Defining the content for a modification

Modification content defines the code that is added to a page to change the contents, appearance, or behavior of the page. The code can consist of HTML, CSS, and JavaScript, in any combination. For example, the content can be a DOM element that is displayed to visitors, such a hero banner or a product carousel, or it can be a script that adds invisible functionality to the page, such as data tracking or event handling.

A modification can have one or more **variations**. Variations are different content versions of the same modification. If a modification has only one variation, all visitors get that variation. If a modification has multiple variations, you can define how the variations are distributed among visitors, that is, what percentage of visitors gets which variation.

Apart from multi-armed bandit modifications, a visitor is assigned to a specific variation until they clear their browser cache, open a new window in incognito mode, or visit the site from another device.

You can create three types of variations:

- **Custom content.** The content is defined directly in the variation. The content is only available to that variation.
- **Content template.** The content is defined outside the modification in a template. A variation links to the template for its content. The template, and therefore the content, is also available to other modifications and variations on the site.
- **Original content.** No content is defined for the modification. The variation is used for tracking the performance of the original page content. This allows you to compare how the other variations perform against the original content.

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- Defining the variation distribution for an A/B test modification
- Defining the variation distribution for a multi-armed bandit modification
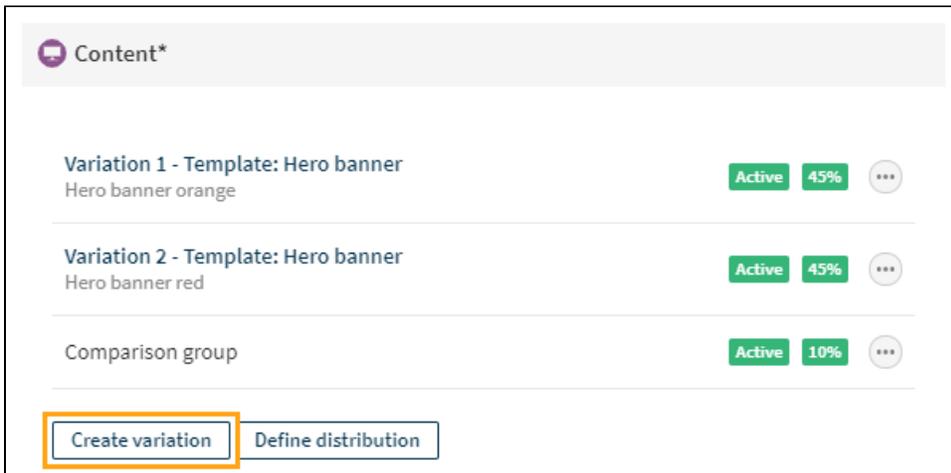
Creating a variation

To define content for your modification, you must create at least one variation. The number of variations you can create for a modification depends on the modification case:

Case	Variations	Notes
A/B test	Multiple	
Multi-armed bandit	Multiple	
Personalization	1	The variation is pre-created with the modification, and you can modify it, but not remove it.
Non-personalized	1	The variation is pre-created with the modification, and you can modify it, but not remove it. This case is only available when selective profiling is enabled for the site.

The Frosmo Platform automatically places 10% of all visitors in the comparison group. To disable the comparison group for the modification, deactivate the comparison group variation. **Non-personalized** modifications do not have a comparison group variation.

To create a variation:

1. In the **Basic settings** view, click **Create variation**.

> ⓘ If the modification case is **Personalization**, the modification can only have a single variation. The variation is pre-created with the modification. You cannot add more variations.

2. Define the content type and content settings for the variation.
3. When you're done, click **Save**.

Editing a variation

To edit a variation:

1. In the **Basic settings** view, in the **Content** section, find the variation you want to edit, and click its name.
2. Define the content type and content settings for the variation.
3. When you're done, click **Save**.

Removing a variation

> ⚠ If the modification case is Personalization, the modification can only have a single variation. The variation is pre-created with the modification. You cannot remove the variation.

To remove a variation:

1. In the **Basic settings** view, in the **Content** section, find the variation you want to remove.
2. Click the quick menu button for the variation, and select **Remove**.
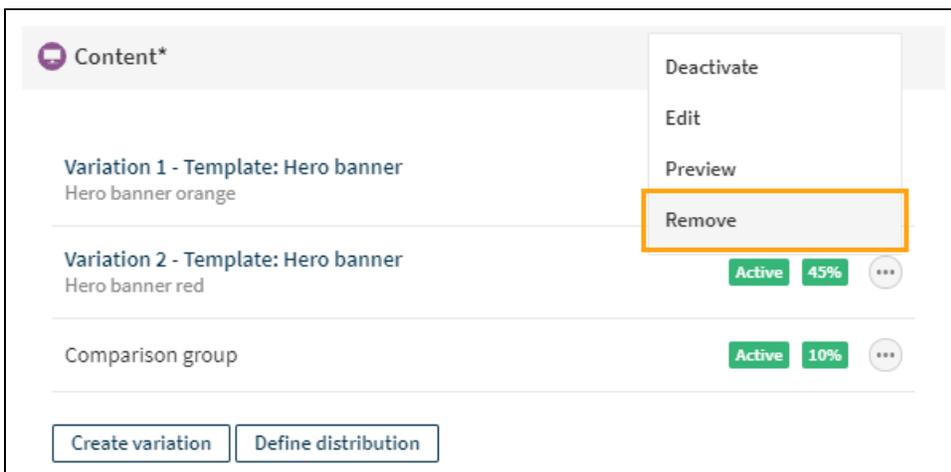
Defining the content type and content settings for a variation

