

Material Design 3 (Material You) - Design System Reference

Prepared 2026-10-22 for the UI UX Design Research Library. Sources: public pages only. **OFFICIAL** = copied from Google-published token files or m3.material.io; **ESTIMATED** = derived/calculated by us (e.g. HSL conversions); **NOT VERIFIED** = could not be confirmed from a public source this run, so no value is given.

Primary sources: <https://m3.material.io> (JS-rendered; text not machine-readable this run) ; Google-published design tokens in the material-web repo (Apache-2.0): https://github.com/material-components/material-web/tree/main/tokens/versions/v0_192 (files `_md-ref-palette.scss`, `_md-sys-color.scss`, `_md-sys-typescale.scss`, `_md-ref-typeface.scss`, `_md-sys-shape.scss`, `_md-sys-elevation.scss`, `_md-sys-state.scss`; token version v0.192, generated "Design system display name: Google Material 3").

1. License

Material Web components and token files: Apache License 2.0 (OFFICIAL, <https://github.com/material-components/material-web/blob/main/LICENSE>). Material Symbols / Material Icons: Apache License 2.0 (OFFICIAL, <https://github.com/google/material-design-icons/blob/master/LICENSE>). Roboto font: distributed via Google Fonts under an open license (see <https://fonts.google.com/specimen/Roboto>). Guideline text/imagery on m3.material.io is Google content; check the site terms before reproducing.

2. Color - baseline scheme (static, light & dark)

Material 3 uses tonal palettes (primary, secondary, tertiary, error, neutral, neutral-variant; tones 0-100) mapped to semantic roles. Dynamic color can generate a scheme from a seed/wallpaper; the values below are the published **baseline** (purple, seed tone primary40 = #6750A4). Role->tone mapping and HEX: OFFICIAL (token files). RGB: exact conversion of the official HEX. HSL: ESTIMATED (rounded conversion). Source:

https://github.com/material-components/material-web/tree/main/tokens/versions/v0_192/_md-sys-color.scss and [_md-ref-palette.scss](https://github.com/material-components/material-web/tree/main/tokens/versions/v0_192/_md-ref-palette.scss)

Role	Light tone	Light HEX / RGB / HSL		Dark tone	Dark HEX / RGB / HSL	
background	neutral98	#FEF7FF rgb(254,247,255) hsl(292,100%,98%)		neutral6	#141218 rgb(20,18,24) hsl(260,14%,8%)	
error	error40	#B3261E rgb(179,38,30) hsl(3,71%,41%)		error80	#F2B8B5 rgb(242,184,181) hsl(3,70%,83%)	
error-container	error90	#F9DEDC rgb(249,222,220) hsl(4,71%,92%)		error30	#8C1D18 rgb(140,29,24) hsl(3,71%,32%)	
inverse-on-surface	neutral95	#F5EFF7 rgb(245,239,247) hsl(285,33%,95%)		neutral20	#322F35 rgb(50,47,53) hsl(270,6%,20%)	
inverse-primary	primary80	#D0BCFF rgb(208,188,255) hsl(258,100%,87%)		primary40	#6750A4 rgb(103,80,164) hsl(256,34%,48%)	
inverse-surface	neutral20	#322F35 rgb(50,47,53) hsl(270,6%,20%)		neutral90	#E6E0E9 rgb(230,224,233) hsl(280,17%,90%)	
on-background	neutral10	#1D1B20 rgb(29,27,32) hsl(264,8%,12%)		neutral90	#E6E0E9 rgb(230,224,233) hsl(280,17%,90%)	
on-error	error100	#FFFFFF rgb(255,255,255) hsl(0,0%,100%)		error20	#601410 rgb(96,20,16) hsl(3,71%,22%)	
on-error-container	error10	#410E0B rgb(65,14,11) hsl(3,71%,15%)		error90	#F9DEDC rgb(249,222,220) hsl(4,71%,92%)	
on-primary	primary100	#FFFFFF rgb(255,255,255) hsl(0,0%,100%)		primary20	#381E72 rgb(56,30,114) hsl(259,58%,28%)	
on-primary-container	primary10	#21005D rgb(33,0,93) hsl(261,100%,18%)		primary90	#EADDFF rgb(234,221,255) hsl(263,100%,93%)	

