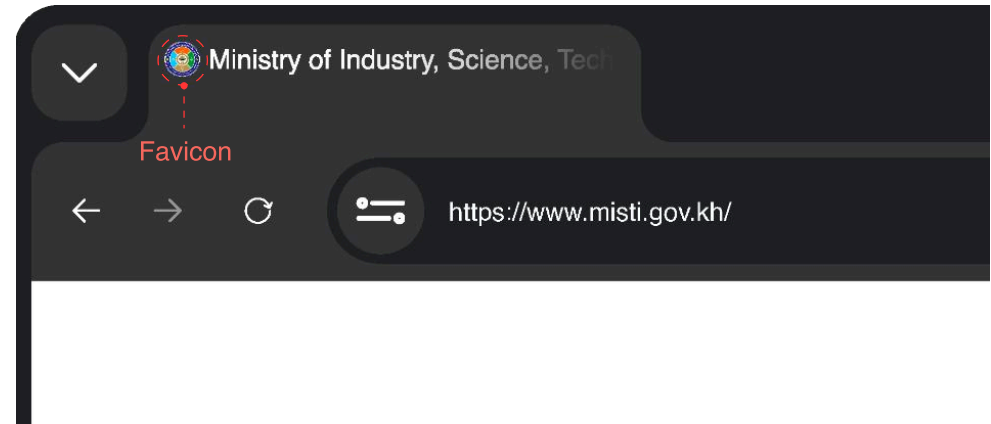


Fig.2.4.4 A Small Icon Displayed in the Browser Tab

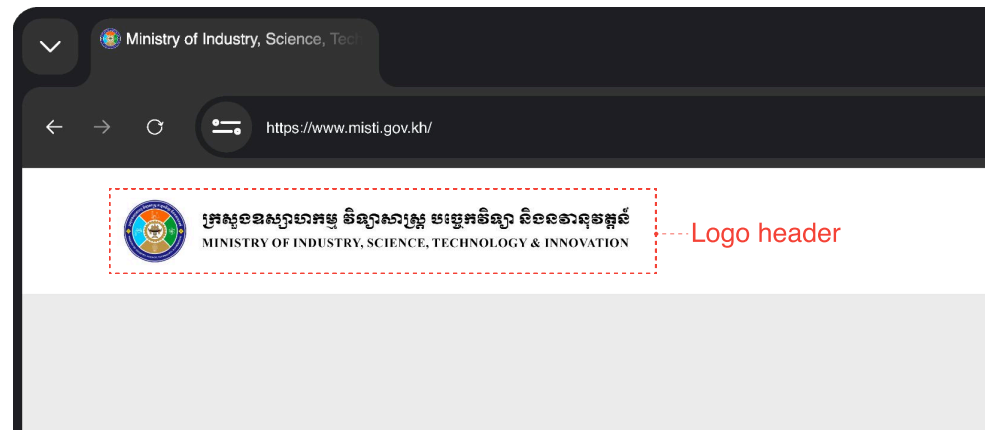


Fig.2.4.5 A Secondary Logo used in the Website Header

iOS App Icon

For the App Store, the MISTI icon must be provided at 1024 × 1024px, as illustrated in **Fig.2.4.6**. The system will automatically scale this master icon to generate all required app icon sizes.

Size	1024 x 1024px
Color space	sRGB
Background	Transparent
File format	PNG, SVG

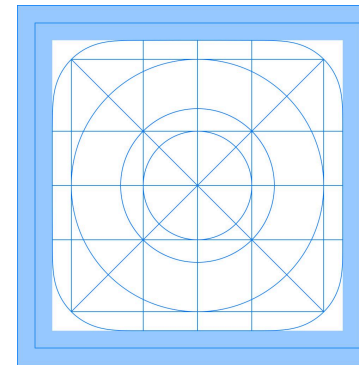


Fig.2.4.6 iOS Icon Keyline



1024px

1024px

Android App Icon

Apps and games on Google Play are adopting a new icon system, and the MISTI icon should be sized at 512 × 512px, as illustrated in **Fig.2.4.7**, to better fit Google Play's various UI layouts, form factors, and devices. This update also ensures consistency and a cleaner look across Google Play.

Size	512 x 512px
Color space	sRGB
Background	Transparent
File format	PNG, SVG

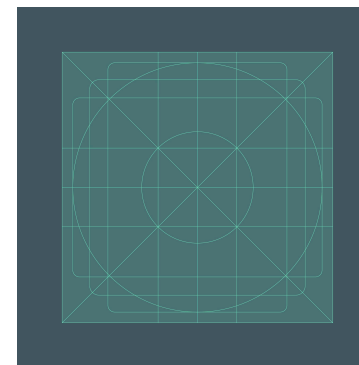


Fig.2.4.7 Android Icon Keyline



512px

512px

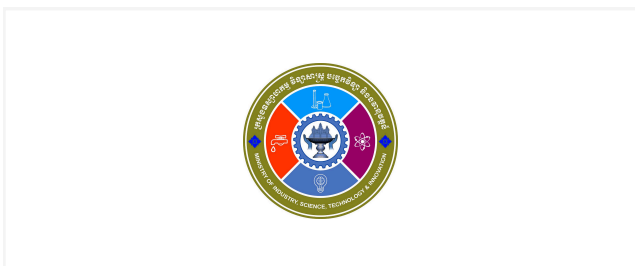
2.5. Use of the Logo - Don'ts



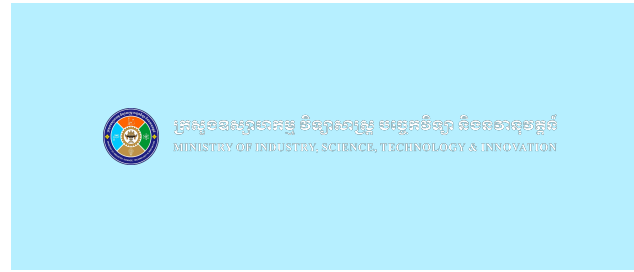
❌ Do not compress, stretch, or distort the MISTI logos, as preserving its original aspect ratio is essential to maintaining the brand's visual integrity.



❌ Do not apply effects such as shadows, gradients, glows, or filters to the MISTI logos. The logo must always appear in its original, unaltered form to ensure brand consistency.



❌ Don't change color on the logo or word mark.



❌ Don't use a background color that matches the logo or provide insufficient contrast.



❌ Don't place the logo in a shape or container.



❌ Don't change logo opacity.



❌ Don't Flip or Rotate the logo.



❌ Don't place the logo over busy background.

03


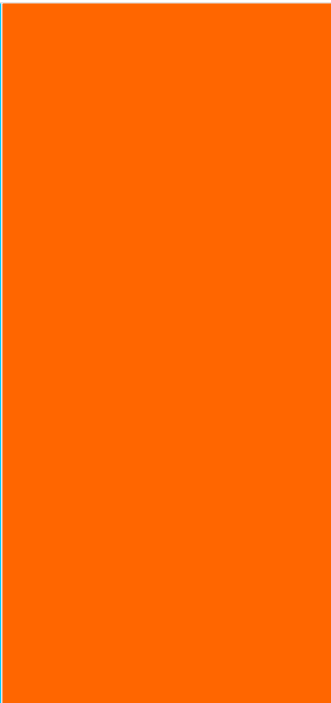
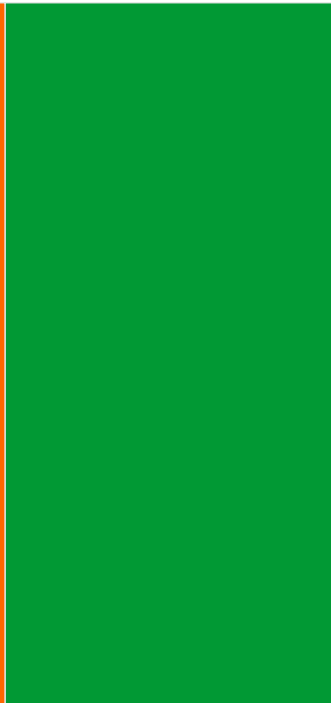

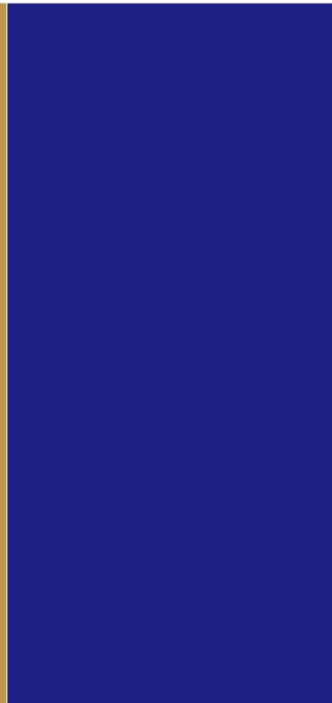
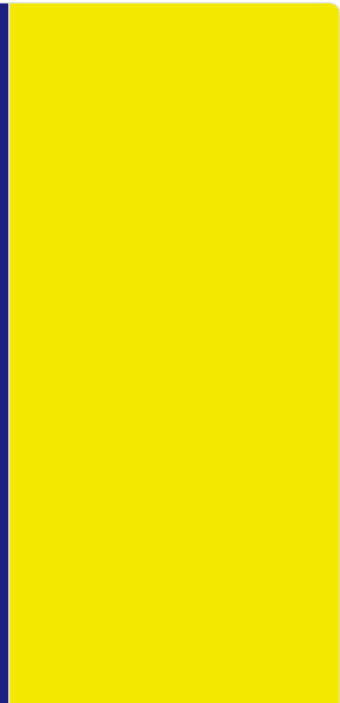
Design Principle

3.1. Color Palette

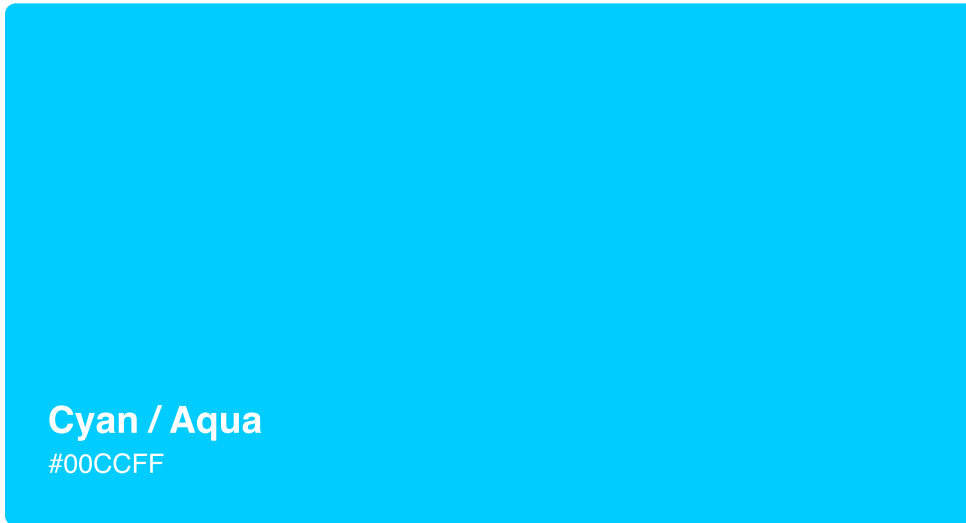
A color palette is a predefined set of colors used to ensure consistency, harmony, and visual coherence across a brand, product, or user interface. It enables designers and developers to create unified visuals and maintain brand integrity throughout all applications.

MISTI Color

The visual identity of the Ministry of Industry, Science, Technology & Innovation (MISTI) is distinctly characterized by its official color palette. These defined colors play a critical role in maintaining a consistent and recognizable brand image. Under no circumstances should they be altered or replaced.

					
Cyan / Aqua #00CCFF	Blazed Orange #FF6600	Fun Green #019934	Tussock #BF9549	Jacksons Purple #1E2084	Golden Yellow #F3E800

Primary Color



Conversion

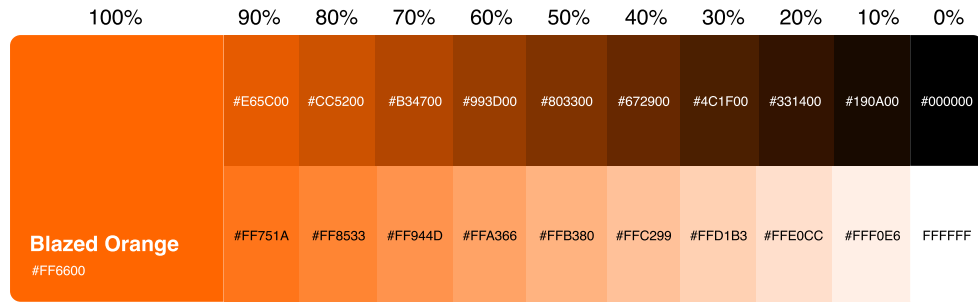
HEX #00CCFF	HSL 192, 100, 50
RGB 0, 204, 255	XYZ 40, 50, 102
CMYK 100, 20,0 ,0	LUV 76, -54, -56
LAB 76, -24, -37	HWB 192, 0, 0

Variations

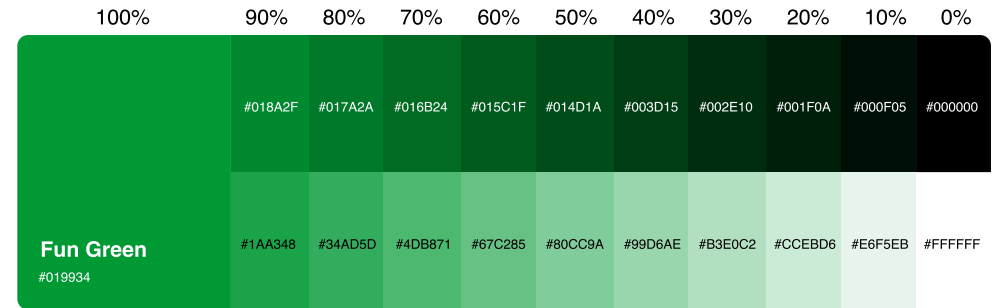
100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%
#00CCFF	#00B8E6	#00A3CC	#008FB3	#007A99	#006680	#005266	#003D4C	#002933	#001419	#000000
#00CCFF	#1AD1FF	#33D6FF	#4DDBFF	#66E0FF	#80E6FF	#99EBFF	#B3F0FF	#CCF5FF	#E6FAFF	#FFFFFF

Secondary Color

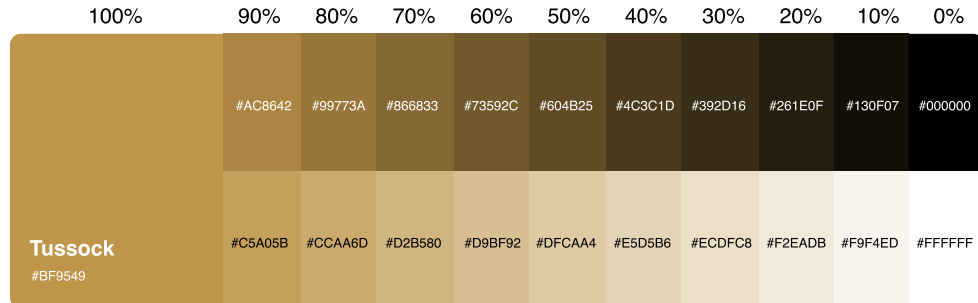
The primary MISTI color is complemented by four corporate accent colors—Blazed Orange, Fun Green, Tussock, and Tackson Purple—working together to create a cohesive and dynamic visual identity.



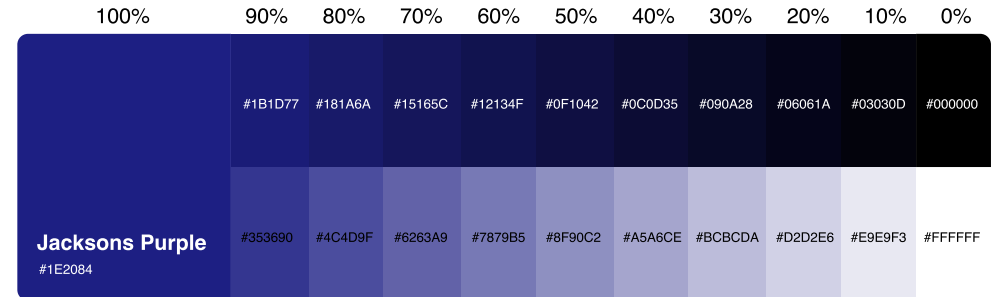
HEX #FF6600 CMYK 0, 60, 100, 0 HSL 24, 100, 50 LUV 62, 127, 54
 RGB 255, 102, 0 LAB 62, 55, 71 XYZ 46, 31, 4 HWB 24, 0, 0



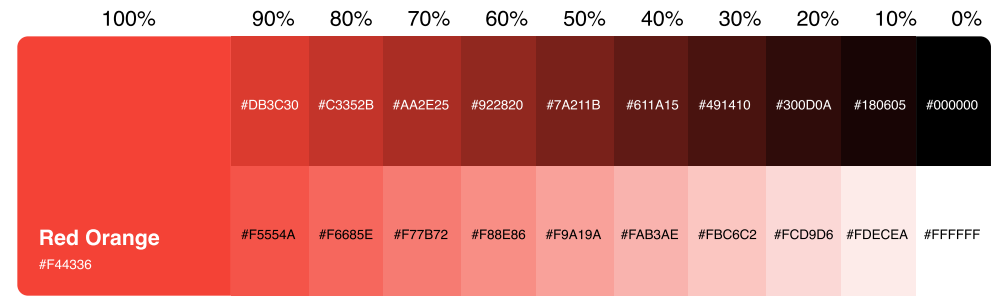
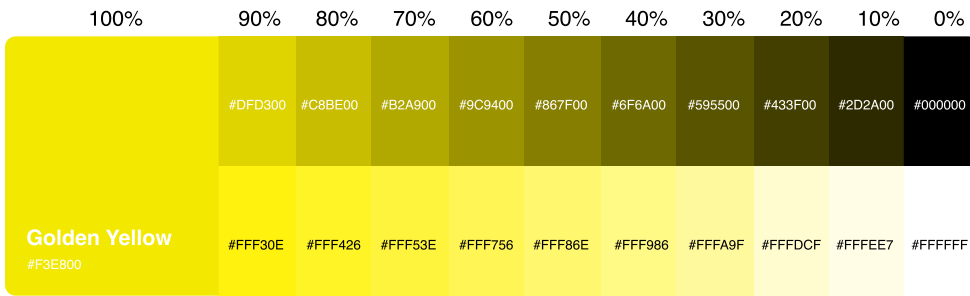
HEX #019934 CMYK 99, 0, 66, 40 HSL 140, 99, 30 LUV 55, -51, 57
 RGB 1, 153, 52 LAB 55, -56, 42 XYZ 12, 23, 7 HWB 140, 0, 40



HEX #BF9549 CMYK 0, 22, 62, 25 HSL 39, 48, 52 LUV 64, 34, 51
 RGB 191, 149, 73 LAB 64, 7, 45 XYZ 33, 33, 11 HWB 39, 29, 25



HEX #1E2084 CMYK 77, 76, 0, 48 HSL 239, 63, 32 LUV 20, -5, -62
 RGB 30, 32, 132 LAB 20, 35, -56 XYZ 5, 3, 22 HWB 239, 12, 48



HEX #F3E800 CMYK 0, 5, 100, 5 HSL 57, 100, 48 LUV 90, 14, 98
 RGB 243, 232, 0 LAB 90, -15, 89 XYZ 71, 85, 12 HWB 57,0 ,5

HEX #F44336 CMYK 0, 73, 78, 4 HSL 4, 90, 58 LUV 56, 139, 34
 RGB 244, 67, 54 LAB 55, 66, 47 XYZ 52, 40, 25 HWB 4, 21, 4

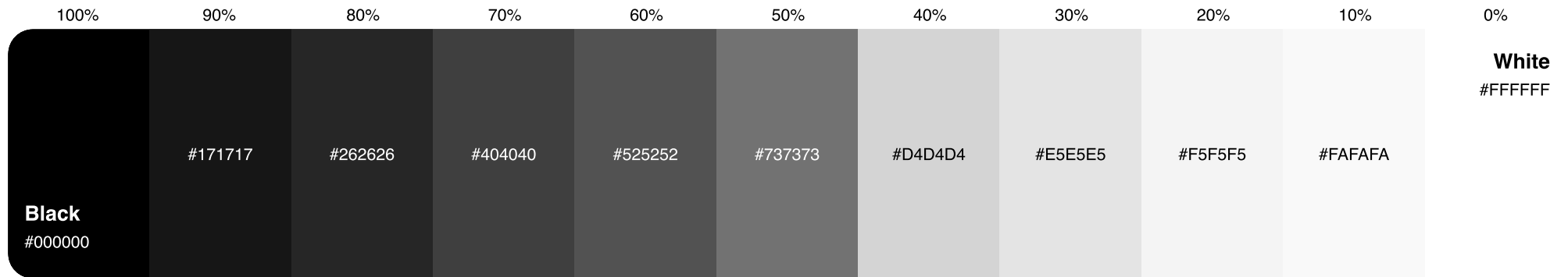
Color Wheel

A color wheel is a visual tool that displays the relationships between colors in a circular layout. To develop a customized color wheel for MISTI, the process begins with the primary corporate color and expands using established color harmony principles to create a balanced and effective palette.



Neutral Color

Neutral colors are used primarily for backgrounds, text, and shapes across MISTI's visual applications. While they typically do not carry specific meaning, they can be used to suggest functional states—such as disabled or inactive elements—within user interfaces.



Semantic Color

Semantic colors are used to convey specific meanings through visual cues. MISTI's semantic color system includes categories such as Informative, Success, Warning, and Danger. These colors should be applied consistently to ensure components communicate clearly and predictably.



Type Ramp - Hanuman

Hanuman is the Khmer typeface selected for MISTI's visual identity. Designed for clarity and legibility, it ensures accurate rendering of Khmer characters across digital and print media. Optimized for web use, Hanuman maintains consistency across browsers, devices, and screen sizes.

Usage	Weight	Size
ចំណងជើង ១	Regular	10px/13
ចំណងជើង ២	Bold	10px/13
ចំណងជើង ១	Regular	12px/16
ចំណងជើង ២	Bold	12px/16
ចំណងជើង ៣	Black	12px/16
កថាខណ្ឌ ១	Regular	14px/20
កថាខណ្ឌ ២	Bold	14px/20
កថាខណ្ឌ ៣	Black	14px/20
ចំណងជើងរង ១	Regular	16px/22
ចំណងជើងរង ២	Bold	16px/22
ចំណងជើងរង ១	Bold	20px/30
ចំណងជើង ១	Bold	24px/36

ចំណងជើង ២ **Bold** 28px/42

ចំណងជើង ៣ **Bold** 32px/48

ចំណងជើងធំ **Bold** 40px/60

បង្ហាញ **Bold** 68px/100

Type ramp - Source Sans 3

Source Sans 3 is the selected English typeface for MISTI's international communications. This modern humanist sans-serif font is optimized for both web and print, providing excellent readability and versatility across platforms and languages.

Usage	Weight	Size
Caption 1	Regular	10px/14
Caption 2	SemiBold	10px/14
Caption 1	Regular	12px/16
Caption 2	SemiBold	12px/16
Caption 3	Bold	12px/16
Body 1	Regular	14px/20
Body 2	SemiBold	14px/20
Body 3	Bold	14px/20
Subtitle 1	Regular	16px/22
Subtitle 2	SemiBold	16px/22
Subtitle 1	SemiBold	20px/26
Title 1	SemiBold	24px/32

Title 2 SemiBold 28px/36

Title 3 SemiBold 32px/40

Large Title SemiBold 40px/52

Display SemiBold 68px/92

3.3. Design Components

Accordion

The MISTI accordion organizes content with expandable headers, allowing users to reveal details on demand. Designed for clarity and ease of use, it includes clear indicators to ensure important information isn't overlooked while maintaining a clean, accessible layout. Example is provided in **Fig.3.3.1**. The size and spacing can be found in **Fig.3.3.2 - Fig.3.3.4**.

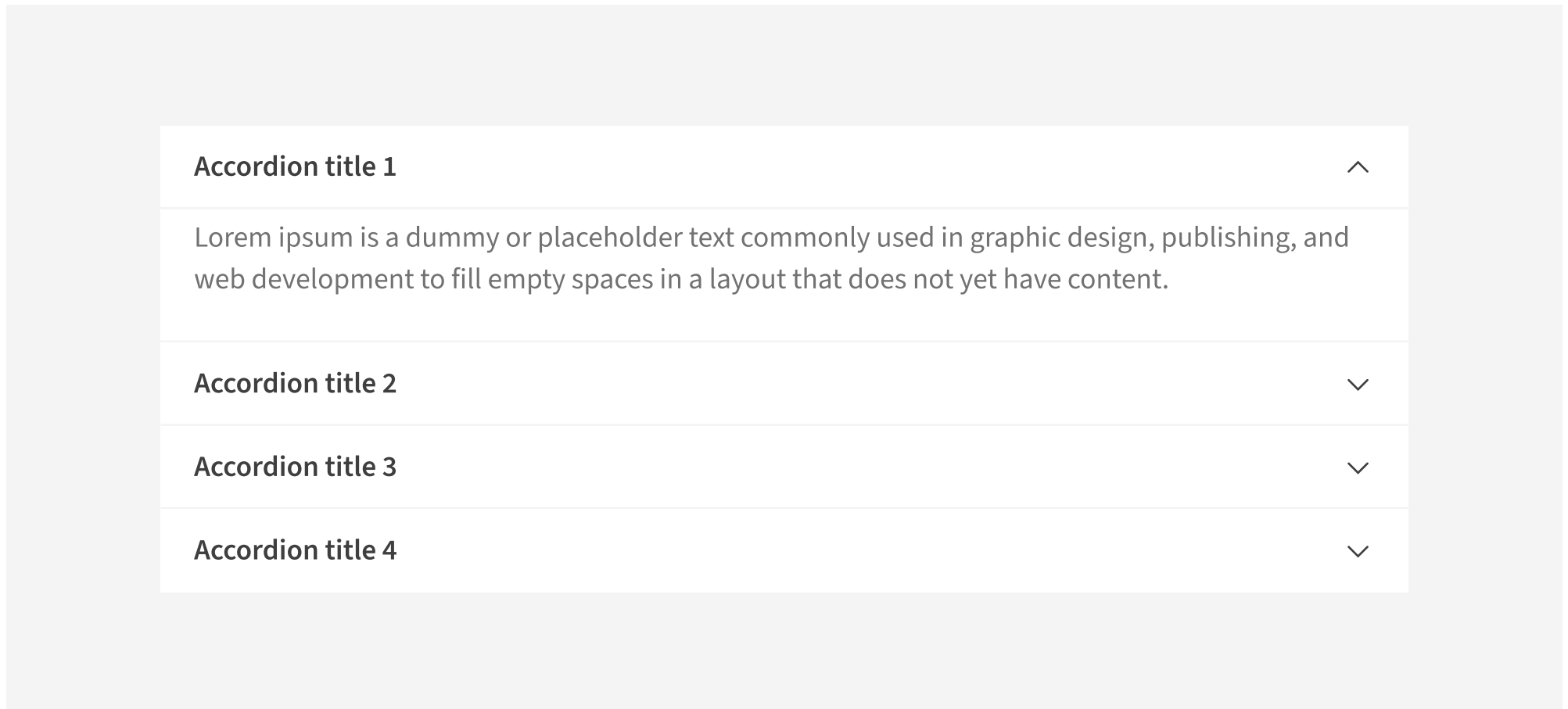


Fig.3.3.1 Accordion

Size and Spacing - Small

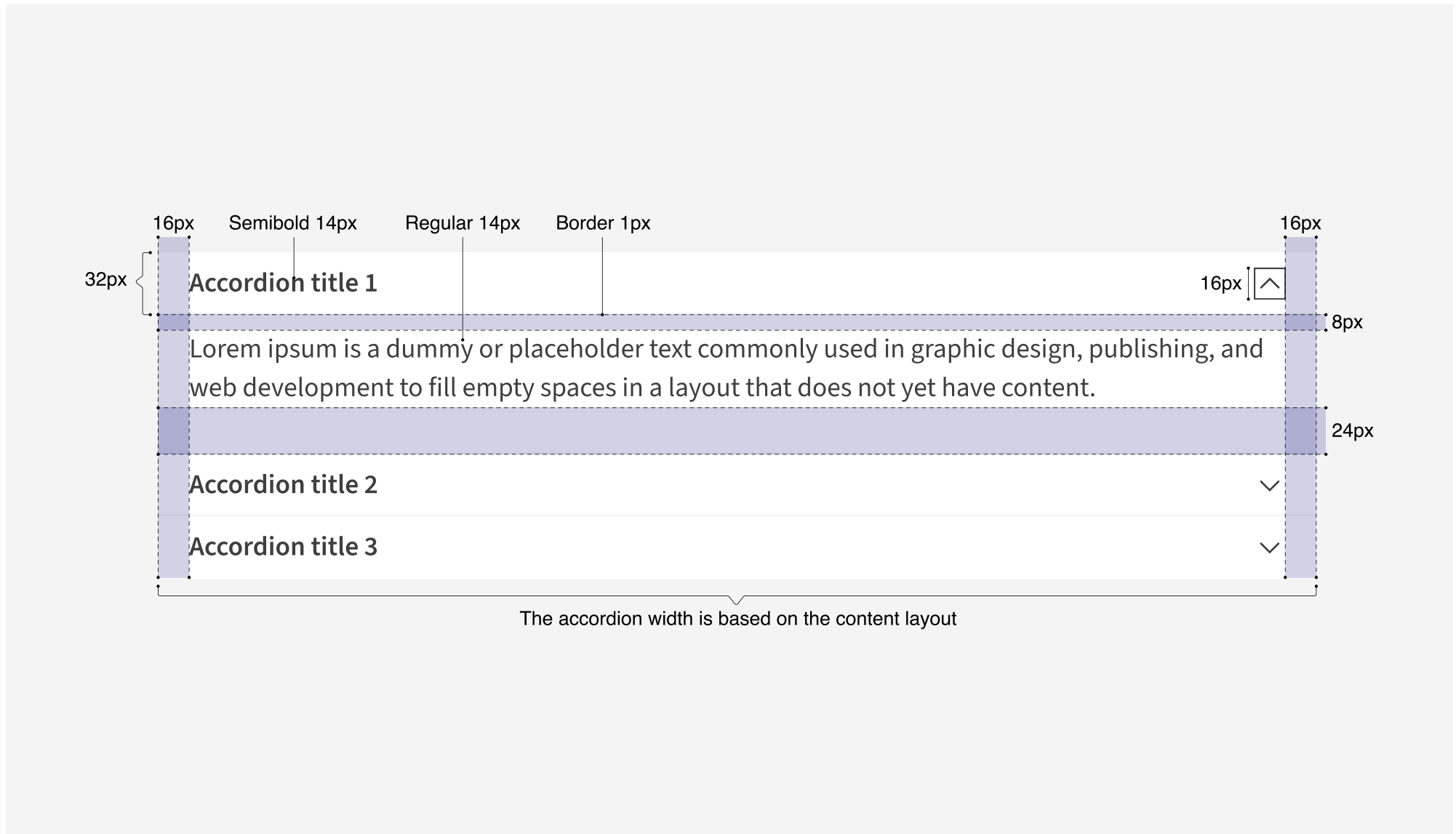


Fig.3.3.2 Accordion - Small Size

Size and Spacing - Medium

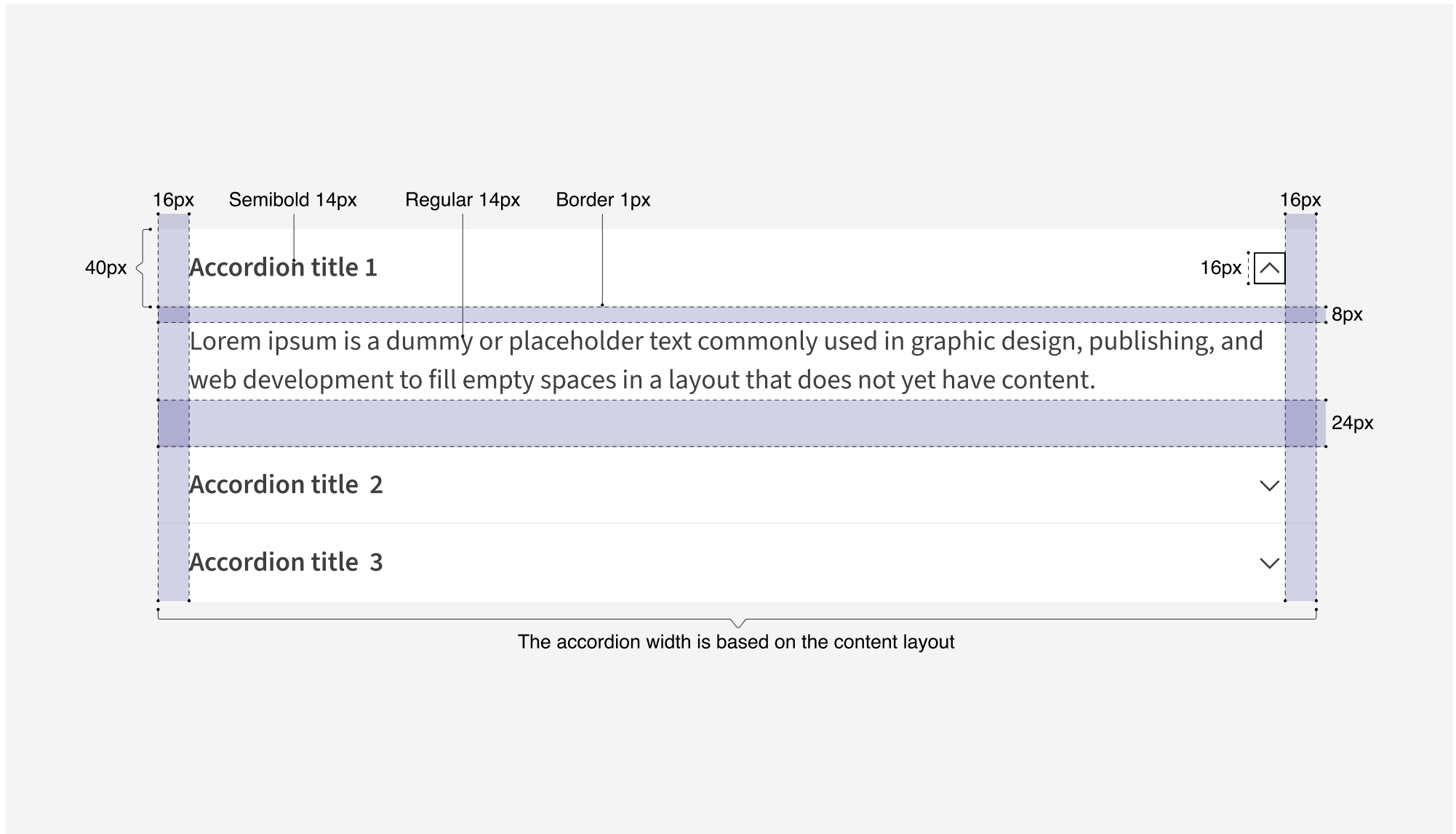


Fig.3.3.3 Accordion - Medium Size

Size and Spacing - Large

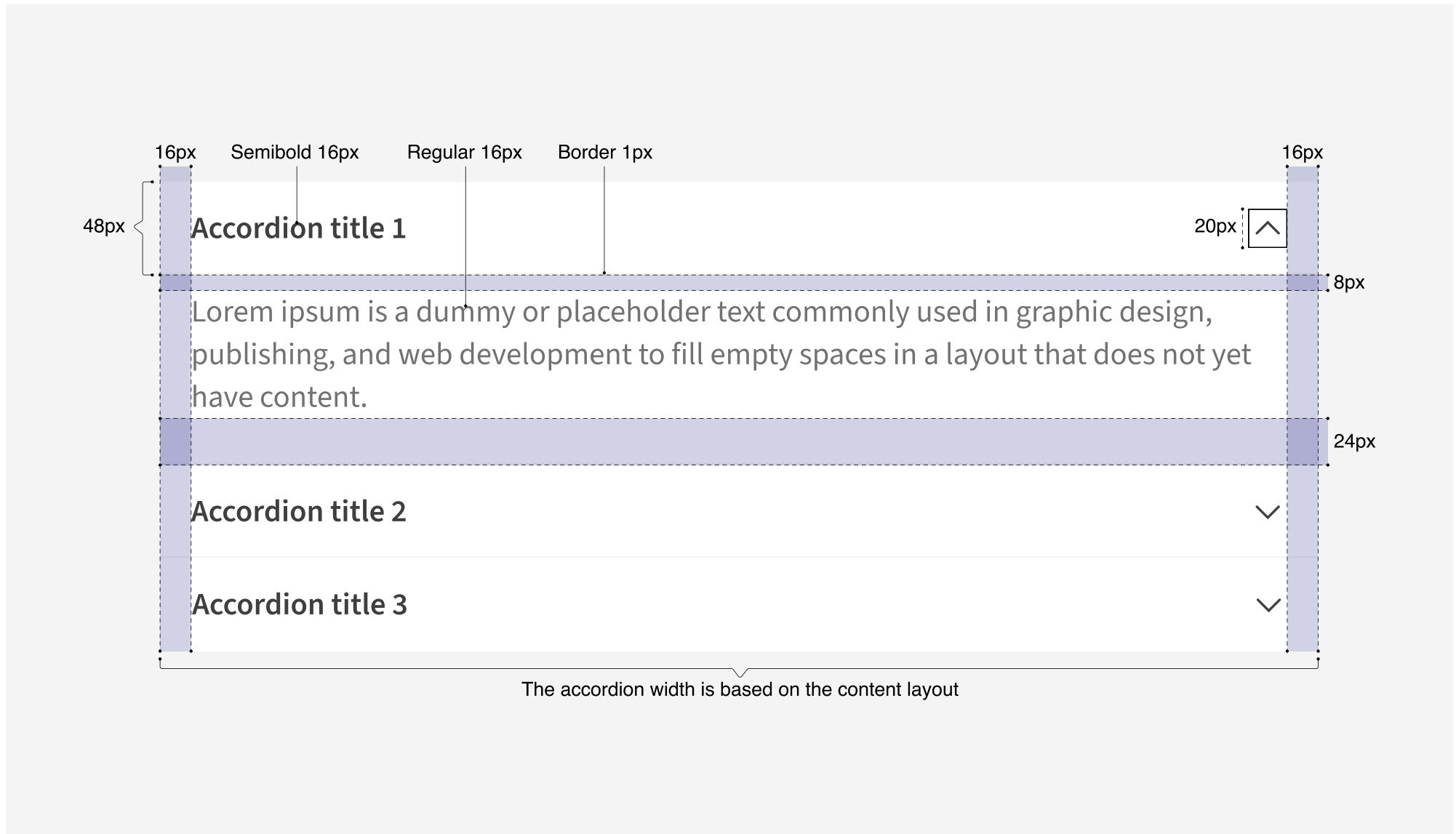


Fig.3.3.4 Accordion - Large Size

Accordion States

Accordion states define how an accordion behaves and appears in different interactions—hover, focus, expanded, and disabled—to provide clear feedback, ensure accessibility, and create a consistent user experience, as shown in **Fig.3.3.5**.

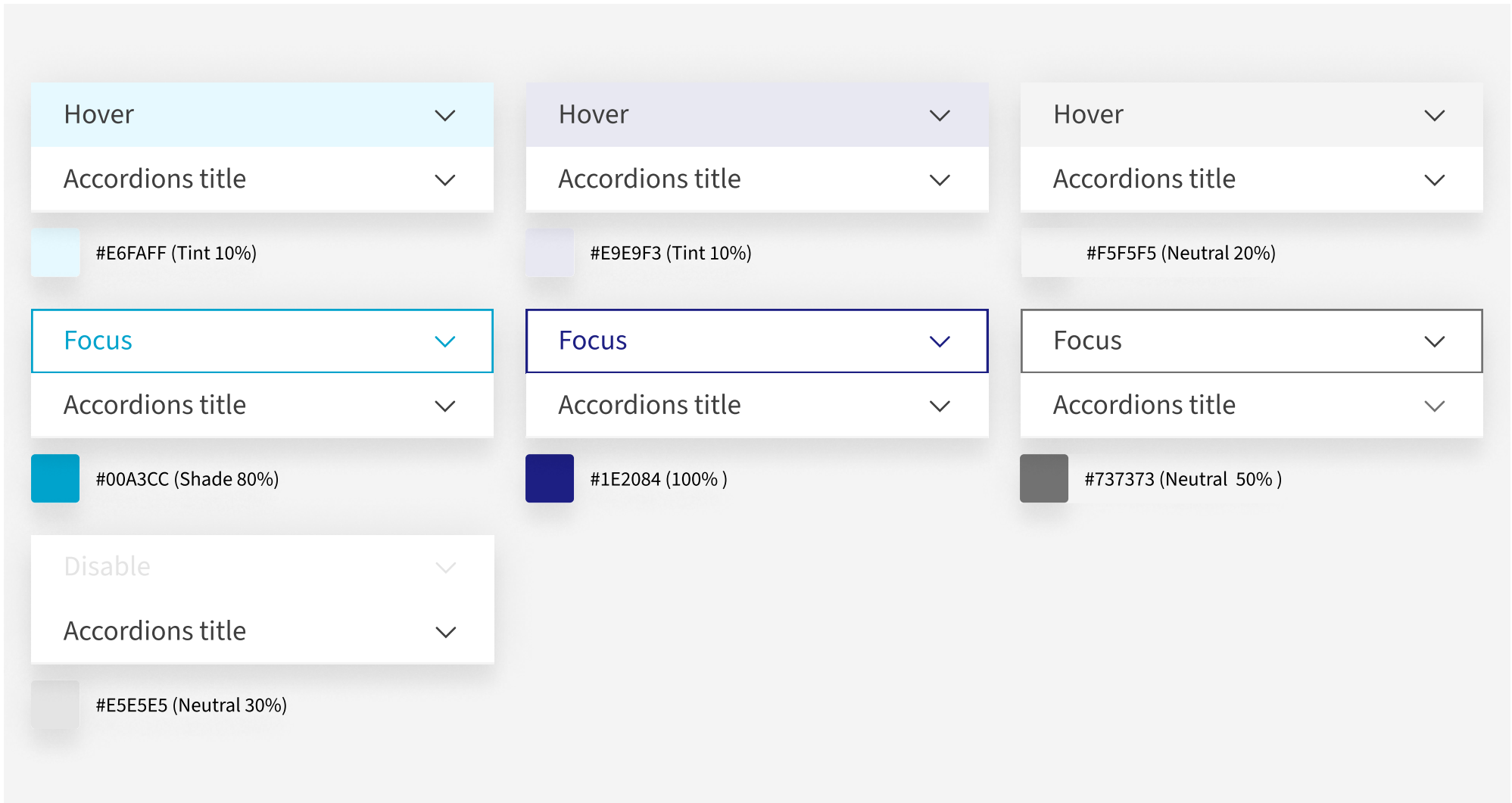


Fig.3.3.5 Accordion States

Button

Buttons enable users to perform actions or navigate to other pages. The MISTI button includes multiple styles tailored to different functional needs, serving as clear visual indicators to guide users through interaction points necessary for advancing within a workflow. Examples are provided in **Fig.3.3.6 - Fig.3.3.20**. The size and spacing can be found in **Fig.3.3.21 - Fig.3.3.23**.

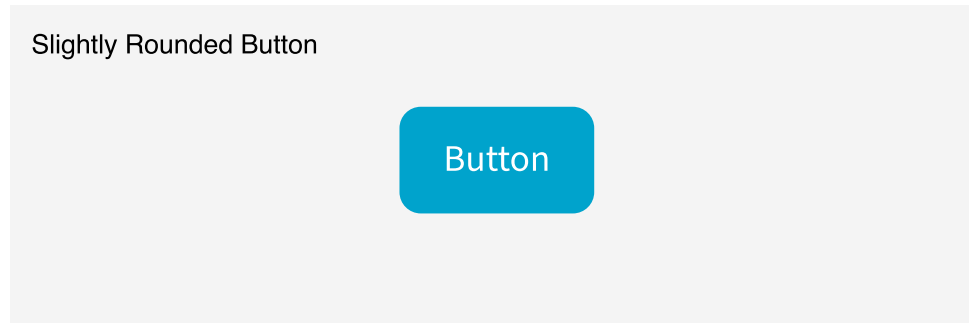


Fig.3.3.6 Slightly Rounded Button

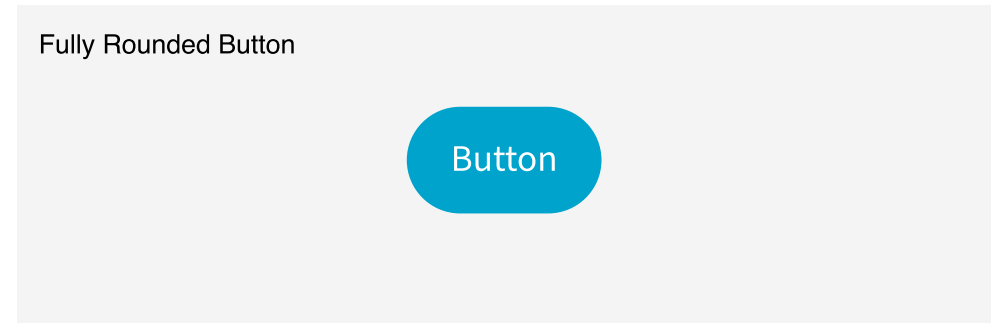


Fig.3.3.7 Fully Rounded Button

Button variants

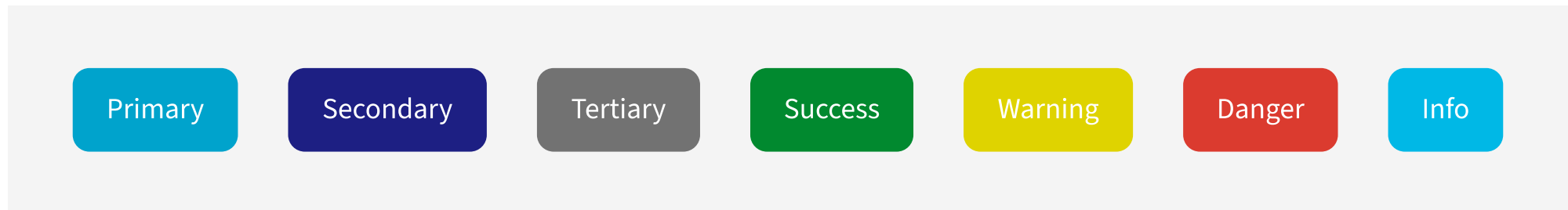
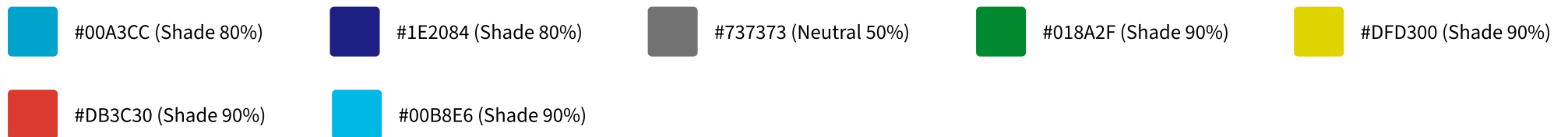


Fig.3.3.8 Buttons with different Background Colors



Outline Button

Outline buttons are designated for low-priority actions within the interface. They may be used independently or alongside primary buttons to provide clear visual hierarchy and enhanced contrast between action levels.

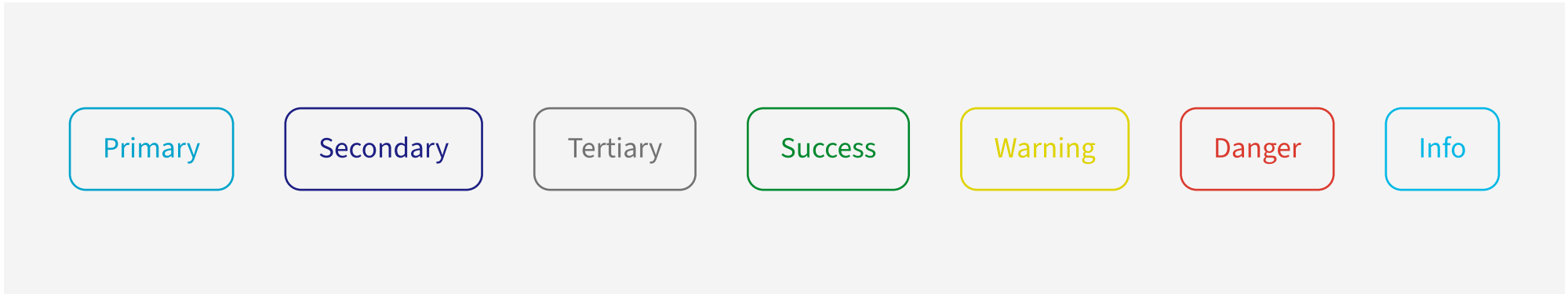


Fig.3.3.9 Outline Buttons

Button with icon

Buttons should consistently include both an icon and text within the container to provide clear visual cues that enhance recognition and usability. This combination improves intuitiveness, optimizes space usage, and supports a cleaner, more accessible design—particularly on mobile devices.

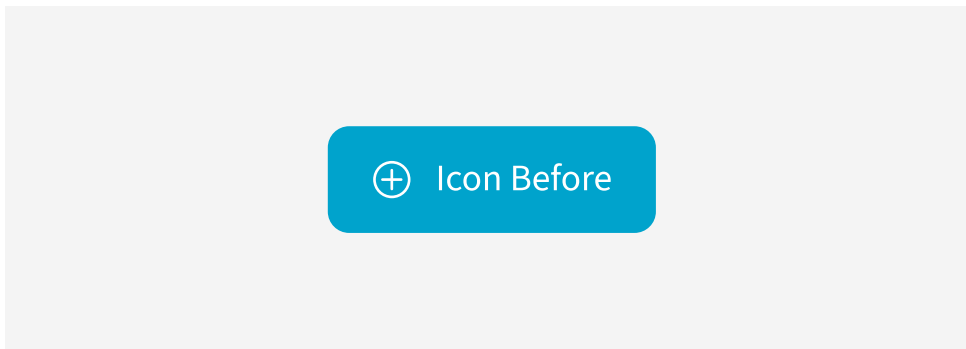


Fig.3.3.10 Button with icon Before

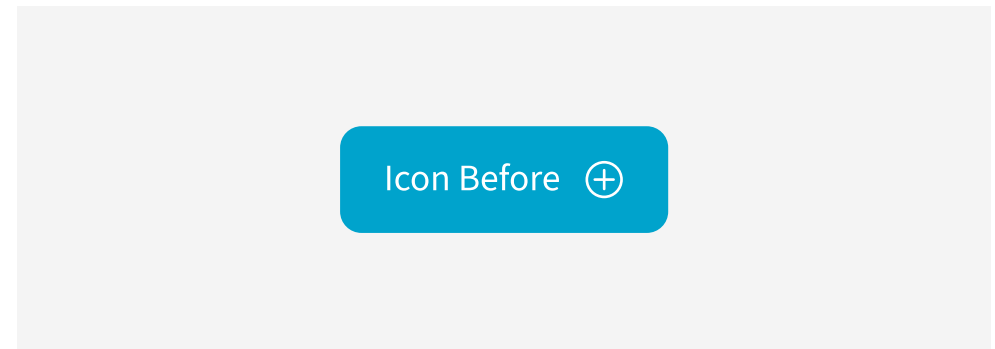


Fig.3.3.11 Button with Icon After

Link Button

A link button is a UI element styled like a button but functions as a hyperlink. It is used to navigate users to another page, section, or external resource, maintaining visual consistency while supporting non-primary navigation actions.

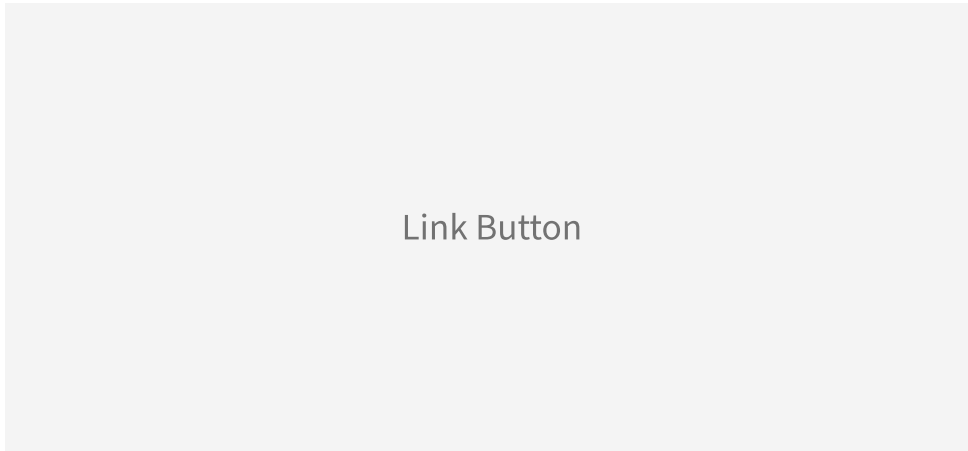


Fig.3.3.12 Link Button



Fig.3.3.13 Link Buttons with Icon

Variants of Link Buttons

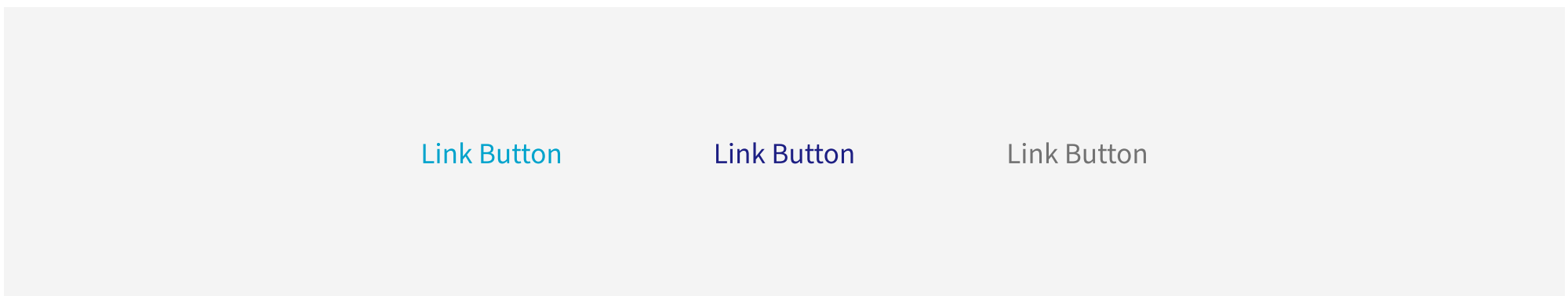


Fig.3.3.14 Link Buttons with different Colors

Icon Button

Icon buttons use system icons with clear meanings and come in standard and toggle types. They support various colors, sizes, and shapes. On the web, tooltips appear on hover. Toggle buttons show outlined icons when unselected and filled icons when selected for clear state indication.

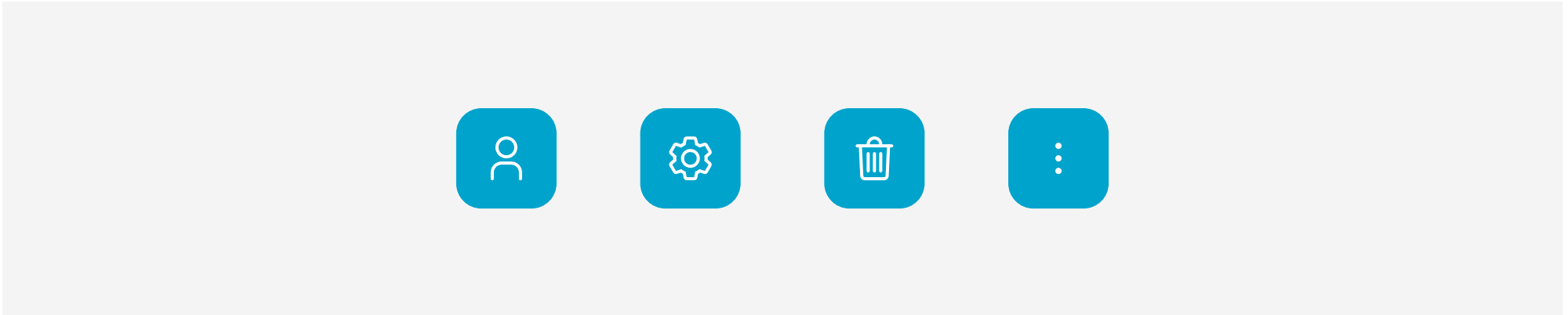


Fig.3.3.15 Icon Button

Variants of Icon Button

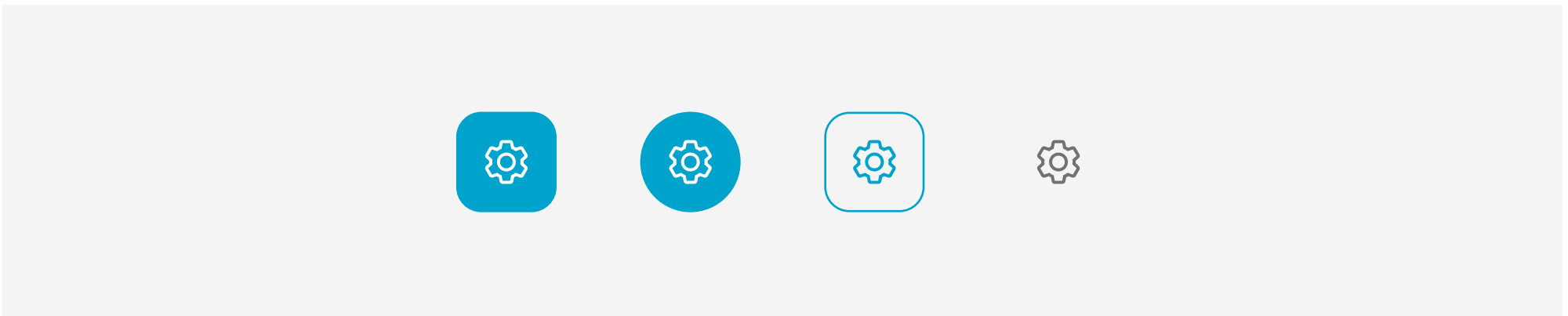


Fig.3.3.16 Variants of Icon Button

Button Group

Group related buttons together on a single horizontal line to indicate contextual association and streamline user interaction within a given interface section.



Fig.3.3.17 Button Group

Outline Style

An outline button group consists of multiple buttons with transparent or white backgrounds and defined borders, visually grouped to represent related actions. This style offers a lightweight, modern appearance suitable for secondary interactions.

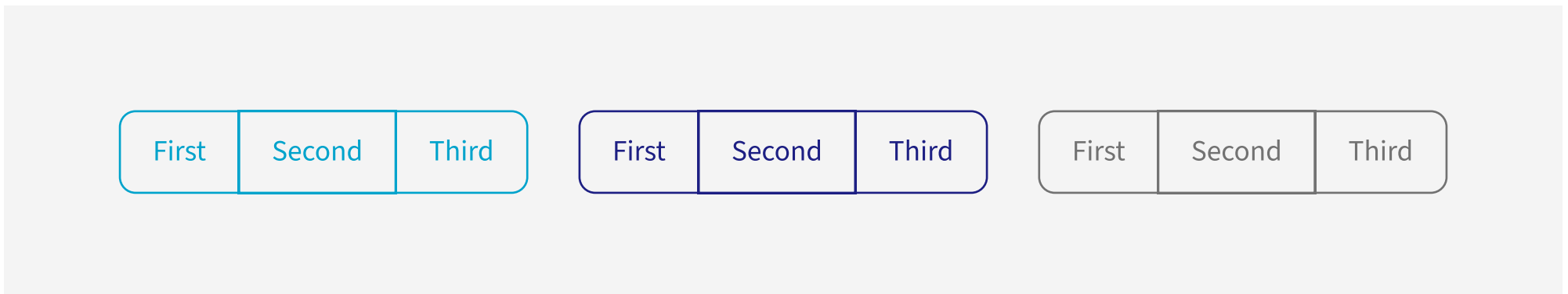


Fig.3.3.18 Outline Button Group

Button Toolbar

A button toolbar is a user interface element that groups commonly used actions into a row or column of buttons. It can be arranged horizontally or vertically, depending on the layout and context, to provide quick access to frequent commands while maintaining a clean and efficient workflow.



Fig.3.3.19 Button Toolbar

Variants of Button Toolbar



Fig.3.3.20 Variants of Button Toolbar

Size and Spacing - Button

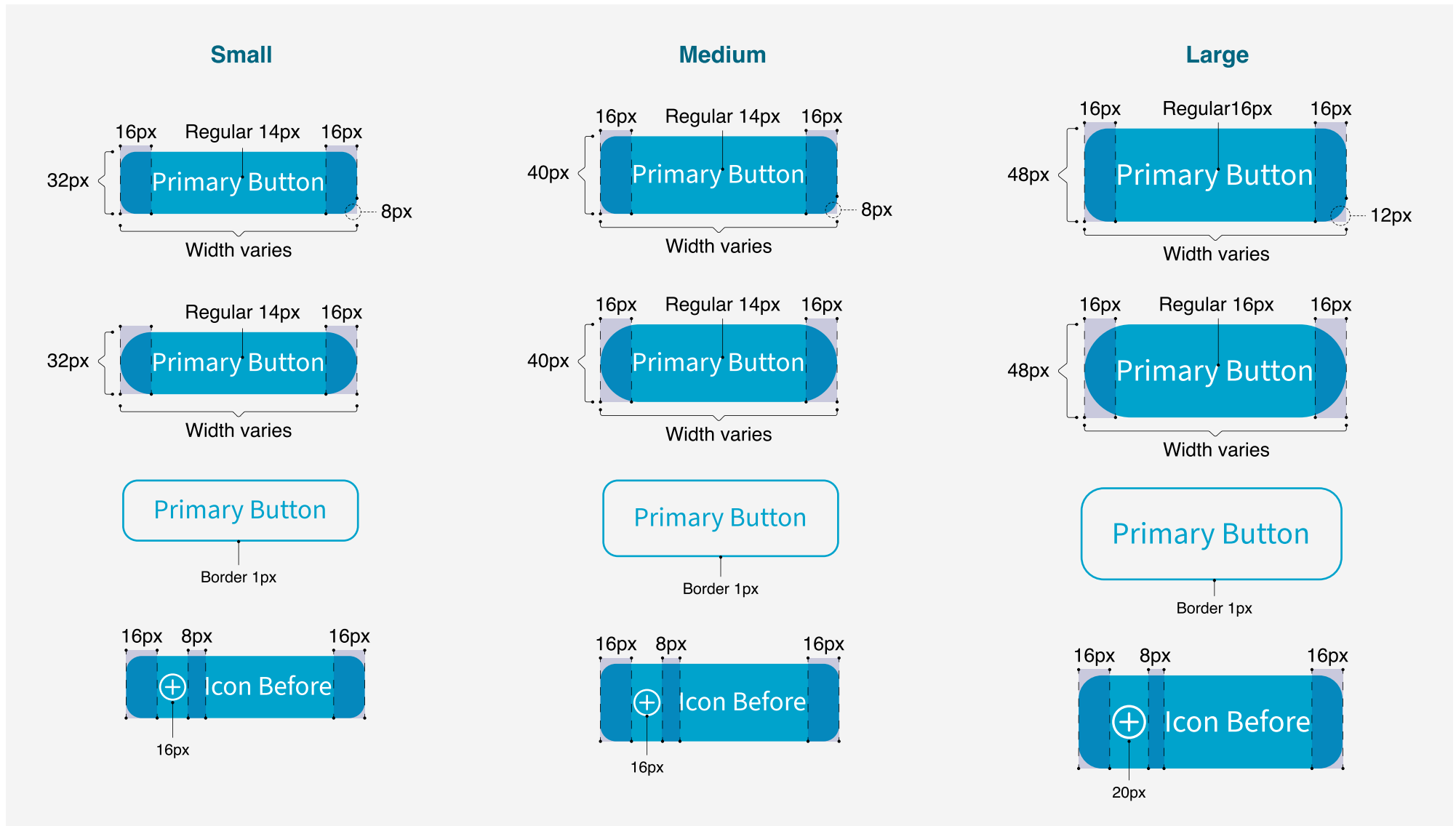


Fig.3.3.21 Size and Spacing - Button

Size and Spacing - Icon Button

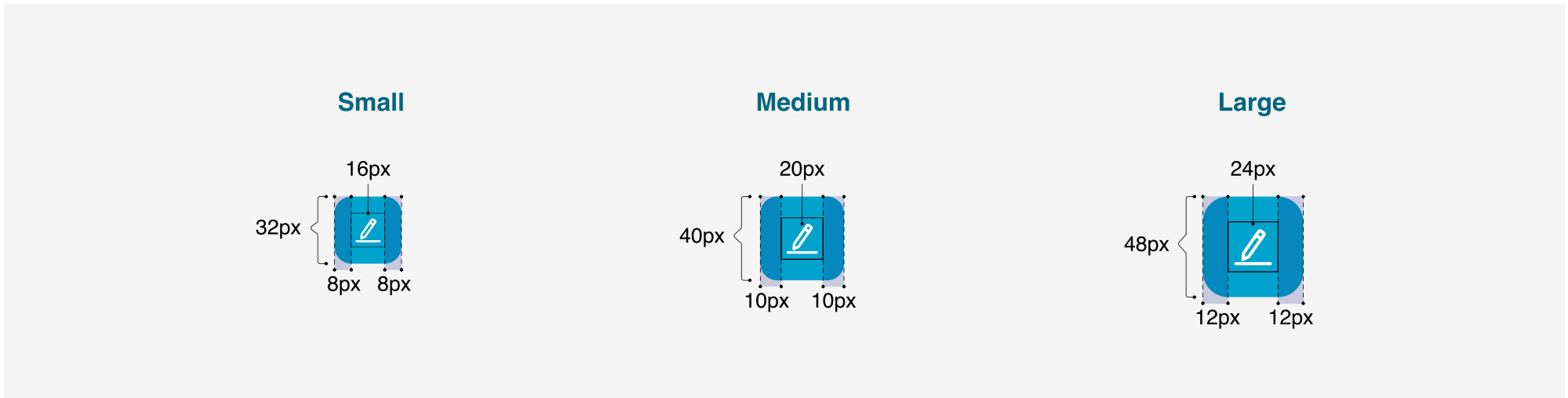


Fig.3.3.22 Size and Spacing - Icon Button

Size and Spacing - Link Button

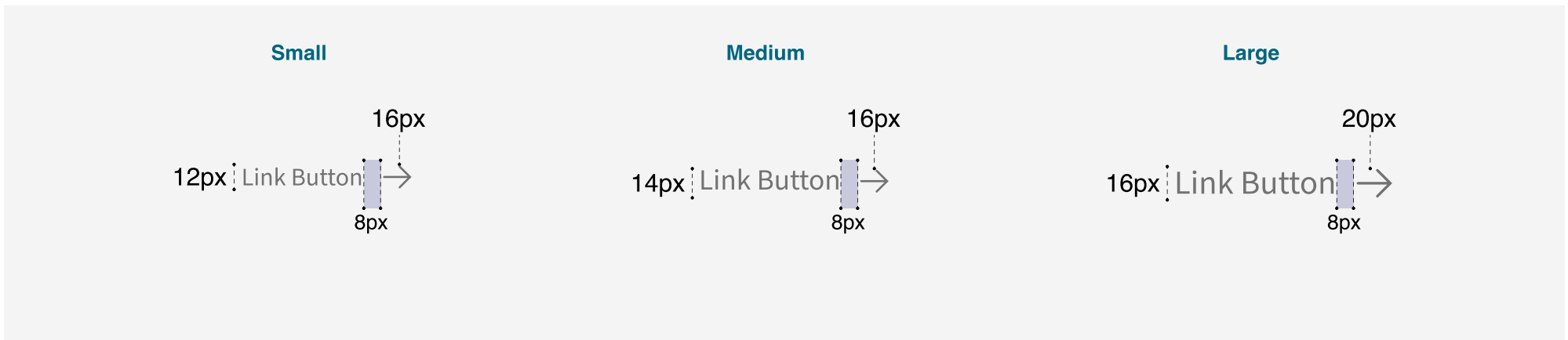


Fig.3.3.23 Size and Spacing - Link Button

Button States

Button states provide visual feedback to indicate a button's current status and guide user interaction. They help users understand whether a button is hovered, disabled, or in a loading state, as shown in **Fig.3.3.24**.

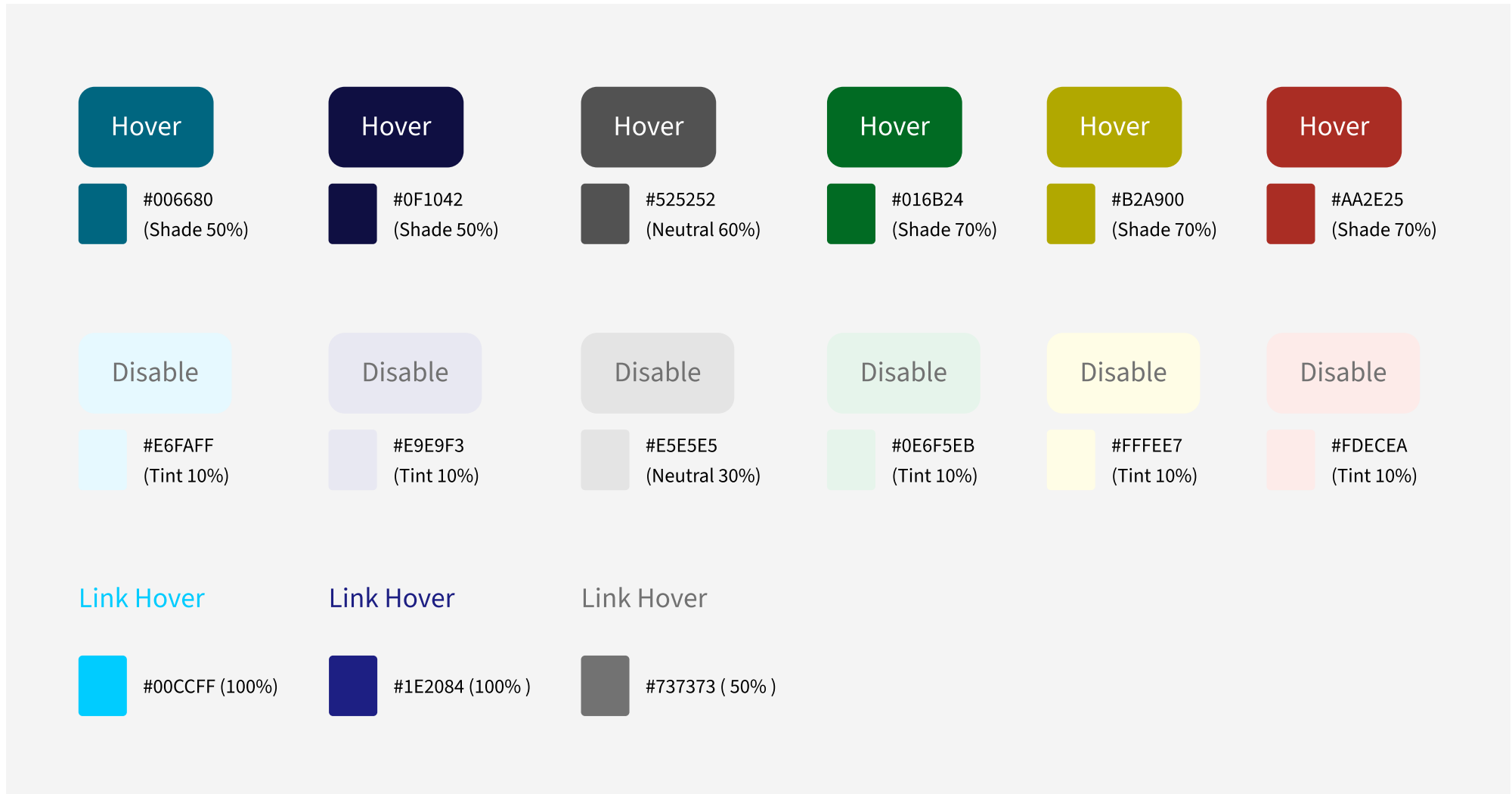


Fig.3.3.24 Button States

Breadcrumbs

Breadcrumbs provide contextual navigation by showing users their current location within a hierarchical structure. They allow quick access to parent levels and are especially useful in multi-level content systems, enhancing clarity and user experience with minimal space. Examples are provided in **Fig.3.3.25 - Fig.3.3.26**. The size and spacing can be found in **Fig.3.3.27**.



Page 1 > Page 2 > ... > Page 5 > Current page

Fig.3.3.25 Breadcrumbs

Overflow Content

When horizontal space is limited, breadcrumbs should truncate using an overflow menu. Always display the first breadcrumb item and the last two items to maintain context and usability. All intermediate items are collapsed into a single overflow menu.



Page 1 > Page 2 > ... > Page 5 > Current page

Page 3

Page 4

Fig.3.3.26 Breadcrumbs with Overflow Menu

Size and Spacing

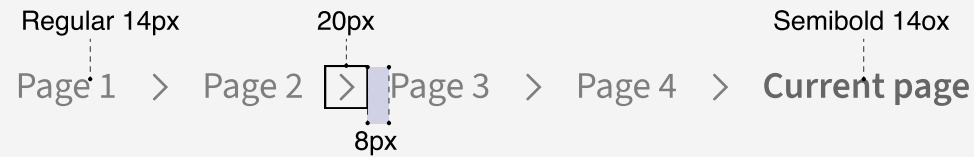


Fig.3.3.27 Size and Spacing - Breadcrumbs

State

Indicates interactivity by changing appearance—typically through color or underline—when the user hovers over or clicks a breadcrumb link, as shown in **Fig.3.3.28**.

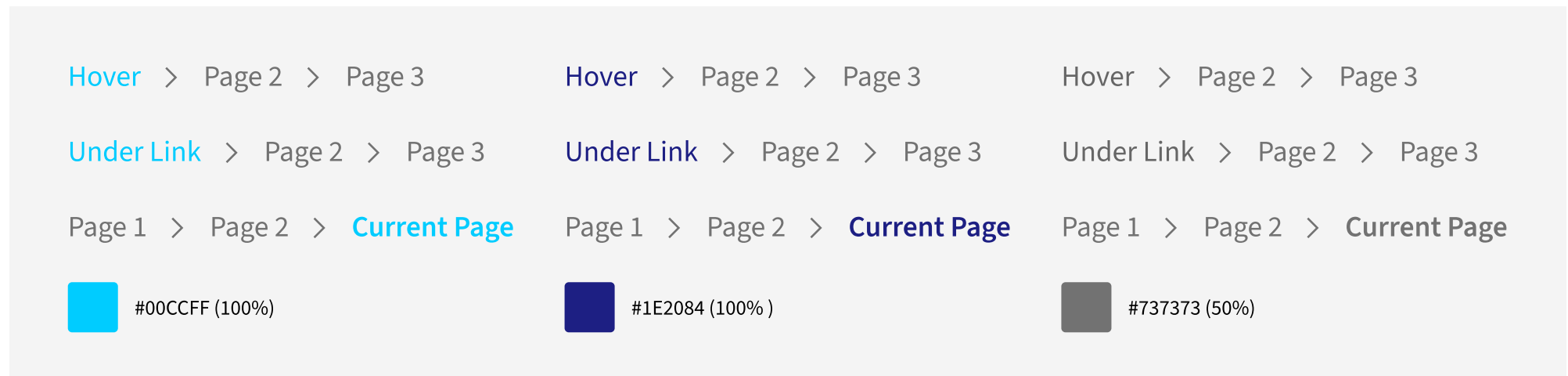


Fig.3.3.28 Breadcrumb States

Badges

Badges are used to visually highlight small but relevant pieces of information, such as status, category, or user role. They present contextual data in a compact, visually distinct format—typically combining a small colored background with text, an icon, or both, as shown in **Fig.3.3.29**. Designed to be lightweight and unobtrusive, badges are commonly found in dashboards or alongside data fields, offering quick, at-a-glance insights without requiring user interaction.

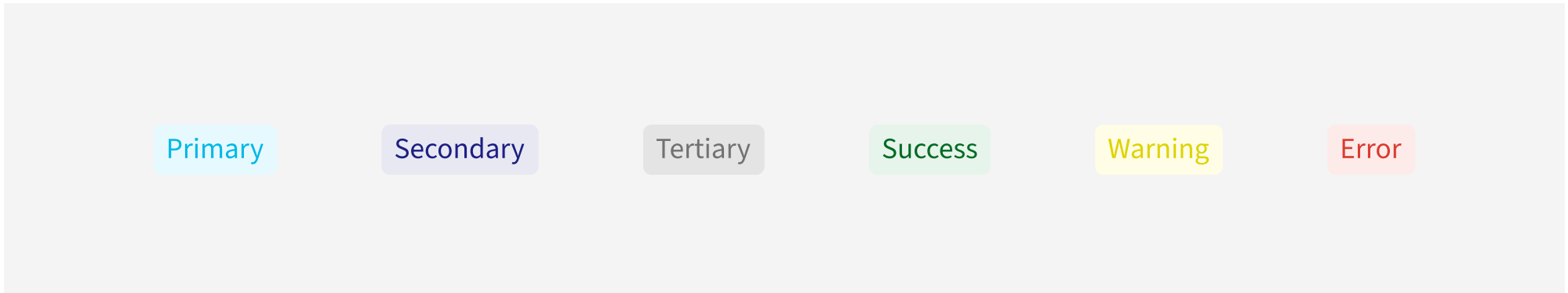


Fig.3.3.29 Badges

Pill Badges

Rounded badges contribute to a smooth, friendly, and modern interface, enhancing the overall look with a polished and approachable feel, as shown in **Fig.3.3.30**.

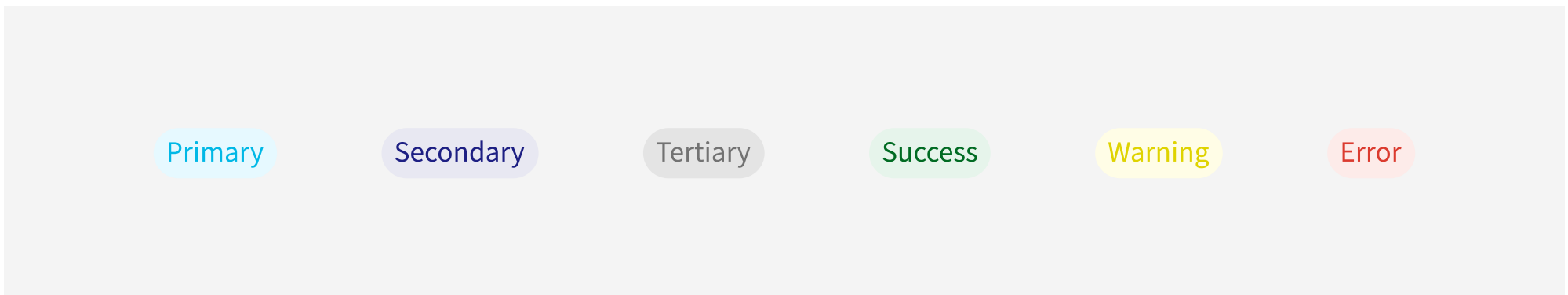


Fig.3.3.30 Pill Badges

Size and Spacing

To maintain clarity and prevent truncation, badge labels are recommended to be concise—ideally limited to 1–3 words. Apply title case formatting and avoid punctuation to ensure consistency and readability across the interface. The example is provided in **Fig.3.3.31**.

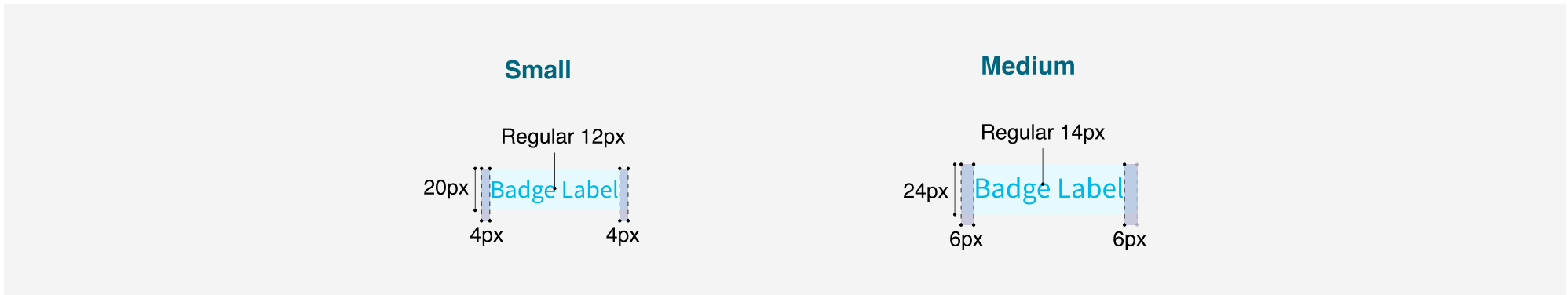


Fig.3.3.31 Badges - Size and Spacing

Checkboxes

A checkbox is an input control that allows users to select one or more options from a set of choices, as shown in **Fig.3.3.32 - Fig.3.3.39**. Commonly used in forms, modals, side panels, and data tables, checkboxes support actions such as filtering, batch editing, or indicating agreement to terms. They also support parent-child relationships, enabling bulk selection through a parent checkbox. When only some child checkboxes are selected, the parent enters an indeterminate state to reflect the mixed selection.



Fig.3.3.32 Checkboxes

Alignment

Checkbox labels are positioned to the right of their inputs. If there is a checkbox grouping, they can be laid out vertically or horizontally depending on the use case and the structure of the UI. When possible, arrange the checkbox and radio button groups vertically for easier reading.

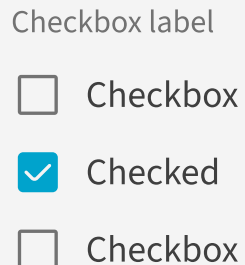


Fig.3.3.33 Vertical Checkbox

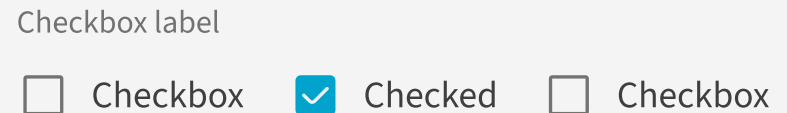


Fig.3.3.34 Horizontal Checkbox

Single Checkbox

A single checkbox is an input control that allows users to toggle a single option on or off. It is commonly used for accepting terms, enabling settings, or confirming choices.

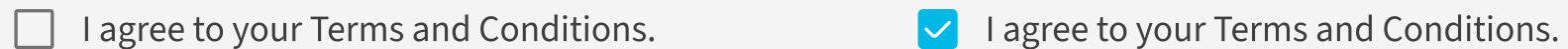


Fig.3.3.35 Single Checkbox

Checkbox group

A checkbox group consists of multiple checkboxes that allow users to select one or more options independently, commonly used for preferences, filtering, or multiple-choice selections. When a checkbox has a long label, it may extend across multiple lines to ensure clarity, making it useful for detailed options, terms, or explanations.

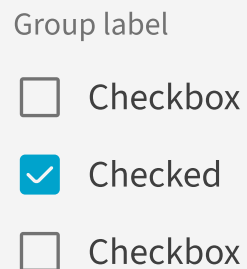


Fig.3.3.36 Checkbox Group

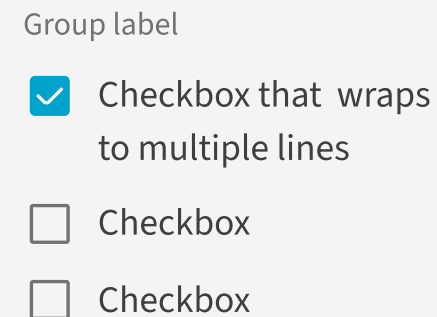


Fig.3.3.37 Checkbox Group with Multiple Lines of Text

Nesting Checkbox

Nested checkboxes establish a parent-child relationship, allowing users to select an entire set or a subset of options. When the parent checkbox is checked, all child checkboxes are automatically selected, and unchecking it deselects them, streamlining bulk selection and management.

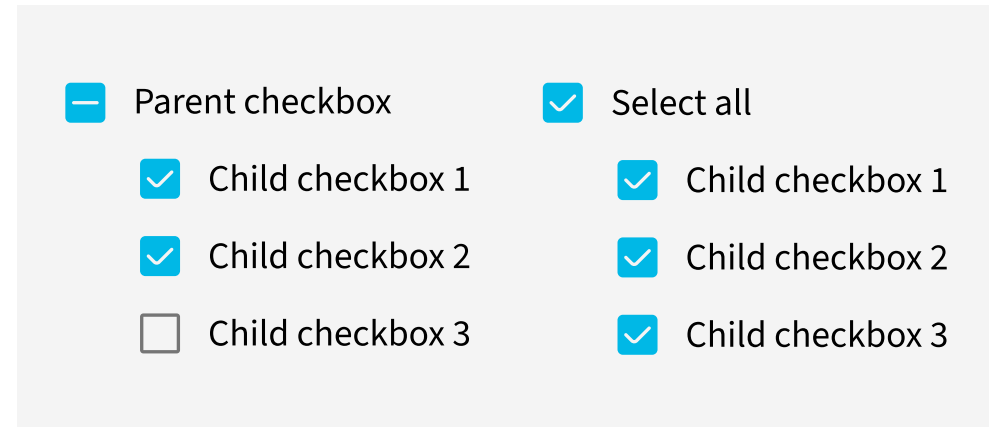


Fig.3.3.38 Nesting Checkbox

Helper text

A checkbox with helper text includes additional guidance or context below the label, helping users understand its purpose. This is useful for clarifying options, providing instructions, or ensuring compliance.

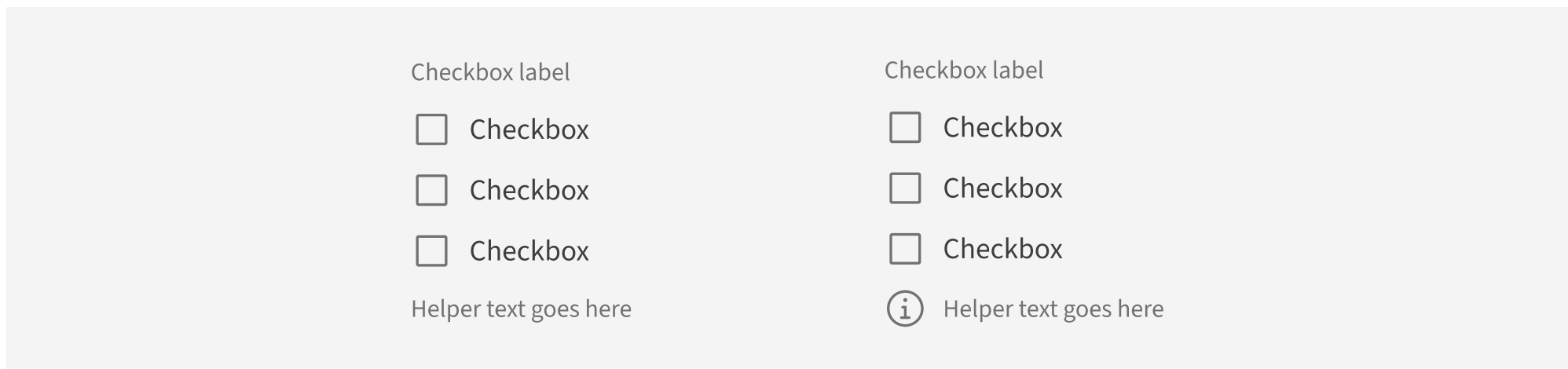


Fig.3.3.39 Checkbox with Helper Text

Size and Spacing

In practice, checkboxes are designed with a minimum horizontal and vertical spacing of 8px between each element, as shown in **Fig.3.3.40**.

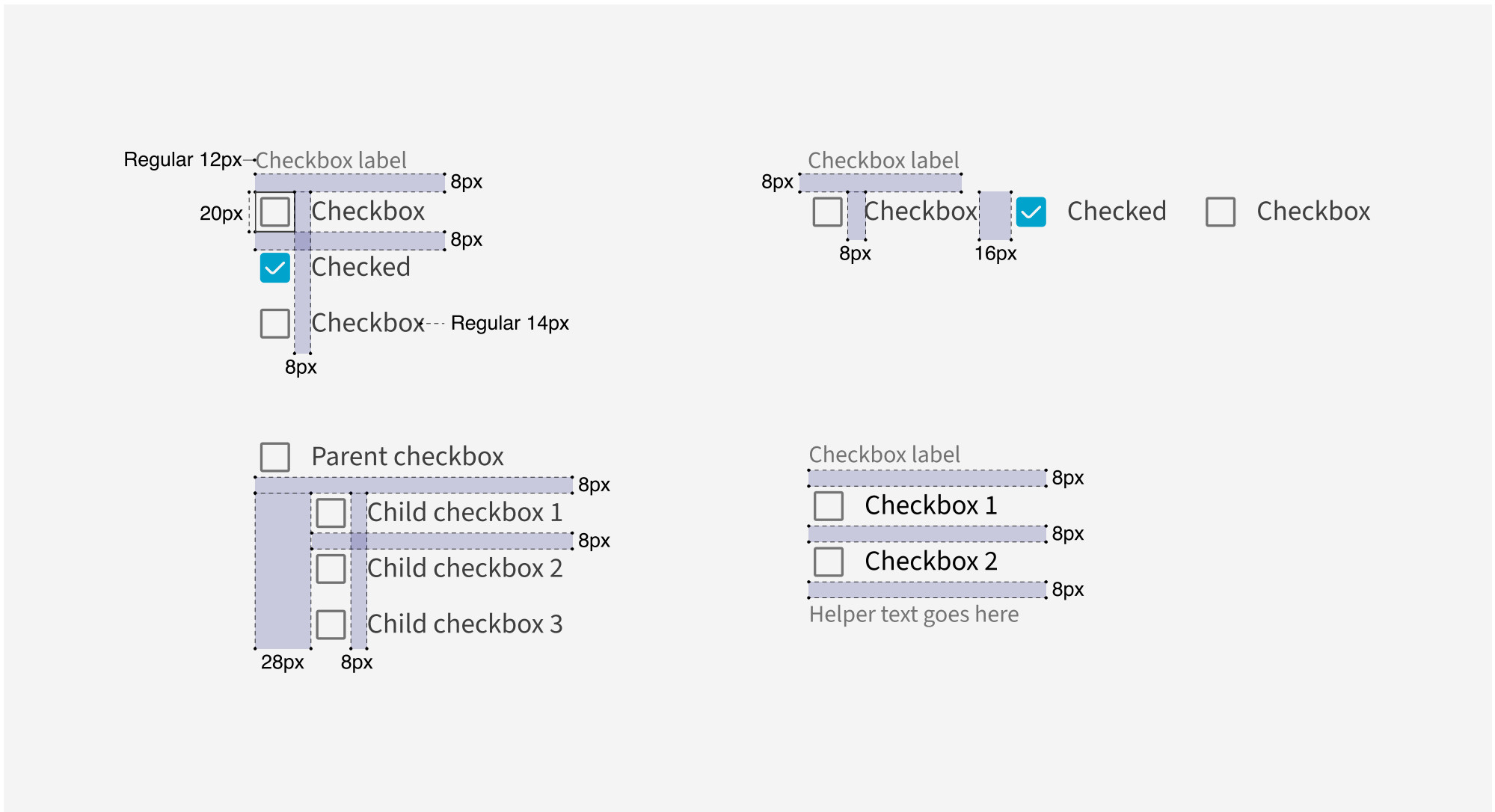


Fig.3.3.40 Size and Spacing - Checkbox

Checkbox States

Checkbox states represent the various conditions a checkbox can be in—such as hover, checked, and disabled—as shown in **Fig.3.3.41**. Each state provides visual feedback to communicate selection status and interaction availability.

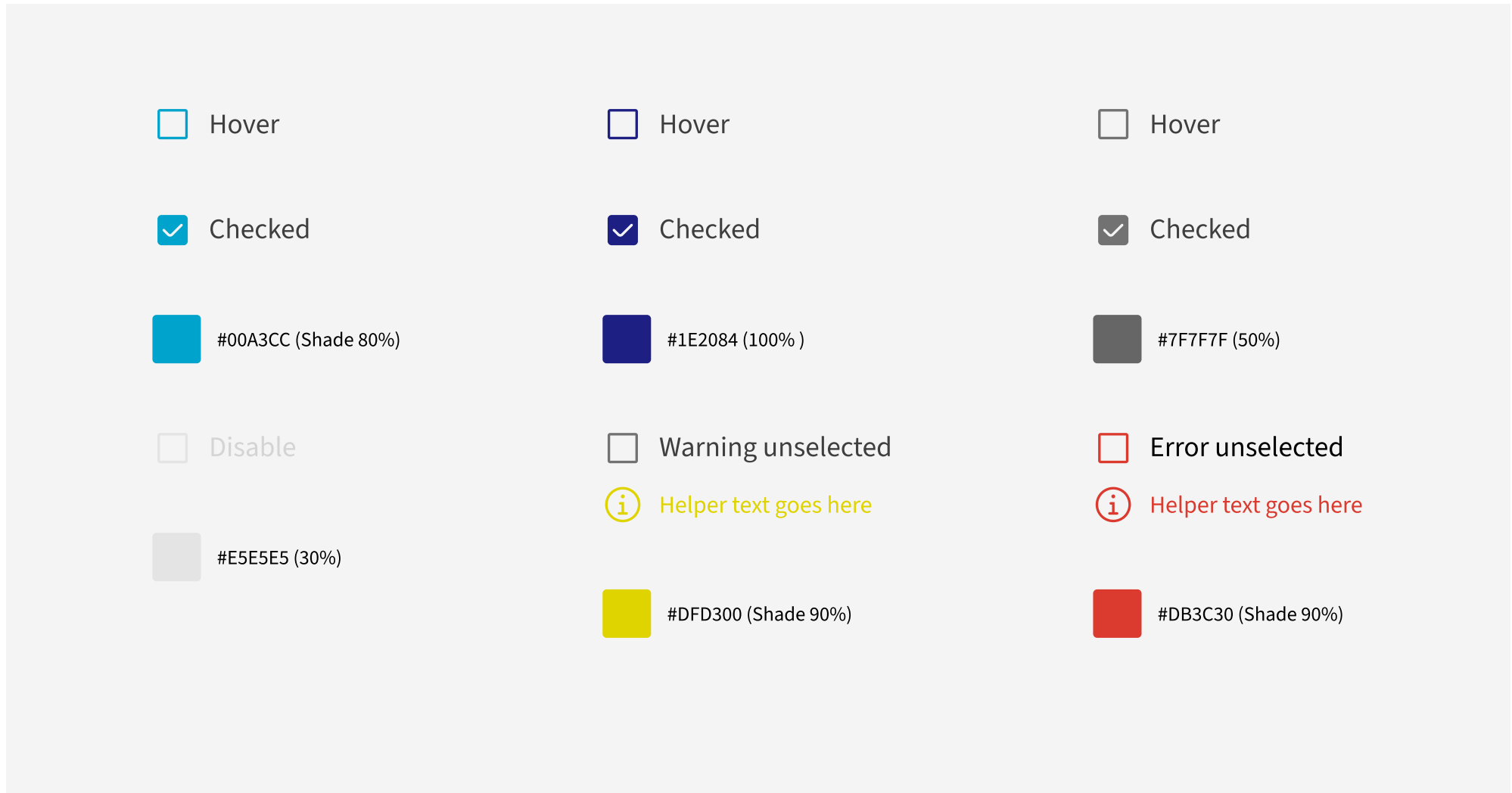


Fig.3.3.41 Checkbox States

Cards

A card is a UI container used to group related information—such as recent records, upcoming tasks, or alerts—into visually distinct sections for improved readability and user interaction. Typically composed of a header, body, and footer, cards often display dynamic content and interactive elements. The body can accommodate various types of content or components, making cards a flexible and effective design element for organizing and presenting information. The examples are provided in **Fig.3.3.42 - Fig.3.3.47**.