To define the content type and content settings for a variation:

1. Optionally, enter a title for the variation.

> ⓘ If your site has a Google Analytics integration with the Frosmo Platform, the variation title is shown as a label in Google Analytics. If you change the title in the Control Panel, the label will also change.

2. Select or change the content type:
   a. Click **Select type**.
   b. Select the content type.

   c. Click **Select**.
3. Define the content based on the selected content type. The available content settings depend on the selected content type and template.
   a. **Custom content**: Define your own CSS, HTML, and JavaScript content in a code editor.

> ⚠️ When using CSS and JavaScript in variation content, the code must be wrapped in `<style>` and `<script>` elements, respectively.

    b. **Original content**: Create a variation for tracking the original page content. Since the variation is only used for collecting data, you don't define content for it.

> ⚠️ To track original content, the display method of the selected placement must be **Replace content**, **Replace element**, or **Hide & replace original**. You cannot append a variation to the original content.

    c. **Content templates**: Define content based on a predefined template.

Content type
Selected content type: Hero banner

Select type

Content options

Title*

Welcome to Frosmo!

Background color

Content options object (JSON) >

To view the JSON object describing the full content options for the variation, expand the **Content options object (JSON)** section.

Content options

Title*

Welcome to Frosmo!

Background color

Content options object (JSON) ∨

```
{
    "bannerBackgroundColor": "#b4b4b4",
    "bannerTitle": "Welcome to Frosmo!"
}
```

4. When you're done, click **Save**.

Activating and deactivating a variation

Before activating the modification and thus making it visible on the site, you must activate each variation you want to use.

The Frosmo Platform automatically places 10% of all visitors in the comparison group, which sees the original content of a web page instead of modifications. Once a visitor enters the comparison group, that visitor will not see any modifications on the site that have the comparison group variation enabled. The comparison group is treated as a variation, and you can deactivate it as any other variation.

To activate a variation:

1. In the **Basic settings** view, in the **Content** section, find the variation you want to activate.
2. Click the quick menu button for the variation, and select **Activate**.
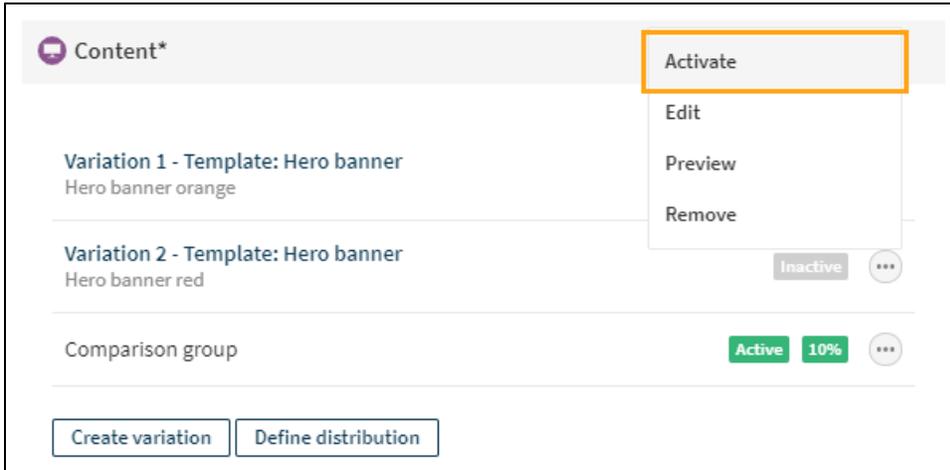
To deactivate a variation:

