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Selection controls—UI component series

Making choices never was more satisfying. A detailed look at checkboxes, radio buttons, and toggles design.



Taras Bakusevych

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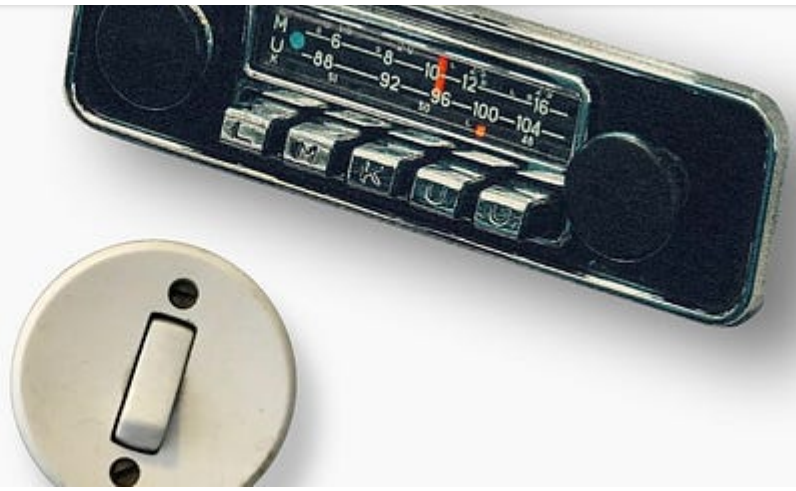


UX Collective a11y-light ~6 min read · June 24, 2020 (Updated: November 11, 2022) · Free: Yes

The word "toggle" is a reference to a switch with a short handle that alternates between two states each time it is activated. You encounter it every time you "switch" on the lights.

As for "Radio Buttons" the word comes from the car radios that as common practice had a set of buttons under the dial that could mechanically store station presets, so the user switch between stations faster. Pressing one of these buttons would cause it to stay down until another was pressed.

Origins



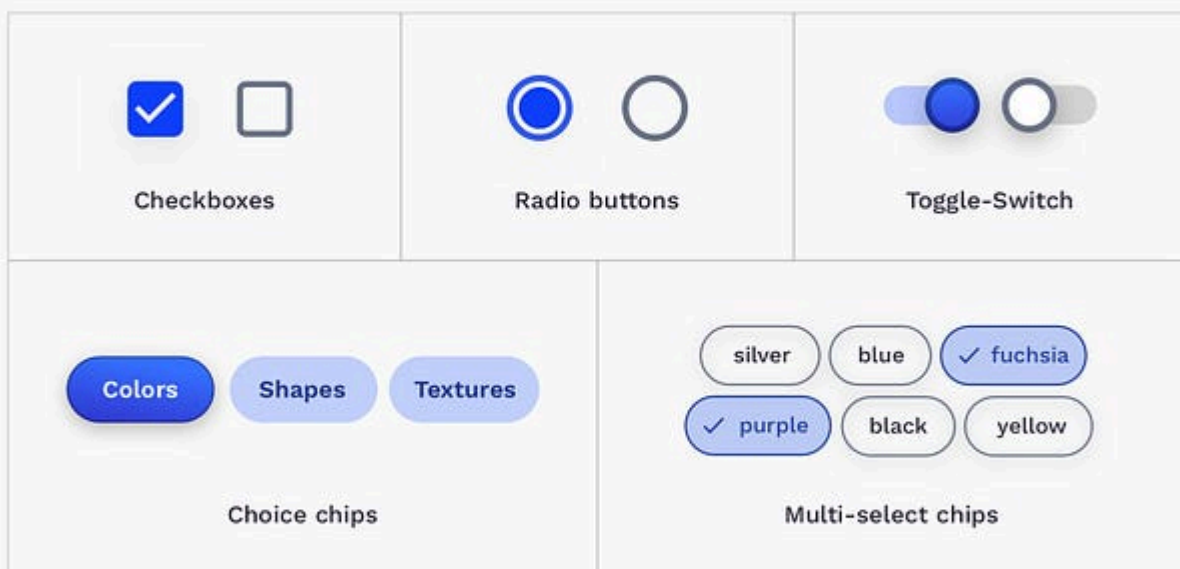
Checkboxes — are used when there are one or many independent options and users may select any number of choices, including none, one, or several.

Radio buttons — are used when there is a list of two or more options that are mutually exclusive and users must select only one of them.