Role	Light tone	Light HEX / RGB / HSL		Dark tone	Dark HEX / RGB / HSL	
on-primary-fixed	primary10	#21005D rgb(33,0,93) hsl(261,100%,18%)		primary10	#21005D rgb(33,0,93) hsl(261,100%,18%)	
on-primary-fixed-variant	primary30	#4F378B rgb(79,55,139) hsl(257,43%,38%)		primary30	#4F378B rgb(79,55,139) hsl(257,43%,38%)	
on-secondary	secondary100	#FFFFFF rgb(255,255,255) hsl(0,0%,100%)		secondary20	#332D41 rgb(51,45,65) hsl(258,18%,22%)	
on-secondary-container	secondary10	#1D192B rgb(29,25,43) hsl(253,26%,13%)		secondary90	#E8DEF8 rgb(232,222,248) hsl(263,65%,92%)	
on-secondary-fixed	secondary10	#1D192B rgb(29,25,43) hsl(253,26%,13%)		secondary10	#1D192B rgb(29,25,43) hsl(253,26%,13%)	
on-secondary-fixed-variant	secondary30	#4A4458 rgb(74,68,88) hsl(258,13%,31%)		secondary30	#4A4458 rgb(74,68,88) hsl(258,13%,31%)	
on-surface	neutral10	#1D1B20 rgb(29,27,32) hsl(264,8%,12%)		neutral90	#E6E0E9 rgb(230,224,233) hsl(280,17%,90%)	
on-surface-variant	neutral-variant 30	#49454F rgb(73,69,79) hsl(264,7%,29%)		neutral-variant 80	#CAC4D0 rgb(202,196,208) hsl(270,11%,79%)	
on-tertiary	tertiary100	#FFFFFF rgb(255,255,255) hsl(0,0%,100%)		tertiary20	#492532 rgb(73,37,50) hsl(338,33%,22%)	
on-tertiary-container	tertiary10	#31111D rgb(49,17,29) hsl(338,48%,13%)		tertiary90	#FFD8E4 rgb(255,216,228) hsl(342,100%,92%)	
on-tertiary-fixed	tertiary10	#31111D rgb(49,17,29) hsl(338,48%,13%)		tertiary10	#31111D rgb(49,17,29) hsl(338,48%,13%)	
on-tertiary-fixed-variant	tertiary30	#633B48 rgb(99,59,72) hsl(340,25%,31%)		tertiary30	#633B48 rgb(99,59,72) hsl(340,25%,31%)	
outline	neutral-variant 50	#79747E rgb(121,116,126) hsl(270,4%,47%)		neutral-variant 60	#938F99 rgb(147,143,153) hsl(264,5%,58%)	
outline-variant	neutral-variant 80	#CAC4D0 rgb(202,196,208) hsl(270,11%,79%)		neutral-variant 30	#49454F rgb(73,69,79) hsl(264,7%,29%)	
primary	primary40	#6750A4 rgb(103,80,164) hsl(256,34%,48%)		primary80	#D0BCFF rgb(208,188,255) hsl(258,100%,87%)	
primary-container	primary90	#EADDFE rgb(234,221,255) hsl(263,100%,93%)		primary30	#4F378B rgb(79,55,139) hsl(257,43%,38%)	
primary-fixed	primary90	#EADDFE rgb(234,221,255) hsl(263,100%,93%)		primary90	#EADDFE rgb(234,221,255) hsl(263,100%,93%)	
primary-fixed-dim	primary80	#D0BCFF rgb(208,188,255) hsl(258,100%,87%)		primary80	#D0BCFF rgb(208,188,255) hsl(258,100%,87%)	

Role	Light tone	Light HEX / RGB / HSL		Dark tone	Dark HEX / RGB / HSL	
scrim	neutral0	#000000 rgb(0,0,0) hsl(0,0%,0%)		neutral0	#000000 rgb(0,0,0) hsl(0,0%,0%)	
secondary	secondary40	#625B71 rgb(98,91,113) hsl(259,11%,40%)		secondary80	#CCC2DC rgb(204,194,220) hsl(263,27%,81%)	
secondary-container	secondary90	#E8DEF8 rgb(232,222,248) hsl(263,65%,92%)		secondary30	#4A4458 rgb(74,68,88) hsl(258,13%,31%)	
secondary-fixed	secondary90	#E8DEF8 rgb(232,222,248) hsl(263,65%,92%)		secondary90	#E8DEF8 rgb(232,222,248) hsl(263,65%,92%)	
secondary-fixed-dim	secondary80	#CCC2DC rgb(204,194,220) hsl(263,27%,81%)		secondary80	#CCC2DC rgb(204,194,220) hsl(263,27%,81%)	
shadow	neutral0	#000000 rgb(0,0,0) hsl(0,0%,0%)		neutral0	#000000 rgb(0,0,0) hsl(0,0%,0%)	
surface	neutral98	#FEF7FF rgb(254,247,255) hsl(292,100%,98%)		neutral6	#141218 rgb(20,18,24) hsl(260,14%,8%)	
surface-bright	neutral98	#FEF7FF rgb(254,247,255) hsl(292,100%,98%)		neutral24	#3B383E rgb(59,56,62) hsl(270,5%,23%)	
surface-container	neutral94	#F3EDF7 rgb(243,237,247) hsl(276,38%,95%)		neutral12	#211F26 rgb(33,31,38) hsl(257,10%,14%)	
surface-container-high	neutral92	#ECE6F0 rgb(236,230,240) hsl(276,25%,92%)		neutral17	#2B2930 rgb(43,41,48) hsl(257,8%,17%)	
surface-container-highest	neutral90	#E6E0E9 rgb(230,224,233) hsl(280,17%,90%)		neutral22	#36343B rgb(54,52,59) hsl(257,6%,22%)	
surface-container-low	neutral96	#F7F2FA rgb(247,242,250) hsl(278,44%,96%)		neutral10	#1D1B20 rgb(29,27,32) hsl(264,8%,12%)	
surface-container-lowest	neutral100	#FFFFFF rgb(255,255,255) hsl(0,0%,100%)		neutral4	#0F0D13 rgb(15,13,19) hsl(260,19%,6%)	
surface-dim	neutral87	#DED8E1 rgb(222,216,225) hsl(280,13%,86%)		neutral6	#141218 rgb(20,18,24) hsl(260,14%,8%)	
surface-tint	primary40	#6750A4 rgb(103,80,164) hsl(256,34%,48%)		primary80	#D0BCFF rgb(208,188,255) hsl(258,100%,87%)	
surface-variant	neutral-variant 90	#E7E0EC rgb(231,224,236) hsl(275,24%,90%)		neutral-variant 30	#49454F rgb(73,69,79) hsl(264,7%,29%)	
tertiary	tertiary40	#7D5260 rgb(125,82,96) hsl(340,21%,41%)		tertiary80	#EFB8C8 rgb(239,184,200) hsl(343,63%,83%)	
tertiary-container	tertiary90	#FFD8E4 rgb(255,216,228) hsl(342,100%,92%)		tertiary30	#633B48 rgb(99,59,72) hsl(340,25%,31%)	

Role	Light tone	Light HEX / RGB / HSL		Dark tone	Dark HEX / RGB / HSL	
tertiary-fixed	tertiary90	#FFD8E4 rgb(255,216,228) hsl(342,100%,92%)		tertiary90	#FFD8E4 rgb(255,216,228) hsl(342,100%,92%)	
tertiary-fixed-dim	tertiary80	#EFB8C8 rgb(239,184,200) hsl(343,63%,83%)		tertiary80	#EFB8C8 rgb(239,184,200) hsl(343,63%,83%)	

Role semantics (from naming in the official tokens; descriptive wording ours): primary/secondary/tertiary = accent families; *-container = lower-emphasis fill with matching on-*container text; on-X = content color on X; surface-container-lowest...highest = layered surface levels (replace M2 elevation overlays); outline / outline-variant = borders & dividers; inverse-* = snackbars/inverted UI; *-fixed = same in light and dark; scrim/shadow = neutral0.