1. In the **Basic settings** view, in the **Content** section, find the variation you want to deactivate.
2. Click the quick menu button for the variation, and select **Deactivate**.
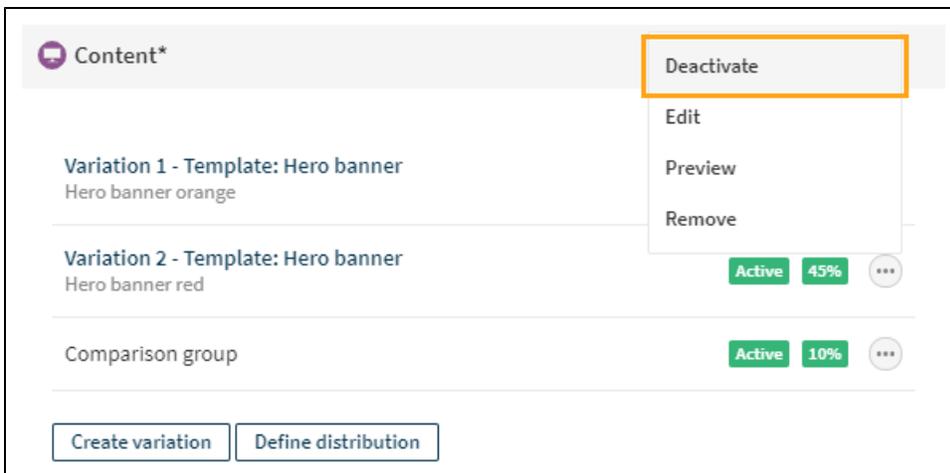

Defining the variation distribution for an A/B test modification

⚠ You can manually define the variation distribution only when the A/B test modification has at least two active variations (in addition to the comparison group).

To define the variation distribution for an A/B test modification:

1. In the **Basic settings** view, in the **Content** section, click **Define distribution**.
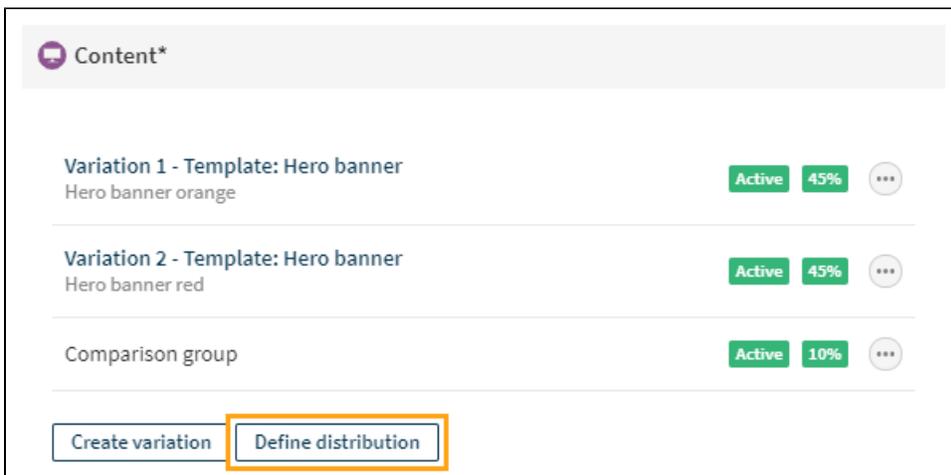
2. Set the distribution between the variations. If you increase the distribution for one variation, the distribution of other variations is automatically adjusted so that the total distribution is 100%.

   If the comparison group variation is enabled for the modification, 10% of visitors do not see the modification, so the total distribution between the other variations is 90%. You can deactivate the comparison group variation in the **Basic settings** view.

3. When you're done, click **Save**.

After defining the variation distribution, you can view the distribution for each variation.
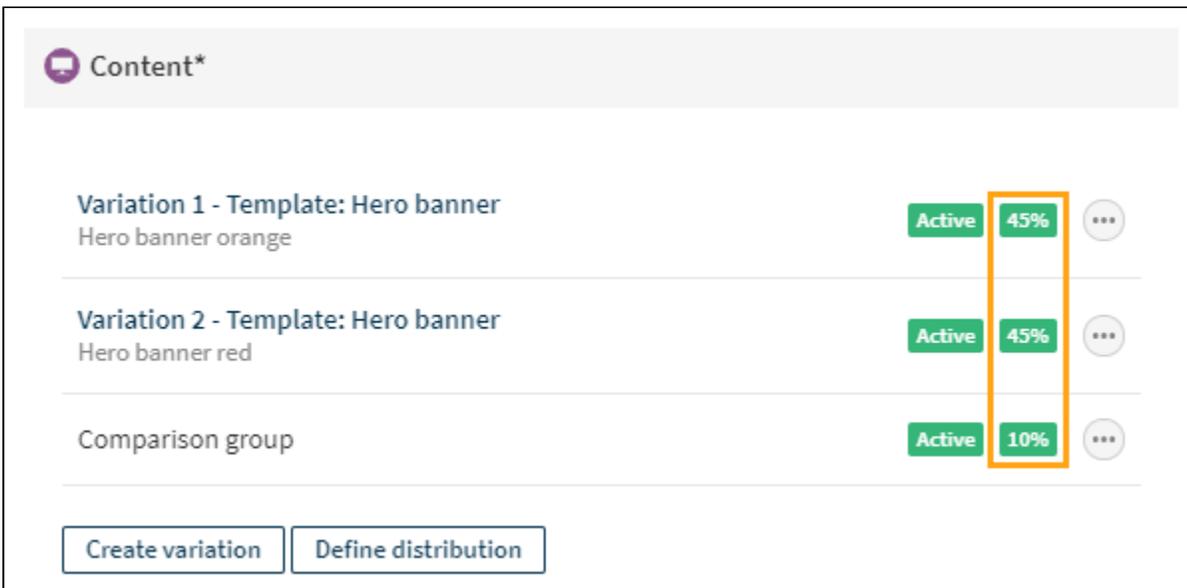
Defining the variation distribution for a multi-armed bandit modification