Toggle switches — are used when there are two mutually exclusive options and always have a default value. Toggles selection takes effect immediately.

Selection controls



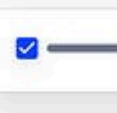

















Types



Multi-select chips — are a compact alternative to checkboxes. Allow users to select multiple options and are primarily used for filtering on mobile.

Selection controls have been used in user interfaces for a long time, so we have formed strong expectations on how they should behave. Here is a simple cheat sheet that you can follow to choose the right type for the right situation.

Selection controls
How to know when use what control?

	 Radio Buttons	 Checkboxes	 Single checkbox	 Toggle Switch
How many selections users can make?	1 	0-All 	2 (yes/no) 	2 (on/off) 
How would you describe the choices?	Mutually exclusive 	Independend of each other 	Mutually exclusive 	Mutually exclusive 
Is there a default option?	Yes 	No 	Yes 	Yes 
When selection will take effect?	After users submit 	After users submit 	After users submit 	Imidiately 

by Taras Bakushevych

Inspiration was taken from NNG article ["Checkboxes vs. Radio Buttons"](#)

States

Checkboxes & radio buttons can be selected or unselected, and Toggles can be Off or On. All of them have enabled, disabled, hover, focused, and pressed states. And I know it looks like a lot), but it's good to create all those states for reliable interaction.

States

Enabled Selected/On	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>
Disabled Selected/On	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>
Hover Selected/On	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>
Focus Selected/On	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>
Pressed Selected/On	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>
Enabled Unselected/Off	<input type="checkbox"/>	<input type="radio"/>	<input type="checkbox"/>
Disabled Unselected/Off	<input type="checkbox"/>	<input type="radio"/>	<input type="checkbox"/>
Hover Unselected/Off	<input type="checkbox"/>	<input type="radio"/>	<input type="checkbox"/>
Focus Unselected/Off	<input type="checkbox"/>	<input type="radio"/>	<input type="checkbox"/>
Pressed Unselected/Off	<input type="checkbox"/>	<input type="radio"/>	<input type="checkbox"/>

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Don't forget about the indeterminate state

State for a checkbox that is neither checked nor unchecked. The state is not fully determined, hence the name- indeterminate. Created to handle a scenario when there's a parent checkbox that has multiple children, some of which are selected and others are not.

Indeterminate States

Enabled Indeterminate		<div><div> Colors</div><div><input type="checkbox"/> Red</div><div><input checked="" type="checkbox"/> Green</div><div><input type="checkbox"/> Brown</div><div><input checked="" type="checkbox"/> Purple</div><div><div> Shapes</div></div></div> <div>Indeterminate Checkboxes</div>
Disabled Indeterminate		
Hover Indeterminate		
Focus Indeterminate		
Pressed Indeterminate		

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Stop misusing toggle switches

Do not create hierarchal structures with toggles. It's more visually distracting and can create a false impression that all child options are On/Off.