3. Typography - type scale

OFFICIAL (source: https://github.com/material-components/material-web/tree/main/tokens/versions/v0_192/_md-sys-typescale.scss, [_md-ref-typeface.scss](#)). Brand and plain typeface tokens = Roboto. Weights: regular=400, medium=500 are the md-ref-typeface weight tokens (weight numbers NOT VERIFIED in this run beyond token names). px = rem x 16 (ESTIMATED conversion at default 16px root).

Style	Size	Line height	Tracking	Weight token
display-large	3.5625rem (57.0px)	4rem (64.0px)	-0.015625rem	weight-regular
display-medium	2.8125rem (45.0px)	3.25rem (52.0px)	0rem	weight-regular
display-small	2.25rem (36.0px)	2.75rem (44.0px)	0rem	weight-regular
headline-large	2rem (32.0px)	2.5rem (40.0px)	0rem	weight-regular
headline-medium	1.75rem (28.0px)	2.25rem (36.0px)	0rem	weight-regular
headline-small	1.5rem (24.0px)	2rem (32.0px)	0rem	weight-regular
title-large	1.375rem (22.0px)	1.75rem (28.0px)	0rem	weight-regular
title-medium	1rem (16.0px)	1.5rem (24.0px)	0.009375rem	weight-medium
title-small	0.875rem (14.0px)	1.25rem (20.0px)	0.00625rem	weight-medium
body-large	1rem (16.0px)	1.5rem (24.0px)	0.03125rem	weight-regular
body-medium	0.875rem (14.0px)	1.25rem (20.0px)	0.015625rem	weight-regular
body-small	0.75rem (12.0px)	1rem (16.0px)	0.025rem	weight-regular
label-large	0.875rem (14.0px)	1.25rem (20.0px)	0.00625rem	weight-medium
label-medium	0.75rem (12.0px)	1rem (16.0px)	0.03125rem	weight-medium
label-small	0.6875rem (11.0px)	1rem (16.0px)	0.03125rem	weight-medium

4. Shape (corner radii)

OFFICIAL, source: https://github.com/material-components/material-web/tree/main/tokens/versions/v0_192/_md-sys-shape.scss

Token	Value
corner-none	0px
corner-extra-small	4px
corner-small	8px
corner-medium	12px
corner-large	16px
corner-extra-large	28px
corner-full	9999px (pill/circle)
corner-large-top	16px 16px 0 0
corner-large-end	0 16px 16px 0

Note: newer M3 "Expressive" (2025) guidance adds further shape tokens; not present in v0.192 tokens - NOT VERIFIED.

5. Elevation & shadows

OFFICIAL elevation levels (dp), source:

https://github.com/material-components/material-web/tree/main/tokens/versions/v0_192/_md-sys-elevation.scss: level0=0, level1=1, level2=3, level3=6, level4=8, level5=12. In M3, elevation is shown mainly by tonal surface-container roles, with shadow color = neutral0 (#000000). Exact CSS box-shadow blur/offset values: NOT VERIFIED (computed by components, not published in this token file).

6. Interaction states

OFFICIAL state-layer opacities (source:

https://github.com/material-components/material-web/tree/main/tokens/versions/v0_192/_md-sys-state.scss): hover 0.08, focus 0.12, pressed 0.12, dragged 0.16. A state layer is an overlay of the on-* content color over the component container. Disabled-state opacities are defined per component token (commonly 0.38 content / 0.12 container in component files) - treat as ESTIMATED unless checked in a specific component token file.

7. Components

Material Web implements (OFFICIAL list, <https://github.com/material-components/material-web/tree/main/docs/components>): buttons (elevated, filled, filled tonal, outlined, text), icon buttons, FAB, checkbox, chips, dialog, divider, elevation, focus ring, list, menu, progress (linear/circular), radio, ripple, select, slider, switch, tabs, text fields (filled/outlined). m3.material.io additionally documents app bars, navigation bar/rail/drawer, bottom sheets, side sheets, cards, badges, date/time pickers, search, snackbar, tooltips, carousel. States for interactive components: enabled, hovered, focused, pressed, dragged, disabled (+ selected/activated where applicable).

8. Spacing, layout & grids

Material layout guidance (<https://m3.material.io/foundations/layout>) uses window size classes (compact / medium / expanded / large / extra-large), panes, margins and a 4dp-based spacing rhythm. Exact breakpoint and margin values were NOT VERIFIED this run because m3.material.io renders client-side and no public token file for layout was found in material-web v0.192. Verify at <https://m3.material.io/foundations/layout/applying-layout/window-size-classes> before use.

9. Icons

Material Symbols (variable icon font; axes fill, weight, grade, optical size) - <https://fonts.google.com/icons> ; Apache-2.0. Google Fonts FAQ (OFFICIAL, <https://developers.google.com/fonts/faq>): "Material Icons has been replaced with Material Symbols and will no longer receive updates."