For a multi-armed bandit modification, you define how to measure variation performance ("reward") and which algorithm to use to automatically optimize the variation distribution. The Frosmo Platform continuously adjusts variation distribution for that modification based on how well the variations perform over time. Performance is measured based on the number of clicks or conversions attributed to each variation.

For more information about the rewards and algorithms, see Multi-armed bandit optimization.

To define the variation distribution for a multi-armed bandit modification:

1. In the **Basic settings** view, in the **Content** section, click **Define distribution**.
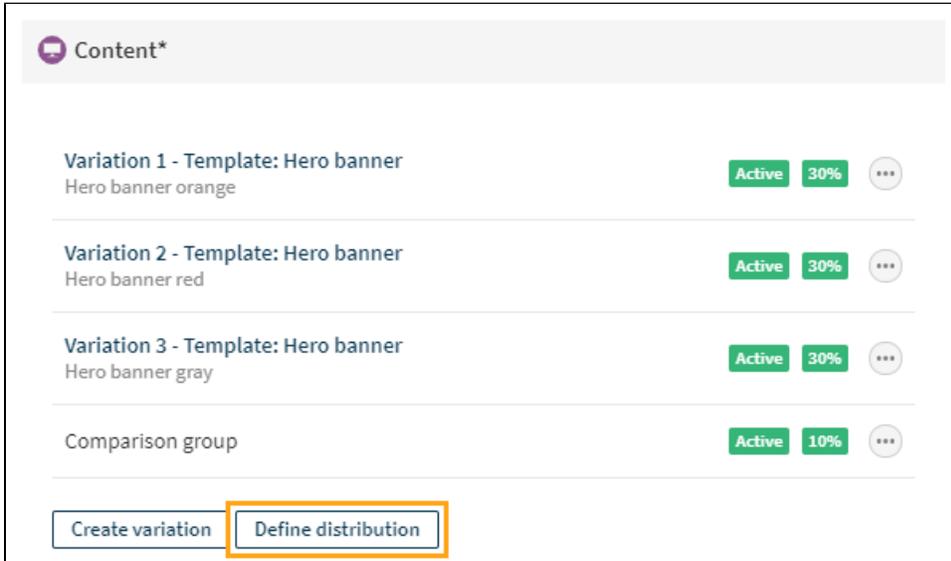
2. Select the reward and the algorithm.

Reward

Select how to measure variation performance. Learn more

○ **Click**
Define the most succesful variation based on the number of clicks it receives.

● **Conversion after click**
Define the most succesful variation based on the number of conversions it receives after being clicked.

○ **Conversion after display**
Define the most succesful variation based on the number of conversions it receives after being displayed.

Algorithm

Select the algorithm for automatically optimizing the variation distribution. Learn more

○ **Thompson sampling**
The most successful variation gets 100% distribution (90% with a comparison group).

○ **Epsilon-greedy**
The most successful variation gets 90% distribution (81% with a comparison group). The remaining 10% (9% with a comparison group) is split equally between the other variations.

● **Softmax**
The most successful variation gets the highest distribution, while the least successful variation gets the lowest distribution. The total available distribution is 100% (90% with a comparison group).

○ **UCB1**
The variation with the highest expected performance gets 100% distribution (90% with a comparison group). The expected performance is calculated based on current performance.

○ **UCB1-tuned**
The variation with the highest expected performance gets 100% distribution (90% with a comparison group). The expected performance is calculated based on current performance, and variations about whose performance the algorithm has less data are selected more often than in UCB1.

3. When you're done, click **Save**.

You can view the distribution for each variation when the variations, and the modification, are active. After data starts to accumulate, the distribution changes over time as the platform measures which variation performs the best. The calculation is performed every two hours.

Content*

Variation 1 - Template: Hero banner Hero banner orange	Active	10%	⋯
Variation 2 - Template: Hero banner Hero banner red	Active	57%	⋯
Variation 3 - Template: Hero banner Hero banner gray	Active	23%	⋯
Comparison group	Active	10%	⋯

Create variation   Define distribution