Useful tip

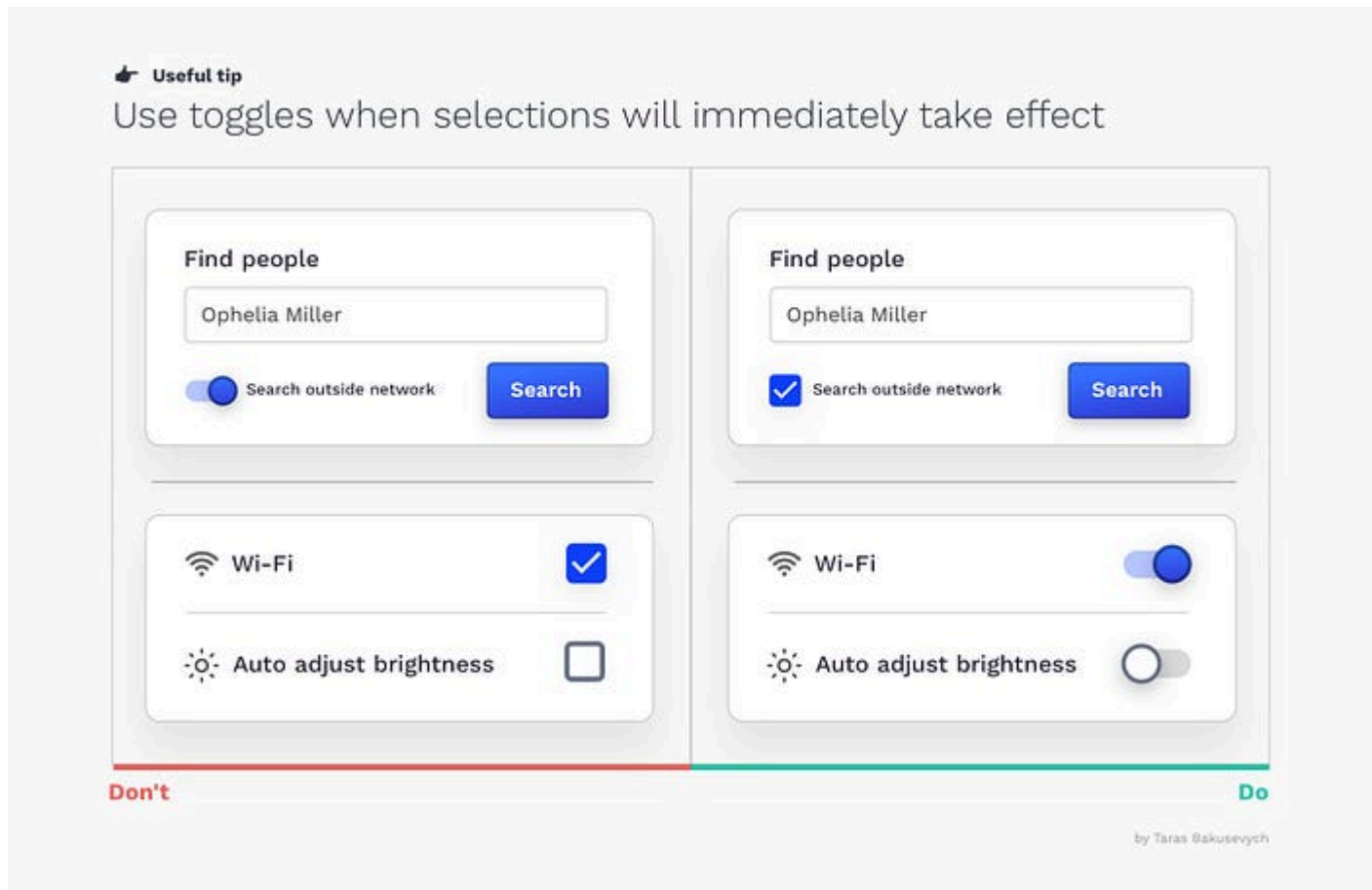
Stop misusing toggle switches



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Use toggles when selection will immediately take effect

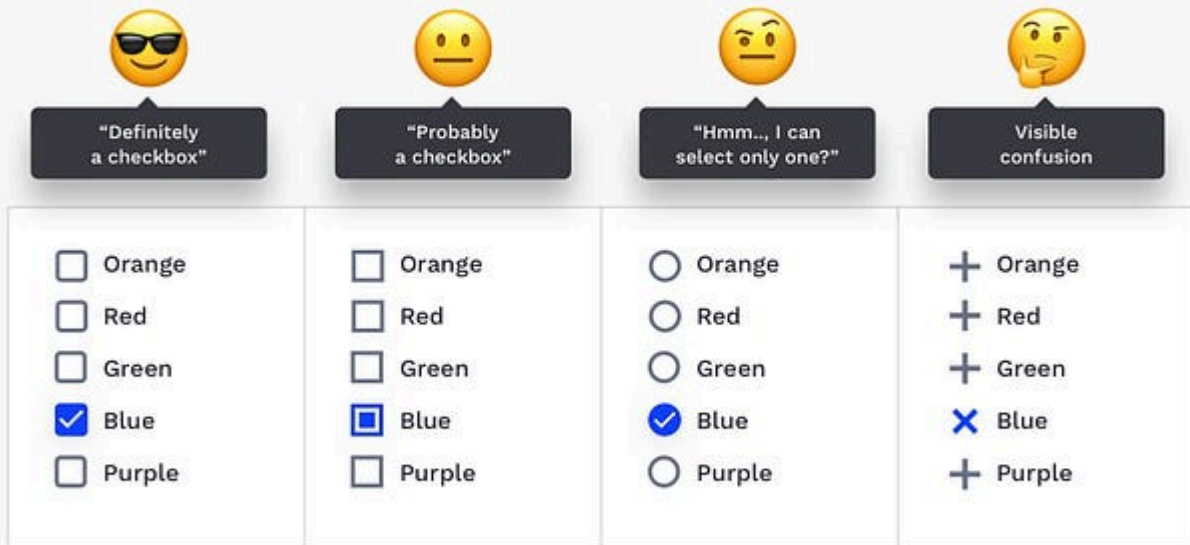
switch with a single checkbox.