10. UX analysis & lessons

- Token tiers (ref palette -> sys roles -> component tokens) let a single seed color re-theme an entire product while keeping contrast pairs (X / on-X) intact. Lesson: design semantic roles, not raw colors.
 - Tone-based palettes make light/dark a mapping change (e.g. primary = tone 40 light, tone 80 dark) rather than a redesign. Lesson: define dark mode as a tone mapping.
 - Surface-container levels replace shadows as the primary depth cue - works better in dark mode and flat UIs.
 - State layers with fixed opacities give consistent, accessible feedback across every component.
 - Large shape scale (4-28px + full) communicates component hierarchy (small chips vs. large sheets).
 - Risk: dynamic color can reduce brand recognizability; Material allows static brand schemes for that case.
- Analysis is our interpretation (not official text).

Gaps

Not verified this run: window size class breakpoints, margins/gutters, motion/easing tokens, exact shadow CSS, M3 Expressive updates, numeric font weights. m3.material.io text could not be extracted (client-rendered).

Figures (screenshots & renders)

Baseline scheme - Light

primary #6750A4	on-primary #FFFFFF	primary-container #EADDF7	on-primary-container #21005D	secondary #625B71
on-secondary #FFFFFF	secondary-container #E8DEF8	on-secondary-container #1D192B	tertiary #7D5260	on-tertiary #FFFFFF
tertiary-container #FFD8E4	on-tertiary-container #31111D	error #B3261E	on-error #FFFFFF	error-container #F9DEDC
on-error-container #410E0B	surface #FEF7FF	on-surface #1D1B20	surface-variant #E7E0EC	on-surface-variant #49454F
surface-container-lowest #FFFFFF	surface-container-low #F7F2FA	surface-container #F3EDF7	surface-container-high #ECE6F0	surface-container-highest #E6E0E9
outline #79747E	outline-variant #CAC4D0	inverse-surface #322F35	inverse-on-surface #F5EFF7	inverse-primary #D0BCFF

Baseline scheme - Dark

primary #D0BCFF	on-primary #381E72	primary-container #4F378B	on-primary-container #EADDF7	secondary #CCC2DC
on-secondary #332D41	secondary-container #4A4458	on-secondary-container #E8DEF8	tertiary #EFB8C8	on-tertiary #492532
tertiary-container #633B48	on-tertiary-container #FFD8E4	error #F28B85	on-error #601410	error-container #8C1D18
on-error-container #F9DEDC	surface #141218	on-surface #E6E0E9	surface-variant #49454F	on-surface-variant #CAC4D0
surface-container-lowest #0F0D13	surface-container-low #1D1B20	surface-container #211F26	surface-container-high #2B2930	surface-container-highest #363438
outline #938F99	outline-variant #49454F	inverse-surface #E6E0E9	inverse-on-surface #322F35	inverse-primary #6750A4

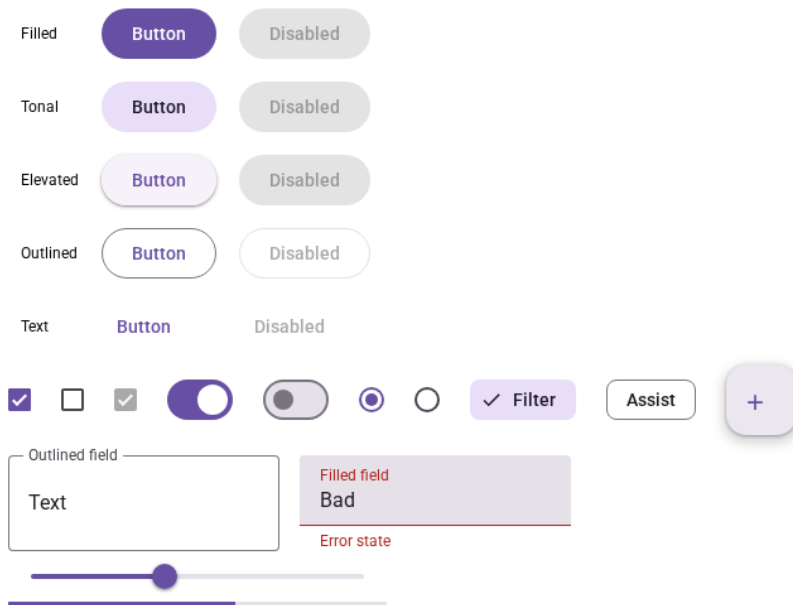
Figure 1. Baseline color scheme, light and dark - all key roles with HEX. *Source: RENDERED BY US from official token files https://github.com/material-components/material-web/tree/main/tokens/versions/v0_192/_md-sys-color.scss + [_md-ref-palette.scss](#)*

Material 3 type scale (Roboto) - rendered from md-sys-typescale tokens v0.192

display-large 3.5625rem / 4rem / 400	Design research library
display-medium 2.8125rem / 3.25rem / 400	Design research library
display-small 2.25rem / 2.75rem / 400	Design research library
headline-large 2rem / 2.5rem / 400	Design research library
headline-medium 1.75rem / 2.25rem / 400	Design research library
headline-small 1.5rem / 2rem / 400	Design research library
title-large 1.375rem / 1.75rem / 400	Design research library
title-medium 1rem / 1.5rem / 500	Design research library
title-small 0.875rem / 1.25rem / 500	Design research library
body-large 1rem / 1.5rem / 400	Design research library
body-medium 0.875rem / 1.25rem / 400	Design research library
body-small 0.75rem / 1rem / 400	Design research library
label-large 0.875rem / 1.25rem / 500	Design research library
label-medium 0.75rem / 1rem / 500	Design research library
label-small 0.6875rem / 1rem / 500	Design research library

Figure 2. Type scale (15 styles) at token sizes/line-heights/weights, Roboto via Google Fonts. *Source: RENDERED BY US from https://github.com/material-components/material-web/tree/main/tokens/versions/v0_192/_md-sys-typescale.scss*

Official @material/web components (baseline light) - enabled vs disabled



State layers (rendered by us from md-sys-state opacities, on a primary button)



Figure 3. Key components & states: buttons (enabled/disabled), checkbox, switch, radio, chips, FAB, text fields (incl. error), slider, progress; state-layer opacities. Source: RENDERED BY US using Google's official @material/web components (<https://github.com/material-components/material-web>, Apache-2.0) and https://github.com/material-components/material-web/tree/main/tokens/versions/v0_192/_md-sys-state.scss. Disabled opacities ESTIMATED.