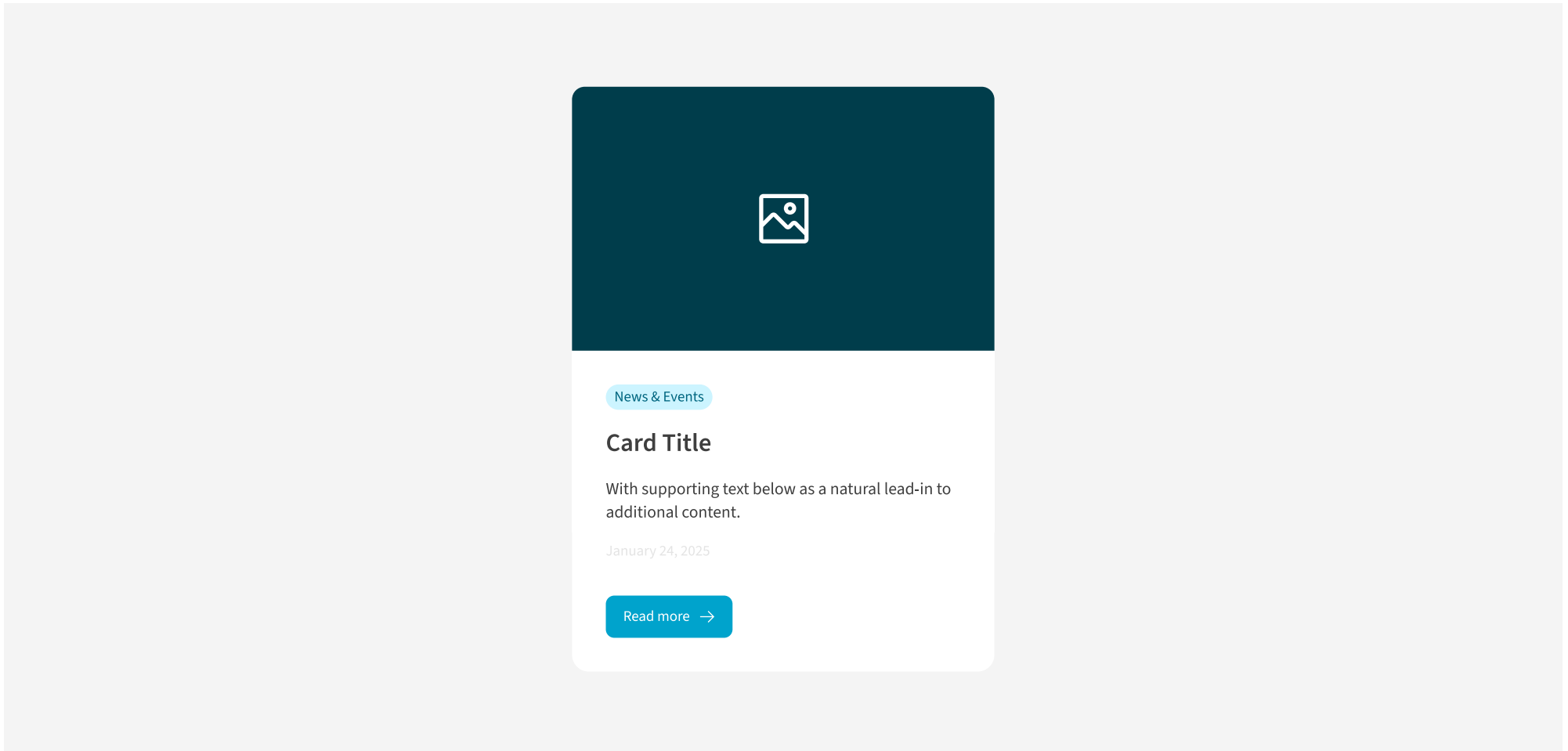


Fig.3.3.42 Cards

Blog Cards

A blog card is a visual UI component that provides a concise summary of a blog post. Commonly used on homepage or archive pages, it typically includes the post title, featured image, and a brief excerpt to encourage further reading.

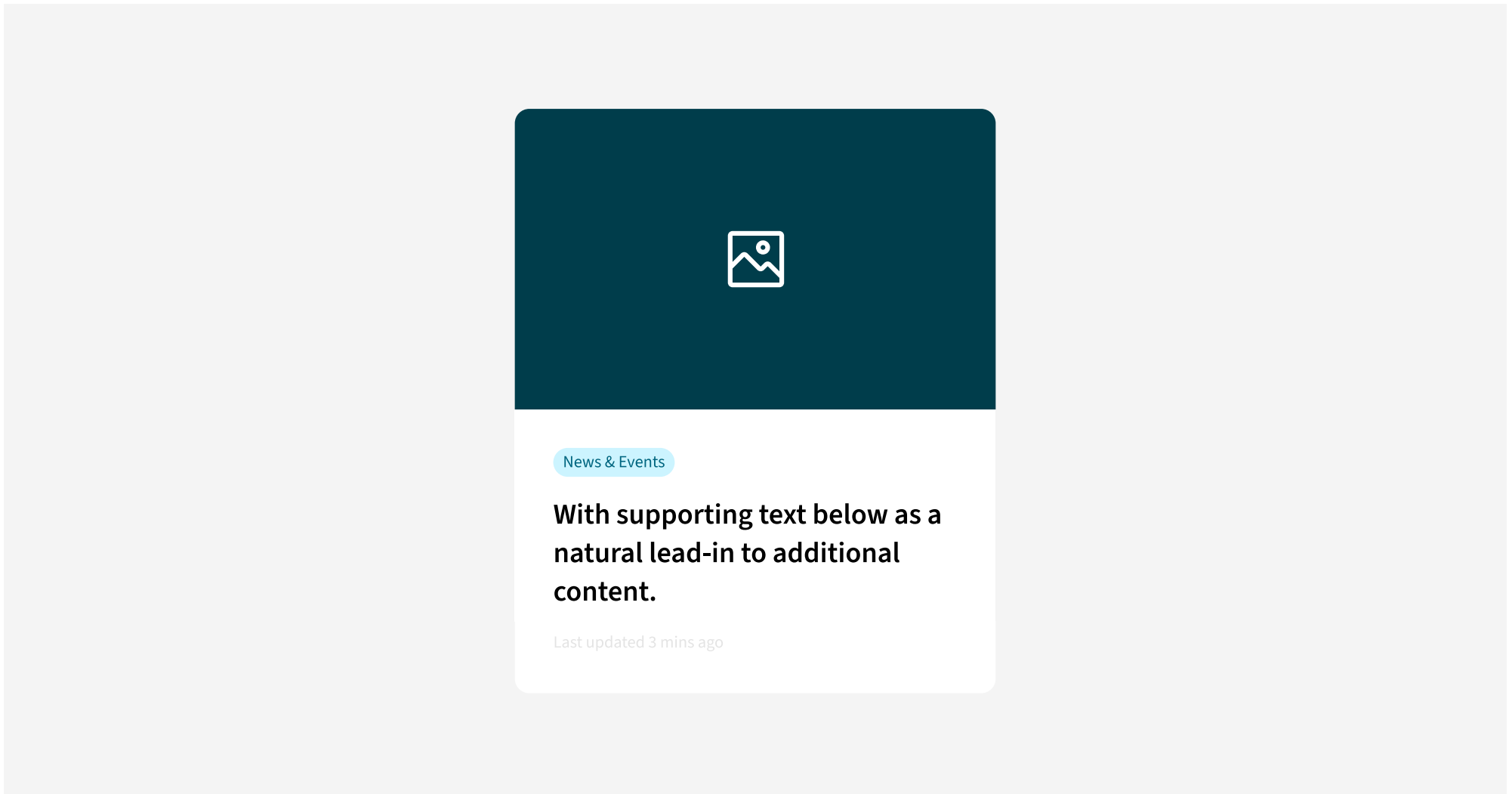


Fig.3.3.43 Blog Cards

Alignments

Cards can be aligned as whole components or in specific sections—such as headers, content areas, or footers—to maintain a consistent, structured, and visually balanced layout.

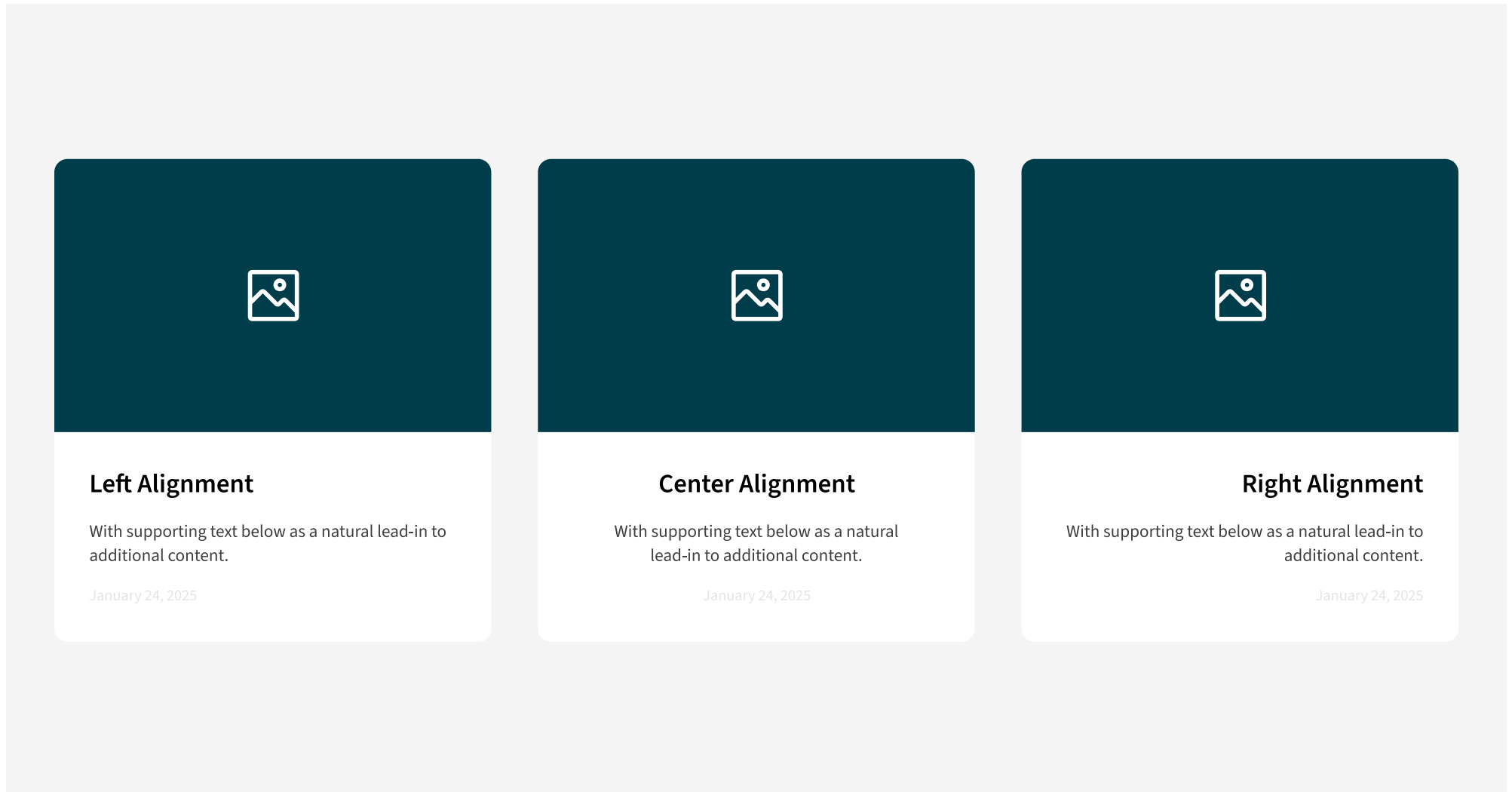


Fig.3.3.44 Card Alignments

Horizontal Cards

A horizontal card is a UI component that arranges content in a row rather than a vertical stack. It typically includes a square preview image, cropped to fit the allocated space, ensuring a consistent and visually balanced layout across the interface.

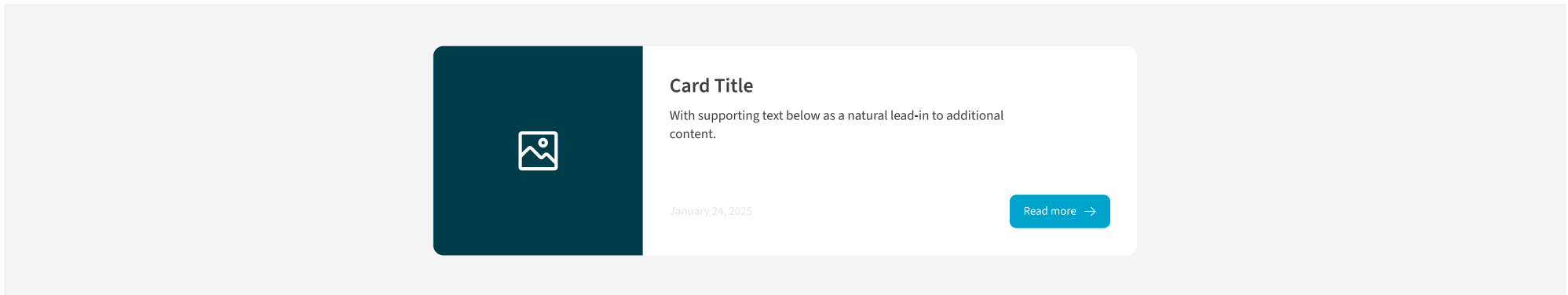


Fig.3.3.45 Horizontal Card

Feature Cards

A feature card is a UI component designed to highlight key features, services, or benefits in a visually engaging format. It typically includes an icon or image, a clear title, a brief description, and a call-to-action button. Feature cards help users quickly grasp the most important aspects of a product or service.

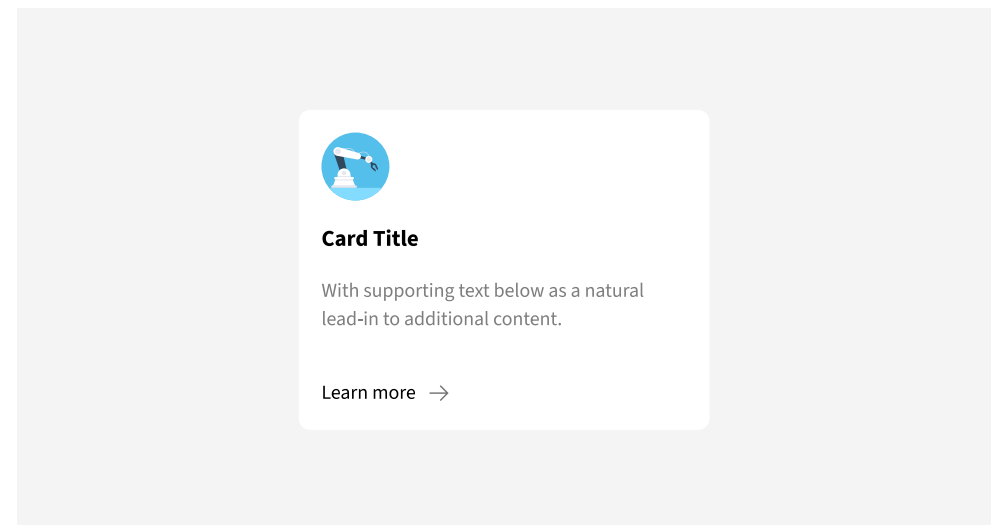


Fig.3.3.46 Feature Cards

Background Colors

Apply the background color as specified in the design guidelines, and ensure the foreground elements—such as text and icons—maintain sufficient contrast for readability and accessibility.

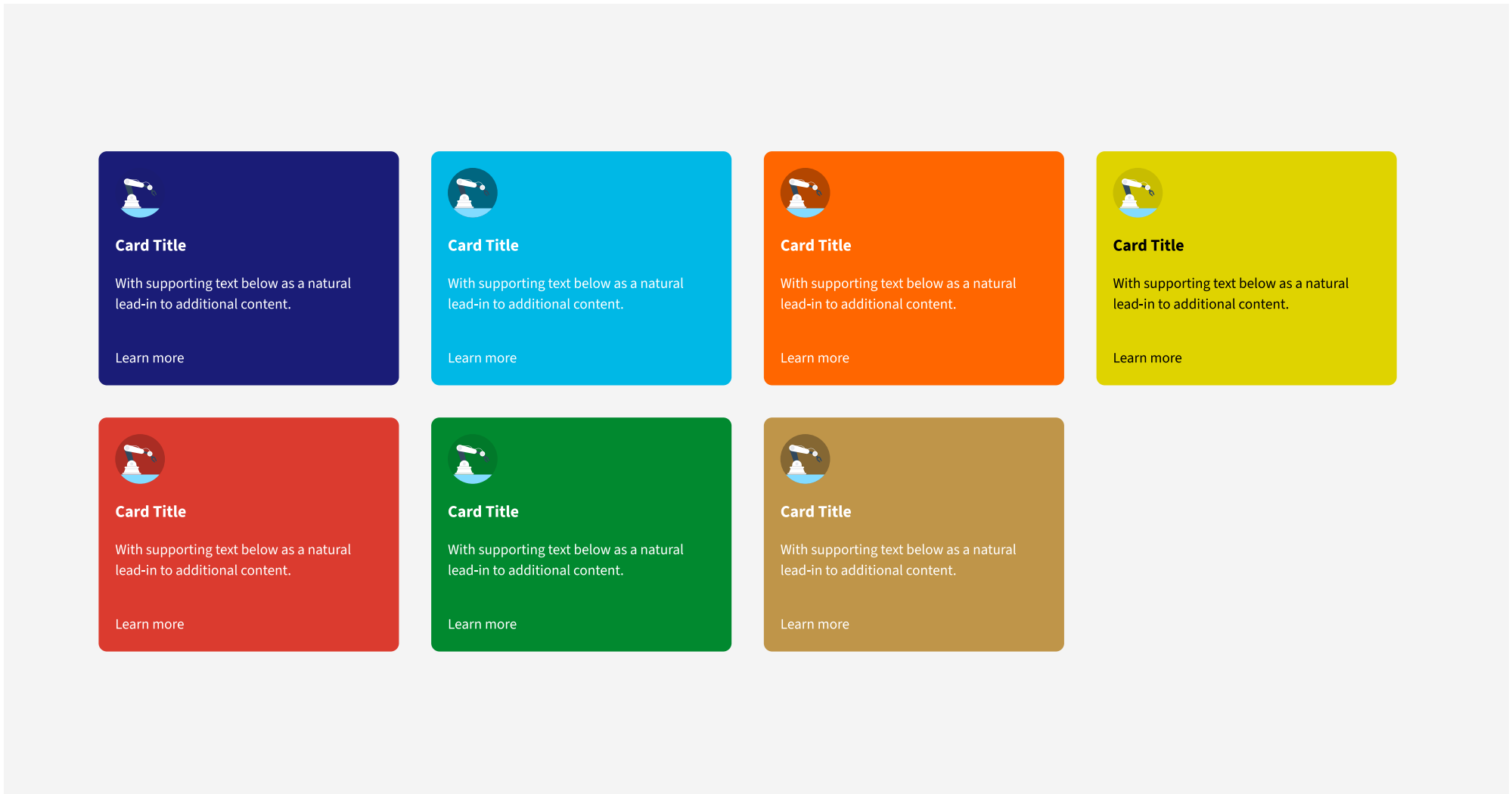


Fig.3.3.47 Cards with Background Colors

Clickable Cards

Some actions are presented as explicit buttons, while others are triggered by clicking anywhere on the card. If the card's only function is to open or reveal more details, avoid using a separate button—make the entire card clickable to perform the action, as shown in **Fig.3.3.48**.

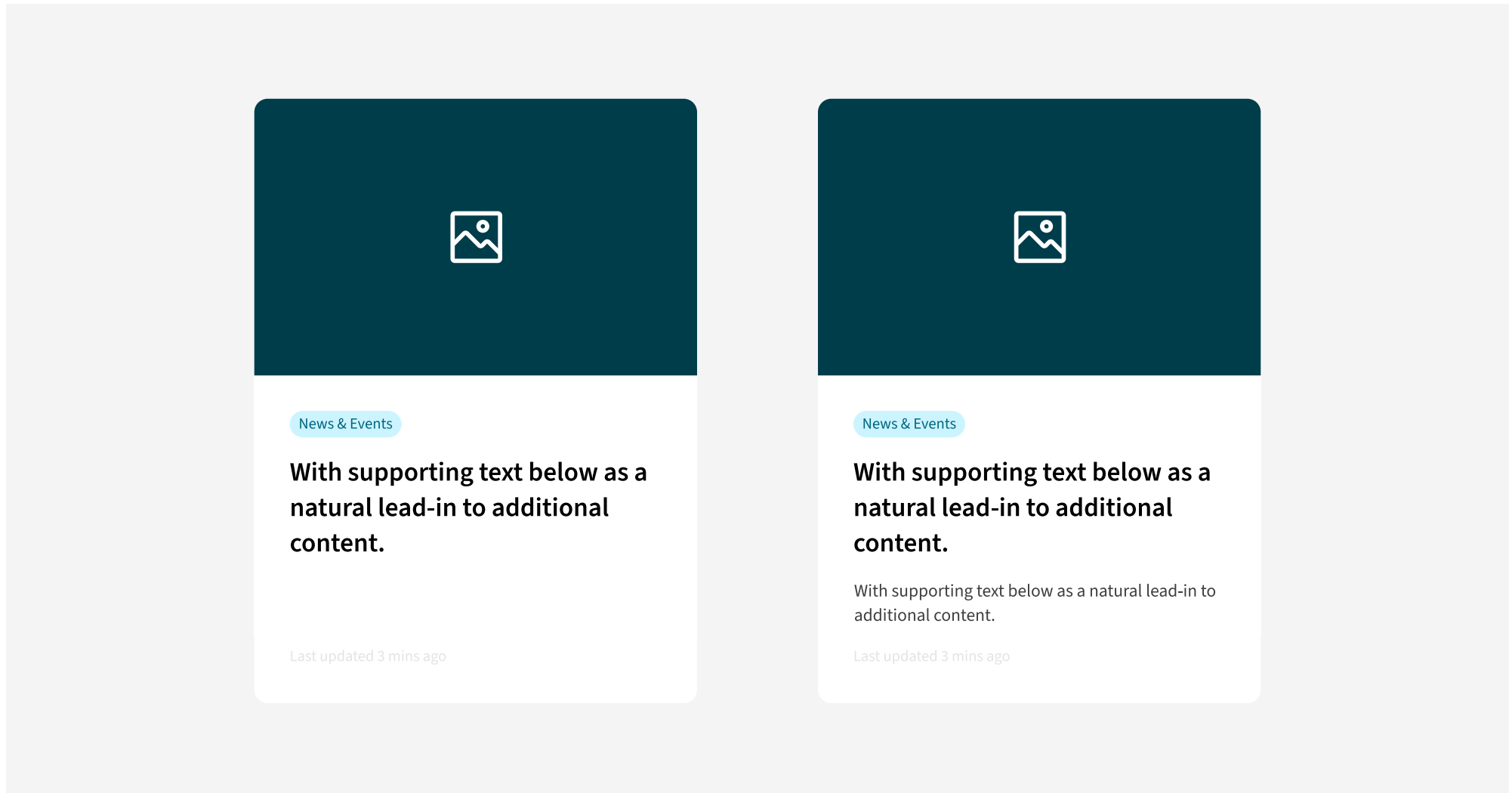


Fig.3.3.48 Clickable Cards

Size and Spacing

Cards can be configured with either a fluid or fixed width, depending on layout requirements. To ensure visual consistency across various card sizes, text should follow the type ramps defined in the MISTI design system, providing flexibility while maintaining readability, as shown in **Fig.3.3.49**.

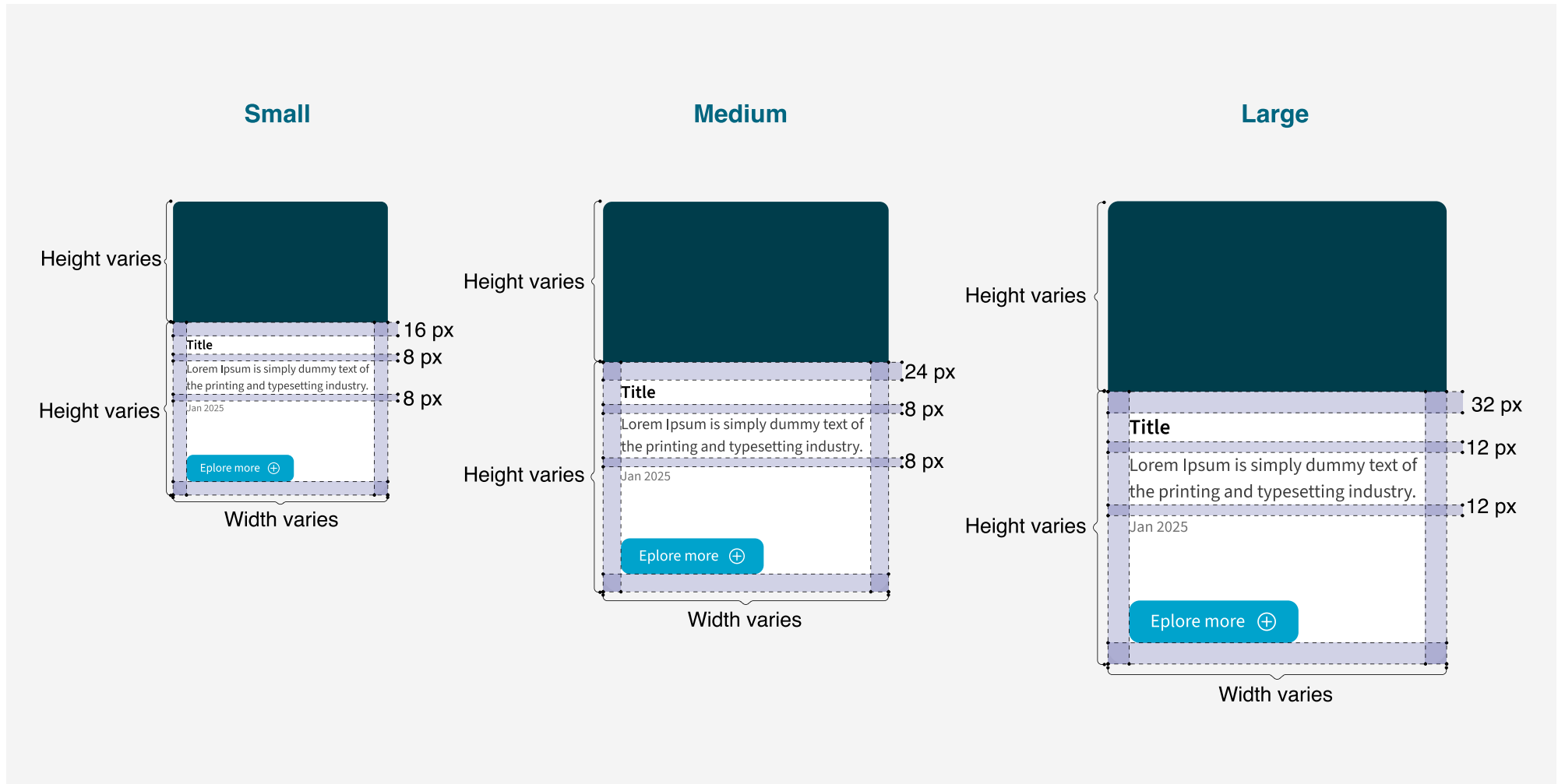


Fig.3.3.49 Size and Spacing - Cards

Carousels

A carousel is a sliding container used to display multiple pieces of featured content within a limited space. It is ideal for cycling through related items or updates in a visually engaging manner. Users can navigate the content using navigation arrows or image indicator controls. The examples are provided in **Fig.3.3.50 - Fig.3.3.53**.

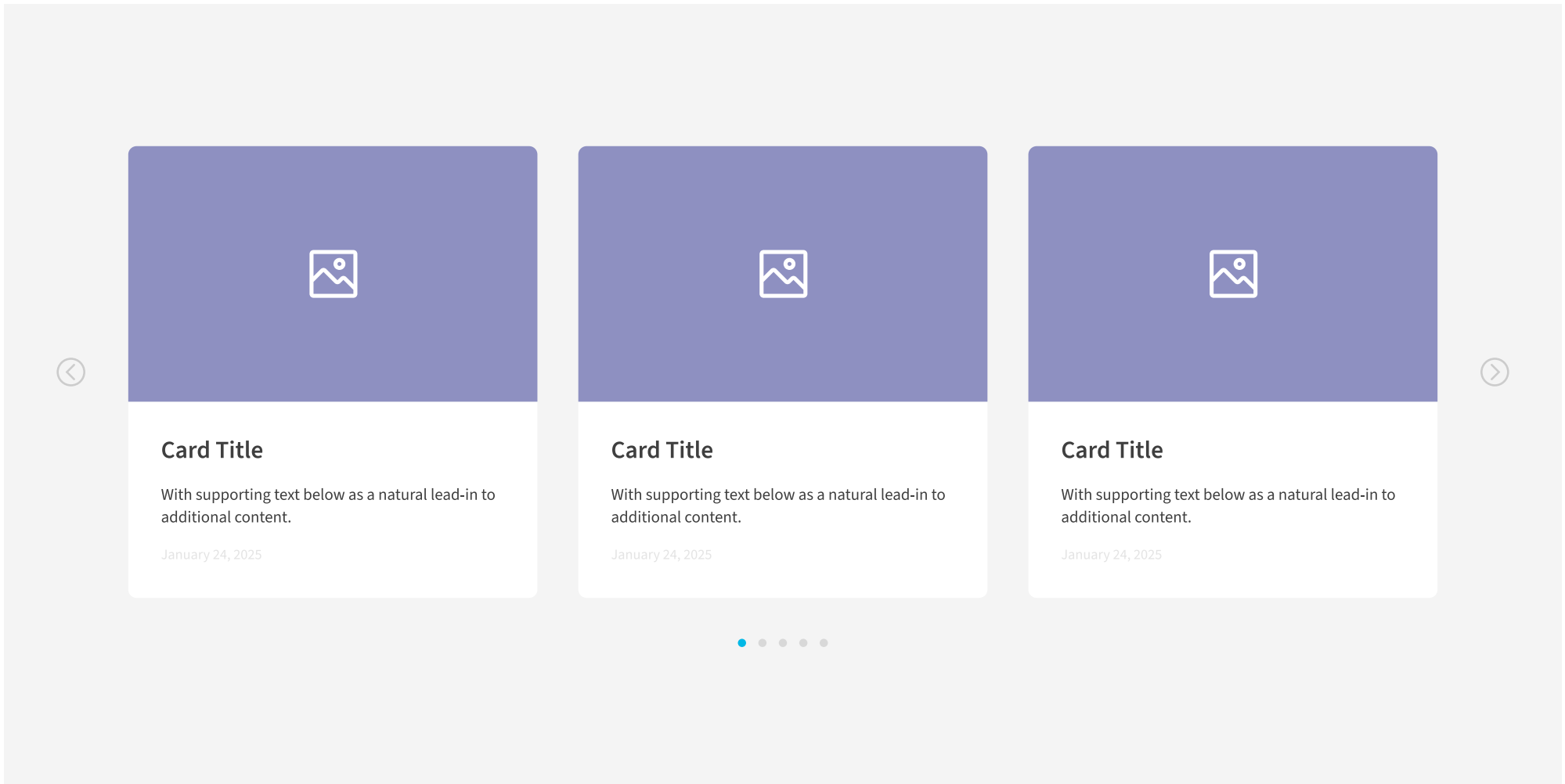


Fig.3.3.50 Carousels

Full-screen Carousel

A full-screen carousel is a web design component that presents a series of images, text, or videos in a slideshow format that occupies the entire viewport. It is typically used to deliver visually impactful content, helping to capture attention and create a memorable user experience, especially on landing pages or feature sections.



Fig.3.3.51 Full Screen Carousel

Auto-scrolling Carousel

An auto-scrolling carousel is a rotating slider that automatically cycles through content—such as images, cards, or text—at predefined intervals without requiring user interaction. It typically includes navigation controls such as arrows, indicators, or pause/resume buttons to enhance usability and accessibility.

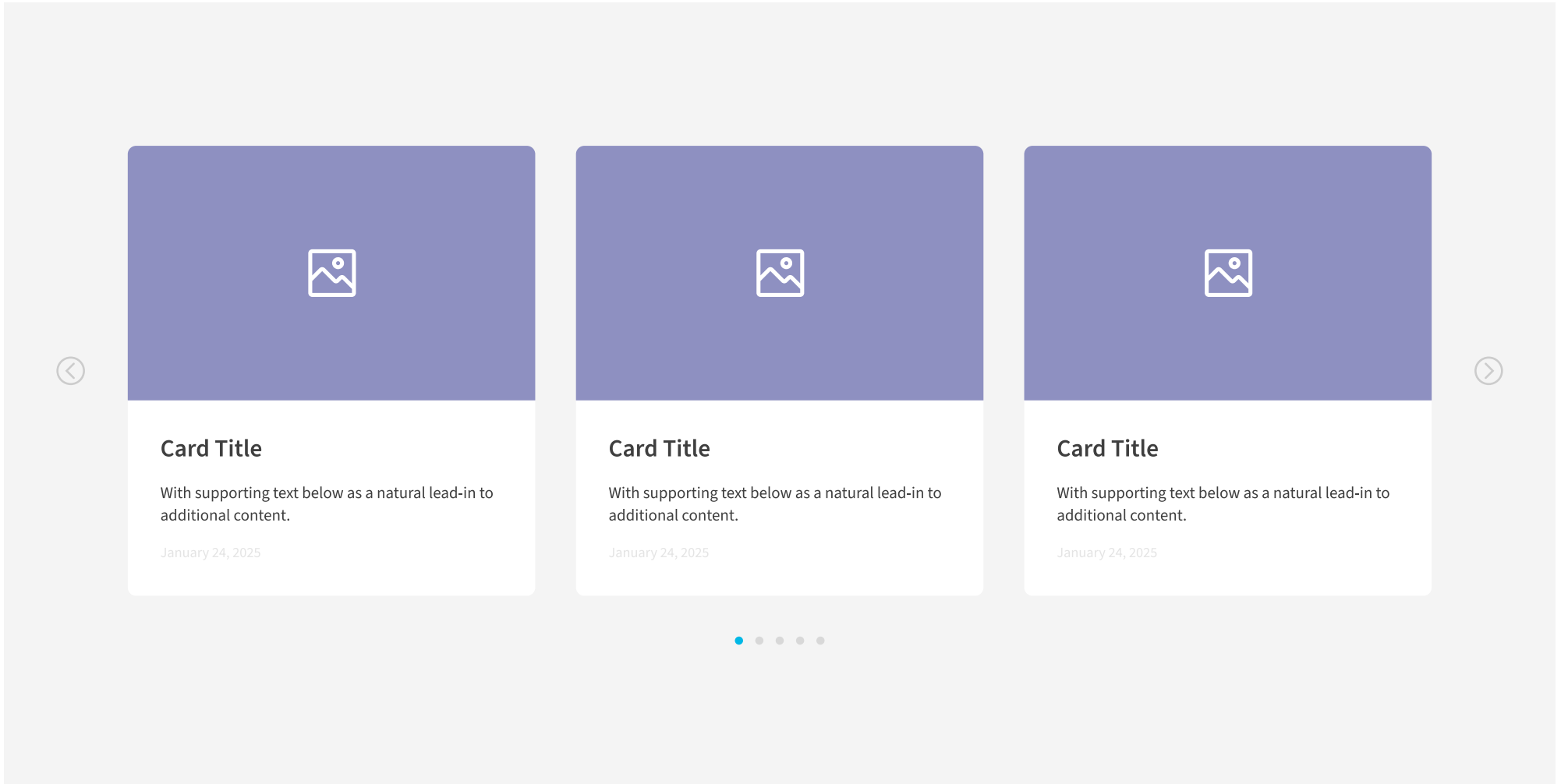


Fig.3.3.52 Auto-Scrolling Carousel

Controls

Navigation arrow buttons and pagination indicators are typically placed outside the content area to prevent overlap with images or text. An exception is full-screen carousels, where these controls may be placed over the image as long as visibility and usability are maintained.

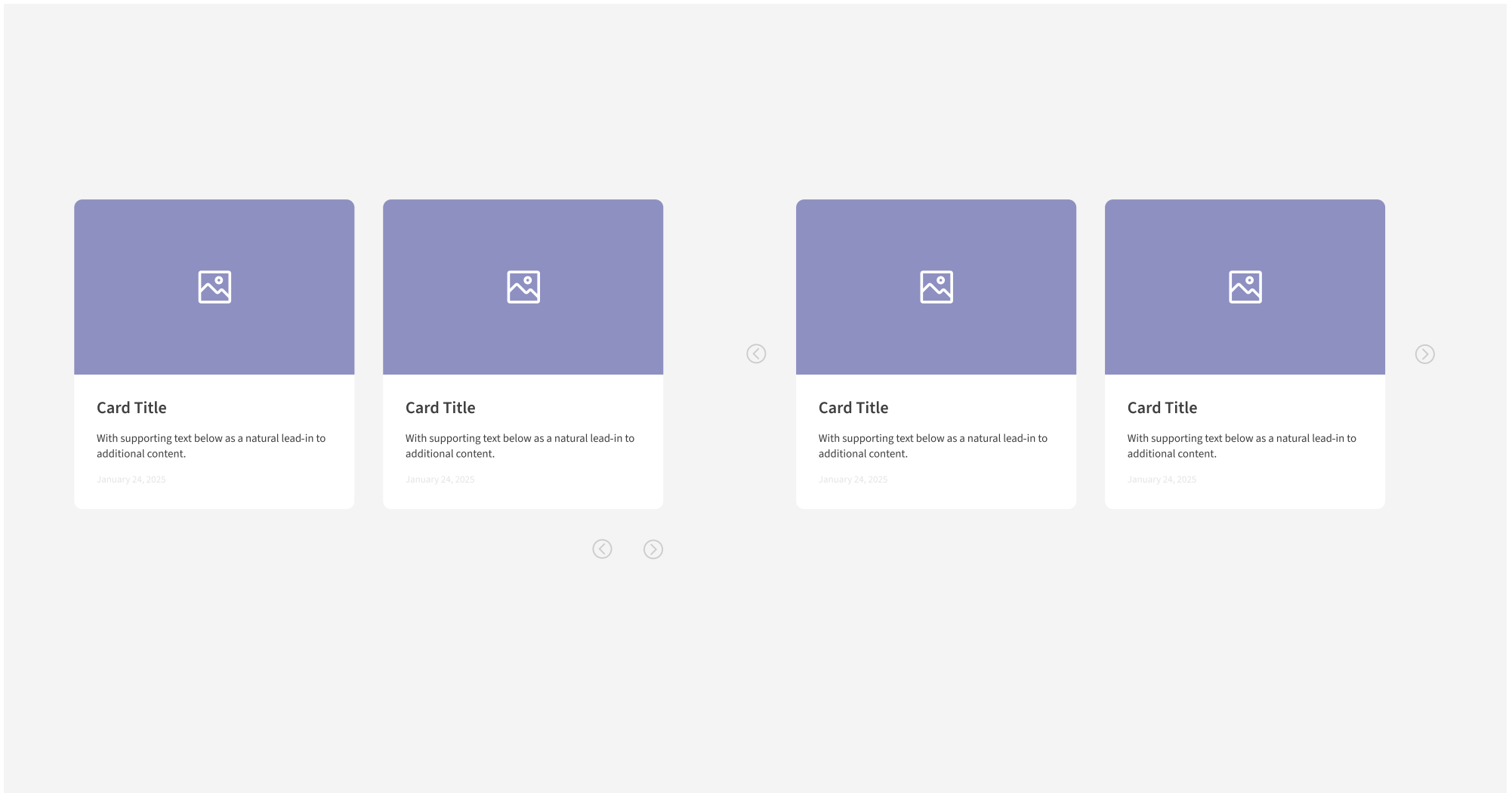


Fig.3.3.53 *Carousel Controller*

Dropdowns

Dropdowns present a list of selectable options that users can choose from to complete a form, filter data, or sort content. They can be used in various contexts, including full-page forms, modals, or side panels. As a stylized enhancement of the native select element, the dropdown component can be customized to align with the design system and is commonly used for filtering or sorting content within a page. The examples are provided in **Fig.3.3.54 - Fig.3.3.60**. The size and spacing can be found in **Fig.3.3.62 - Fig.3.3.67**.

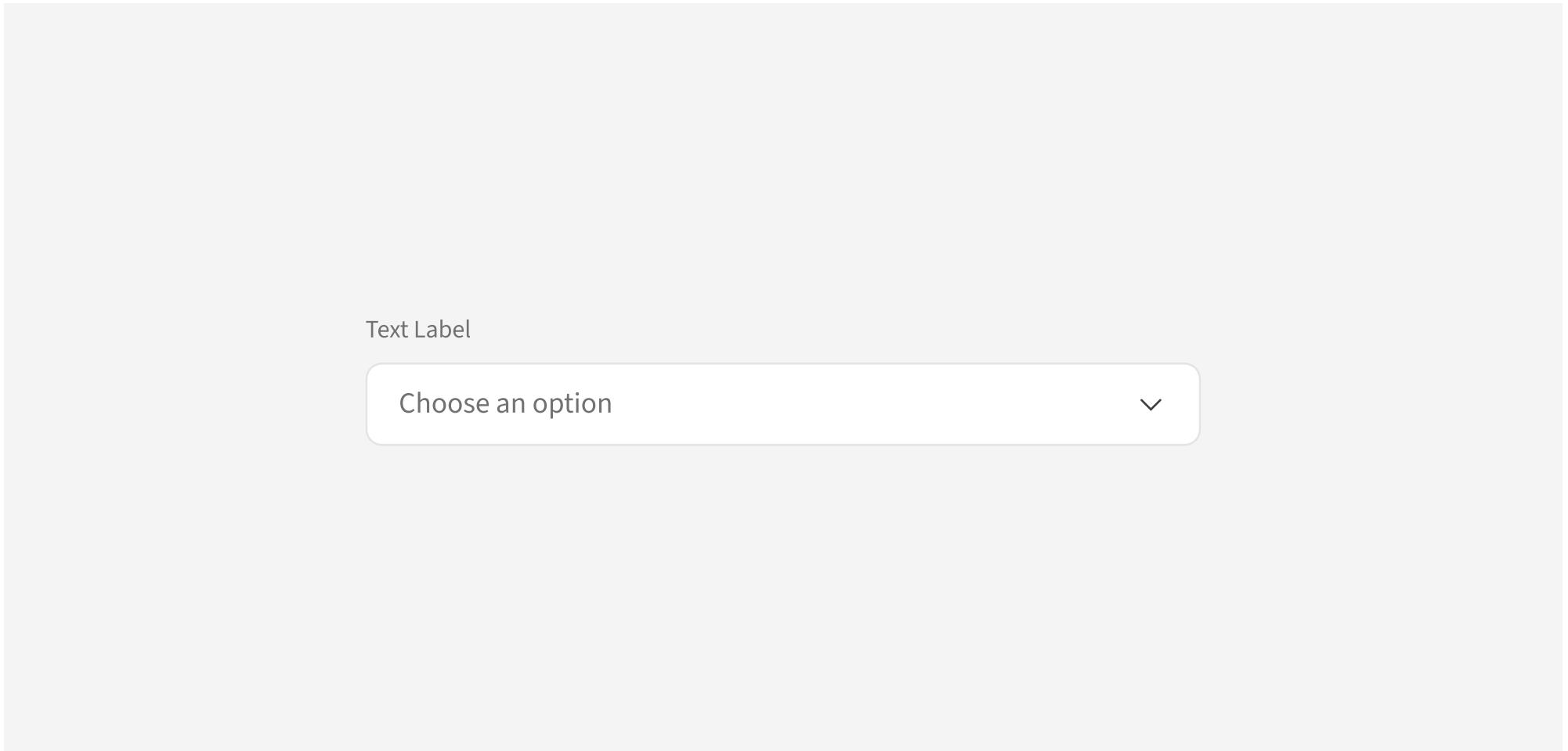


Fig.3.3.54 Dropdowns

Single-select

Use a single-select dropdown when the user must choose one option from a predefined list. This component is especially effective in scenarios where screen space is limited.

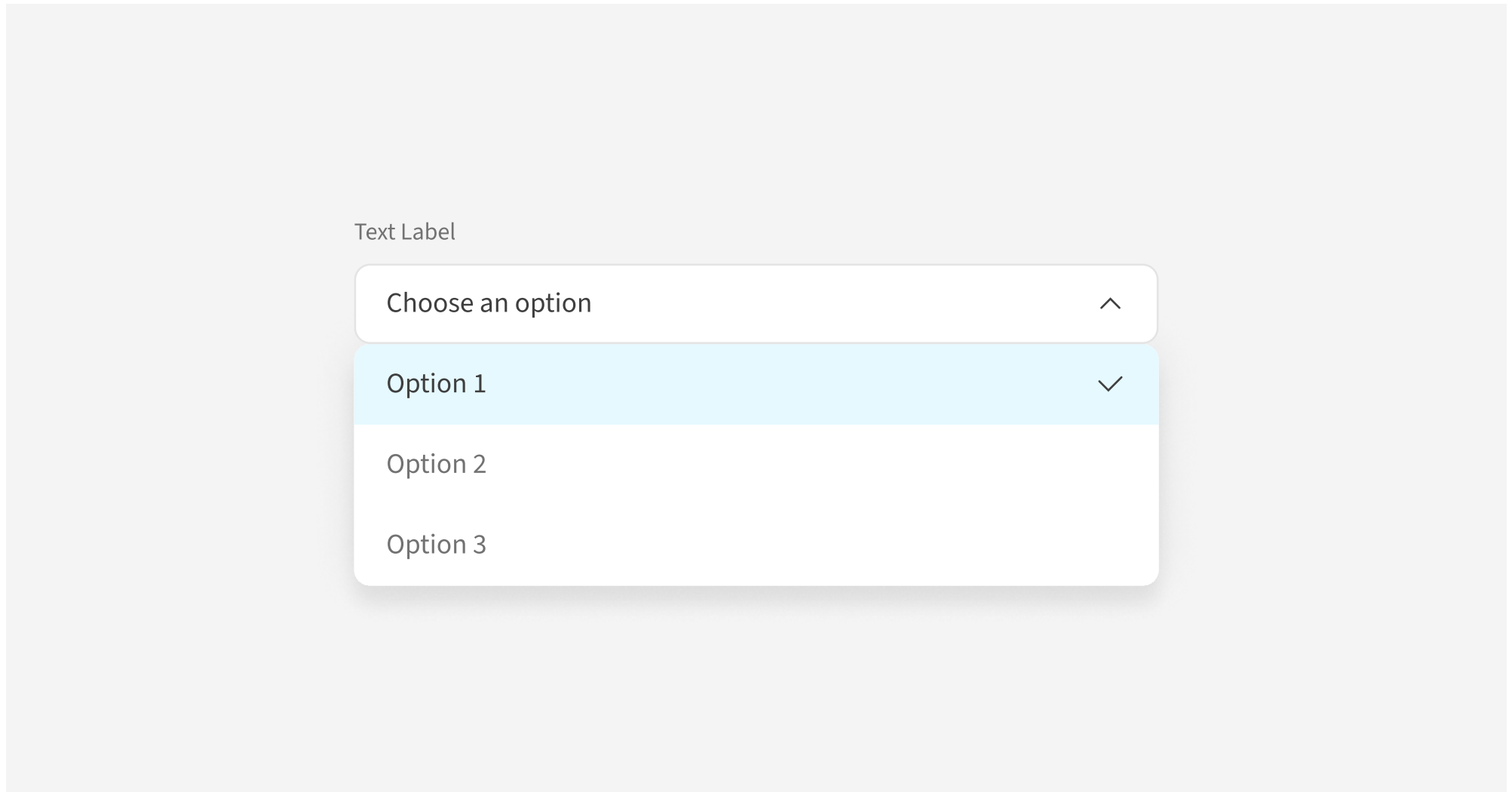


Fig.3.3.55 Single-Select Dropdown

Multiselect

Use a multiselect dropdown when users need to choose multiple options from a predefined list. Multiselects are ideal for filtering or sorting content based on multiple criteria. Each option in the list includes a checkbox icon to clearly indicate selectable items and support multi-selection.

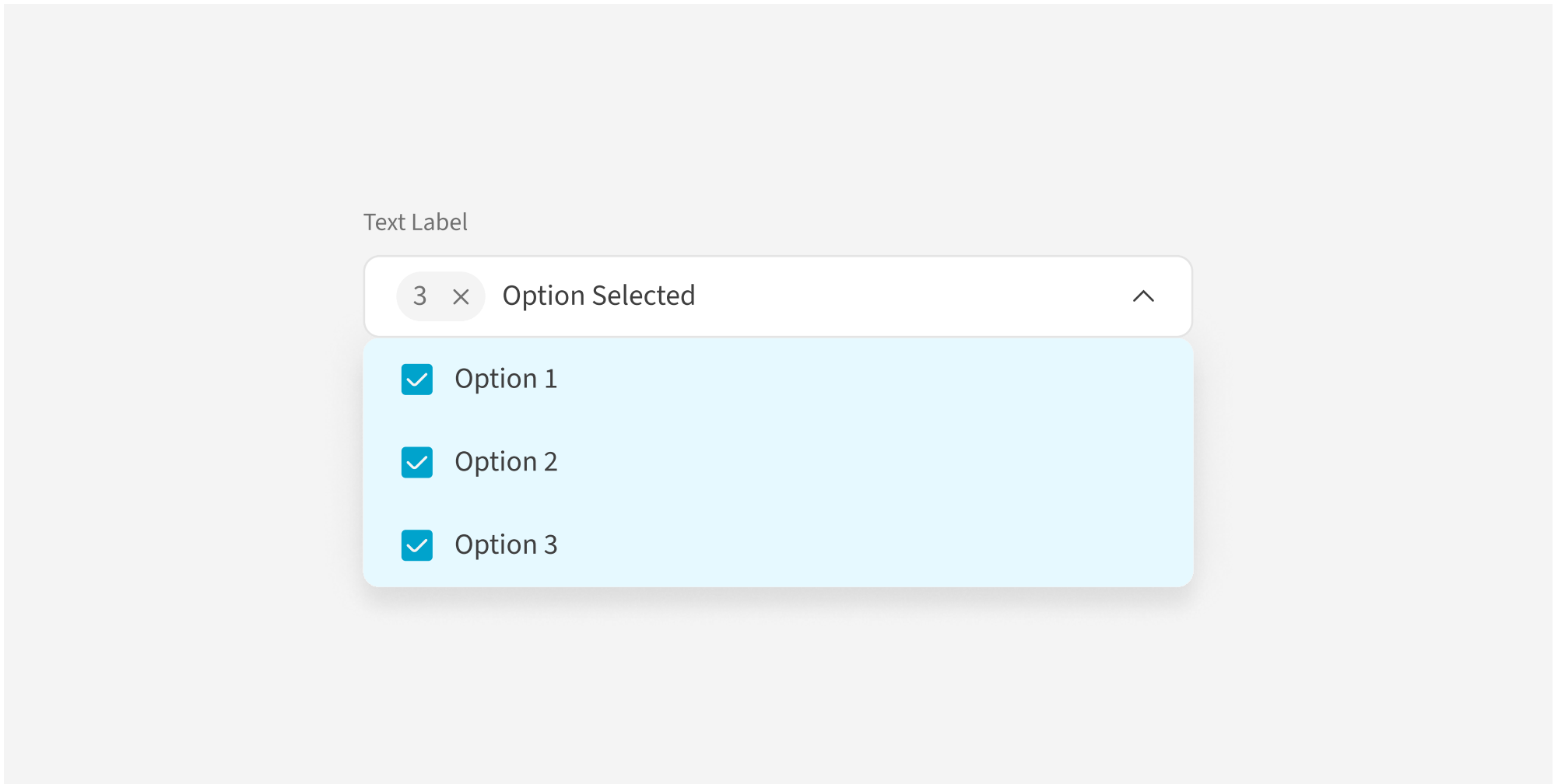


Fig.3.3.56 Multiselect Dropdown

Filtering

Filtering enables users to dynamically refine options by typing or selecting criteria, simplifying the process of narrowing down long lists to quickly find the desired selection.

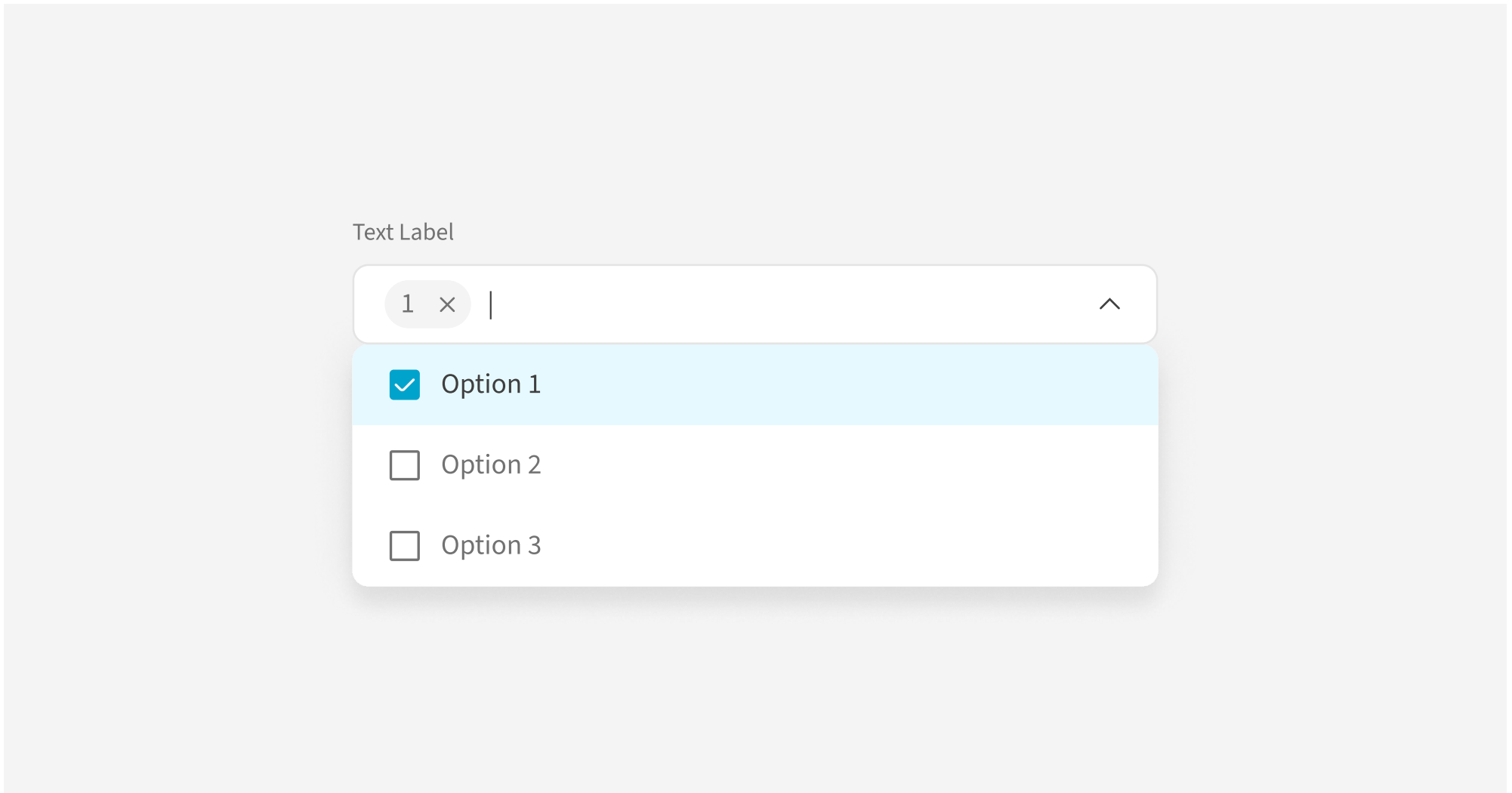


Fig.3.3.57 Filtering Dropdown

Combo Box

Use a combo box when the user needs to select one option, but the list of options may be very long or not predefined. Combo boxes allow the user to either select from a list of suggested options or type in their own custom value.

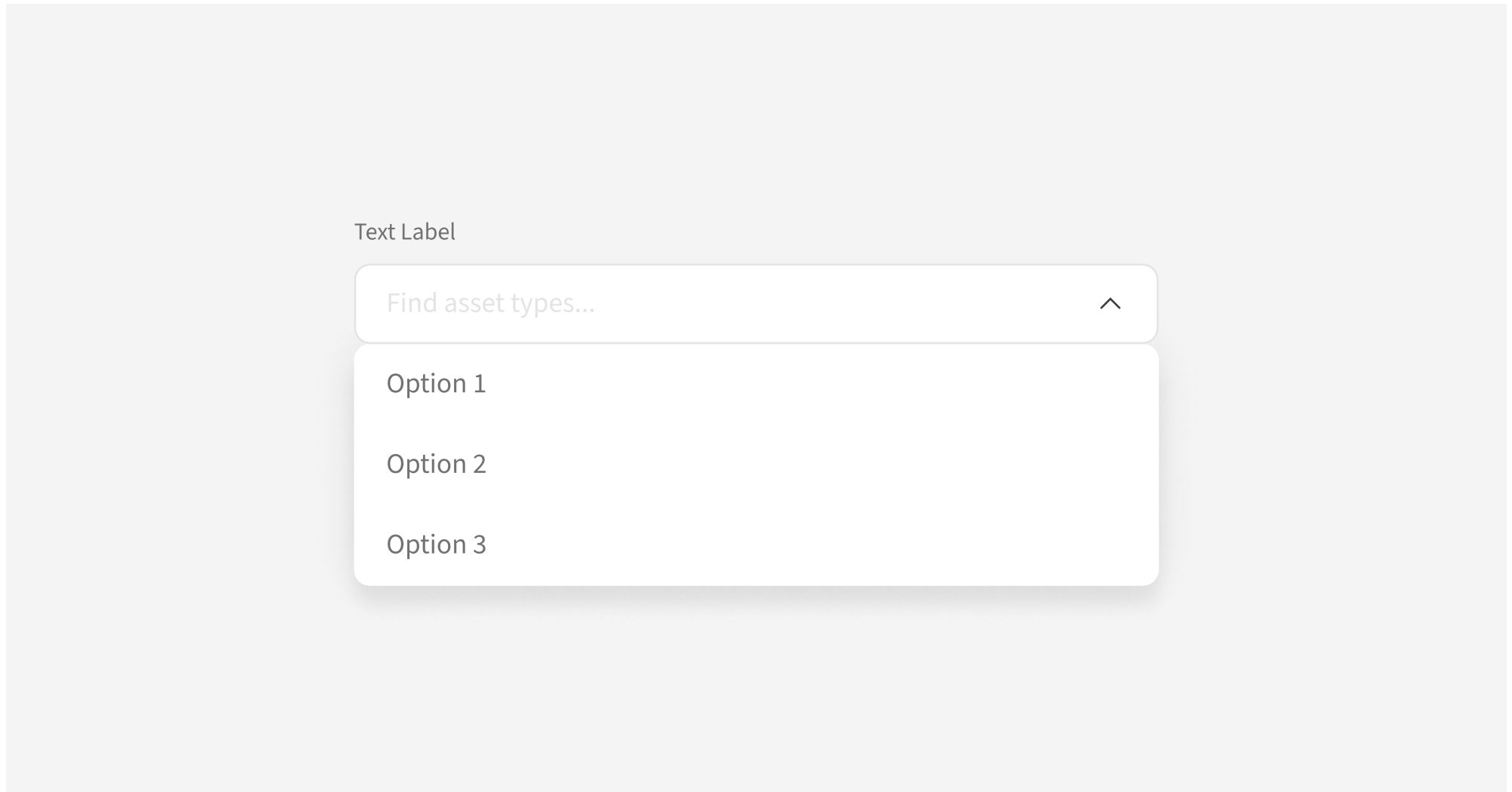


Fig.3.3.58 Combo Box

Inline Dropdown

An inline dropdown is a compact UI element that displays a list of options within the existing content flow when triggered. It helps conserve space, enhances accessibility, and supports seamless interaction without disrupting the overall layout.

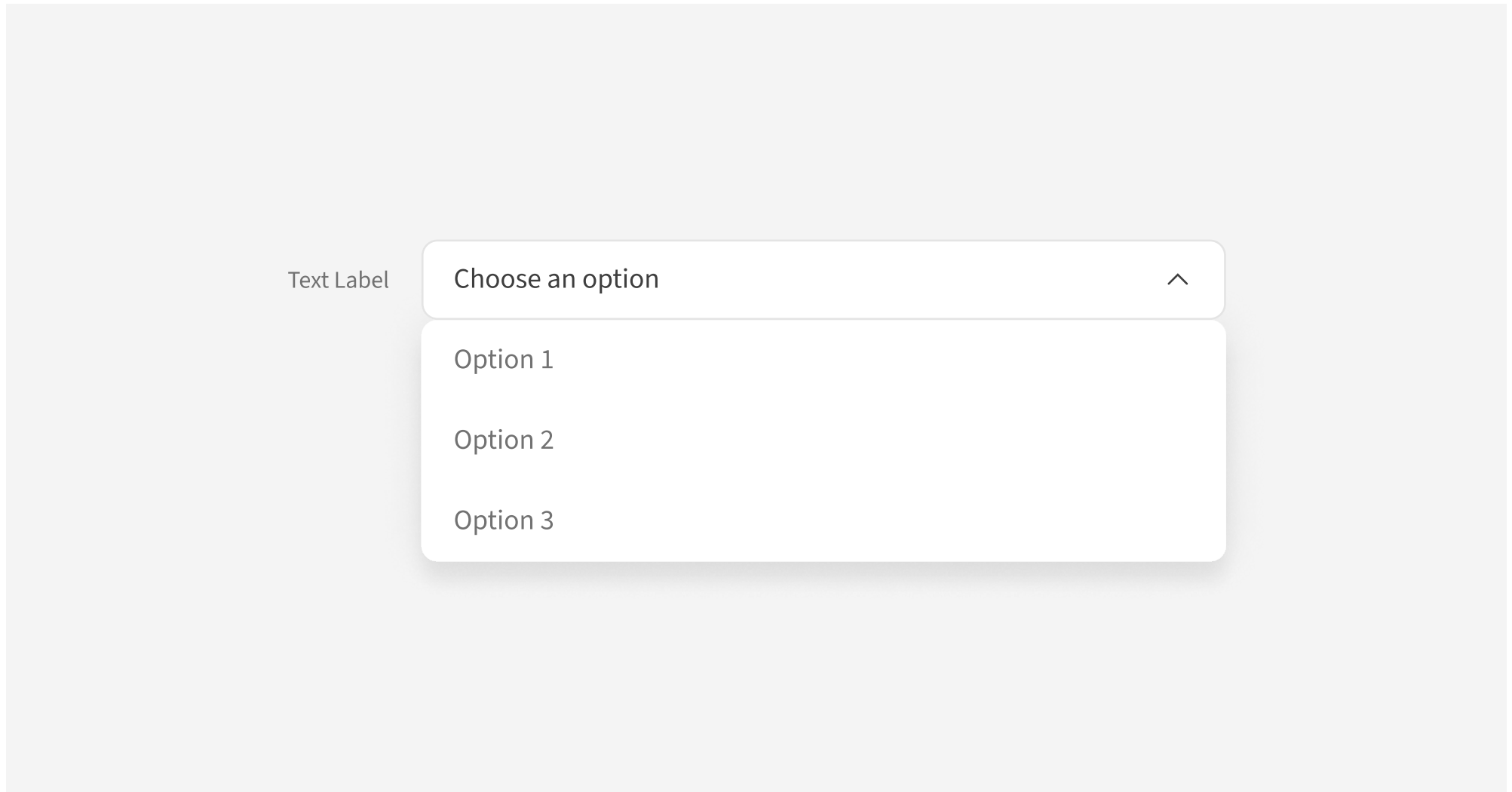


Fig.3.3.59 *Inline Dropdown*

Fluid Dropdown

In a fluid dropdown, the input field maintains a single consistent height, while the menu items are available in two size variants: default and condensed. This allows for flexibility in presenting options without affecting the overall input structure.

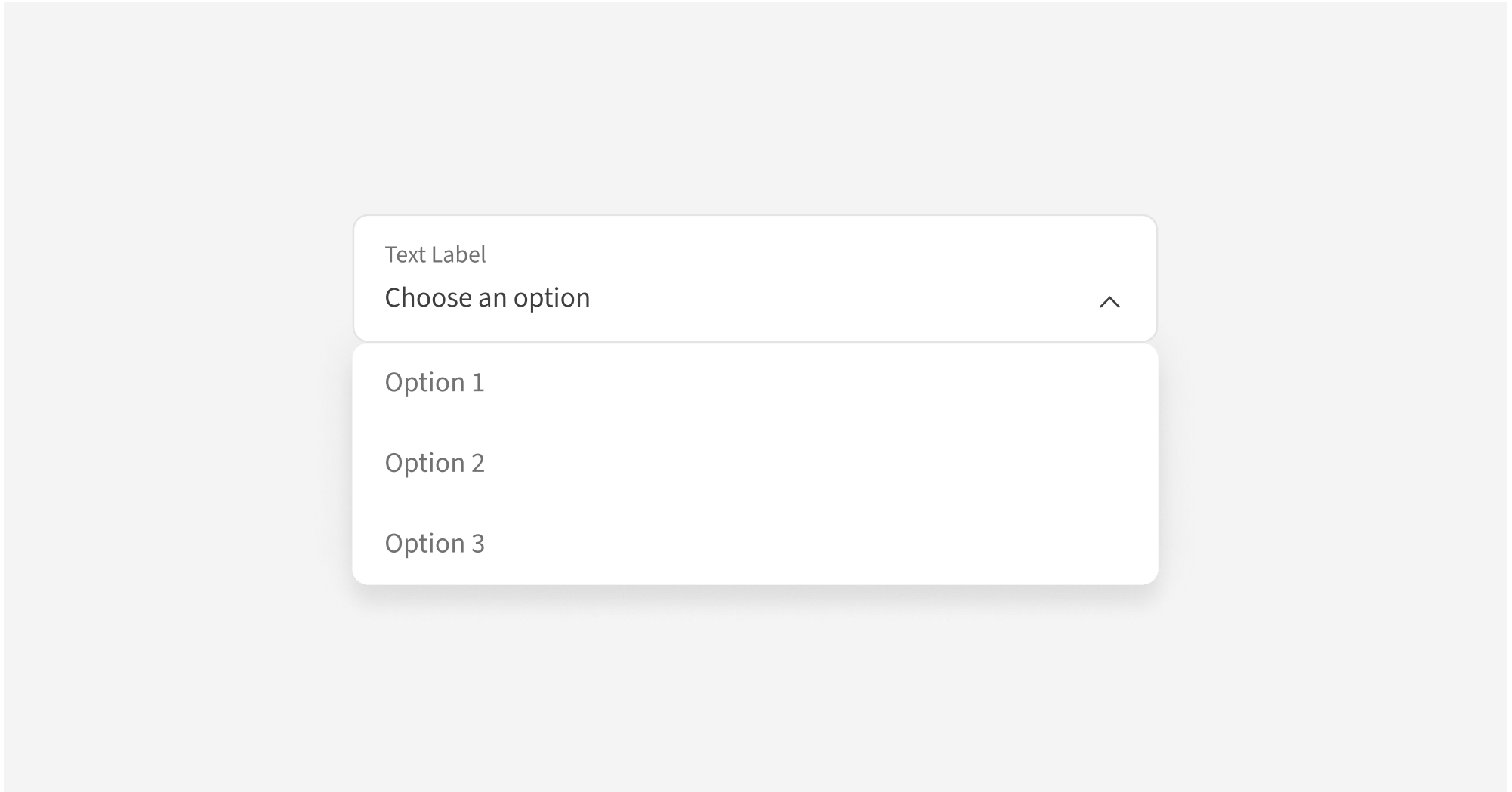


Fig.3.3.60 Fluid Dropdown

Scrolling Behavior

Scrollbars may not always be visible, so it's recommended to reveal approximately 50% of the last option's container height to indicate that additional content is available, as shown in **Fig.3.3.61**. This approach can vary depending on the specific use case and design context.

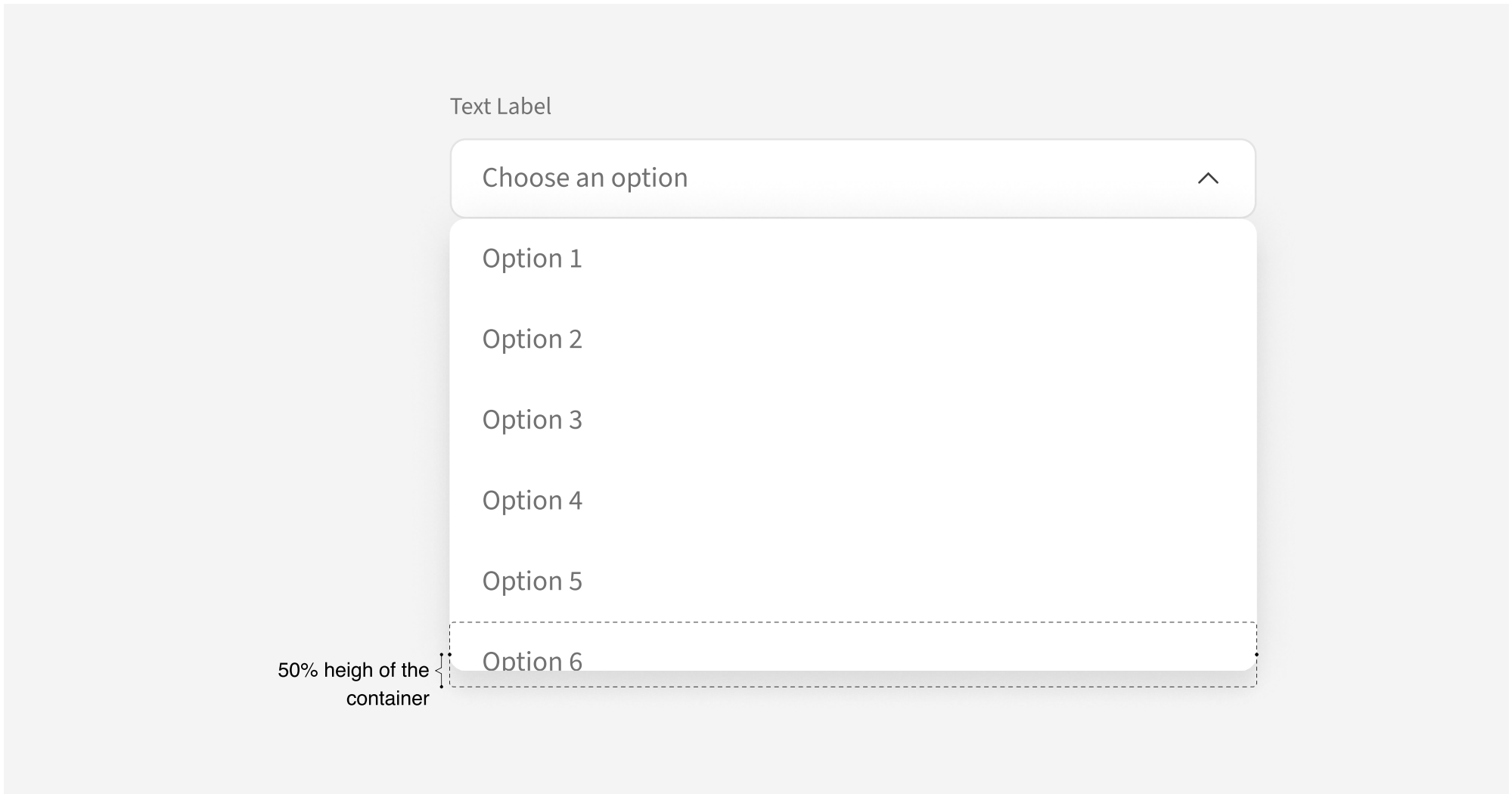


Fig.3.3.61 Scrolling Dropdown

Size and Spacing - Small

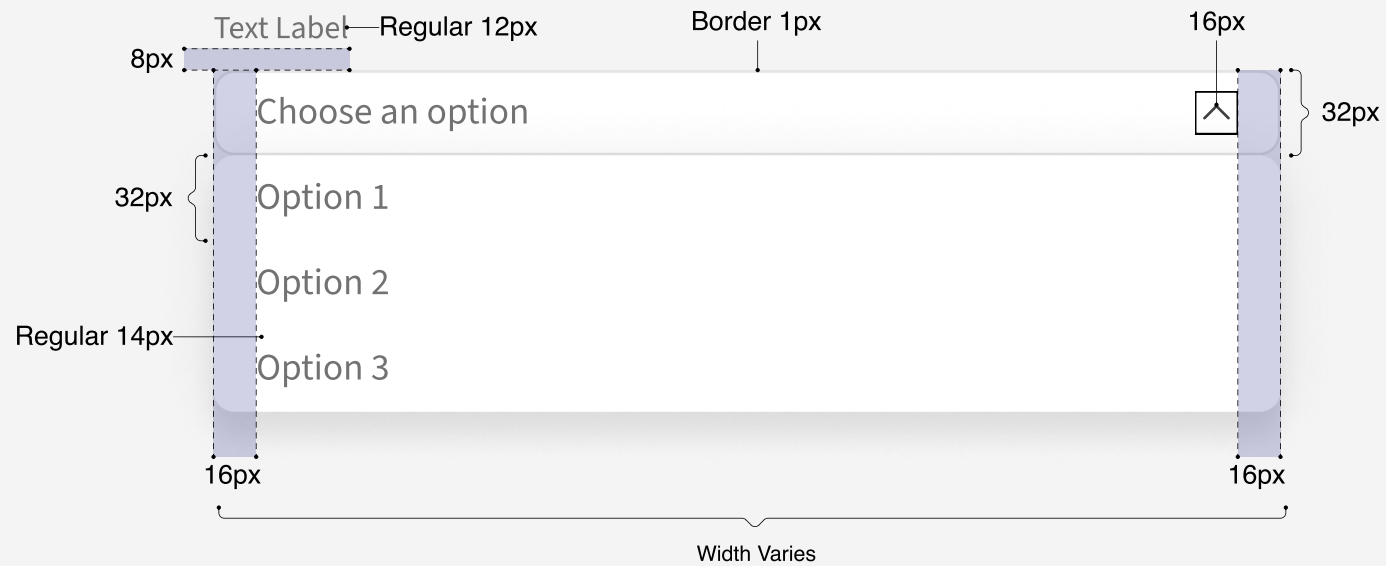


Fig.3.3.62 Dropdowns - Small Size

Size and Spacing - Medium

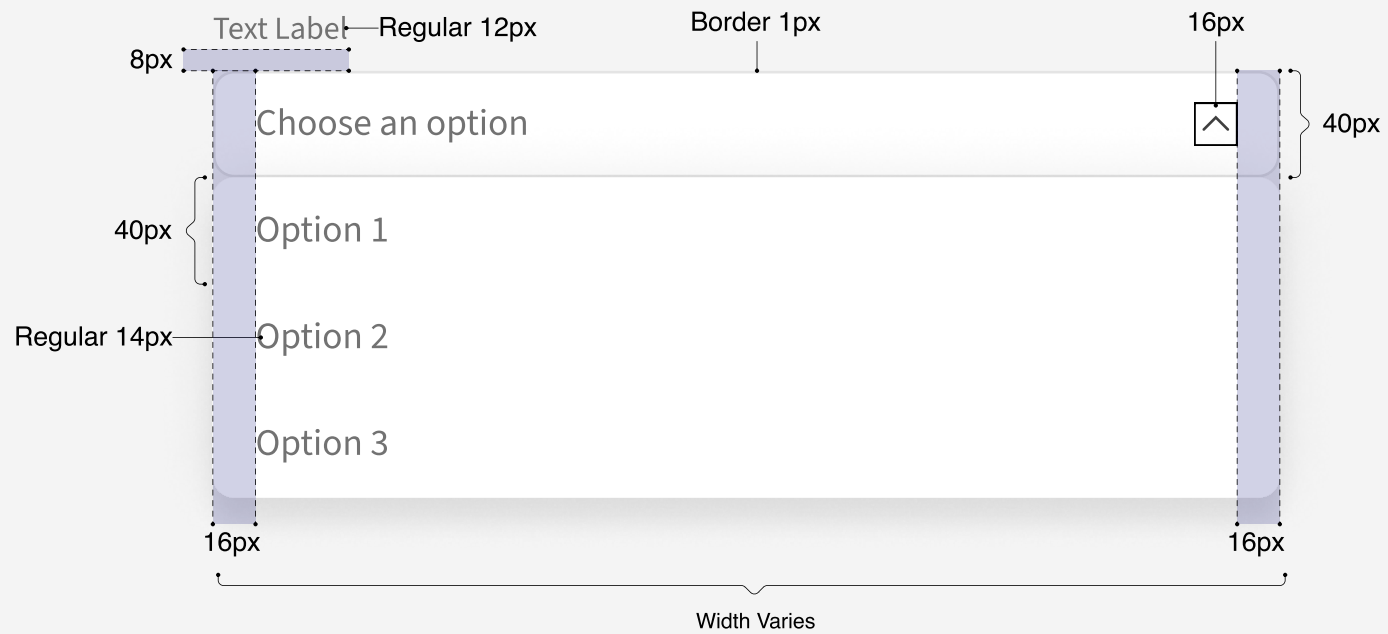


Fig.3.3.63 Dropdowns - Medium Size

Size and Spacing - Large

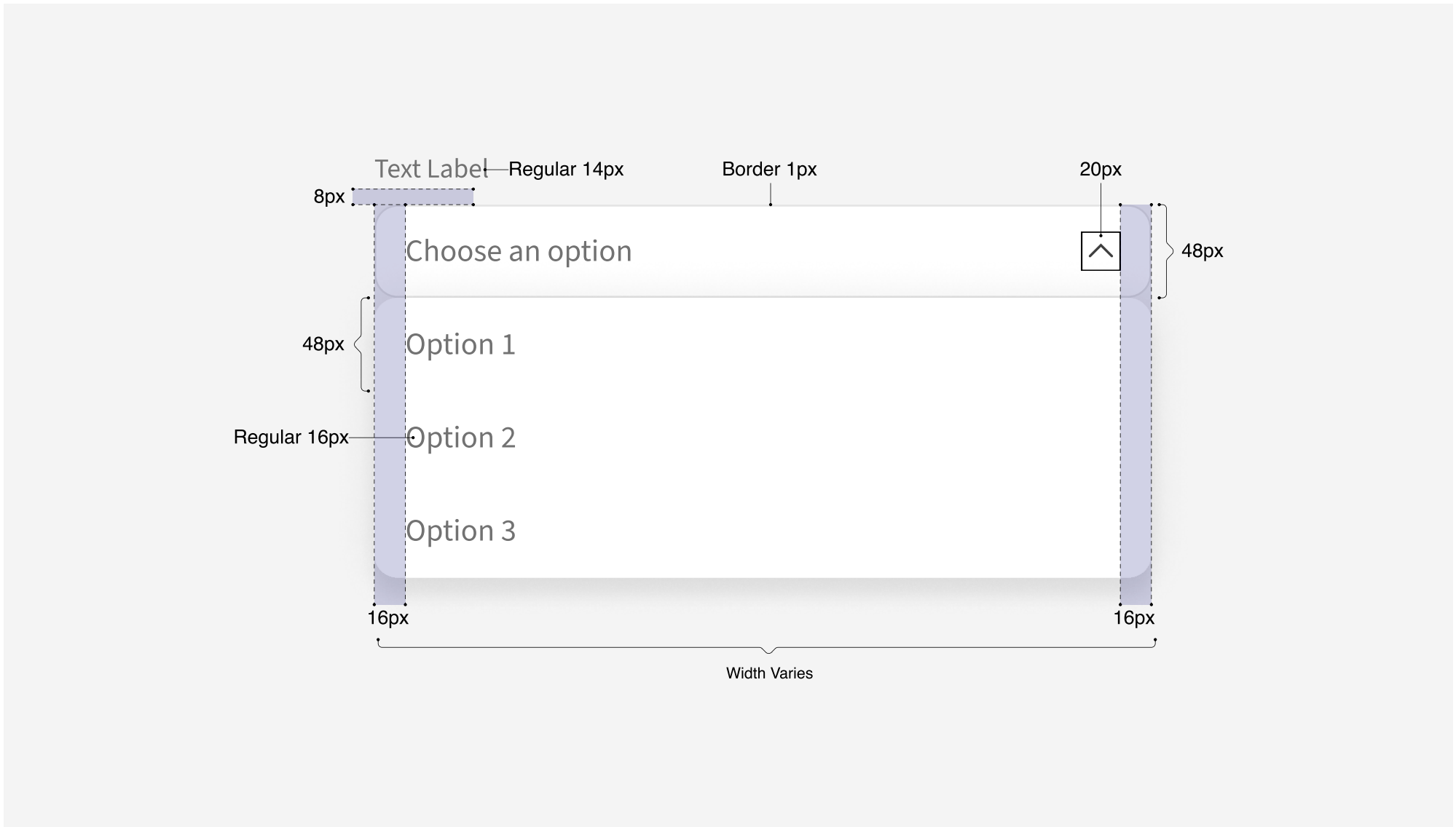


Fig.3.3.64 Dropdowns - Large Size

Size and Spacing - Filtering

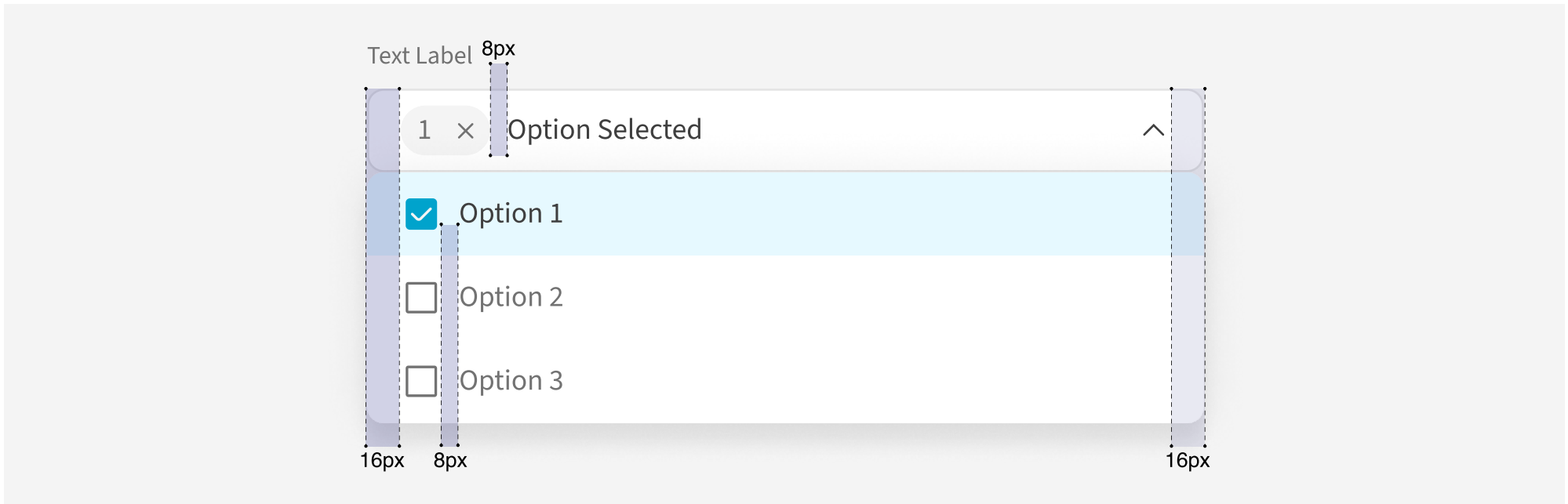


Fig.3.3.65 Size and Spacing - Filtering

Size and Spacing - Inline Dropdown

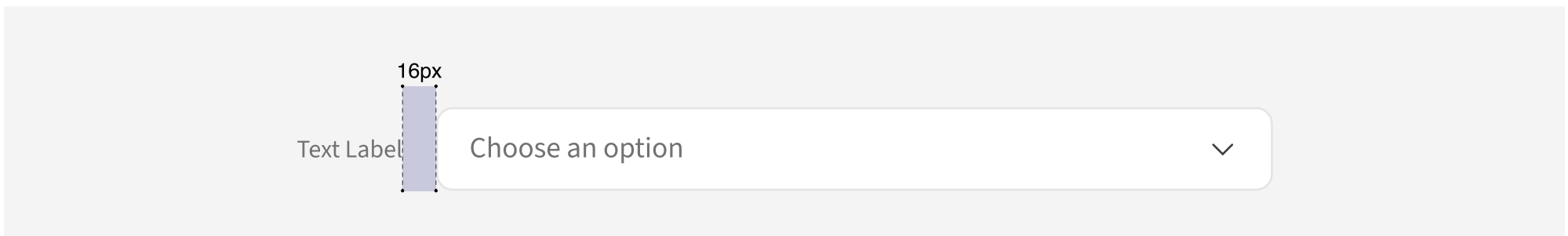


Fig.3.3.66 Size and Spacing - Inline Dropdown

Size and Spacing - Fluid Dropdown

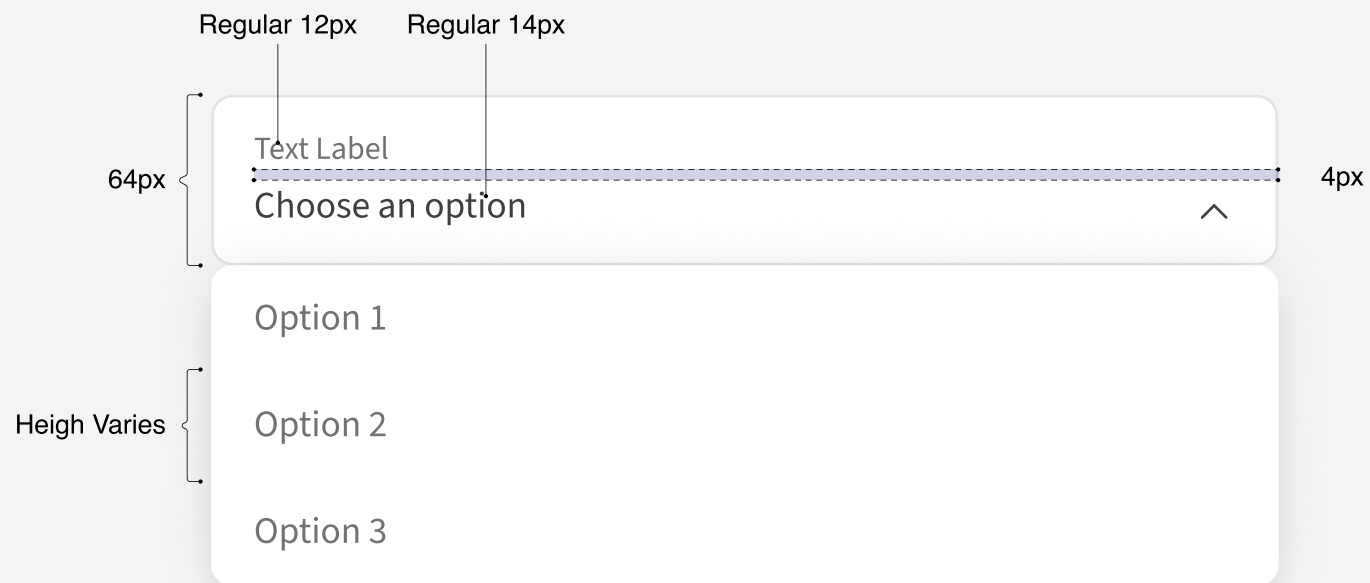


Fig.3.3.67 Size and Spacing - Fluid Dropdown

Dropdown States

Dropdown states represent the visual and interactive conditions of a dropdown—such as hover, selected, and disabled—to guide user behavior and enhance clarity, as shown in, **Fig.3.3.68**.

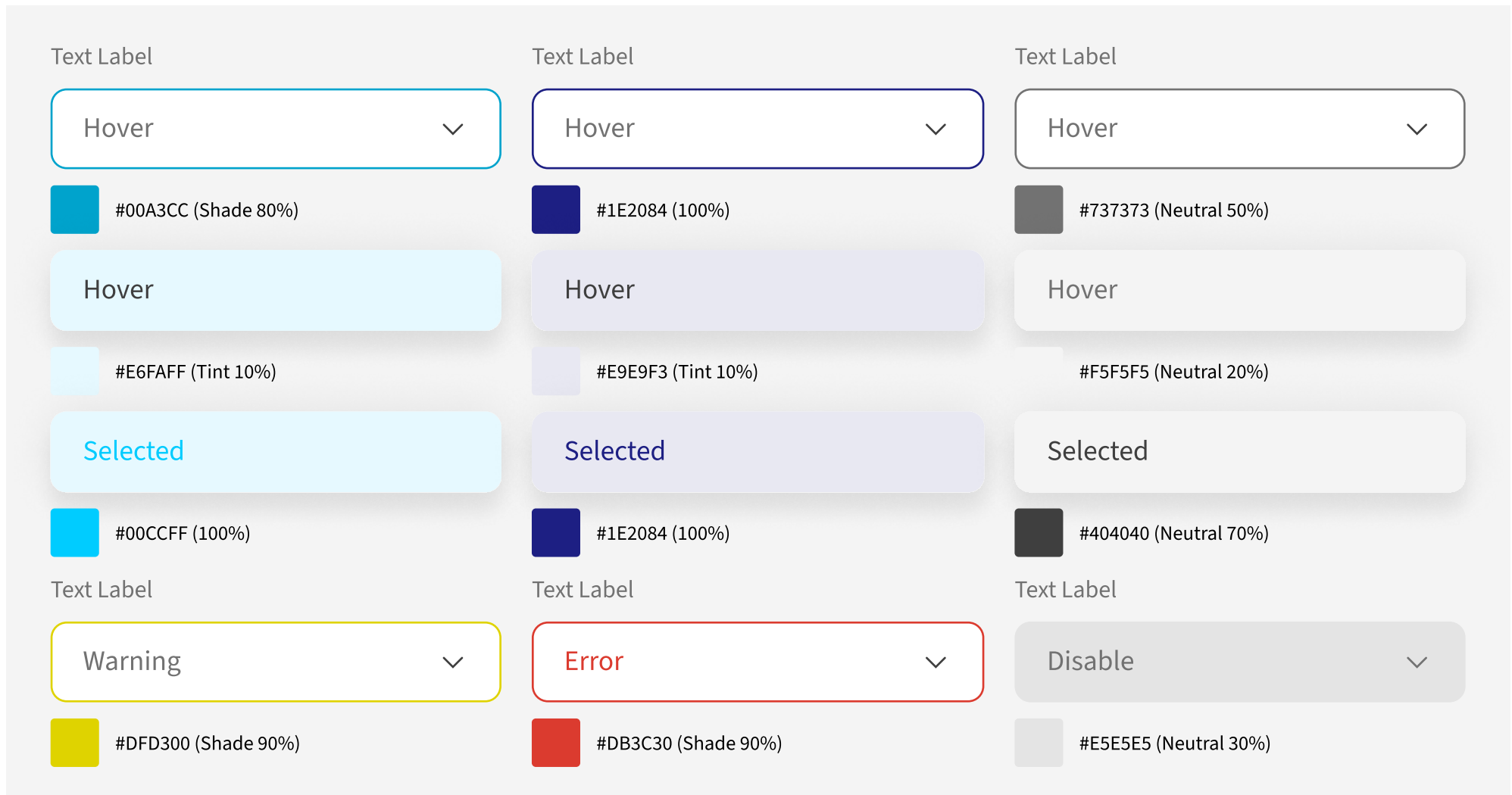



Fig.3.3.68 Dropdown States

Data Tables

Data tables present information in a structured grid of rows and columns, making it easy to scan, compare, and extract insights. They may include interactive components, non-interactive elements, and tools that allow users to query, sort, or manipulate data effectively. The examples are provided in **Fig.3.3.69 - Fig.3.3.74**. The size and spacing can be found in **Fig.3.3.75 - Fig.3.3.80**.



Header	Header	Header	Header	Header	Header	Header
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text

Fig.3.3.69 Data Tables

Horizontal Borders

Using horizontal borders in tables helps reduce visual noise and improves readability by guiding the eye across rows, making it easier for users to scan and compare data.




Header	Header	Header	Header	Header	Header	Header
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text

Fig.3.3.70 Data Tables with Horizontal Border

Freeform

Freeform tables omit both horizontal and vertical borders, creating a minimalist layout that emphasizes content over structure and supports a cleaner, more modern aesthetic.




Header	Header	Header	Header	Header	Header	Header
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text

Fig.3.3.71 Freeform Data Tables

Alternating Rows

Applying a fill color to every other row improves readability in large data sets. This technique works with tables that use full borders, horizontal borders, or no borders at all.



Header	Header	Header	Header	Header	Header	Header
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text

Fig.3.3.72 Data Tables with Alternating Rows

Selectable Rows and Bulk Actions

Selectable rows include checkboxes that let users select individual or all visible rows within the current table view. Selected rows can be grouped to perform bulk actions such as delete, move, or other available operations. Non-selectable rows display inactive checkboxes to indicate that no interaction is allowed.



<input type="checkbox"/>	Header	Header	Header	Header	Header	Header
<input checked="" type="checkbox"/>	Text	Text	Text	Text	Text	Text
<input checked="" type="checkbox"/>	Text	Text	Text	Text	Text	Text
<input type="checkbox"/>	Text	Text	Text	Text	Text	Text
<input type="checkbox"/>	Text	Text	Text	Text	Text	Text
<input type="checkbox"/>	Text	Text	Text	Text	Text	Text

Fig.3.3.73 Selectable Rows and Bulk Actions

Expandable Rows

Expandable rows reveal additional content that is hidden in the table's default view. When expanded, the row spans the full width of the table, and its content can be scrolled if it exceeds the available space.

	Header	Header	Header	Header	Header	Header
^	Text	Text	Text	Text	Text	Text
	Text This is sample content.					
v	Text	Text	Text	Text	Text	Text
v	Text	Text	Text	Text	Text	Text
v	Text	Text	Text	Text	Text	Text

Fig.3.3.74 Data Tables with Expandable Rows

Size and Spacing - Small

The diagram illustrates a small data table with the following specifications:

- Table Dimensions:** The table is 32px high and 16px wide.
- Header Row:** The first row contains seven 'Header' cells. The text is Semibold 14px. A note indicates 'The width of each column can vary'.
- Text Rows:** The subsequent four rows contain 'Text' cells. The text is Regular 14px.
- Border:** A 1px border is shown on the left side of the table.
- Spacing:** A 32px vertical spacing is indicated on the right side of the table.