Un-orthodox styling can confuse users

Any deviation from what is considered standard for the platform you design will add additional cognitive load for users. I often see circular checkboxes that can be easily confused with radio buttons.

Un-orthodox styling can mislead users






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Presenting options in the vertical list will help users easily scan them

Left-aligned controls and labels will work best as they are closely positioned to each other. This supports the fastest completion times and fewer mistakes. Right-aligned controls have some benefits on mobile, as labels and buttons, can't get too far apart. Having a button close to the right edge makes it more easily reachable when holding the device in one hand. Also, we are not obscuring the labels with a finger during selection.

Left-aligned controls & labels work best

 <p>Orange <input type="checkbox"/> Red <input type="checkbox"/> Green <input checked="" type="checkbox"/> Blue <input checked="" type="checkbox"/> Purple <input type="checkbox"/></p> <p>Excessive and variable distances between labels and controls</p>	 <p>Orange <input type="checkbox"/> Red <input type="checkbox"/> Green <input checked="" type="checkbox"/> Blue <input checked="" type="checkbox"/> Purple <input type="checkbox"/></p> <p>Harder to quickly scan, and quickly select multiple options</p>	 <p><input type="checkbox"/> Orange <input type="checkbox"/> Red <input checked="" type="checkbox"/> Green <input checked="" type="checkbox"/> Blue <input type="checkbox"/> Purple</p> <p>Label and control are closely positioned, easily scannable</p>
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by Taras Bakusevych

Consider chips if vertical space is an issue

You should prevent a situation when it's really difficult to see which control is selected (make sure to space the buttons and labels). Consider using chips to clearly visually separate options.

Useful tip

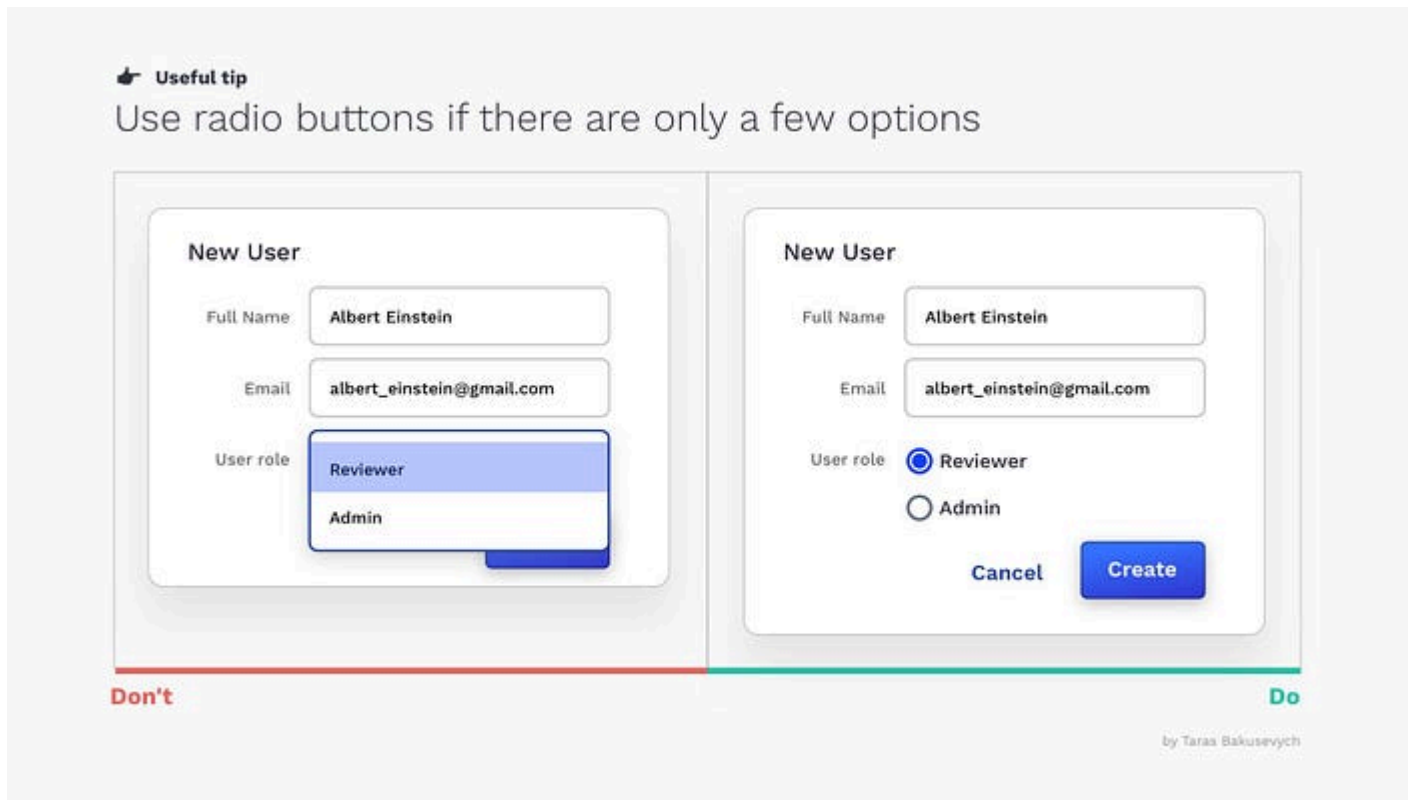
Consider selection chips if vertical space is an issue