Shape scale (md-sys-shape)



Sample layout (rendered by us with M3 tokens + @material/web; not an official mockup)

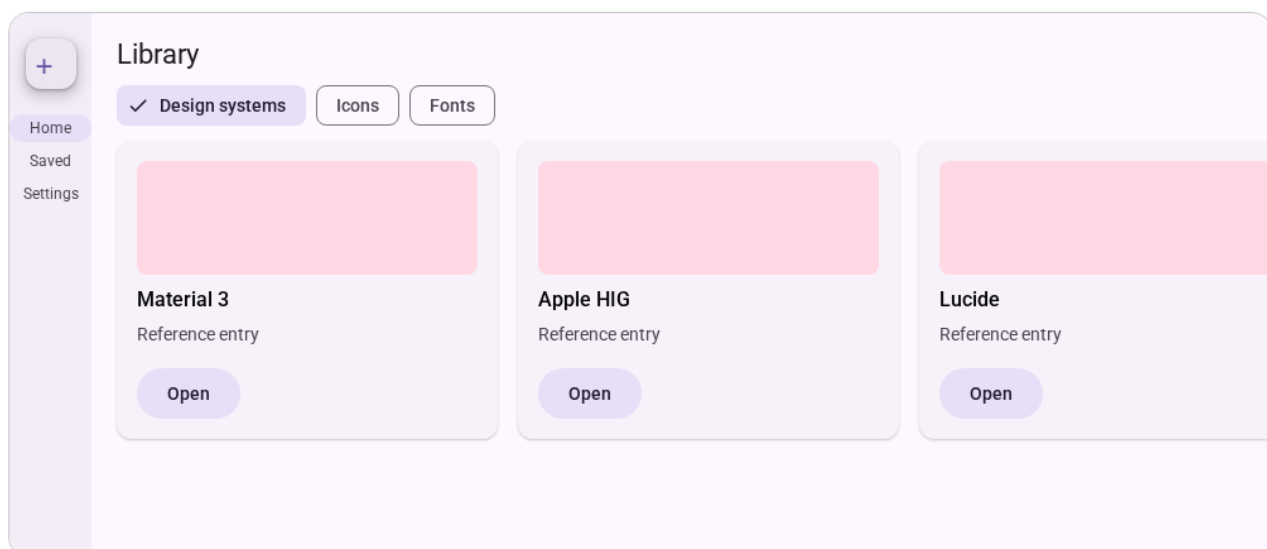


Figure 4. Shape scale and a sample layout (navigation rail + chips + cards). Source: RENDERED BY US with M3 tokens + @material/web; illustrative sample, not an official Google mockup