Header	Header	Header	Header	Header	Header	Header
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text
Text	Text	Text	Text	Text	Text	Text

Fig.3.3.75 Data Tables - Small Size

Size and Spacing - Medium

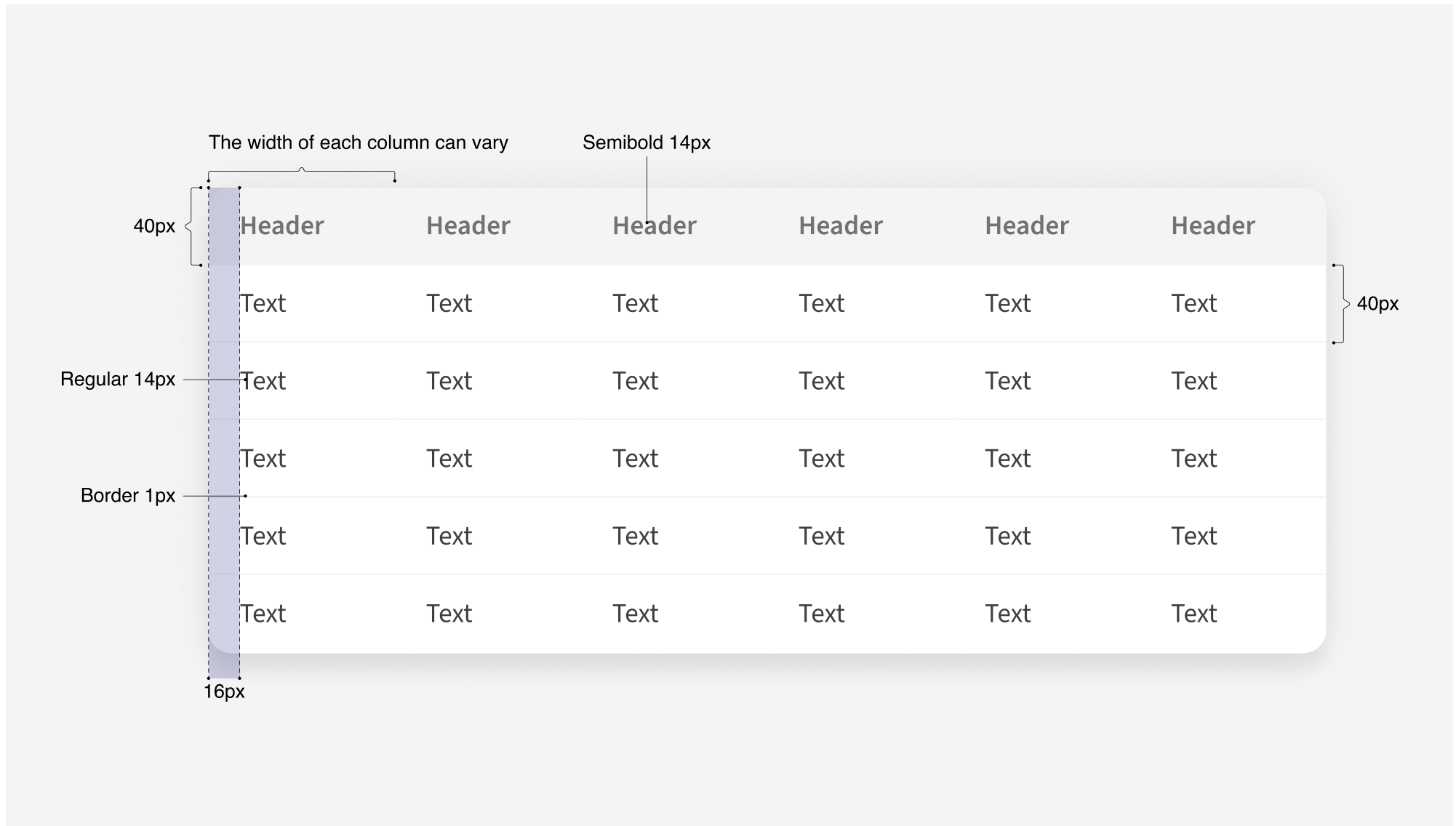


Fig.3.3.76 Data Tables - Medium Size

Size and Spacing - Large

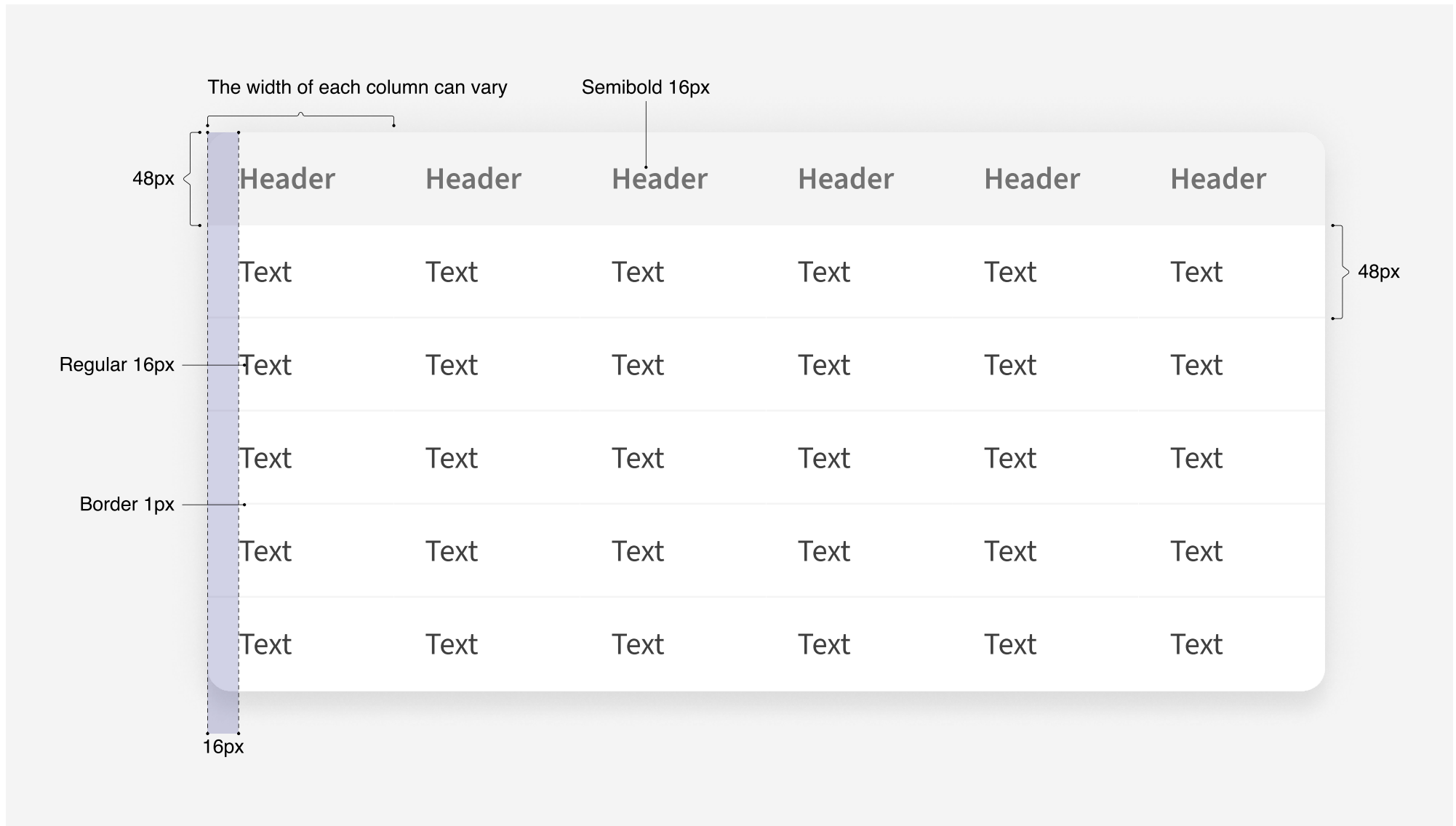


Fig.3.3.77 Data Tables - Large Size

Size and Spacing - Extra Large

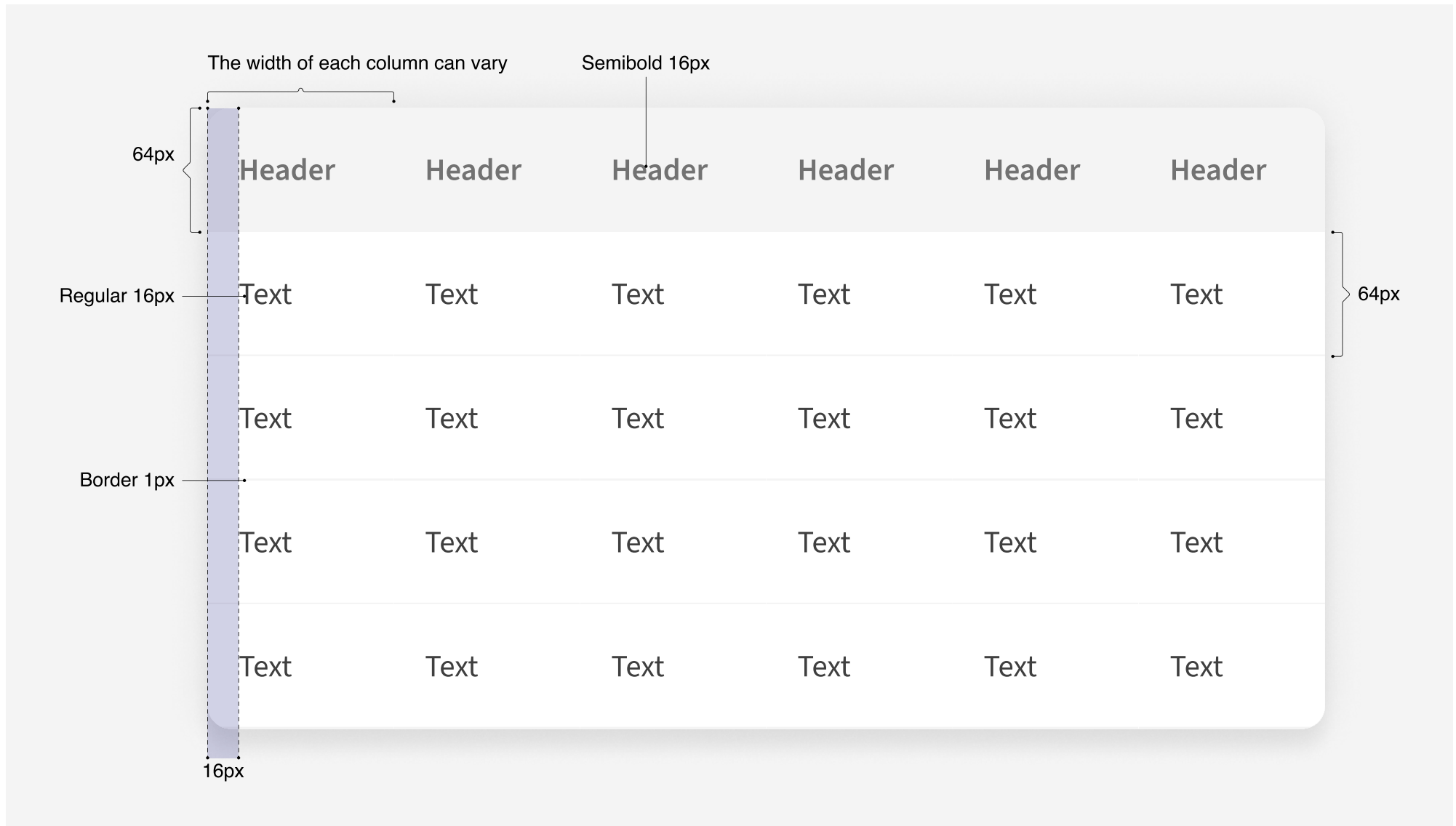


Fig.3.3.78 Data Tables - Extra Large Size

Size and Spacing - Selectable Rows and Bulk Actions



Fig.3.3.79 Size and Spacing - Selectable Rows and Bulk Actions

Size and Spacing - Expandable Rows

The header and text inside expandable rows adjust dynamically according to the standard table size shown in **Fig.3.3.74 - Fig.3.3.77**, ensuring that the content remains readable and properly aligned when rows are expanded or collapsed.

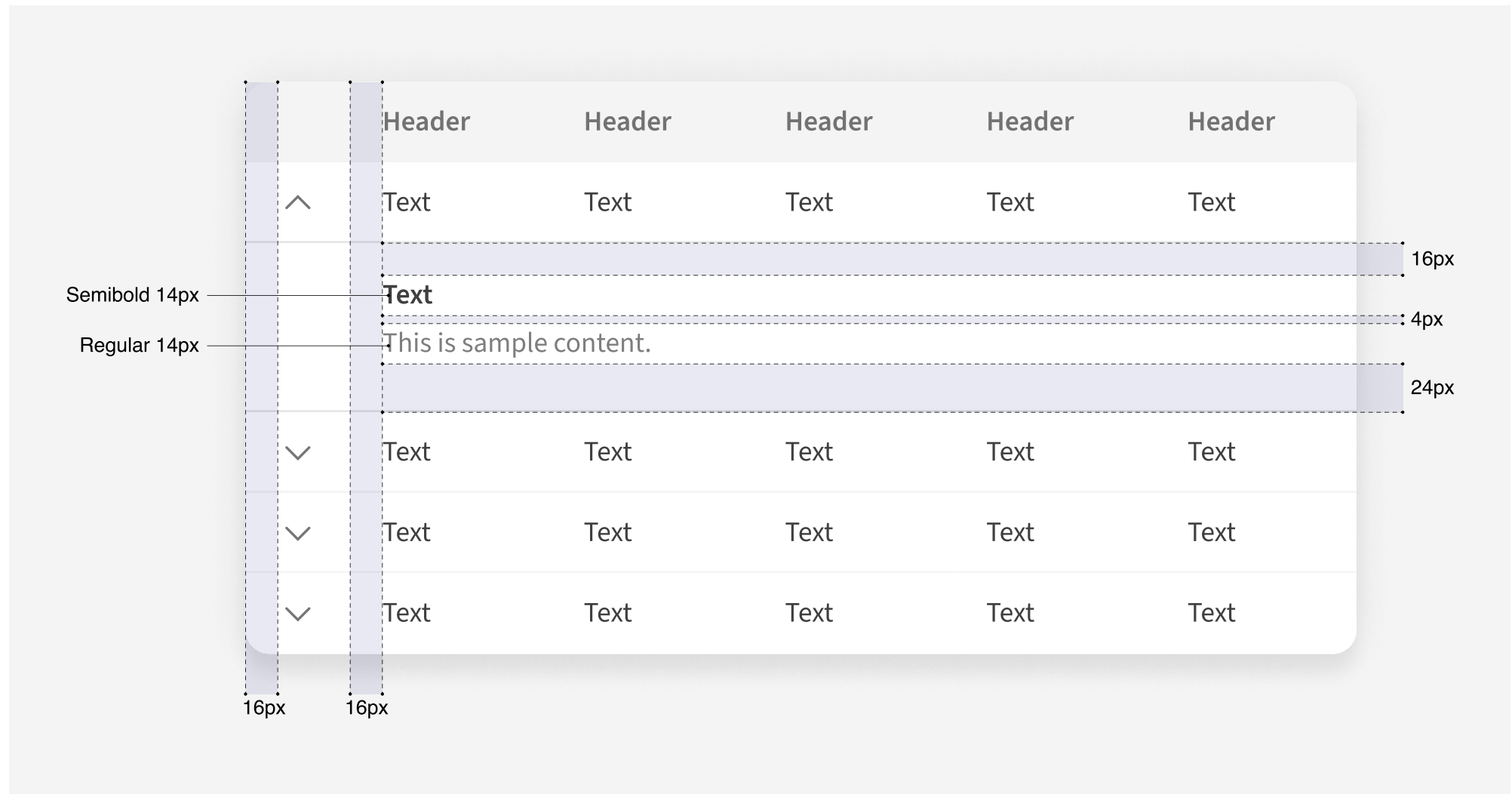


Fig.3.3.80 Size and Spacing - Expandable Rows

Data Table States

Data table states show how rows and cells appear and behave in different situations—such as hover or selected states, as shown in **Fig.3.3.81**. These help users know what’s happening and how to interact.

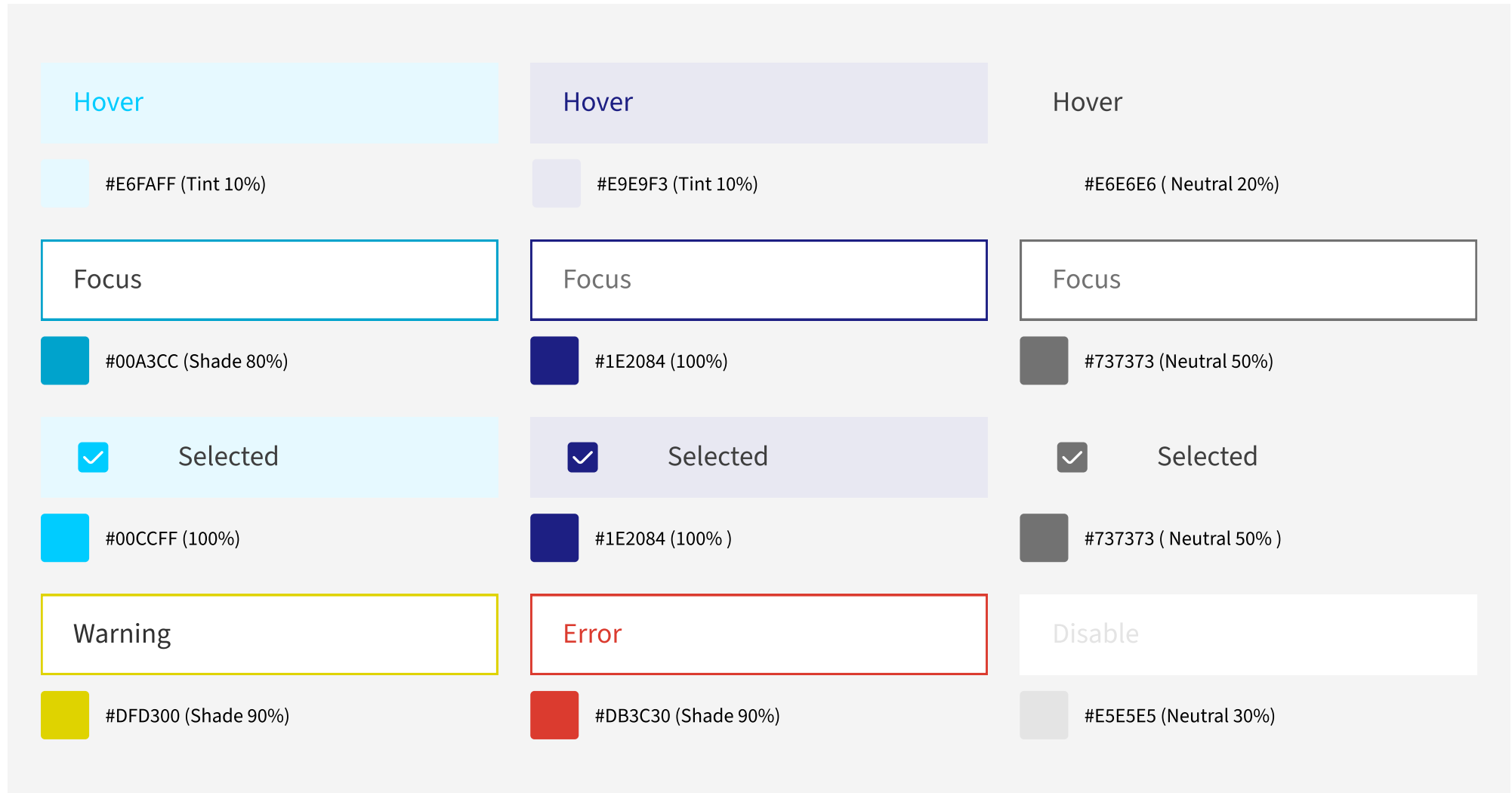


Fig.3.3.81 Data Table States

File Uploader

File uploaders let users upload their own content, typically within forms or as standalone components. They support single or multiple file uploads, often include drag-and-drop functionality, and display upload progress to keep users informed. The examples are provided in **Fig.3.3.82 - Fig.3.3.83**. The size and spacing can be found in **Fig.3.3.84 - Fig.3.3.87**.

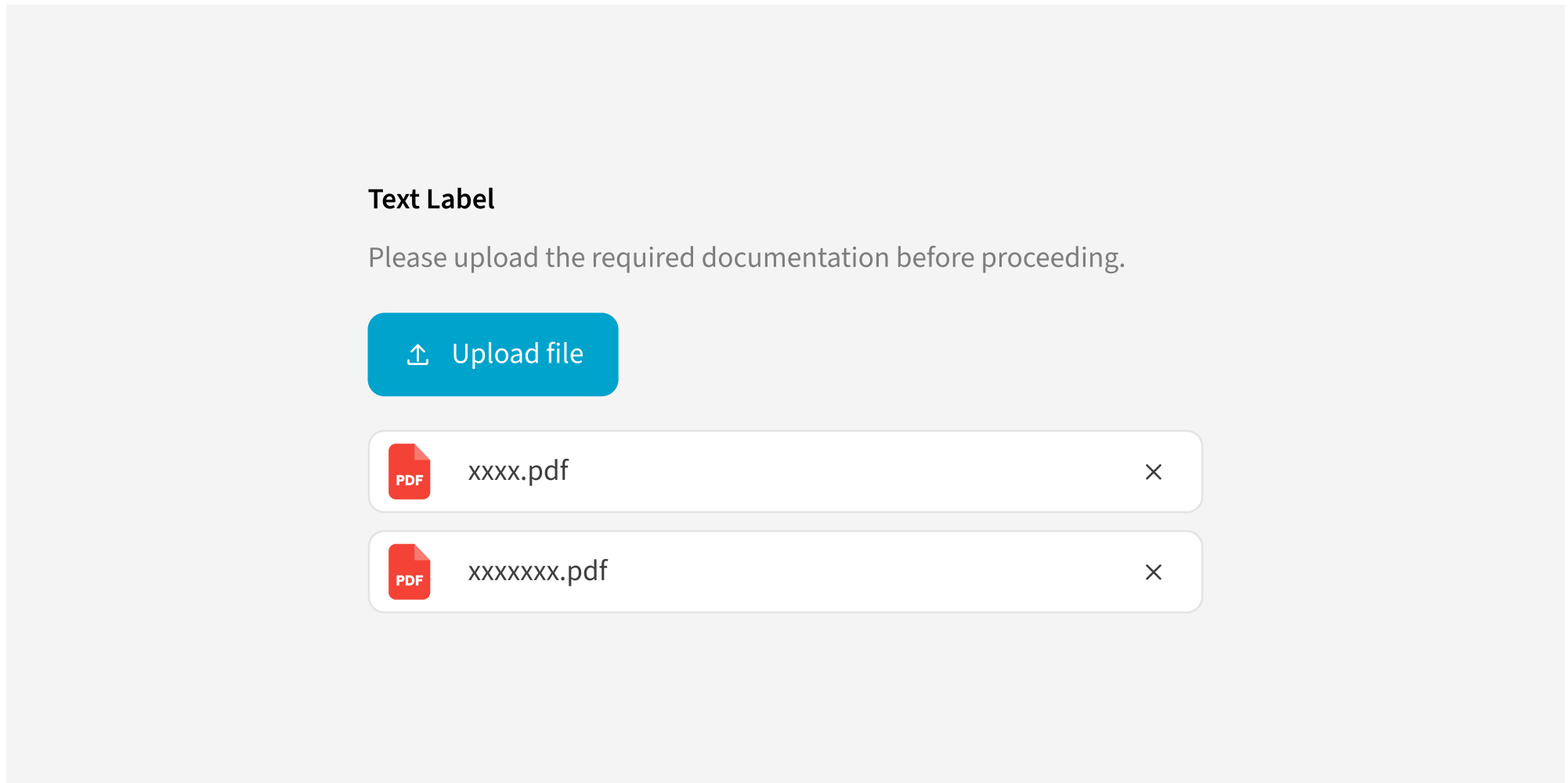


Fig.3.3.82 File Uploader

Drag or Drop

Dragging a file into the designated drop zone activates the upload area. Releasing the file within this zone will initiate the upload process automatically.

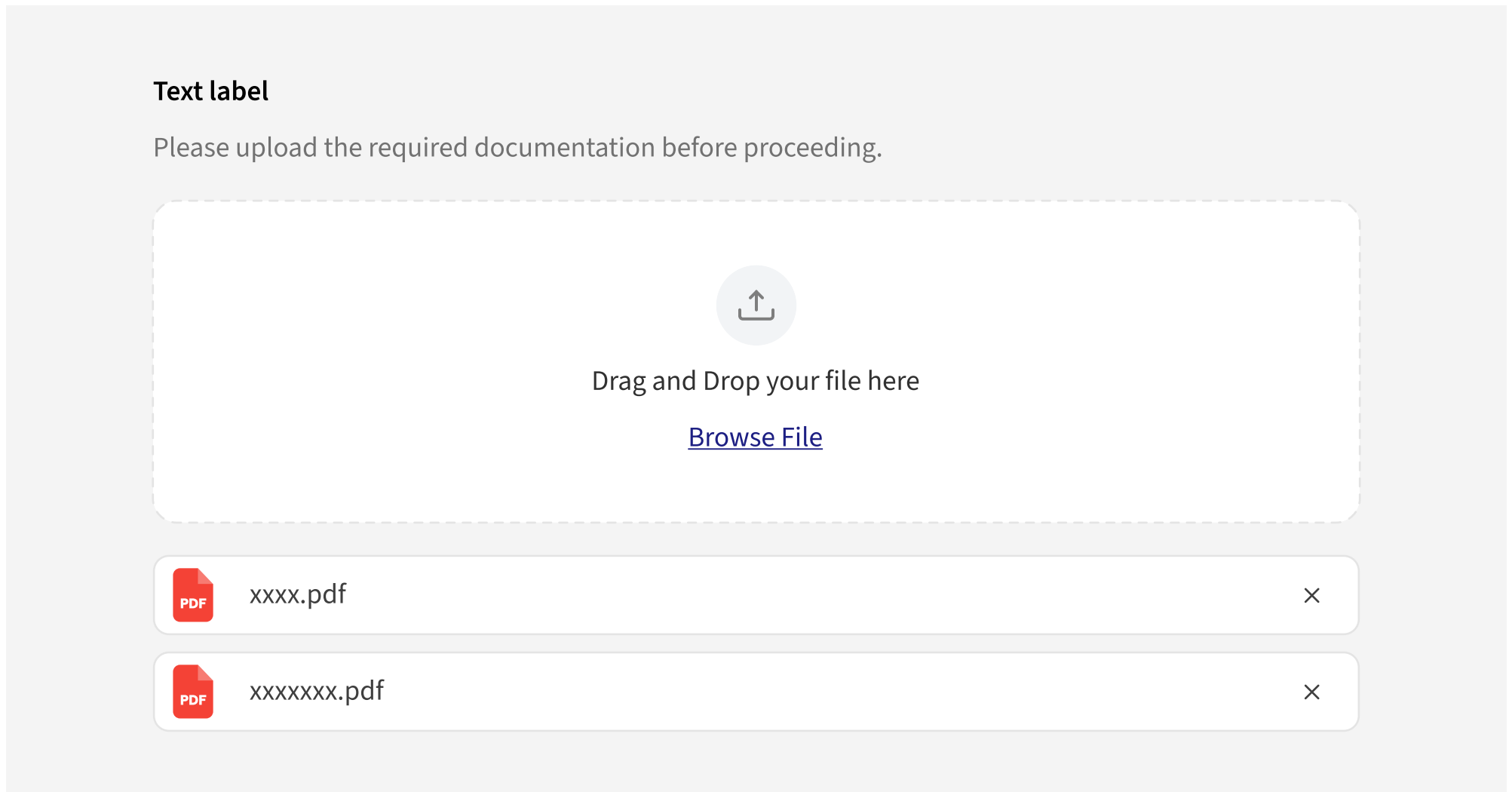


Fig.3.3.83 Drag or Drop File Uploader

Size and Spacing - Small

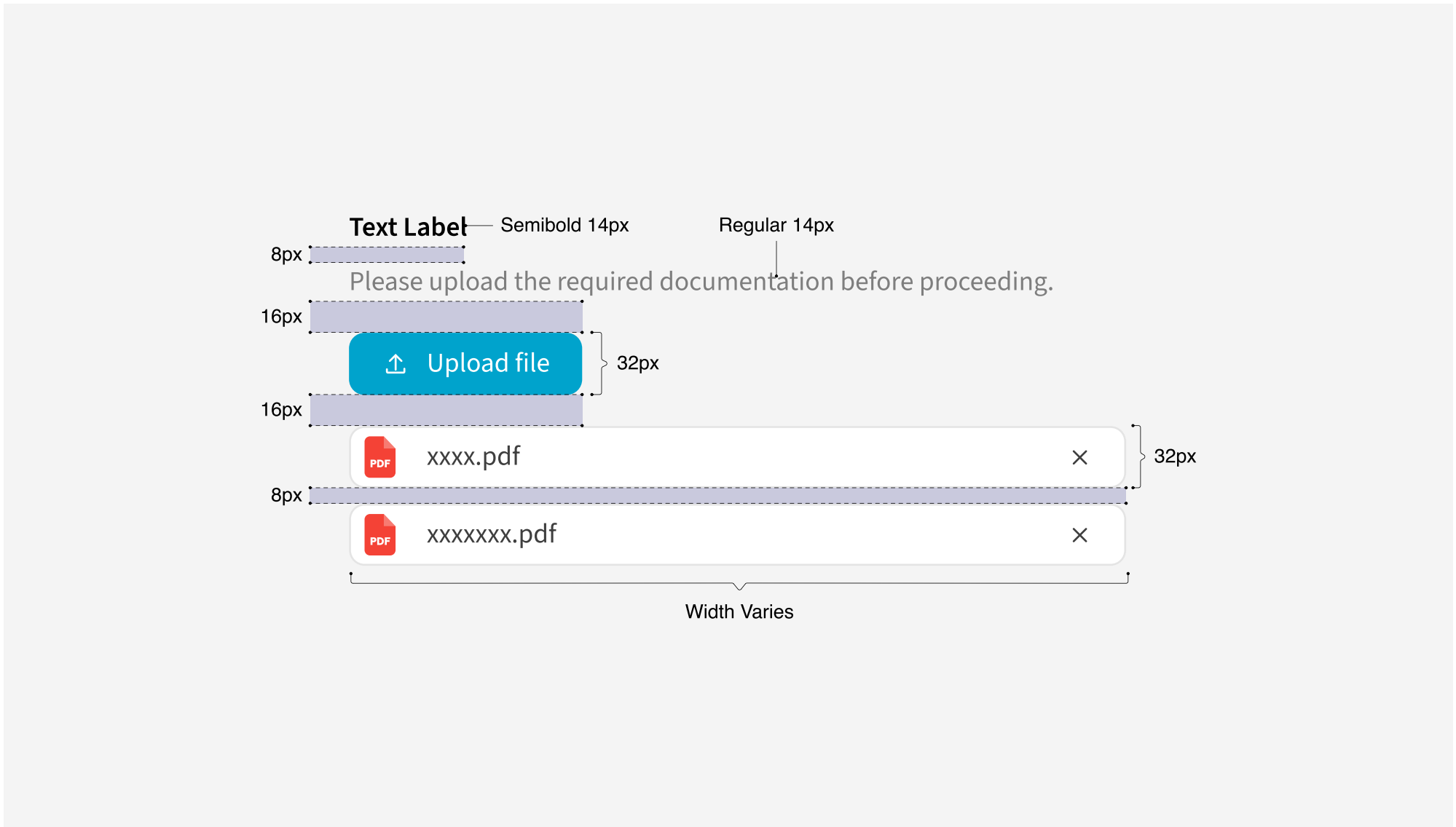


Fig.3.3.84 File Uploader - Small Size

Size and Spacing - Medium

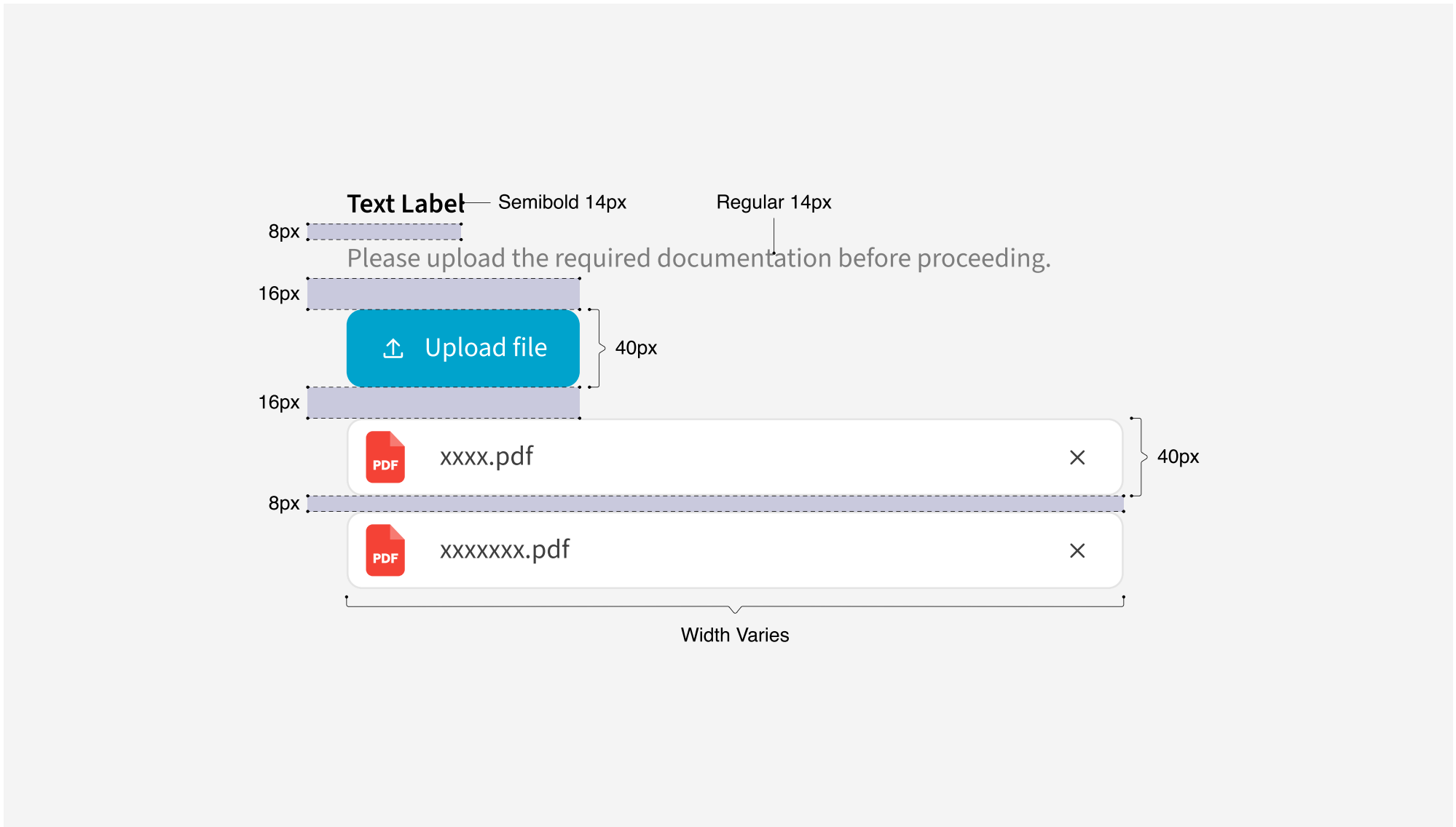


Fig.3.3.85 File Uploader - Medium Size

Size and Spacing - Large

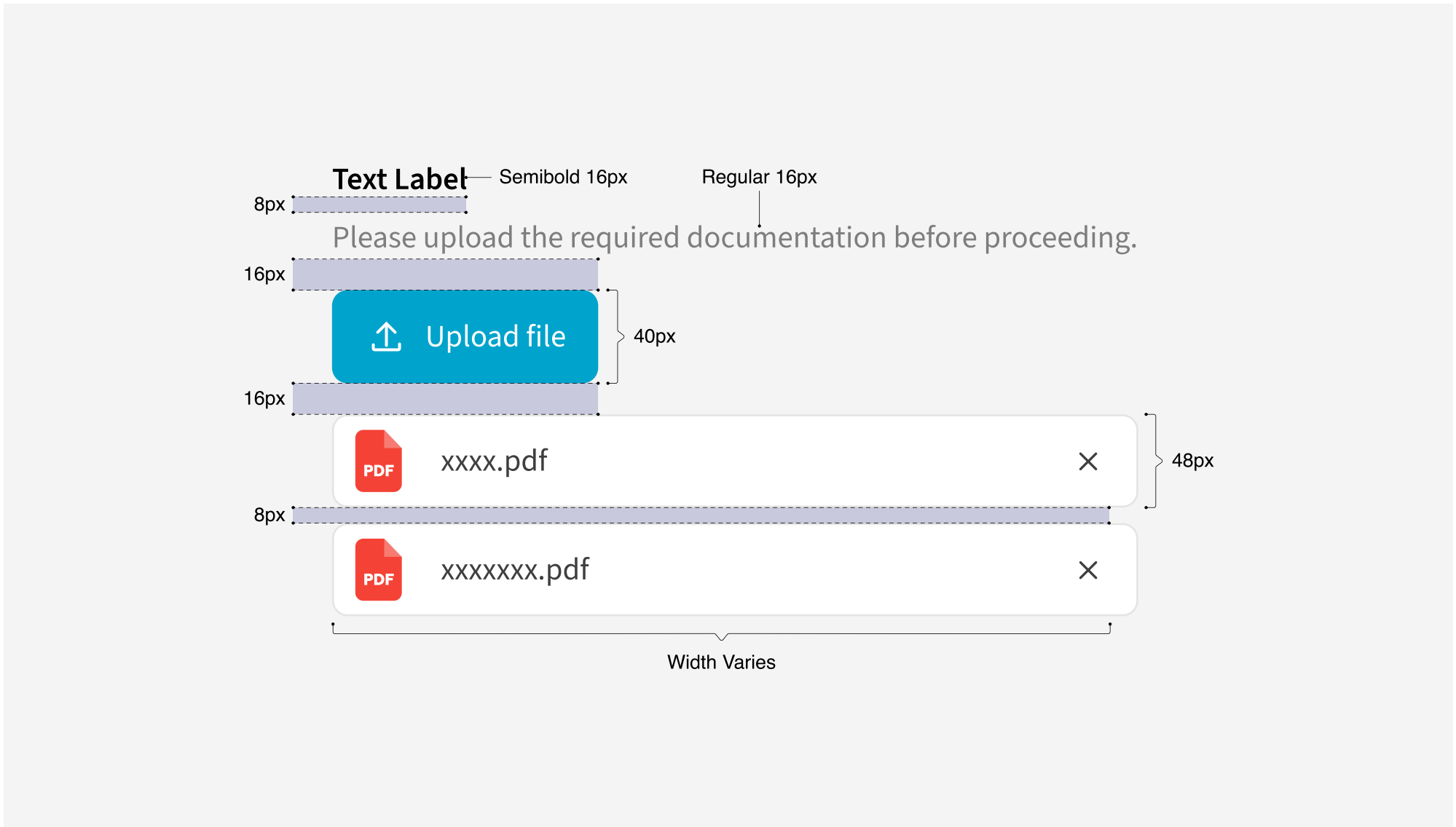


Fig.3.3.86 File Uploader - Large Size

Size and Spacing - Drag or Drop

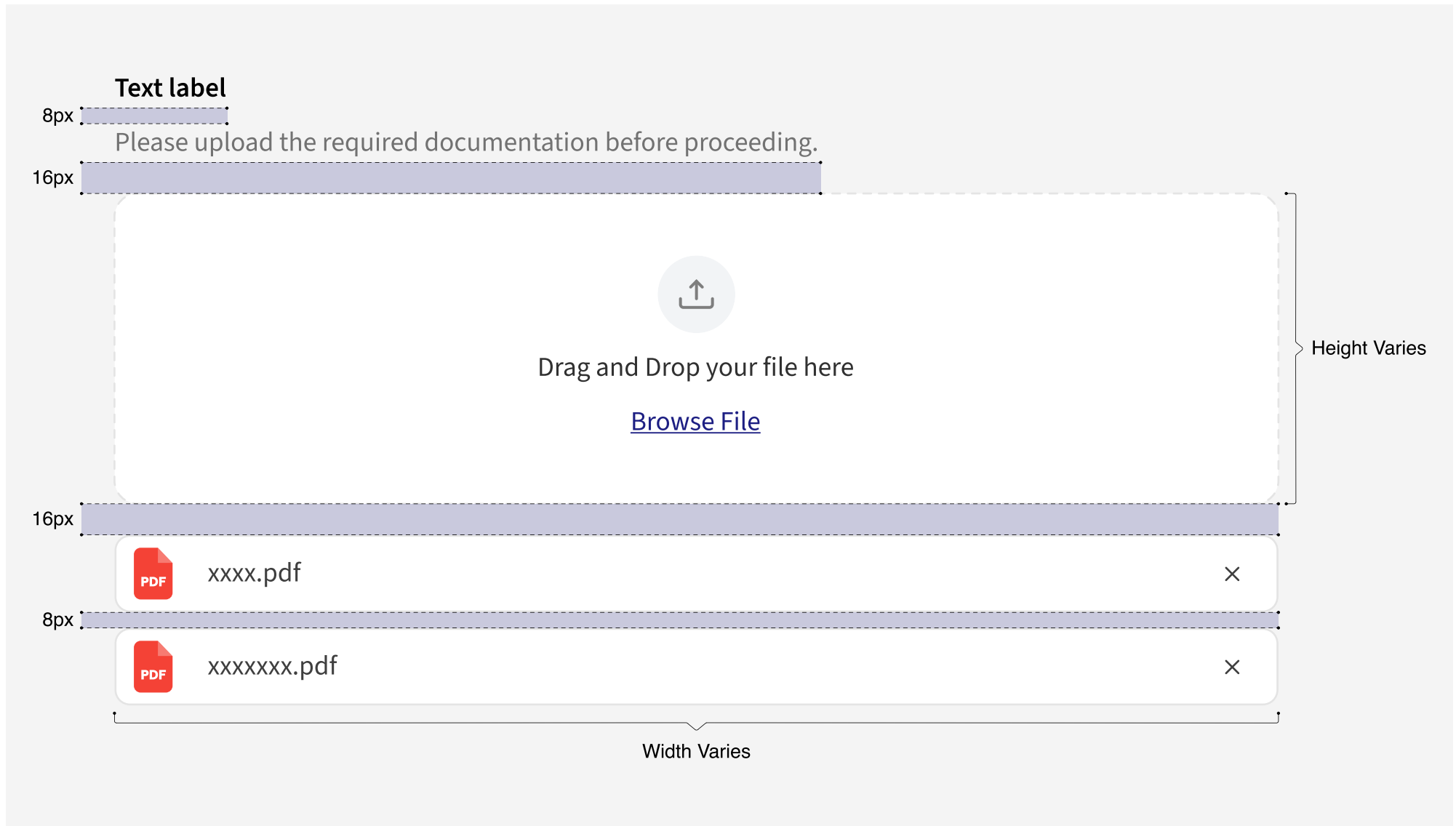


Fig.3.3.87 Size and Spacing - Drag or Drop

File Uploader States

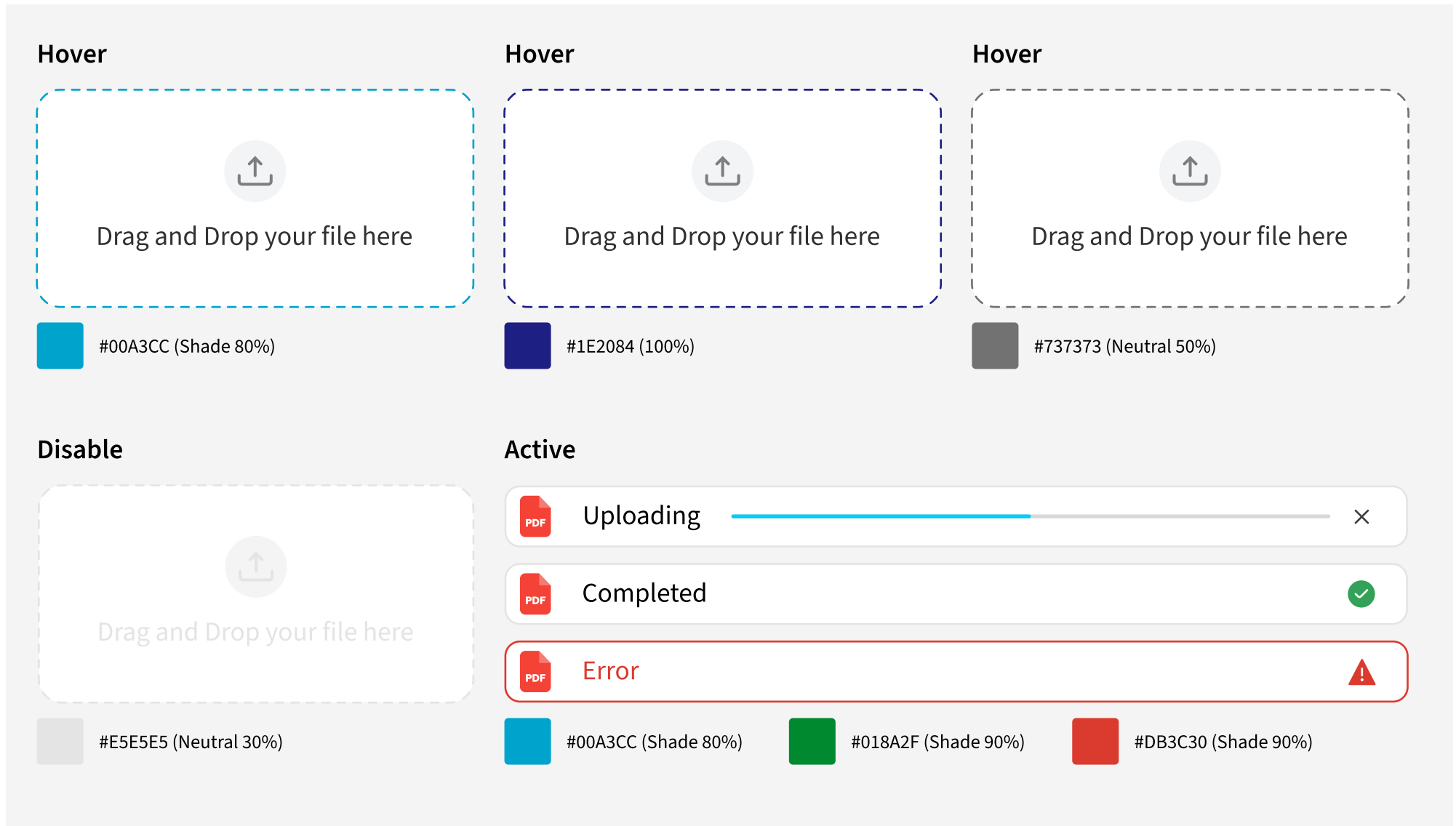


Fig.3.3.88 File Uploader States

Progress Bar

A progress bar visually indicates the status of a process—such as downloading, uploading, or saving—by showing how much of the task is complete. It helps set user expectations for operations that take time, especially when a percentage or duration can be shown to reflect progress. The examples are provided in **Fig.3.3.89 - Fig.3.3.93**. The size and spacing can be found in **Fig.3.3.94 - Fig.3.3.96**.

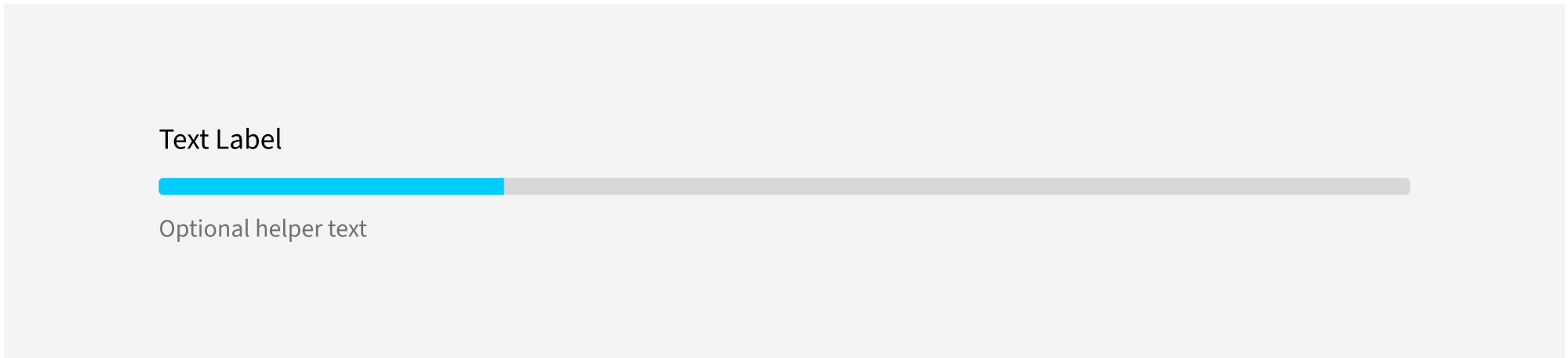


Fig.3.3.89 Slightly Progress Bar

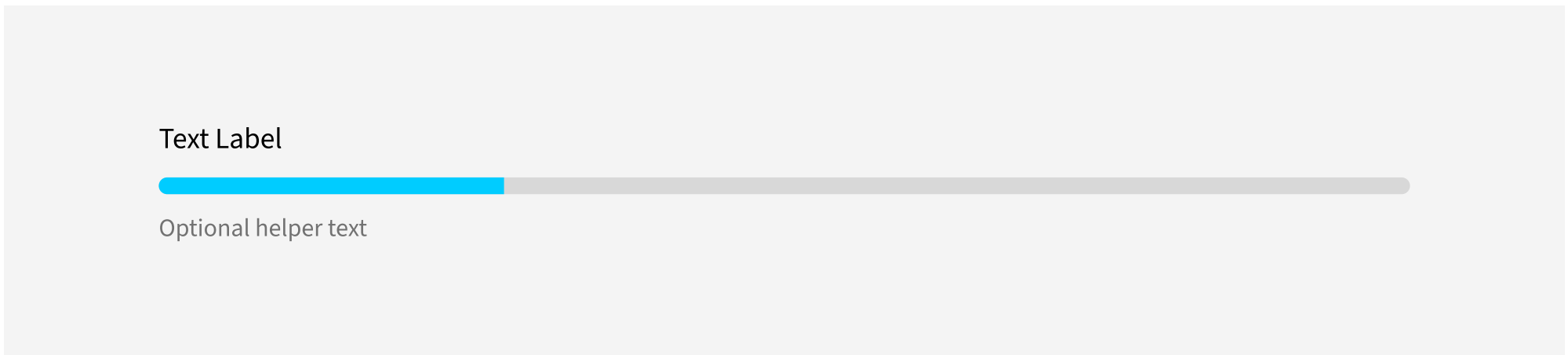


Fig.3.3.90 Fully Rounded Progress Bar

Text Alignment

Progress bar text alignment varies based on context and available space, with three options: default, inline, and indent. The indent alignment is specifically recommended for use within containers, tiles, or side panels, where the progress bar extends to the full width of its parent element.

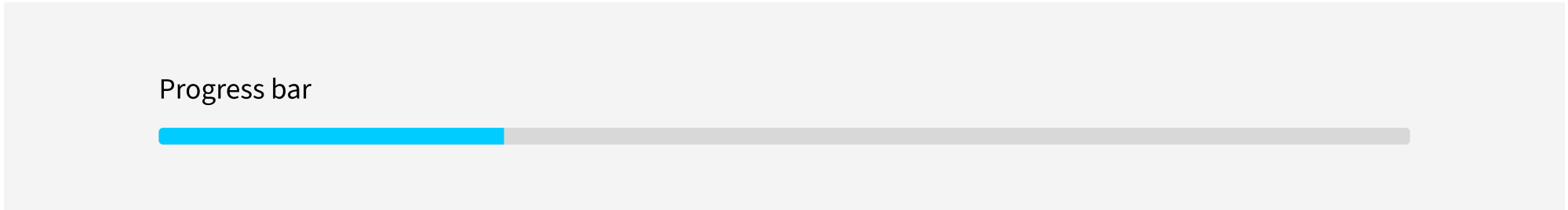


Fig.3.3.91 Default Progress Bar

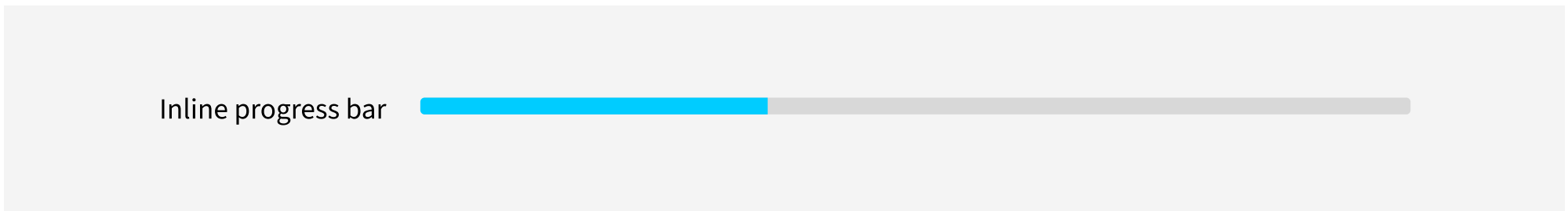


Fig.3.3.92 Inline Progress Bar

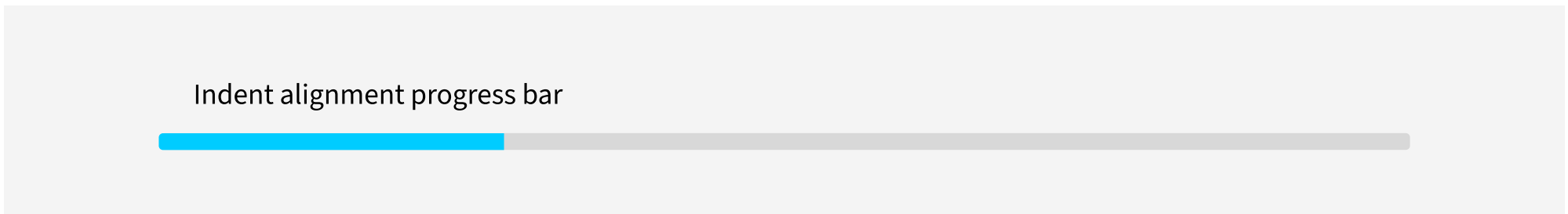
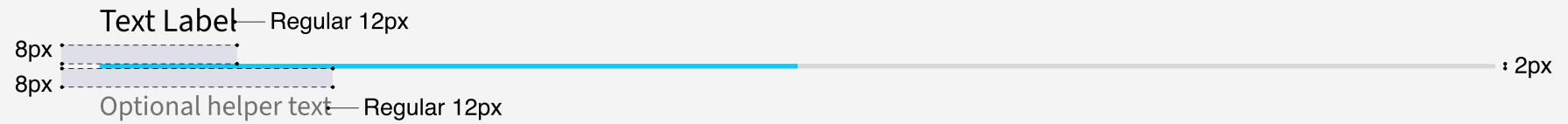


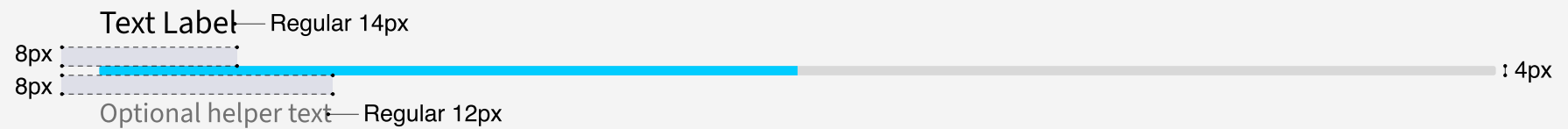
Fig.3.3.93 Indent Alignment Progress Bar

Size and Spacing

Small



Medium



Large

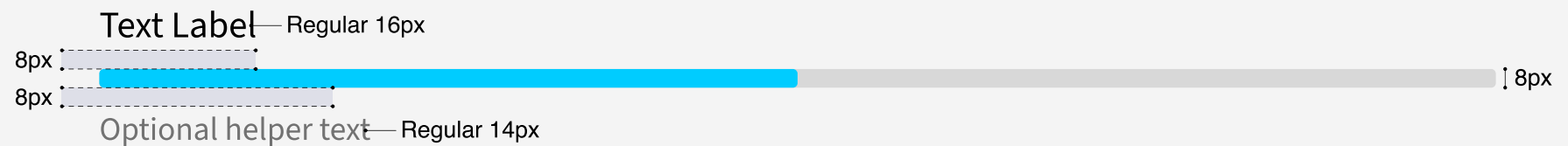


Fig.3.3.94 Size and Spacing - Progress Bar

Size and Spacing - Inline Progress Bar

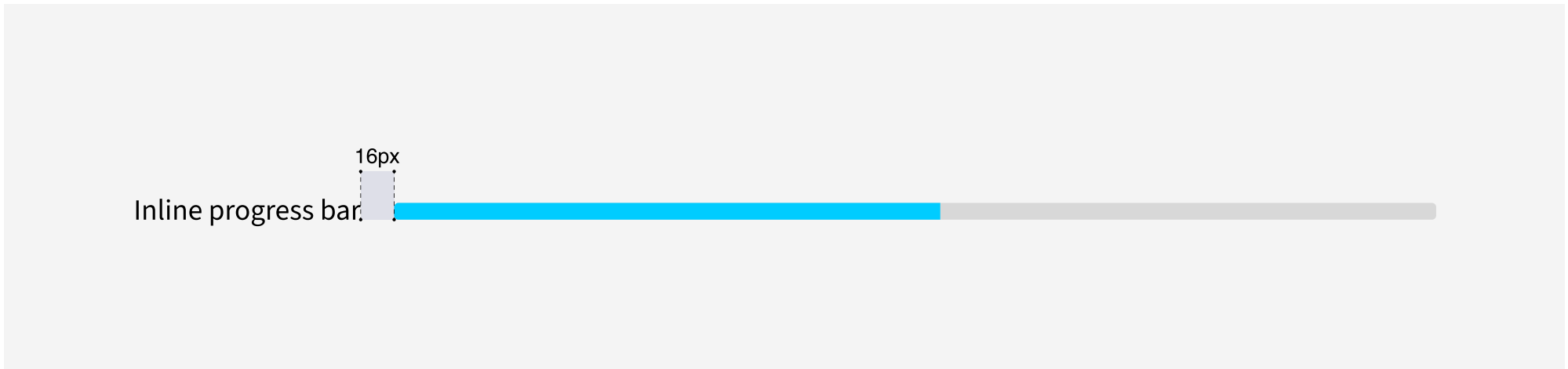


Fig.3.3.95 Size and Spacing - Inline Progress Bar

Size and Spacing - Indent Alignment Progress Bar

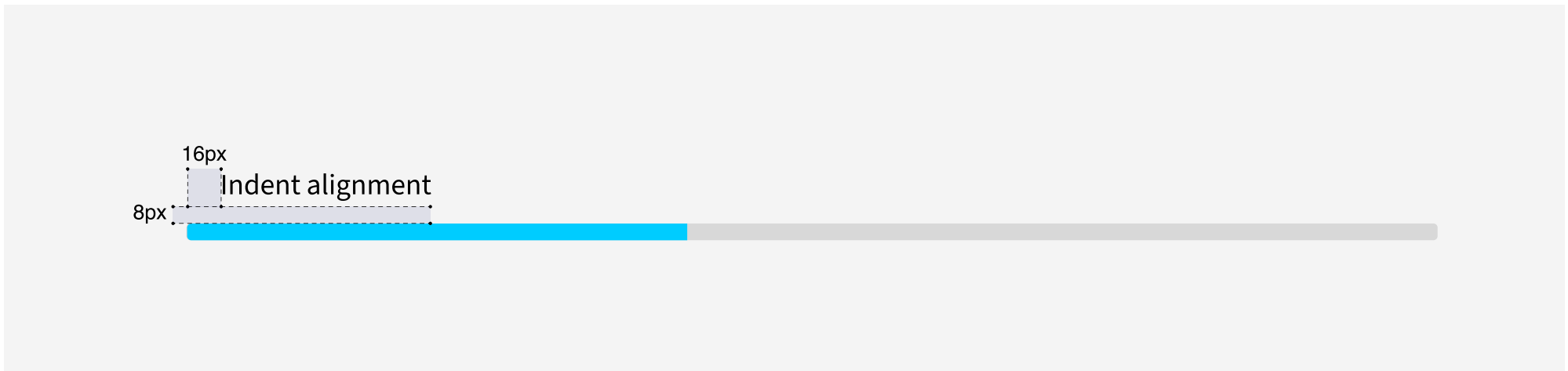


Fig.3.3.96 Size and Spacing - Inline Progress Bar

Progress Bar States

Progress bar states represent the different conditions a progress bar can be in—such as active, paused, completed, or error. These states provide visual feedback to help users understand the current status of a task or process, as shown in **Fig.3.3.97**.

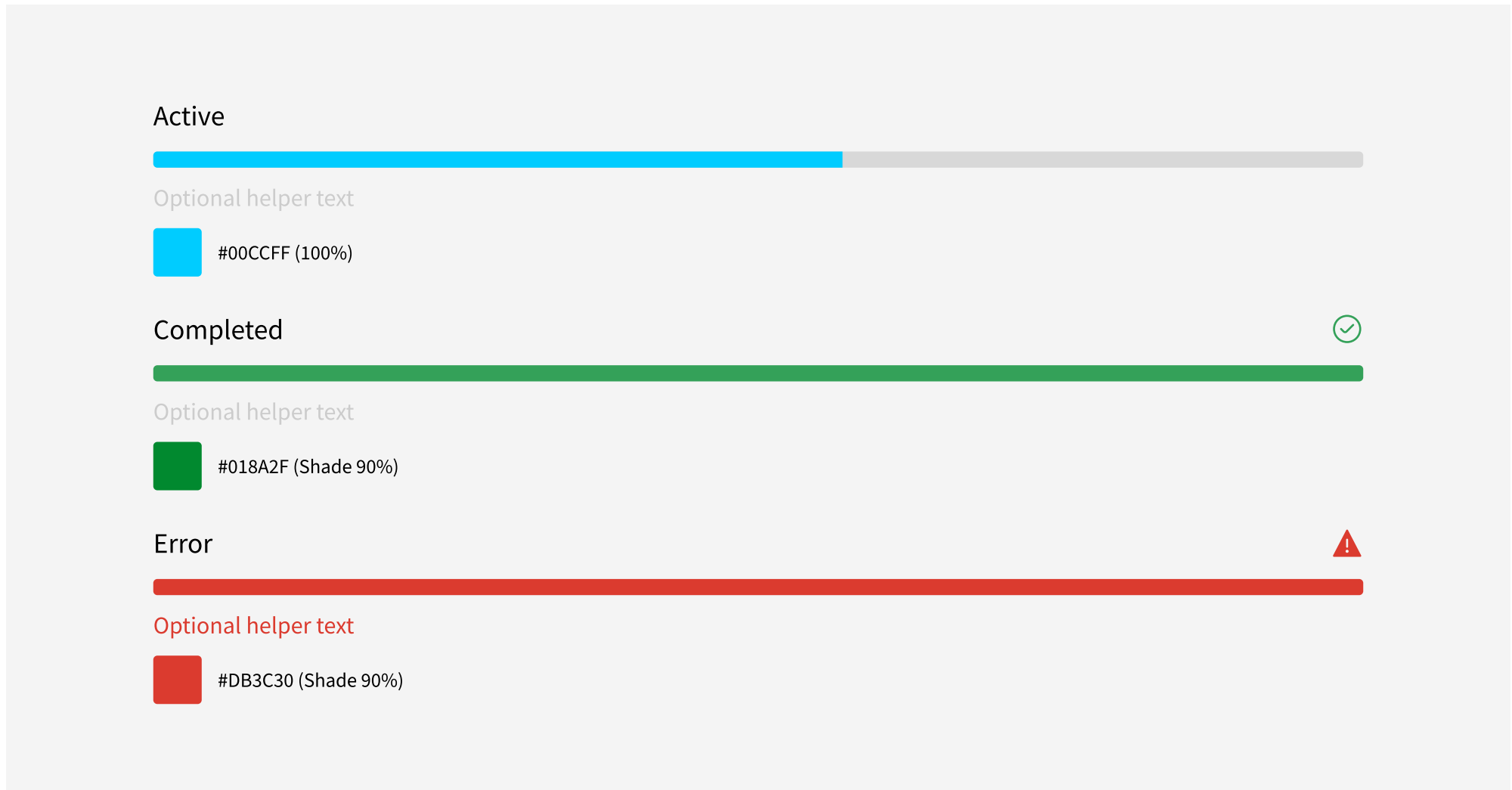


Fig.3.3.97 Progress Bar States

Progress Indicator

A progress indicator helps users navigate a linear, multistep process by visually showing completed, current, and upcoming steps. It's ideal for tasks with three or more stages—such as checkouts, onboarding, or applications—where tracking progress and validating input at each step supports clarity and confidence, as shown in **Fig.3.3.98 - Fig.3.3.99**. The size and spacing can be found in **Fig.3.3.100**.

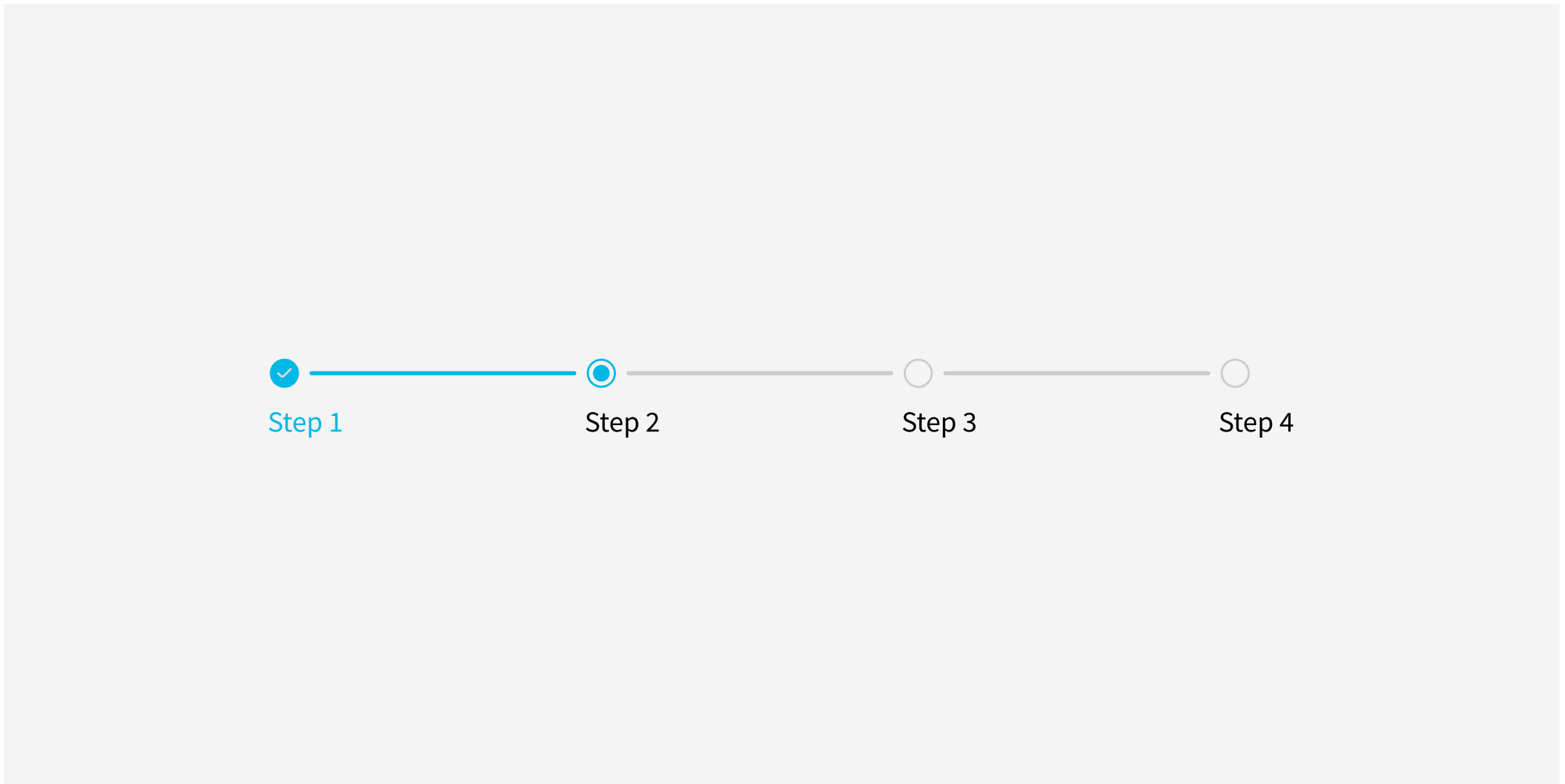


Fig.3.3.98 Progress Indicator

Vertical Progress

Vertical progress trackers can be positioned to the left or right of on-page content. This layout is especially recommended for mobile experiences, as it prevents horizontal scrolling and enhances readability.

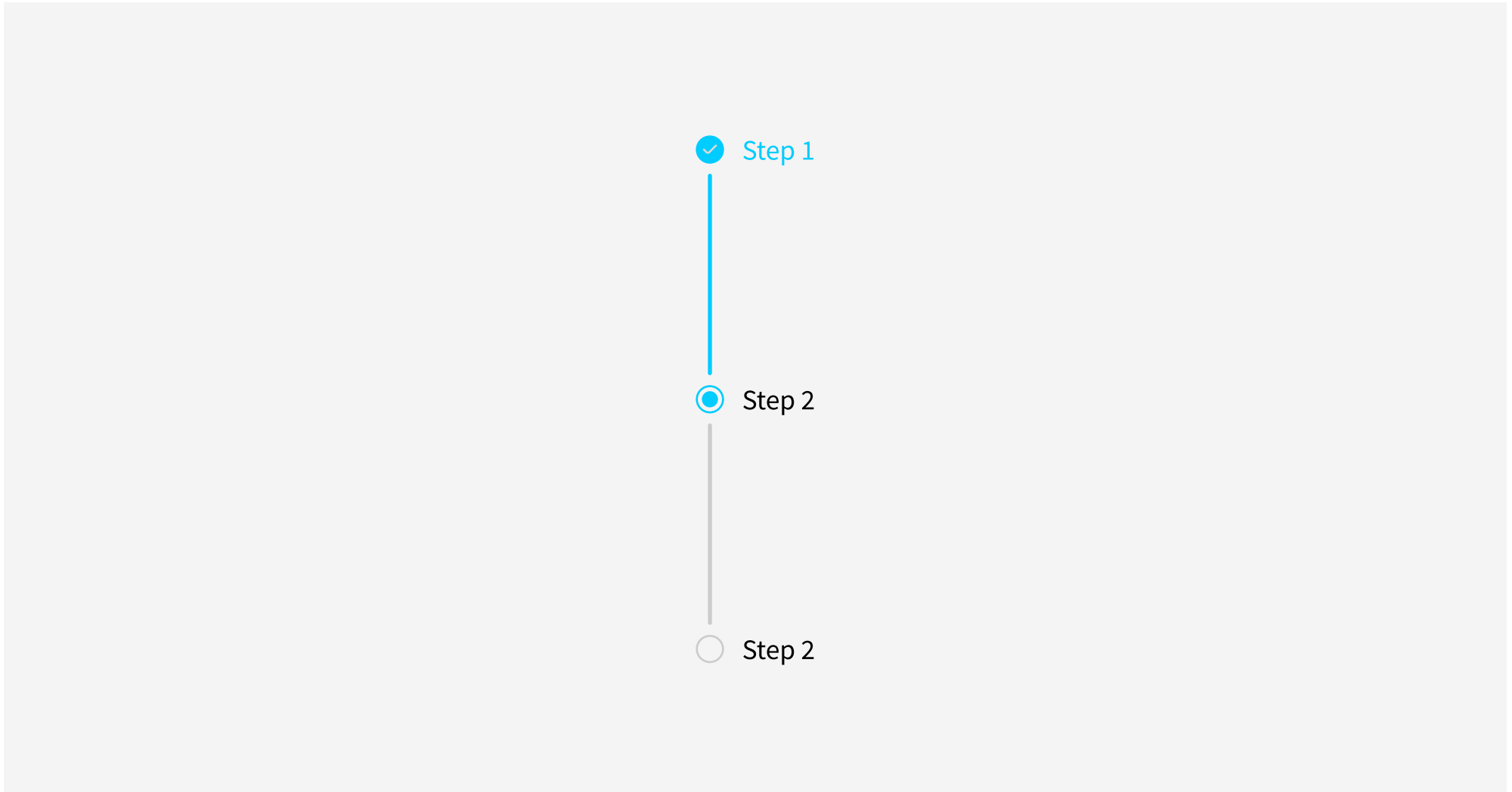


Fig.3.3.99 Vertical Progress Indicator

Size and Spacing

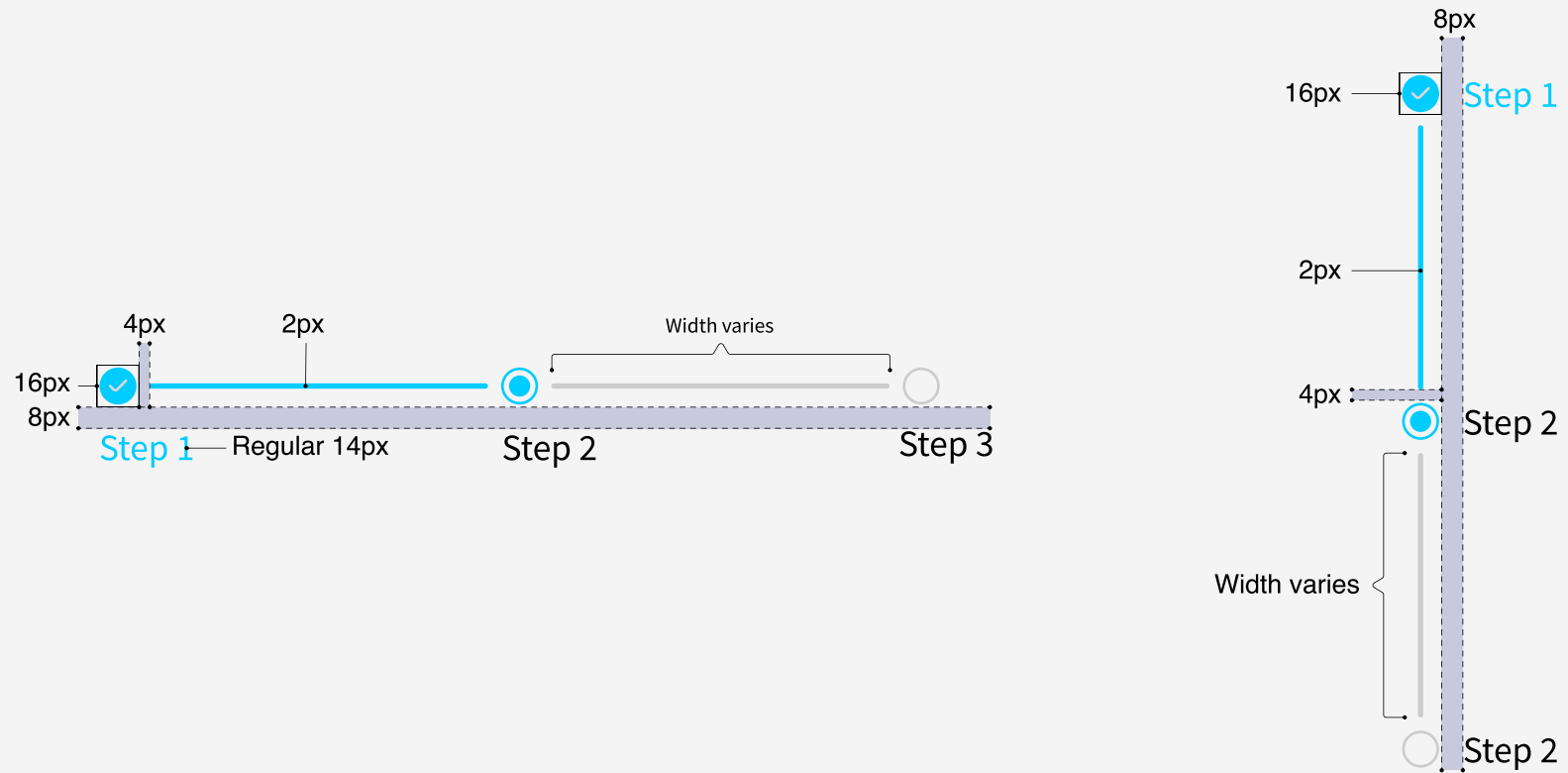


Fig.3.3.100 Size and Spacing - Progress Indicator

Progress Indicator States

A progress indicator visually represents a user's movement through a multistep process. It displays states such as hover, selected, completed, current, and upcoming steps—helping users understand where they are and what comes next in the flow, as shown in **Fig.3.3.101**.

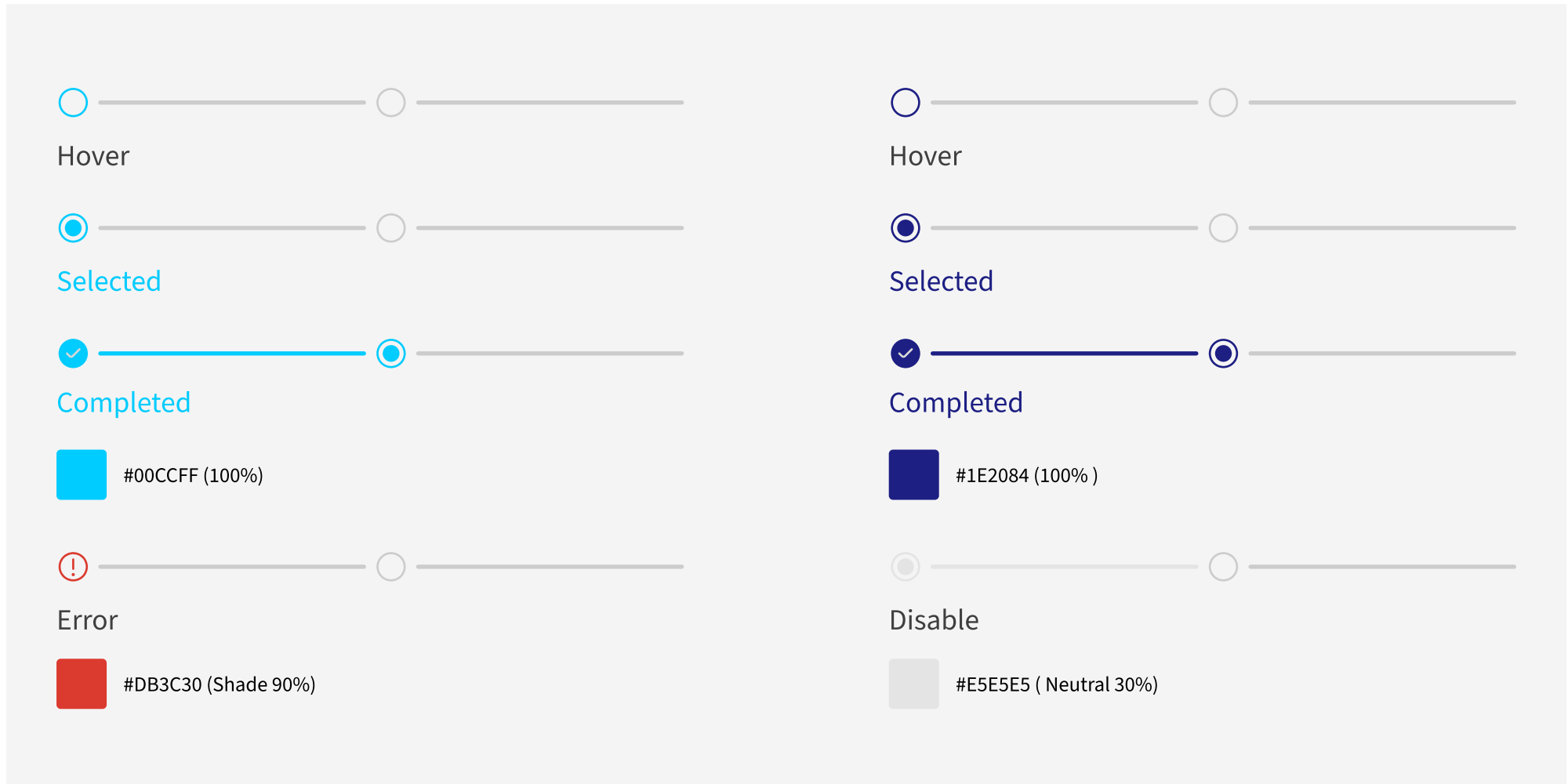


Fig.3.3.101 Progress Indicator - States

Pagination

Pagination divides large sets of content into separate pages, giving users control over how much they view at a time. It improves performance, optimizes space, and enhances navigation—especially in data tables or multi-page layouts, as shown in **Fig.3.3.102**. The size and spacing can be found in **Fig.3.3.103**.

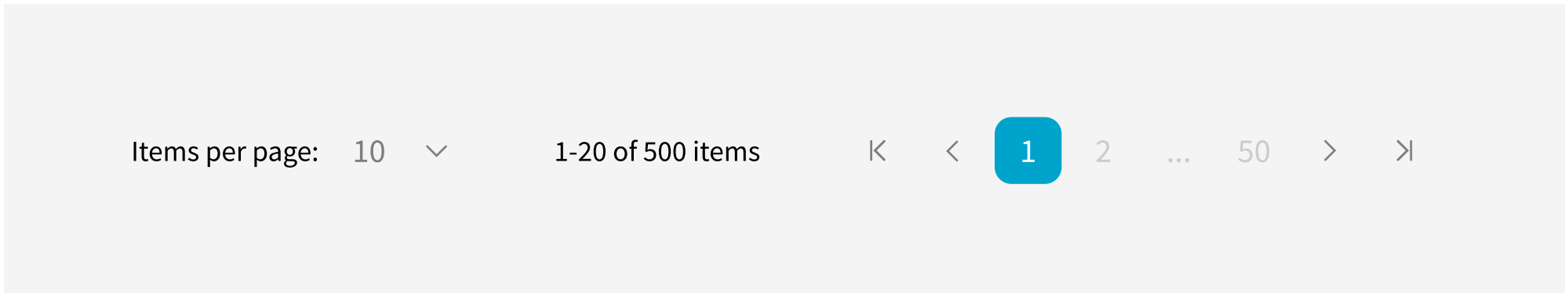


Fig.3.3.102 *Pagination*

Size and Spacing

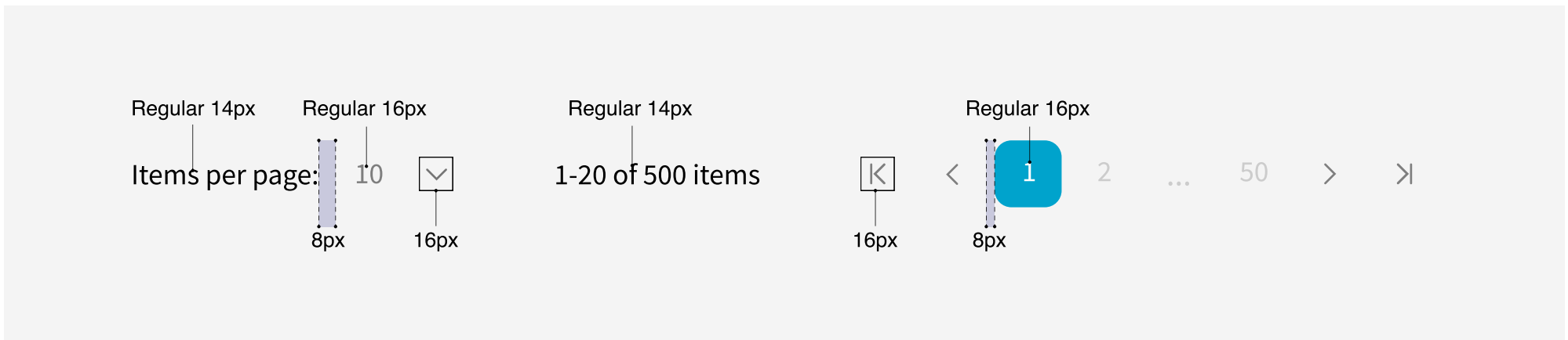


Fig.3.3.103 *Size and Spacing - Progress Indicator*

Toggle Button

A toggle is a UI control used to quickly switch between two states, typically representing a binary action such as on/off. Toggles are intended for settings that take effect immediately after interaction and should not require additional confirmation. The examples are provided in **Fig.3.3.104 - Fig.3.3.105**, while size and spacing specifications are detailed **Fig.3.3.106**.

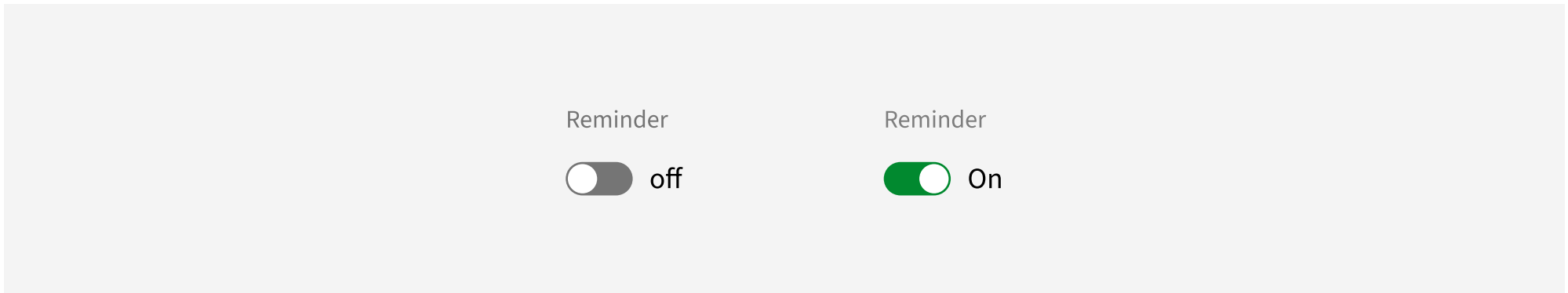


Fig.3.3.104 Toggle Button

Toggle Button with Icon

Icons visually indicate the current state of a toggle, enhancing clarity and usability. This approach improves the user experience by offering an intuitive, space-efficient way to represent settings or actions, often reducing the need for additional text labels.

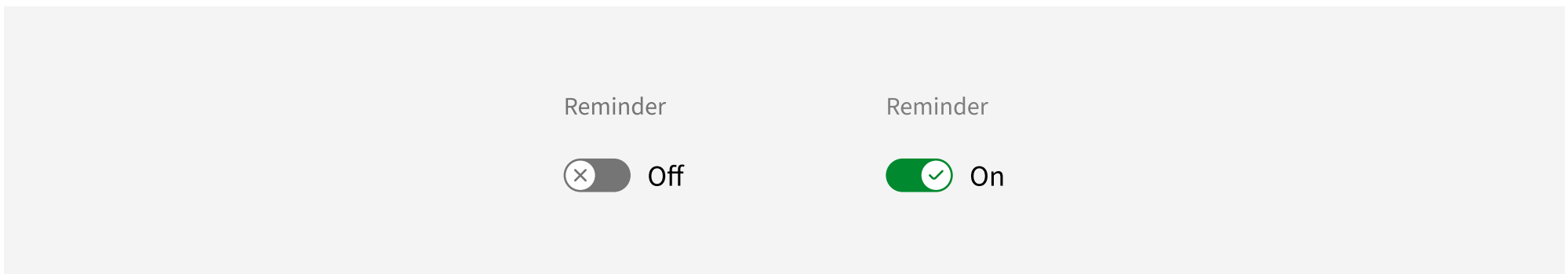


Fig.3.3.105 Toggle Button with Icon

Size and Spacing

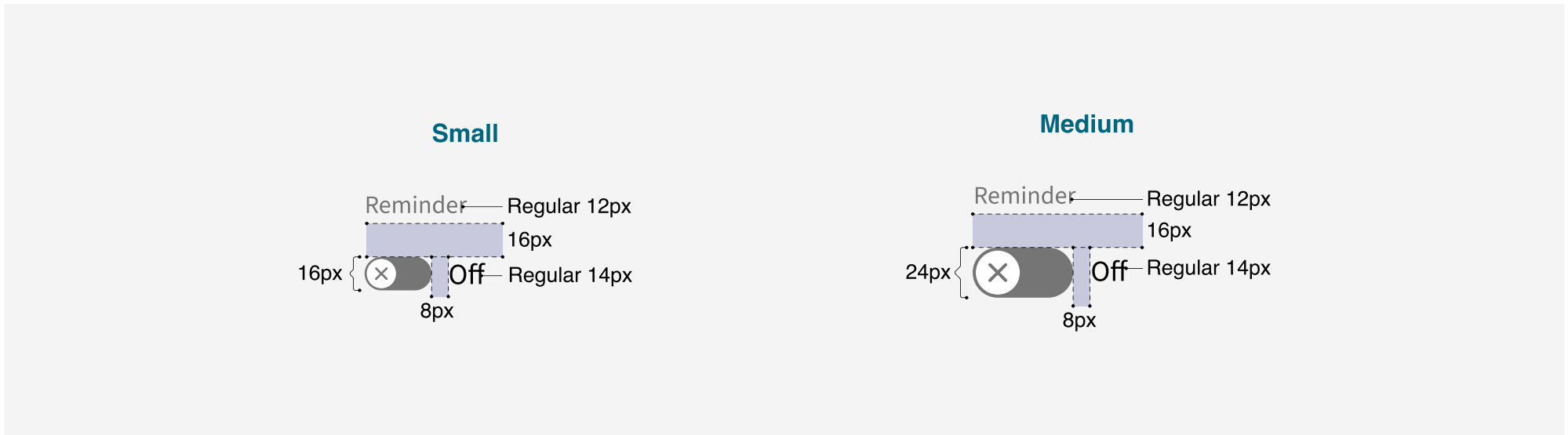


Fig.3.3.106 Size and Spacing - Toggle Button

Text Field

Text inputs are commonly used in forms to collect user information such as names, email addresses, passwords, and phone numbers. To ensure a positive user experience, it's important to apply clear labels, proper formatting, and helpful guidance text that support accurate and efficient data entry. The examples are provided in **Fig.3.3.107 - Fig.3.3.110**. The size and spacing can be found in **Fig.3.3.111 - Fig.3.3.114**.

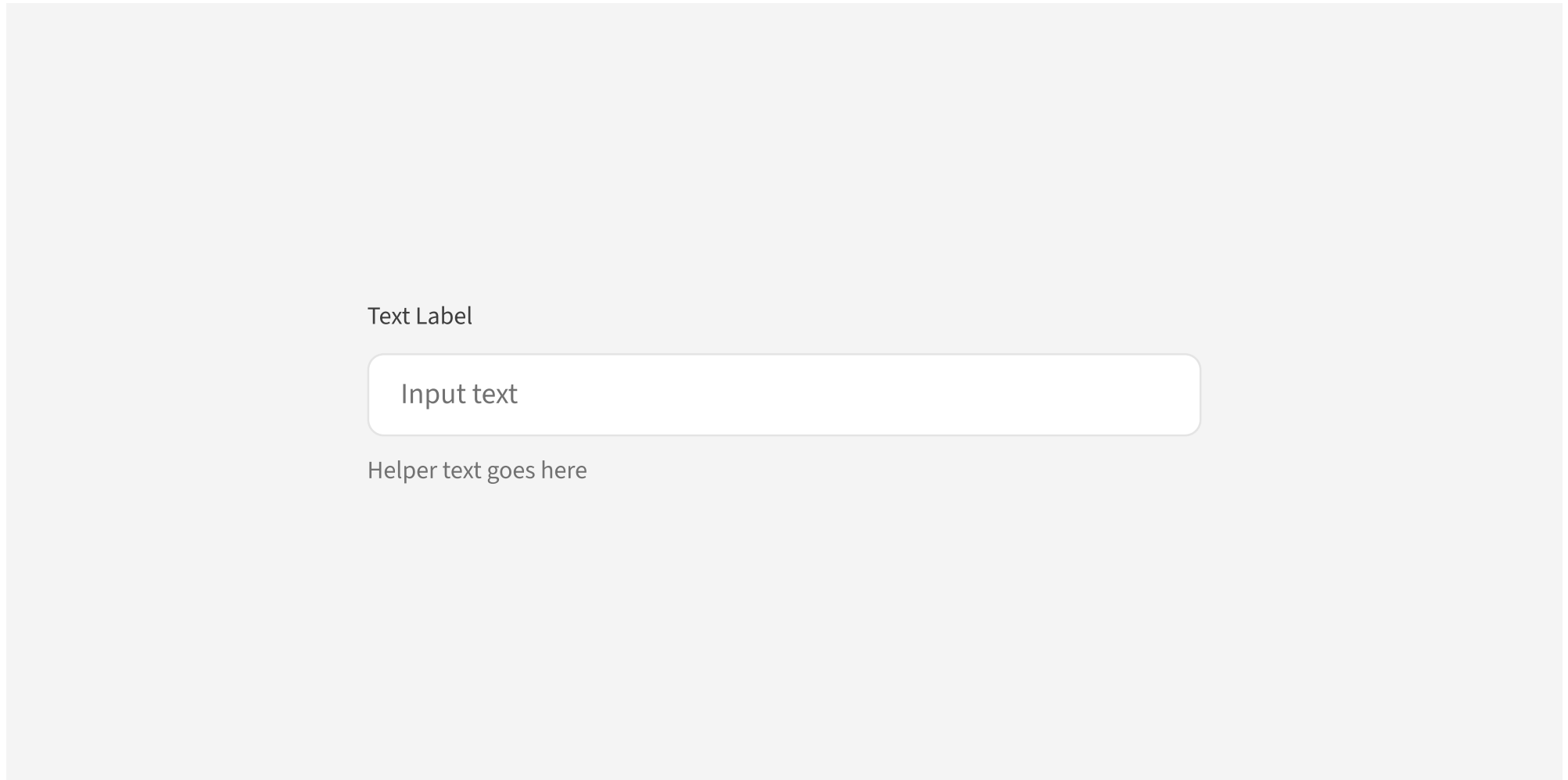


Fig.3.3.107 Text Field

Text Field with Icon

Validation in text fields is the process of verifying user input to ensure compliance with predefined rules or requirements before submission in a form. This mechanism safeguards data integrity, minimizes errors, and enhances security by preventing invalid or malicious entries.