<p>Search by</p> <p><input checked="" type="radio"/> Colors <input type="radio"/> Shapes <input type="radio"/> Textures</p> <p>Select colors</p> <p><input type="checkbox"/> silver <input type="checkbox"/> blue <input checked="" type="checkbox"/> fuchsia <input checked="" type="checkbox"/> purple <input type="checkbox"/> black <input type="checkbox"/> yellow <input type="checkbox"/> lime <input type="checkbox"/> maroon <input type="checkbox"/> green</p> <p>Don't</p>	<p>Search by</p> <p><input checked="" type="button" value="Colors"/> <input type="button" value="Shapes"/> <input type="button" value="Textures"/></p> <p>Select colors</p> <p><input type="button" value="silver"/> <input type="button" value="blue"/> <input checked="" type="button" value="fuchsia"/> <input checked="" type="button" value="purple"/> <input type="button" value="black"/> <input type="button" value="yellow"/> <input type="button" value="lime"/> <input type="button" value="maroon"/> <input type="button" value="green"/></p> <p>Do</p>
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If possible, use radio buttons rather than drop-down menus

Making all options permanently visible so that users can easily compare them reduces cognitive load and help forms be more transparent.



Use dropdowns for numerous or similar options

If the number of options is more than 6–7 you should consider putting them in the dropdown as users anyway will not be able to keep all of them in mind. The same will apply to predictable, similar, or incremental options like (zoom — 10%, 20%, 30% ..).

Use dropdowns for numerous or similar options

Personal info

Date of birth

24 Jan 2001

Country

☒ Afghanistan

☐ Albania

☐ Andorra

☐ Antigua and Barbuda

☐ Argentina

Personal info

Date of birth

24 Jan 2001

Country

Afghanistan

Albania

Andorra

Antigua and Barbuda

Use dropdowns if there are more than 7-8 options

Use dropdowns if there are a lot of similar options

Don't

Do

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It is better to have a selected radio button by default

Users cannot deselect and set the radio button back to its original state once one has been selected. If users might need to refrain from making a selection, you should provide a radio button labeled "None." Structure the list of options in a logical order, and harness the power of suggestion.

Useful tip

Select a single radio button by default in most cases

Color theme

☐ Red

☐ Green

☐ Blue

☐ Purple

Color theme

☒ Red

☐ Green

☐ Blue

☐ Purple

Don't

Do

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Write clear labels, avoid negations

Avoid situations when users need to tick the box in order for something **not** to happen.

Useful tip
Write clear labels, avoid negations

Don't

Do

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Highlight selected options to draw users attention

Visually differentiate selected options from others, especially important for rows selection in data tables.