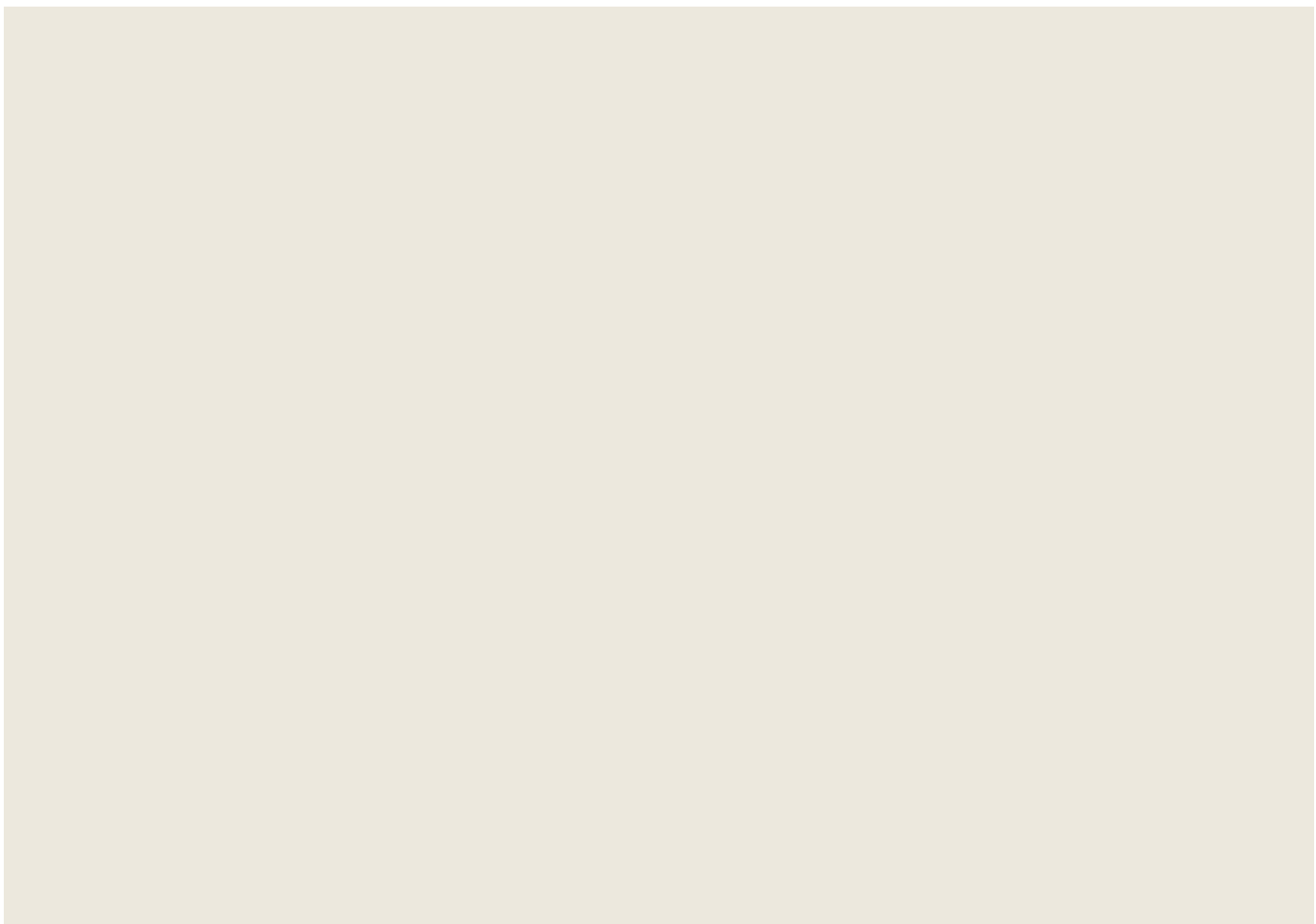


Figure 5. Color roles page header. Source: OFFICIAL PAGE SCREENSHOT (headless Chromium capture of the public page), <https://m3.material.io/styles/color/roles>

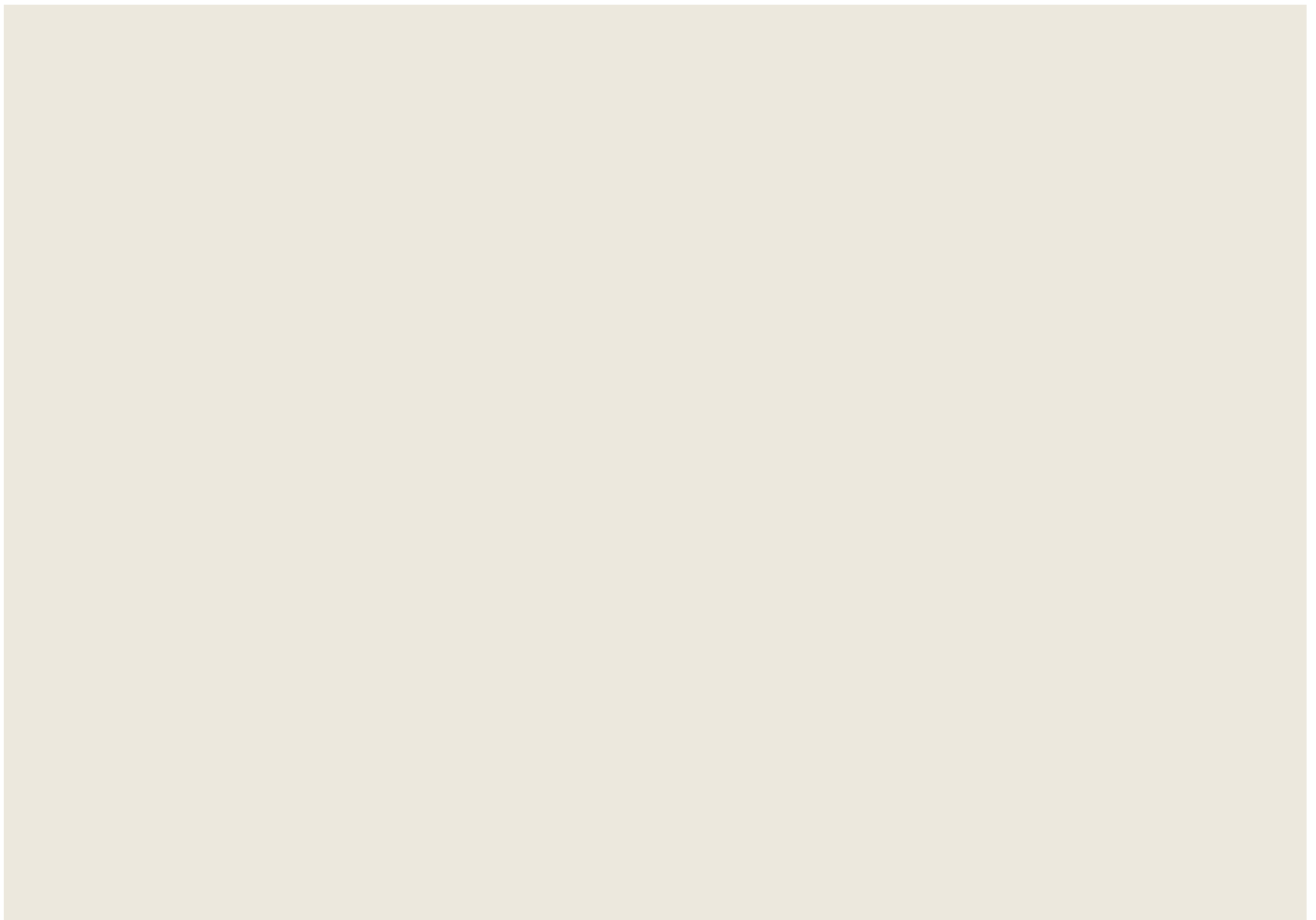


Figure 6. Type scale tokens page header. *Source: OFFICIAL PAGE SCREENSHOT (headless Chromium capture of the public page), <https://m3.material.io/styles/typography/type-scale-tokens>*