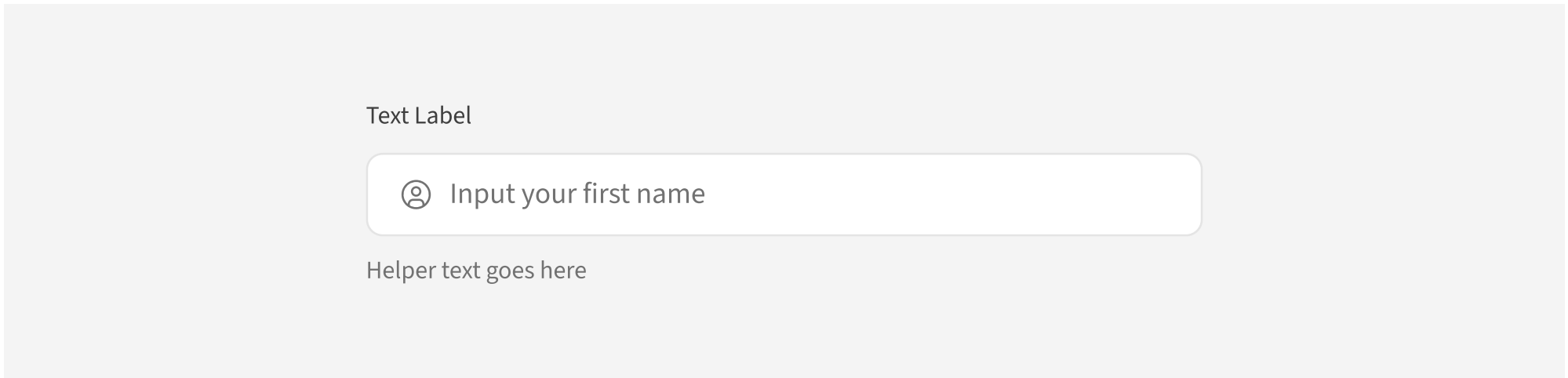


Fig.3.3.108 Text Field with Icon Before

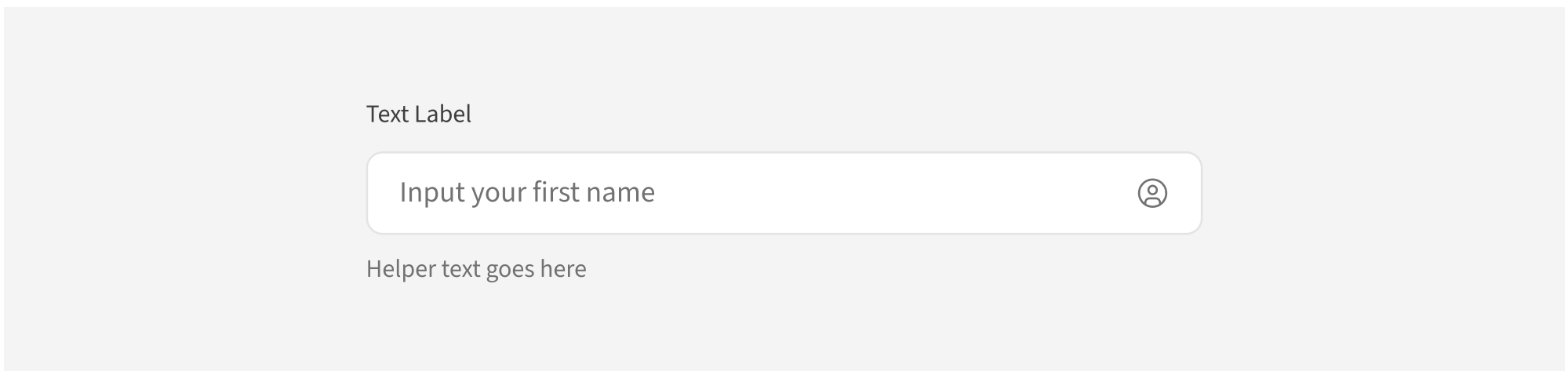


Fig.3.3.109 Text Field with Icon After

Text Area

Text areas are used for multi-line input, such as comments or descriptions. They share most behaviors with text inputs but exclude password functionality. Additional features like resize handles, word counters, and character counters support longer content entry.

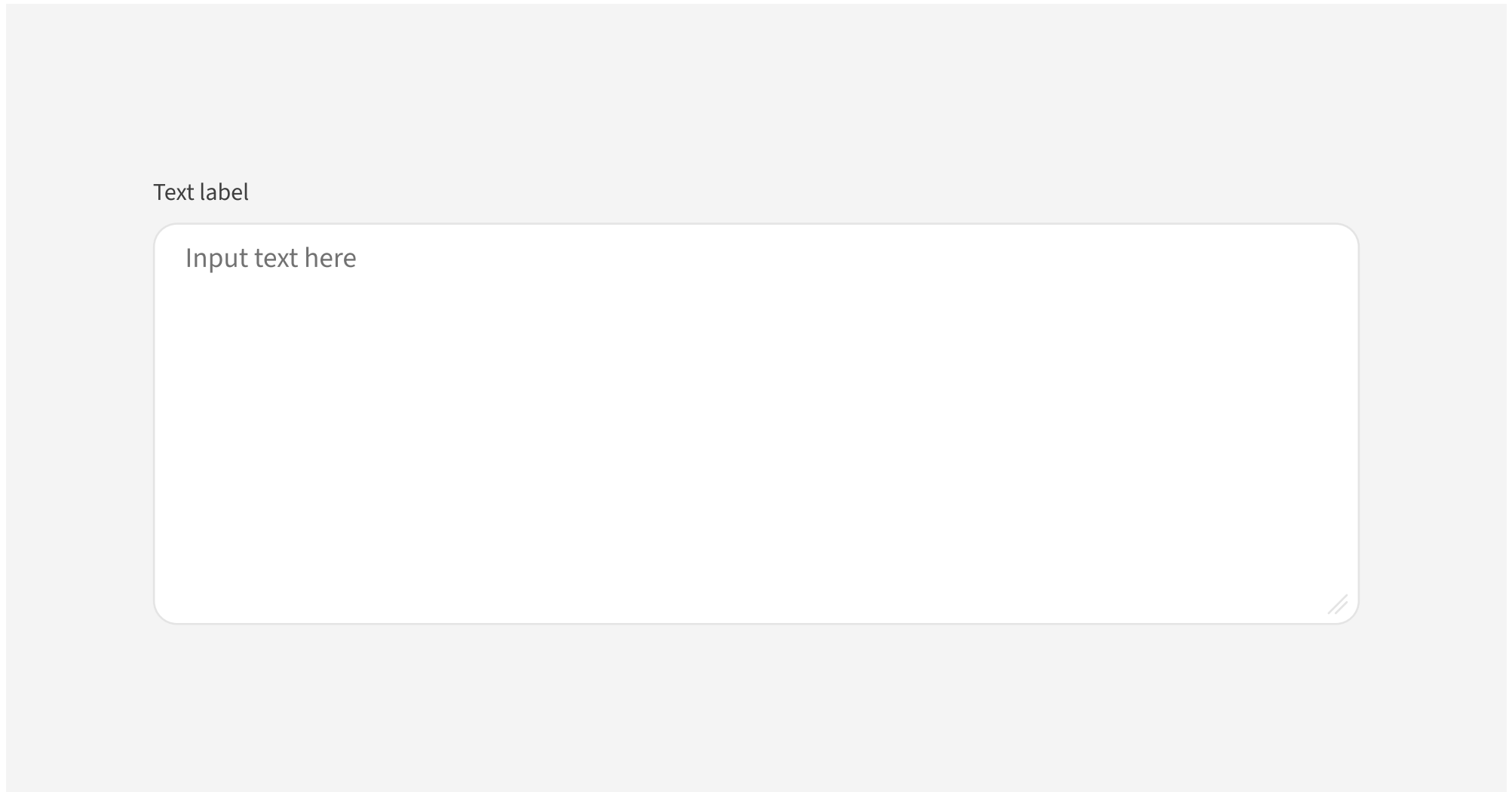


Fig.3.3.110 Text Area

Size and Spacing - Small

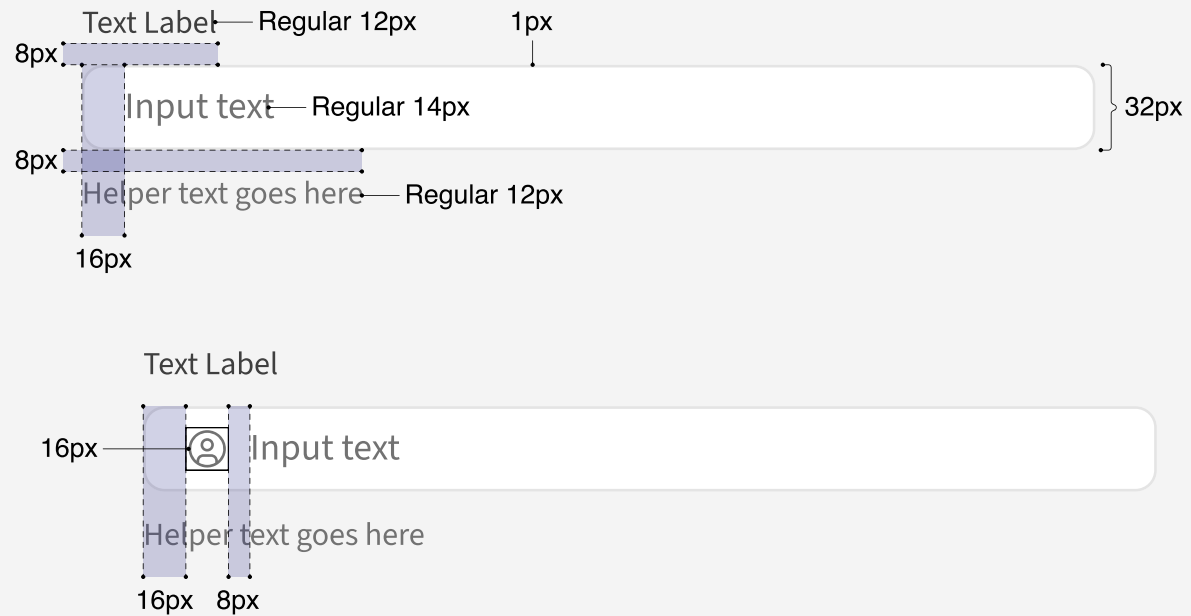


Fig.3.3.111 Text Field - Small Size

Size and Spacing - Medium

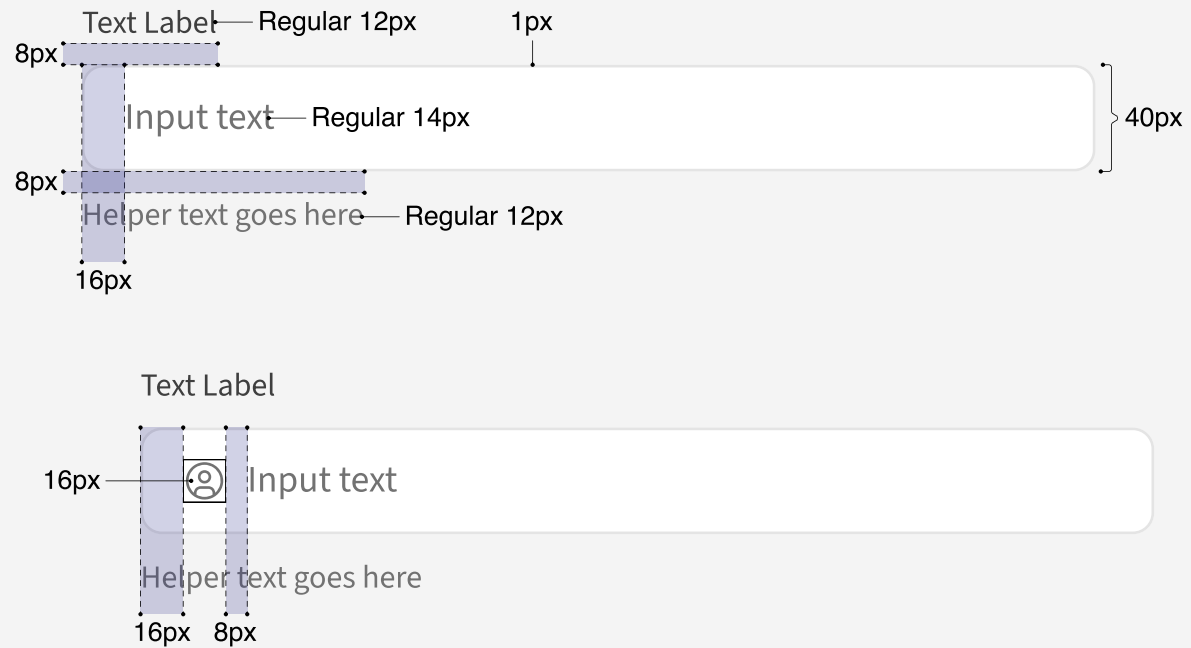


Fig.3.3.112 Text Field - Medium Size

Size and Spacing - Large

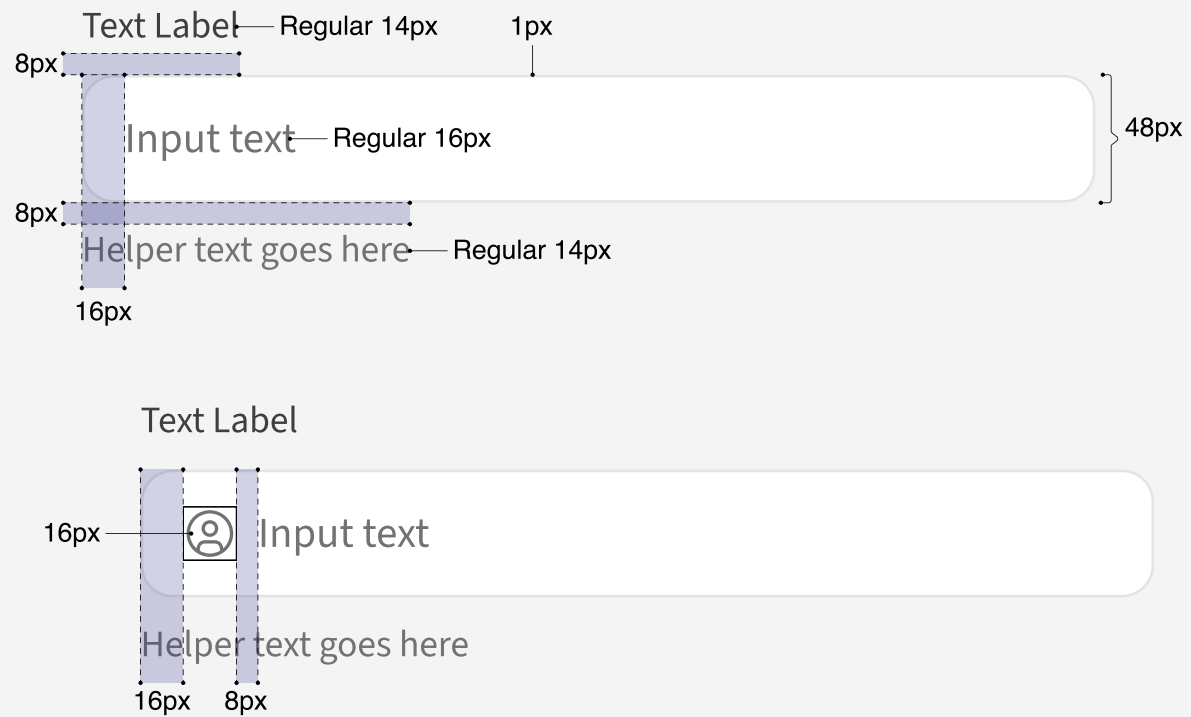


Fig.3.3.113 Text Field - Large Size

Size and Spacing - Text Area

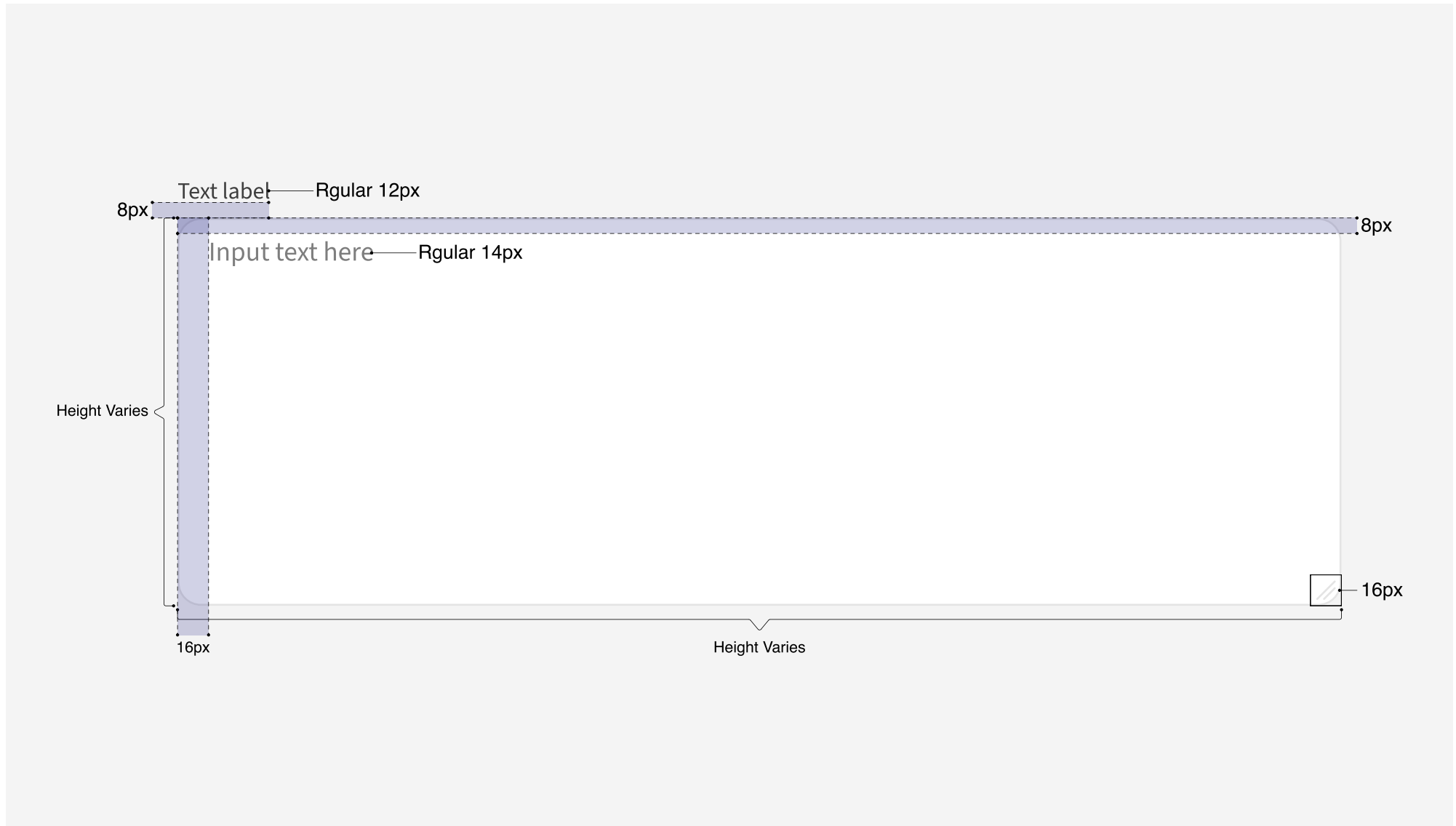


Fig.3.3.114 Size and Spacing - Text Area

Text Field States

Text field states show how input fields change in appearance and behavior as users interact, making them clear and easy to use, as shown in **Fig.3.3.115**.

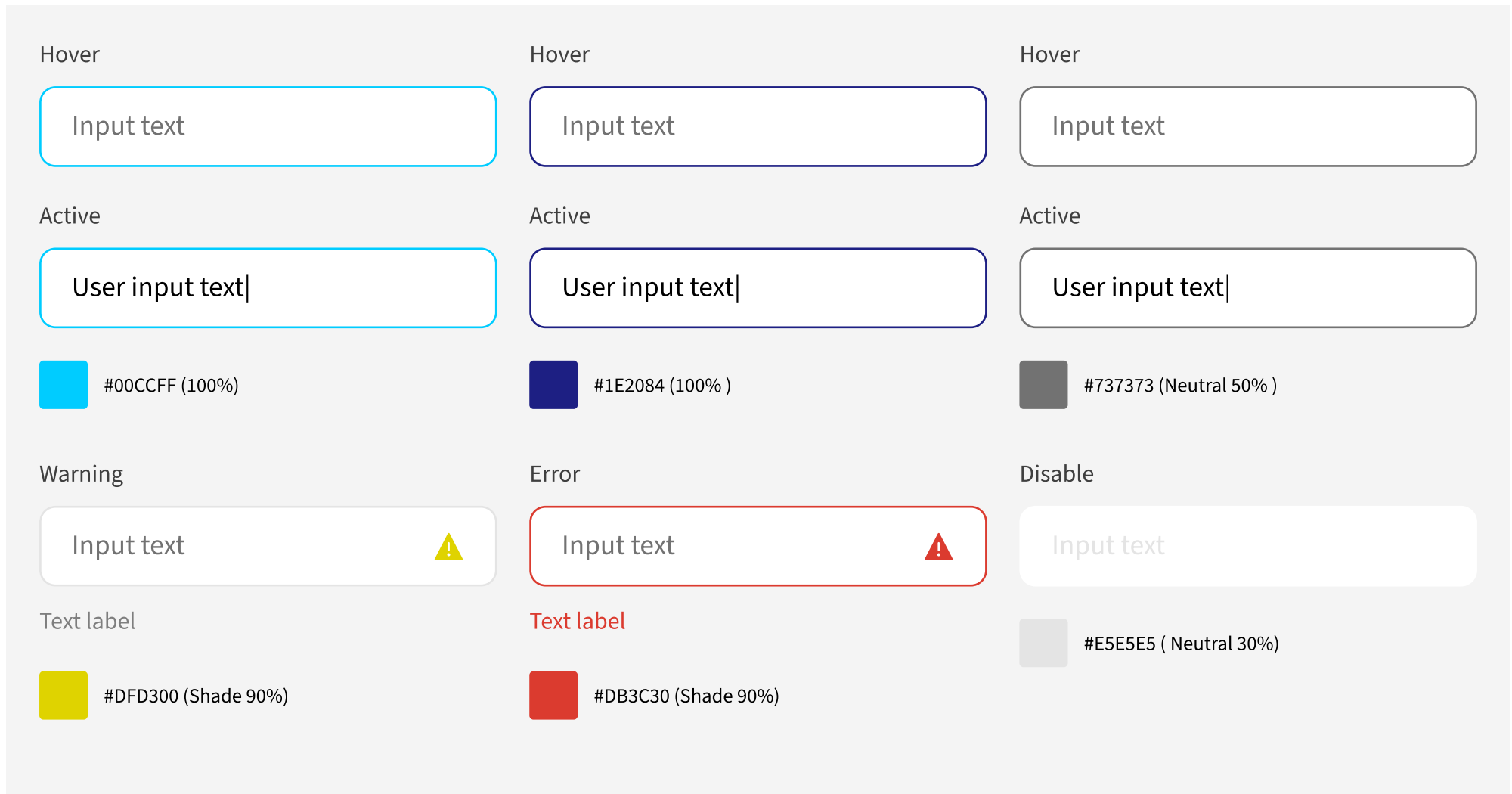


Fig.3.3.115 Text Field States

Tabs

Tabs allow users to switch between different sections of related content within a single view, making it easier to locate information without navigating to a separate page. They help manage large amounts of content by enabling users to focus on specific sections as needed, thereby improving organization and usability. The examples are provided in **Fig.3.3.116 - Fig.3.3.119**, with size and spacing specifications are shown in **Fig.3.3.120 - Fig.3.3.122**.

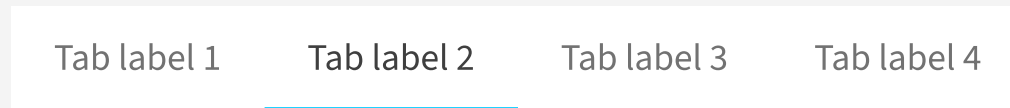


Fig.3.3.116 Tabs

Contained tabs

Contained tabs are emphasized tabs typically used to define distinct content areas, such as sub-pages. They are always paired with a tab panel (background container) that shares the same layer token as the selected tab, reinforcing visual hierarchy and content association.

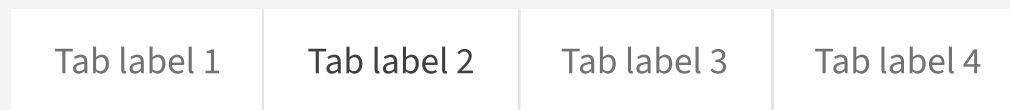


Fig.3.3.117 Contained Tabs

Tabs with icon

Icons can be used in both line and contained tabs. They should be consistently placed to the left or right of the tab label and must not appear above or below.



Fig.3.3.118 *Tabs with Icon Before*



Fig.3.3.119 *Tabs with Icon After*

Size and Spacing - Small

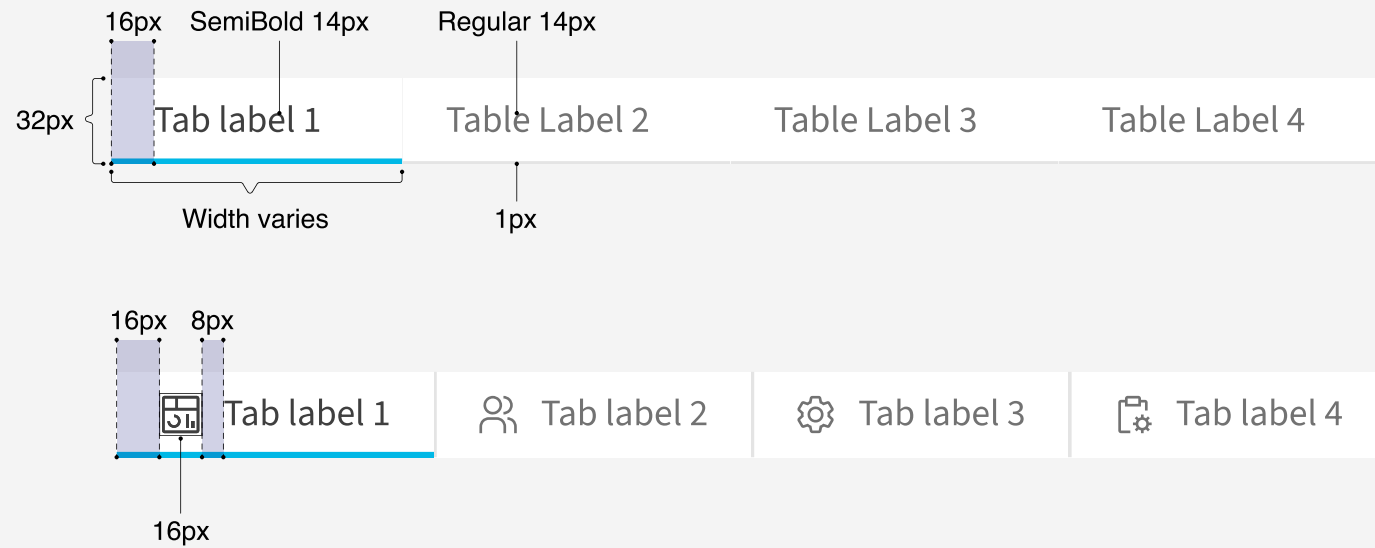


Fig.3.3.120 Tabs - Small Size

Size and Spacing - Medium

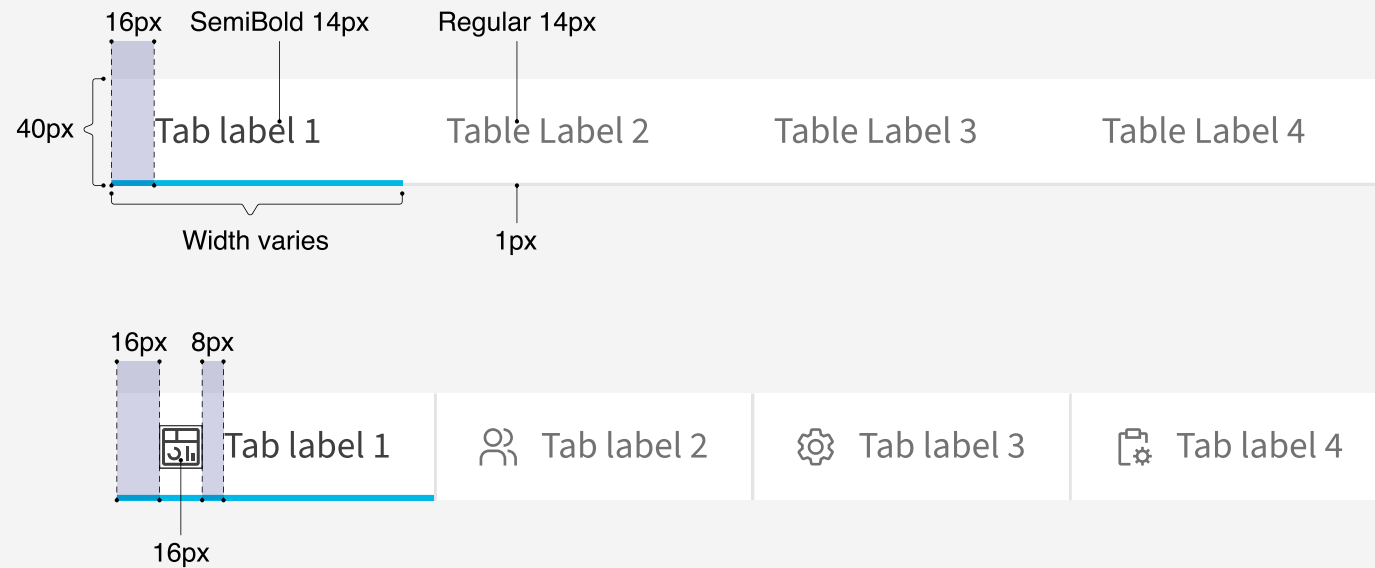


Fig.3.3.121 Tabs - Medium Size

Size and Spacing - Large

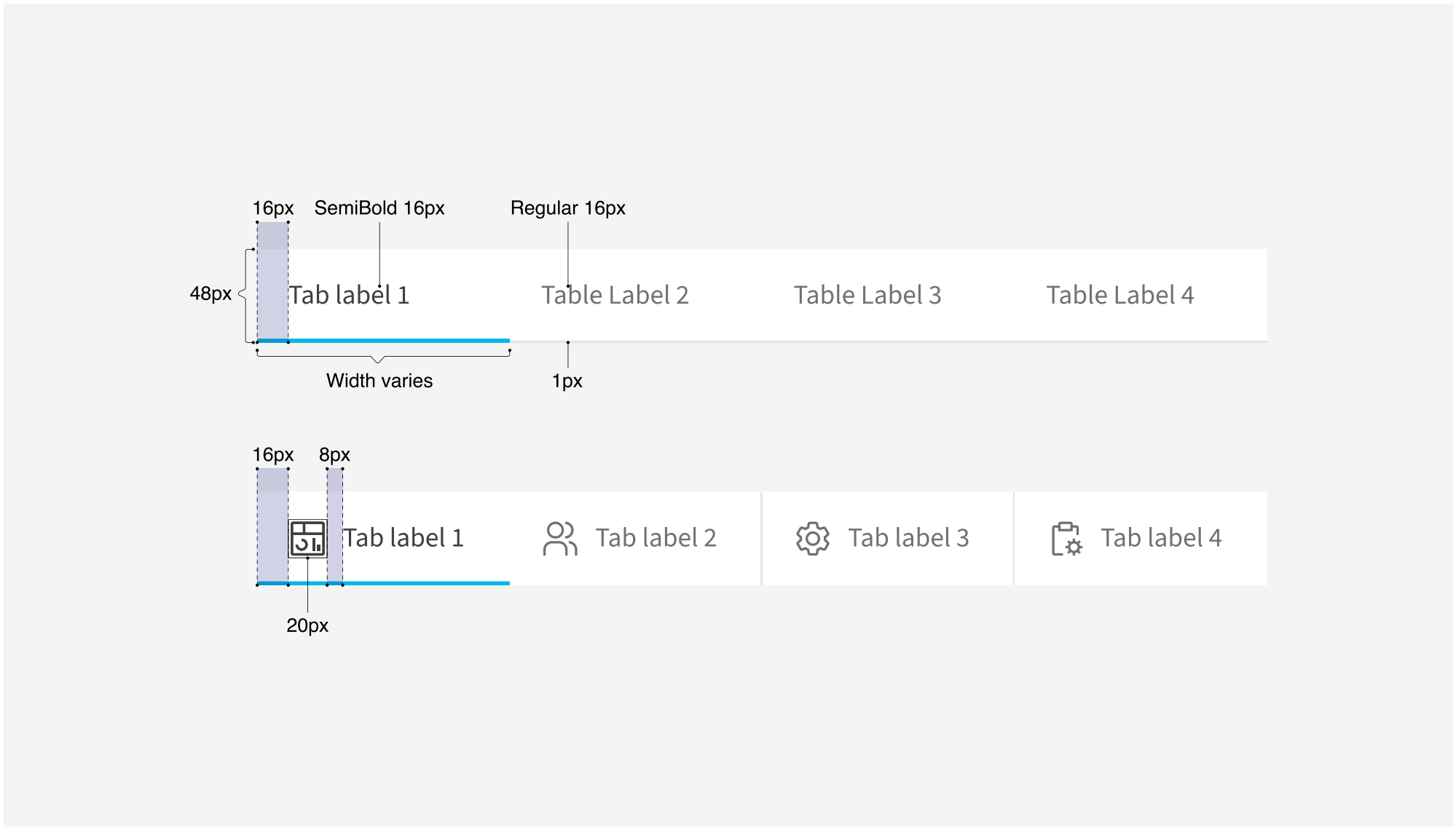


Fig.3.3.122 Tabs - Large Size

Tab States

Tab states communicate the current status of each tab, helping users understand which tabs are interactive, active, or unavailable, as shown in **Fig.3.3.123**.

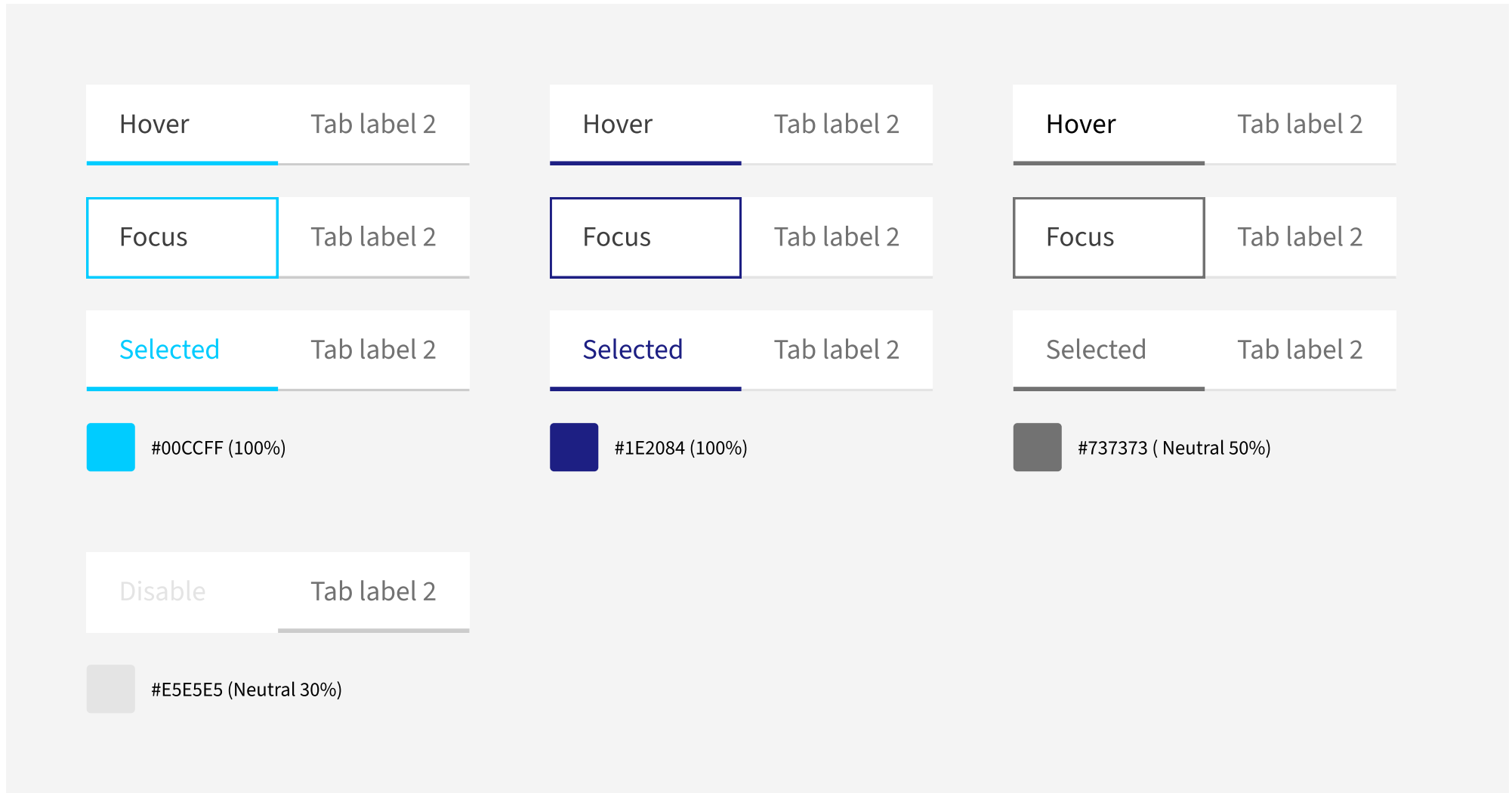


Fig.3.3.123 Tab States

Tag

Tags are compact UI components that help identify, organize, and manage information within an interface. They are commonly used to label content, group items into categories, filter datasets, and enable quick selection or deselection of options. Tags may also provide functions such as dismissal or linking to related views, as shown in **Fig.3.3.124 - Fig.3.3.128**. The size and spacing can be found in **Fig.3.3.129 - Fig.3.3.131**.

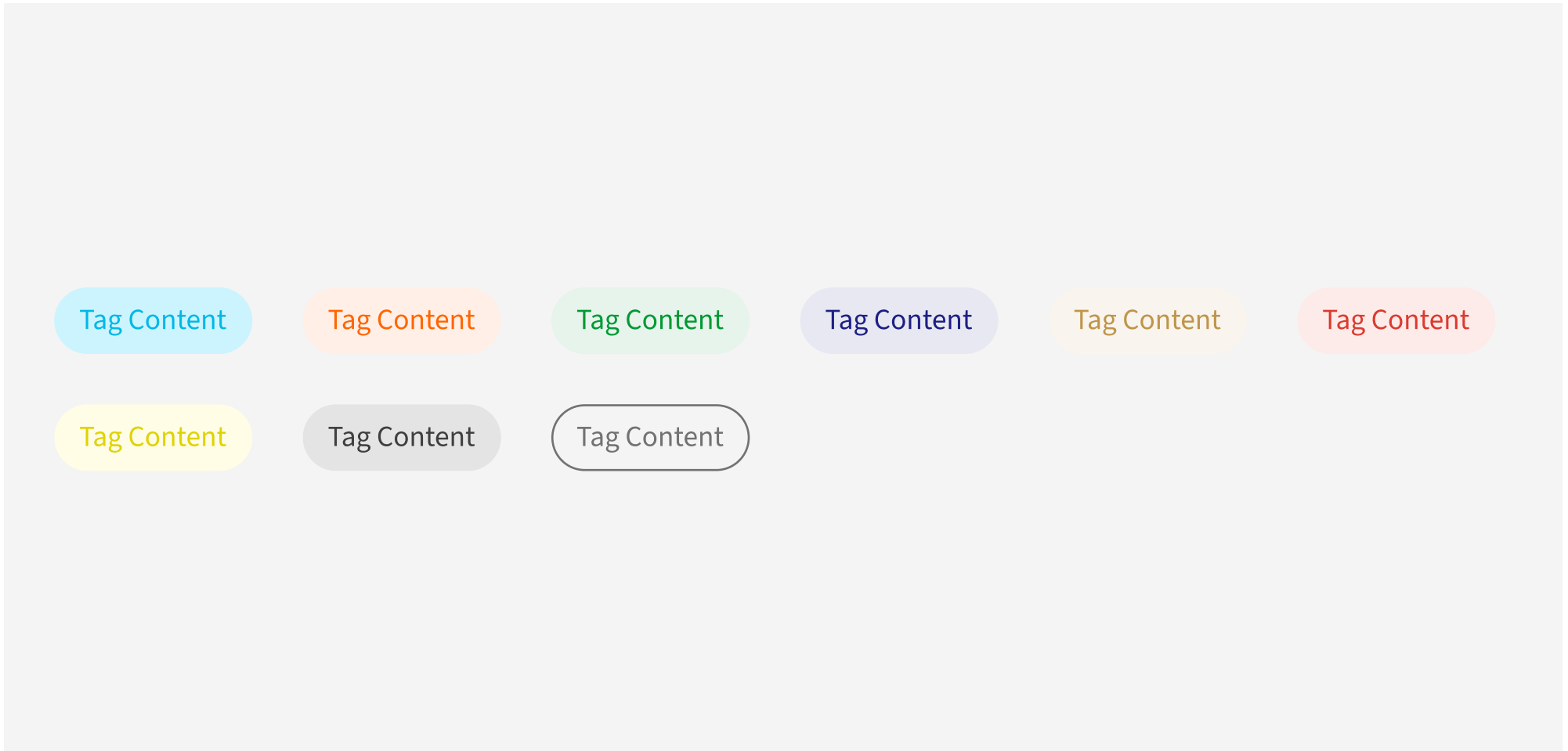


Fig.3.3.124 Tags

Read-only Tag

Read-only tags are used for categorization and labeling without any interactive functionality. They are available in multiple color options and may include optional decorative icons to help distinguish between categories.

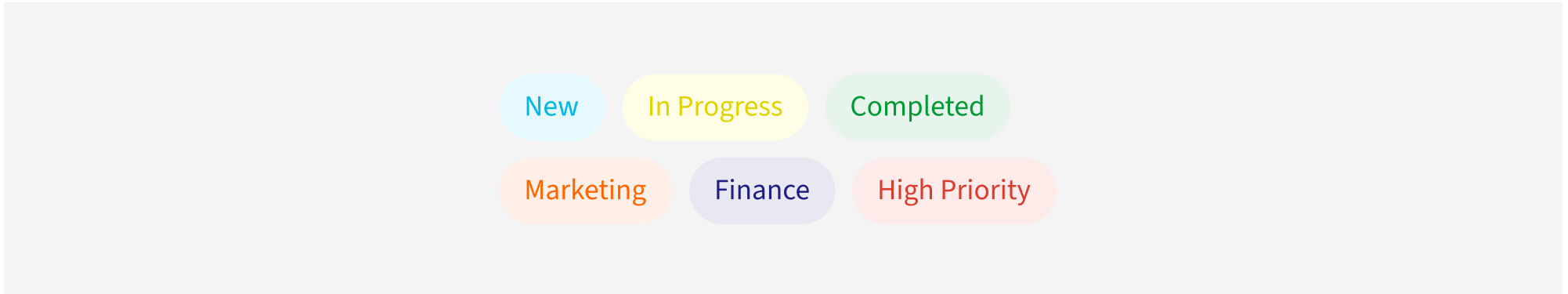


Fig.3.3.125 Read-only Tags

Dismissible Tag

Dismissible tags allow users to remove or close a tag. They are commonly used in search or filtering to manage keywords and can also represent user-generated labels that can be deleted if needed. Avoid using dismissible tags for content that must remain persistent, as they can be removed by the user.



Fig.3.3.126 Read-only Tags

Selectable Tag

Selectable tags allow users to select or deselect options. They can serve as the primary selection method in forms, as interactive choices in chats to guide decisions, or as filters to refine content within a page or component. In some cases, they may replace traditional form elements, particularly when a form consistently uses tags for input. Selectable tags support both single- and multi-selection scenarios and should maintain high contrast to clearly distinguish selected from unselected states.

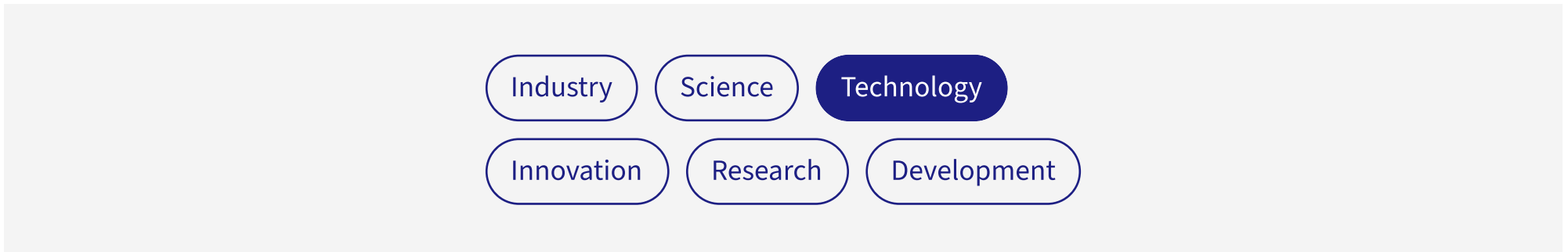


Fig.3.3.127 Selectable Tags

Decorative Icon

Decorative icons lead before the tag title. Decorative icons are optional and are often used to support the tag title visually. We recommend not using decorative icons in the small tag size where there is compact spacing, which could create possible visual tension between some icon shapes and tags with borders.

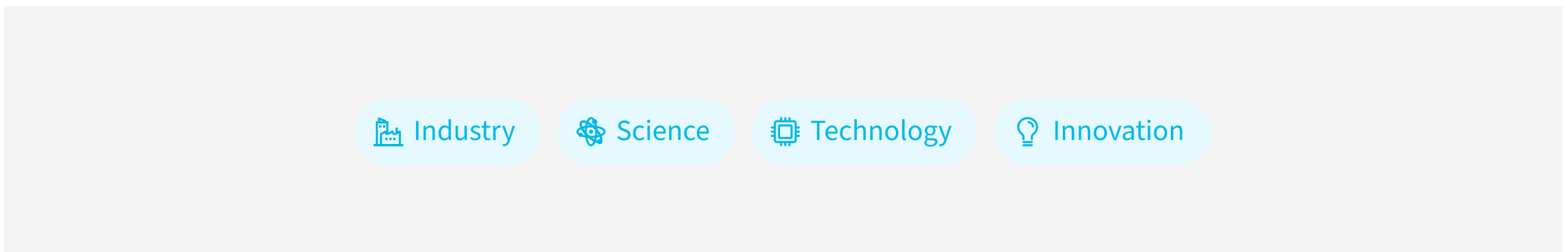


Fig.3.3.128 Decorative Icon

Size and Spacing - Read-only Tag

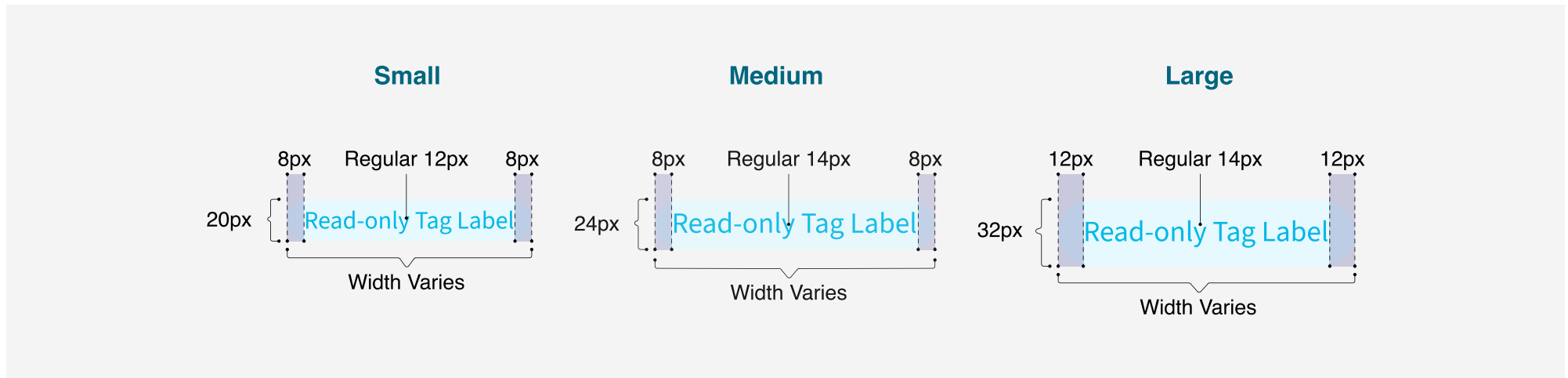


Fig.3.3.129 Size and Spacing - Read-only Tag

Size and Spacing - Dismissible Tag

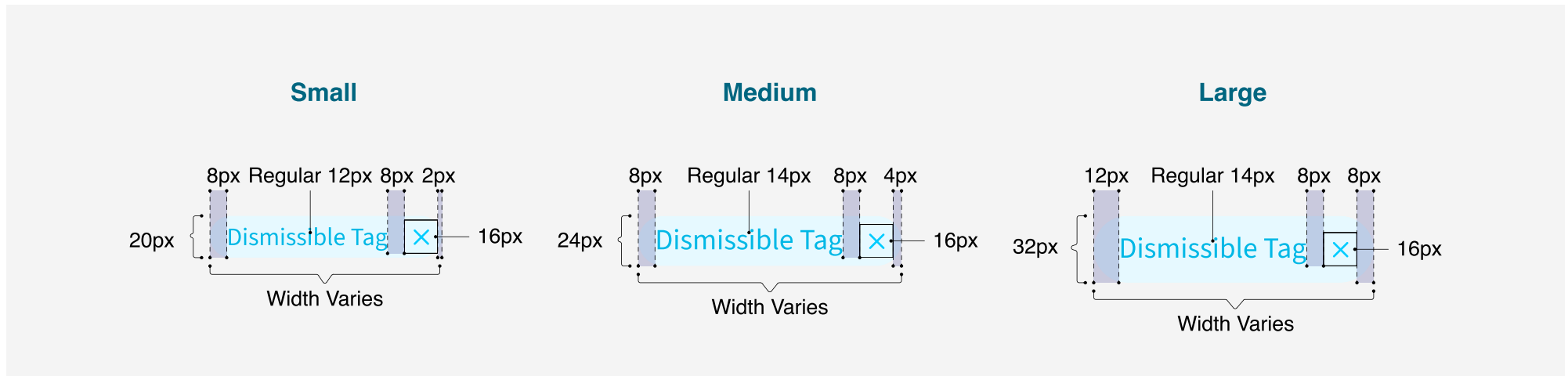


Fig.3.3.130 Size and Spacing - Dismissible Tag

Size and Spacing - Decorative Icon

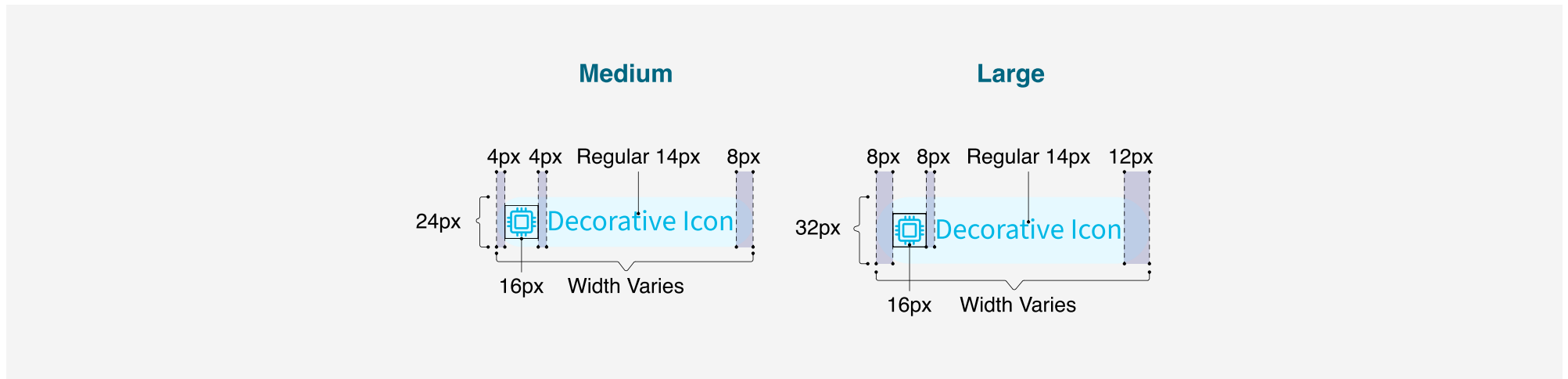


Fig.3.3.131 Size and Spacing - Decorative Icon

Tooltip

Tooltips provide brief, contextual information related to a component and appear when a user hovers over or focuses on the element. They can display the names of controls, such as icon buttons without visible labels, provide additional information for focusable elements to support informed decisions, offer extra context or explanations for specific elements, or define a term or provide details for an inline item. Examples can be found in **Fig.3.3.132 - Fig.3.3.134**.

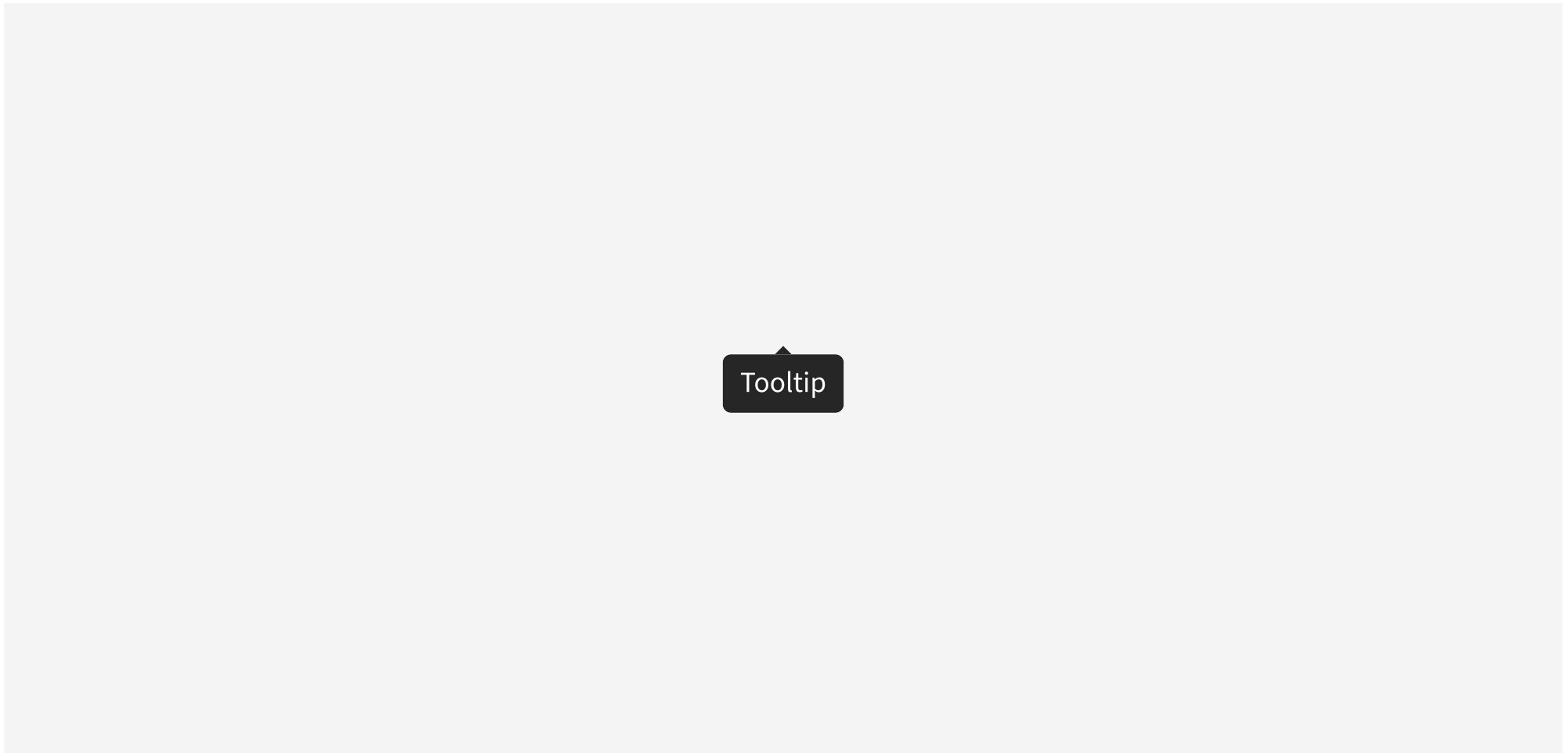


Fig.3.3.132 *Tooltip*

Alignment

The tooltip container can be aligned to the start, center, or end to prevent it from overflowing the page or covering important content. The UI trigger button and the caret should be vertically centered with each other to clearly associate the tooltip with its trigger. This alignment is particularly important when multiple elements are positioned close together.

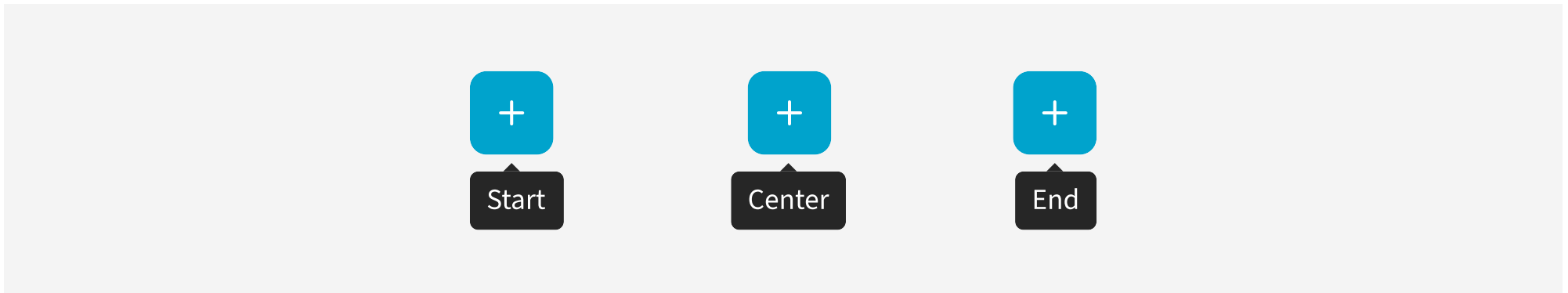


Fig.3.3.133 Tooltip Alignment

Placement

By default, tooltips are set to auto and adjust to stay fully visible within the browser. They can also be positioned top, bottom, left, or right of the trigger element. Tooltips should never cover essential content or extend beyond the page.

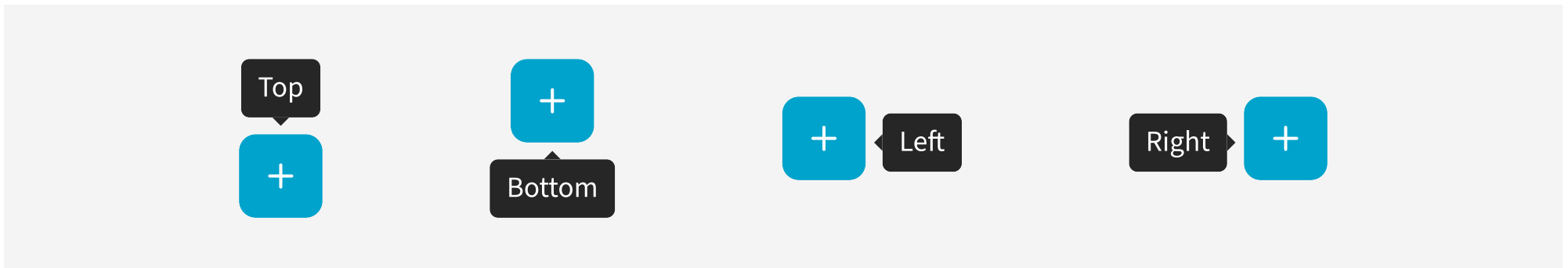


Fig.3.3.134 Tooltip Placement

Size and Spacing

Tooltips have a maximum width of 350px. The container expands with the content until it reaches this limit, at which point the content wraps to the next line. The height of a tooltip adjusts automatically to fit the content, growing as the content's height increases, as shown in **Fig.3.3.135**.

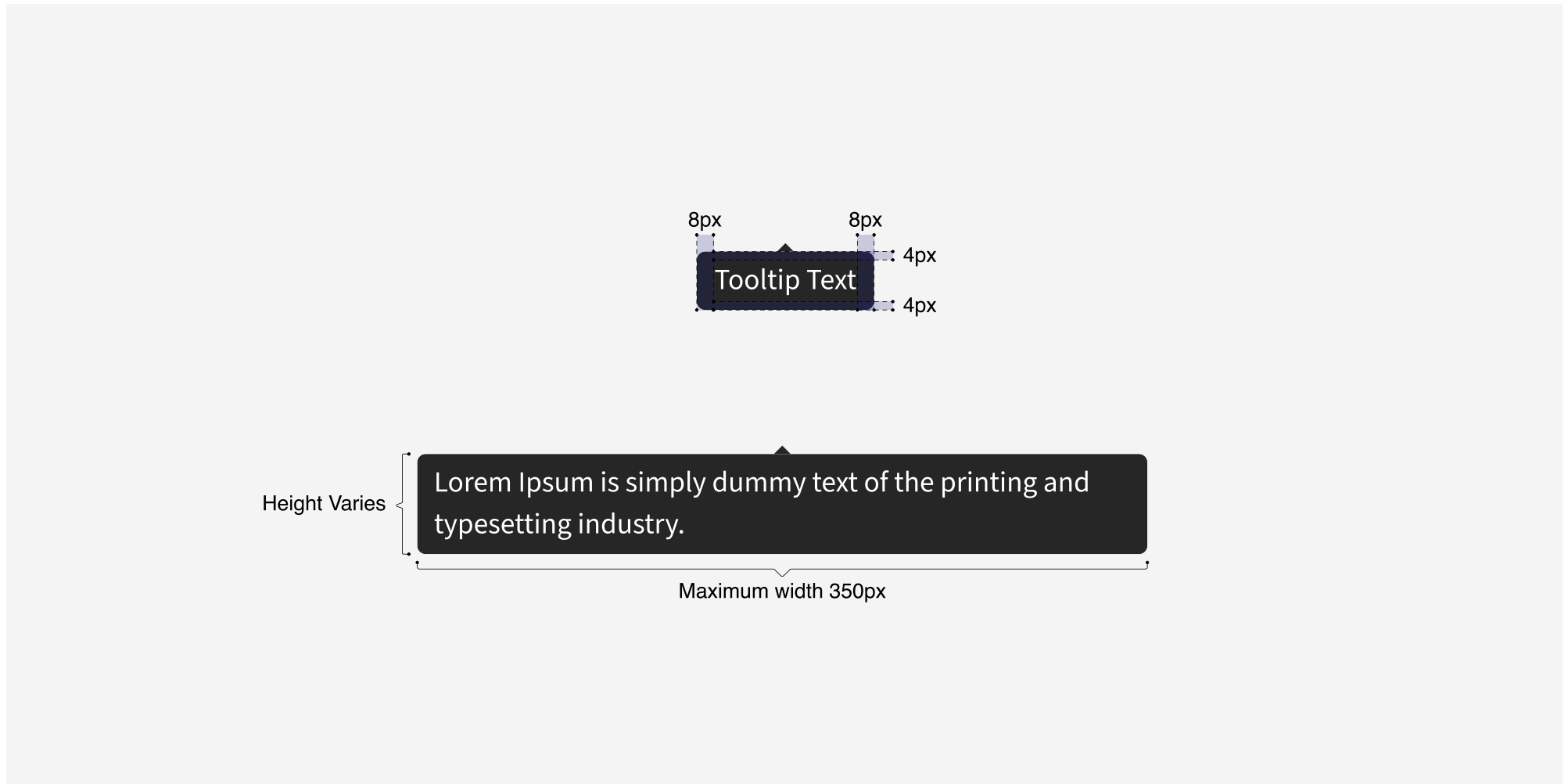


Fig.3.3.135 Size and Spacing - Tooltip

Radio Button

Radio buttons are used when a user must select a single option from a set of mutually exclusive choices. Selecting a new option automatically deselects the previously selected one. They are commonly used in tiles, data tables, modals, side panels, and full-page forms to ensure clear and consistent user input. The examples are provided in **Fig.3.3.136 - Fig.3.3.138**, with size and spacing specifications are shown in **Fig.3.3.139**.

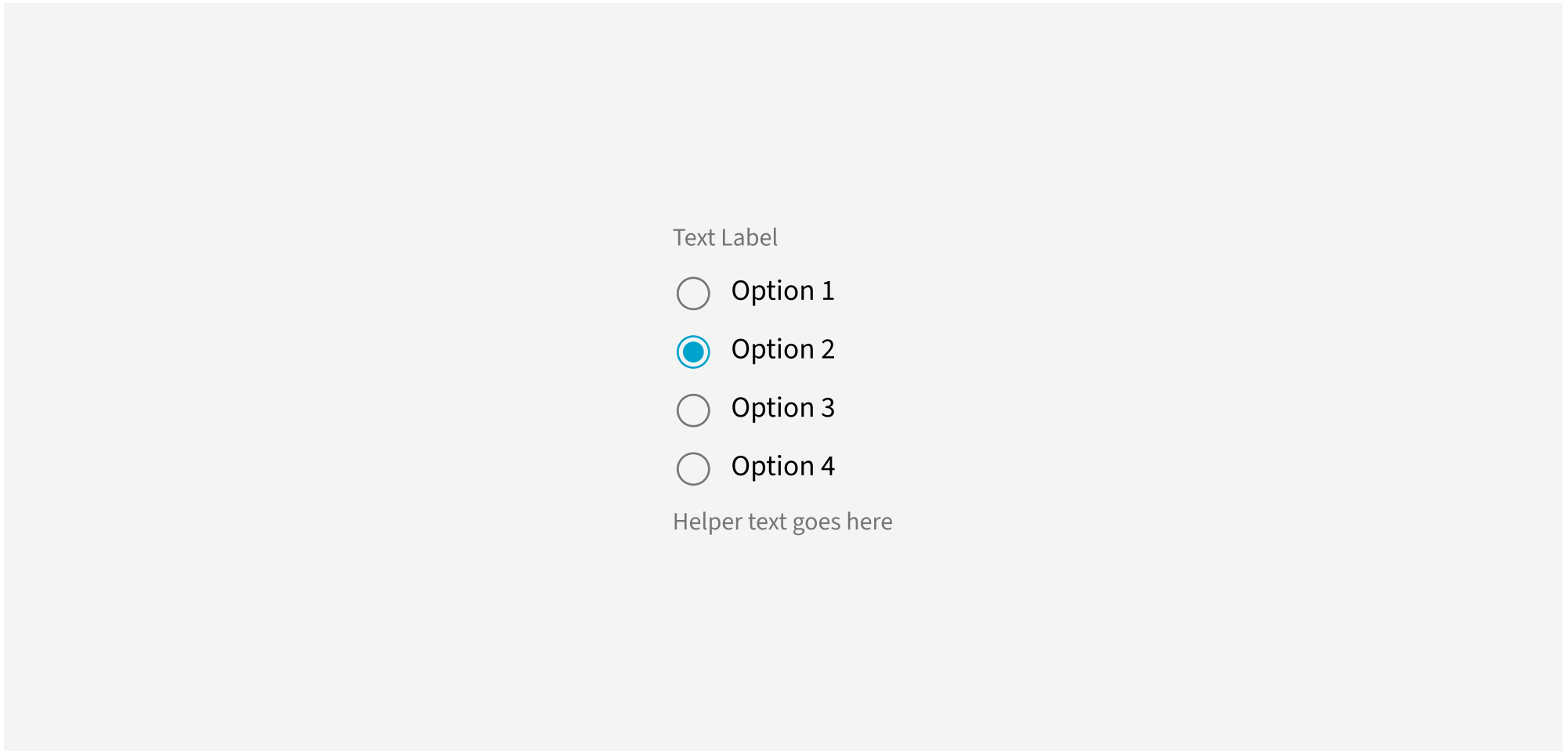


Fig.3.3.136 Radio Button

Alignment

Radio button labels are positioned to the right of their inputs in languages that read left to right. If there is a radio button grouping, they can be laid out vertically or horizontally depending on the use case and the structure of the UI. When possible, arrange the radio button and checkbox groups vertically for easier reading.

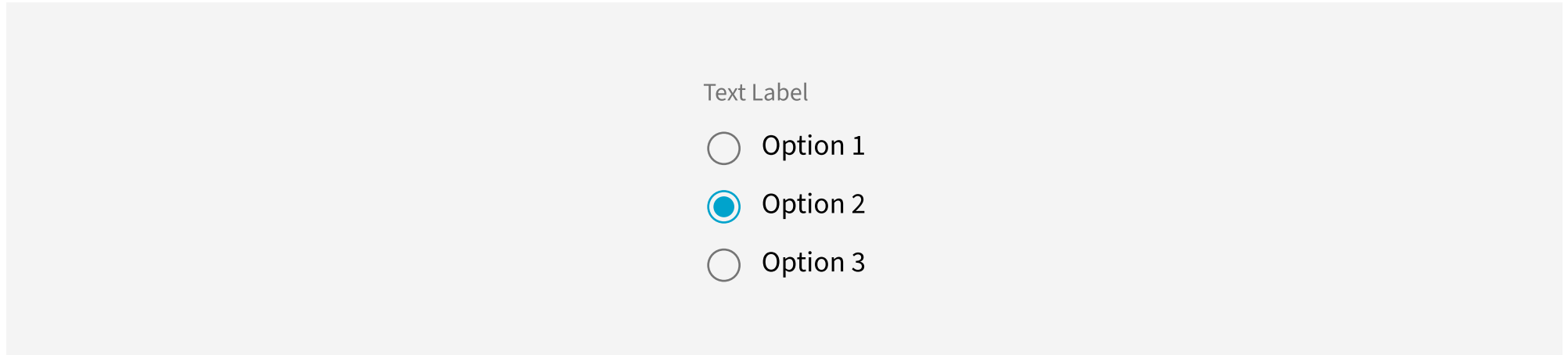


Fig.3.3.137 Vertical Radio Button

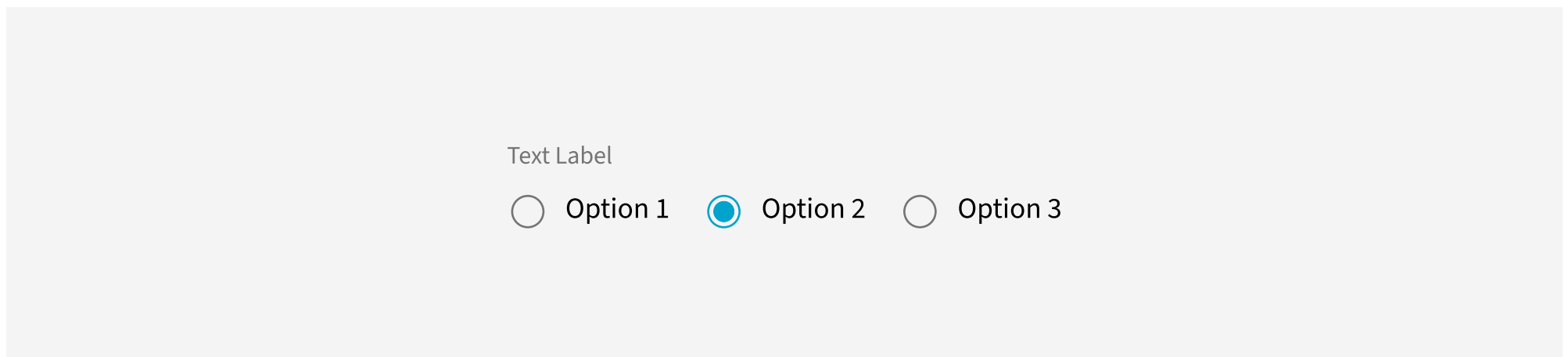


Fig.3.3.138 Horizontal Radio Button

Size and Spacing

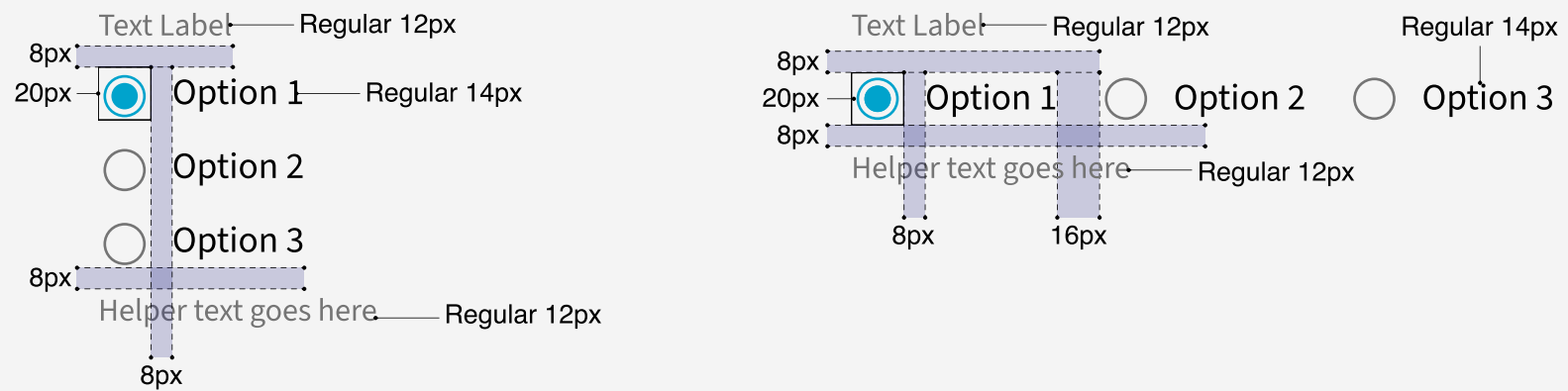


Fig.3.3.139 Size and Spacing - Radio Button

Radio Button States

Radio button states indicate the different visual conditions—such as hover, selected, error and disabled—that communicate the button's current status and guide user interaction, as shown in **Fig.3.3.140**.

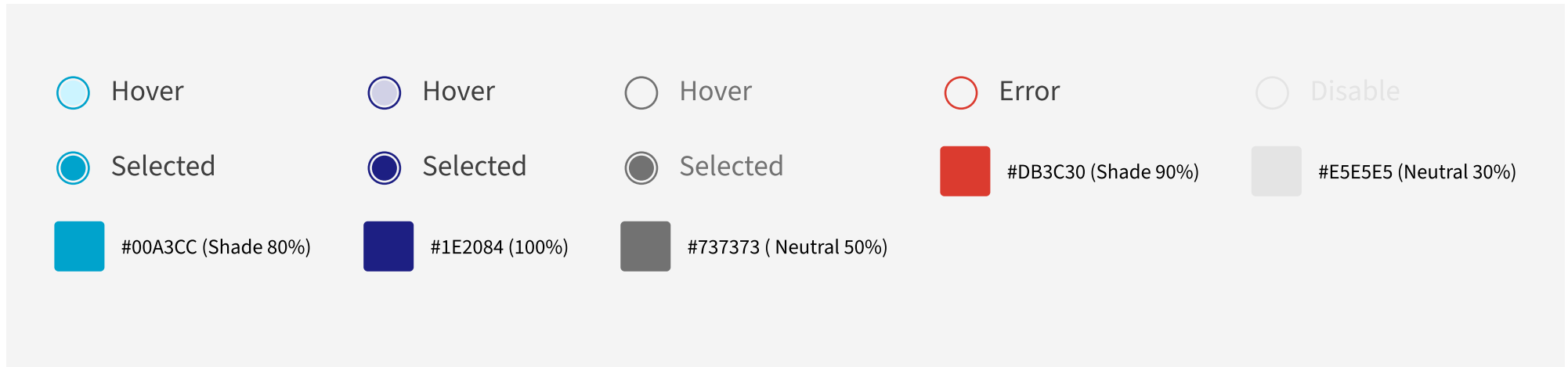


Fig.3.3.140 Radio Button States

04

Illustration and Photography

4.1. Icons

Icons are visual representations of actions, objects, or concepts. They enhance communication by conveying meaning at a glance, support user interaction, and help highlight key information within an interface, as show in **Fig.4.1.1**.

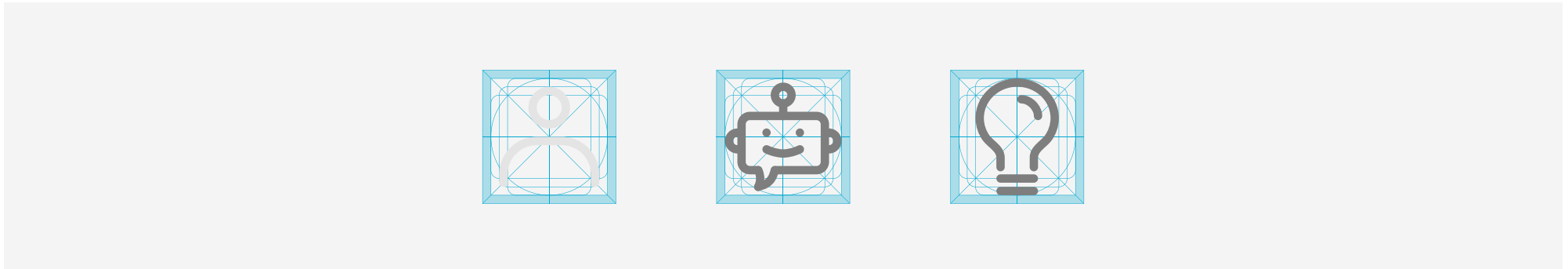


Fig.4.1.1 Icons

Keylines and Grids

Use a 32x32 pixel grid with 2px padding to make sure all icons stay the same size and look balanced. The grid helps you line up shapes, while the padding keeps spacing clear between icons. If needed, you can slightly go beyond the padding to make some parts of the icon stand out more. See **Fig.4.1.2** for the keyline and grid layout size, and **Fig.4.1.3** for icon size specifications.

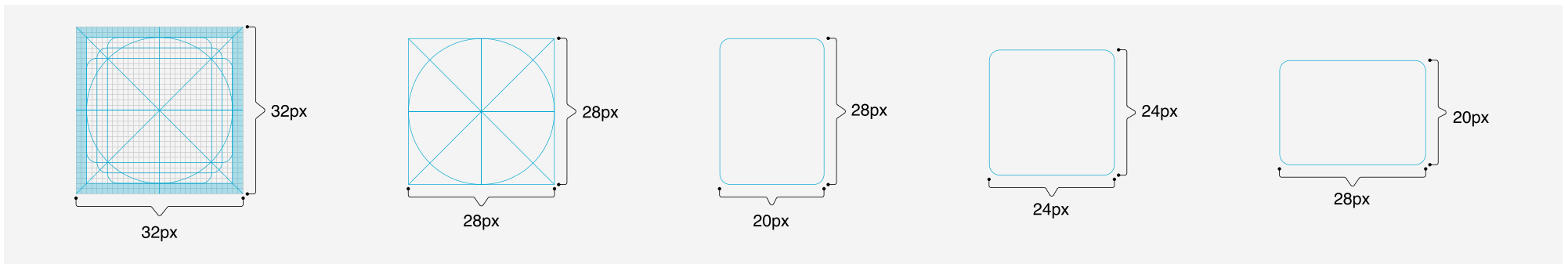


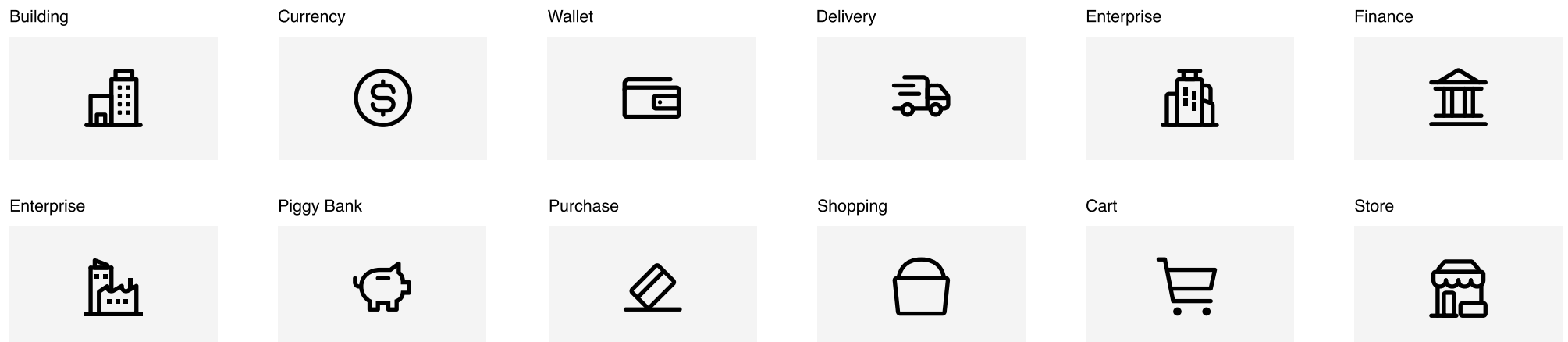
Fig.4.1.2 Icon Keylines and Grids Size

Icon Sizes



Fig.4.1.3 Icon Sizes

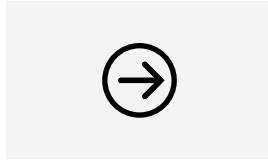
Icon Package



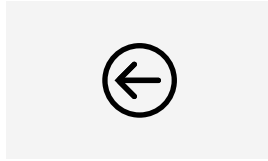
Dashboard



Next Arrow



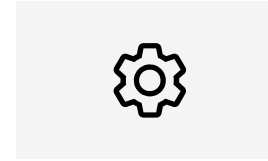
Previous Arrow



Pause



Setting



Power



Arrow Up



Arrow Down



Play



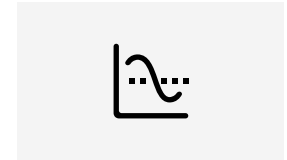
Analytic



Calendar



Cart Average



Cart Cluster Bar



Cart Histogram



Cart Line Data



Cart Pie



Chart Radial



Cart Ring



Cart Ring



Managed Solutions



Copy



Document



Add Document



Document Attachment



Document Download



Document Export



Document Import



PDF File

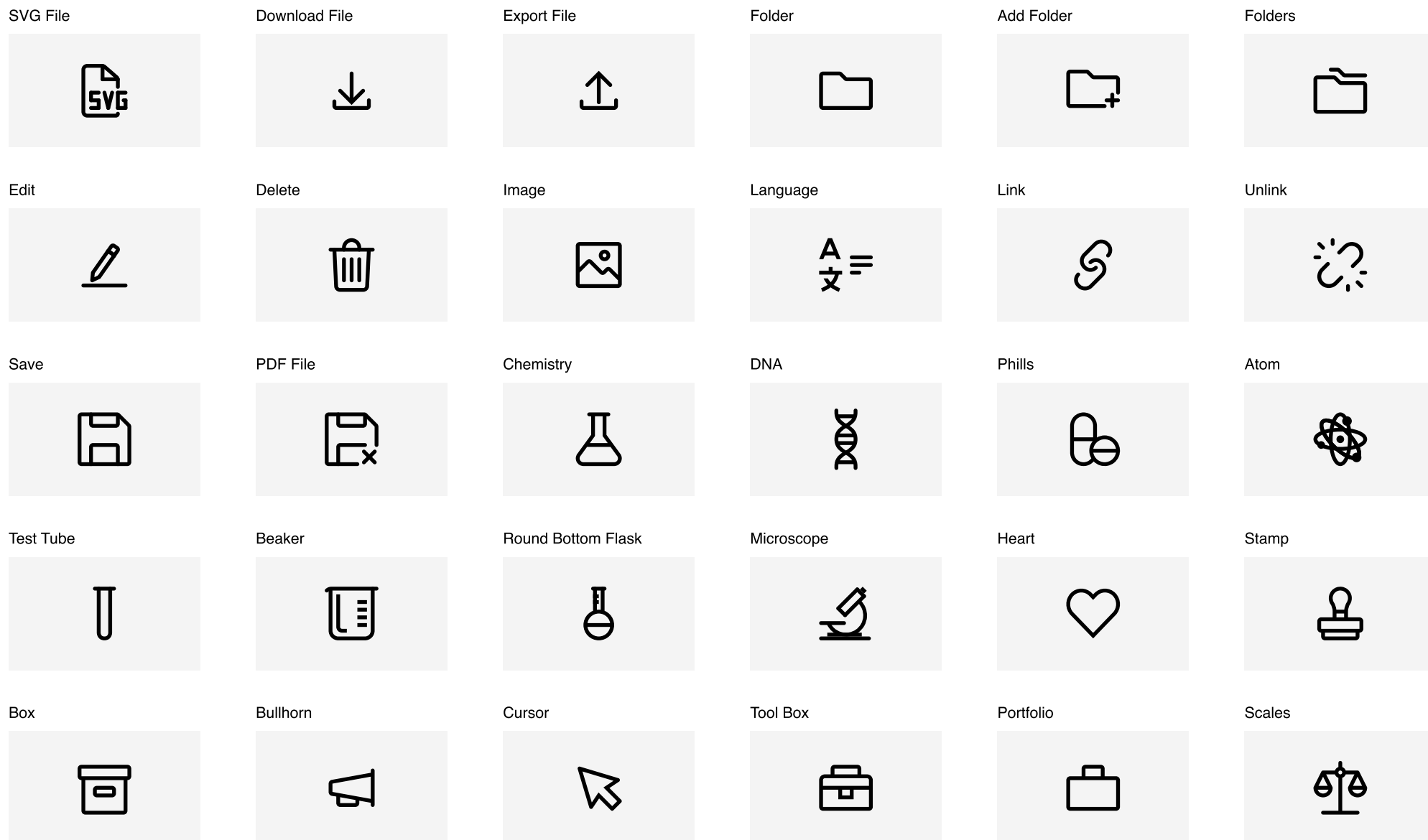


JPG File



PNG File





Tools



Tool Kit



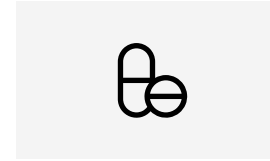
Chemistry



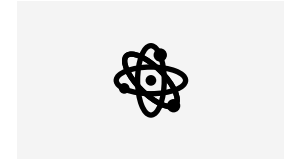
DNA



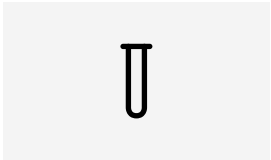
Phills



Atom



Test Tube



Beaker



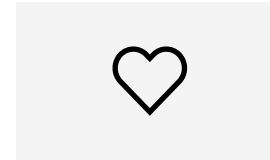
Round Bottom Flask



Microscope



Heart



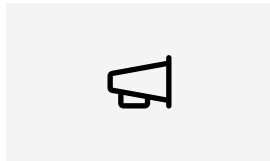
Stamp



Box



Bullhorn



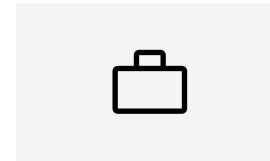
Cursor



Tool Box



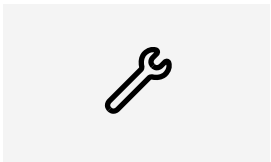
Portfolio



Scales



Tools



Tool Kit



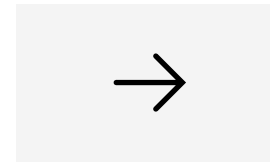
Add



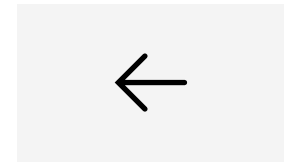
Add Alt



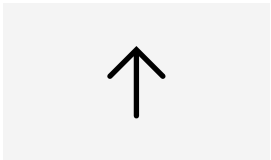
Arrow Right



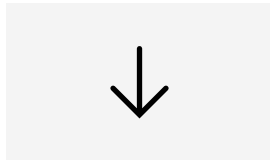
Arrow Left



Arrow Up



Arrow Down



Arrow Down Right



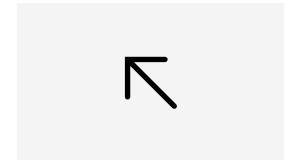
Arrow Down Left



Arrow Up Right



Arrow Up Left



Chevron Right



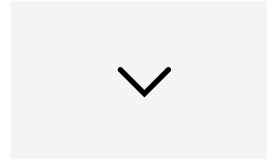
Chevron Left



Chevron Up



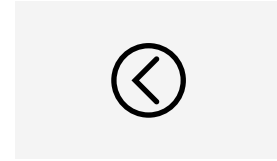
Chevron Down



Chevron Right Outline



Chevron Left Outline



Chevron Up Outline



Chevron Down Outline



Close



Close Outline



Page Last



Page First



Down to Bottom



Up to Top



Home



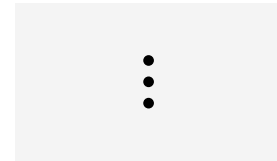
Menu Bar



Overflow Menu Horizontal



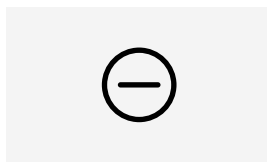
Overflow Menu Vertical



Subtract



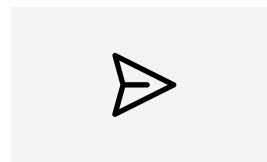
Subtract Outline



Filter



Sent



Search



Recently



Renew



Chat



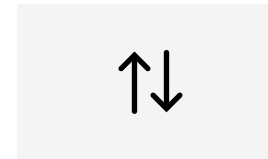
Comment



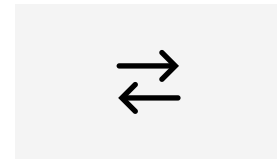
Question Mark

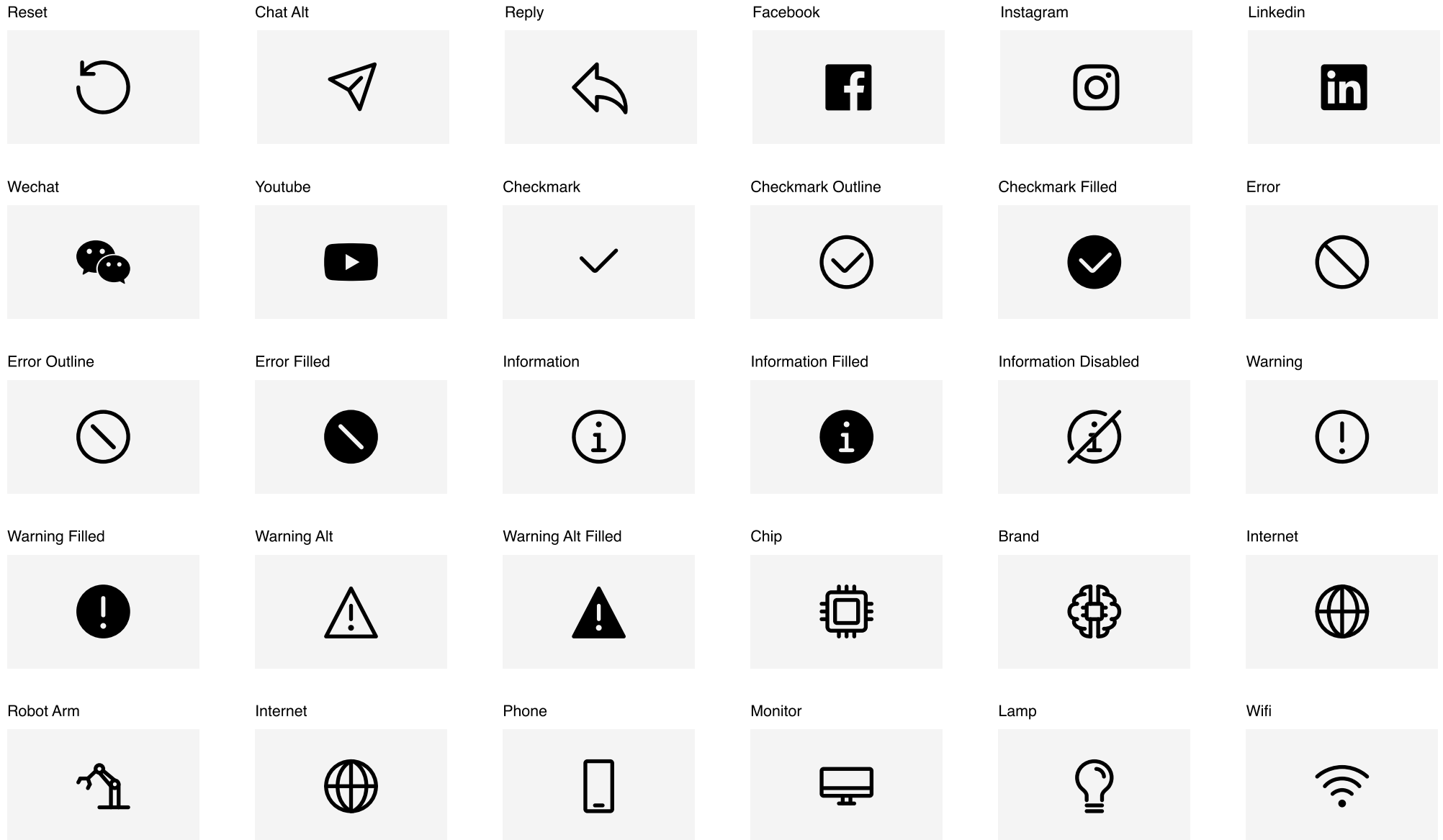


Arrows Vertical

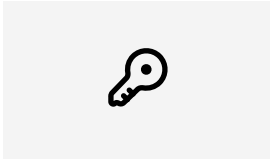


Arrows Horizontal





Password



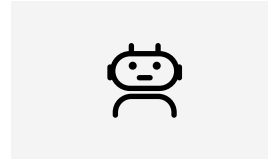
Cloud Upload



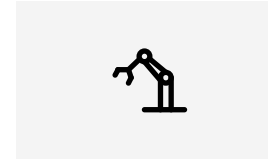
Cloud Download



Robot



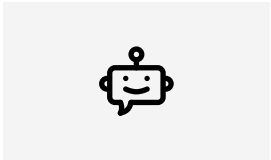
Robot Arm



Hide View



Chat Bot



Monitor



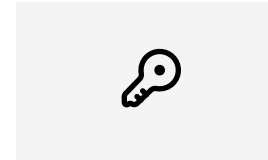
Lamp



Wifi



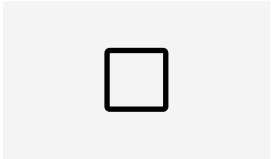
Password



Calendar



Check Box



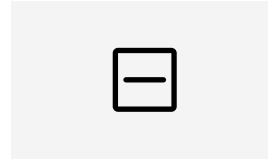
Check Box Outline



Check Box Filled



Checkbox Indeterminate



Checkbox Indeterminate Filled



Grid



List



Bell



Notification



View



Hide View



View Filled



Hide View Filled



Female



Male



Transgender



User



User Admin



User Outline



User Filled



User Avatar



User Group



View



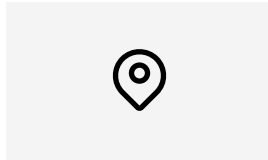
View Filled



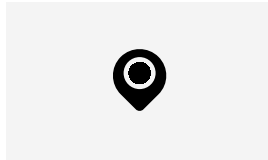
Hide View Filled



Location



Location Filled



4.2. Illustration

Illustrations are visual elements, such as drawings or graphics, used to enhance the user experience by clarifying, decorating, or visually representing text or complex ideas, while also improving the overall aesthetic appeal. They should always have a clear purpose, supporting content and guiding users to understand difficult concepts, products, or services. Clear and simple illustrations help provide meaningful engagement and improve communication with users, as shown in **Fig.4.2.1**.