Useful tip
Highlight selected options to draw users attention

Don't

Do

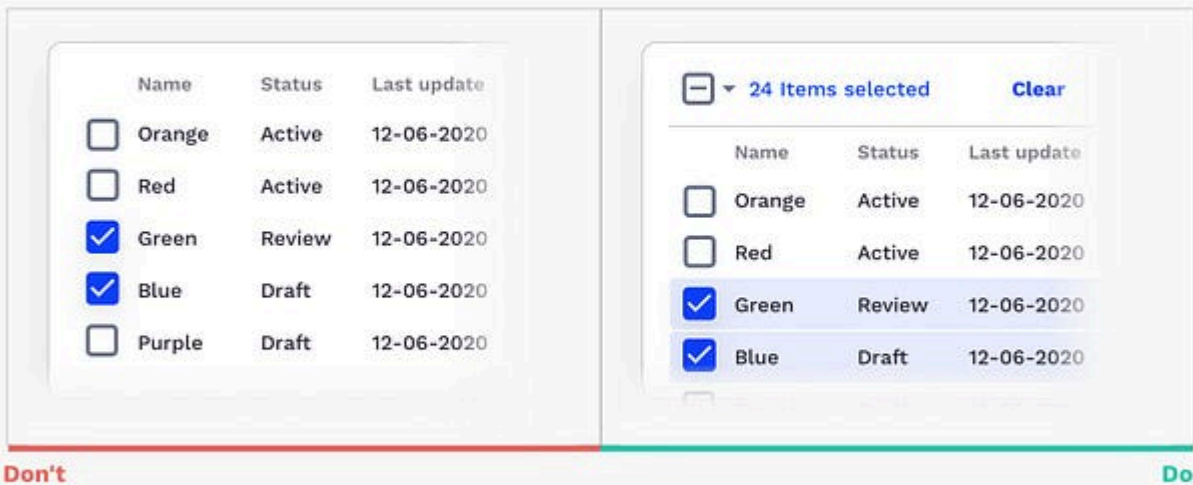
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Support bulk select and clear

Selecting or clearing multiple items at once should be effortless for users.

👉 Useful tip

Support bulk select and clear for large lists of options



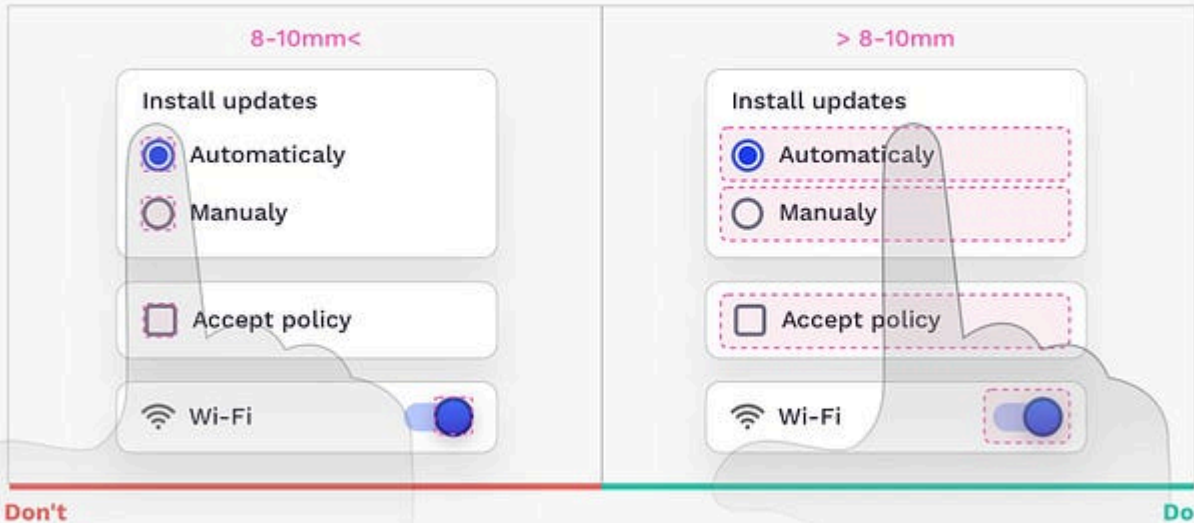
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Make clickable areas large enough for reliable interaction

Include both buttons and labels in the generous clickable/tappable area.

According to Fitts's Law the size of the target plays an important role. Checkboxes and radio buttons are generally tiny and can be tricky to click or tap, especially on mobile.

Make controls clickable areas large enough for reliable interaction



by Taras Bakusevych

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