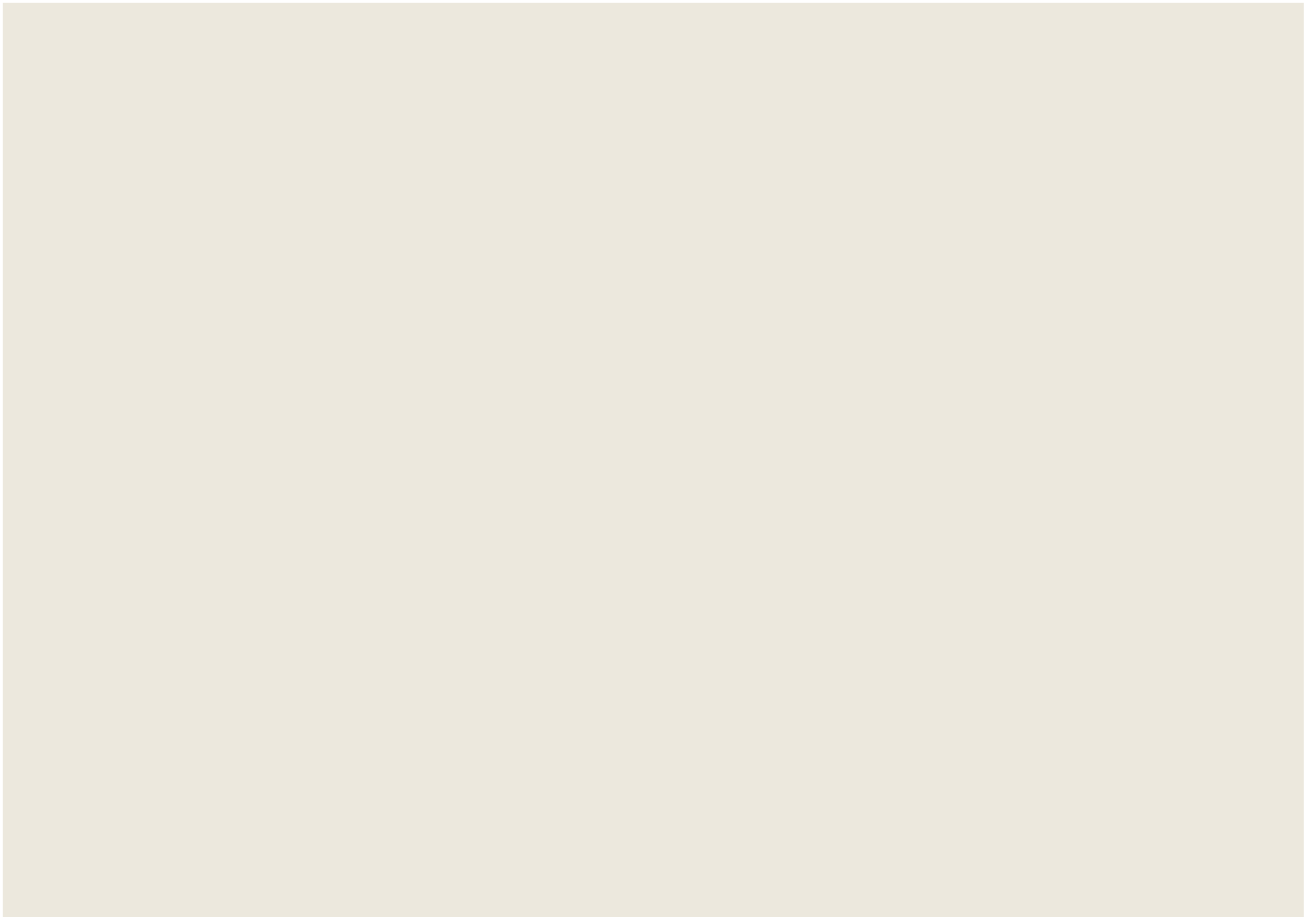


Figure 7. Buttons overview page header (official example component in context). Source: OFFICIAL PAGE SCREENSHOT (headless Chromium capture of the public page), <https://m3.material.io/components/buttons/overview>