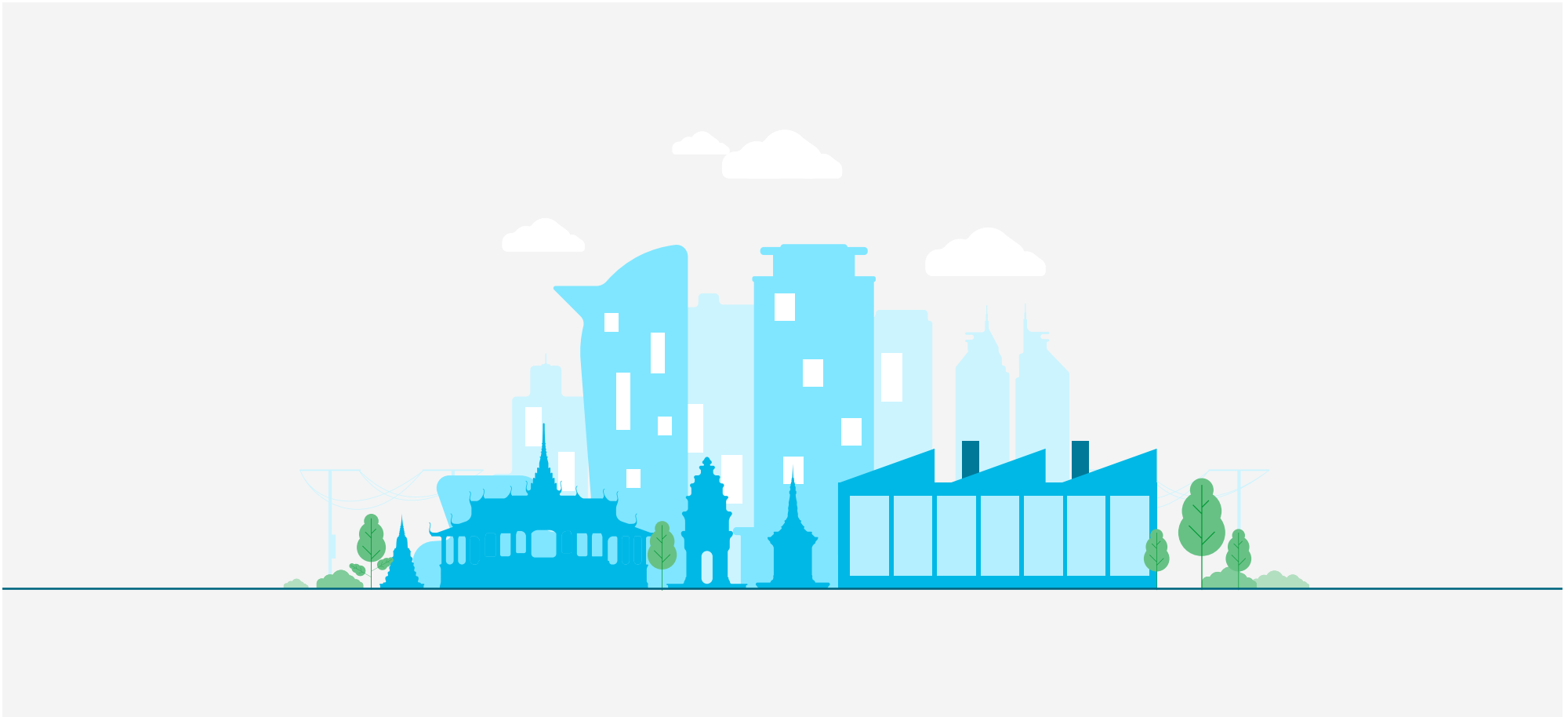


Fig.4.2.1 City Illustration

Flat Style

The flat style uses basic geometric shapes to represent people, objects, environments, and concepts. By thoughtfully applying color and tonal variations, it clearly defines these shapes, creating illustrations that are both engaging and visually appealing. The examples are provided in **Fig.4.2.2 - Fig.4.2.5**.

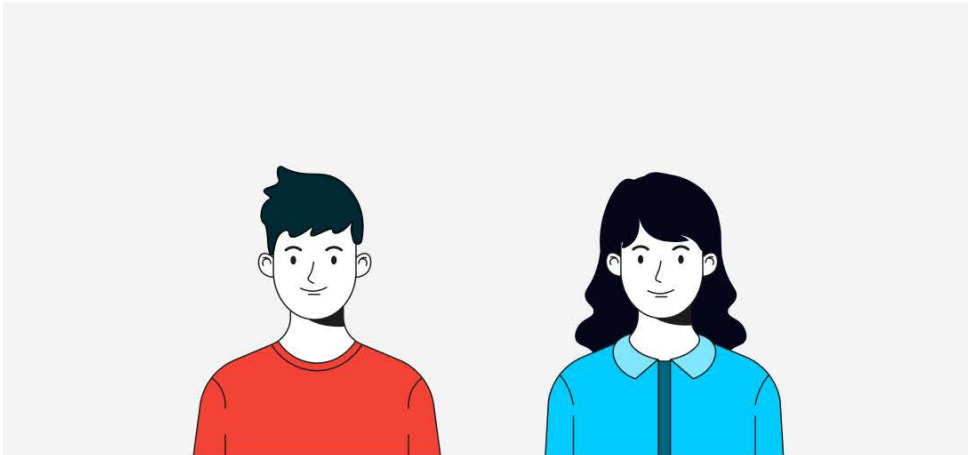


Fig.4.2.2 Characters

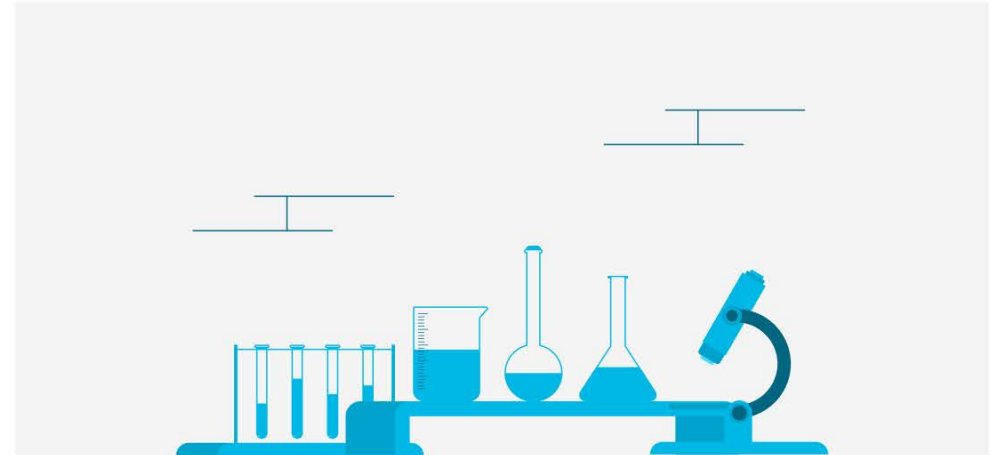


Fig.4.2.3 Laboratory



Fig.4.2.4 Business Owner

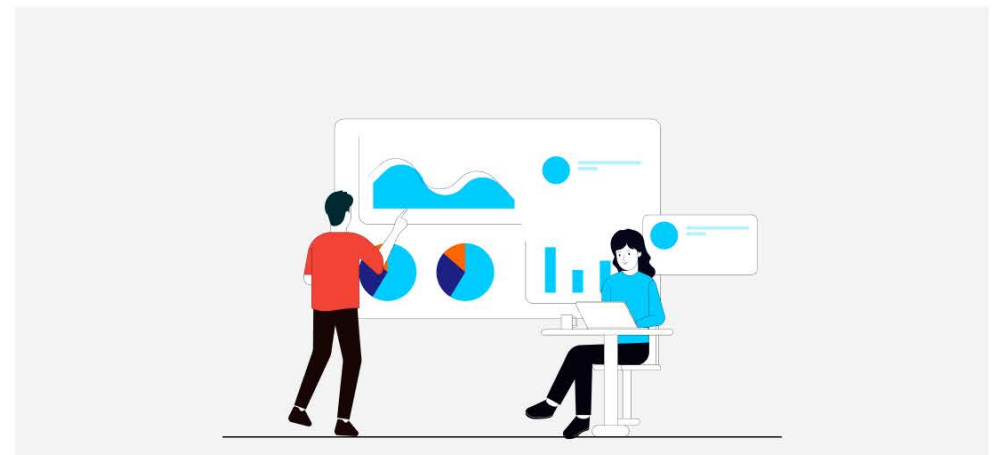


Fig.4.2.5 Data Visualizations

Isometric Style

The isometric style is an illustrative approach that simulates three-dimensional depth within a two-dimensional space. By applying a consistent angle and scale, it introduces structure and spatial clarity, making complex scenes or components easier to interpret while maintaining a clean and organized visual presentation.

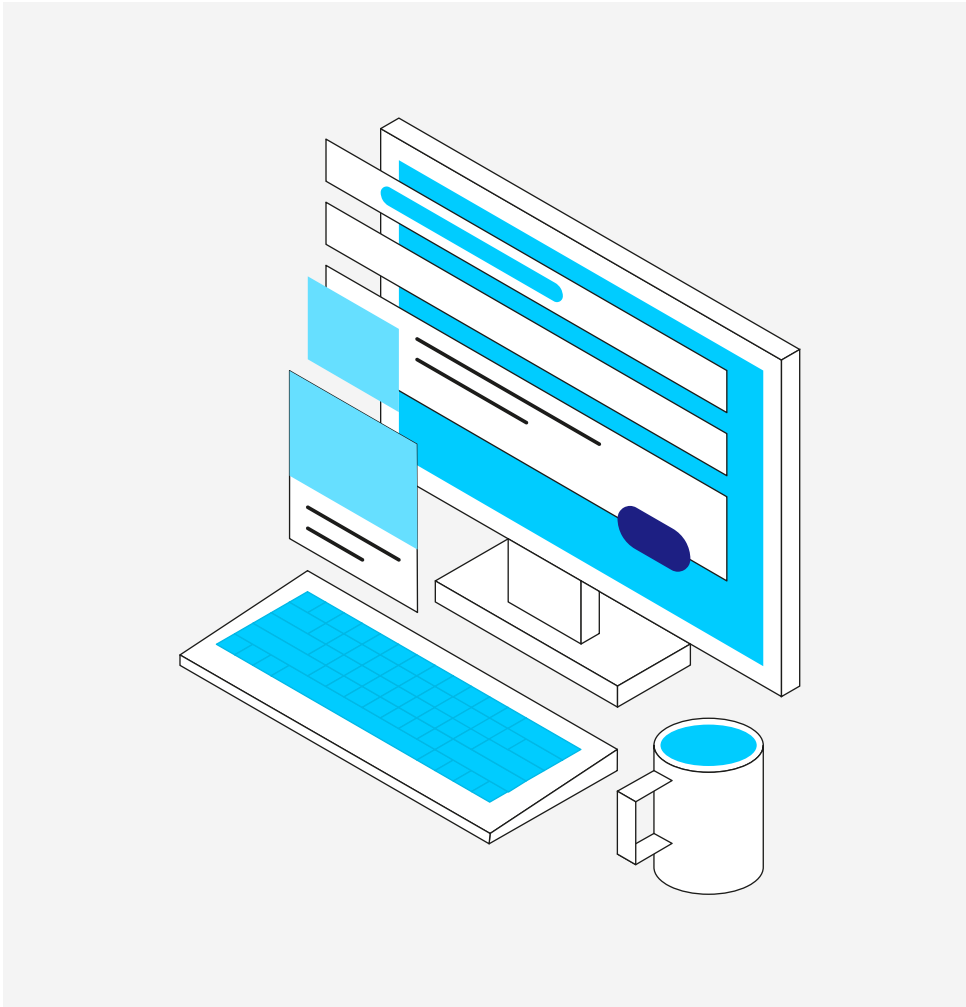


Fig.4.2.6 Public Digital Service

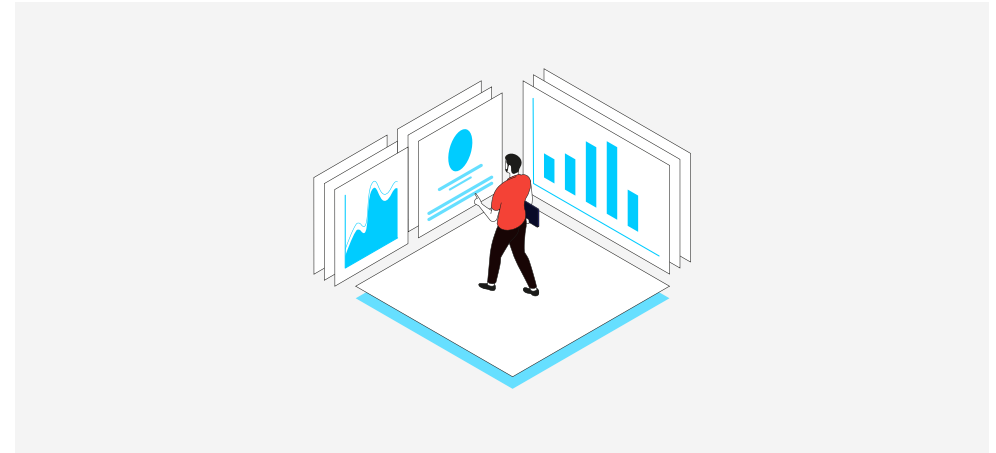


Fig.4.2.7 Data Visualizations



Fig.4.2.8 Ai Technology

4.3. Photography

A consistent visual language is essential for maintaining a professional and cohesive style. Photography plays a key role in all communications, helping to convey content and services quickly while creating an emotional connection with the audience. MISTI's visual language is defined by three core qualities: emotionality, authenticity, and professionalism.

Portraiture

Portraiture photography highlights an individual, capturing more than just appearance. A well-executed portrait reveals the subject's personality, identity, and inner story. The examples are provided in **Fig.4.3.1 - Fig.4.3.2**.

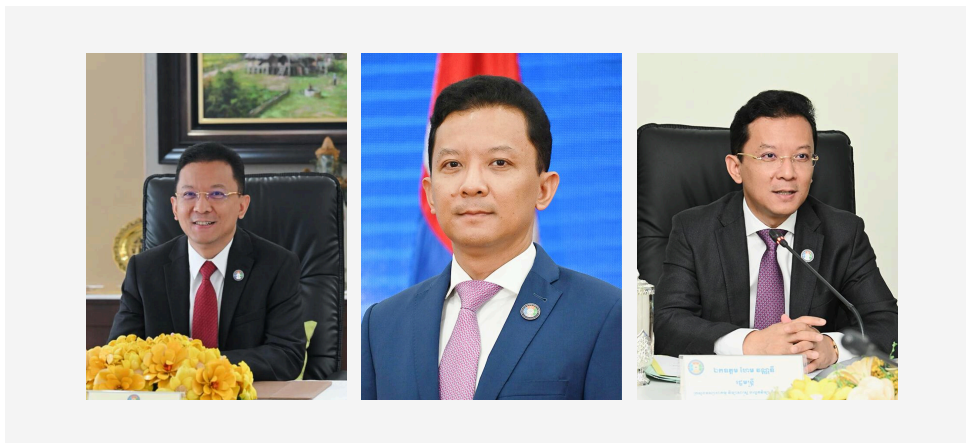


Fig.4.3.1 Correct Portraiture Photography Example

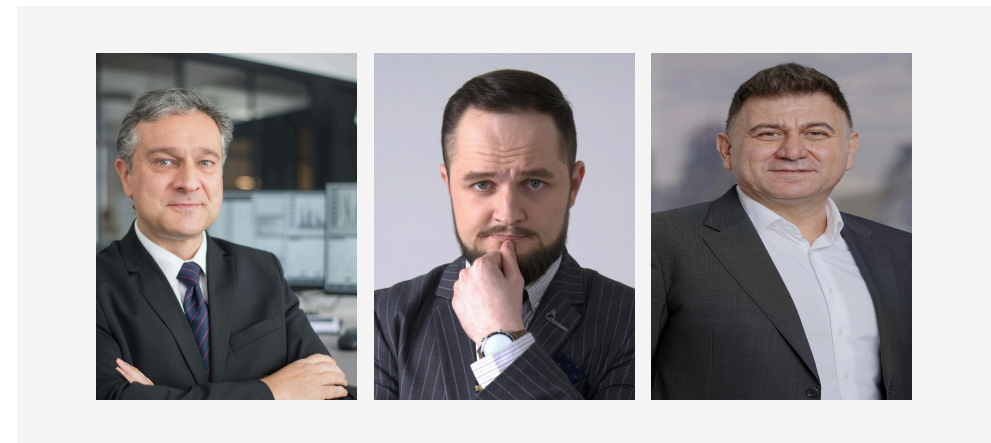


Fig.4.3.2 Incorrect Portraiture Photography Example

✓ Do:

- High-quality photo (not blurred, pixelated, or skewed)
- Make sure the person is well lit
- Headshot photo must be in the middle
- Picture of the person should be shown alone and not in a group
- Professional attire, both shoulders are shown and not cut off

✗ Don't:

- Use photo that is blurry, grainy, pixelated, and skewed
- Use images that is off center; the shoulders should not be cut off
- Use images that is stretched

Authenticity

Authentic photography focuses on capturing real people in genuine moments and natural environments. It avoids overly staged or posed shots, instead highlighting authentic interactions, diverse individuals, and realistic settings. The goal is to reflect real-life situations in relatable, uncontrived ways—showcasing a true sense of place, personality, and connection, as shown in **Fig.4.3.3 - Fig.4.3.4**.



Fig.4.3.3 Correct Authenticity Photography Example

- ✔ Do:
 - Scenes in a realistic, natural environment
 - Realistic geographical context
 - Uncontrived
 - Authentic characters and real-life situations



Fig.4.3.4 Correct Authenticity Photography Example

❌ Don't:

- Wrong regional context
- Unrealistic scenes
- Overly posed or staged shots

Color Scheme



Fig.4.3.5 Correct Color Scheme Photography Example

✓ Do:

- The color scheme should be matched to the respective accent
- Color in order to create a homogeneous colour mood.
- Warm, friendly colors
- Natural light, optimal exposure
- Good contrasts



Fig.4.3.6 Incorrect Color Scheme Photography Example

✗ Don't:

- Artificial look, extreme colouring
- Too colorful
- Exaggerated colour grading

05

Layout Principle

5.1. Grids & Layouts

Grids

The grid serves as the foundational structure for positioning visual elements, providing a consistent framework that guides creative decisions across products. It supports responsive design across various devices, reinforces visual hierarchy, and ensures balanced, coherent layouts throughout the interface. The example is provided in **Fig.5.1.1**.

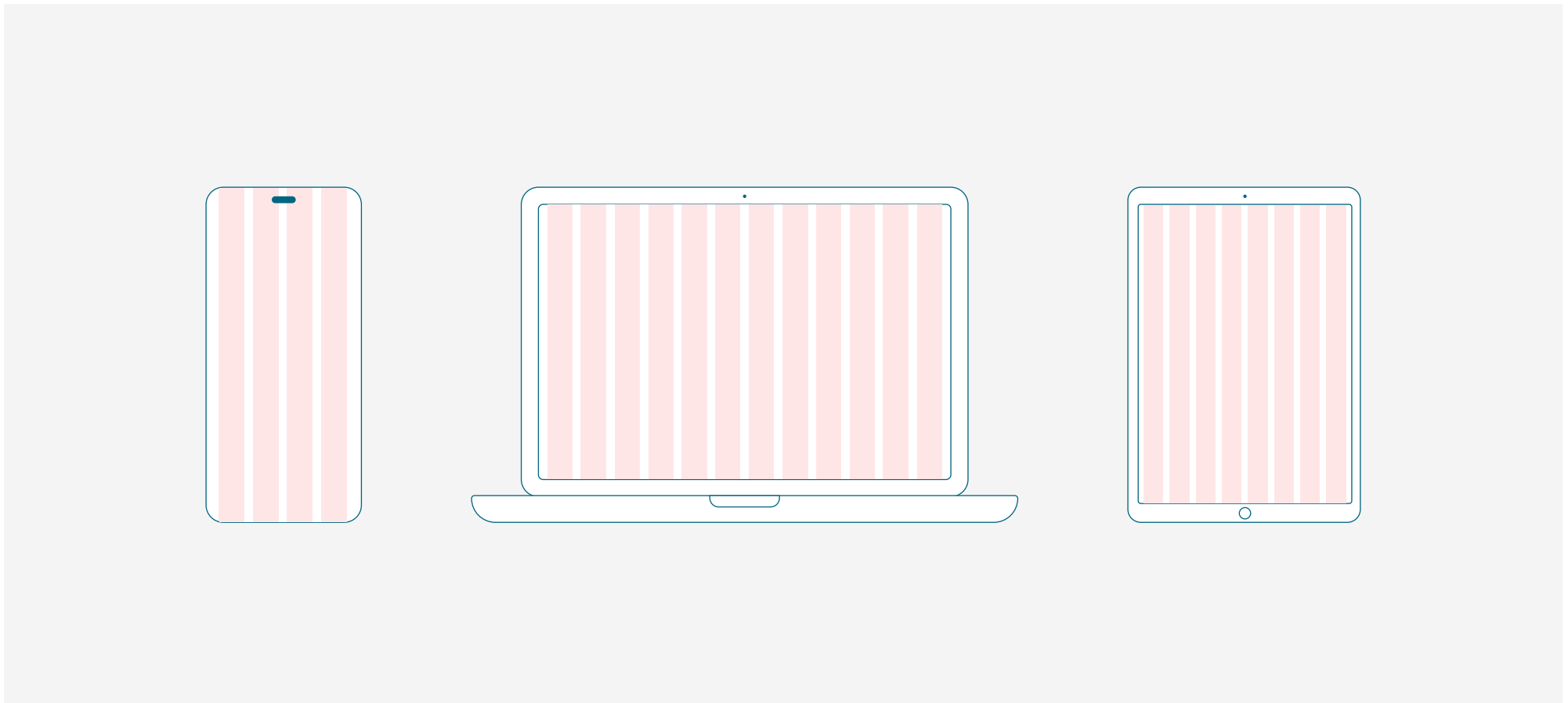


Fig.5.1.1 Example of Layout Grid Structure

Columns

A 12-column grid, the most commonly used layout, divides the page into vertical spatial areas that organize and contain content. This structure helps maintain consistency, alignment, and flexibility across different screen sizes and layouts, as shown in **Fig.5.1.2**.

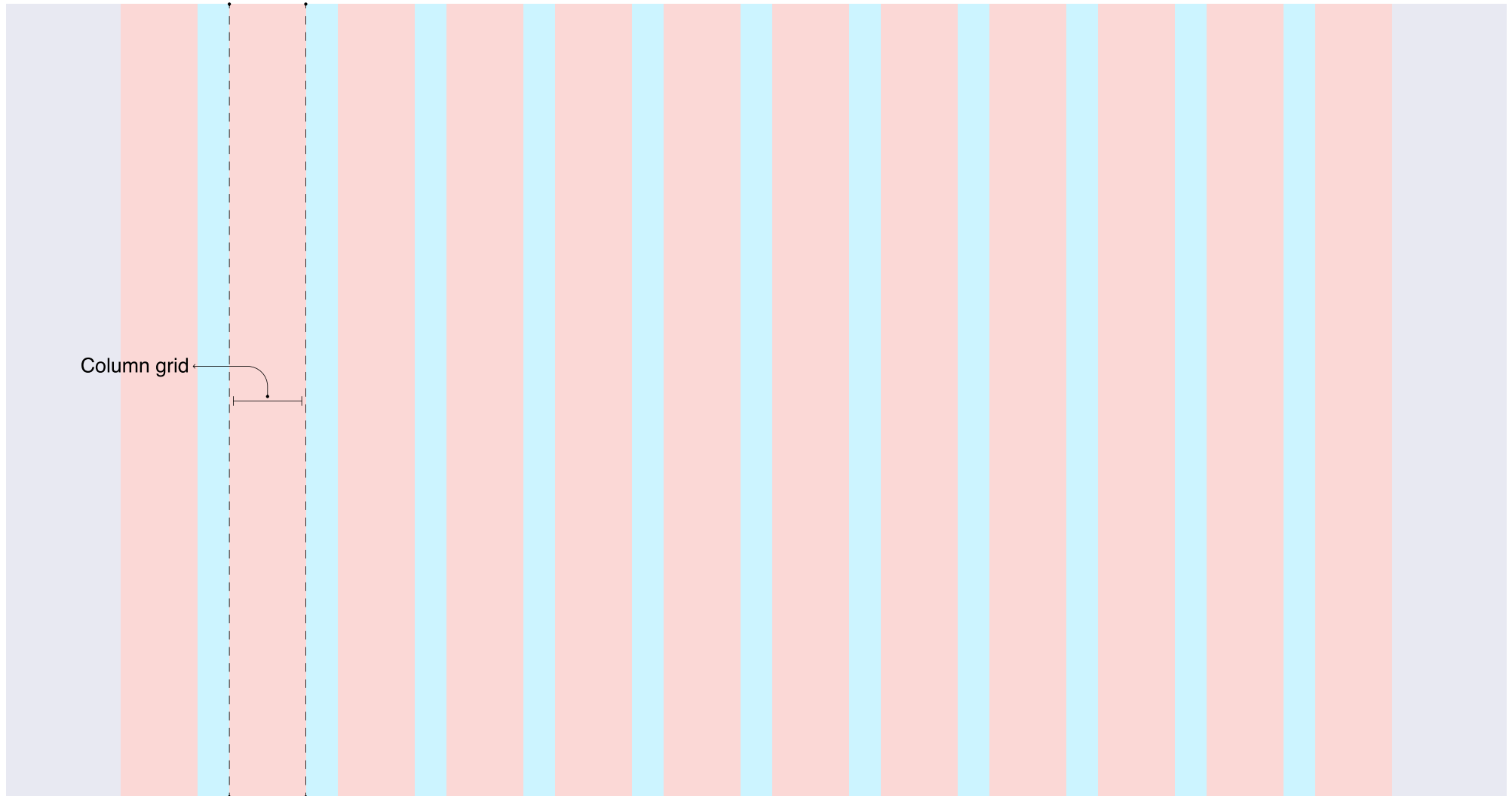


Fig.5.1.2 Columns

Gutters

Gutters are the spaces between columns that separate content blocks, as shown in **Fig.5.1.3**. They play a crucial role in creating visual breathing room, improving readability, and maintaining a balanced, organized layout.

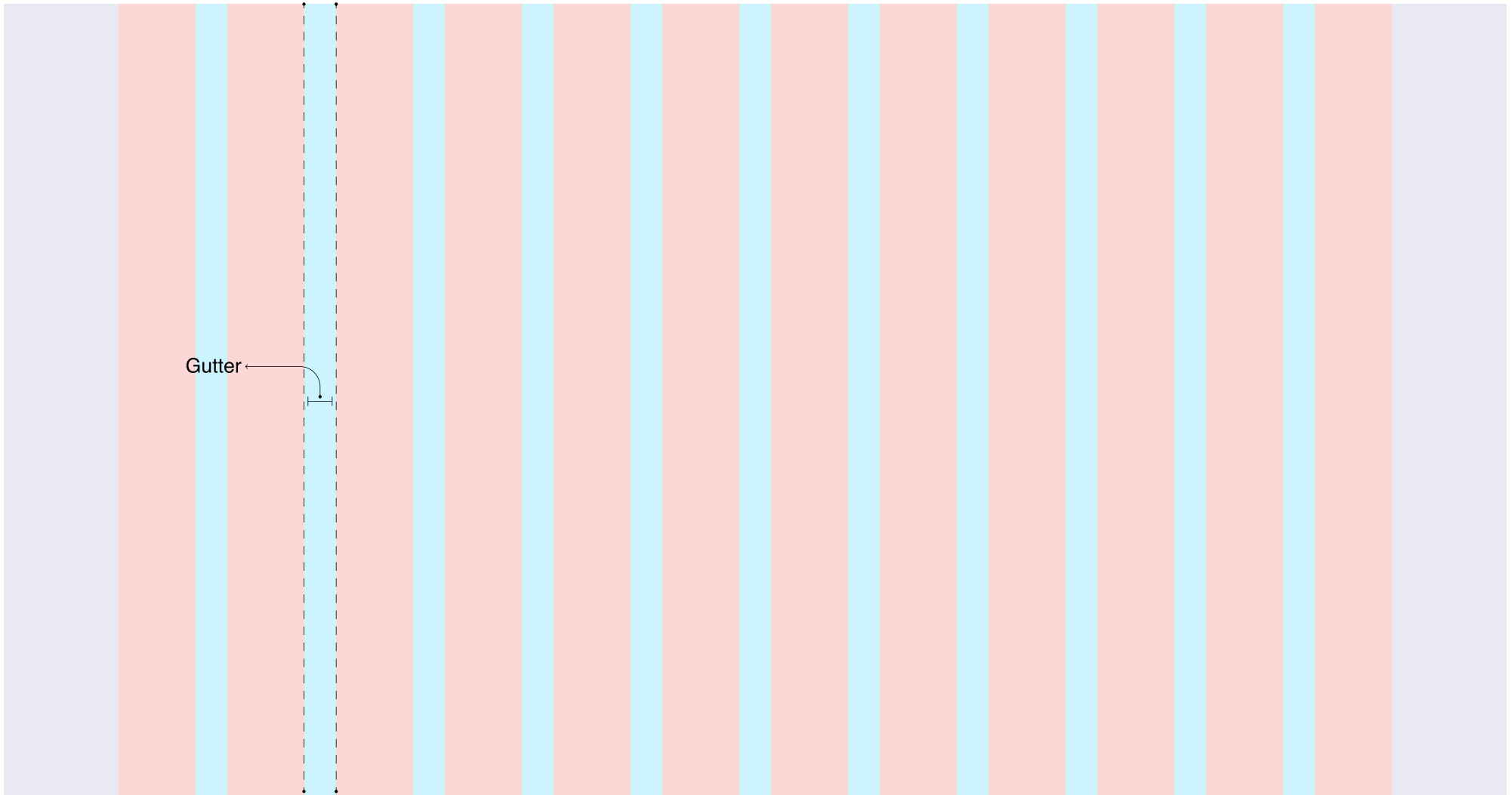


Fig.5.1.3 Gutters

Margins

Margins are the spaces between the content and the left and right edges of the screen. They create white space around the content, improving readability and visual balance, as shown in **Fig.5.1.4**. Margin size adjusts with screen size—expanding or shrinking responsively—and is typically equal to or greater than the gutter width.

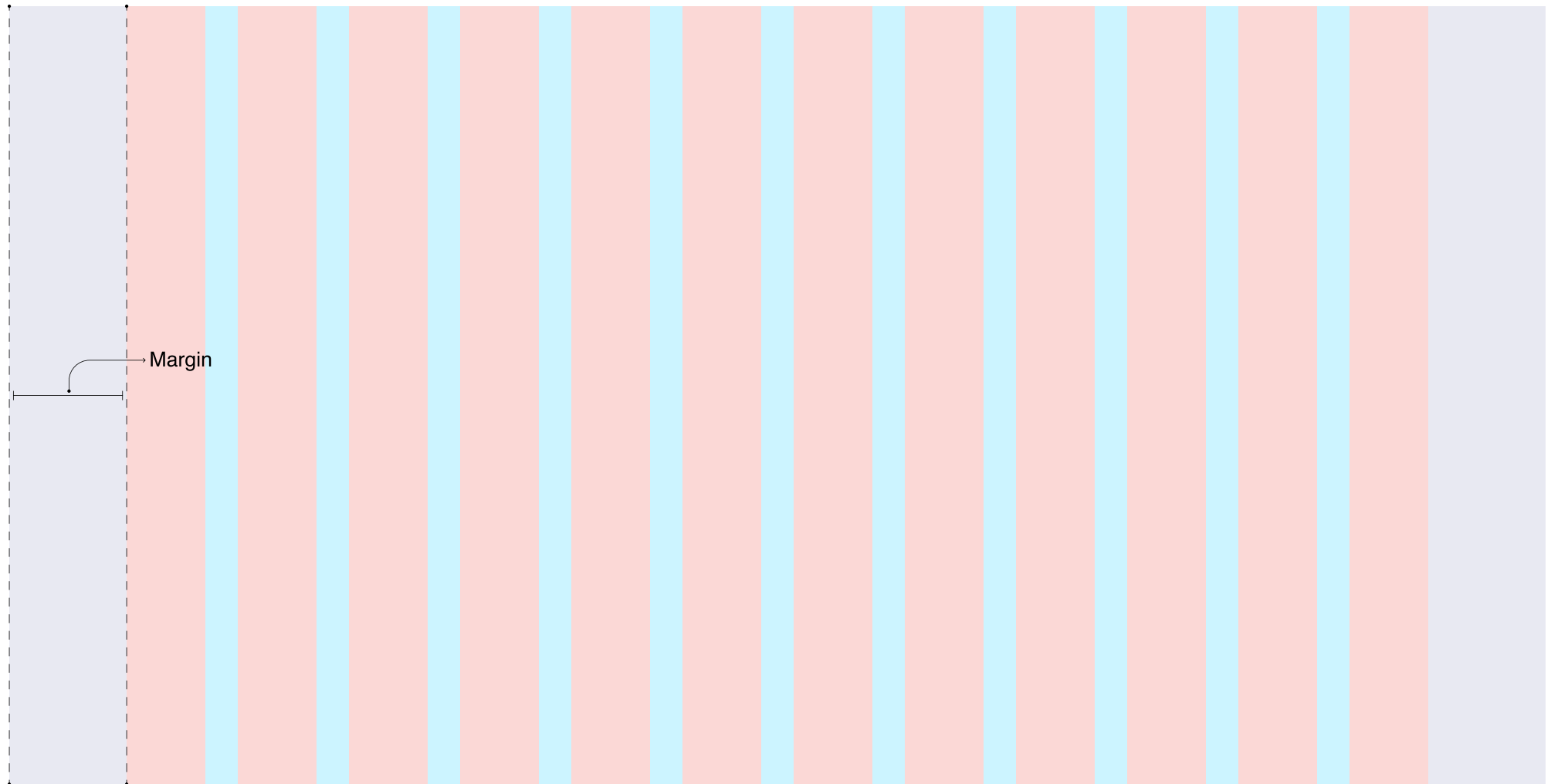


Fig.5.1.4 Margins

Layout Regions

Layout regions are defined sections within the grid that organize and contain content, as shown in **Fig.5.1.5**. These regions can span multiple columns and adjust responsively to changes in the grid, ensuring consistent structure across different screen sizes.

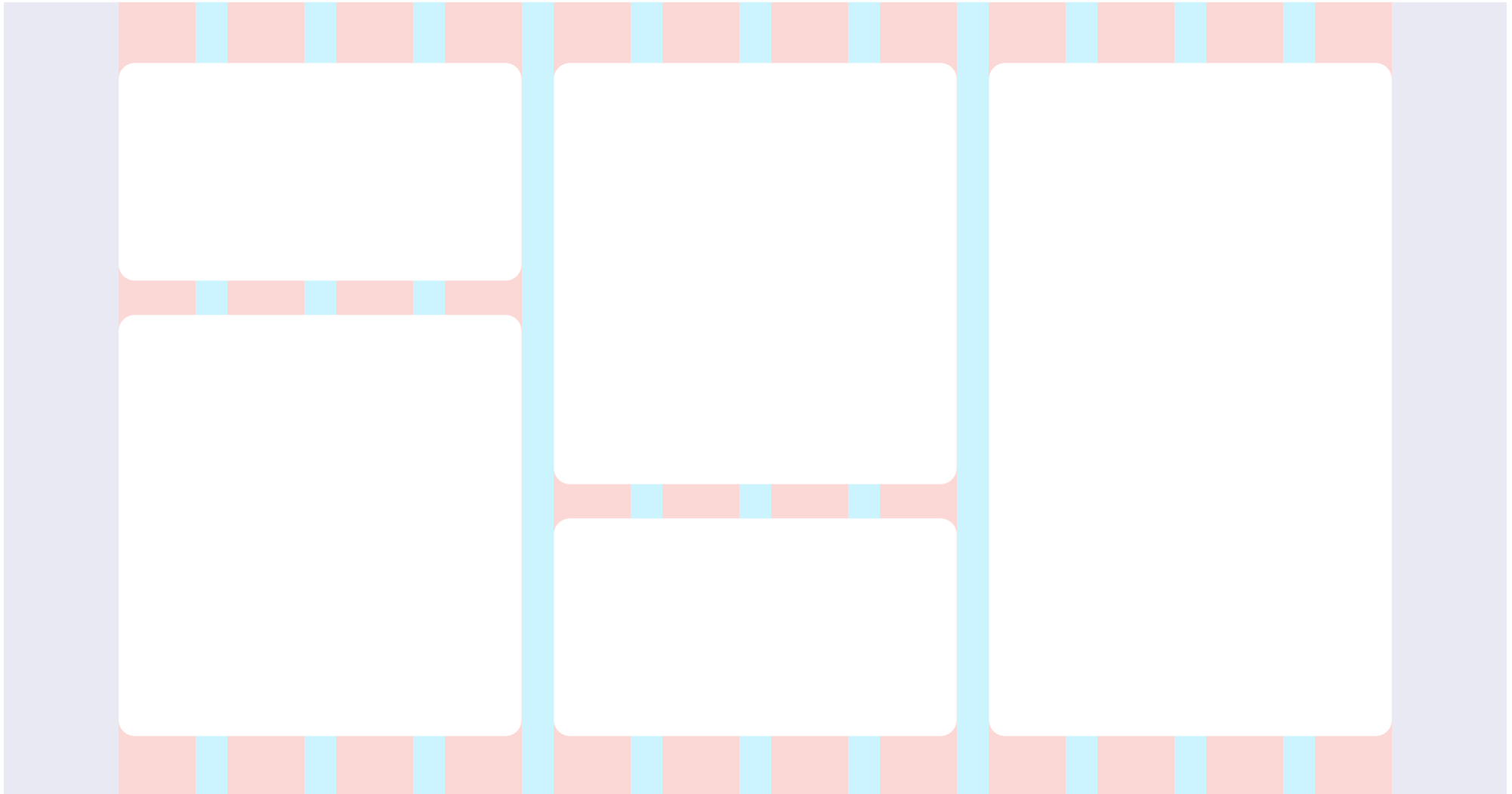


Fig.5.1.5 Layout Regions

Grids Type

There are various ways to combine columns, gutters, and margins to create different grid layouts. Maintaining consistency is essential for establishing familiar patterns that make MISTI applications and websites easy to scan and navigate.

Fluid Grid

Fluid grids scale proportionally based on the available screen space, as illustrated in **Fig.5.1.6**. While columns expand or contract to fit the layout, margins remain fixed to maintain visual balance. This approach is ideal for complex screens and web applications, as it utilizes 100% of the screen width to maximize available real estate.

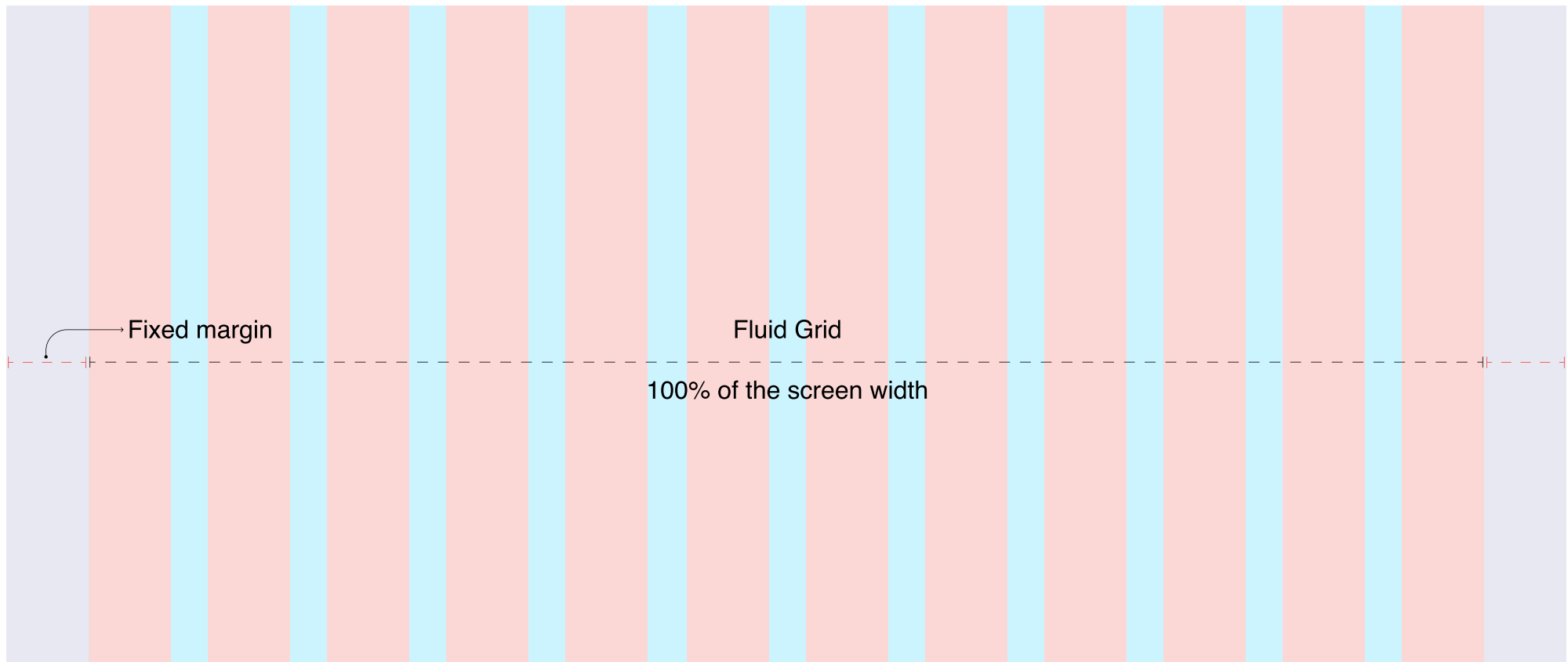


Fig.5.1.6 Fluid Grid

Fixed Grid

Fixed grids adjust only their margins as the screen size increases, while columns and gutters remain constant, as illustrated in **Fig.5.1.6**. This means the content stays fixed in size. They are best suited for simple screens and content-specific pages, where the fixed width supports optimal readability on large and high-resolution displays.

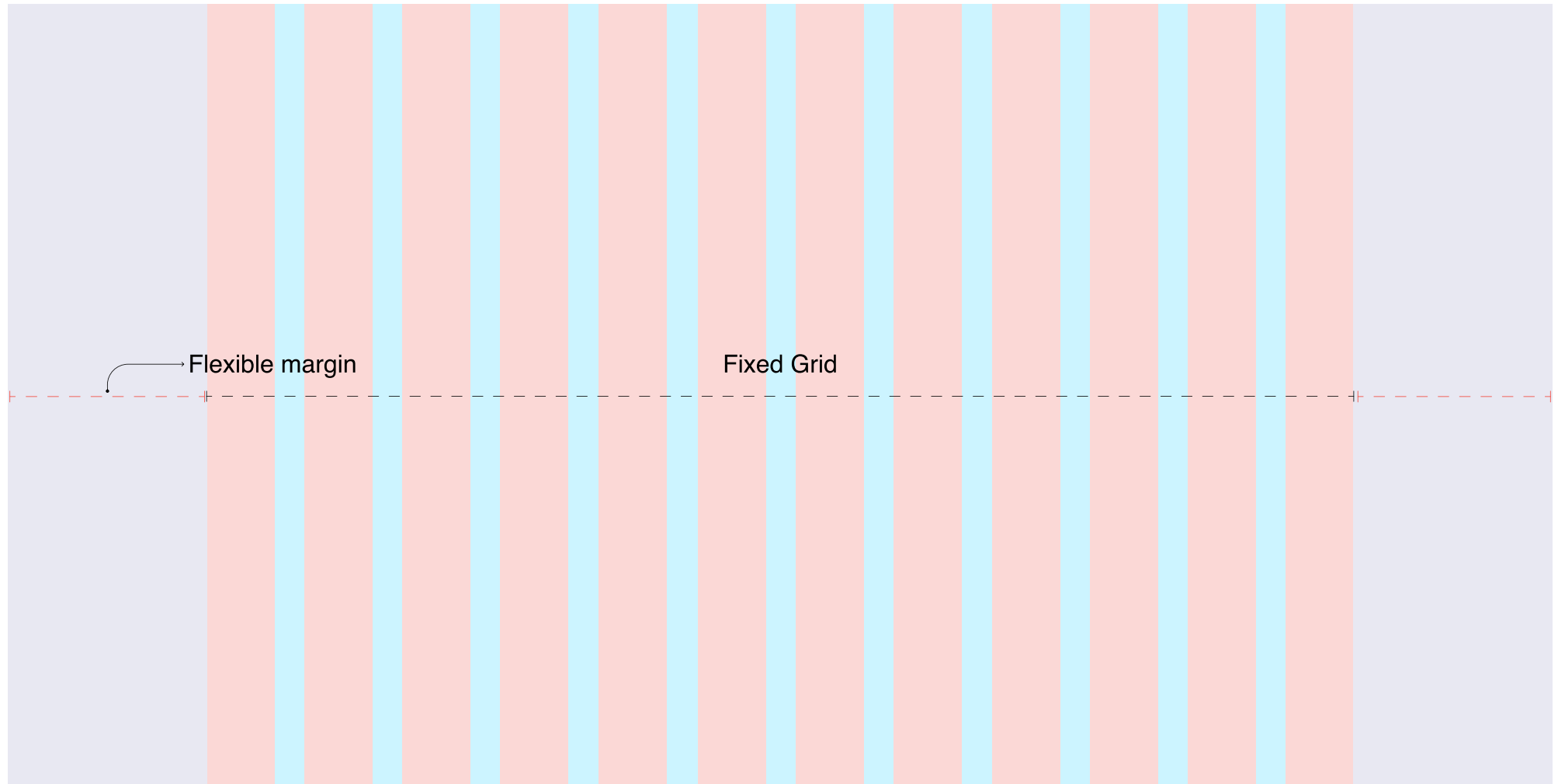


Fig.5.1.7 Fixed grid














Breakpoints and Dimensions

Width	Column	Gutter	Margin	Fluid Grid Width	Fixed Grid Width
320	4	12px	12px	100%	100%
480	6	16px	16px	100%	100%
640	8	16px	16px	100%	100%
768	8	16px, 24px	16px, 24px	100%	100%
1024	12	16px, 24px	16px, 24px	100%	Centered
1368	12	16px, 24px, 32px	16px, 32px, 48px	100%	Centered
1440	12	16px, 24px, 32px	16px, 32px, 48px	100%	Centered
1600	12	24px, 32px	32px, 48px	100%	Centered
1920	12	24px, 32px, 48px	32px, 48px, 96px	100%	Centered
2160px and Above	12	24px, 32px, 48px	48px, 96px, 128px	100%	Centered

5.2. Spacing & White Space

Spacing

Spacing values are essential for creating consistent and harmonious interfaces. By clearly defining the spatial relationships between components, they establish a clear visual hierarchy, enhance readability, and improve the overall user experience. Maintaining consistent spacing ensures that designs feel balanced and well-organized across various screen sizes and contexts.

Name	Value	Ramp
Spacing-01	2px	
Spacing-02	4px	
Spacing-03	8px	
Spacing-04	12px	
Spacing-05	16px	
Spacing-06	24px	
Spacing-07	32px	
Spacing-08	40px	
Spacing-09	48px	
Spacing-10	56px	
Spacing-11	64px	
Spacing-12	80px	
Spacing-13	96px	

White Space

Empty space — also known as white space — is important in design. It can be used to break up sections on a page or to help create focus on certain element(s). White space helps with information processing; too much dense information can be disorienting or overwhelming for a user. Sections of a UI are allowed to be dense, but the whole page should not be crowded; there should be white space to let the user's eye rest. The examples are provided in **Fig.5.2.1 - Fig.5.2.2**.

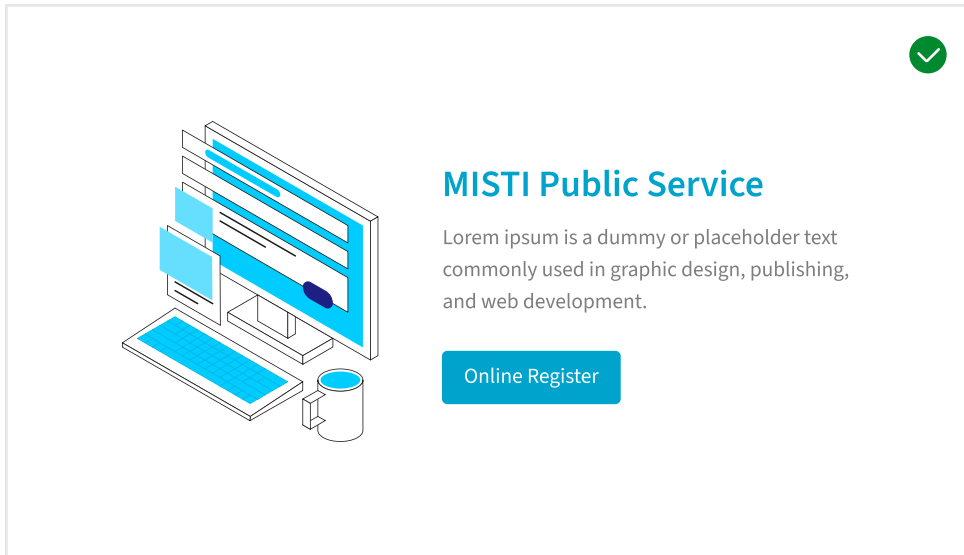


Fig.5.2.1 Using White Space to separate sections of Elements



Fig.5.2.2 Elements with reduced White Space

5.3. Breakpoint & Responsive

Breakpoint

A breakpoint in responsive design is a specific point at which a website's content and layout adjust to optimize the user experience for different screen sizes and devices, as shown in **Fig.5.3.1**.

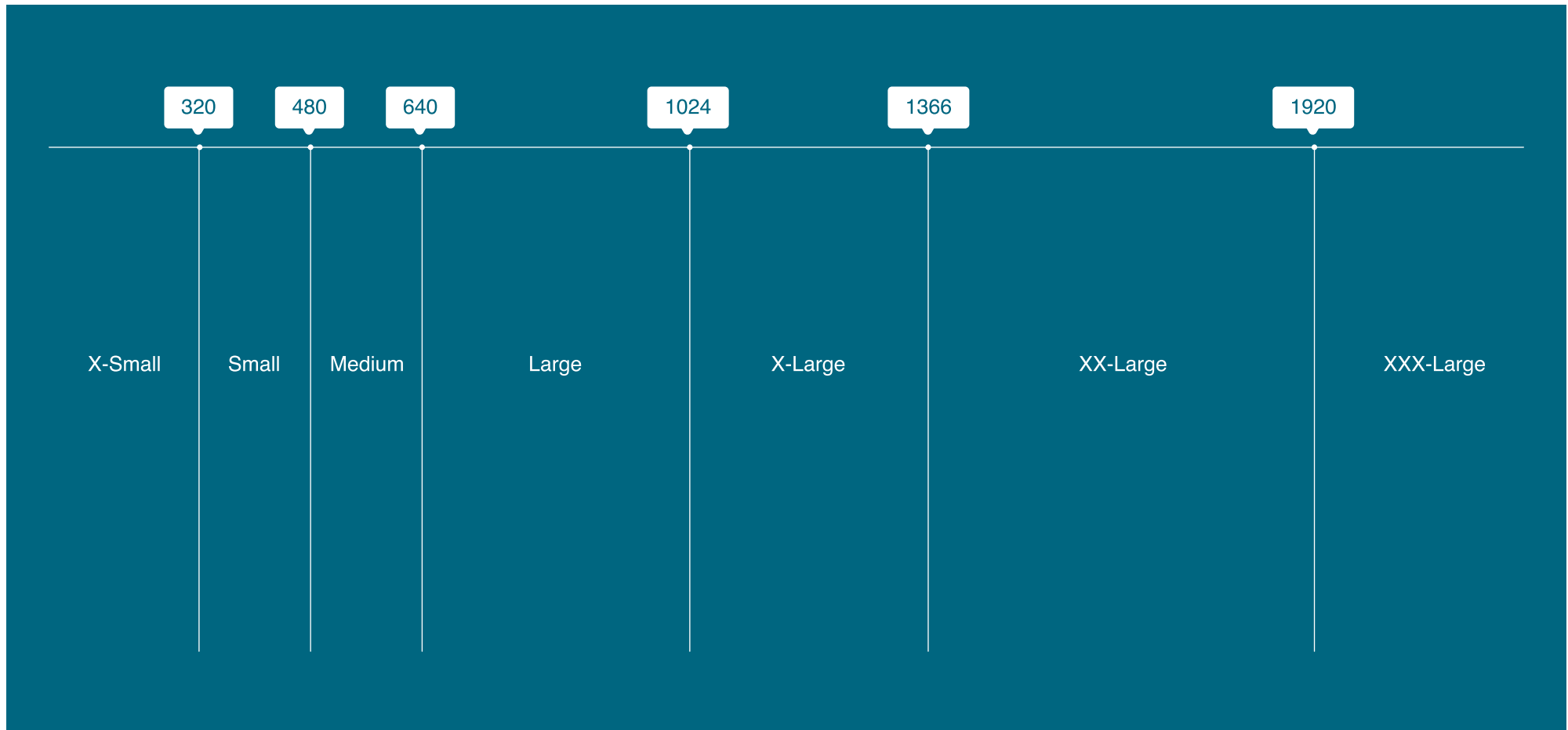


Fig.5.3.1 Breakpoints

List Specifications

Size class	Breakpoint rangs	Breakpoints
Small	320 - 480px	480px
Medium	480 - 640px	640px
Large	640 - 1024px	1024px
X-Large	1024 - 1366px	1366px
XX-Large	1366 - 1920px	1920px
XXX-Large	1920 and up	Base on screen size

Responsive

Responsive design uses just one layout where the content is fluid and can adapt to changing format size. This design technique uses media queries to inspect a given device's characteristics and renders content accordingly. Responsive design allows you to build a feature one time and expect it to work across all screen sizes. The example is provided in **Fig.5.3.2**.



Fig.5.3.2 Responsive Design Example

Adaptive

An adaptive layout changes completely based on the device or screen size. It uses several fixed layout sizes, and the browser picks the right one to show depending on the available space. Adaptive design uses media queries, like responsive design, to detect screen sizes, but it also adds extra code to make the site work better on different devices. This method is called “progressive enhancement”. The example is provided in **Fig.5.3.3**



Fig.5.3.3 Adaptive Design Example

06

Infographic

6.1. Charts

Data visualization is a powerful means to discover, understand and reveal important stories that live within vast amounts of information. To be effective, they need to stand out, be distinctive, be clear and deliver meaning while representing values and numbers accurately. We've synthesized a set of criteria that can help you achieve successful data visualization. The example is provided in **Fig.6.1.1**.

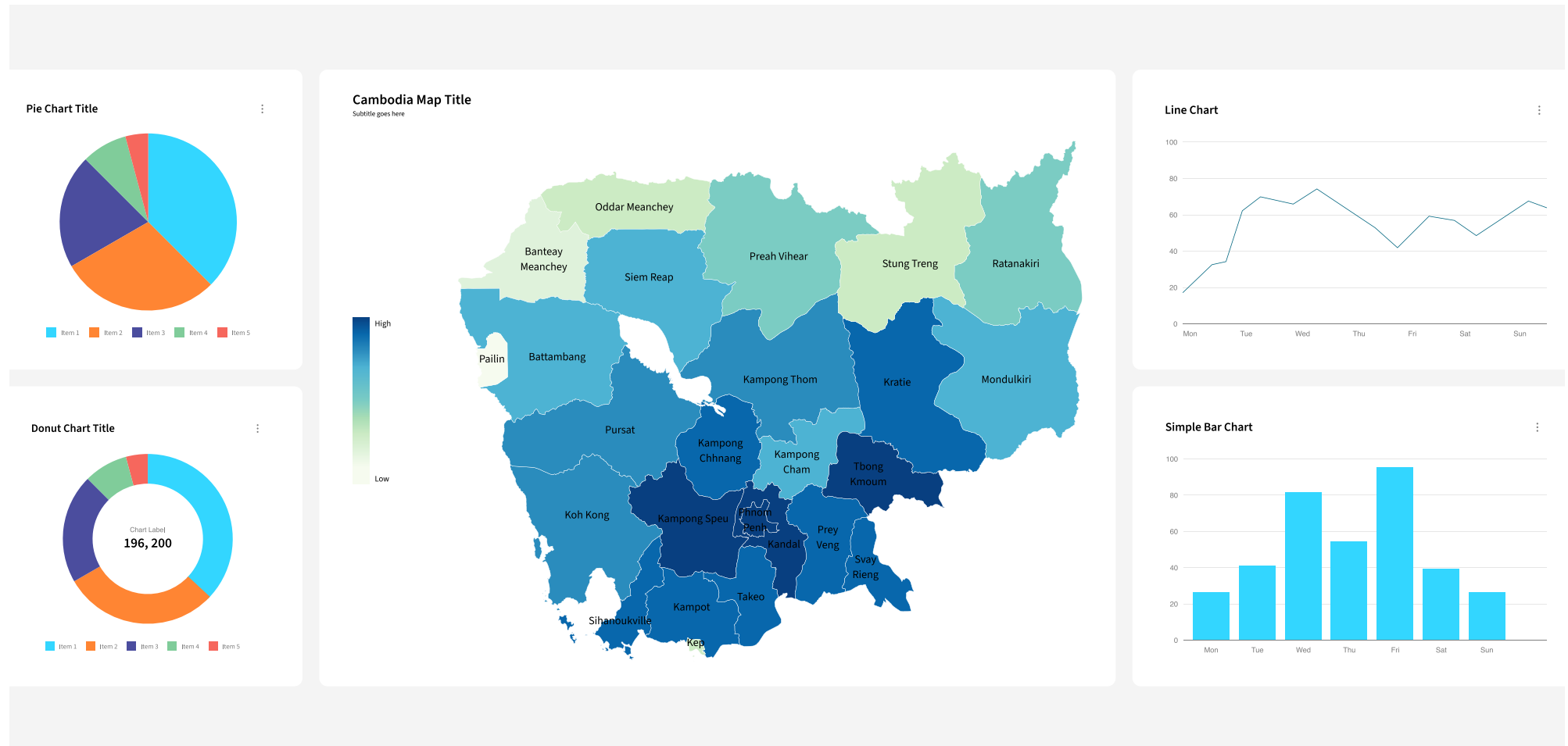


Fig.6.1.1 Dashboard Charts example

Chart Colors

Most modern charting libraries allow users to customize the chart colors by manually selecting hues, applying gradients, or using pre-defined palettes, giving flexibility to match the visual style of a project or preference. For a cohesive and professional appearance, it is often recommended to use MISTI colors where possible.

Qualitative Palette

A qualitative palette is used when the variable is categorical in nature. Categorical variables are those that take on distinct labels without inherent ordering.

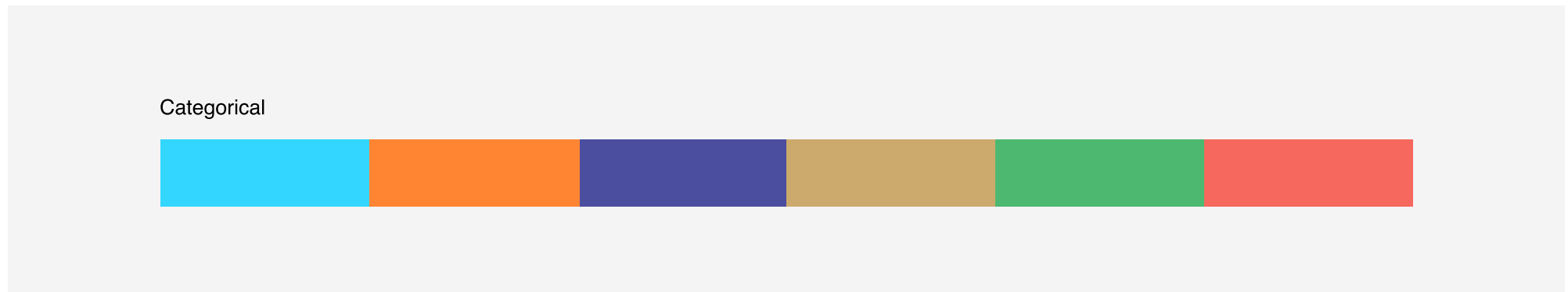


Fig.6.1.2 Qualitative palette

In a qualitative color palette, each group should have a clearly distinct color, as shown in **Fig.6.1.2**. Using too many colors can make it hard to tell groups apart, so it's best to limit the number of colors. If there are more groups than colors, combine smaller ones into an "Other" category. Avoid reusing colors, as it can lead to confusion.

Sequential Palette

For numeric variables or those with a natural order, use a sequential color palette to represent values along a continuous scale. This is typically achieved by varying lightness, hue, or both, as illustrated in **Fig.6.1.3**. Lightness plays a key role in communicating value: on light backgrounds, lighter colors generally indicate lower values and darker colors indicate higher values. On dark backgrounds, this pattern is usually reversed, with brighter or lighter colors signifying higher values.

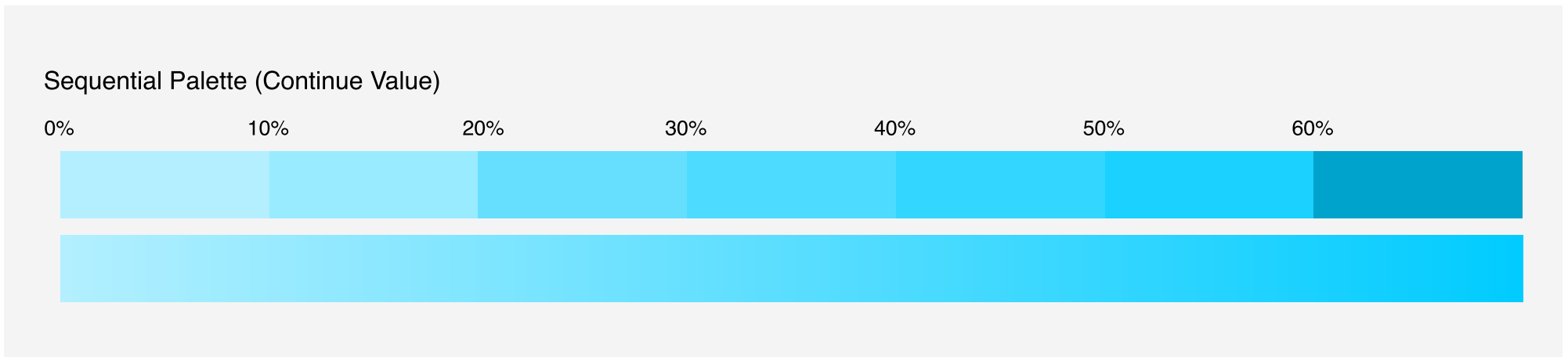


Fig.6.1.3 Sequential palette

Diverging Palette

Diverging color palettes are also used for numeric data, especially when visualizing values with meaningful midpoints—such as zero—or data with two extremes, as illustratr in **Fig.6.1.4**. These palettes consist of two contrasting color gradients that converge at a neutral baseline, making it easy to distinguish positive and negative values relative to the center.

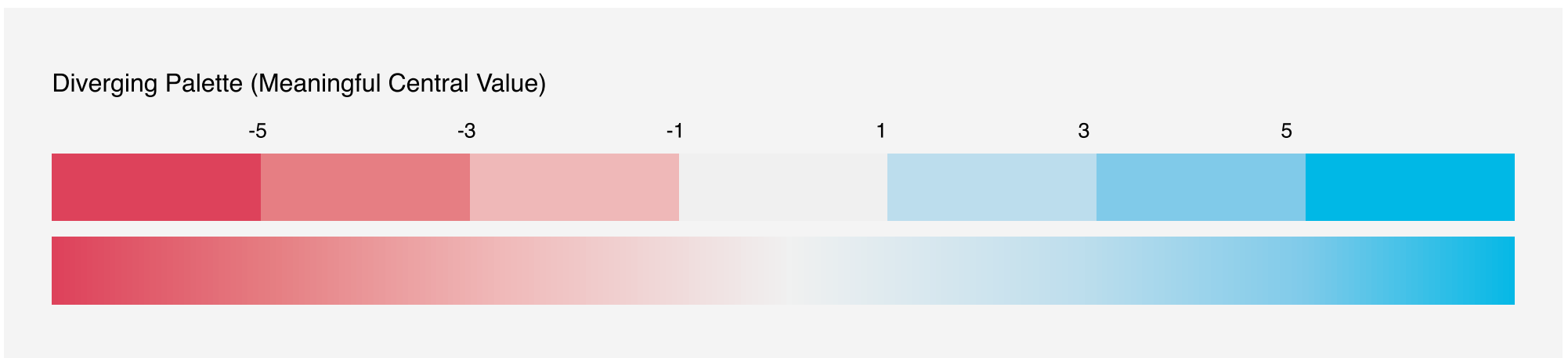


Fig.6.1.4 Diverging palette

Discrete Vs Continuous Palette

Sequential and diverging palettes can be associated with data values in two different ways: either as a discrete set of colors, each one associated with a numeric range, or as a continuous function between numeric value and color, as illustrated in **Fig.6.1.5**.



Fig.6.1.5 Discrete Vs Continuous palette

Humans are generally better at interpreting position or size than precise values from color. For this reason, using discrete color ranges can improve chart readability by clearly revealing overall patterns and reducing cognitive load. Unlike continuous color scales, discrete palettes allow you to define custom value ranges—particularly useful when your data contains outliers. This approach helps highlight important differences without compressing most values into a narrow color range.

Basic Axes

Coordinate system

Most charts use a two-dimensional Cartesian coordinate system, with a horizontal x-axis and a vertical y-axis to plot data. In contrast, charts like pie and donut charts use a polar coordinate system, where data points are shown using angles and distances from a central point. The coordinate systems are shown in **Fig.6.1.6 - Fig.6.1.7**.

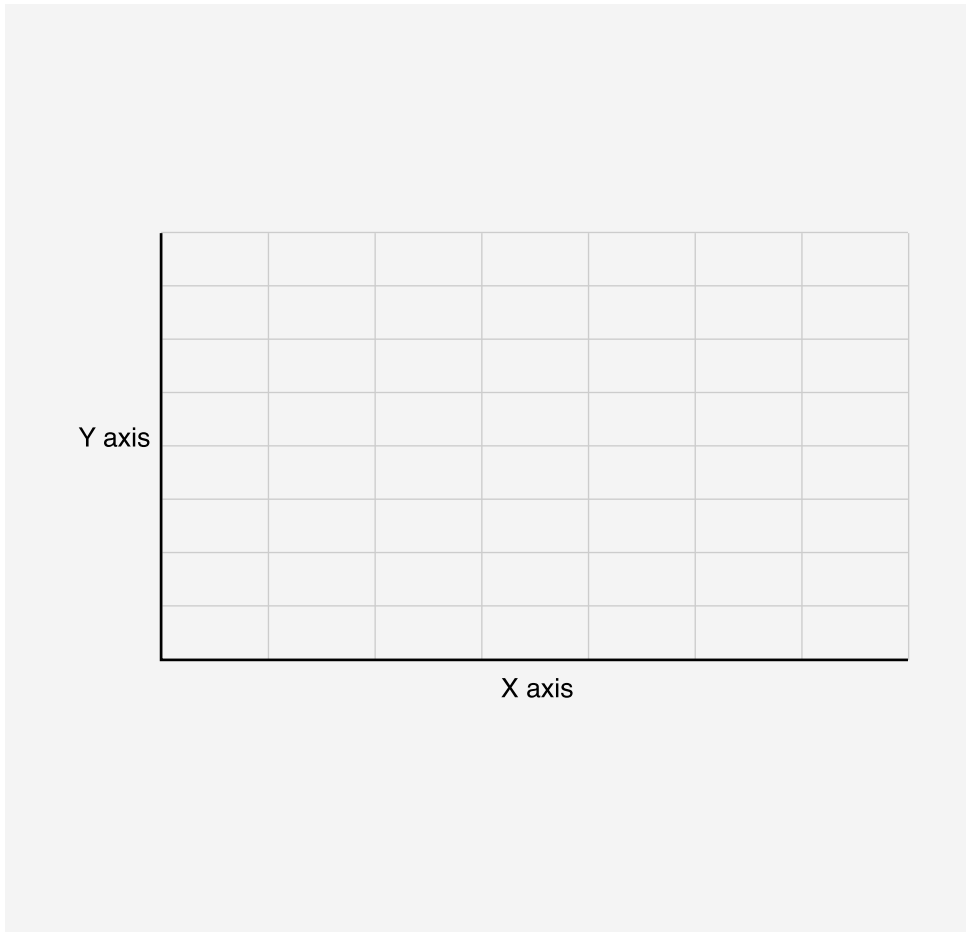


Fig.6.1.6 Cartesian Coordinate System

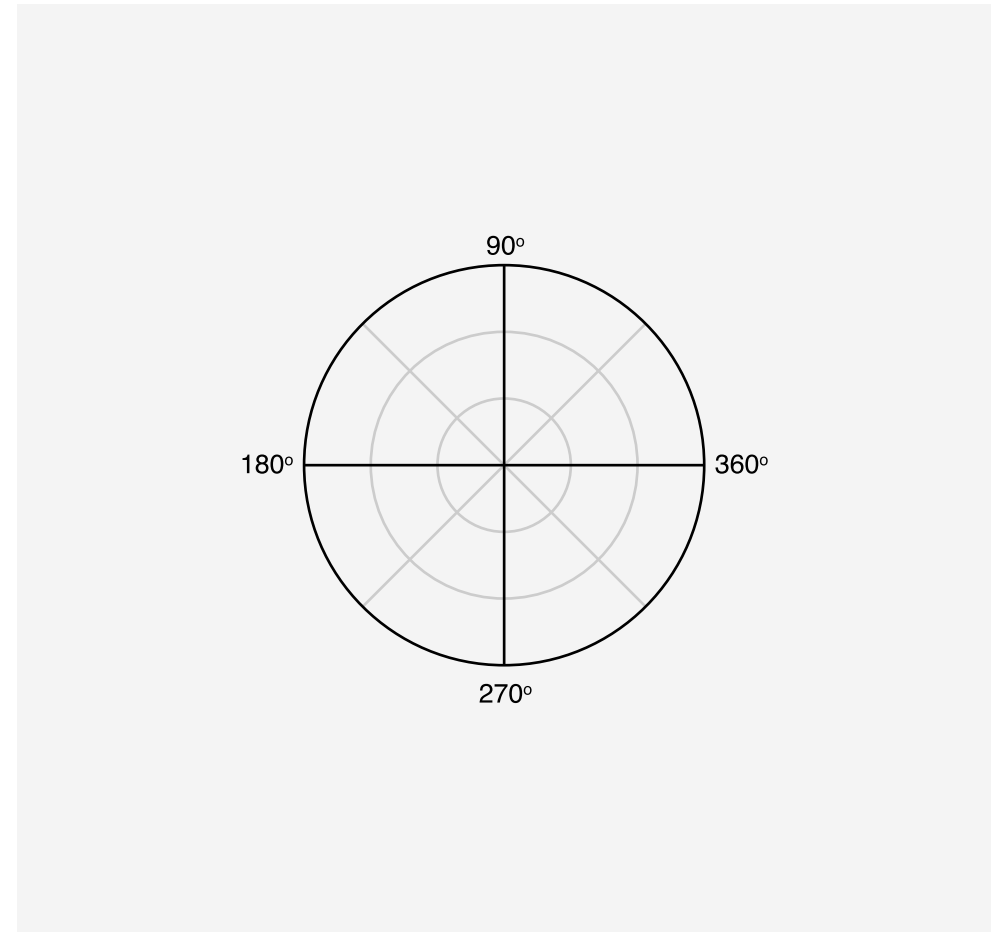


Fig.6.1.7 Polar Coordinate System

Core elements and spacing of charts

Most data visualizations use rectangular charts, where information is plotted along a vertical and a horizontal axis. These charts typically include essential elements such as axis titles, a legend, and a toolbar for interaction. Well-considered spacing in charts is essential—it keeps the layout clean, improves readability, and ensures the chart communicates insights clearly without visual clutter. Detailed specifications of core chart elements and spacing are shown in **Fig.6.1.8**.

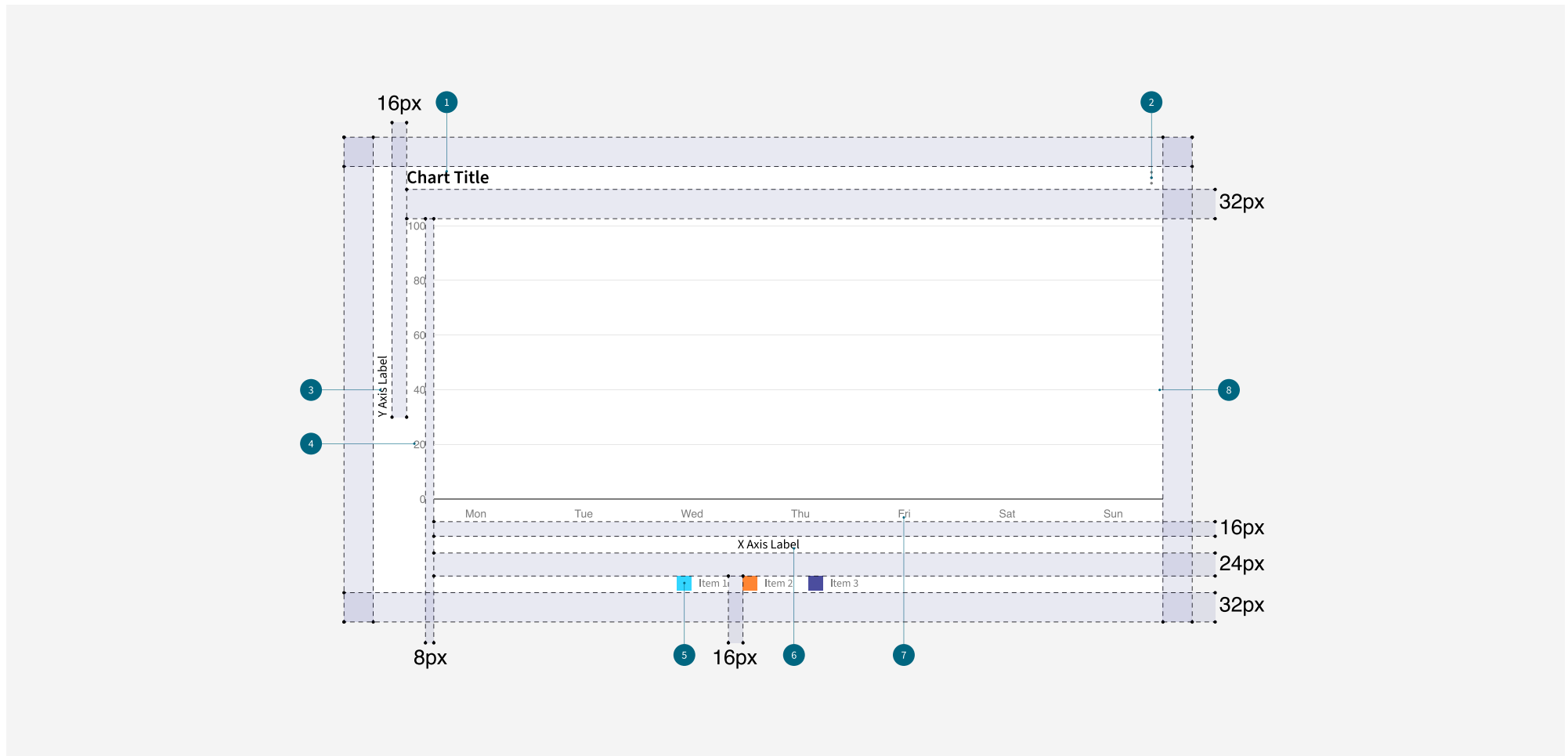


Fig.6.1.8 Core Elements and Spacing of Charts

- 1 **Title:** is the main heading placed at the top of a chart that tells you what the chart is about.
- 2 **Toolbar:** is a set of interactive tools or buttons usually placed around or above the chart area.
- 3 **Y Axis Label:** is also known as the vertical axis or the ordinate. It typically represents the values or measurements being plotted.
- 4 **Y Axis Values:** are the numerical or categorical points shown along the vertical (Y) axis of a chart.
- 5 **Legend:** a component that provides a key or explanation for the symbols, colors, or patterns used within the chart.
- 6 **X Axis Label:** is also known as the horizontal axis or the abscissa. It is commonly used to display categories, such as time periods, regions, or types of items.
- 7 **Category Label:** defines the main category each group belongs to.
- 8 **Plot Area:** the area within the chart, often shown as a grid, where the data is displayed.

Legend

Legends summarize the distinguishing visual properties such as colors or texture used in the visualization. A legend or key helps the user build the necessary associations to make sense of the chart. The examples are provided in **Fig.6.1.9 - Fig.6.1.14**.

Legend usage

Remove legends to simplify the chart when there is only one data category or a single color is used. In such cases, the legend becomes redundant and may add unnecessary visual clutter.

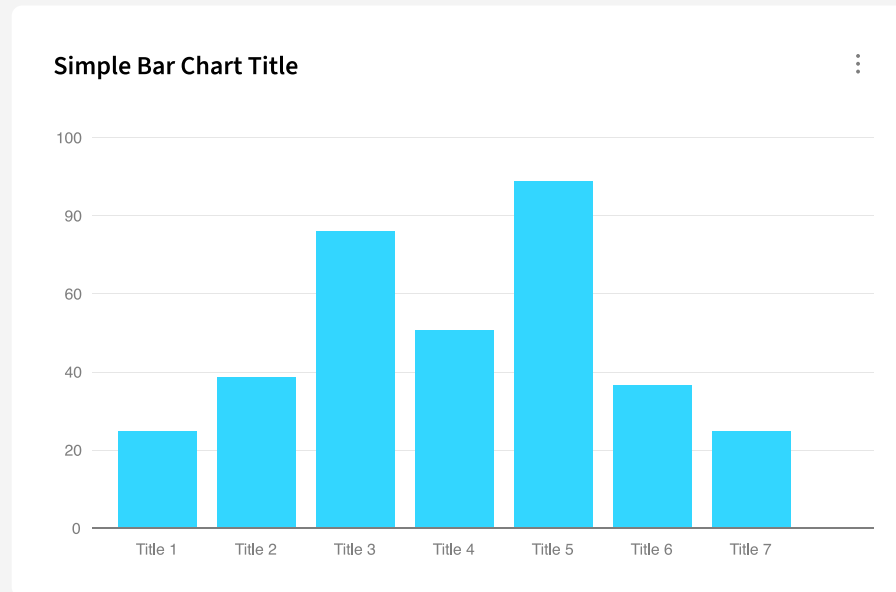


Fig.6.1.9 Remove the Legend if the Chart shows only one Data Category or Color

Positions

Legends are positioned at the bottom of a chart by default. However, depending on the page layout and context, they may be placed at the top, below the chart title, or to the left or right of the chart, aligned with the graph frame.

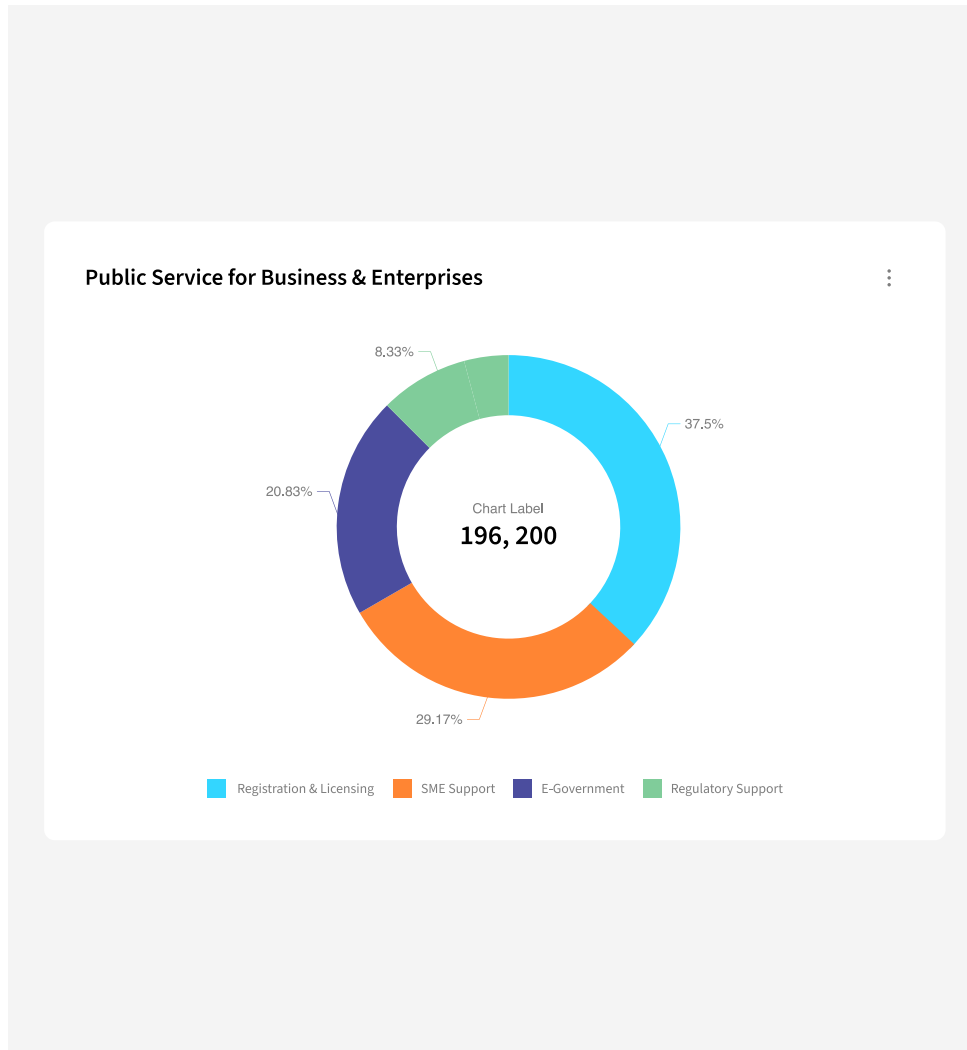


Fig.6.1.10 Legend Positioned at the Bottom of the Chart

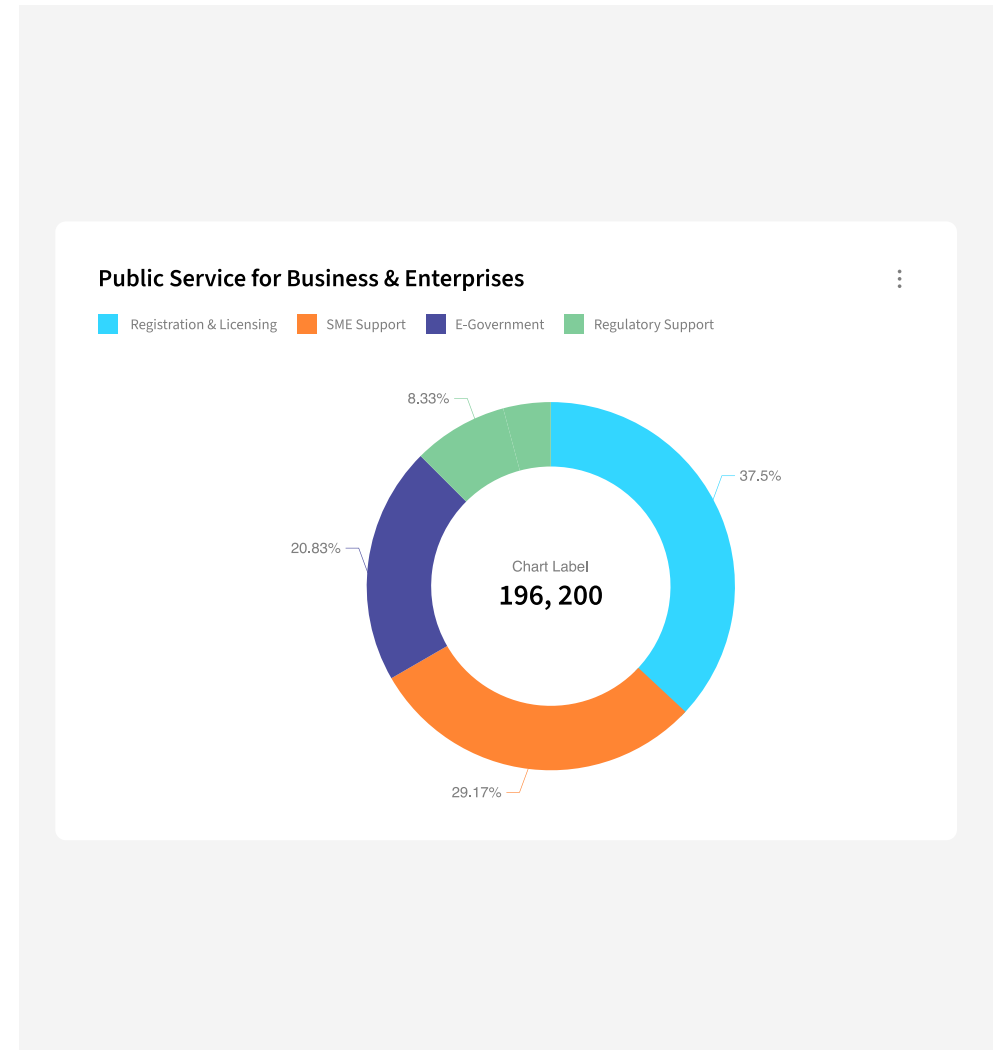


Fig.6.1.11 Legend Positioned at the Top of the Chart

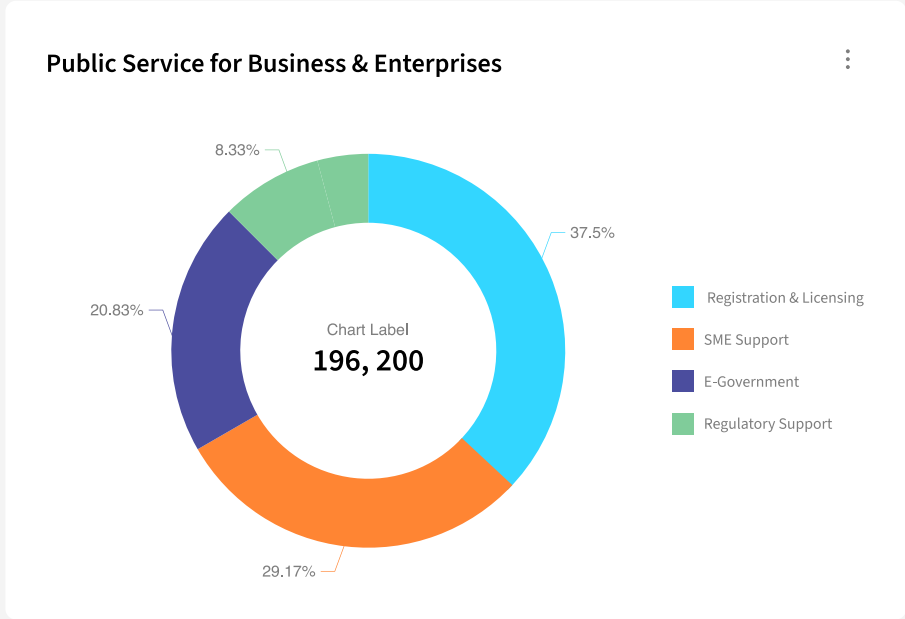


Fig.6.1.12 Legend Positioned at the Right of the Chart

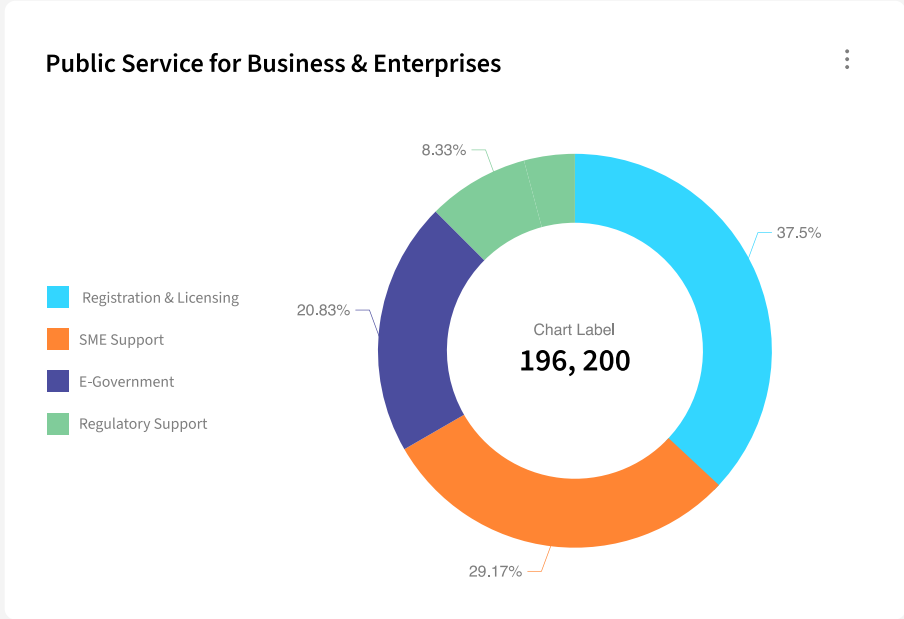


Fig.6.1.13 Legend Positioned at the Left of the Chart

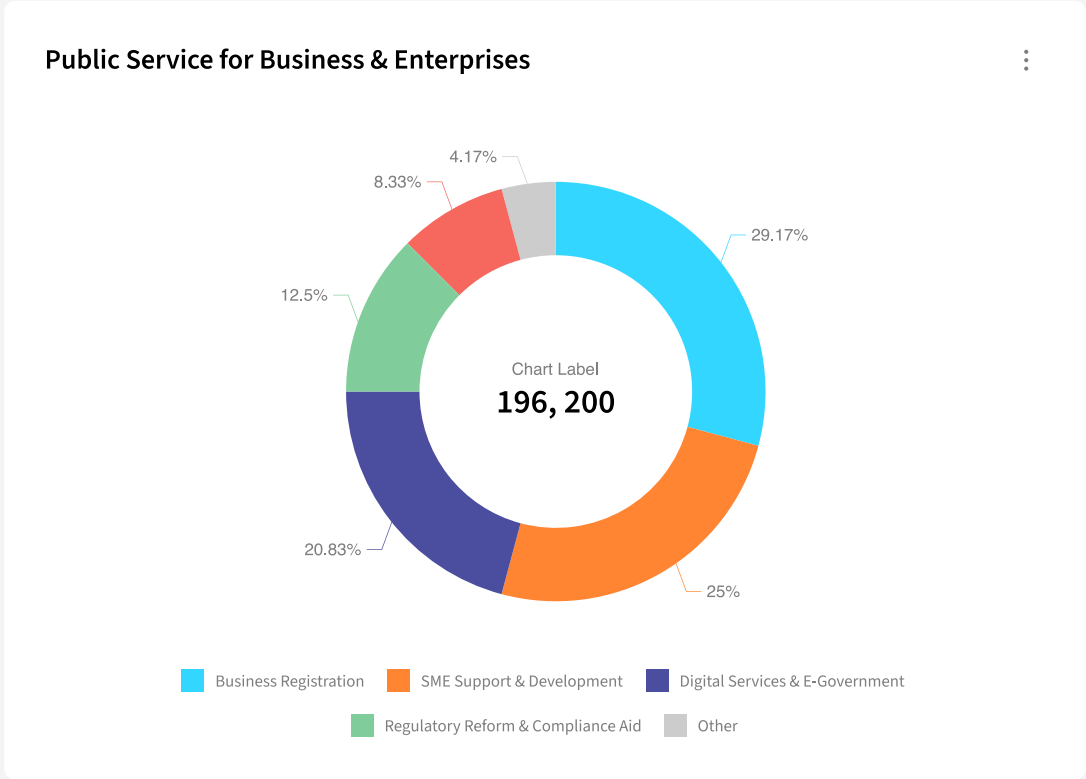


Fig.6.1.14 Overflowing legends in chart

Interaction

Data visualization often enables users to explore details by hovering over or selecting data points. Use chart hover effects to provide clear visual feedback during these interactions. The examples are provided in **Fig.6.1.15 - Fig.6.1.16**.

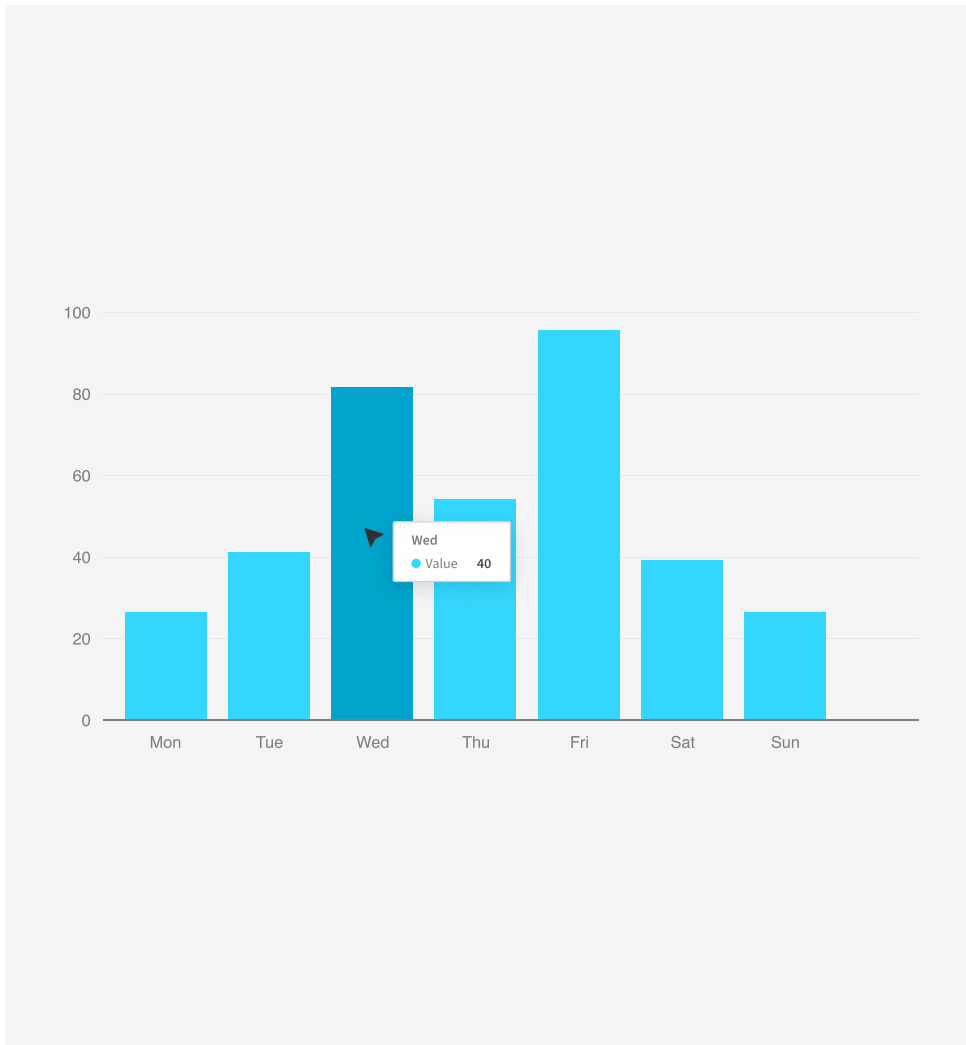


Fig.6.1.15 Color Fade on Interaction

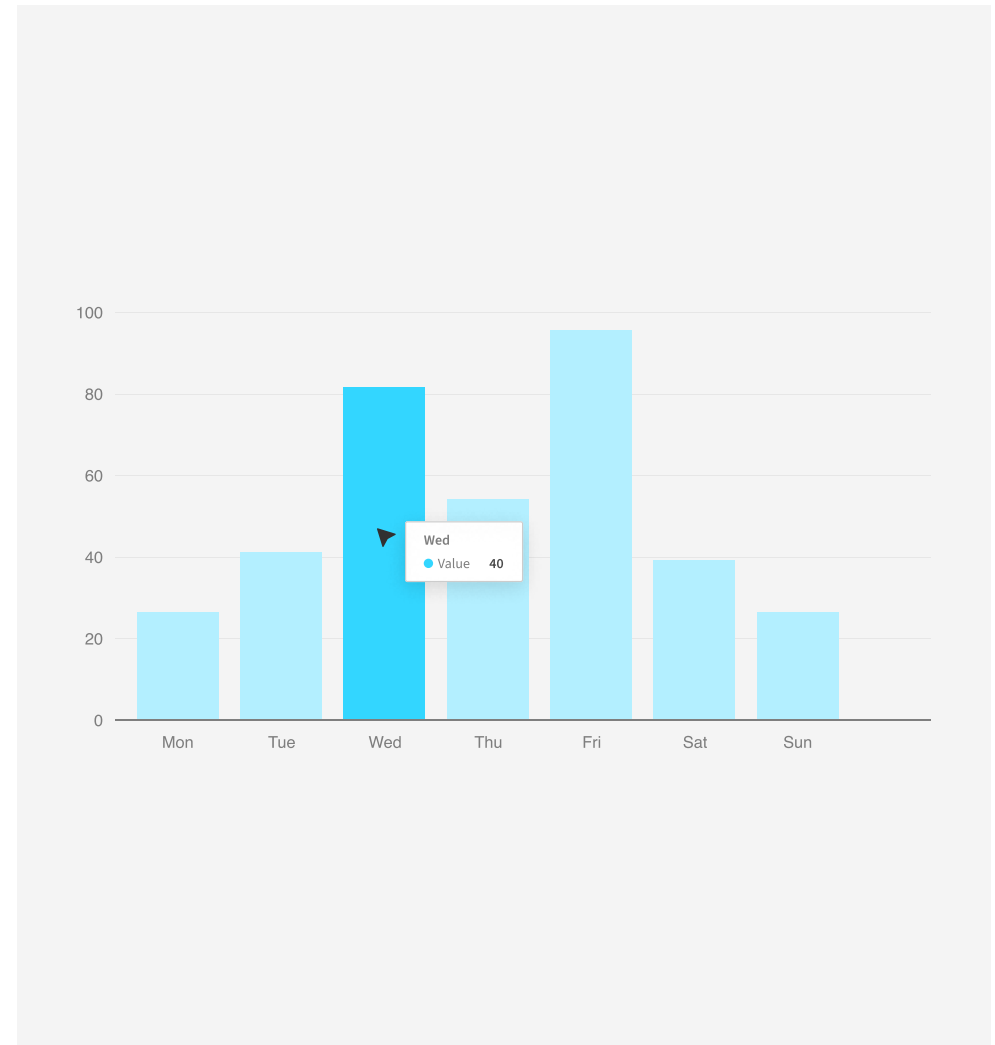


Fig.6.1.16 Opacity Change on Interaction

Label Rotation

Chart label rotation involves adjusting the orientation of axis labels—typically on the X-axis—to enhance readability and prevent overlap, especially when dealing with lengthy or numerous category names. Instead of displaying labels horizontally, they can be angled or rotated vertically to fit within the chart area without cluttering. The example is provided in **Fig.6.1.17**.

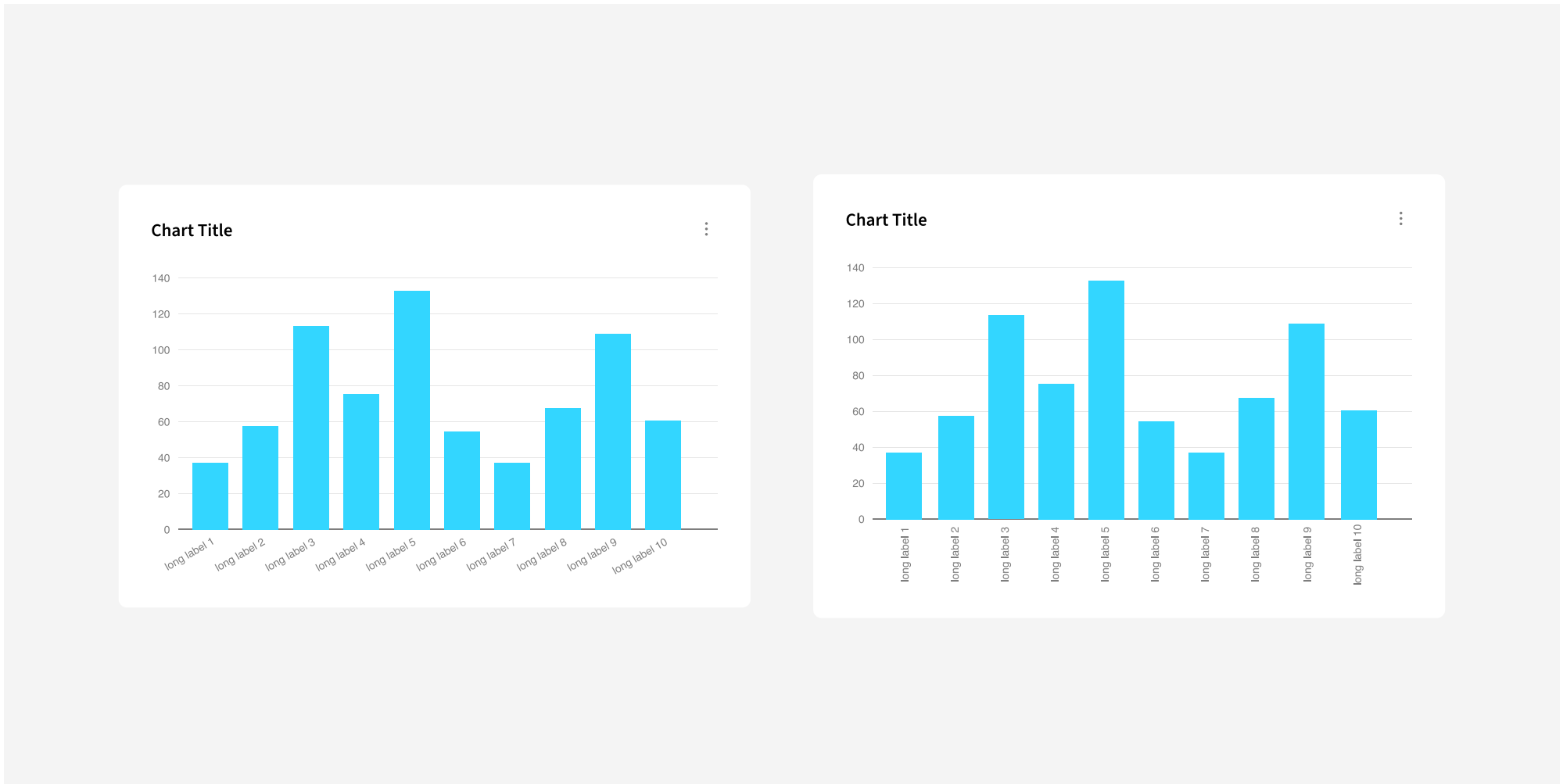


Fig.6.1.17 Chart Label Rotations

Axis Scale

Linear scale

Linear scale is the default y-axis scale type in most charts, as shown in **Fig.6.1.18**. Values for this scale should be numbers and scale intervals will be evenly distributed along the axis. This type of scale is used when values fall within one reasonable range.

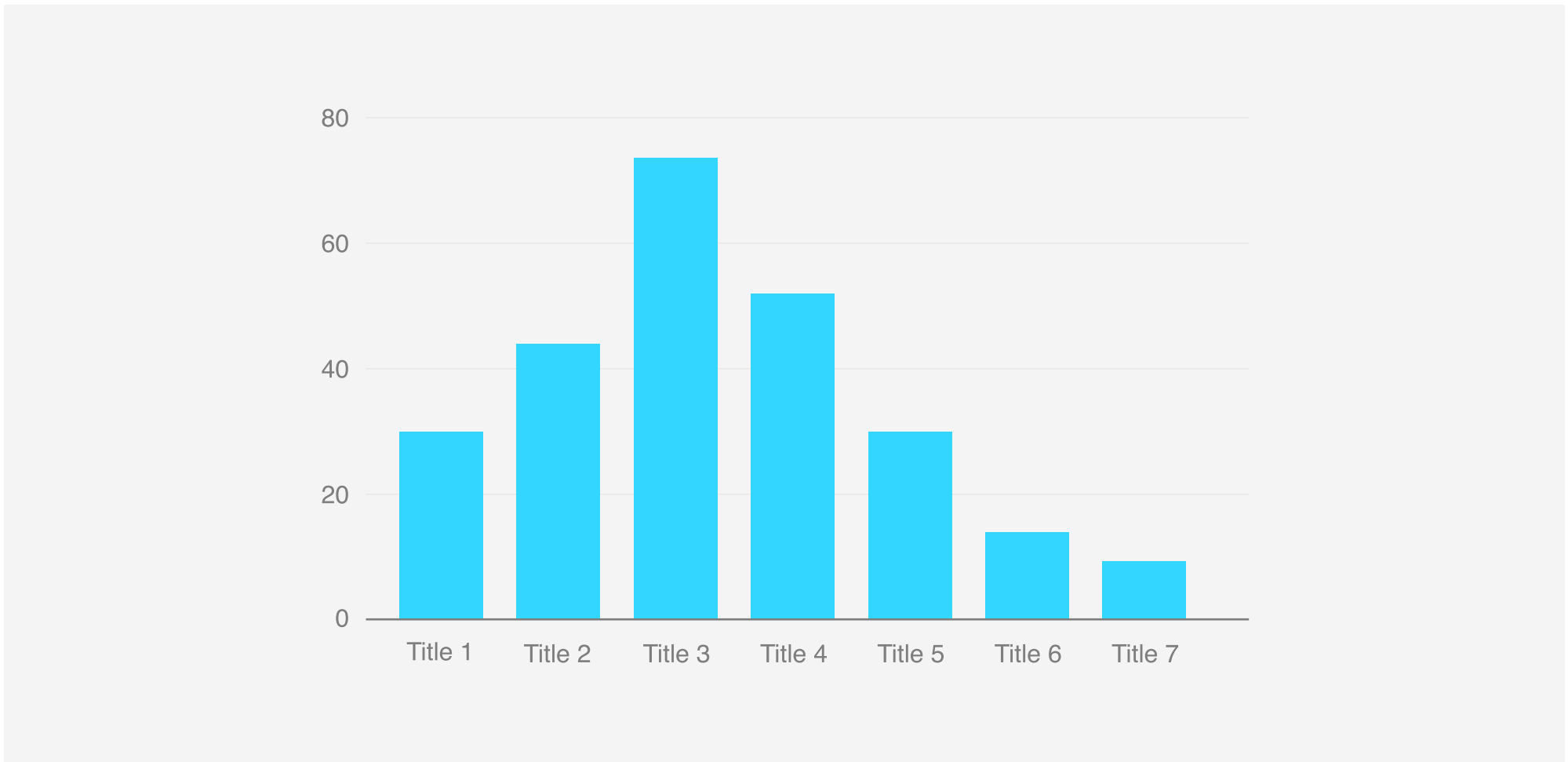


Fig.6.1.18 Linear Scale

Logarithm scale

A logarithmic scale (log scale) is a measurement scale that displays the logarithm of a value rather than the value itself. This type of scale is useful when data spans a large range, as it compresses the scale into a more manageable and readable format. Logarithmic scales are especially effective for visualizing exponential growth or ratios, as illustrated in **Fig.6.1.19**.

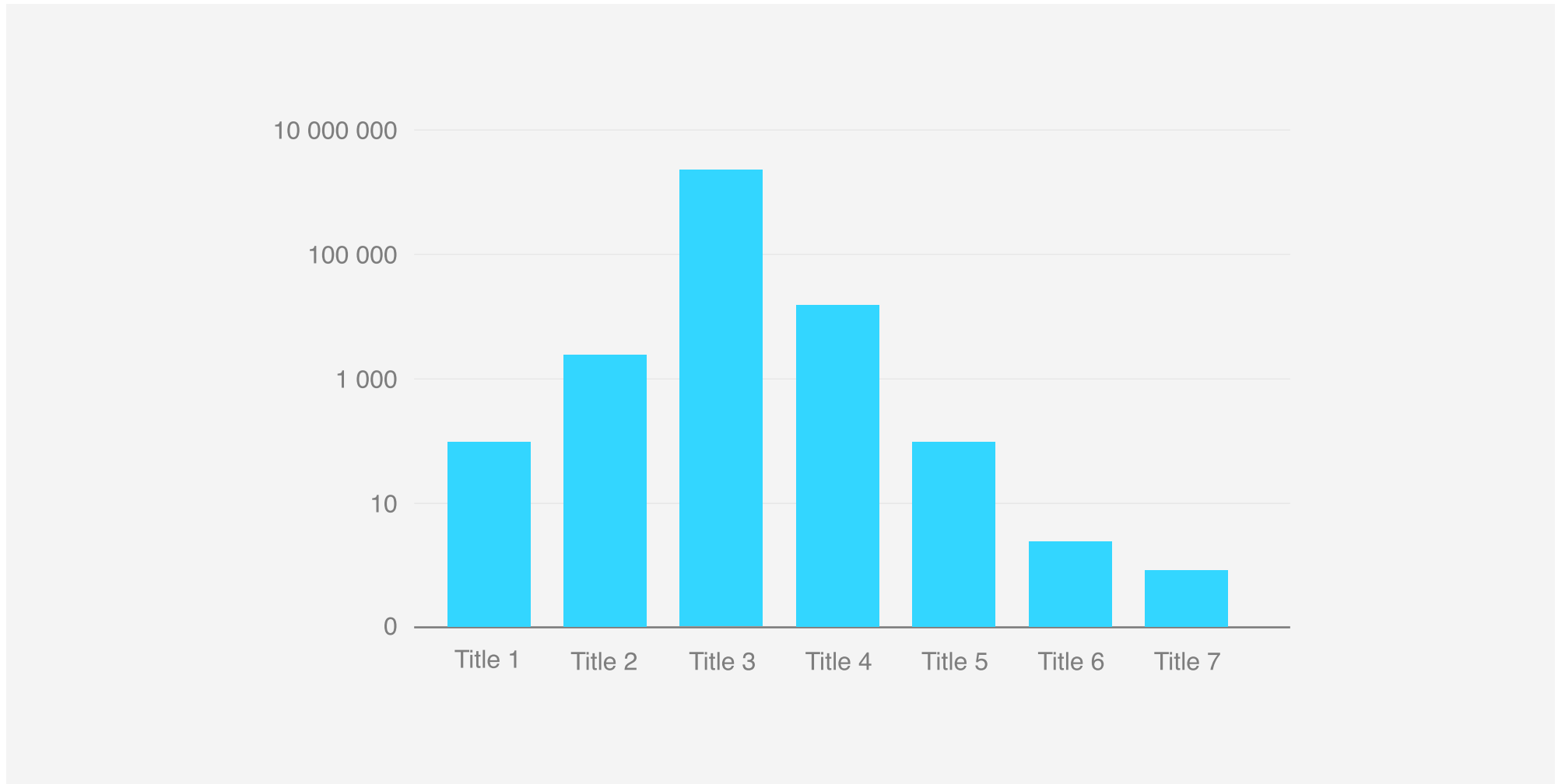


Fig.6.1.19 Logarithm Scale

Ordinal scale

Ordinal scale is the default x-axis scale type in all Cartesian charts, as shown in **Fig.6.1.20**. It is designed for categorical data, where values are of string type. The scale automatically assigns evenly spaced intervals for each category along the axis.

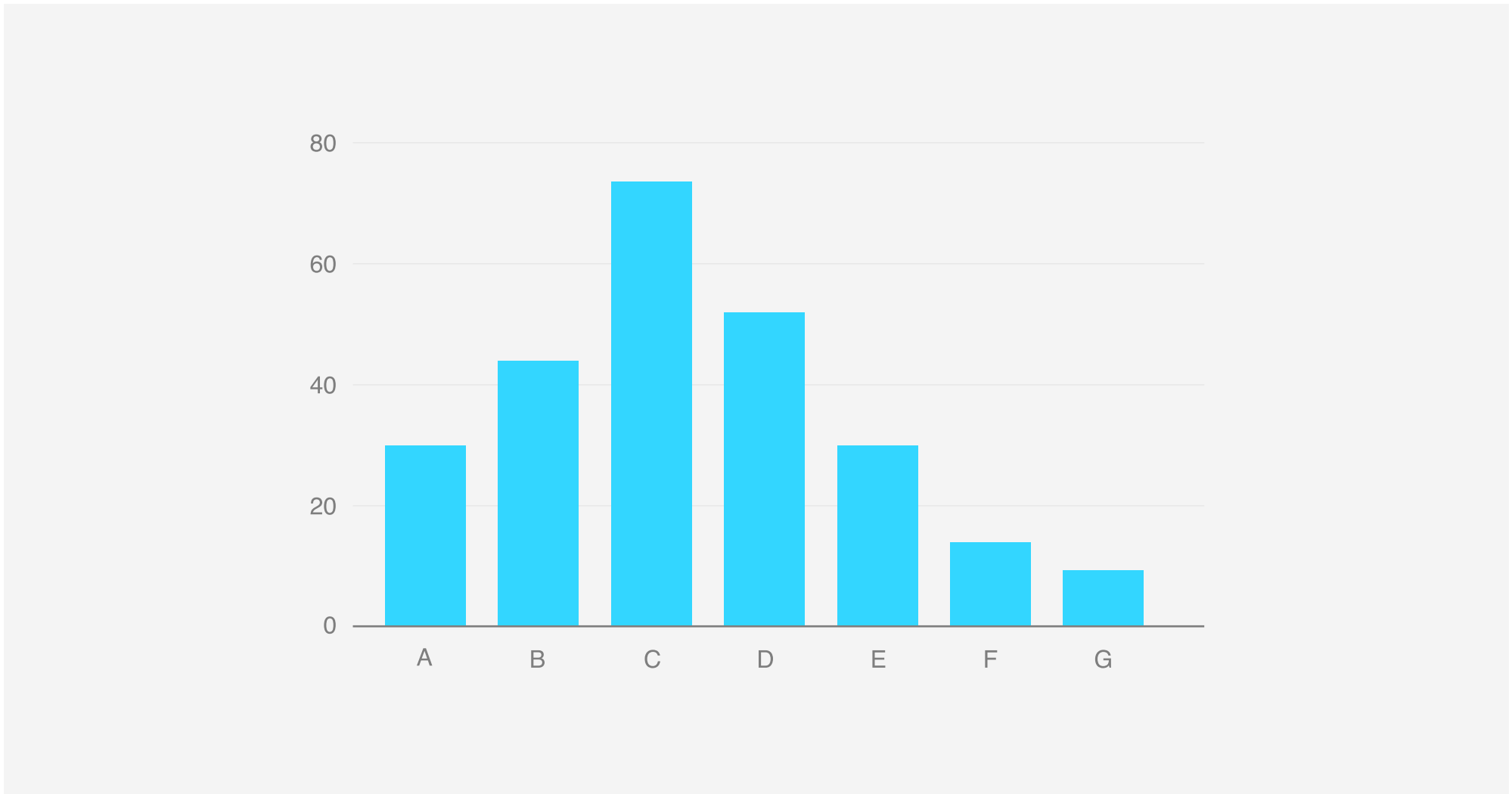


Fig.6.1.20 Ordinal Scale

Date time scale

A dateTime scale is a scale of measurement that is based on the UTC Date format, but accepts variety of data formats. Presentation of data on a dateTime scale can be helpful for displaying time lines and time intervals, as shown in **Fig.6.1.21**.

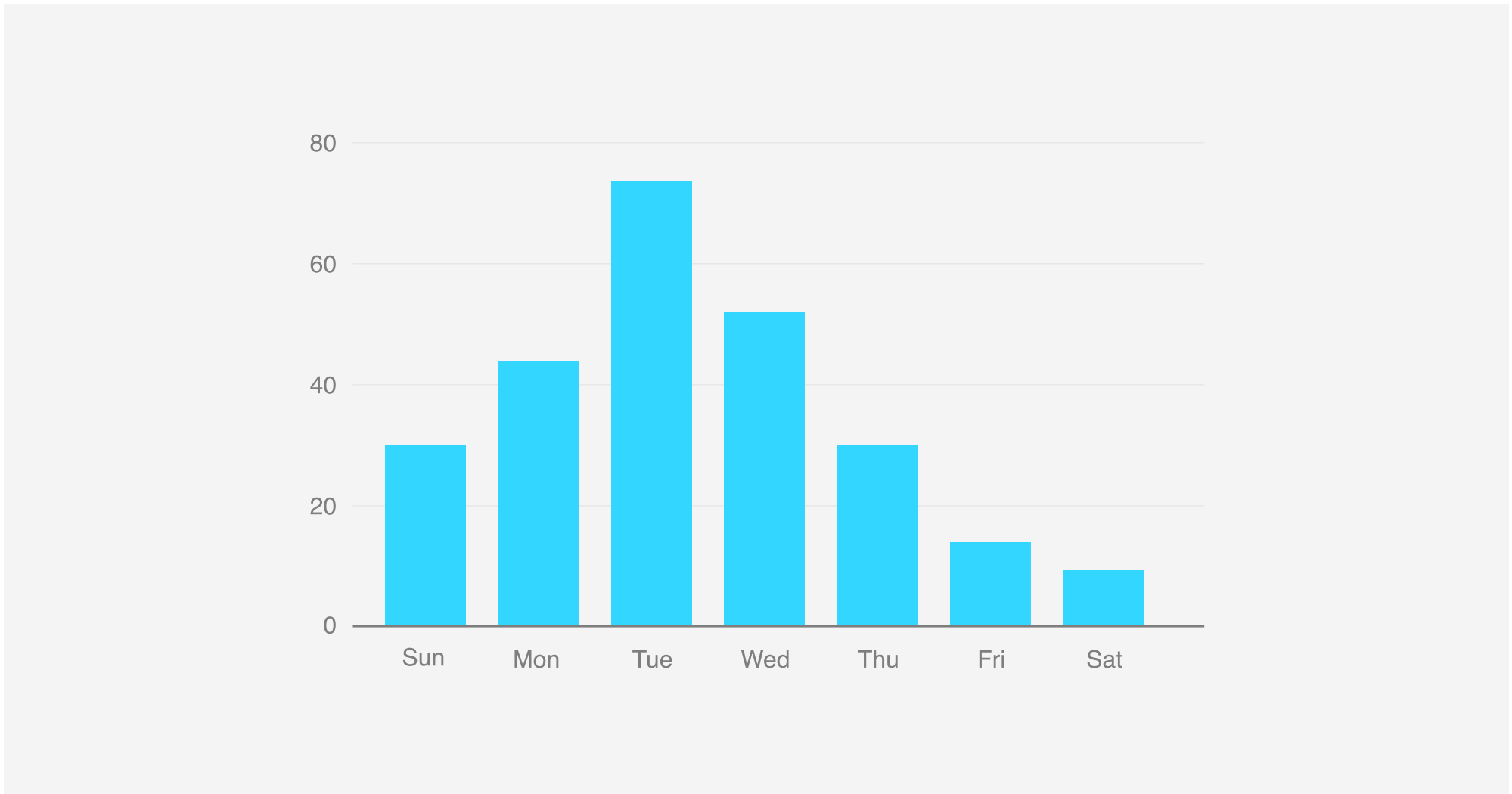


Fig.6.1.21 Date Time Scale

Area Charts

Area chart combines the line chart and bar chart to show how one or more group's numeric values change over the progression of a second variable, typically that of time. An area chart is distinguished from a line chart by the addition of shading between lines and a baseline, like in a bar chart. The example is provided in **Fig.6.1.22**.



Fig.6.1.22 Area Chart

Overlapping Area Chart

An overlapping area chart is used to compare values between groups by layering shaded areas beneath line plots for each group. Transparency is applied to the shading to allow visibility of overlapping regions, helping viewers identify which group has the highest values based on the dominance of its color. The example is provided in **Fig.6.1.23**.

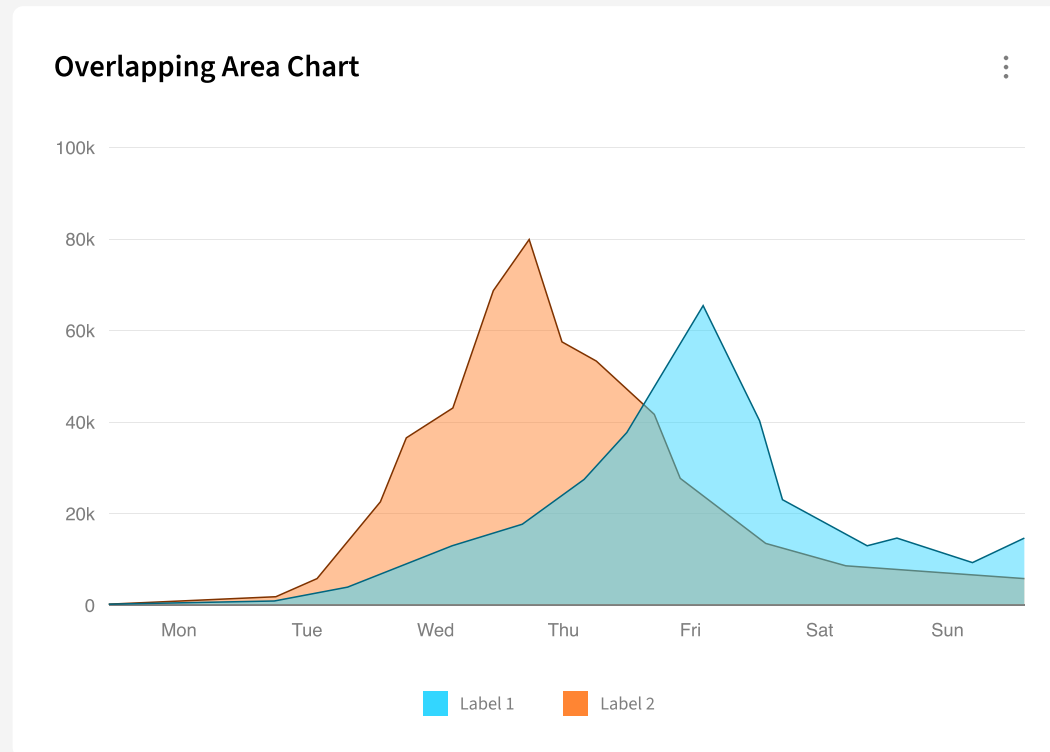


Fig.6.1.23 Overlapping Area chart

Stacked Area chart

A stacked area chart displays multiple data series layered on top of one another, with each group's baseline aligned to the top of the previous one. This stacking creates a cumulative visual effect, where the top line represents the total of all groups combined. Stacked area charts are useful for visualizing both overall trends and the contribution of individual groups over time. The height of each colored area indicates the relative impact of each group within the total. The example is provided in **Fig.6.1.24**.

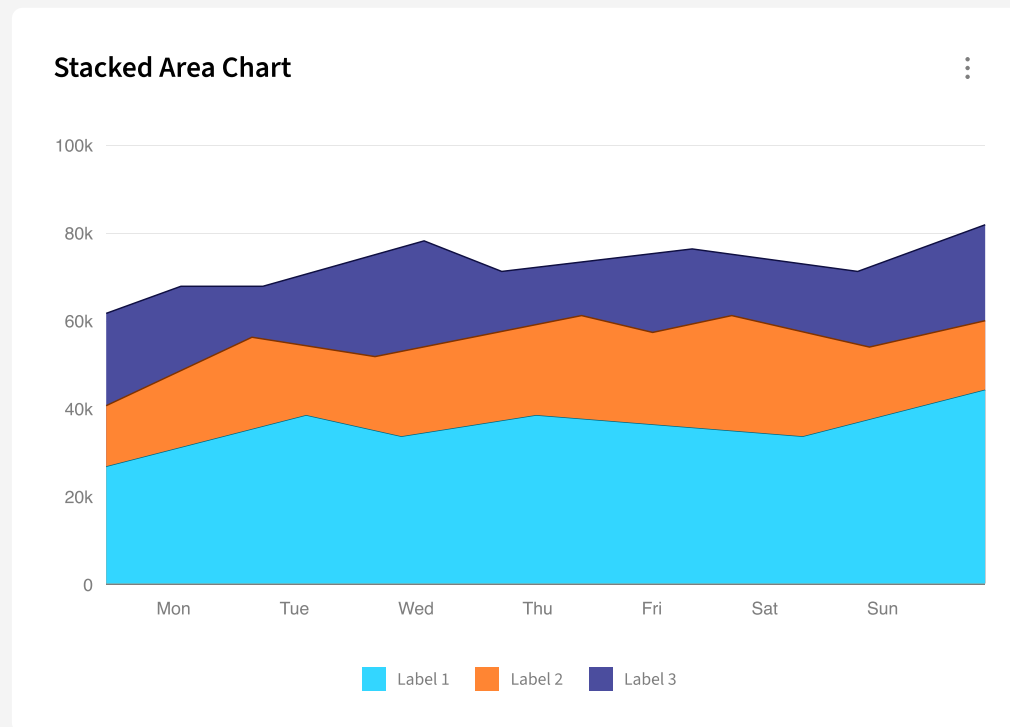


Fig.6.1.24 Staked Area chart

Best Practice

Include a zero-baseline

When using shading in an area chart, it's important to start from a zero baseline, just like in a bar chart. This is because viewers judge the size of values based on the height of the colored areas. If you don't start at zero, it can give a misleading impression of the differences between values.

However, there's one exception: when comparing two groups in an overlapping area chart. If you only shade the area between the two lines (instead of shading down to zero), you can remove the baseline. In this case, the shading shows which group is bigger and how big the difference is between them. Examples of this principle are shown in **Fig.6.1.25 - Fig.6.1.26**.

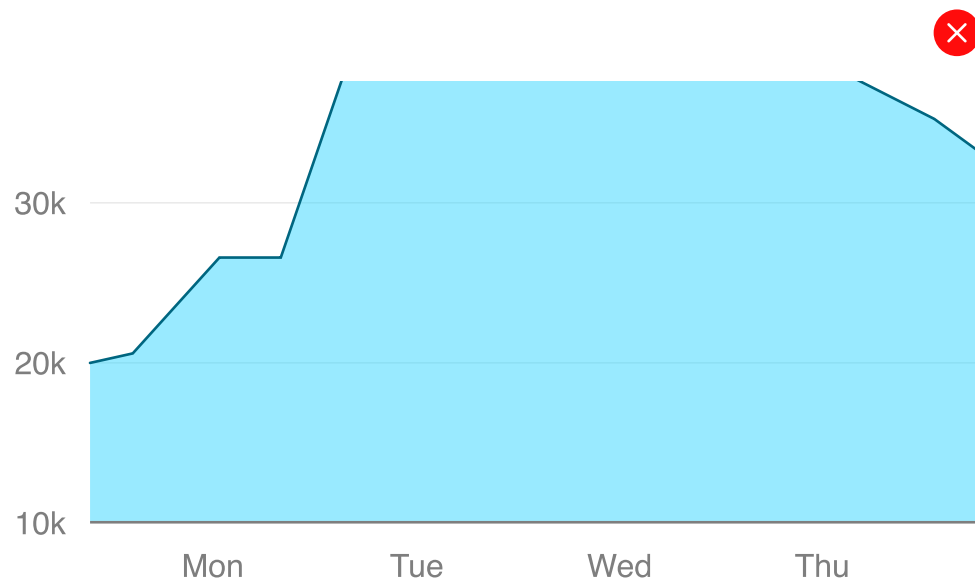


Fig.6.1.25 Area chart without a common Zero - Valued Baseline

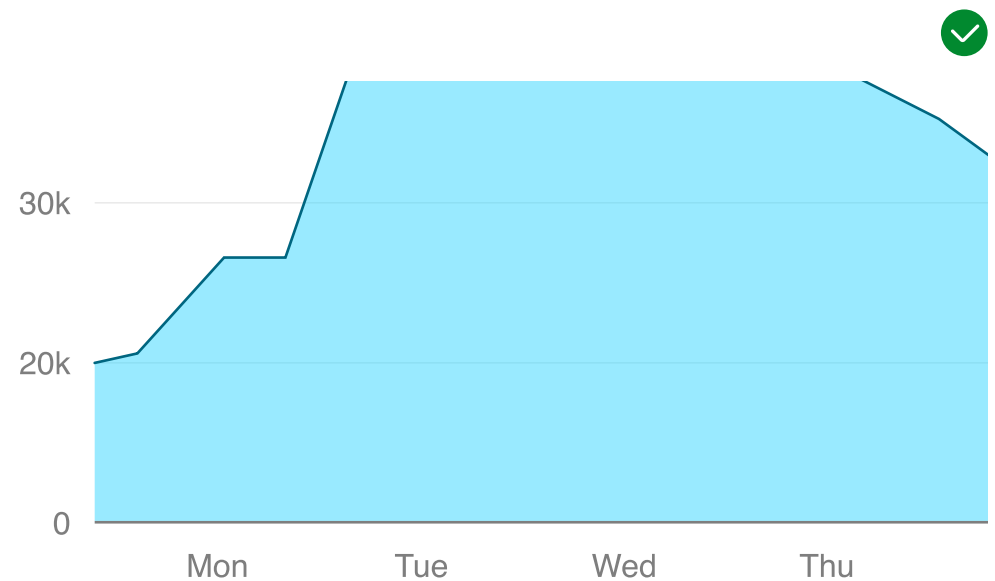


Fig.6.1.26 Area chart using a common Zero - Valued Baseline

Limit number of series in an overlapping area chart

In overlapping area charts, including too many series can significantly reduce readability. When shaded areas overlap, they form blended colors that often don't correspond to any single group in the legend, which can confuse the viewer. Even with just three series, overlapping can result in several unintended color combinations, making the chart difficult to interpret.

Overlapping area charts are generally most effective with only two series. However, if one group consistently dominates, the result may resemble a stacked area chart, potentially misleading the viewer. Due to these limitations, a line chart is often a clearer alternative for comparing multiple groups. Examples of this principle are shown in **Fig.6.1.27 - Fig.6.1.28**.

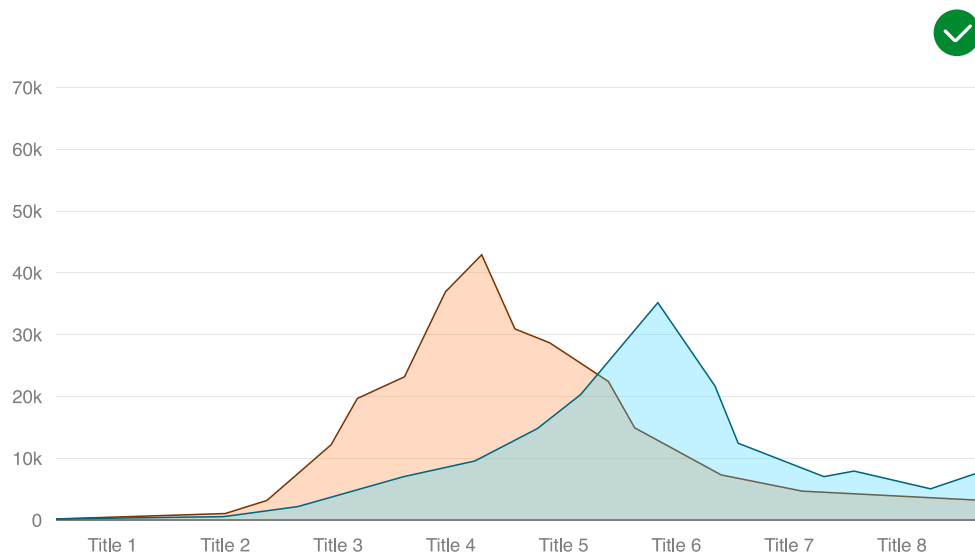


Fig.6.1.27 Area chart showing color Overlap between two series

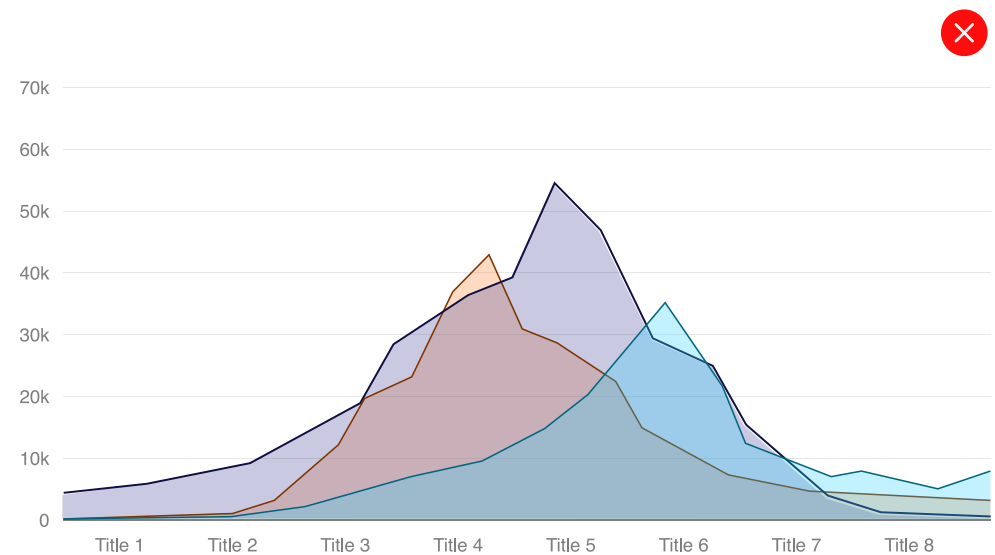


Fig.6.1.28 Area chart showing color Overlap between three series

Area Chart Options

Percentage stacked area chart

A percentage stacked area chart shows how each group contributes to the whole over time. Instead of showing actual values, it displays percentages, so the chart always adds up to 100%. This makes it easy to compare the relative size of each group, but it doesn't show changes in total amounts. For that, you'd need a separate line chart. A helpful feature of this chart is that you can also measure group contributions from the top line of the chart. The example is provided in **Fig.6.1.29**.

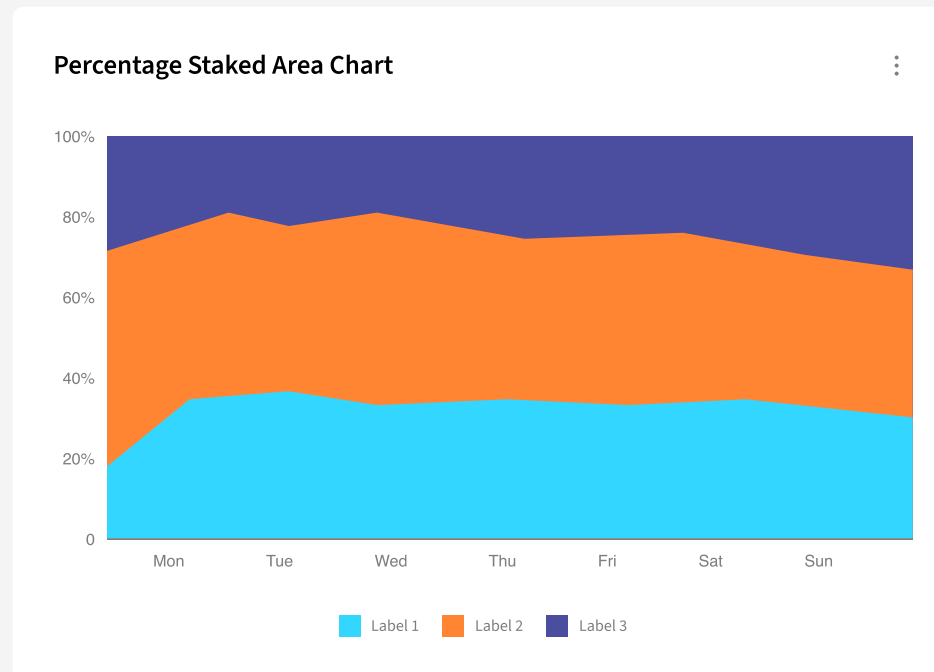


Fig.6.1.29 Percentage area chart

Bar Charts

Bar chart plots numeric values for levels of a categorical feature as bars. Levels are plotted on one chart axis, and values are plotted on the other axis. Each categorical value claims one bar, and the length of each bar corresponds to the bar's value. Bars are plotted on a common baseline to allow for easy comparison of values. The example is provided in **Fig.6.1.30**.

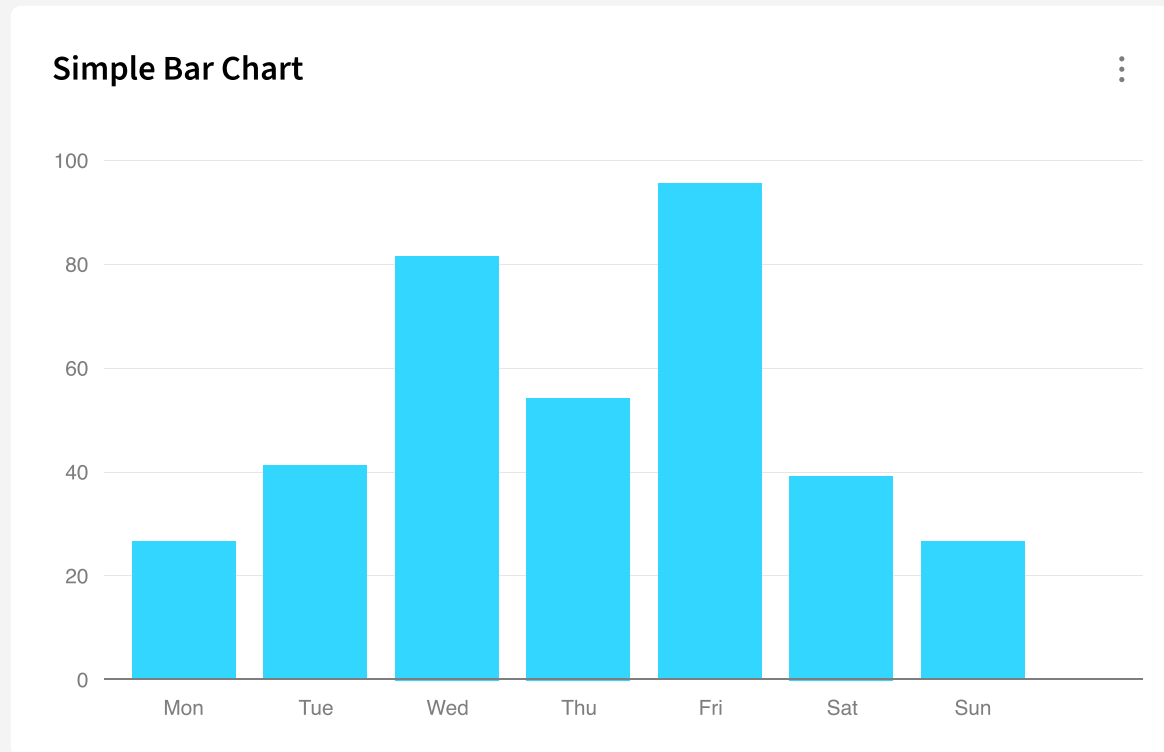


Fig.6.1.30 Simple bar chart

Best Practices

Use a common zero-valued baseline

First and foremost, make sure that all of your bars are being plotted against a zero-value baseline. Not only does that baseline make it easier for readers to compare bar lengths, it also maintains the truthfulness of your data visualization. Examples of this principle are shown in *Fig.6.1.31 - Fig.6.1.32*.

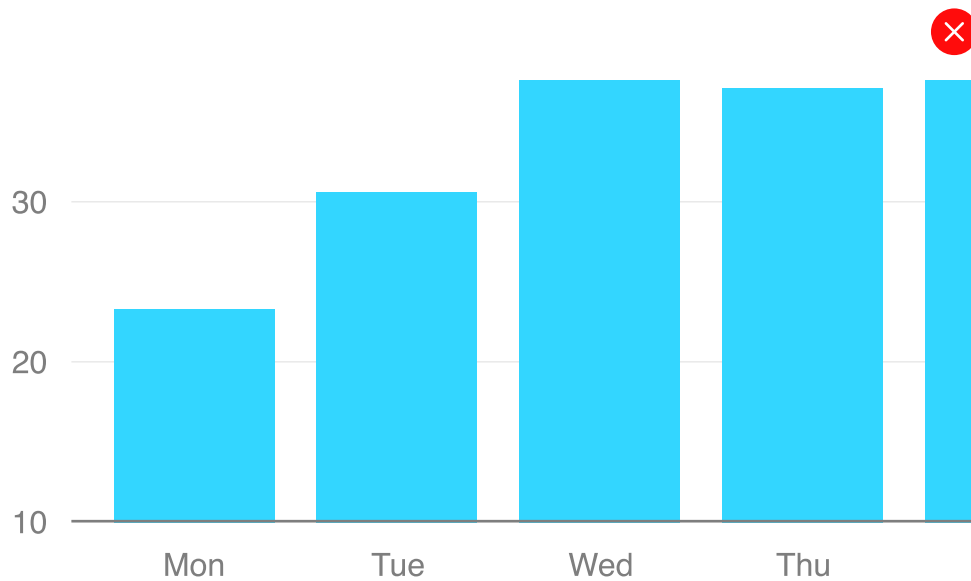


Fig.6.1.31 Bar Chart without a common Zero - Valued Baseline

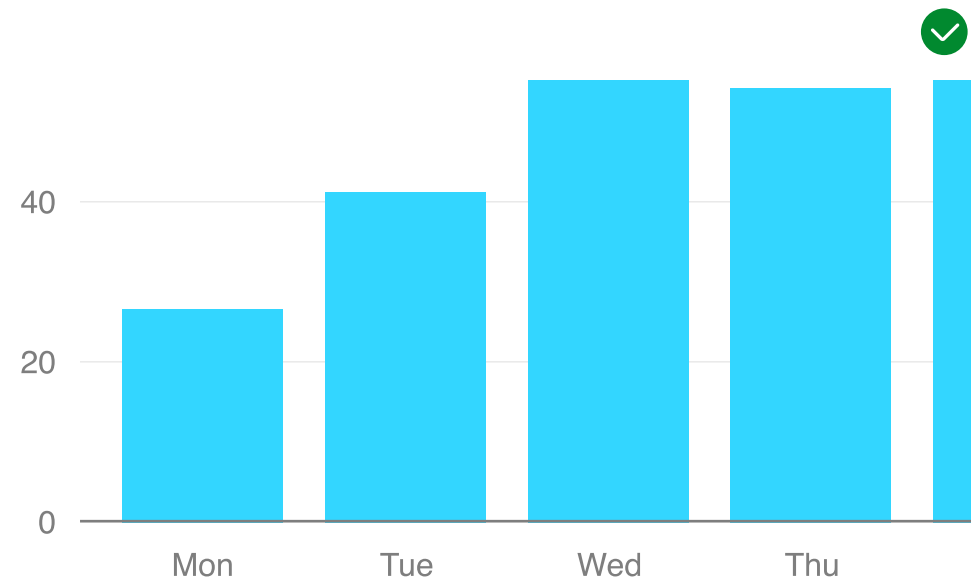


Fig.6.1.32 Bar using a common Zero - Valued Baseline

Maintain rectangular forms on bars

Some tools will allow for the rounding of the bar caps, rather than just have straight edges. This rounding means that it's difficult for the reader to tell where to read the actual value: from the top of the semicircle, or somewhere in the middle? A little bit of rounding of the corners can be okay, but make sure each bar is flat enough to discern its true value and provide an easy comparison between bars. Examples of this principle are shown in **Fig.6.1.33 - Fig.6.1.34**.

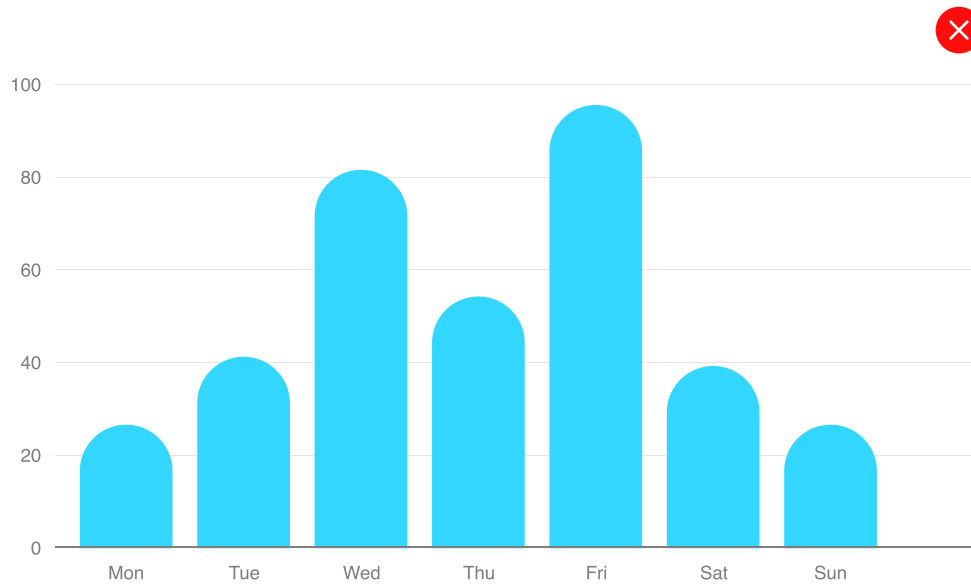


Fig.6.1.33 Rounding Bar chart

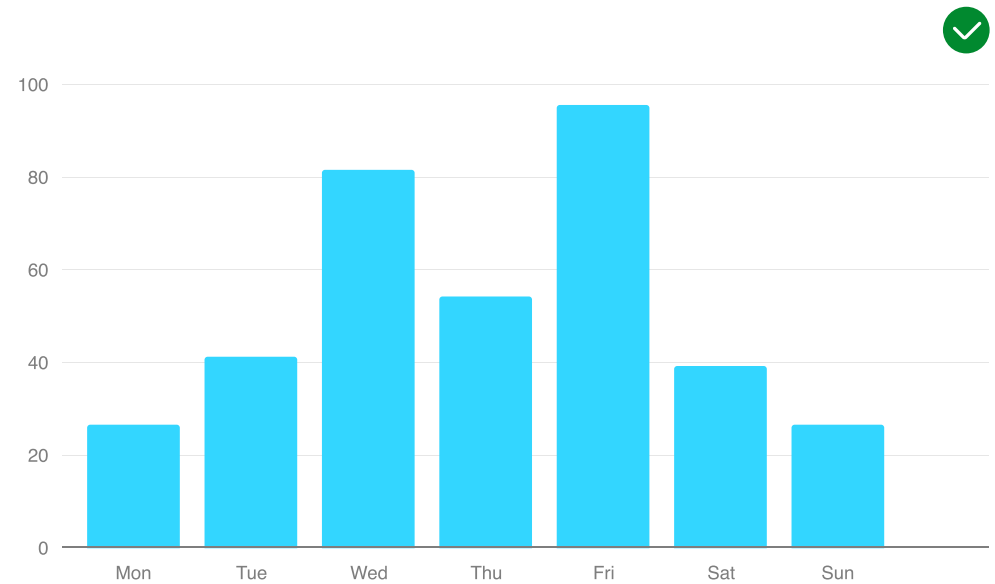


Fig.6.1.34 Small corner radius Bar chart

Spacing Between Bars in a Bar Chart

To improve readability and balance, the minimum spacing between bars should be 16 pixels, as shown in **Fig.6.1.35**. This keeps bars clearly separated, prevents clutter, and helps users distinguish data points while maintaining the chart's clarity.

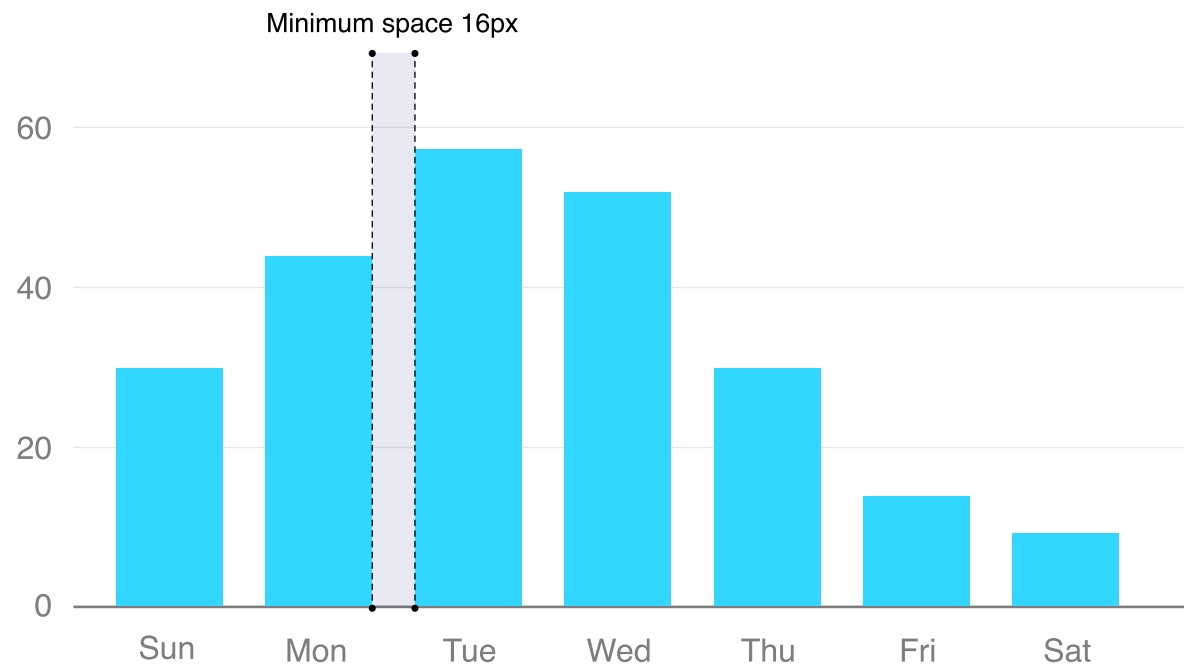


Fig.6.1.35 Minimum spacing between Bars in a Bar chart

Consider the ordering of category levels

When creating a bar chart, think about the order of the bars, as shown in **Fig.6.1.36**. It's common to sort them from longest to shortest to make comparisons easier for the viewer. However, if the categories have a natural order (like months of the year), you should keep that order instead.

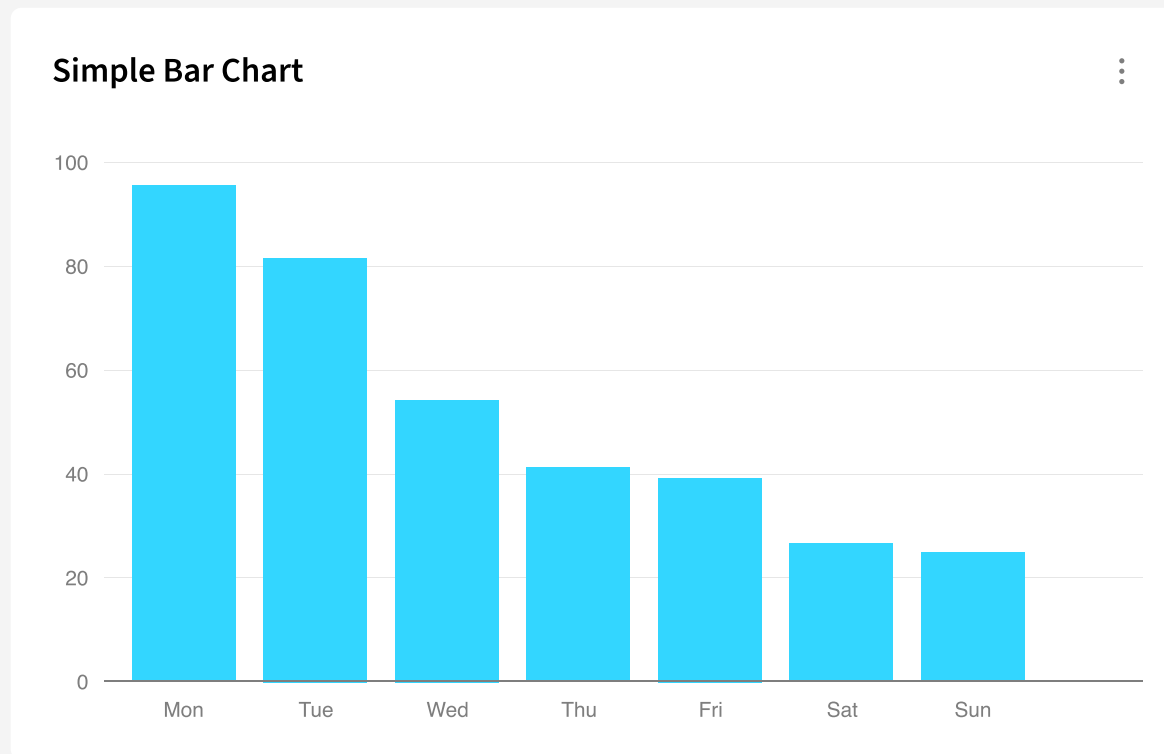


Fig.6.1.36 Ordering of Category levels in a Bar chart

Bar Chart Options

Horizontal bar chart

Bar charts can be vertical or horizontal. Vertical is the default, but horizontal bar charts are better when category labels are long. This helps keep the labels clear and readable, without needing to rotate or adjust them. The example is provided in **Fig.6.1.37**.

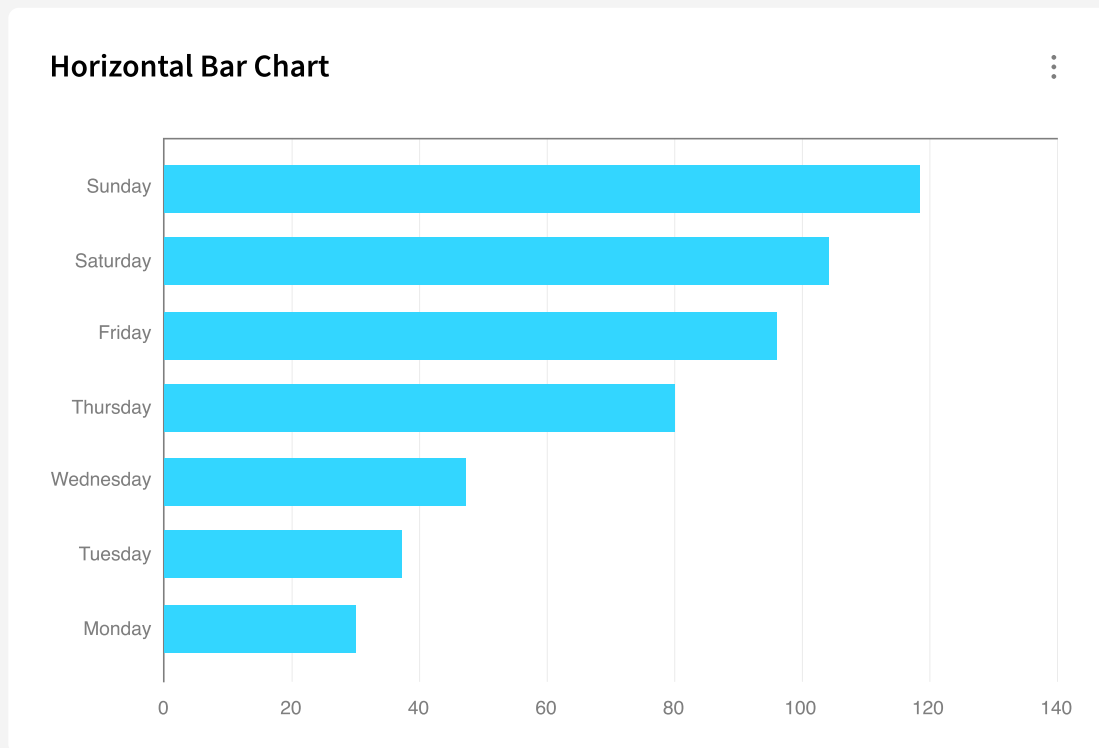


Fig.6.1.37 Horizontal Bar Chart

Include value annotations

Bar charts often include value labels to show exact numbers. While people can estimate values by looking at the bar lengths, labels make the exact values clear. These labels are usually placed inside the bars or at the ends. The example is provided in **Fig.6.1.38**.

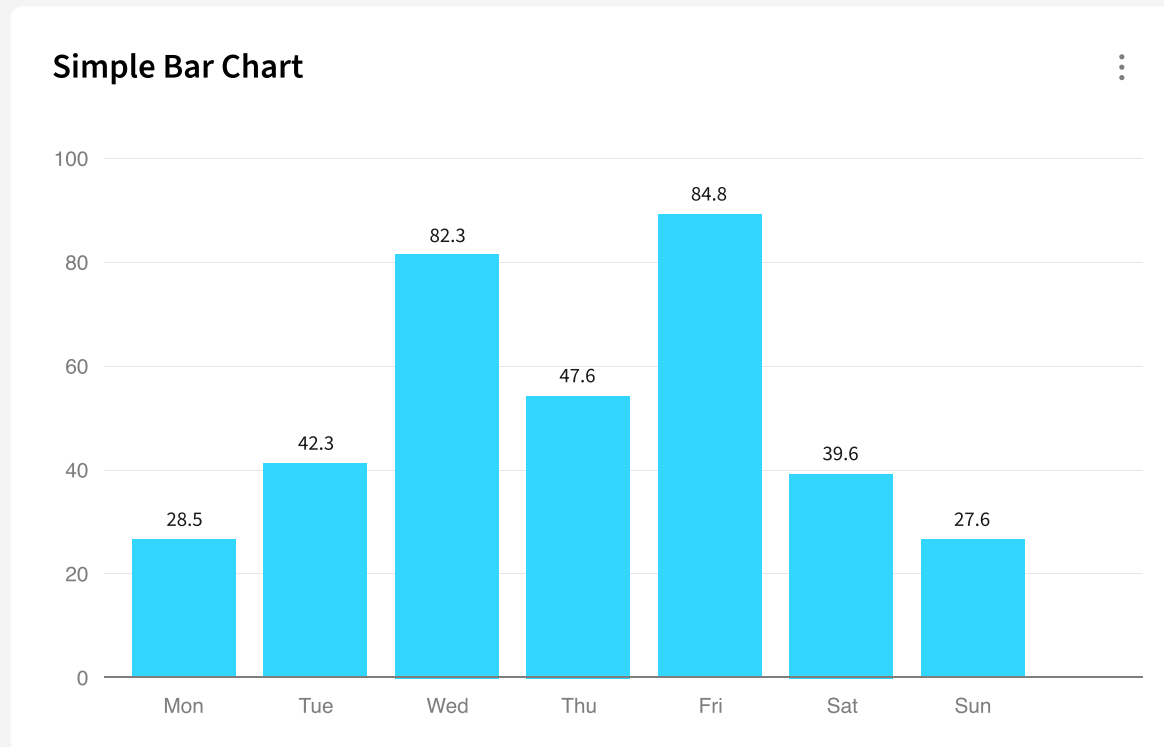


Fig.6.1.38 Bar Chart include Value Annotation

Lollipop chart

A lollipop chart is a different style of bar chart. It shows the same data, but uses lines with dots at the ends instead of full bars. This style is helpful when there are many categories with similar values, as it can make the chart easier to read. The example is provided in **Fig.6.1.39**.

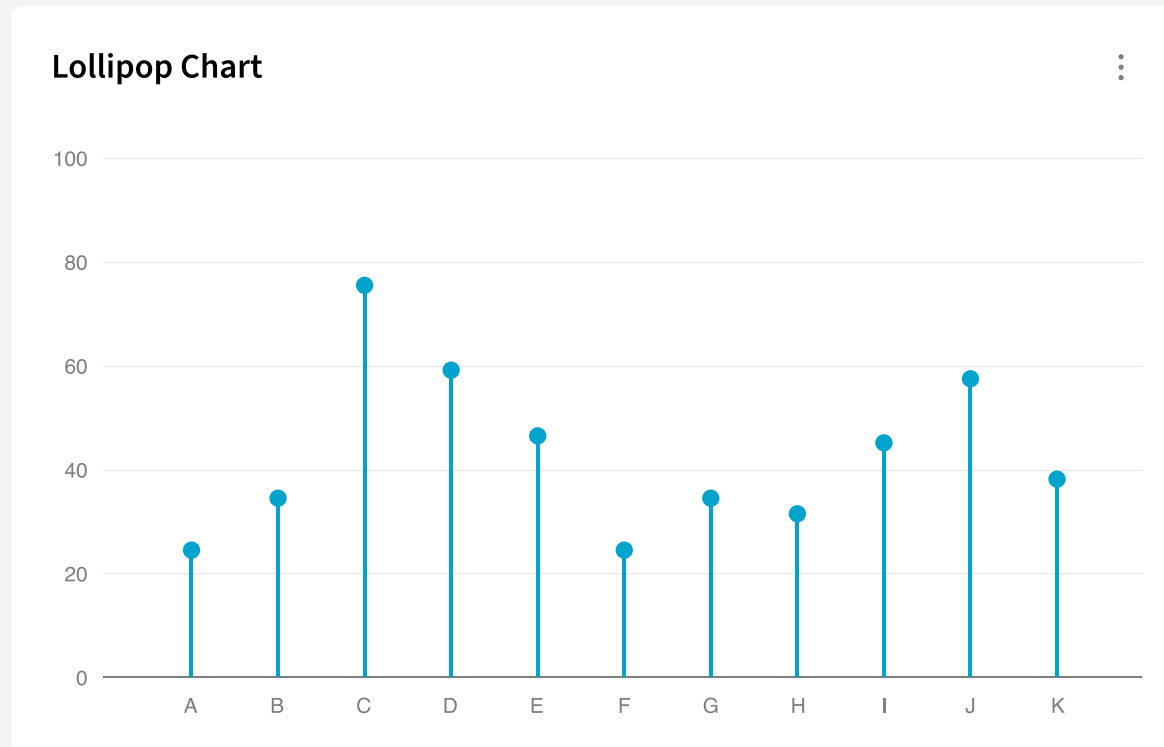


Fig.6.1.39 Lollipop Chart

Box Plots

A box plot uses boxes and lines to depict the distributions of one or more groups of numeric data. Box limits indicate the range of the central 50% of the data, with a central line marking the median value. Lines extend from each box to capture the range of the remaining data, with dots placed past the line edges to indicate outliers. The example is provided in **Fig.6.1.40**.

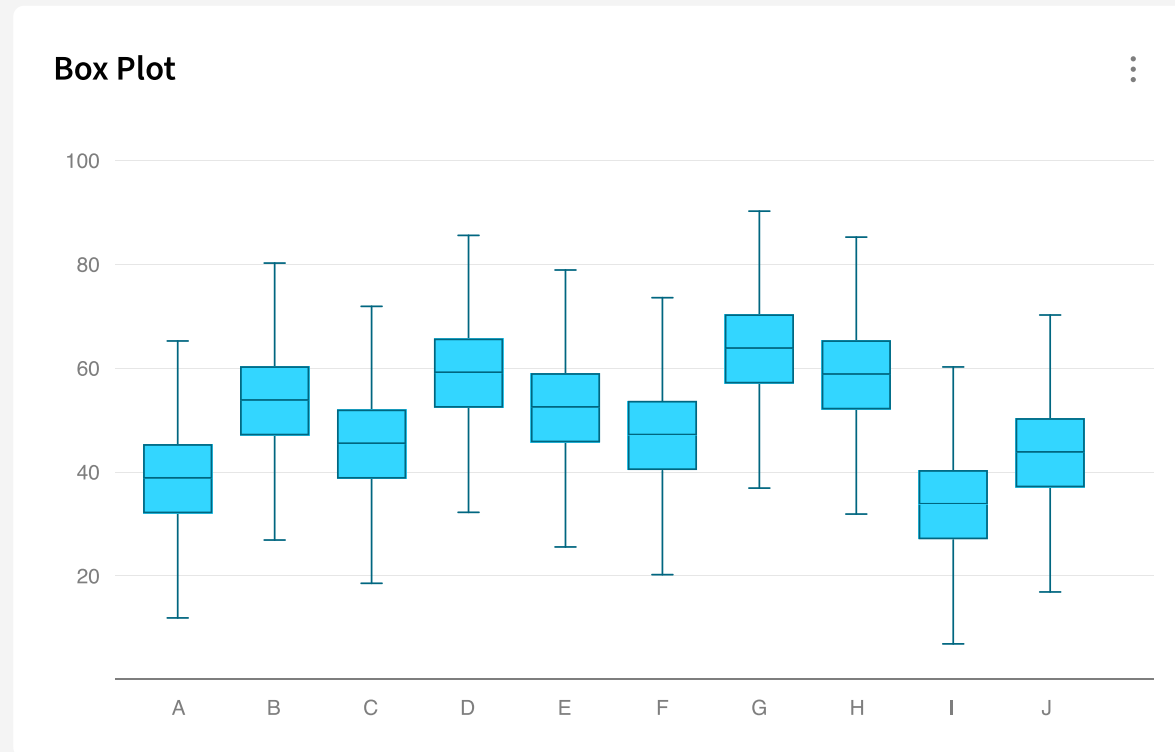


Fig.6.1.40 Box Plot

Interpreting a box and whiskers

Construction of a box plot is based around a dataset's quartiles, or the values that divide the dataset into equal fourths. The first quartile (Q1) is greater than 25% of the data and less than the other 75%. The second quartile (Q2) sits in the middle, dividing the data in half. Q2 is also known as the median. The third quartile (Q3) is larger than 75% of the data, and smaller than the remaining 25%. In a box and whiskers plot, the ends of the box and its center line mark the locations of these three quartiles. The example is provided in **Fig.6.1.41**.

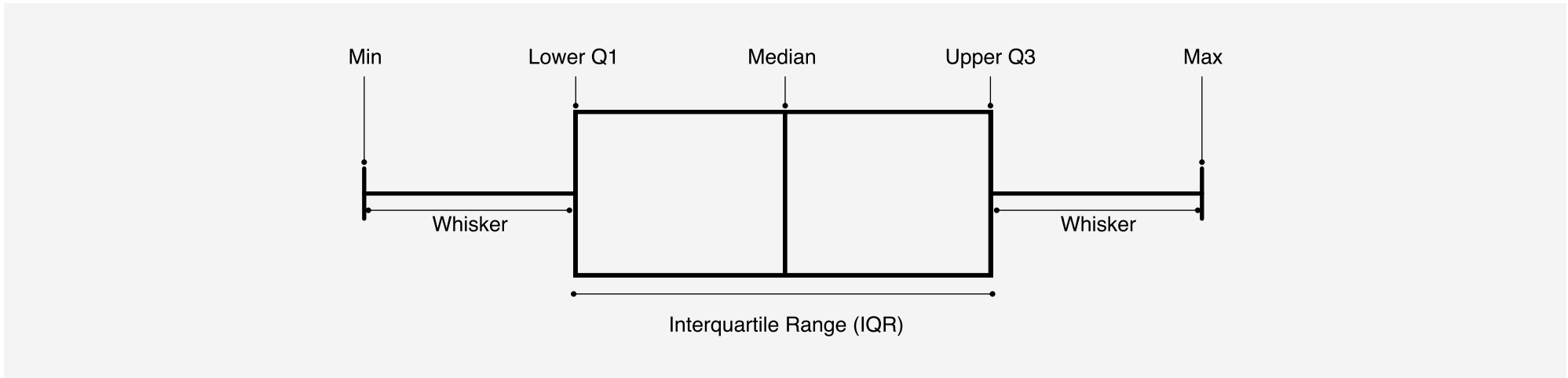
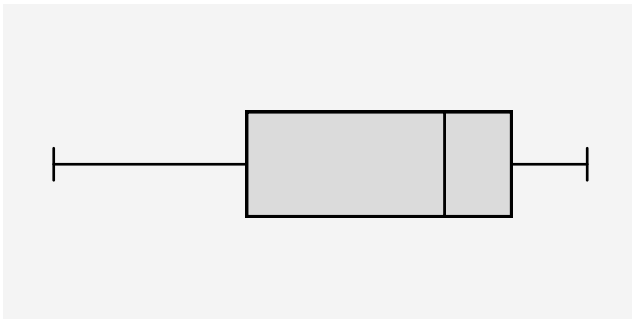
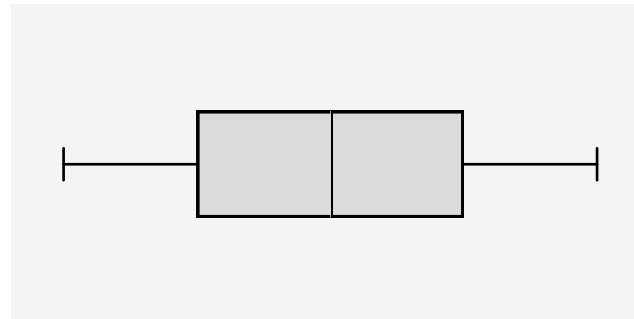


Fig.6.1.41 Interpreting a Box and Whisker

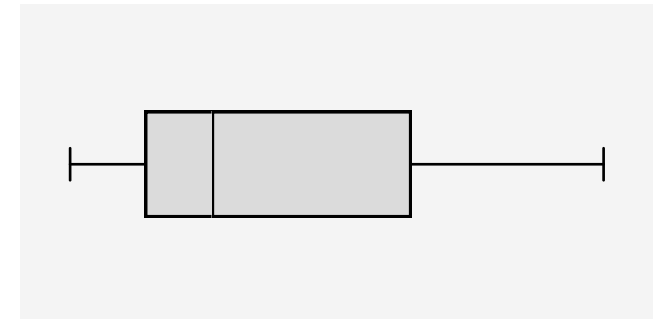
Left-Skewed



Symmetric



Right-Skewed



Outliers

Outliers are data points that fall outside the "whiskers," which extend from the box to the furthest data points within 1.5 times the interquartile range (IQR) from the quartiles. The example is provided in **Fig.6.1.42**.

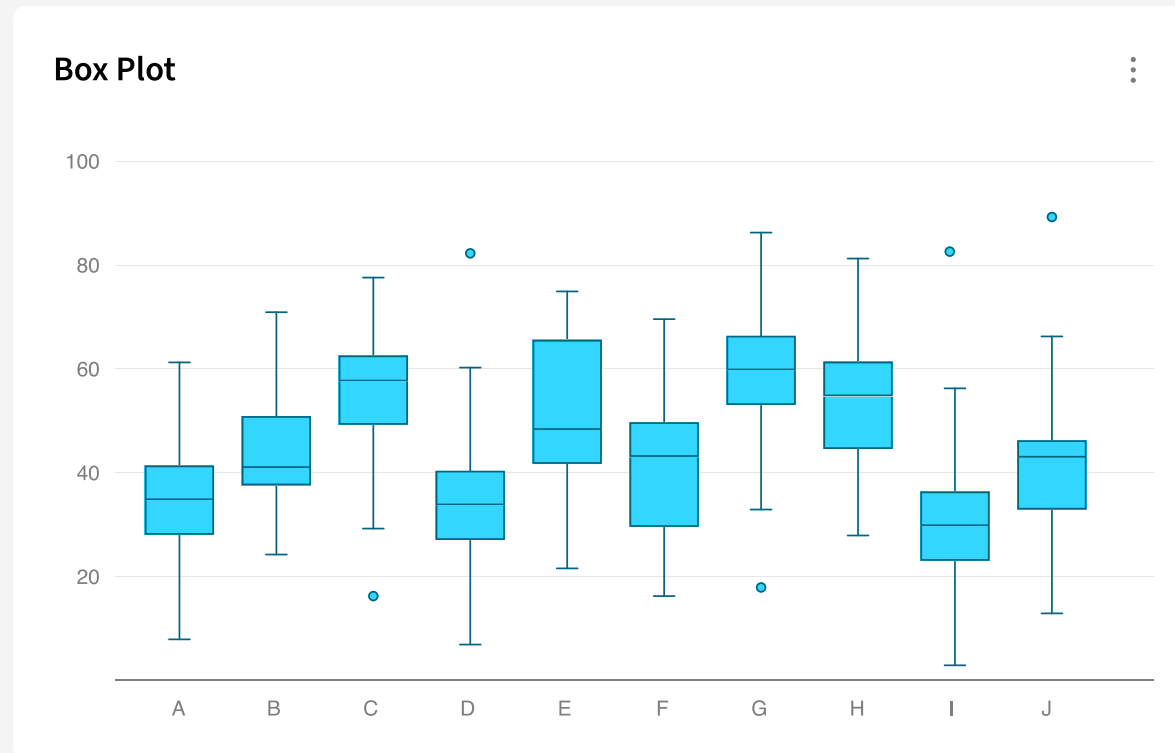


Fig.6.1.42 Outliers in Box Plot

Best Practice

Compare multiple groups

Box plots are great for comparing data distributions across multiple groups because they give a quick summary using boxes and whiskers to show medians, ranges, and outliers. However, they're less useful when showing just one group, as they only provide a high-level overview and don't reveal detailed patterns or the shape of the data distribution. The example is provided in **Fig.6.1.43**.

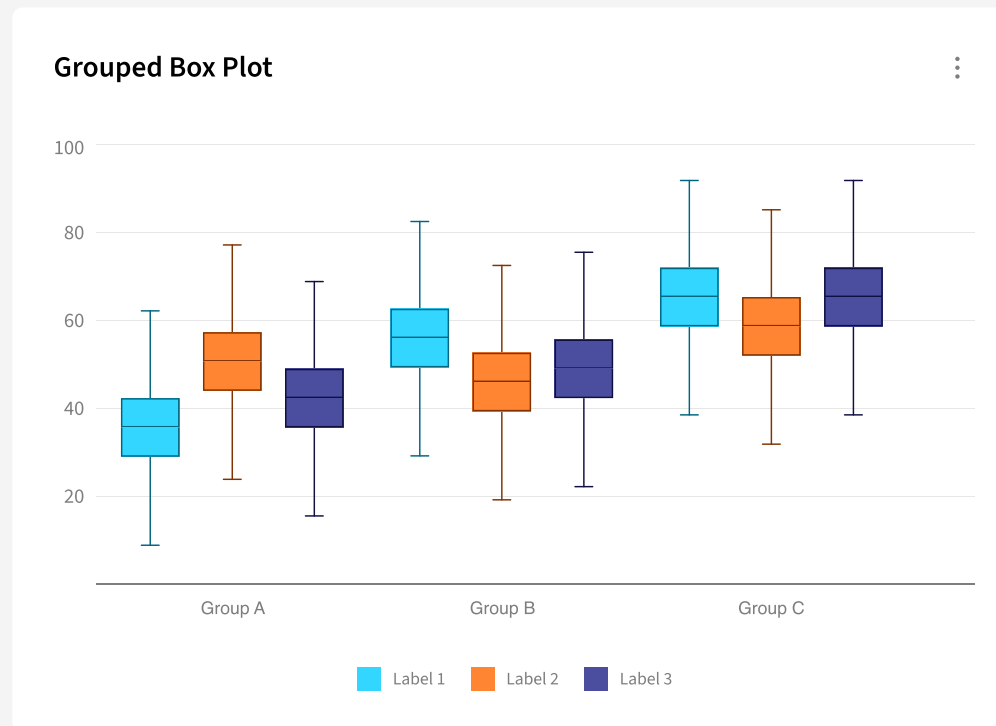


Fig.6.1.43 Comparing Multiple Groups of Box Plots

Consider the order of groups

If the groups plotted in a box plot do not have an inherent order, then you should consider arranging them in an order that highlights patterns and insights. One common ordering for groups is to sort them by median value, as shown in **Fig.6.1.44**.

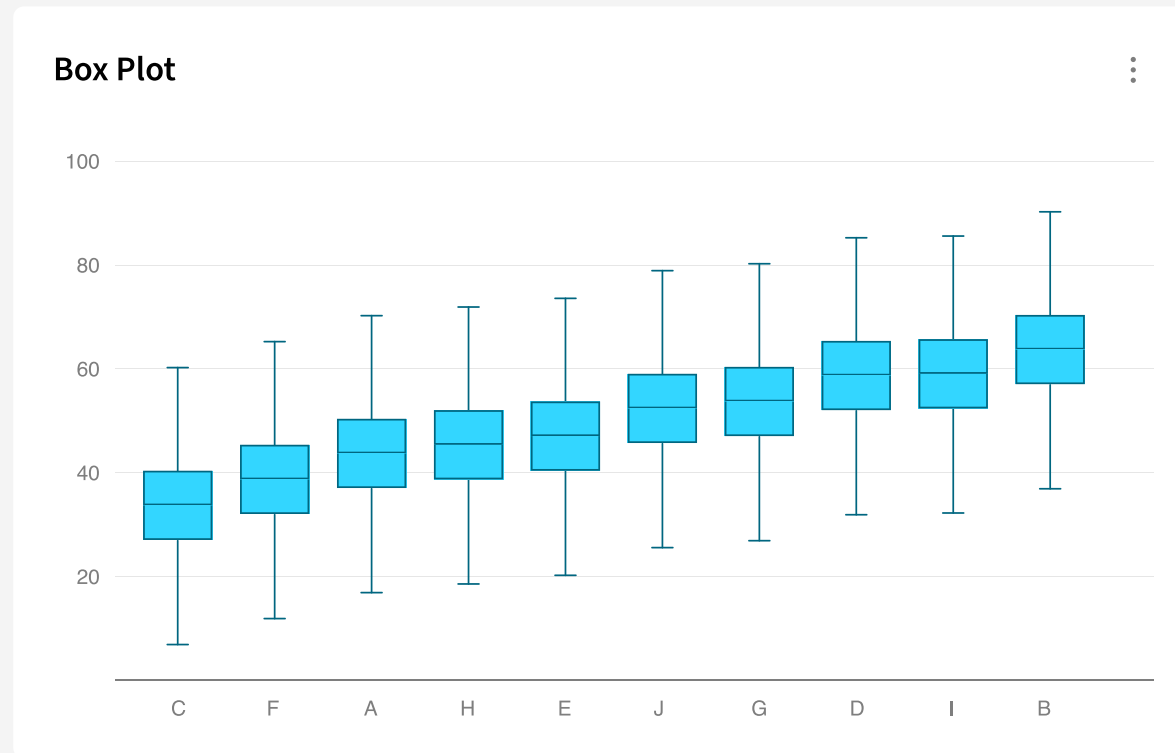


Fig.6.1.44 Box Plot with Ordered Groups

Box Plot Options

Horizontal box plot

Box plots can be displayed either vertically or horizontally. A horizontal layout is helpful when there are many groups or long group names, as it avoids text rotation or cutting off labels. A vertical layout works well when the groups represent time-based data, as it feels more natural for showing trends over time. The example is provided in **Fig.6.1.45**.

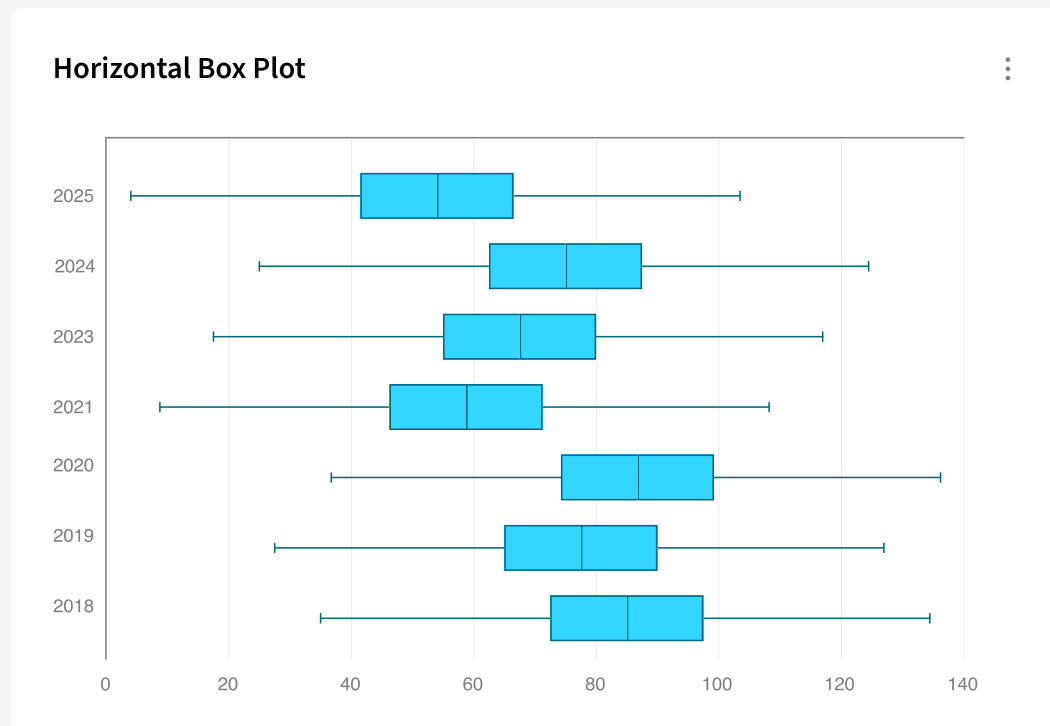


Fig.6.1.45 Horizontal Box Plot

Bubble Charts

Bubble charts plot data points as bubbles positioned along two axes, each representing a separate measure. The size of each bubble corresponds to a third measure, enabling visualization of three variables in a single chart. The example is provided in **Fig.6.1.46**.

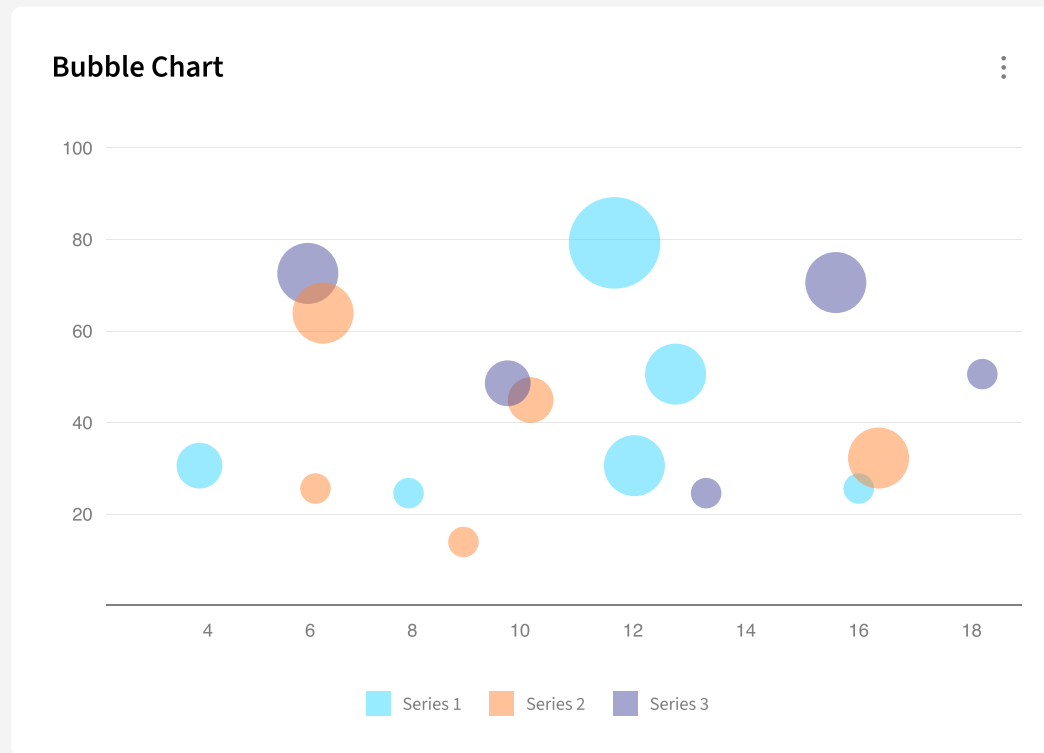


Fig.6.1.46 Bubble Chart

Best Practice

Scale bubble area by value

When creating a bubble chart, avoid scaling bubbles by diameter or radius, as this can misrepresent the data—a value twice as large could appear four times bigger in area. Instead, ensure the area of each bubble accurately reflects the third variable's value. You may need to adjust or normalize your data so that bubble sizes correctly represent the values. Be especially careful when using tools that scale by diameter or radius, as this can unintentionally exaggerate differences. Examples of this principle are shown in **Fig.6.1.47 - Fig.6.1.48**.

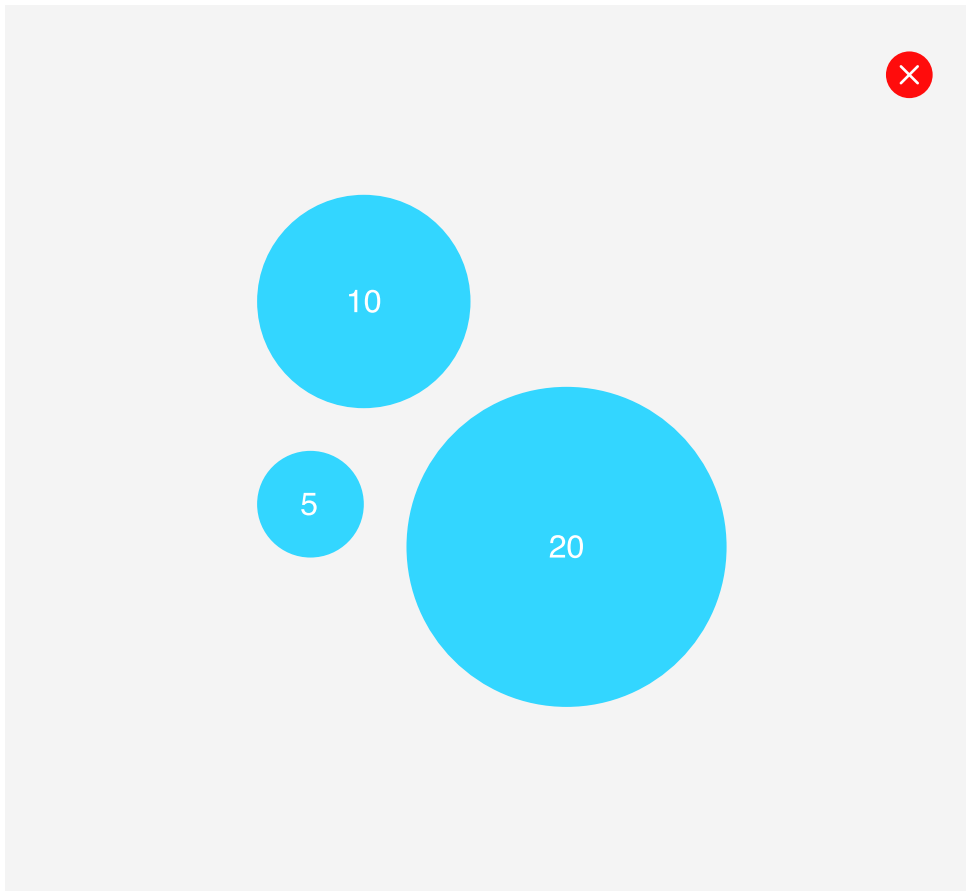


Fig.6.1.47 Avoid scaling Bubbles by Diameter or Radius

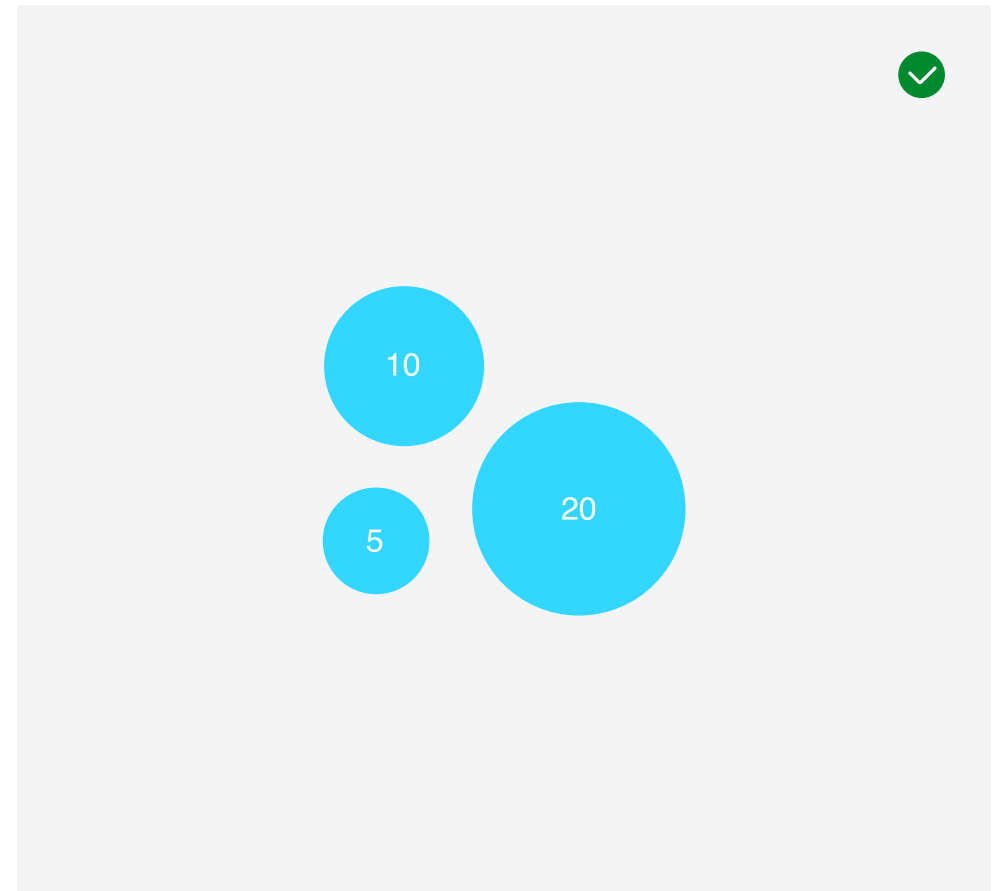


Fig.6.1.48 Scale Bubble Area by Value

Limit number of points to plot

Bubble charts are often transparent to show overlaps when all points are small. Although there aren't any guidelines for using data in bubble charts, there are a few things to think about when making one. If there is too much plotting, summarize or use a different chart type to show your data. Smaller bubbles can separate points, but it's harder to read values from them. The example is provided in **Fig.6.1.49**.