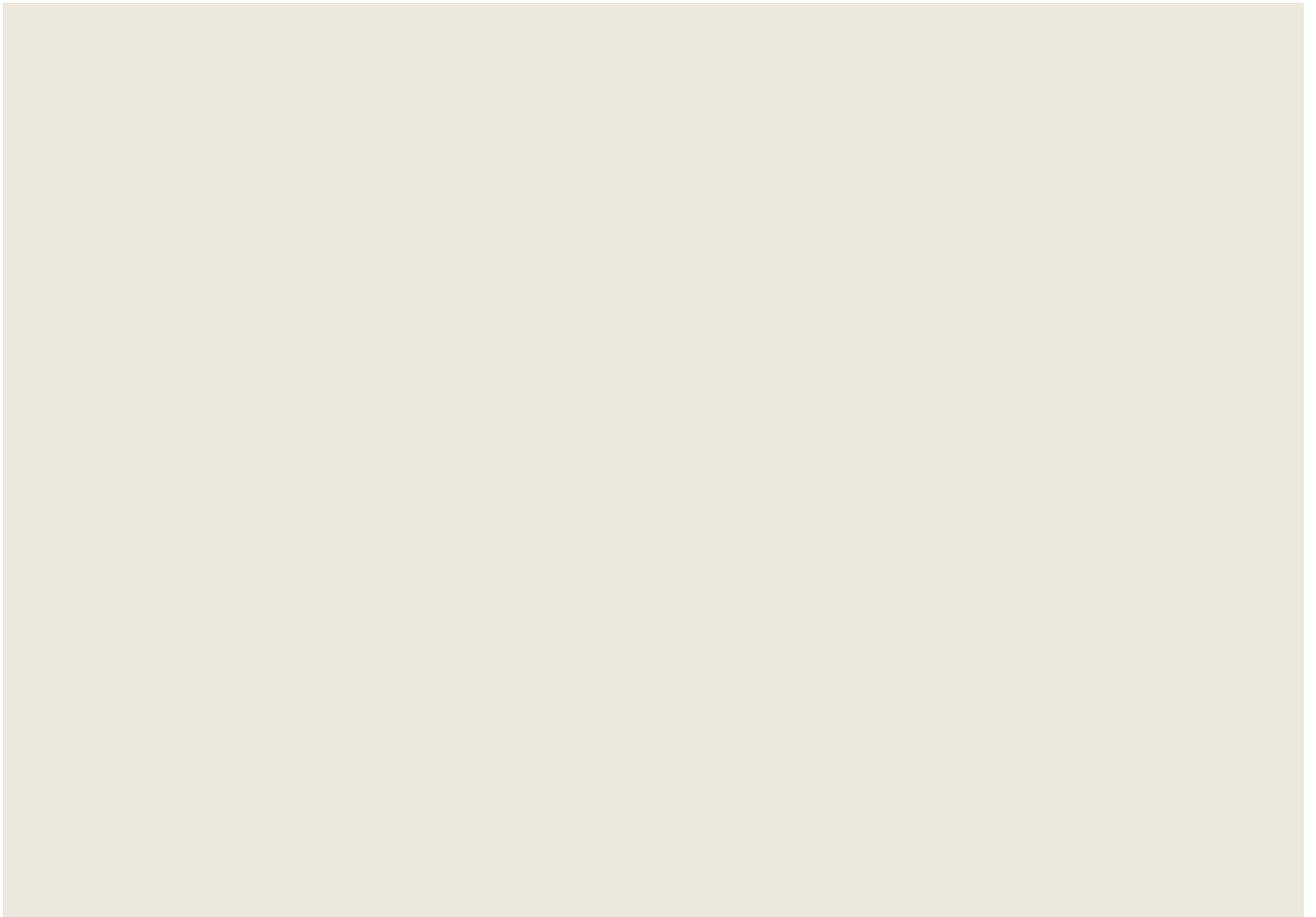


Figure 8. Interaction states page header. Source: OFFICIAL PAGE SCREENSHOT (headless Chromium capture of the public page), <https://m3.material.io/foundations/interaction/states/overview>

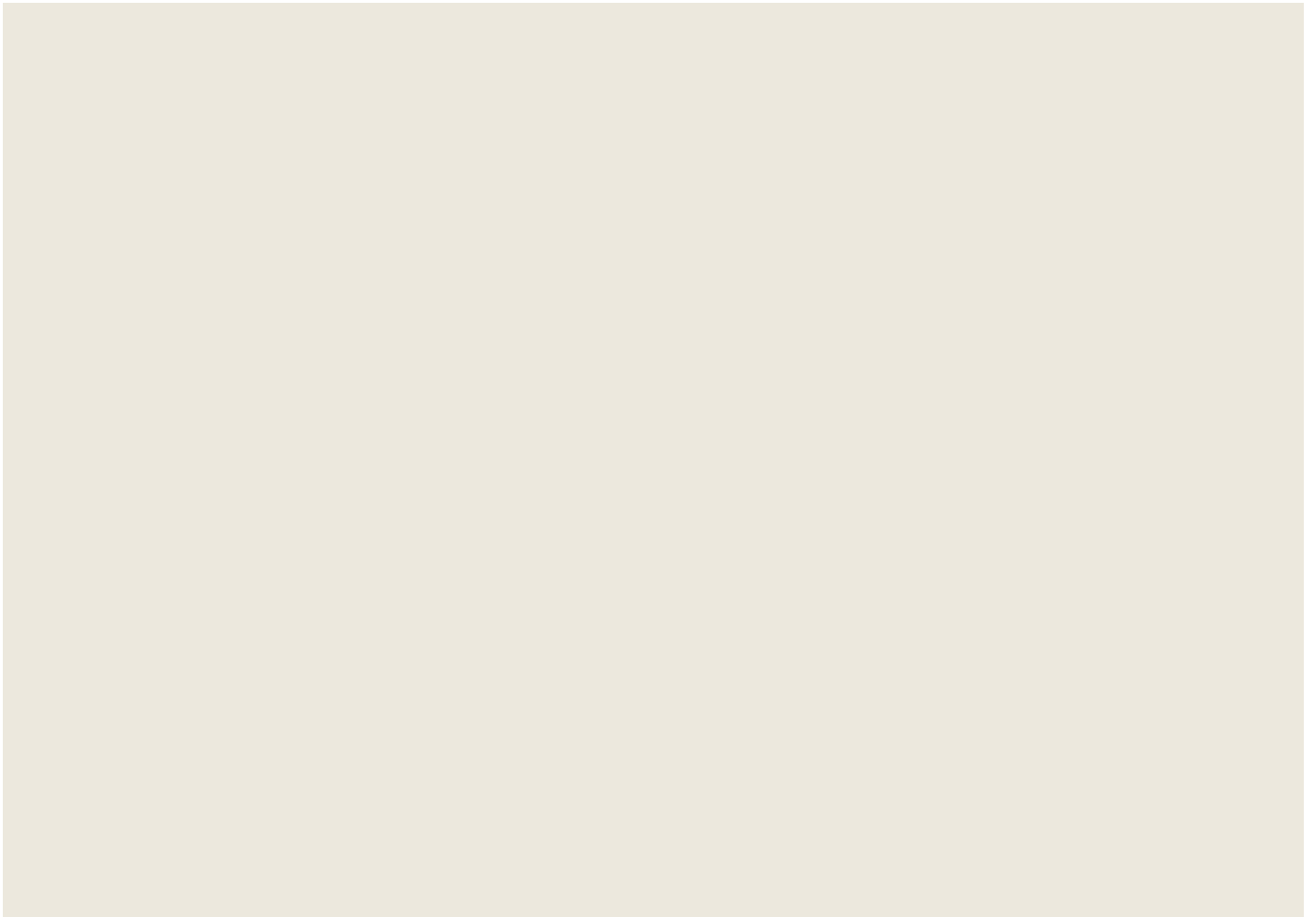


Figure 9. Window size classes / breakpoints page header. Source: OFFICIAL PAGE SCREENSHOT (headless Chromium capture of the public page), <https://m3.material.io/foundations/layout/applying-layout/window-size-classes>