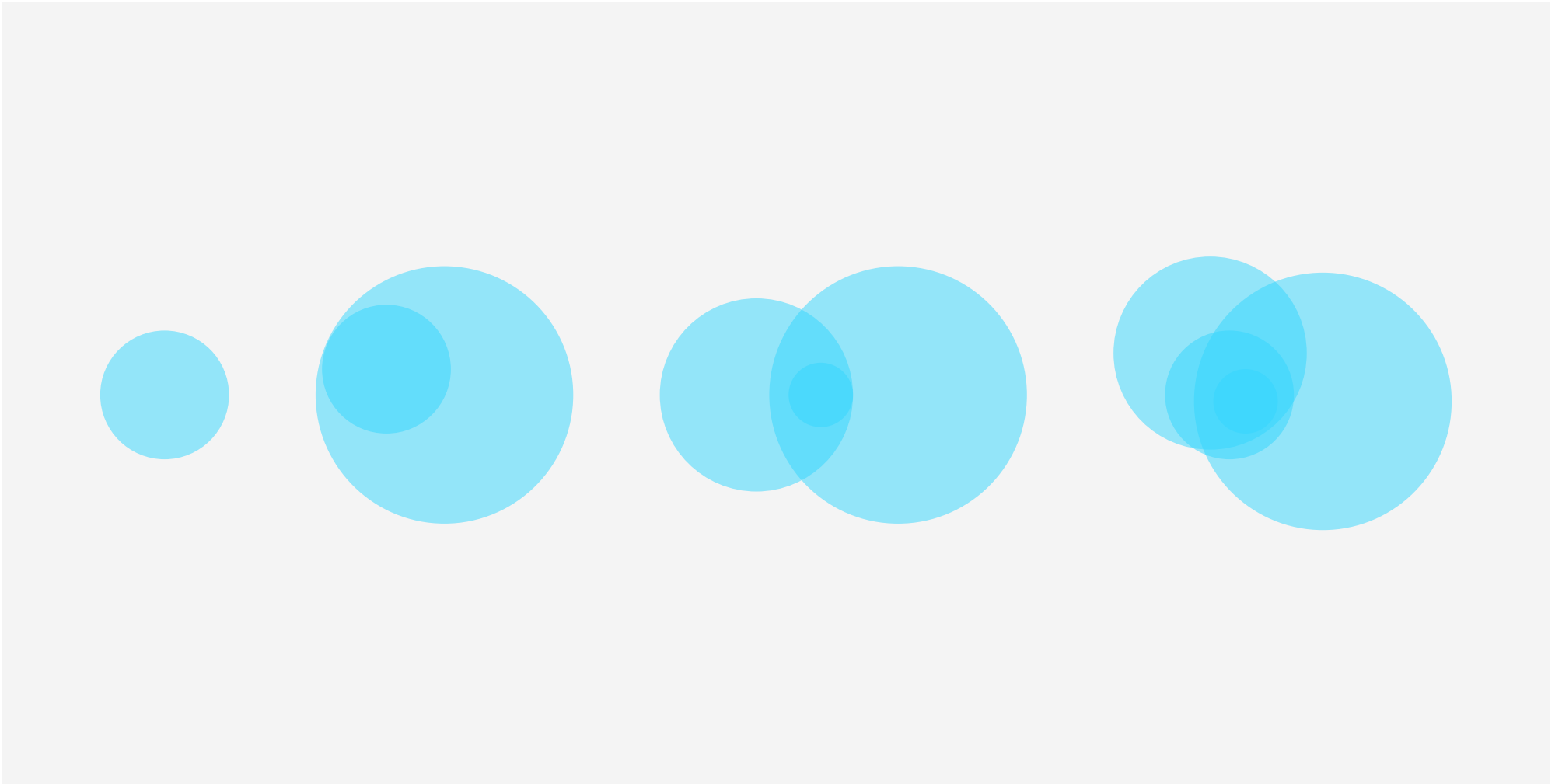


Fig.6.1.49 *Overlapping Bubbles with Transparency in a Bubble Chart*

Bullet Chart

Bullet Charts provide a clear and compact way to display performance data by comparing a primary measure to one or more other measures and qualitative ranges, such as poor, satisfactory, and excellent. This type of chart is effective for offering a quick snapshot of data in the context of set performance goals or benchmarks. Originally designed as an alternative to more complex dashboard gauges and meters, Bullet Charts are particularly useful for enhancing dashboard readability and efficiency. The example is provided in **Fig.6.1.50**.

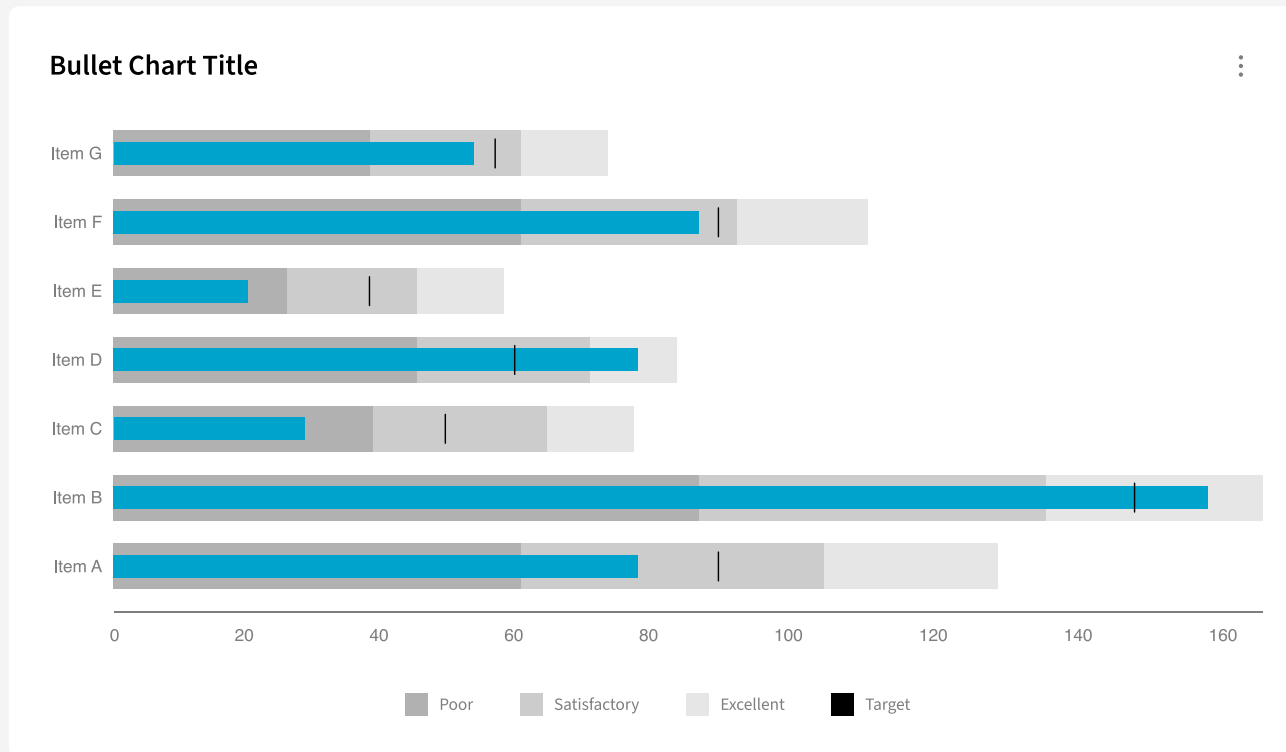


Fig.6.1.50 Bullet Chart

Interpreting a bullet chart

A bullet chart is read from left to right and is designed to make it easy to interpret performance at a glance. The main horizontal bar shows the actual value. Behind it are shaded areas that show performance levels, such as Poor, Satisfactory, or Excellent. A vertical line marks the target or goal. By looking at where the bar ends compared to this line and the shaded zones, you can easily tell if the performance is good, bad, or on track. This clear design helps you see results quickly, which is why bullet charts are great for dashboards and reports. The example is provided in **Fig.6.1.51**.

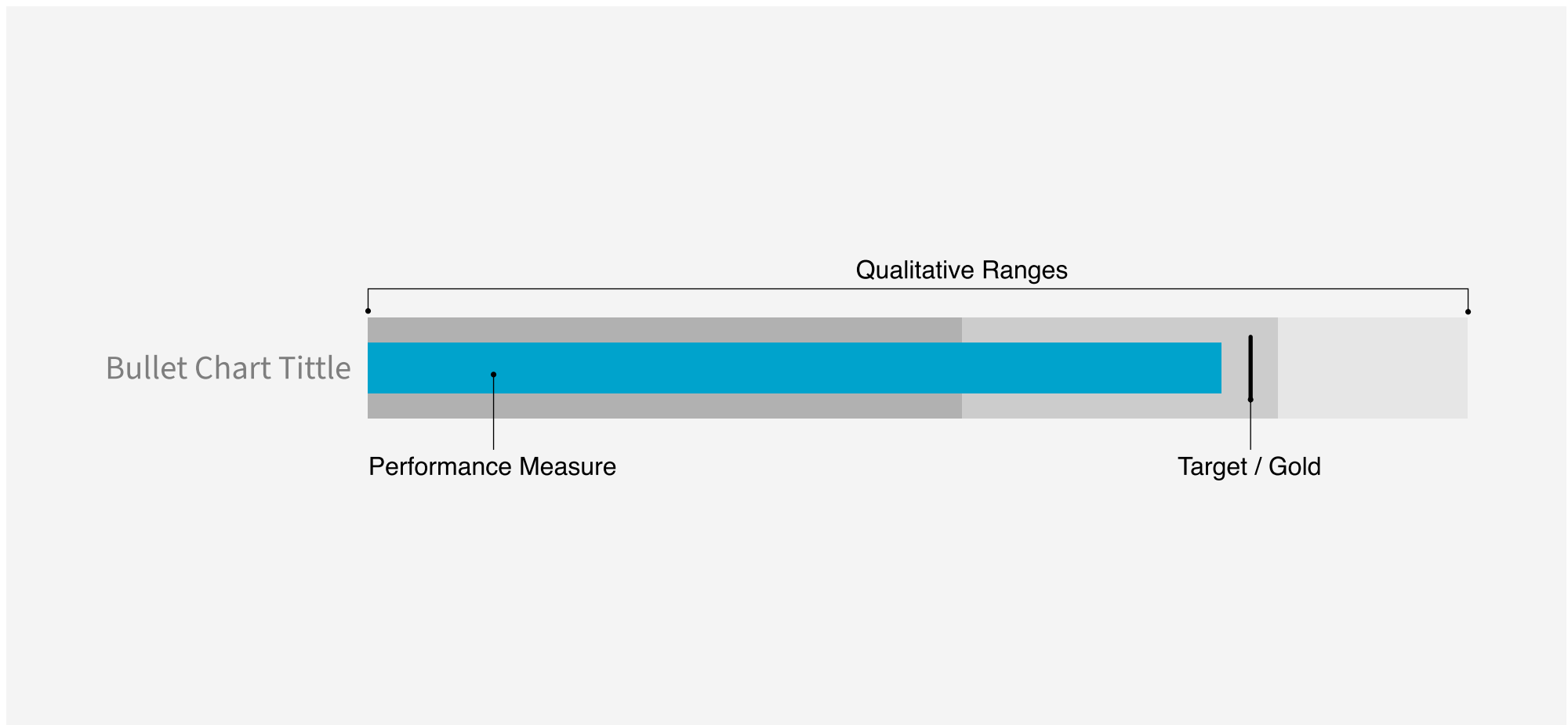


Fig.6.1.51 Interpreting a Bullet Chart

Best Practice

Choose color carefully

Excessive use of color can lead to visual clutter and confuse the user. To minimize cognitive strain, use a strong contrast or a clear, bold color for the primary performance measure, and softer tones for the background ranges. This approach maintains clarity, enhances readability, and ensures that the most important data stands out effectively. Examples of this principle are shown in **Fig.6.1.52 - Fig.6.1.53**.

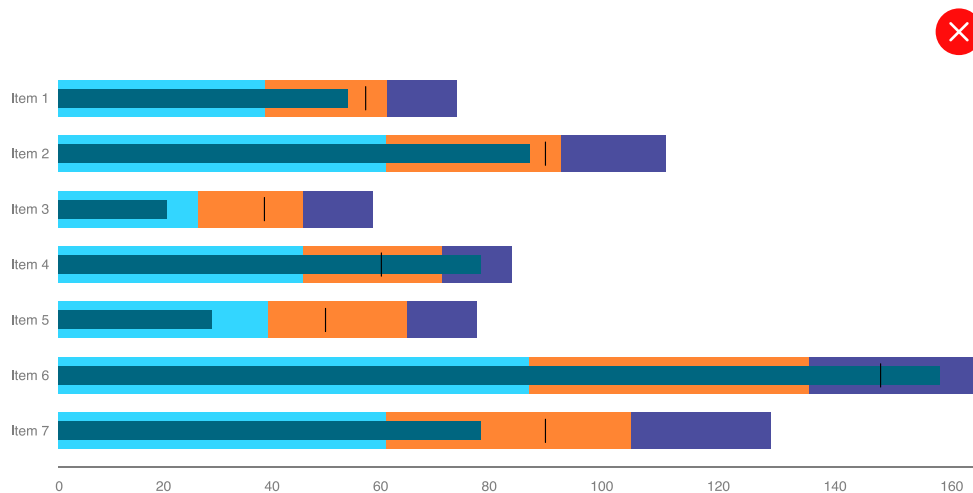


Fig.6.1.52 Bullet Chart with too many colors, leading to visual confusion

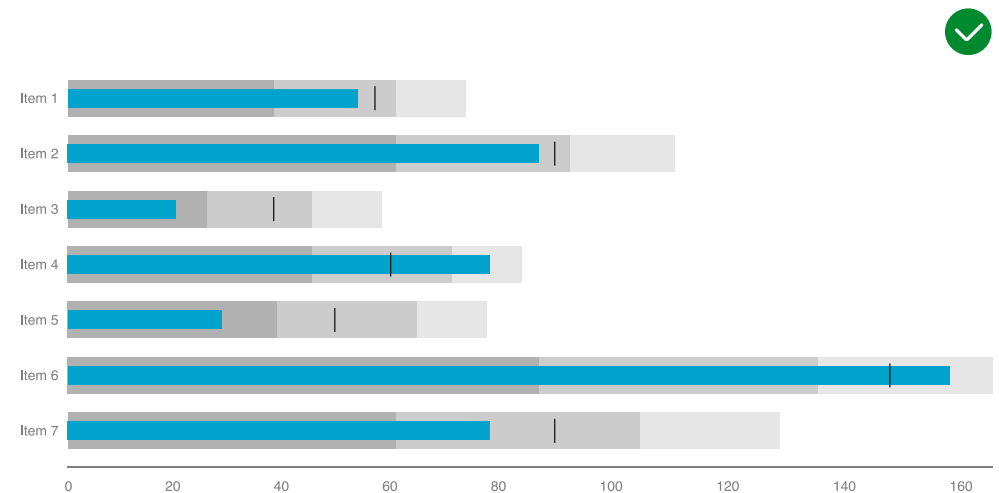


Fig.6.1.53 Bullet Chart using clear colors

Use a common zero-valued baseline

Bullet charts start at zero to provide a clear and consistent point of reference for comparing performance measures. Beginning at zero ensures that the length of the bars accurately reflects the magnitude of the values, preventing misleading interpretations that could arise if the baseline were set elsewhere. This approach enables viewers to quickly and accurately assess how actual values measure up against targets or benchmarks. Examples of this principle are shown in **Fig.6.1.54 - Fig.6.1.55**.

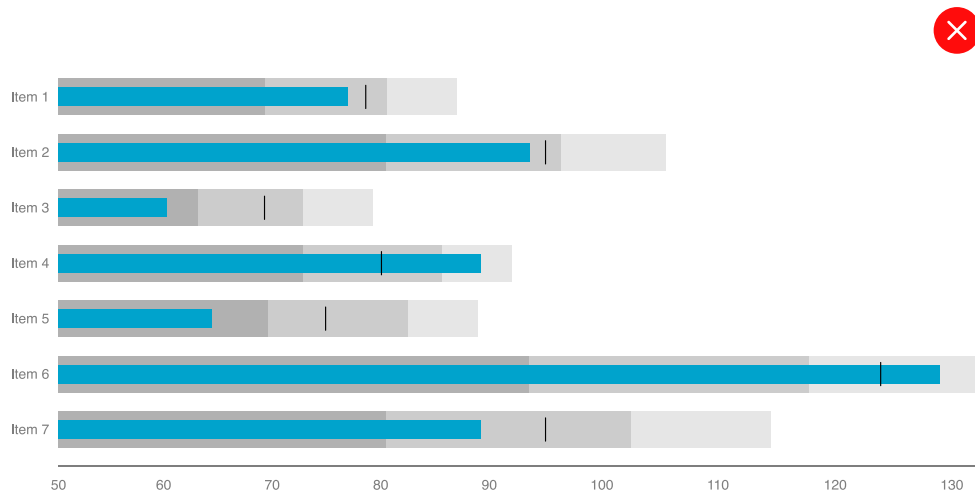


Fig.6.1.54 Bullet Chart without a common Zero - Valued Baseline

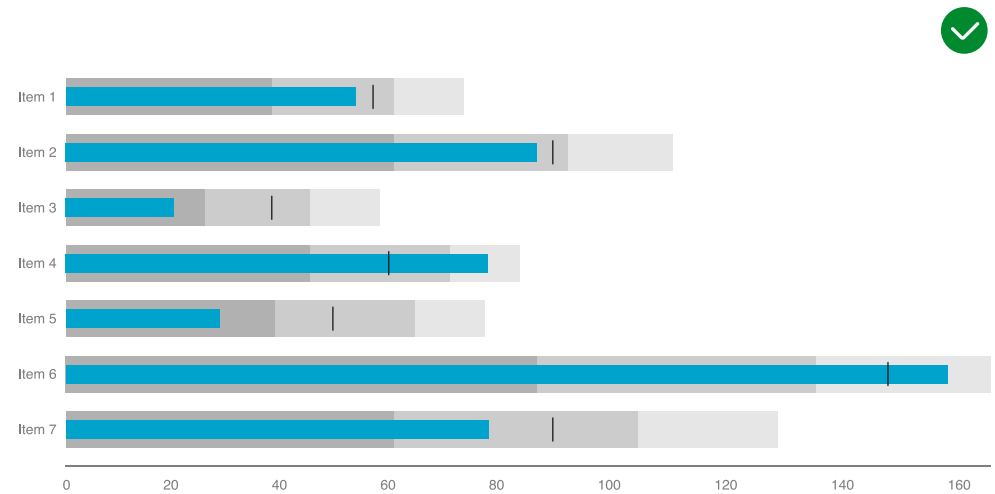


Fig.6.1.55 Bullet Chart using a common Zero - Valued Baseline



Grouped Bar Charts

A grouped bar chart extends the bar chart, plotting numeric values for levels of two categorical variables instead of one. Bars are grouped by position for levels of one categorical variable, with color indicating the secondary category level within each group. The example is provided in *Fig.6.1.56*.

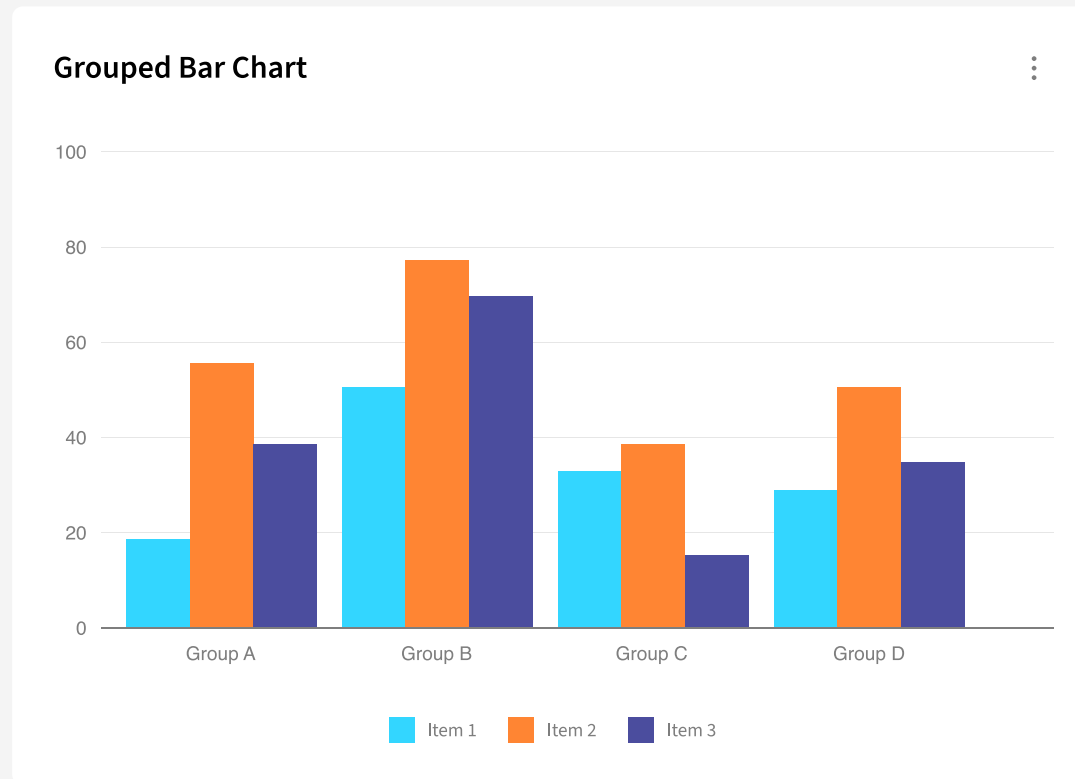


Fig.6.1.56 Grouped Bar Chart

Best Practice

Maintain a zero-baseline

Adding clustered bars does not change the fundamental rule that bar charts should include a zero baseline. As with simple bar charts, the baseline ensures that the lengths of the bars accurately reflect their values. Examples of this principle are shown in **Fig.6.1.57 - Fig.6.1.58**.

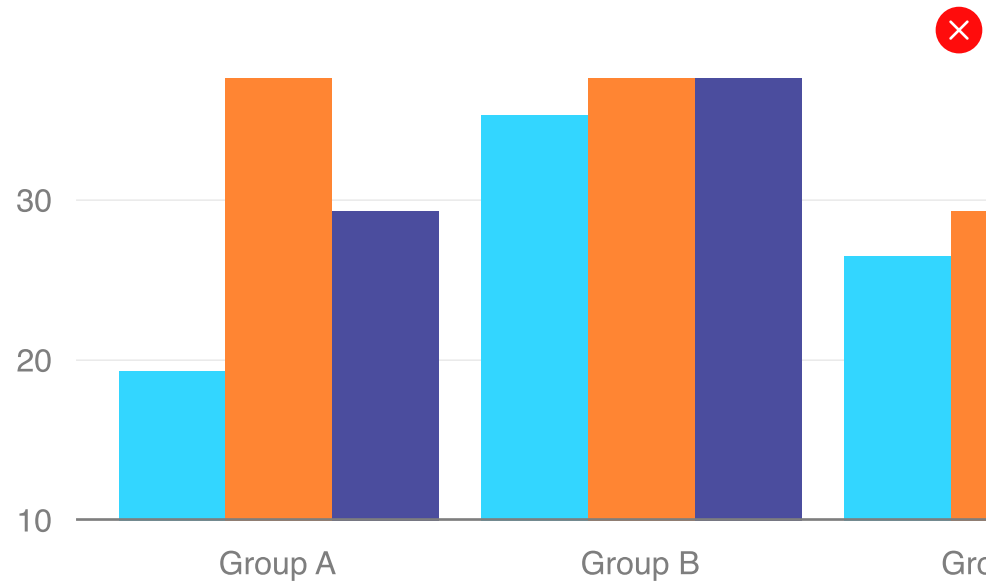


Fig.6.1.57 Grouped Bar Chart without a common Zero - Valued Baseline

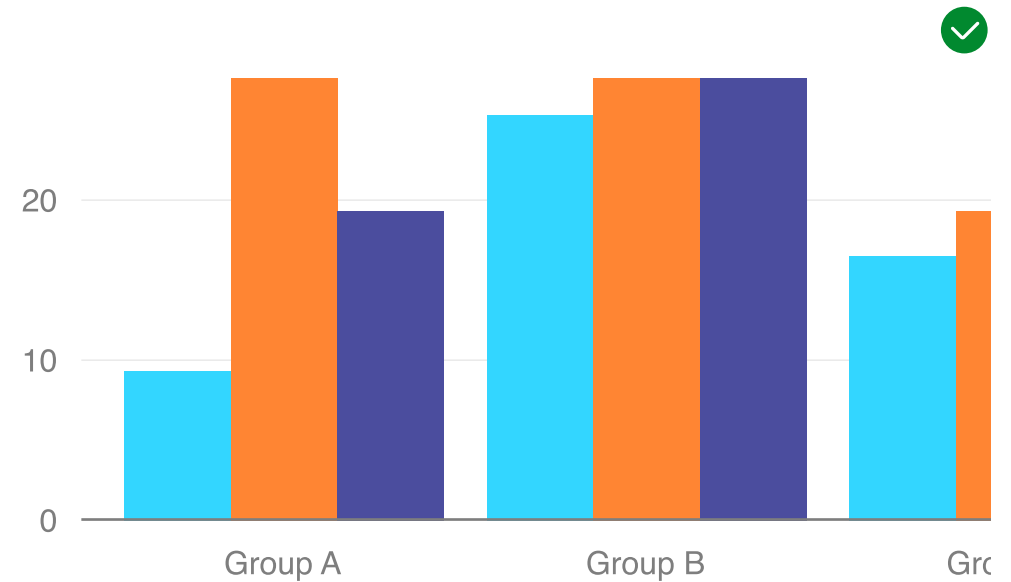


Fig.6.1.58 Grouped Bar Chart using a common Zero - Valued Baseline

Spacing between grouped bar in a grouped bar chart

In grouped bar charts, spacing between groups of bars is essential for clarity. A minimum spacing of 16 pixels between groups helps clearly separate the main categories, while consistent spacing within each group allows for easy comparison of sub-group values, as shown in **Fig.6.1.59**.

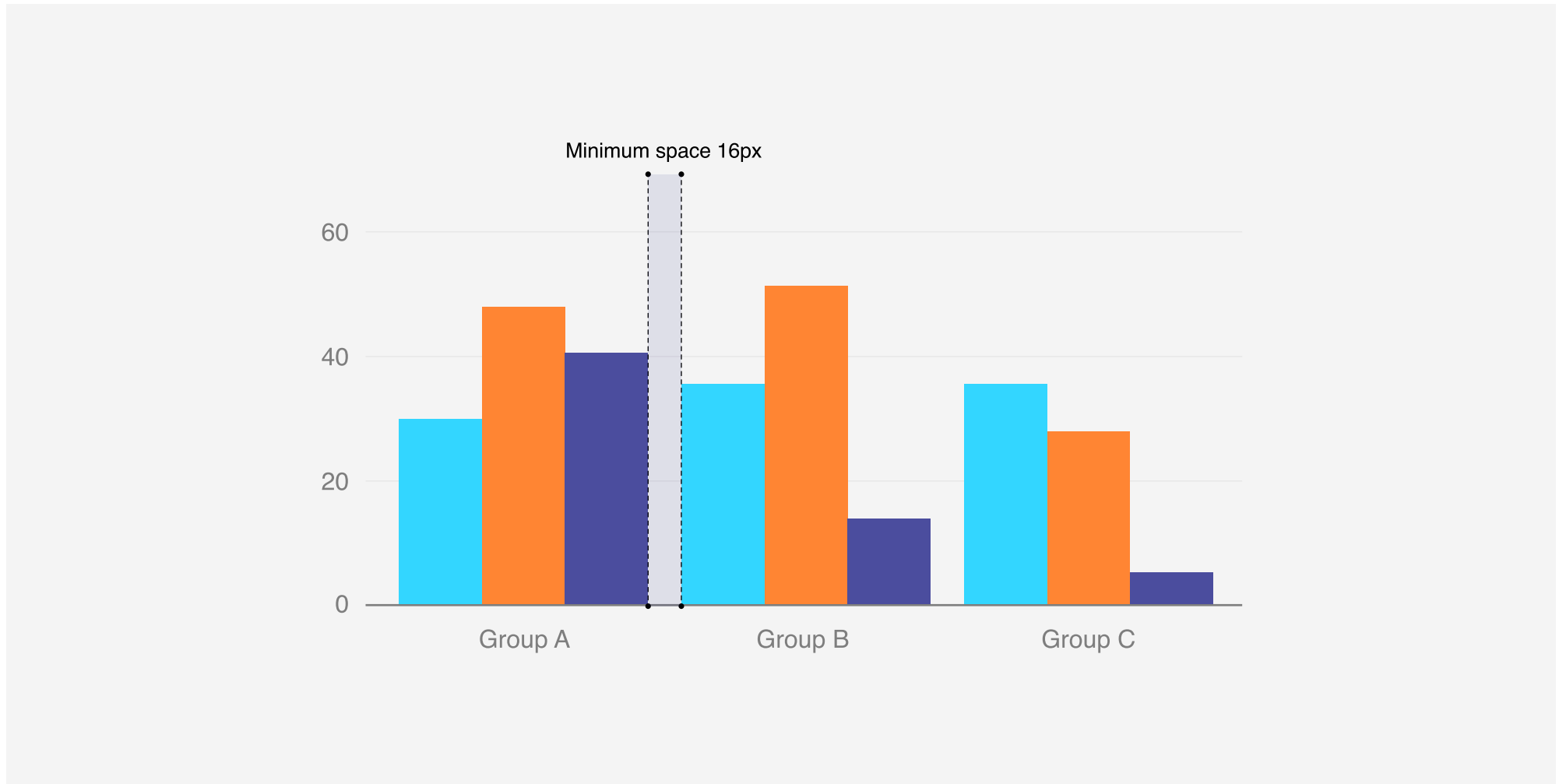


Fig.6.1.59 Minimum Spacing between Grouped Bars in a Grouped Bar Chart

Choosing effective color

Color choices become a vital part of the grouped bar chart in order to distinguish levels of the secondary categorical variable. The important choice to make here is to choose a color palette that matches the type of secondary variable you have: a qualitative palette for a purely categorical variable, or a sequential or diverging palette for categorical variables with inherent ordering. The example is provided in **Fig.6.1.60**.

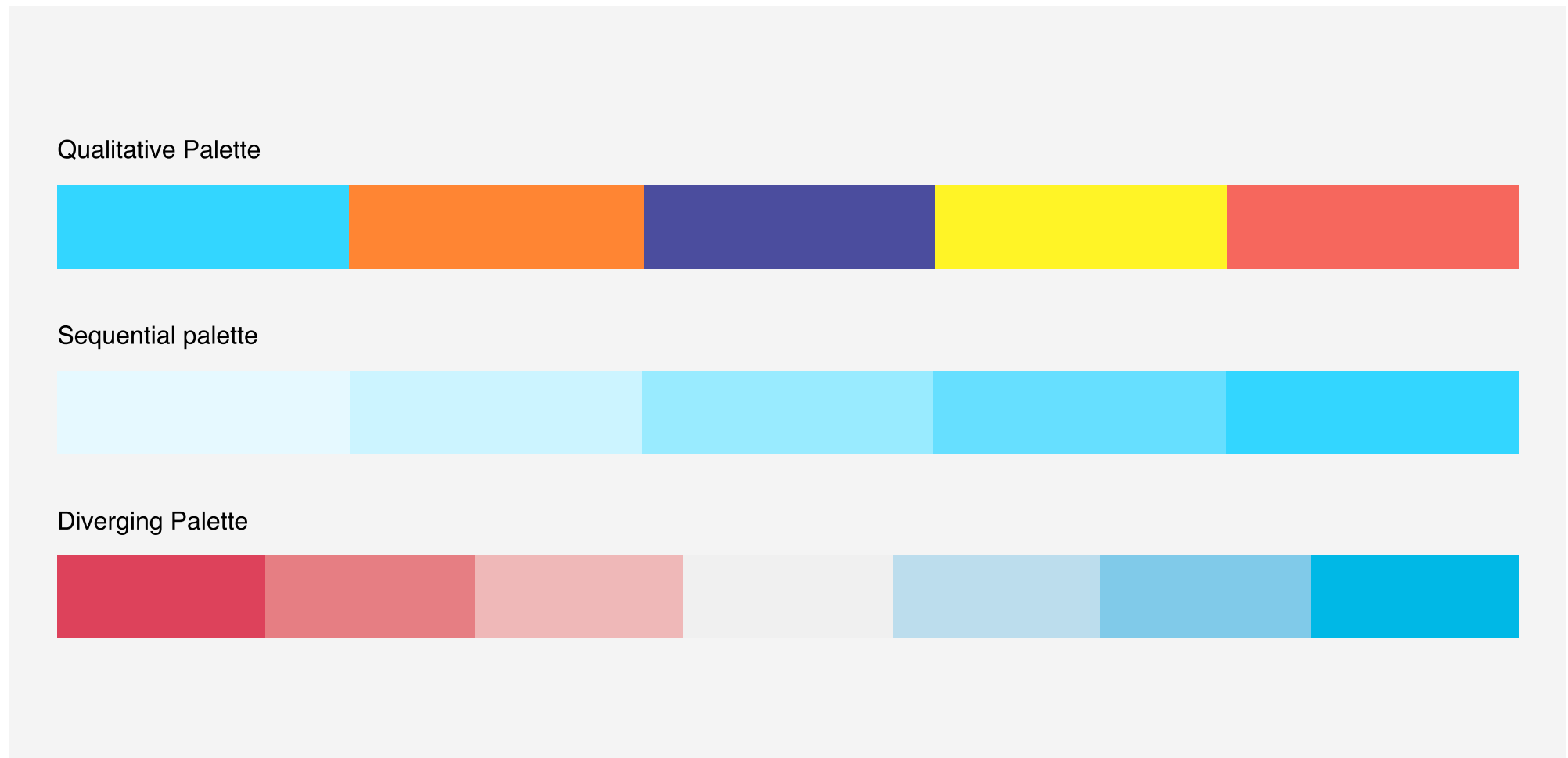


Fig.6.1.60 Choosing Effective Color

Grouped Bar Chart Options

Horizontal grouped bar chart

Similar to standard bar charts, grouped bar charts can be oriented either vertically or horizontally, as illustrated in **Fig.6.1.61**. A horizontal layout offers the same advantages, such as providing more space for long category labels—eliminating the need for rotation or truncation and improving overall readability.

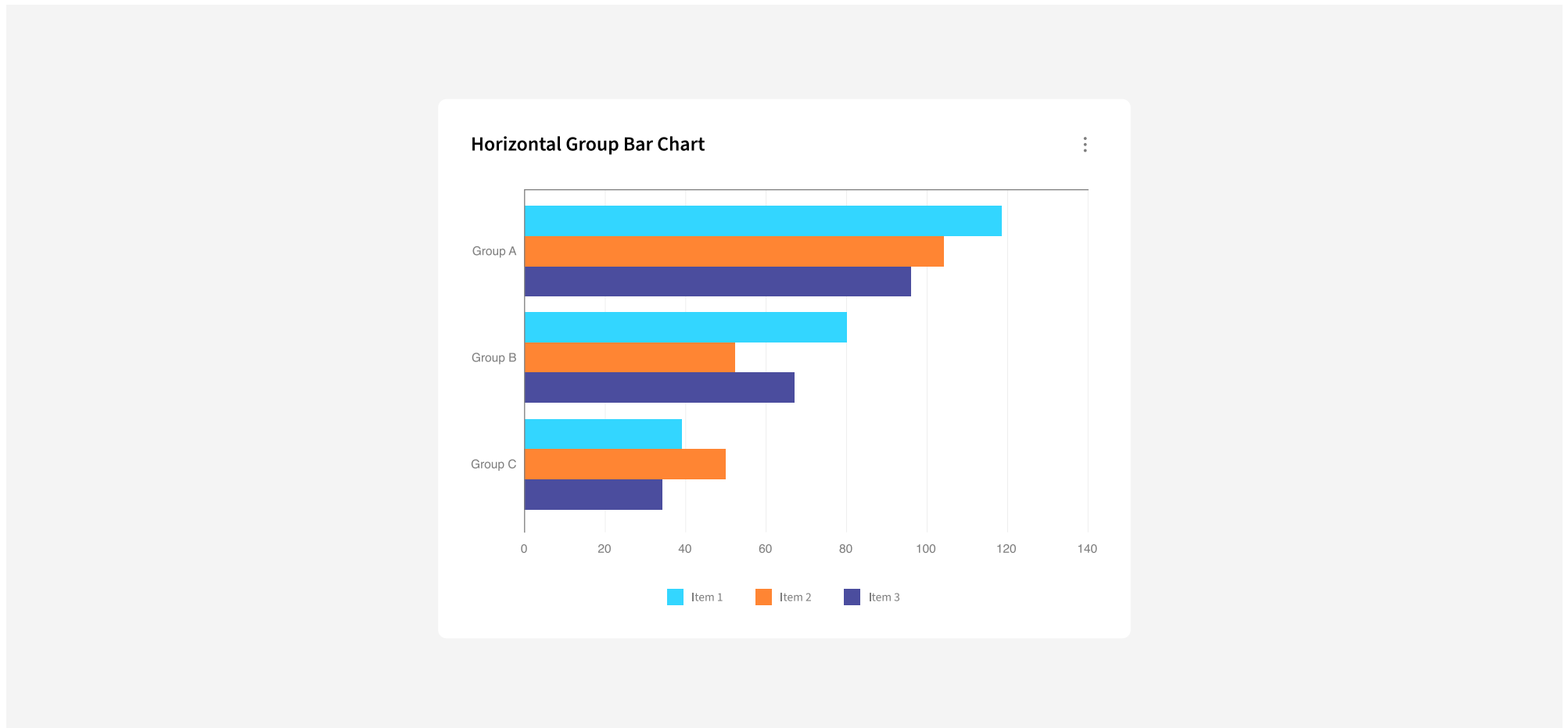


Fig.6.1.61 Horizontal Grouped Bar Chart

Histogram

A histogram is a chart that plots the distribution of a numeric variable's values as a series of bars. Each bar typically covers a range of numeric values called a bin or class; a bar's height indicates the frequency of data points with a value within the corresponding bin. The example is provided in **Fig.6.1.62**.

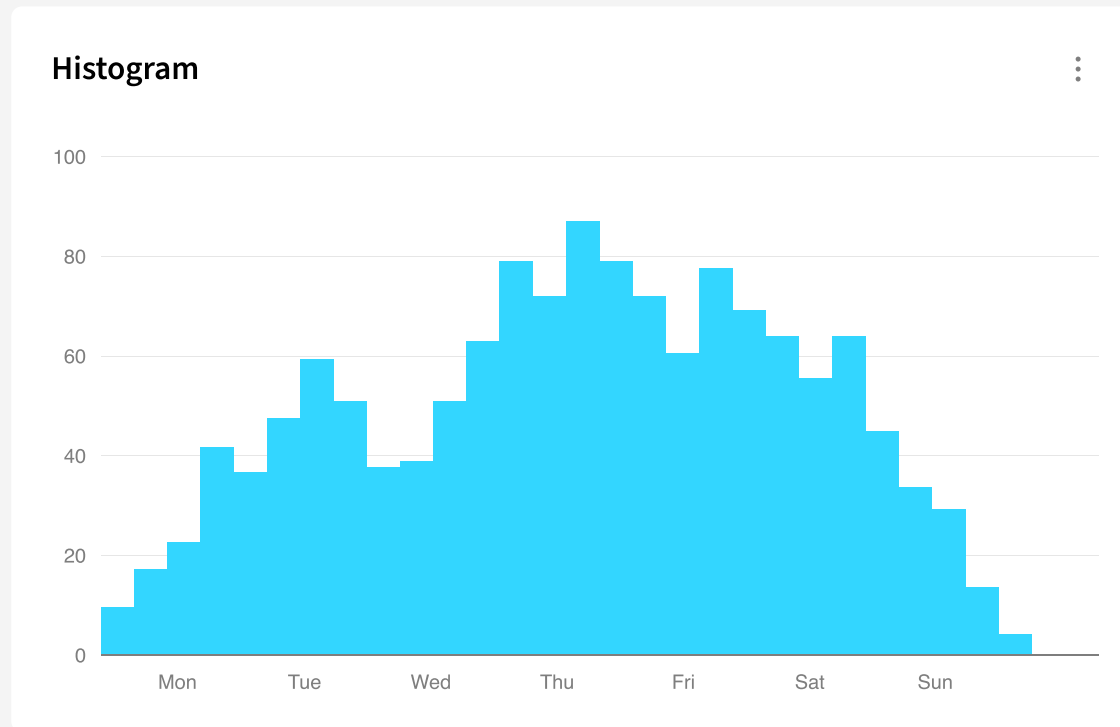
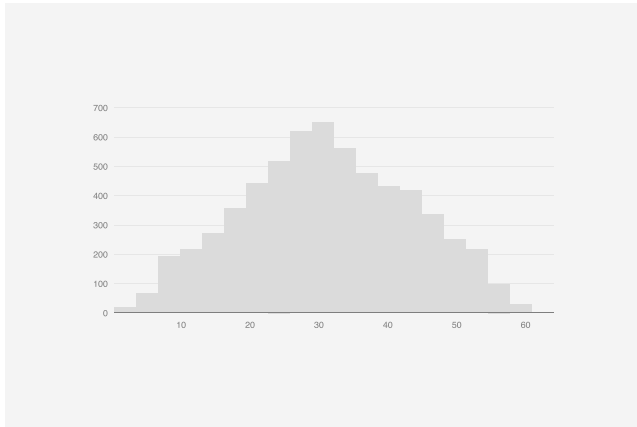


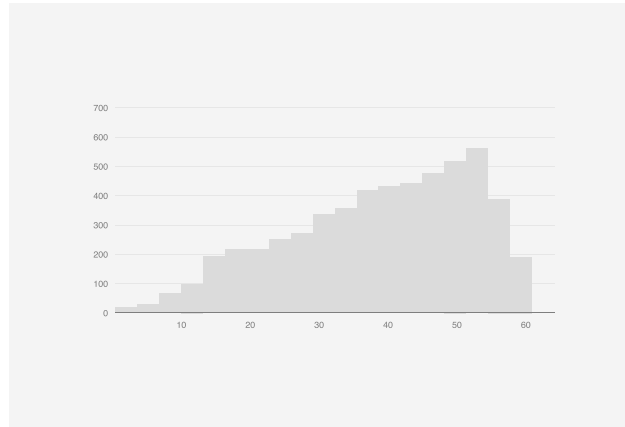
Fig.6.1.62 Histogram

Type of Histograms

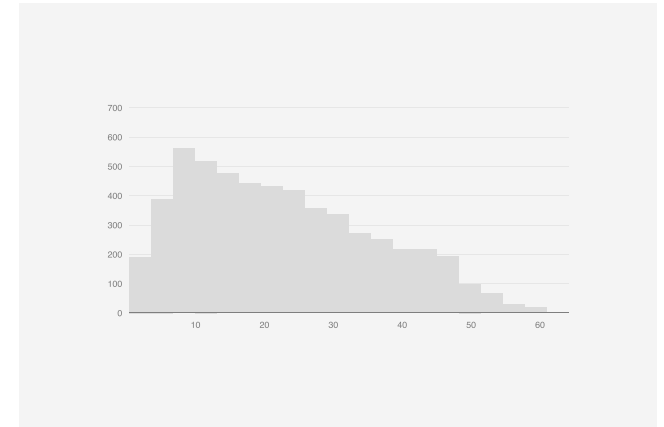
Symmetric, Unimodal



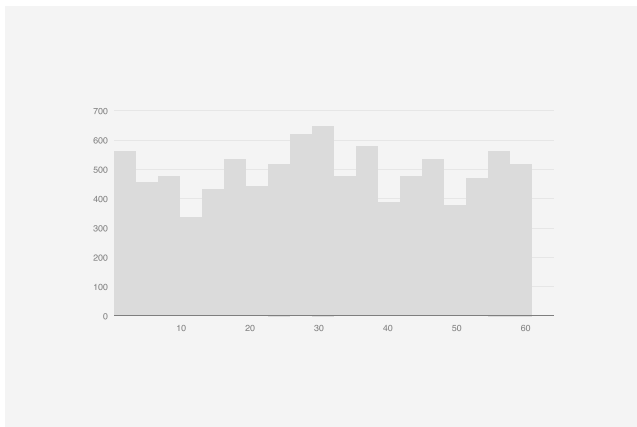
Skew left



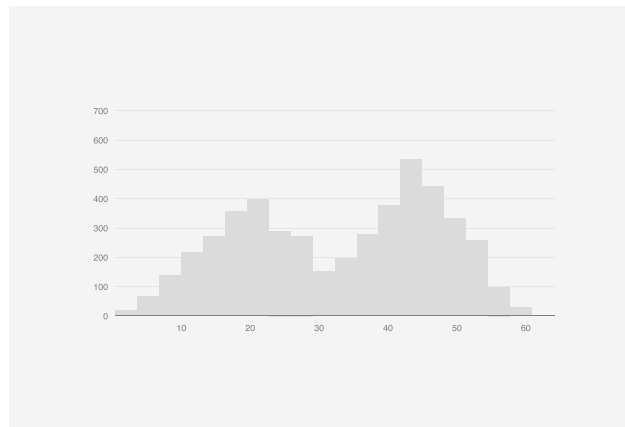
Skew right



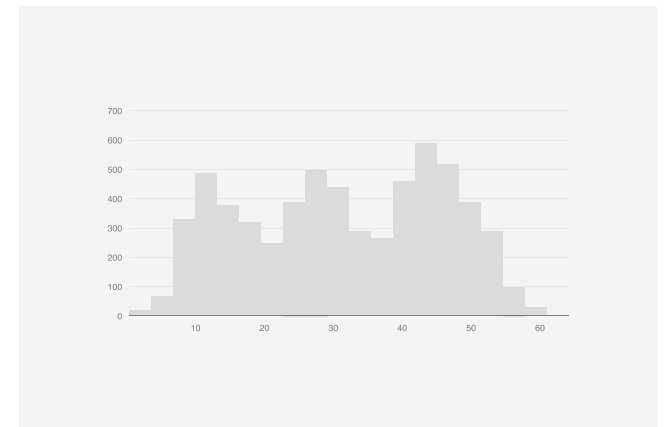
Uniform



Bimodal



Multimodal



Best Practice

Use a zero-valued baseline

An important aspect of histograms is that they must be plotted with a zero-valued baseline. Since the frequency of data in each bin is implied by the height of each bar, changing the baseline or introducing a gap in the scale will skew the perception of the distribution of data. Examples of this principle are shown in **Fig.6.1.63 - Fig.6.1.64**.

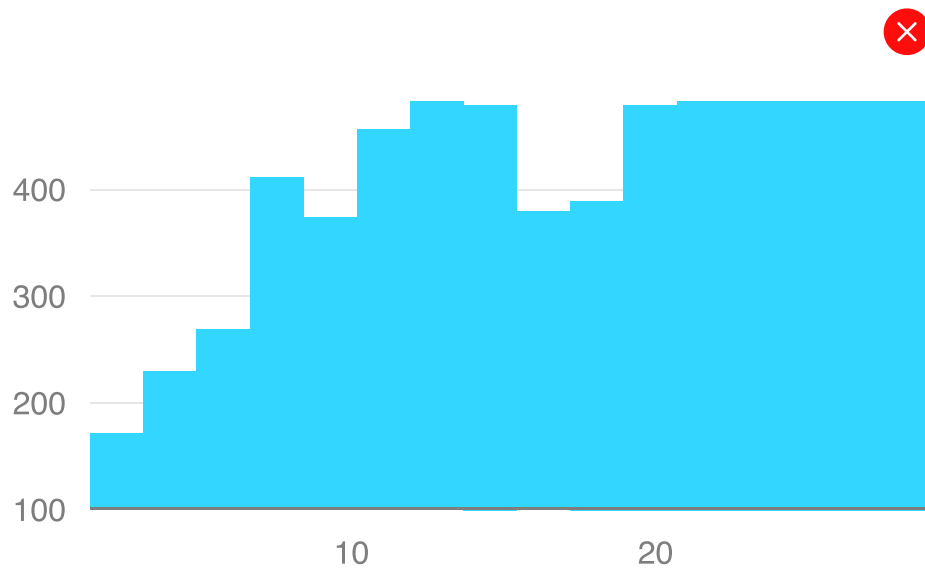


Fig.6.1.63 Histogram Without a common Zero - Valued Baseline

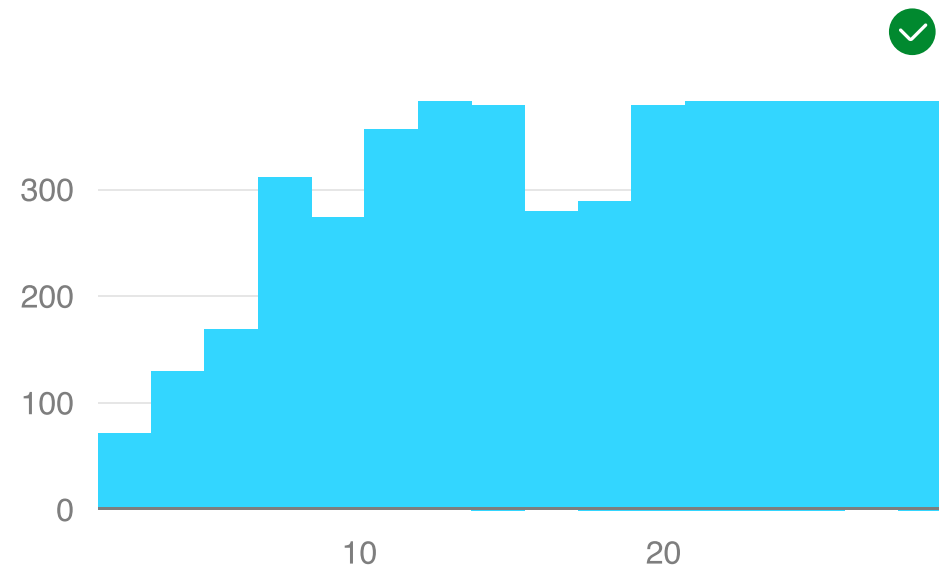


Fig.6.1.64 Histogram using a common Zero - Valued Baseline

Choose an appropriate number of bins

While most tools that generate histograms use default algorithms to define bin boundaries, it's often beneficial to adjust the binning parameters to better represent your data. The size of the bins directly affects the number of bins shown: larger bins result in fewer bins, while smaller bins produce more. Choosing the right bin size is crucial, as it influences how the data is perceived. Too many small bins can introduce visual noise and obscure patterns, while too few large bins may oversimplify the distribution and hide important details. Experimenting with different bin sizes can help you select one that best reveals the underlying structure of the data. The example is provided in **Fig.6.1.65**.

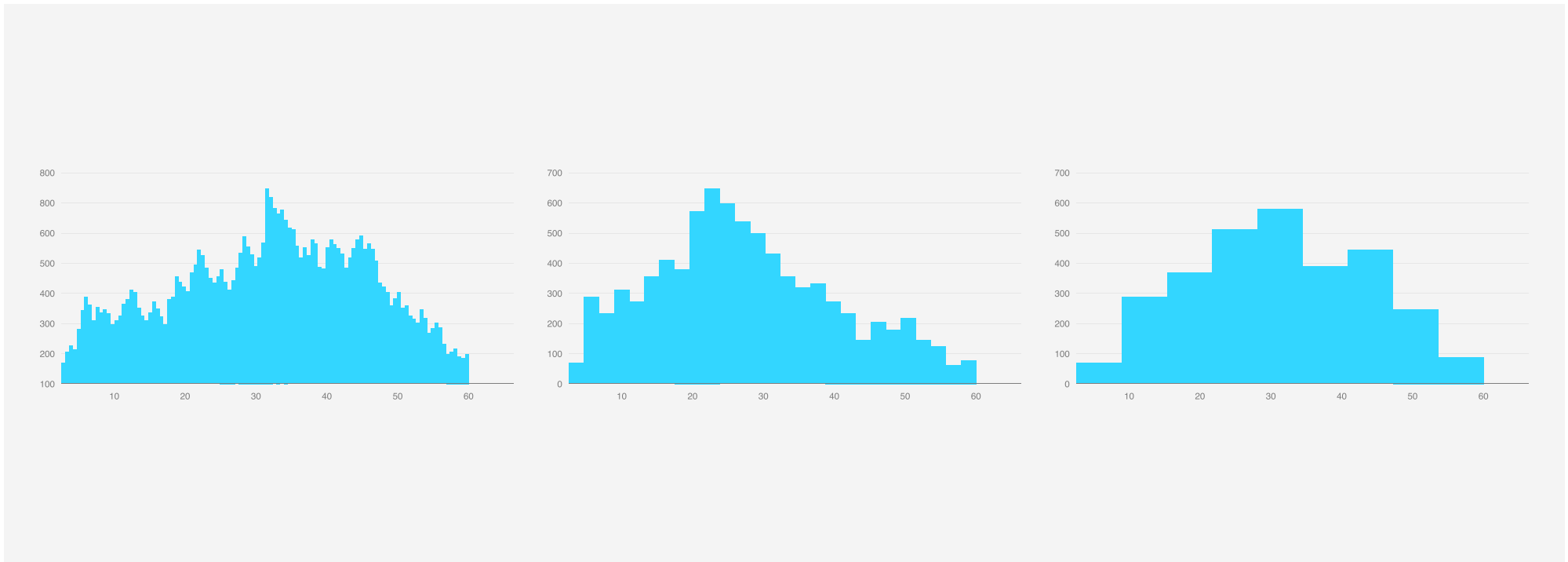


Fig.6.1.65 Choose an Appropriate Number of Bins

Using an excessive number of bins can result in a noisy and cluttered histogram, making it difficult to interpret meaningful patterns. Conversely, using too few bins may oversimplify the data, obscuring important trends and variations.

Line Chart

A line chart displays data points connected by line segments from left to right to show changes in value over a continuous progression. The horizontal axis typically represents time or another continuous variable, while the vertical axis shows the corresponding values of a metric across that progression. The example is provided in **Fig.6.1.66**.

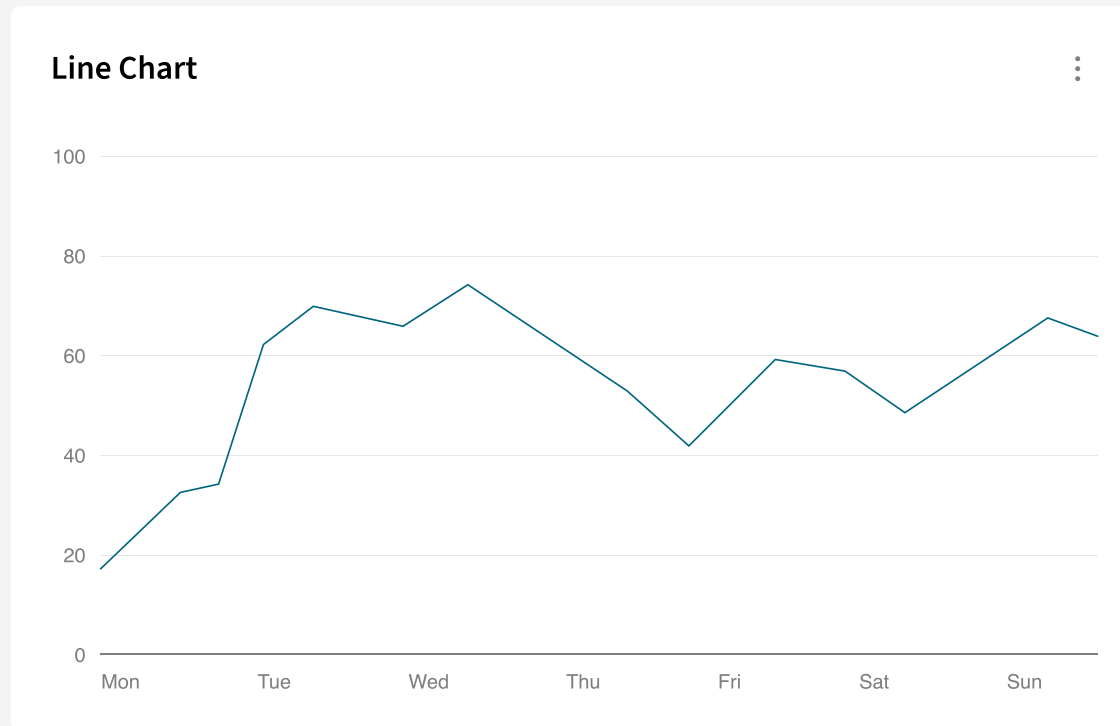


Fig.6.1.66 Line Chart

Best Practice [18]

Choose an appropriate measurement interval

Choosing the right time interval or bin size is key when making a line chart. If the interval is too wide, it can hide important trends, and if it's too narrow, the chart might show too much noise. To get a clear view of the data, it's important to find a balance. You can test different intervals or use your knowledge of the data to decide. The example is provided in **Fig.6.1.67**.

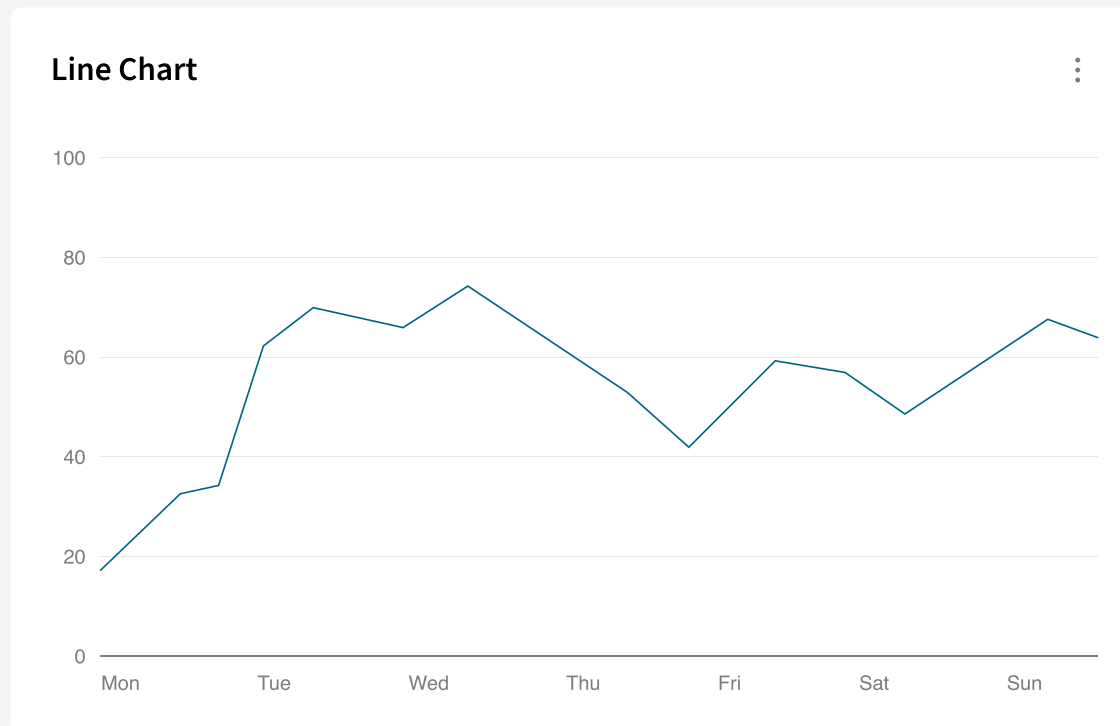


Fig.6.1.67 Choose an Appropriate Measurement Interval

Plotting multiple lines in a line chart

While it's possible to add many lines to a single line chart, it's important not to overload it. In best practice, recommended to keep it to five or fewer lines to avoid making the chart messy and hard to read. However, if the lines are clearly separated and easy to distinguish, you can include more without losing clarity. Examples of this principle are shown in **Fig.6.1.68 - Fig.6.1.69**.

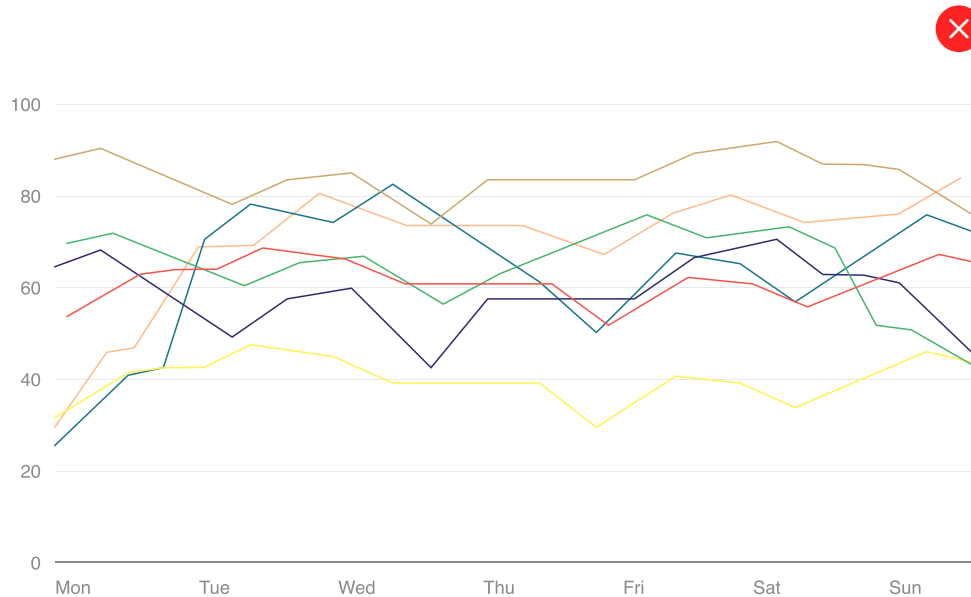


Fig.6.1.68 Plotting too Many Lines in a Line Chart

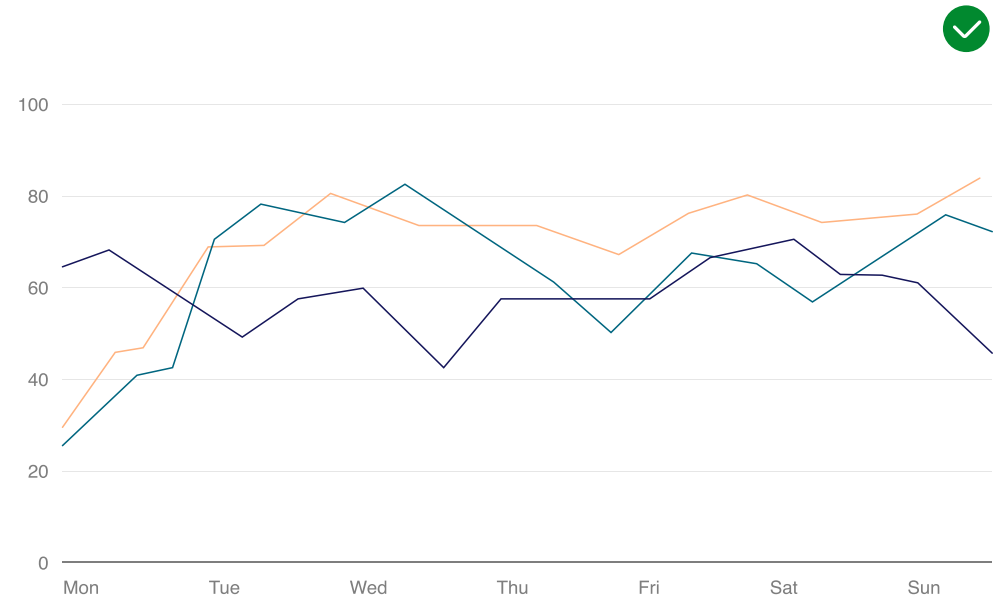


Fig.6.1.69 Plotting Few Lines in a Line Chart

Avoid using dual axes

Using dual axes to compare the trends of different variables can be misleading because each axis has its own scale, which may make unrelated lines appear similar or connected. This can confuse viewers and lead to incorrect interpretations. It also makes the chart harder to read and can distort the importance of changes. A better approach is to normalize the data or use separate charts to clearly show each trend. Examples of this principle are shown in **Fig.6.1.70 - Fig.6.1.71**.



Fig.6.1.70 Using a misleading Dual Axis

Fig.6.1.71 Using a Clear and Accurate Single Axis

Many chart tools let you make dual-axis charts, but it's usually not recommended—whether the axes use the same units or not. A better option is to split the lines into separate charts (called faceting). This way, you can still see how each variable changes over time without being misled into directly comparing them.

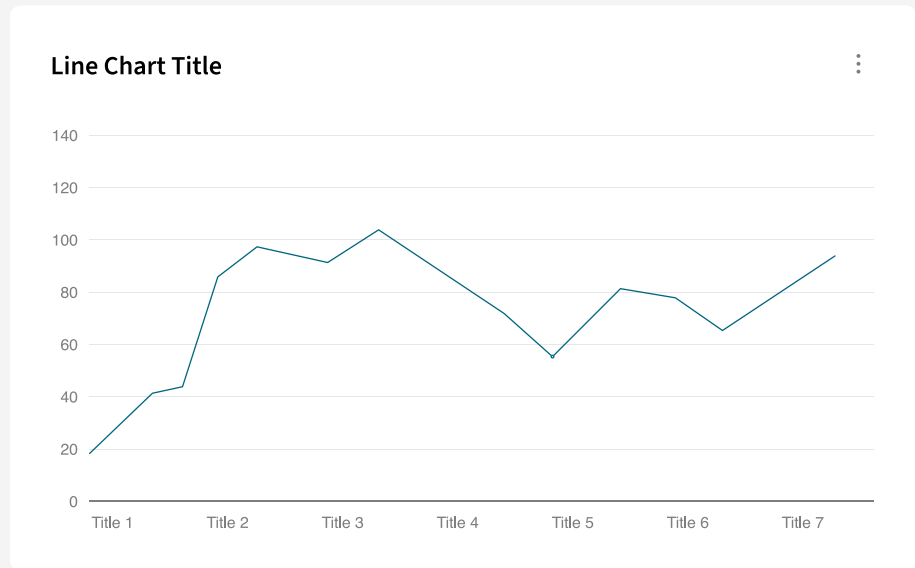
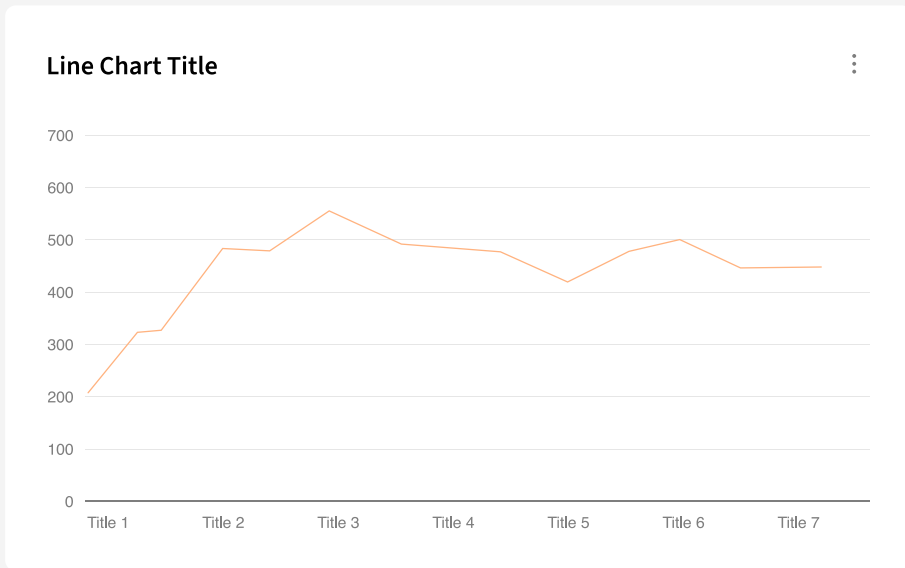


Fig.6.1.72 Separating the Two Lines into Individual Plots using Faceting

Line Chart Options

Include additional lines to show uncertainty

When a line chart shows an average or median, it's helpful to also show how much the data varies. This can be done by adding error bars at each point to show uncertainty, like standard deviation. Another option is to add shaded areas or lines above and below the main line to show the range where most data points fall. These additions help give a clearer picture of both the trend and the data's reliability. The example is provided in **Fig.6.1.73**.

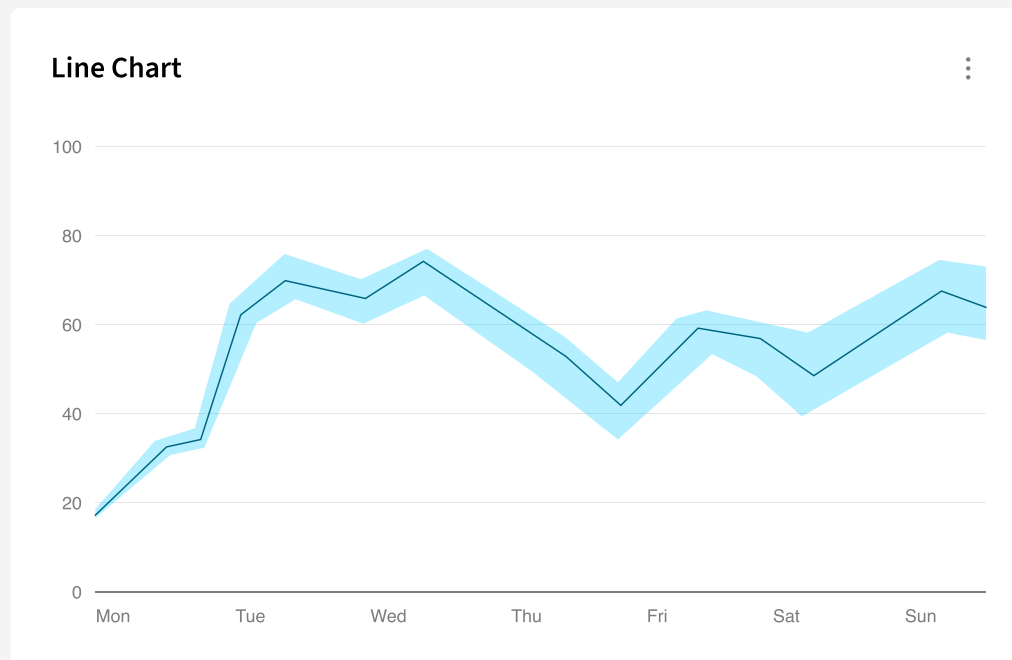


Fig.6.1.73 Line chart with Uncertainty Range

Ridgeline plot

A ridgeline plot is a type of line chart that shows multiple lines stacked vertically but slightly offset from each other. This layout saves space compared to separate charts for each line. Ridgeline plots usually don't show vertical axis labels because they would be hard to read. They are great for comparing many groups based on their frequency distributions, especially when the lines are arranged in a meaningful order that reveals clear patterns. The example is provided in **Fig.6.1.74**.

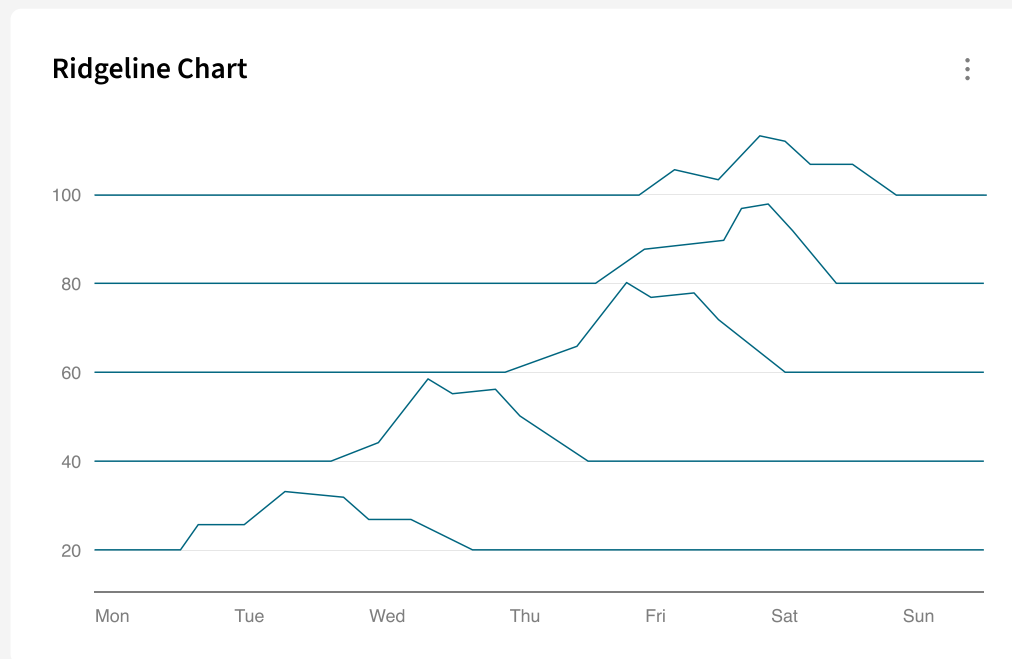


Fig.6.1.74 Ridgeline Plot

Smoothed line chart

The smooth line chart is a variation of the basic line chart, designed to provide a more visually comfortable experience. It is especially useful for emphasizing overall trends rather than exact values. The example is provided in **Fig.6.1.75**.

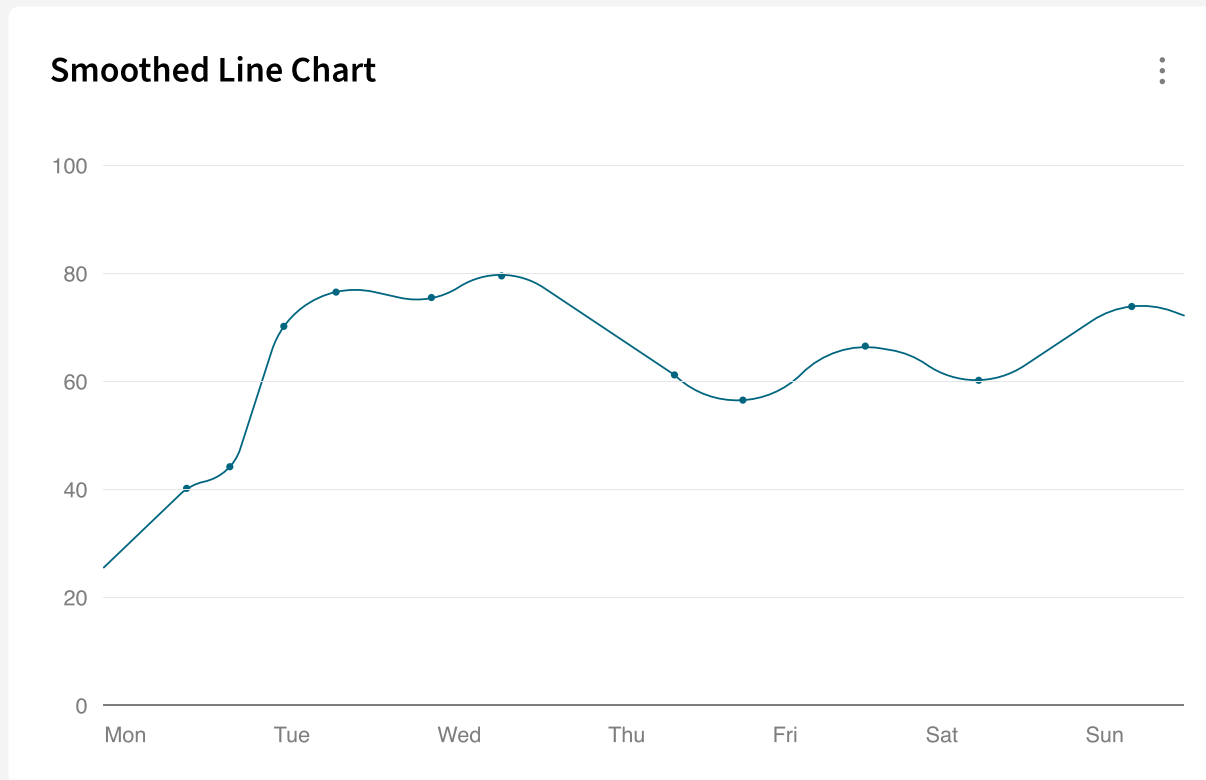


Fig.6.1.75 Smoothed Line Chart

Pie Chart

Donut charts are a type of circular statistical graphic, similar to pie charts, but with a central hole. They display data in a ring shape, where the arc length of each slice corresponds to the proportion of the whole it represents. The central area of the chart remains empty, allowing for additional information or annotations. The example is provided in **Fig.6.1.76**.

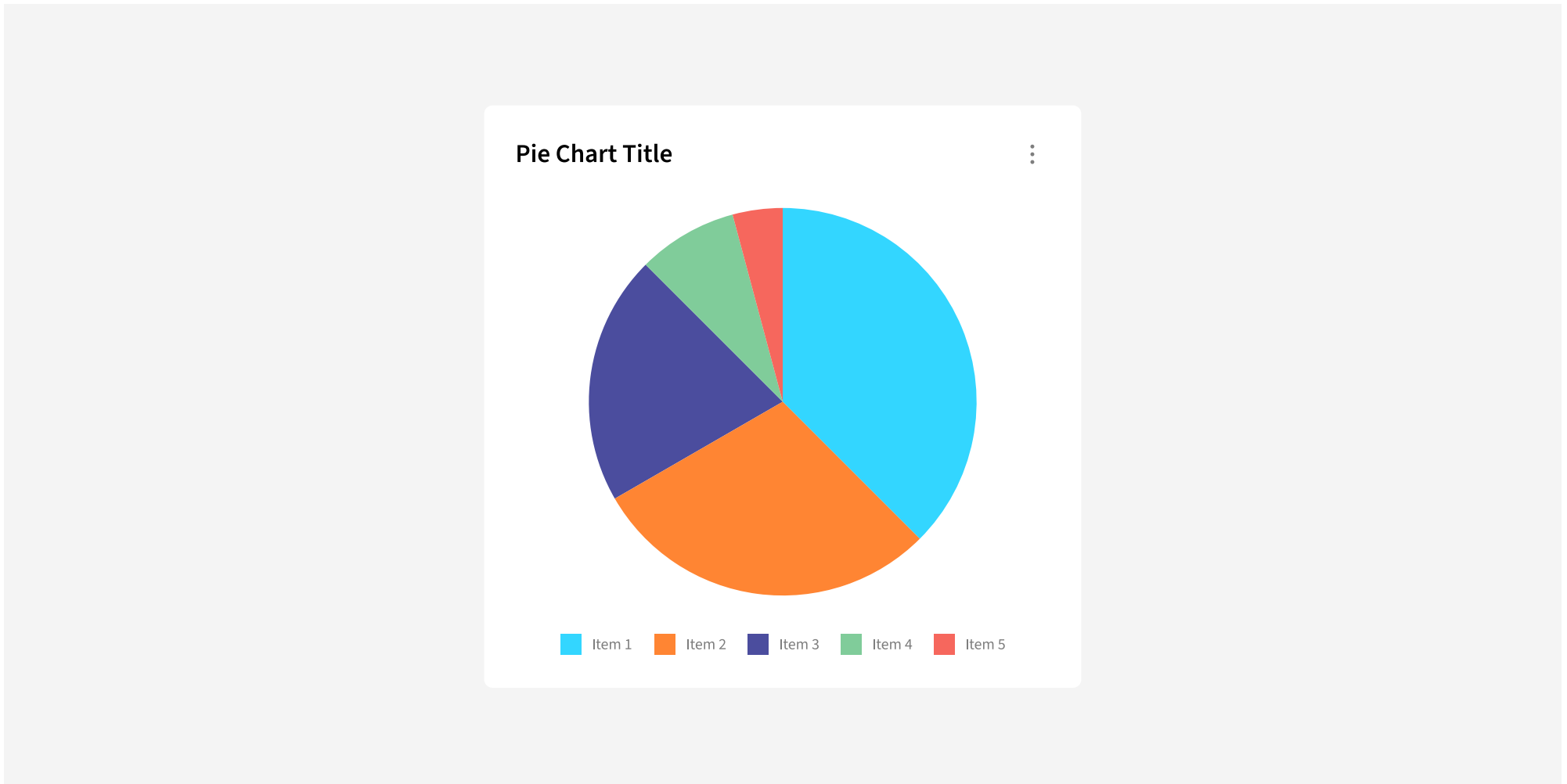


Fig.6.1.76 Pie Chart

Best Practice

Include annotation

Pie charts make it hard to judge exact values—especially when slices are close in size. While it's easy to spot simple fractions like 1/2, 1/3, or 1/4, anything more precise becomes difficult to compare. Also, since pie charts usually don't have tick marks or scales, they aren't great for showing actual amounts. That's why it's common to include annotations or labels directly on or near the slices—to help people understand the data more accurately. The example is provided in **Fig.6.1.77**.

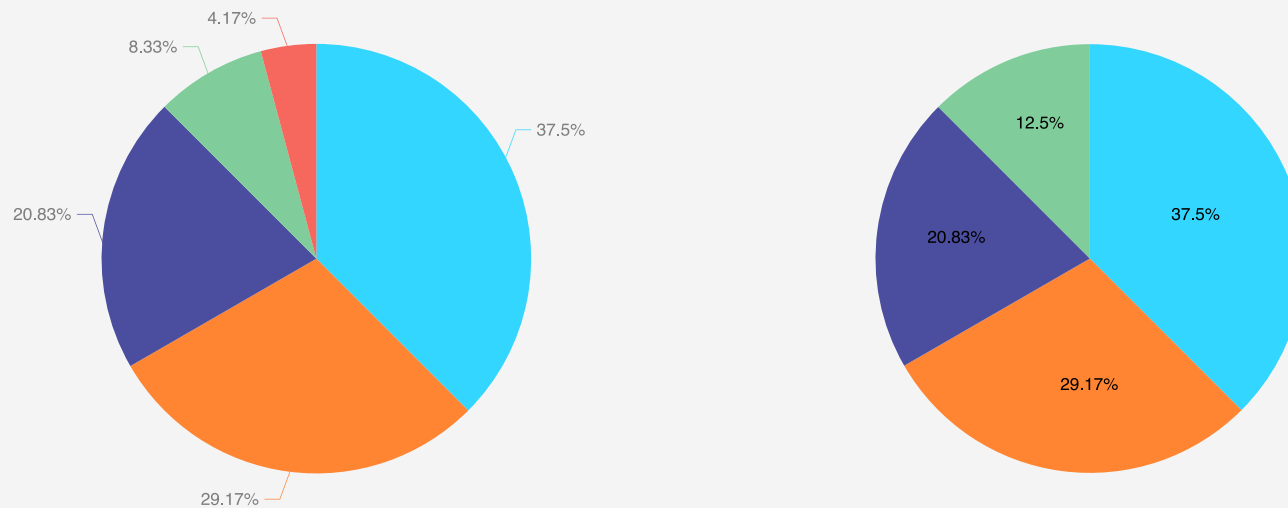


Fig.6.1.77 Pie Chart with Annotation

Limit the number of pie slices

Pie charts with many slices can be difficult to read. Small slices are often hard to see, and it becomes challenging to choose enough distinct colors for all categories. While recommendations vary, it's generally best to use a different chart type if you have more than about five categories. Alternatively, you can group the smaller slices into a single “Other” category and use a neutral gray to represent it, keeping the chart cleaner and easier to interpret. The example is provided in **Fig.6.1.78**.

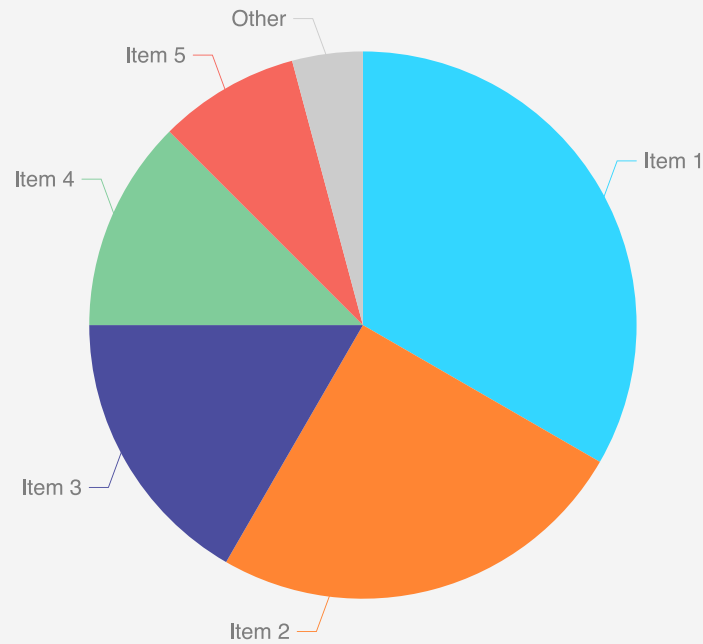


Fig.6.1.78 Limit the Number of Pie Slices

Pie Chart Options

Doughnut plot

A doughnut plot is simply a pie chart with a central circle removed. For the most part, there aren't significant differences in readability between a pie chart and donut chart, so the choice of a doughnut over a standard circle is mostly that of aesthetic. One small boon for the ring shape is that the central area can be used for additional information or to report statistics. The example is provided in **Fig.6.1.79**.

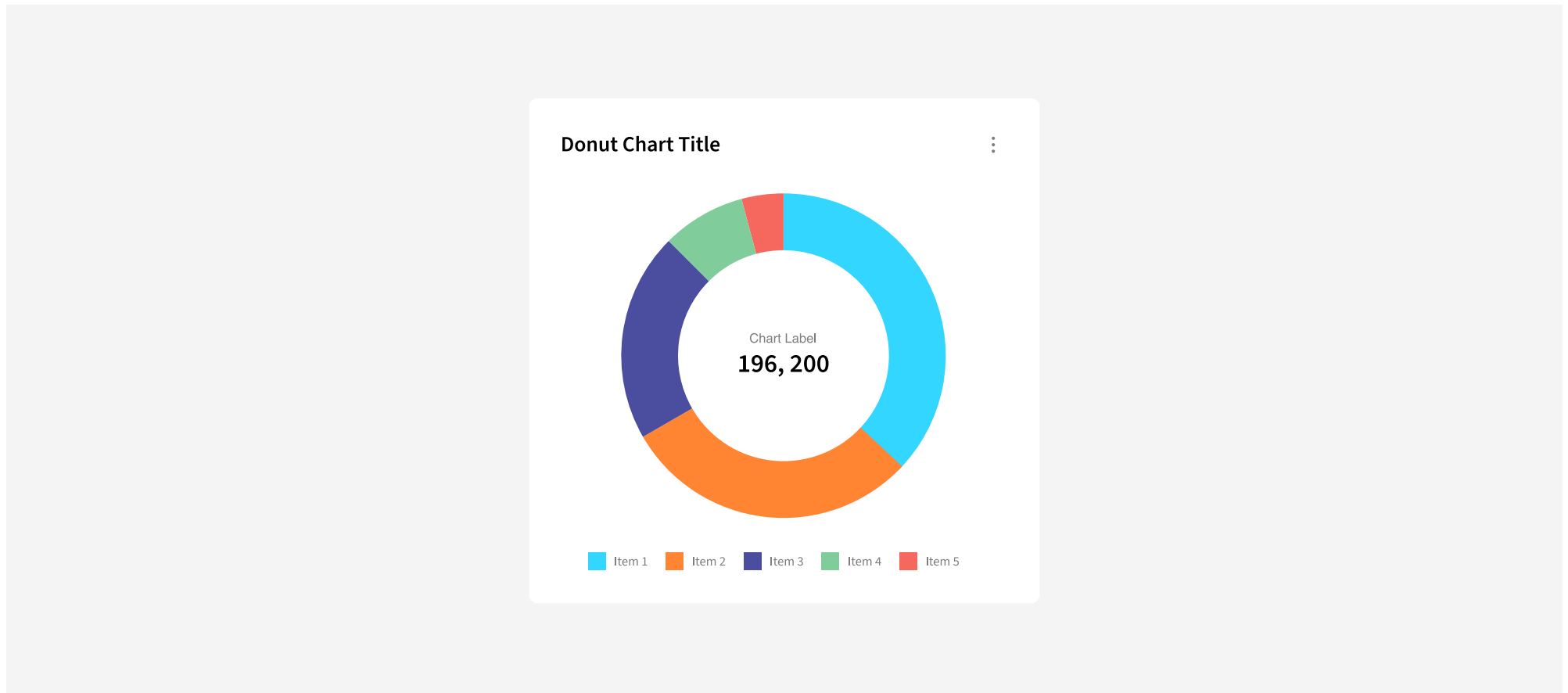


Fig.6.1.79 Doughnut Plot

Radar Chart

Radar charts are circular charts that show several variables at once. Each line from the center represents a different category, and data points are plotted on these lines and connected to form a shape. This makes it easy to compare patterns and relationships across multiple dimensions in a single view. The example is provided in **Fig.6.1.80**.

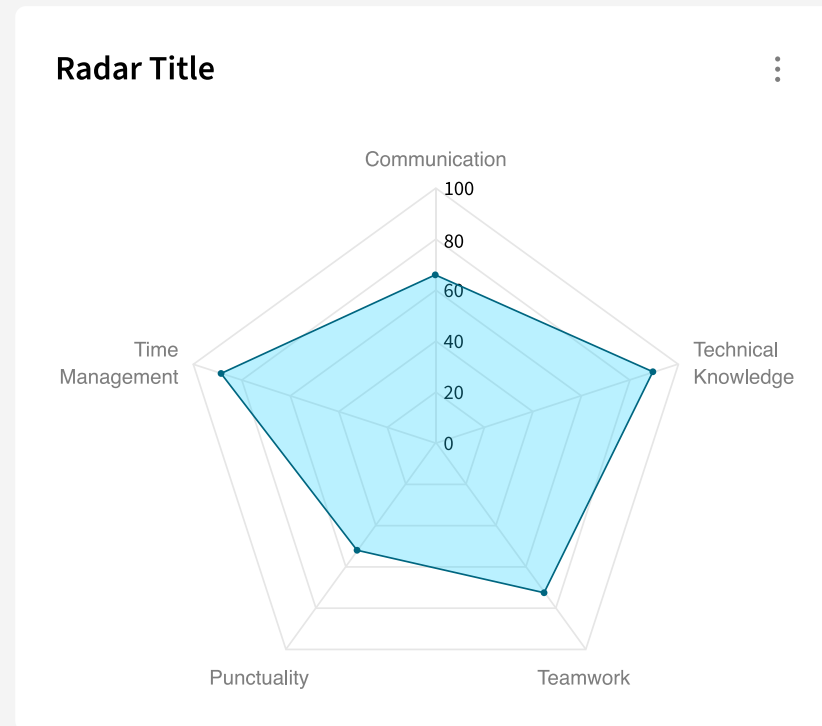


Fig.6.1.80 Radar Chart

Interpreting a radar chart

Radar charts are useful for comparing multiple quantitative variables at once, making it easy to spot similarities, outliers, or performance highs and lows across a dataset. Each variable is displayed on its own axis, radiating from a central point, with all axes evenly spaced and scaled equally. Data points are plotted along these axes and connected to form a polygon, while grid lines help guide interpretation. This format provides a clear visual overview of how different variables relate to each other, as illustrated in **Fig.6.1.81**.

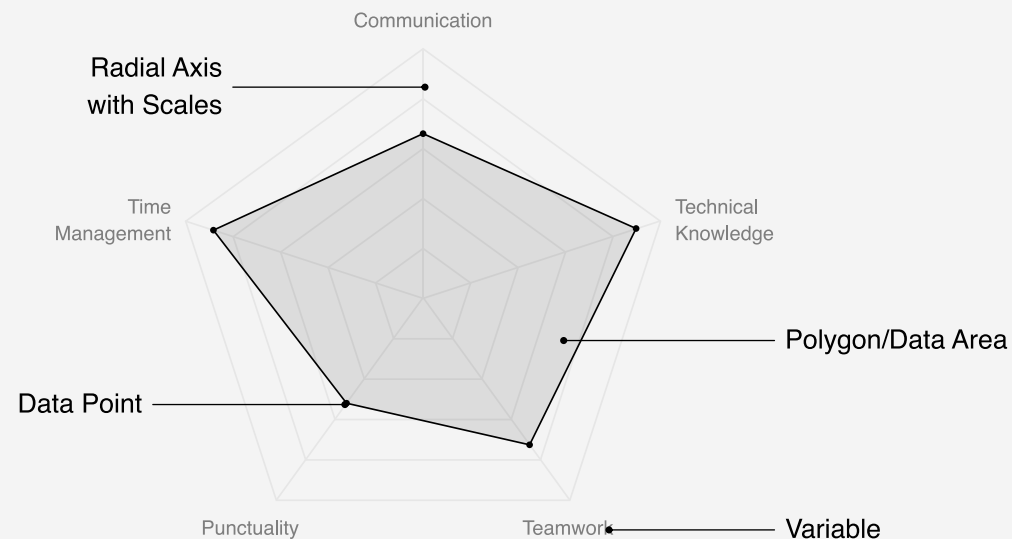


Fig.6.1.81 Interpreting a Radar Chart

Best Practice

Radar chart comparing multiple data points

Radar charts can be visually complex, with multiple lines and overlapping areas that make them hard to read—especially when comparing more than two or three data points. Since interpreting values around a circle is harder than along a straight line, it's important to use radar charts only when they clearly support your message. They're best suited for highlighting outliers or comparing a small number of items across multiple categories. For larger comparisons, consider a simpler chart type. The example is provided in **Fig.6.1.82**.

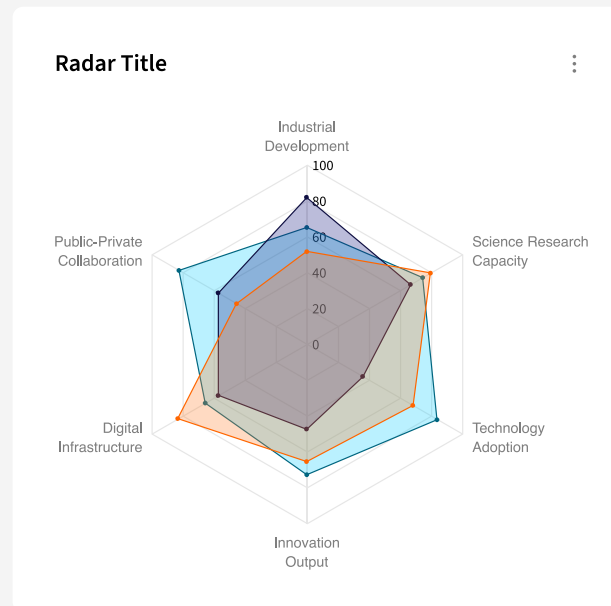


Fig.6.1.82 Radar Chart Comparing Multiple Data Points

Limit your radar chart axes

To ensure clarity and readability, it is recommended to use radar charts with 5 to 8 axes (variables) and no more than 5 polygons (categories or entities), if possible. Staying within these limits helps prevent visual clutter and makes the chart easier to interpret—especially when comparing multiple dimensions, as shown in **Fig.6.1.83**.

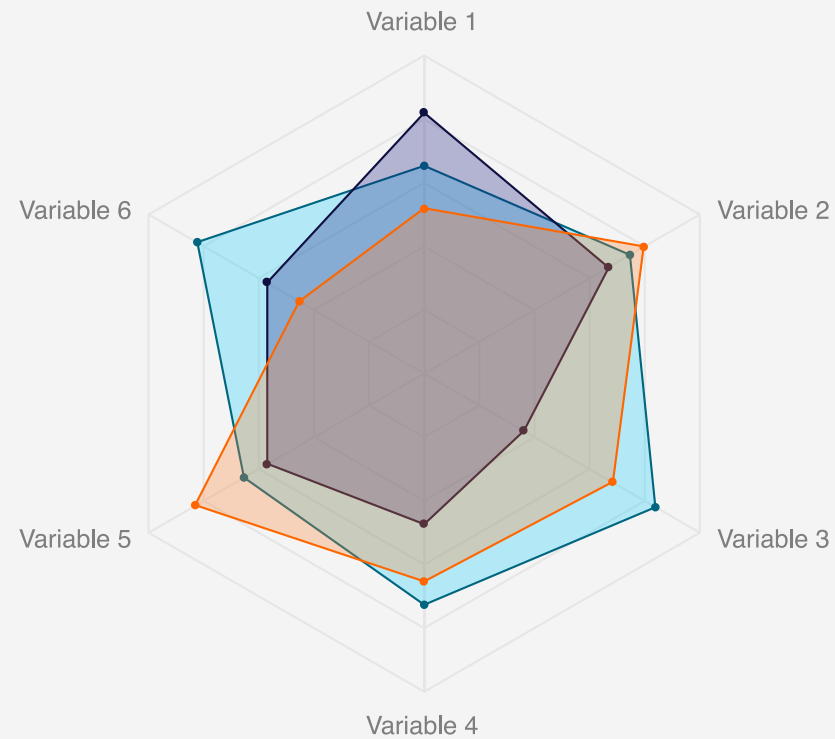


Fig.6.1.83 Recommended Limits for Radar Chart Axes and Polygons

Radar Chart Options

Transparency radar chart

Radar charts can be a visually engaging way to show data, especially when comparing multiple variables. If you're plotting more than one dataset, use transparency so all layers remain visible. However, use radar charts carefully—they're best for specific cases, and sometimes a different chart type may work better. The example is provided in **Fig.6.1.84**.

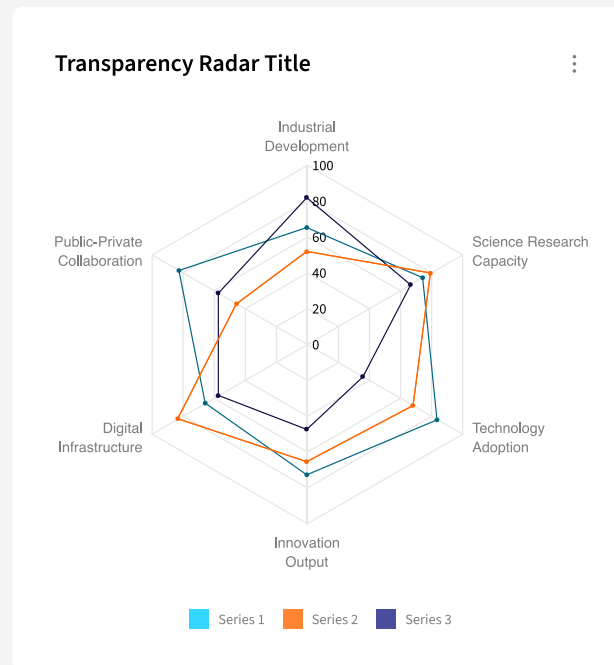


Fig.6.1.84 Transparency Radar Chart

Polar chart

A polar chart showing different series types on a radial axis. Polar charts, also known as a radar charts, are often used to compare multivariate data sets. A polar chart in Highcharts is simply a cartesian chart where the X axis is wrapped around the perimeter. It can render common cartesian series types like line, column, area or arearange. The example is provided in **Fig.6.1.85**.

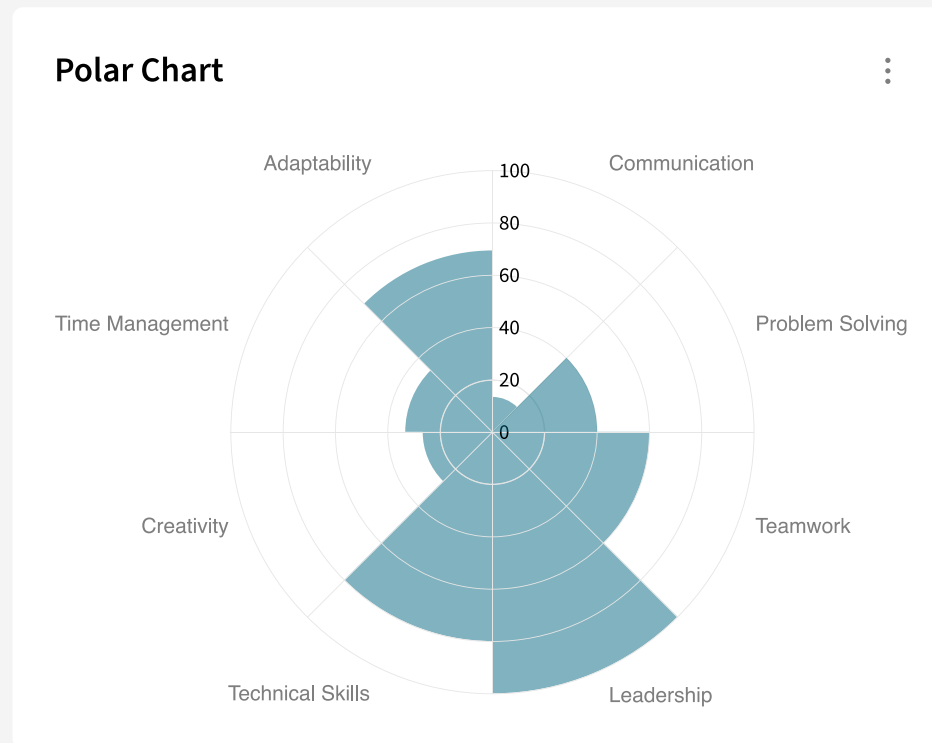


Fig.6.1.85 Polar Chart

Ridgeline Plot

A ridgeline plot is a data visualization technique used to display the distribution of a numerical variable across multiple groups. It typically presents either histograms or density plots, each aligned to a common horizontal axis and slightly overlapped vertically. This format effectively highlights differences in distribution while conserving space and maintaining visual clarity. The example is provided in **Fig.6.1.86**.

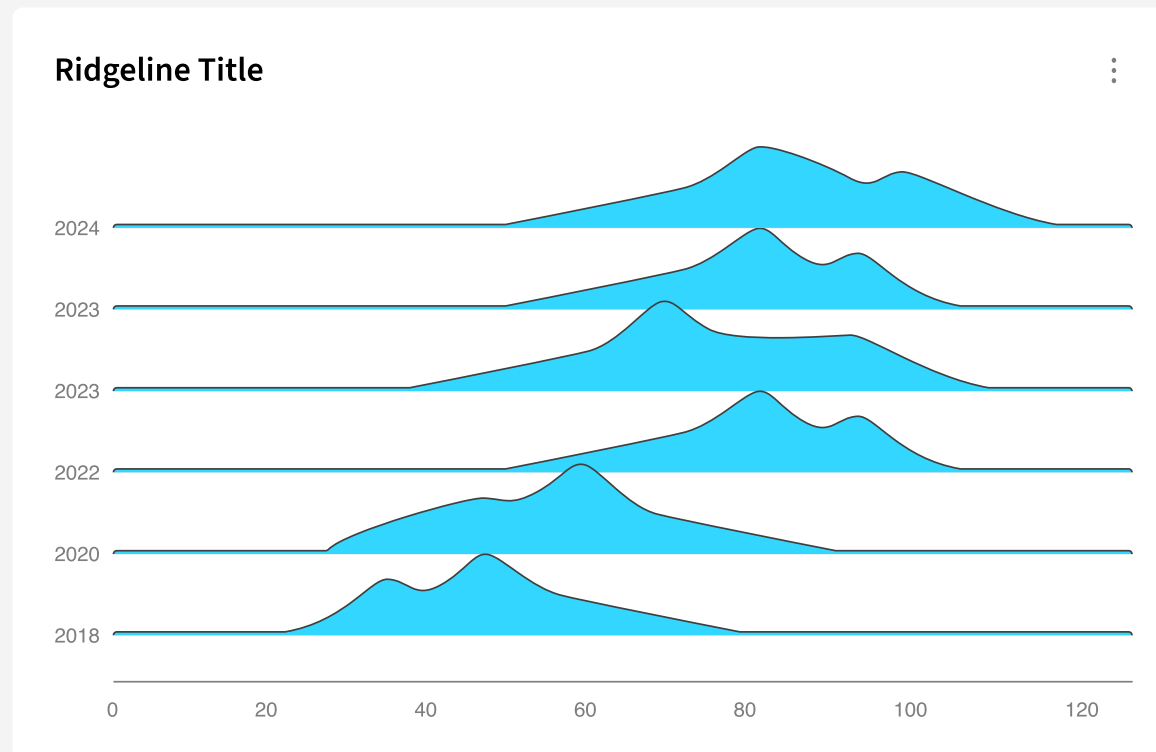


Fig.6.1.86 Ridgeline Plot

Best Practice

Multiple ridgeline plot

Multiple ridgeline plots can display overlapping distributions within the same data group, allowing for detailed comparisons both across different groups and within individual groups, as shown in **Fig.6.1.87**. This approach enhances the ability to observe patterns and variations in complex datasets.

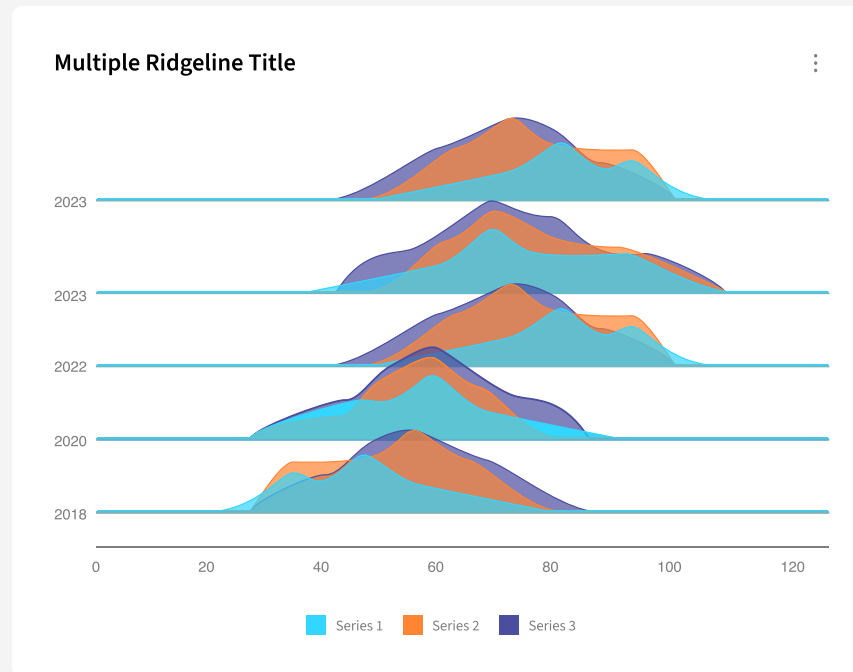


Fig.6.1.87 Multiple Ridgeline Plot

Selecting effective colors and legends

Using clear colors and well-defined legends in a ridgeline plot is essential for readability and accurate interpretation. Distinct color assignments help differentiate overlapping groups, while a clearly labeled legend enables users to quickly associate each color with its corresponding category. The example is provided in **Fig.6.1.88**.

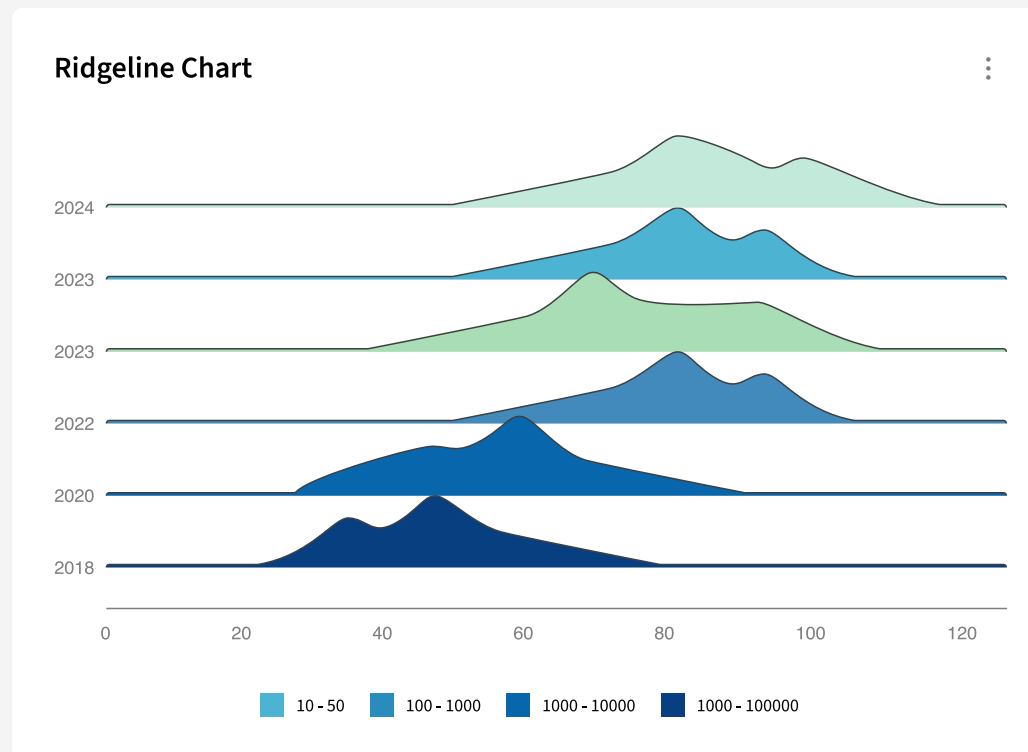


Fig.6.1.88 Selecting effective colors and Legend

Consider the order of groups

Properly ordering groups in a ridgeline plot is essential for clear and meaningful insights. Organizing groups in a logical sequence—such as by time, magnitude, or category—enables users to easily identify trends, compare distributions, and recognize patterns. The example is provided in **Fig.6.1.89**.

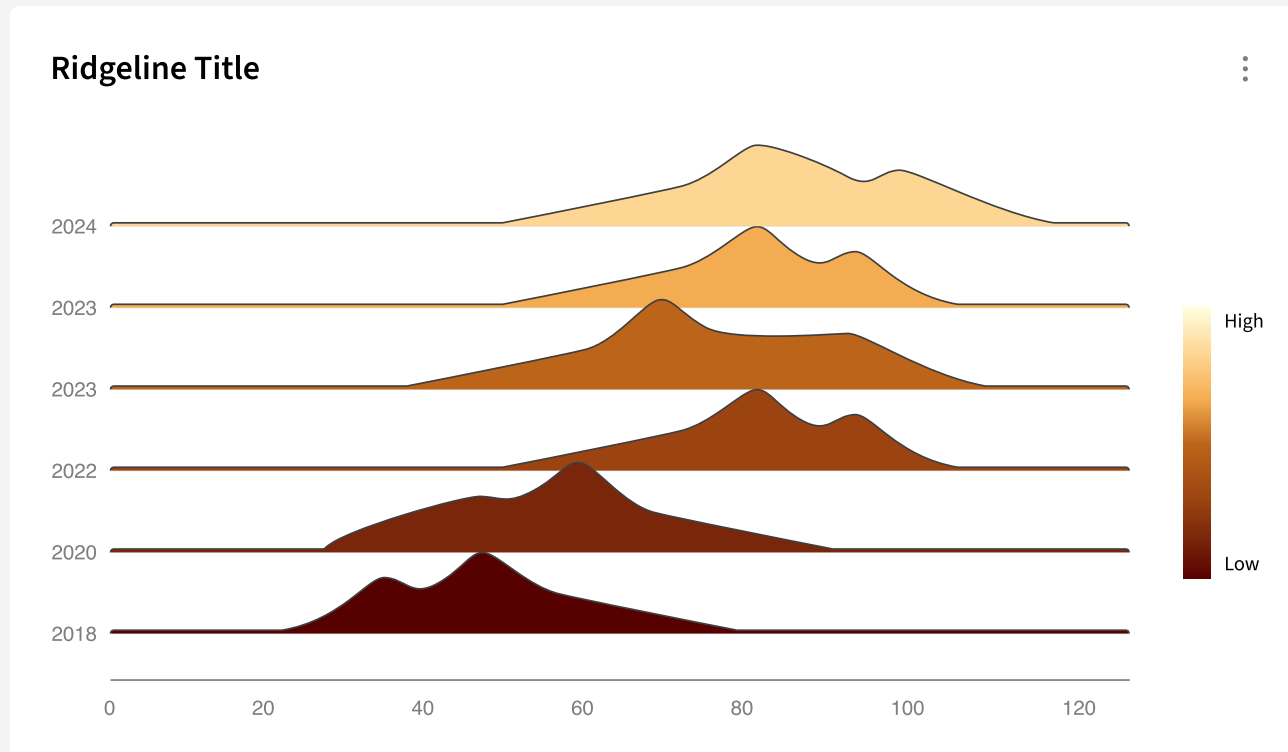


Fig.6.1.89 Ordering Groups in a Ridgeline Plot

Ridgeline Options

Histogram

Ridgeline plots can be used to display histograms aligned along a common horizontal axis as an alternative to density plots, as illustrated in **Fig.6.1.90**. However, this method typically offers limited analytical value compared to using smooth density estimates.

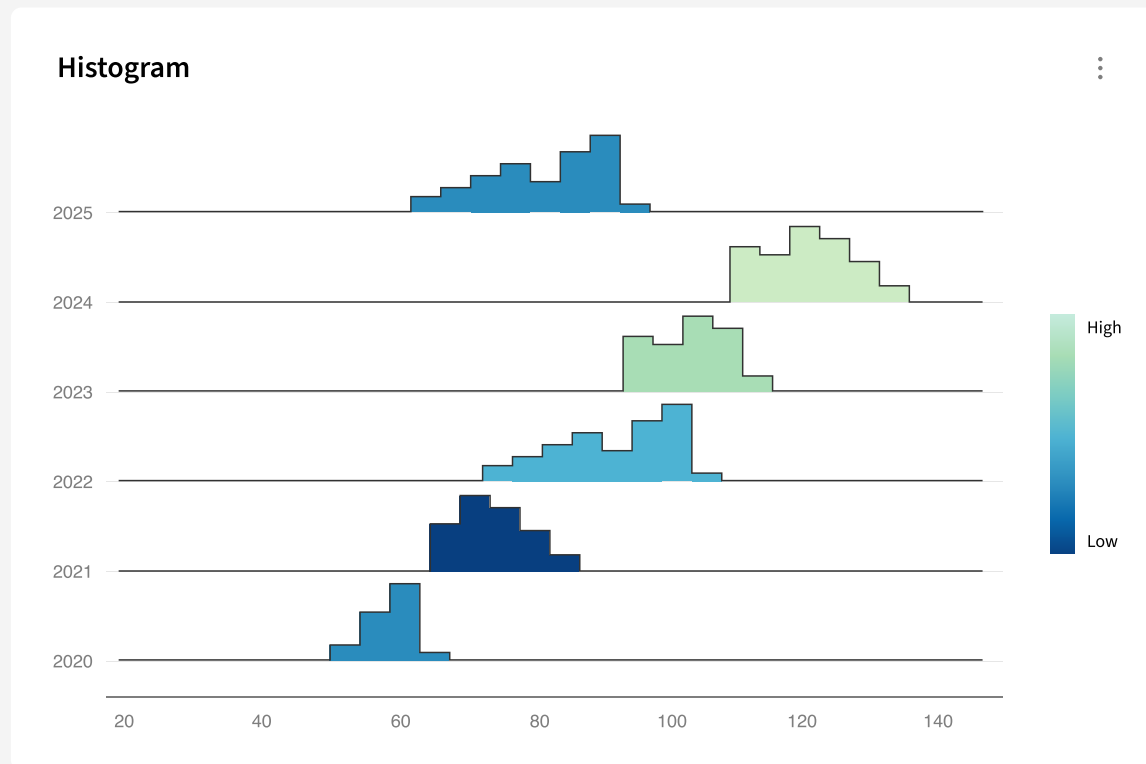


Fig.6.1.90 Histograms Plotted in a Ridgeline Format

Scatter Plot

A scatter plot uses dots to represent values of two numeric variables. Each dot's position along the horizontal and vertical axes corresponds to the values of an individual data point. Scatter plots are commonly used to visualize and analyze relationships or correlations between variables. The example is provided in **Fig.6.1.91**.

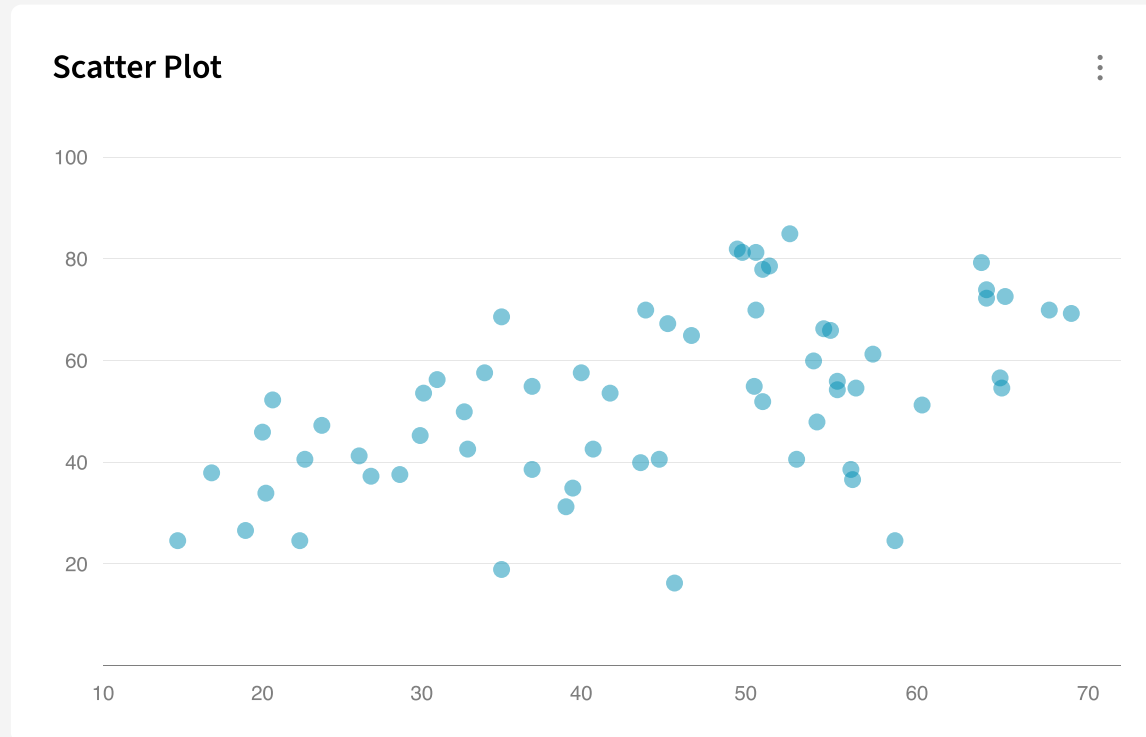


Fig.6.1.91 Scatter Plot

Best Practice

Overplotting

When a plot has too many data points, they can overlap and make it hard to see patterns—this is called overplotting. To fix it, you can show only a sample of the points, make the points smaller or transparent, or use a heatmap that shows data density with colors instead of individual points. The example is provided in **Fig.6.1.92**.

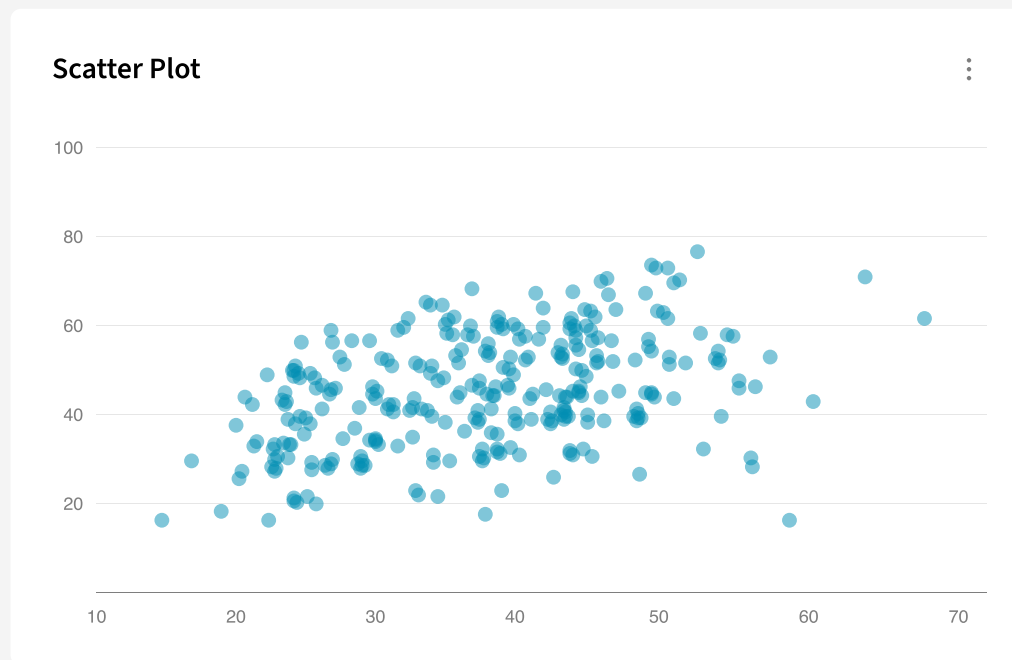


Fig.6.1.92 Overplotting Scatter Plot

Scatter Plot Options

Add a trend line

When using a scatter plot to explore the relationship between two variables, people often add a trend line. This line shows the best mathematical fit to the data and helps reveal how strong the relationship is. It can also highlight unusual points that might be affecting the trend. The example is provided in **Fig.6.1.93**.

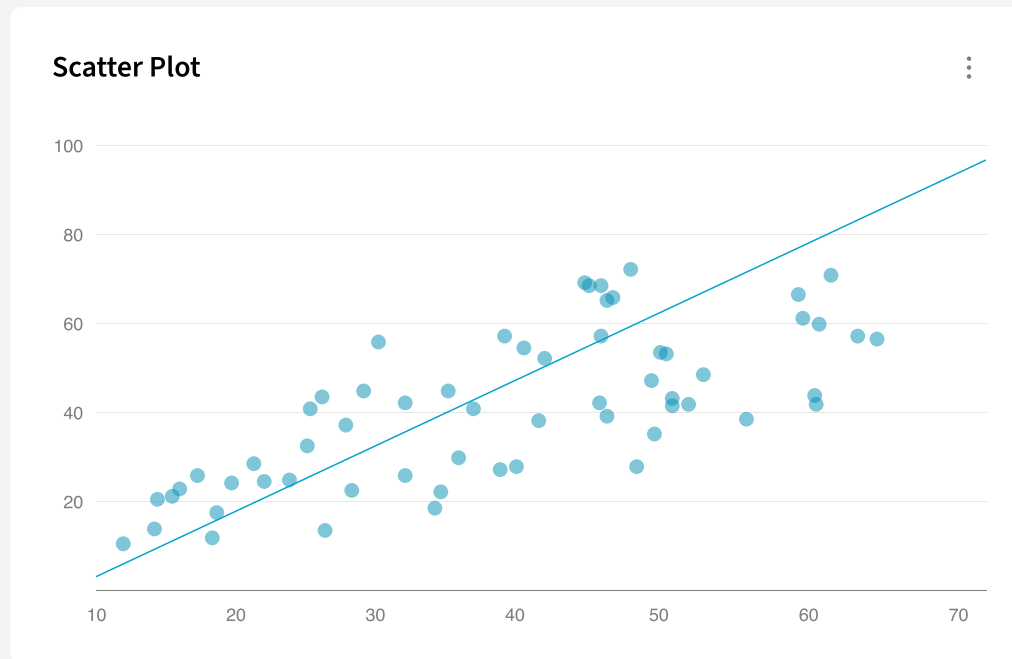


Fig.6.1.93 Trend Line in Scatter Plot

Categorical color

For scatter plots where point color represents a categorical variable, it is advisable to use the MISTI color palettes for consistency and visual clarity. Keep the number of categories to a maximum of six to avoid confusion, and ensure a clear legend is provided to explain the color meanings. The example is provided in **Fig.6.1.94**.

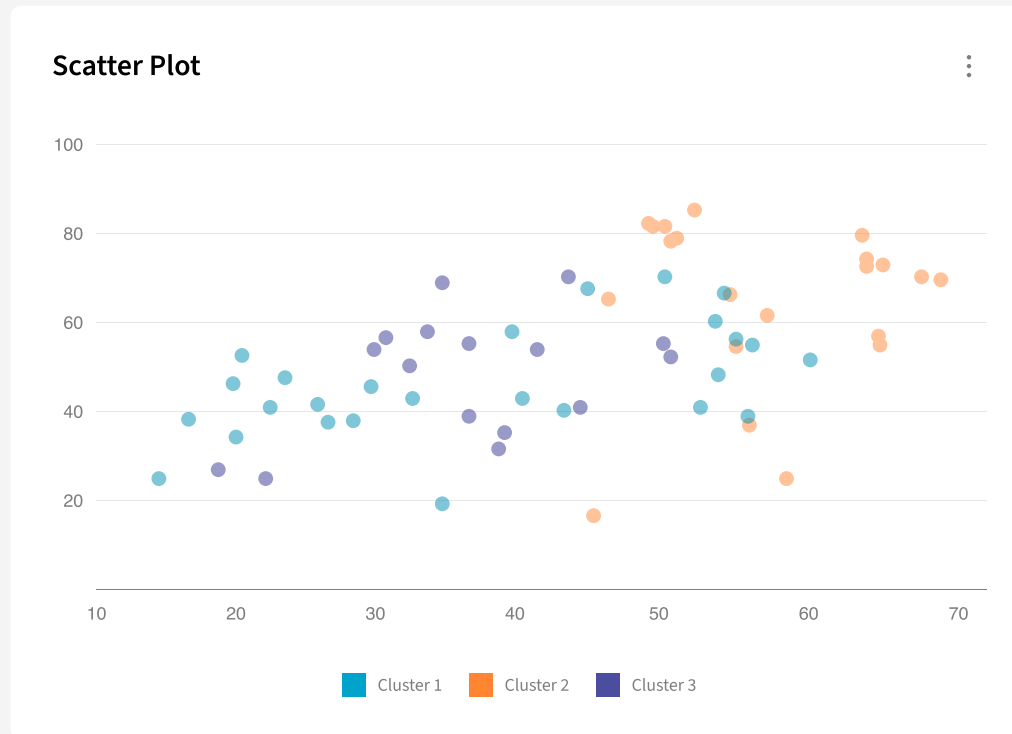


Fig.6.1.94 Trend Line in Scatter Plot

Using sequential color

Hue can be used to represent numeric values as an alternative to size or position. Rather than assigning distinct colors to categories, a continuous color gradient is applied to convey the range of values effectively. The example is provided in **Fig.6.1.95**.

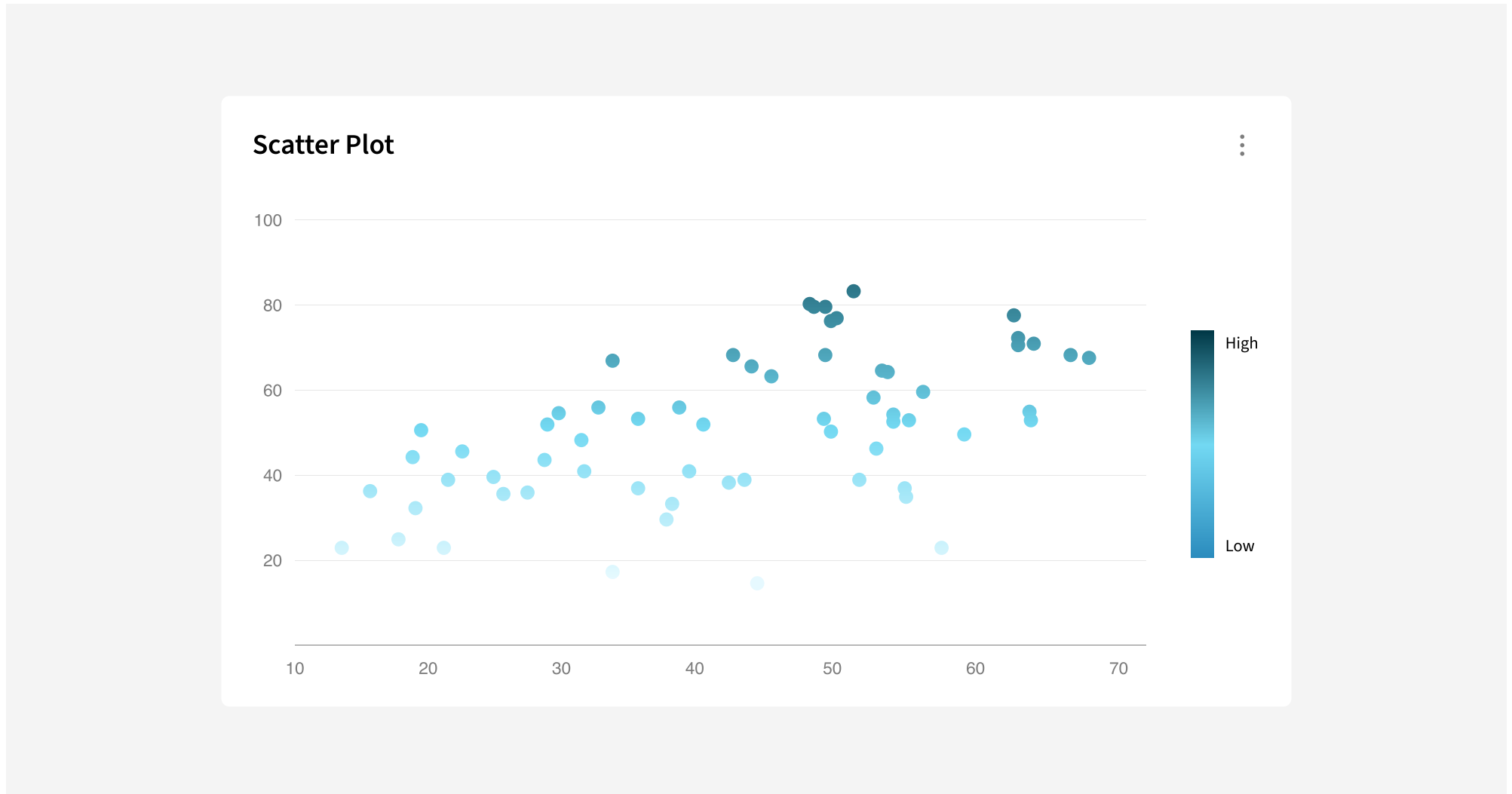


Fig.6.1.95 Using Sequential Color in a Scatter Plot

Stacked Bar Chart

The stacked bar chart extends the standard bar chart from looking at numeric values across one categorical variable to two. Each bar in a standard bar chart is divided into a number of sub-bars stacked end to end, each one corresponding to a level of the second categorical variable. The example is provided in **Fig.6.1.96**.

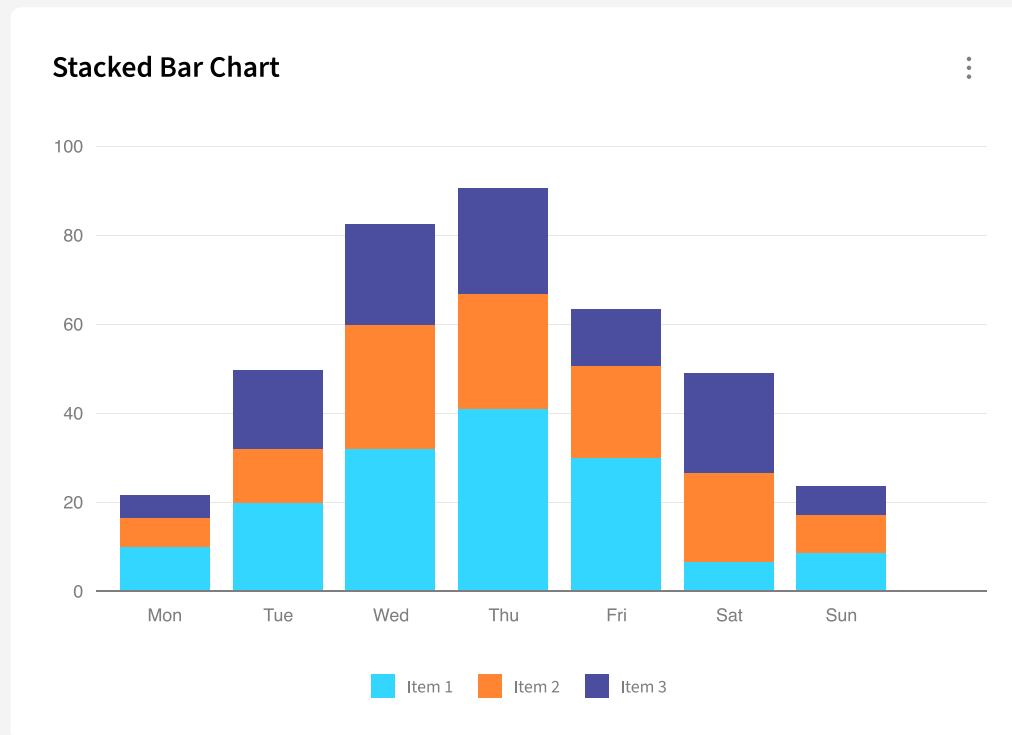


Fig.6.1.96 Stacked Bar Chart

Best Practice

Ordering of category levels

In a stacked bar chart, it's important to carefully choose the order of both categorical variables. A good rule is to order bars from largest to smallest—unless the categories have a natural order. For the stacked sections (the secondary variable), use the same stacking order across all bars. This consistency helps readers easily compare sub-groups and makes values easier to interpret, especially for the category placed at the bottom. If exact values matter for a specific group, place it on the baseline. Examples of this principle are shown in **Fig.6.1.97 - Fig.6.1.98**.

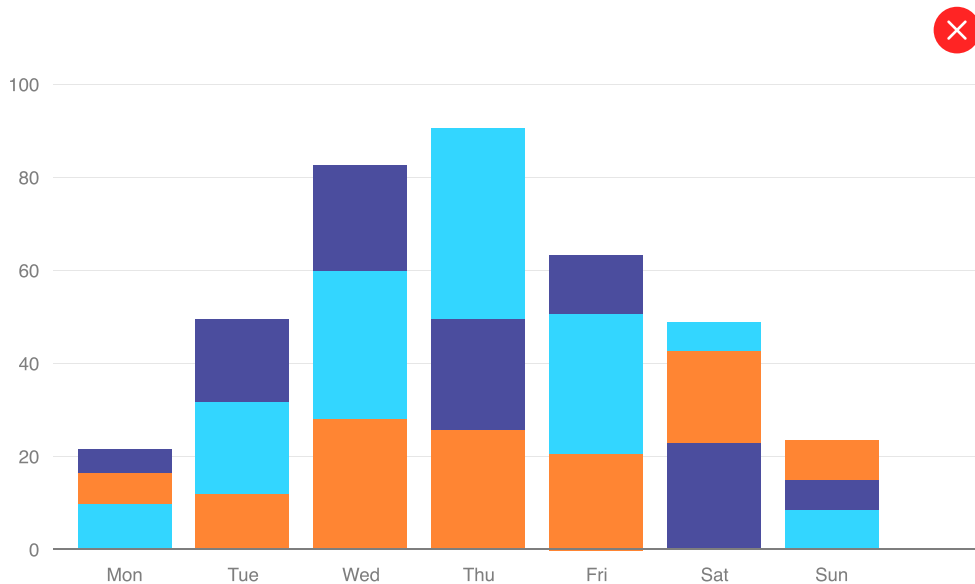


Fig.6.1.97 Unordered Category Levels in a Stacked Bar Chart

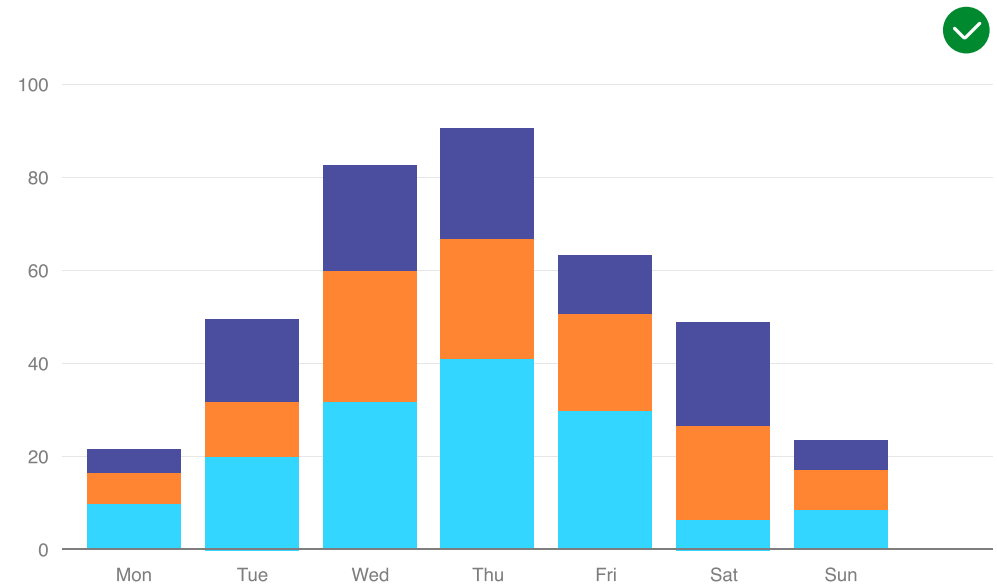


Fig.6.1.98 Ordering of Category Levels in a Stacked Bar Chart

Spacing between bars in stacked bar chart

In a stacked bar chart, a minimum spacing of 16px is applied between each stacked bar group, just like in a simple bar chart. While the segments within each bar are stacked tightly to display the whole, the gap between groups ensures that each category remains visually distinct. The example is provided in **Fig.6.1.99**.

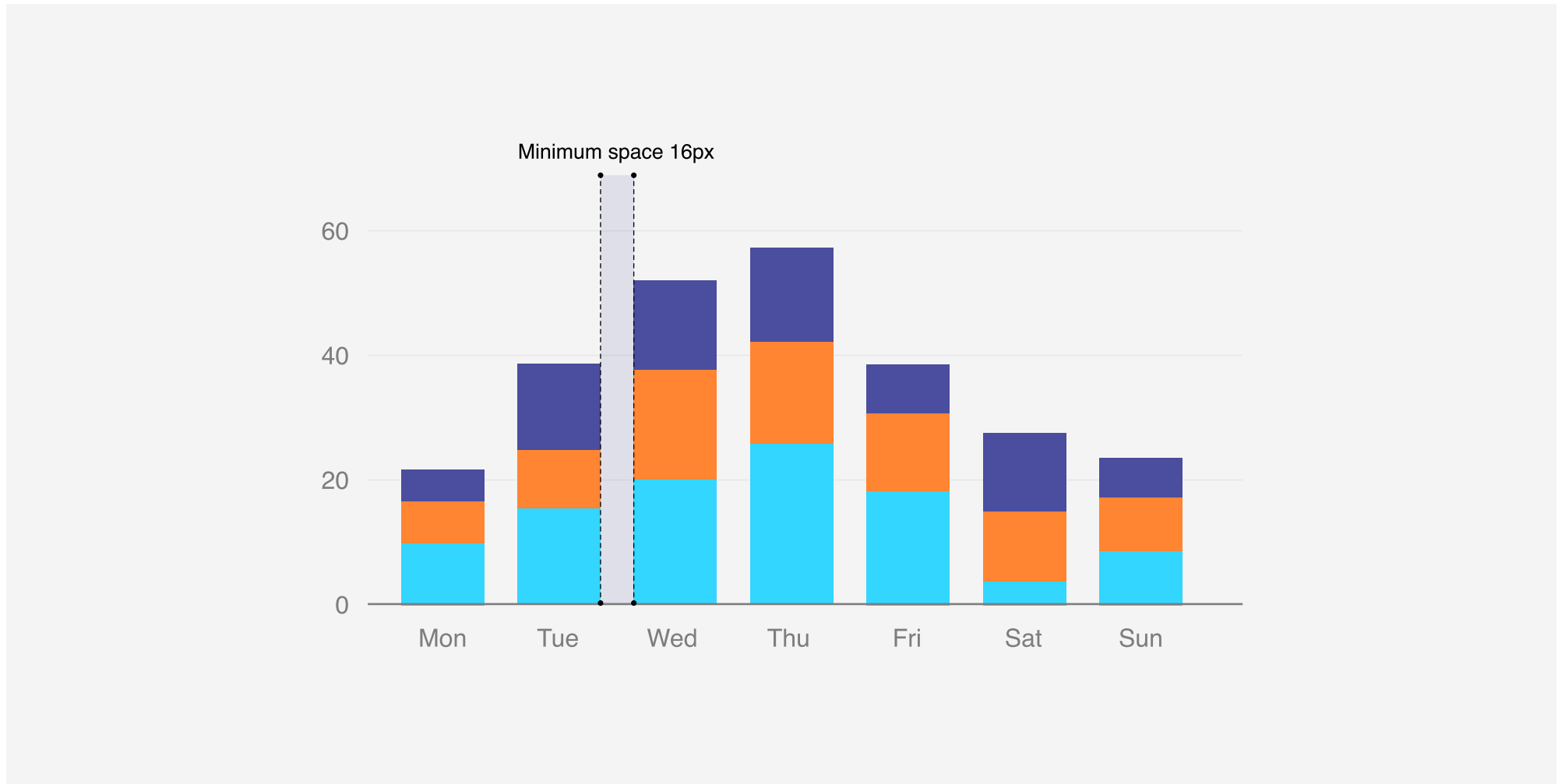


Fig.6.1.99 Minimum Spacing between Bars in a Stacked Bar Chart

Choosing effective color

While a single color is generally recommended for standard bar charts, using color to distinguish secondary variable levels is essential in stacked bar charts. The key is to choose a color palette that fits the type of data: use a qualitative palette for purely categorical variables, and a sequential or diverging palette for variables with a meaningful order. The example is provided in **Fig.6.1.100**.

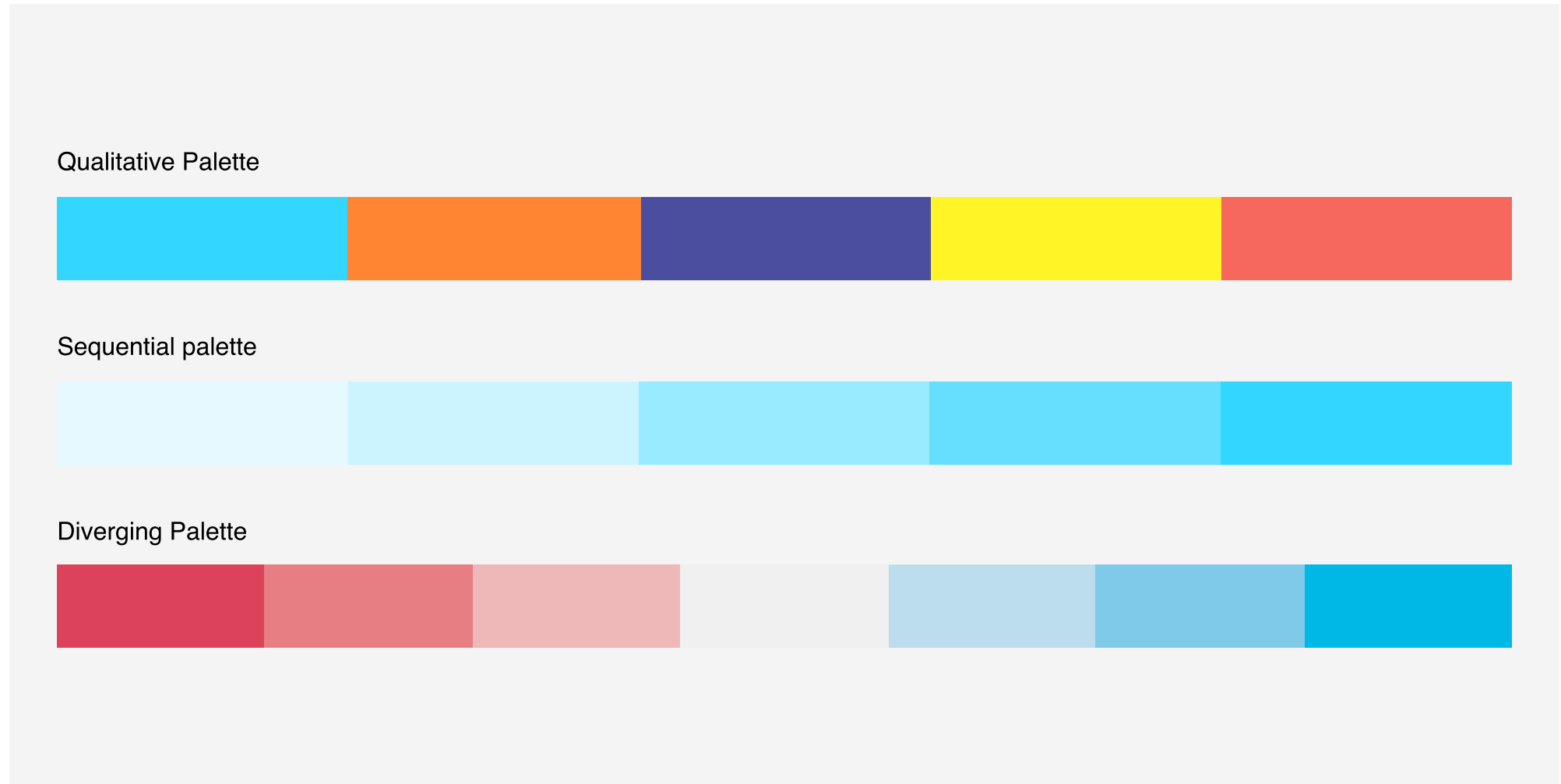


Fig.6.1.100 Choosing Effective Color

Stacked Bar Chart Options

Horizontal stacked bar chart

Stacked bar charts can be oriented either horizontally or vertically, as illustrated in **Fig.6.1.101**. The horizontal orientation offers similar advantages as previously mentioned, enabling the clear display of long category labels without the need for rotation or truncation.

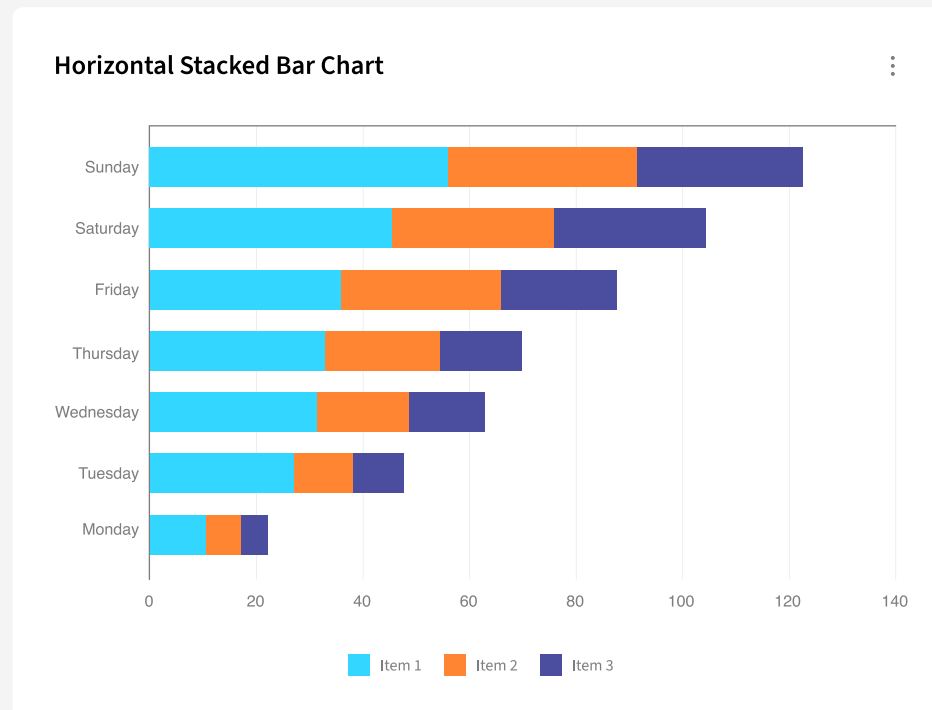


Fig.6.1.101 Horizontal Stacked Bar Chart

Percentage stacked bar chart

A percentage stacked bar chart scales each primary bar to the same height, showing the relative contribution of each subgroup. This makes it easier to compare distributions across categories, though total values are no longer visible. The uniform height also creates a top baseline for tracking secondary groups. The example is provided in **Fig.6.1.102**.

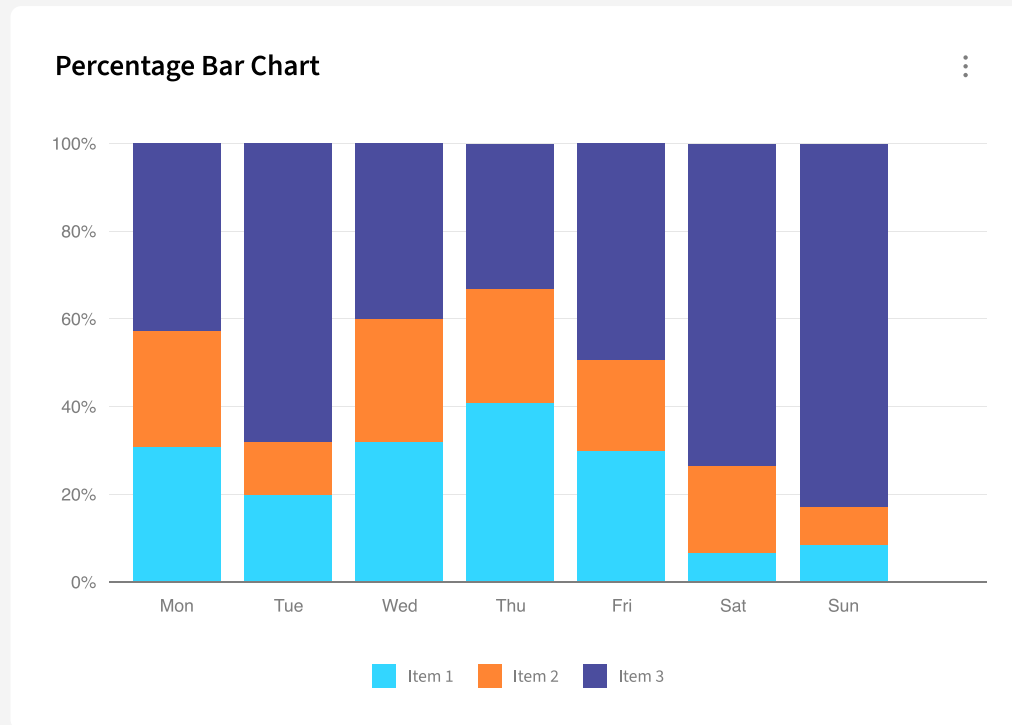


Fig.6.1.102 Percentage Stacked Bar Chart

Value annotations

One way to improve sub-bar comparison in stacked bar charts is by adding annotations to show values. While helpful, this can add visual clutter, so use it only if it supports your main visualization goals—otherwise, consider a different chart type. The example is provided in **Fig.6.1.103**.

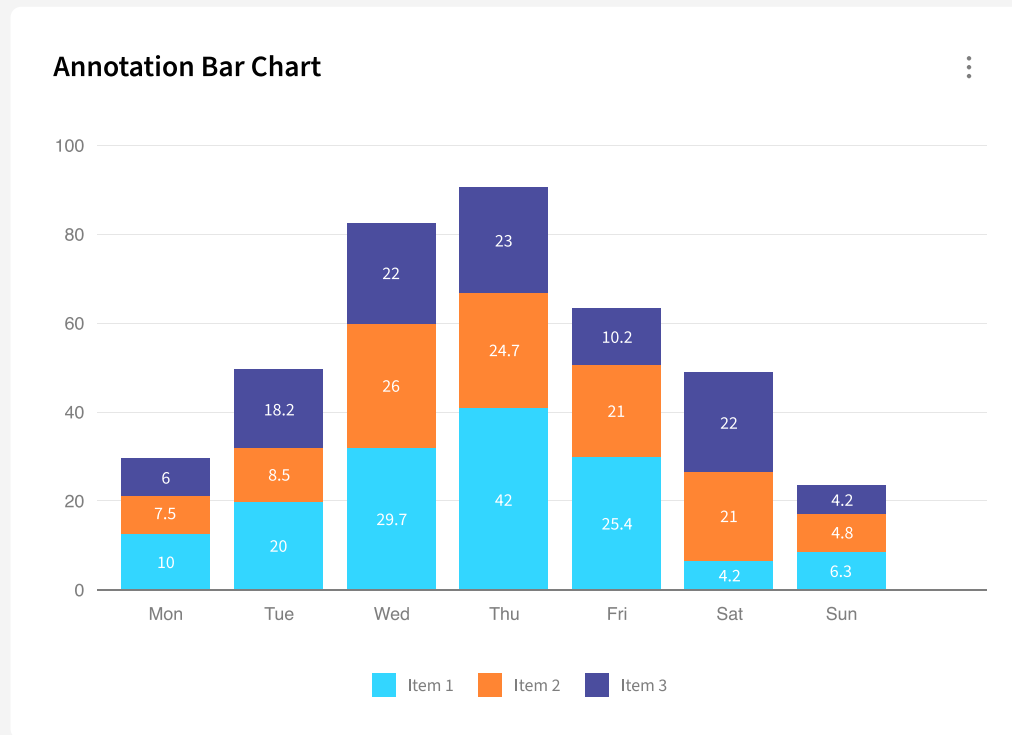


Fig.6.1.103 Percentage Stacked Bar Chart

6.2. Maps

Choropleth

Choropleth is a map that uses differences in shading, coloring, or the placing of symbols within predefined areas to indicate the average values of a property or quantity in those areas. The example is provided in **Fig.6.2.1**.

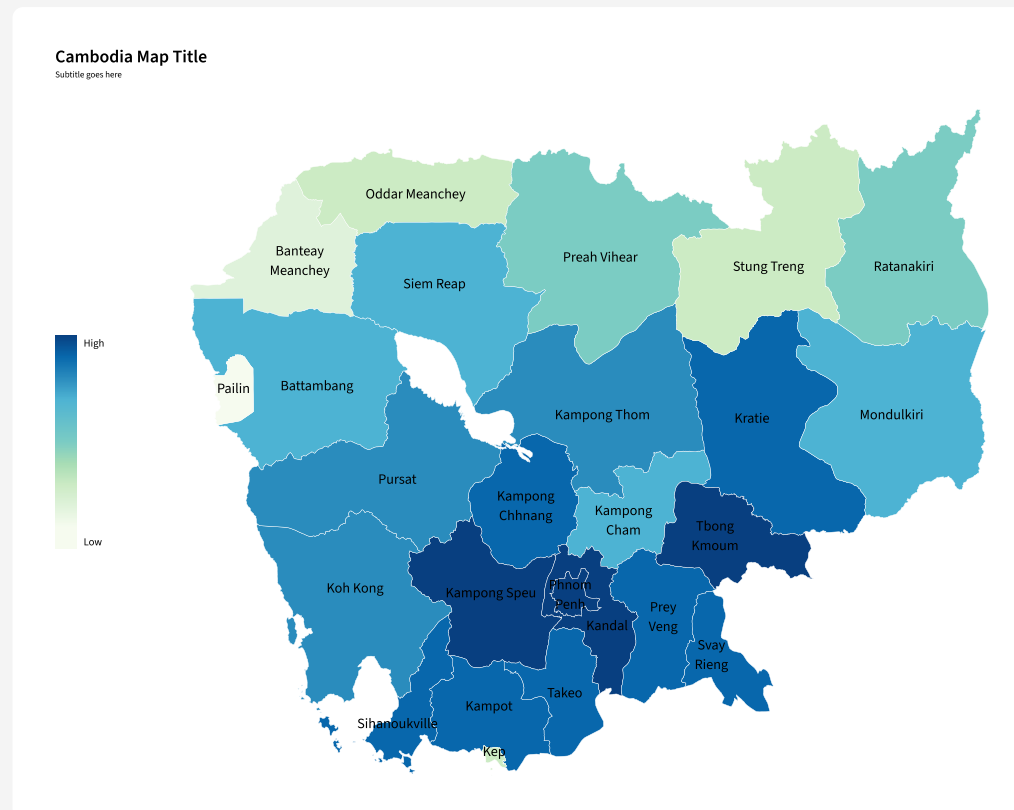


Fig.6.2.1 Cambodia Choropleth Map

Make sure the legend is present

For a choropleth map, it's essential to include a clear and visible legend. The legend explains what the map's colors represent, such as population density, income level, or any other data value. Without it, viewers can't interpret the meaning behind the color variations. The example is provided in **Fig.6.2.3**.

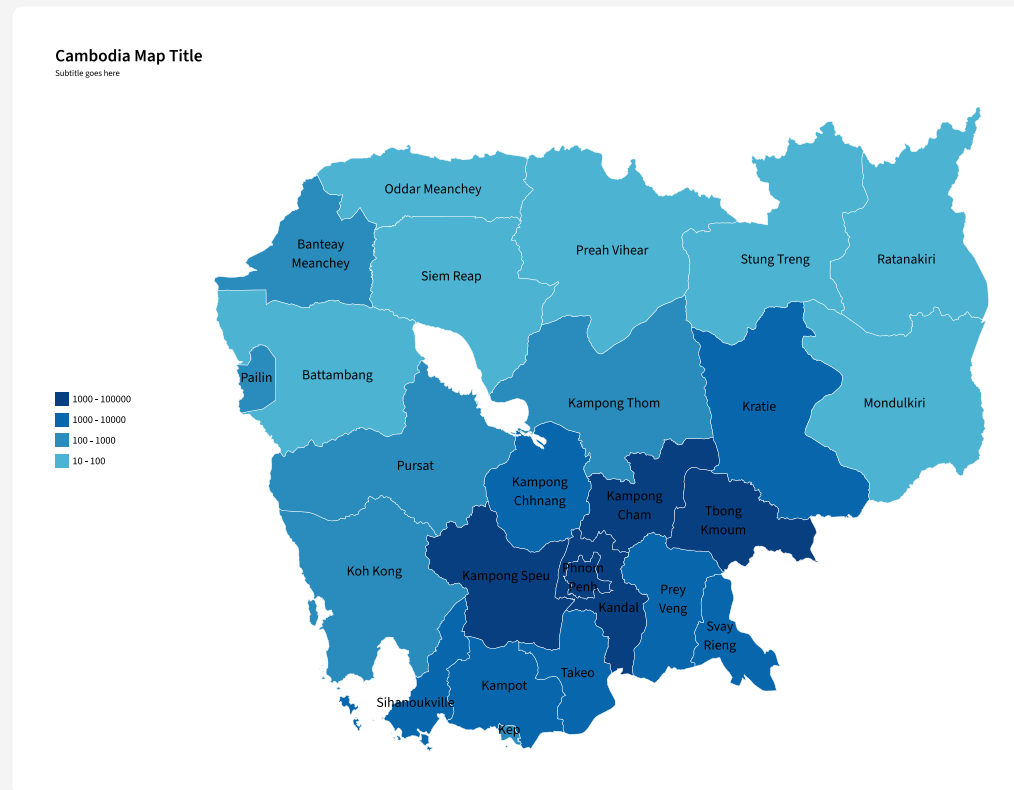


Fig.6.2.3 Choropleth Map with Legend

Choropleth Map Options

Bubble map

Bubble maps are like bubble charts but placed on a map. Each bubble shows a value by its size and is positioned based on location. They are useful for comparing data across regions and avoid the problem choropleth maps have with different area sizes affecting how data looks. The example is provided in **Fig.6.2.4**.



Fig.6.2.4 Bubble Map

Connection map

Connection Maps are drawn by connecting points placed on a map by straight or curved lines. While Connection Maps are great for showing connections and relationships geographically, they can also be used to display map routes through a single chain of links. Connection Maps can also be useful in revealing spatial patterns through the distribution of connections or by how concentrated connections are on a map. The example is provided in **Fig.6.2.5**.

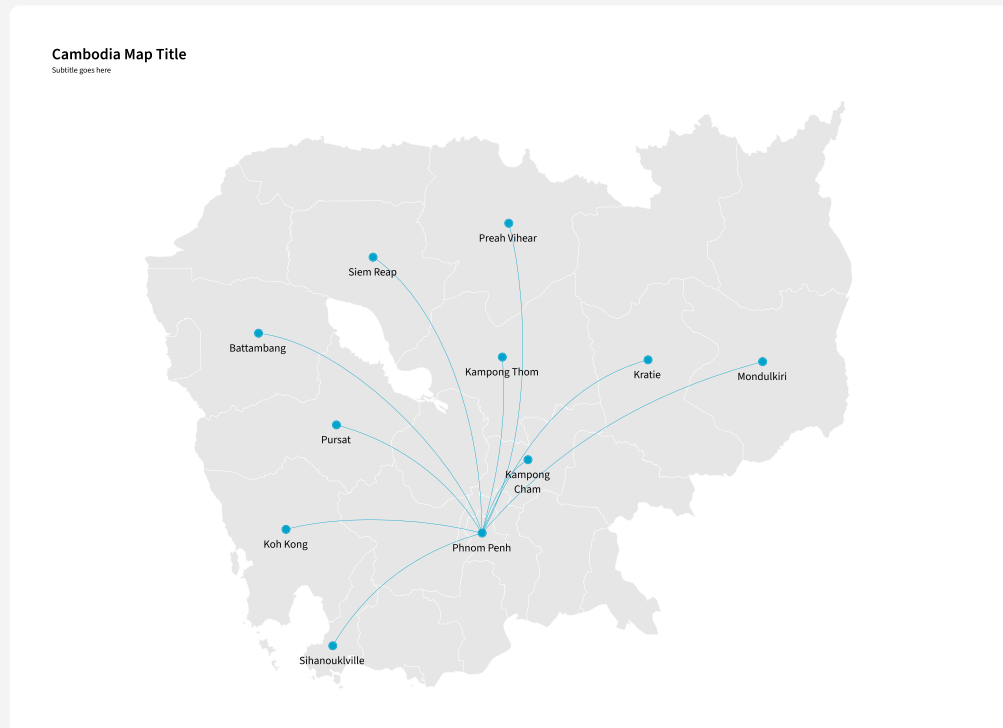


Fig.6.2.5 Connection Map

Heatmap

A heatmap depicts values for a main variable of interest across two axis variables as a grid of colored squares. The axis variables are divided into ranges like a bar chart or histogram, and each cell's color indicates the value of the main variable in the corresponding cell range. The example is provided in **Fig.6.2.6**.

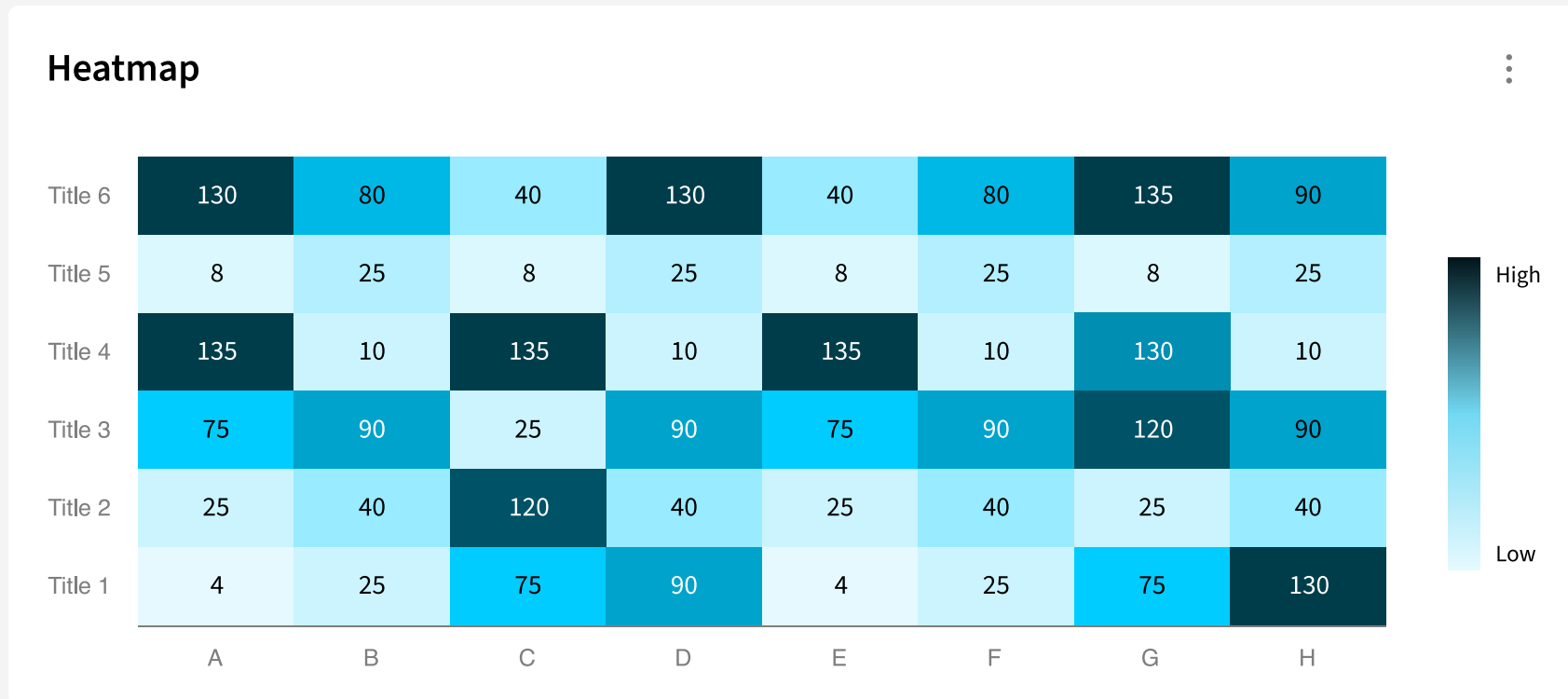


Fig.6.2.6 Heatmap

2-D Density plots

The term heatmap is also used in a more general sense, where data is not constrained to a grid. For example, tracking tools for websites can be set up to see how users interact with the site, like studying where a user clicks, or how far down a page readers tend to scroll. The example is provided in **Fig.6.2.7**.



Fig.6.2.7 2-D Density Plots

Best Practice

Show values in cell

There is a lack of precision for mapping color to value, especially compared to other encodings like position or length. Where possible, it is a good idea to add cell value annotations to the heatmap as a double encoding of value.

Choose an appropriate color palette

Color is a core component of this chart type, so it's worth making sure that you choose an appropriate color palette to match the data. Most frequently, there will be a sequential color ramp between value and color, where lighter colors correspond to smaller values and darker colors to larger values, or vice versa. However, a diverging color palette may be used when values have a meaningful zero point. The example is provided in **Fig.6.2.8**.

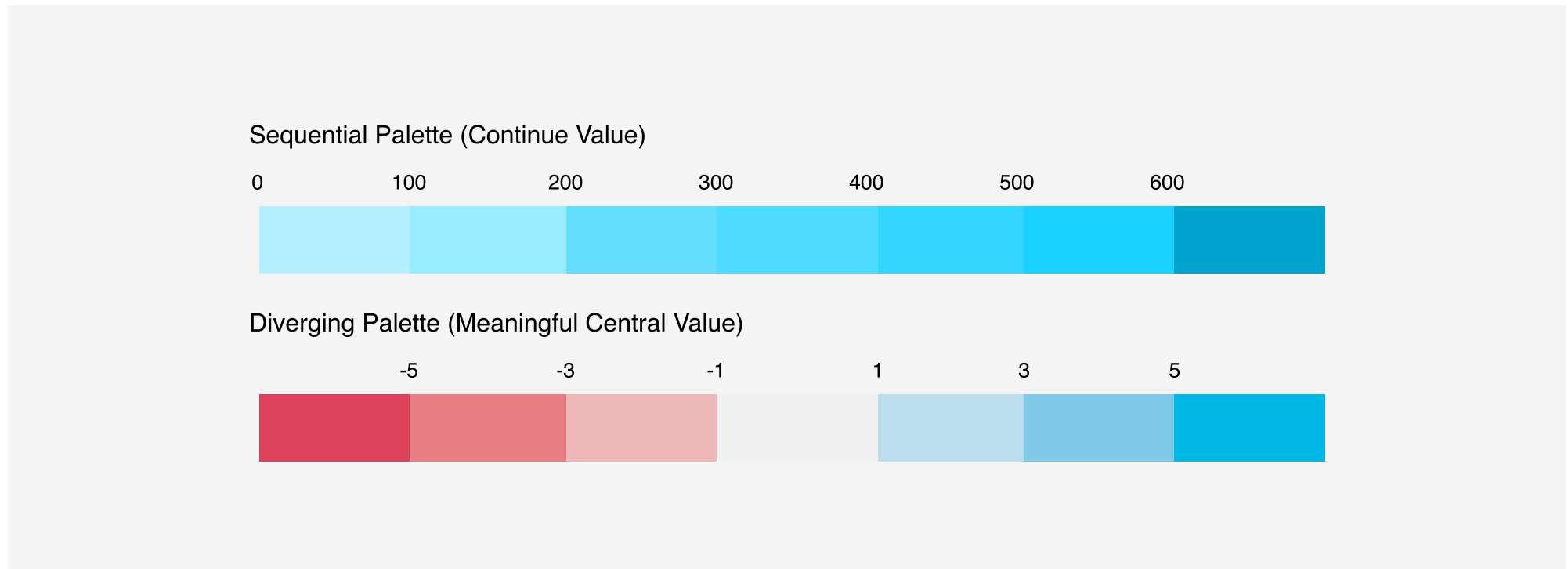


Fig.6.2.8 Choose an Appropriate Color Palette

Sort levels by similarity or value

When one or both axis variables in a plot are categorical in nature, it can be worth considering changing the order in which those axis variable levels are plotted. If the categories do not have an inherent ordering, we might want to choose an order that best helps the reader grasp patterns in the data. A common option is to sort categories by their average cell value from largest to smallest. The example is provided in **Fig.6.2.9**.

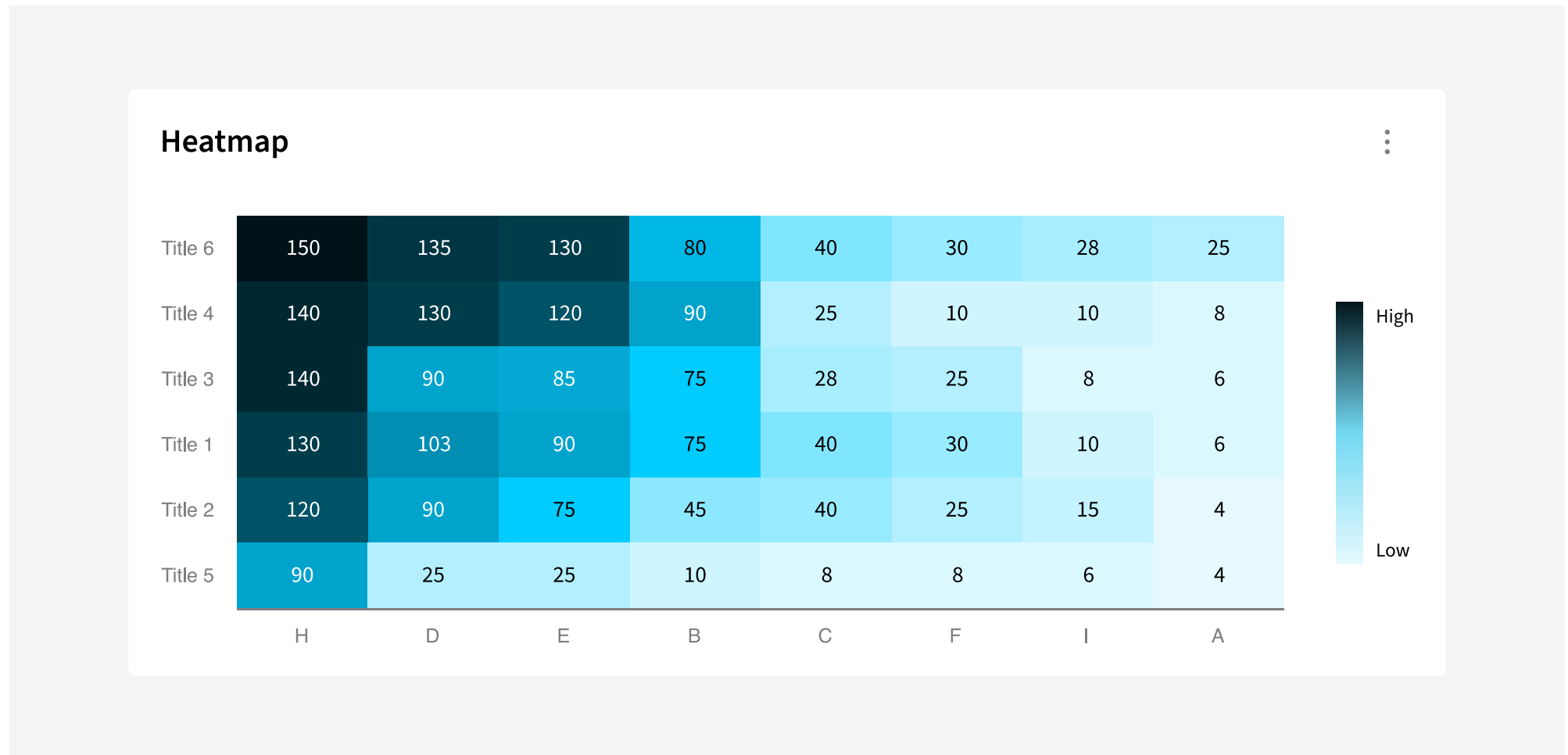


Fig.6.2.9 Heatmap sort levels by Similarity or Value

Treemap

A treemap is a visualization that displays hierarchically organized data as a set of nested rectangles, parent elements being tiled with their child elements. The sizes and colors of rectangles are proportional to the values of the data points they represent. The example is provided in **Fig.6.2.10**.

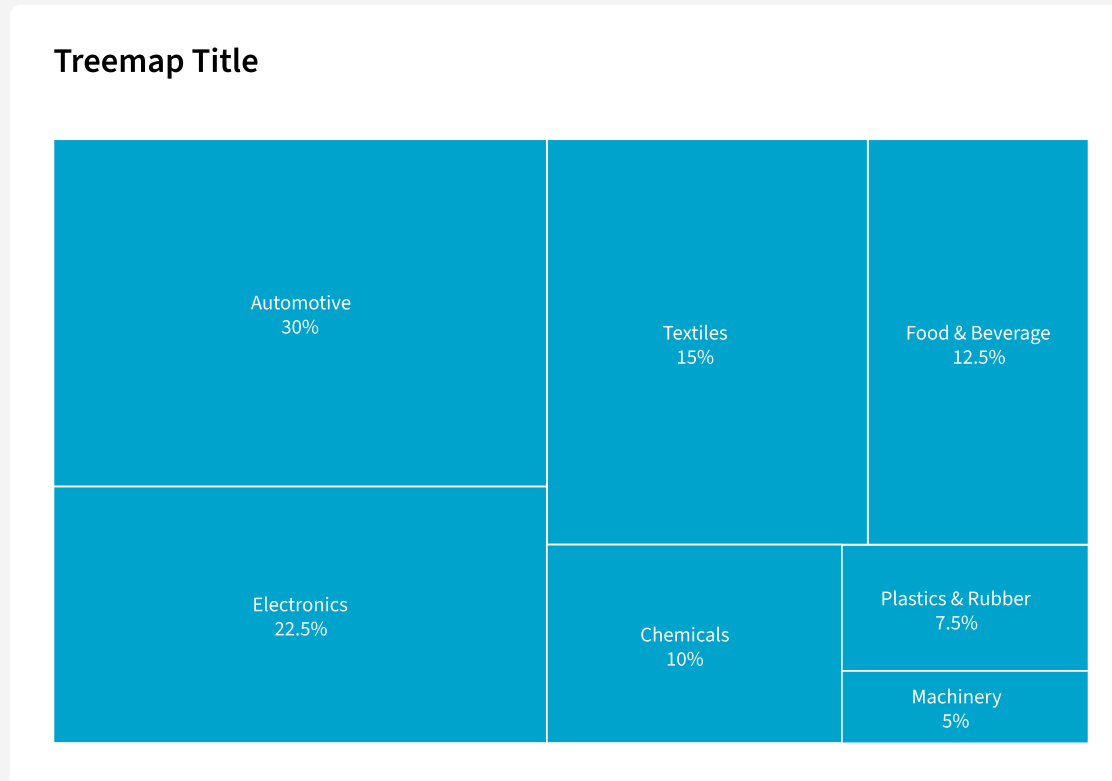


Fig.6.2.10 Treemap

Best Practice

Visualizing Data Magnitude Using Rectangle Size

In a treemap, the size of each rectangle shows the value it represents. The chart automatically adjusts the size of each rectangle so that larger values take up more space, making it easy to compare different data points at a glance, as shown in **Fig.6.2.11**.

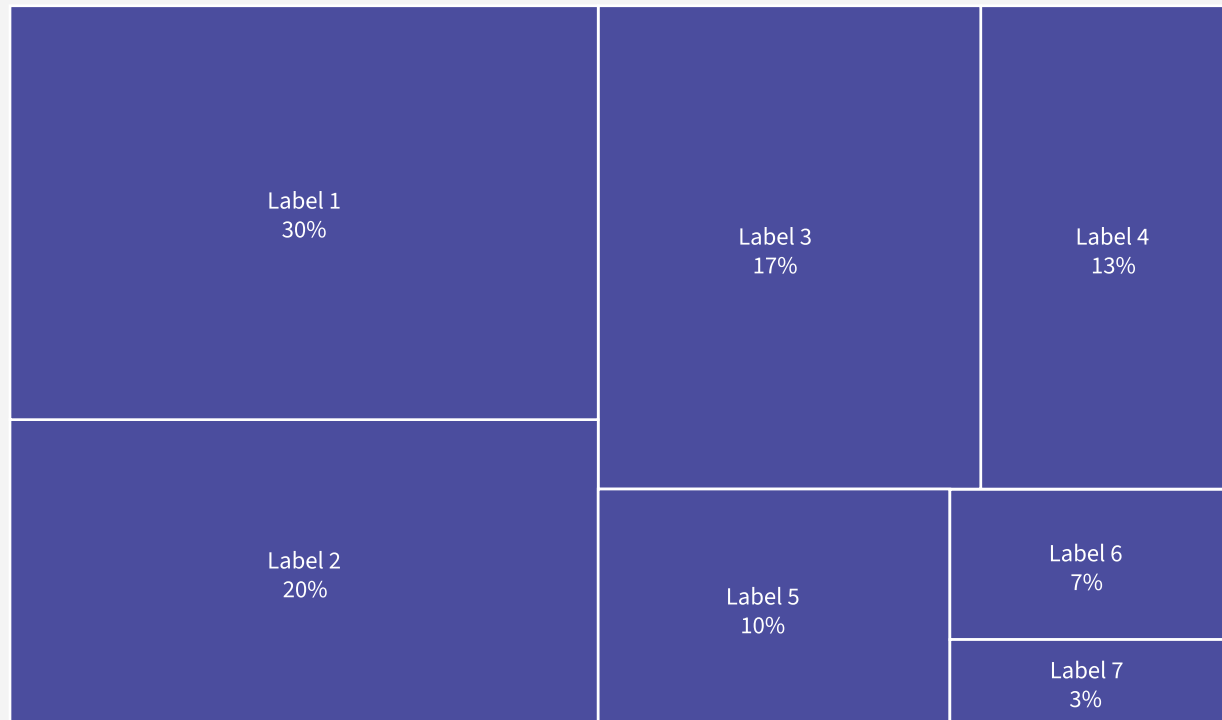


Fig.6.2.11 Visualizing Data Magnitude Using Rectangle Size

Choosing the right color

Color helps make treemaps easier to understand. You can use different colors to show categories—usually, each main category gets a different color, and subcategories use shades of the same color. You can also color based on performance, like showing changes over time or satisfaction levels, using a sequential color palette. The example is provided in **Fig.6.2.12**.

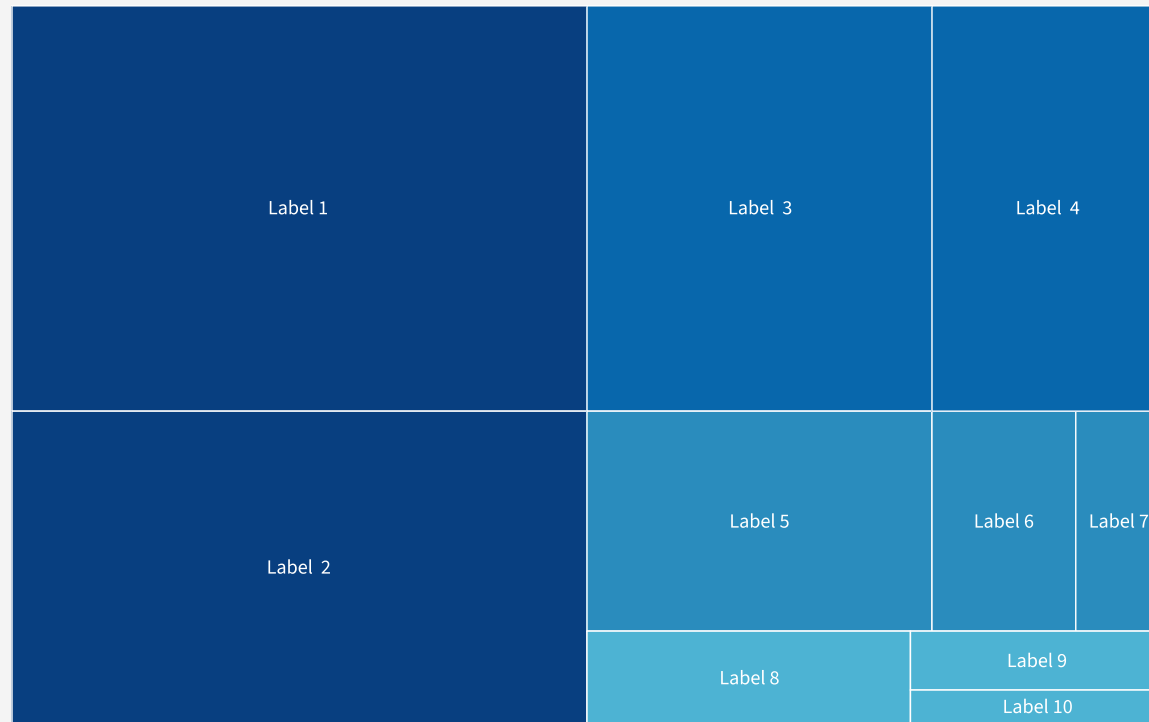


Fig.6.2.12 Treemap Visualization Using Color to Distinguish Data

Limit the number of rectangle

When a treemap includes many categories, it can become cluttered and difficult to read. If the data and message allow, consider grouping all small categories into a single “Other” category and labeling it accordingly. Ideally, the “Other” category should not exceed the size of the second-smallest category. An example is shown in **Fig.6.2.13**.

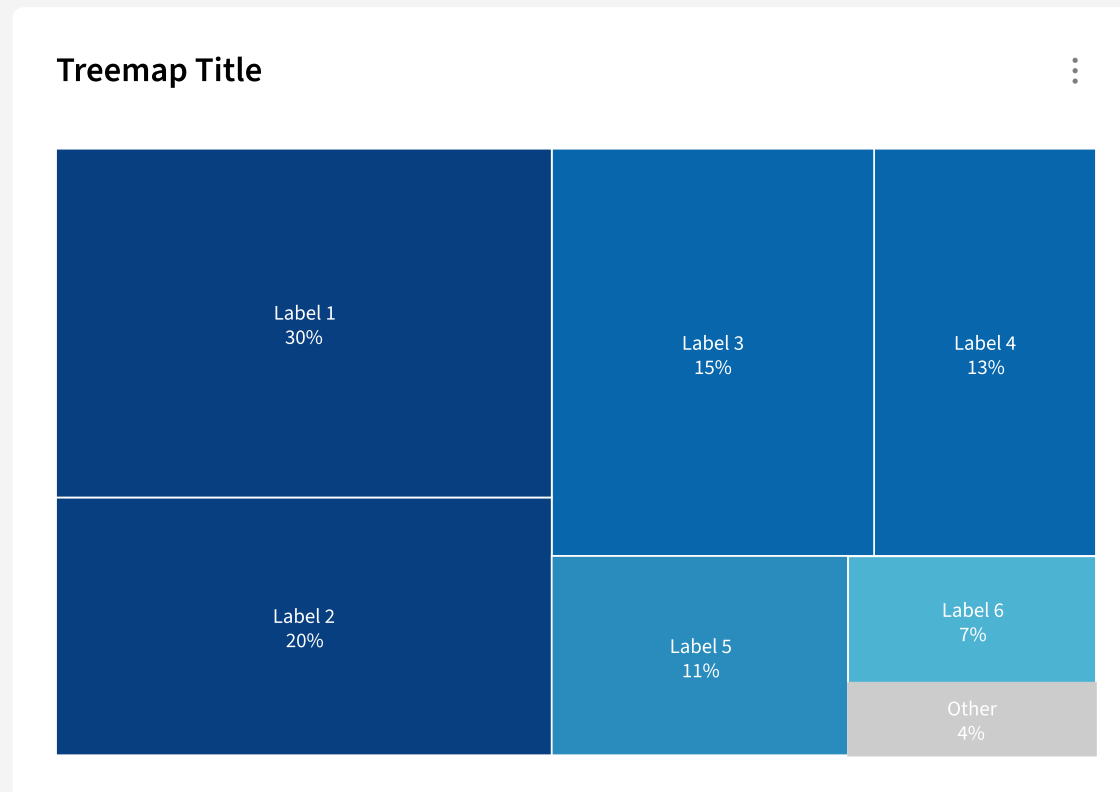


Fig.6.2.13 Limiting the Number of Rectangles in Treemap

07

Digital Application Sample

7.1. Web Site

MISTI Website - Digital Platforms

Overview

The “Digital Platforms” is a page of public digital services provided by the Ministry of Industry, Science, Technology & Innovation (MISTI). It is designed to be user-friendly and well-organized, presenting each platform in a simple card layout with a brief description and a clear link button for easy access. This design helps users quickly find and navigate to the Ministry’s specialized systems, creating an efficient and user-focused browsing experience. Example is provided in **Fig. 7.1.1**.

UI components

- **Menu Navigation Bar:** Includes the primary logo, dropdown buttons for About Us, Units, Resources, Pressroom, Digital Platforms, and a primary action button.
- **Cover:** A gradient background blended with an abstract pattern, complemented by consistent typography styles.
- **Cards Interactivity:** Contains basic components and clickable link buttons that navigate to MISTI’s public digital services.
- **Footer:** Contains link buttons to MISTI web pages, primary logo, social media icons, and ministry’s location.

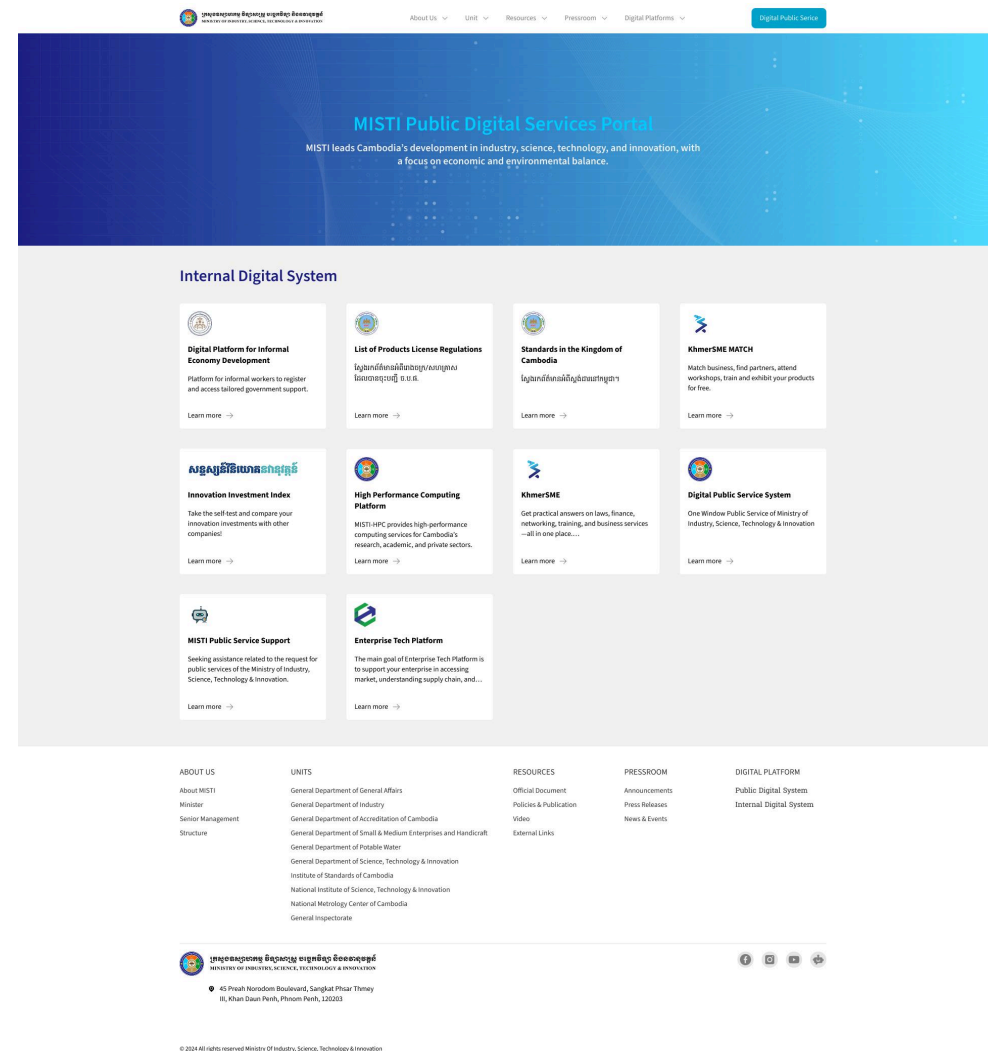


Fig.7.1.1 MISTI Digital Platform UI Design

7.2. Mobile App

Mobile App - Digital Platforms

Overview

In the mobile app, the Digital Platforms page provides quick access to key public services offered by the Ministry of Industry, Science, Technology & Innovation. Users—such as citizens and business owners—can easily explore platforms related to business support, innovation, licensing, and more, directly from their mobile screen. Example is provided in **Fig. 7.2.1**.

UI components

- **Header:** Includes a back arrow button and a clear page title for easy navigation and screen identification.
- **Background:** Use a gradient color as the page background.
- **Typograhly:** A simple large Title and subtitle to clearly introduce MISTI’s Public Digital services.
- **Cards Interactivity:** Cards contain essential components and are fully interactive, allowing users to navigate to various public digital services
- **Tab Bar:** Helps users move between the main parts of the app. Each button takes the user to a different page or section.

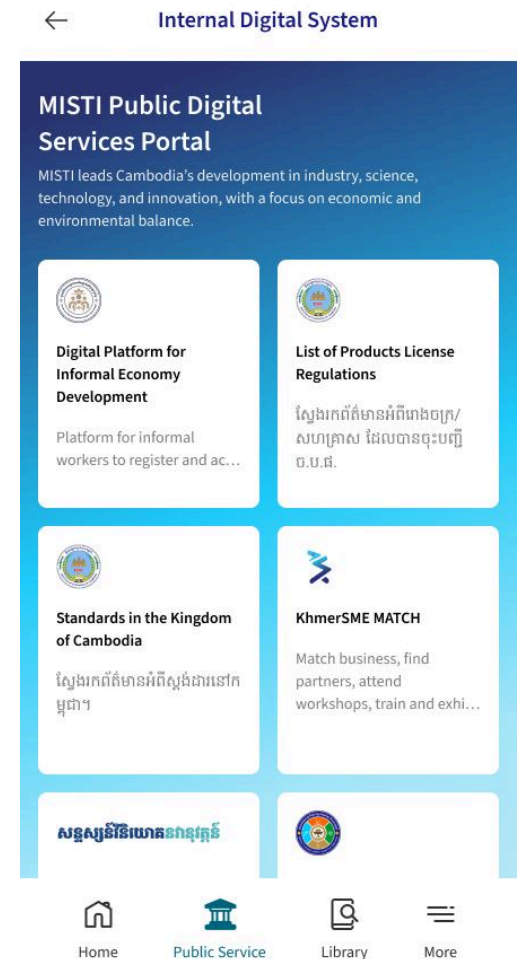


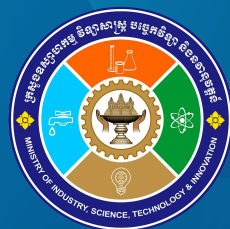
Fig.7.2.1 MISTI Digital Platform on Mobile App

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MINISTRY OF INDUSTRY, SCIENCE, TECHNOLOGY & INNOVATION