

Business Case Pubstack

Problem

The publisher notices that eCPM decreased of 25 % from June to July on his websites.

What is the reason explaining this drop?

Plan

I. Dataset Exploration

1. Dataset Overview and Features Distribution
2. Evidence of the eCPM Drop
3. Bivariate Analysis

II. Identification of the Most Influential Factors

1. The Most Beneficial Factor
2. The Most Detrimental Factor

Conclusion

I. Dataset Exploration



1. Dataset Overview and Features Distribution



a) What is eCPM?

The eCPM (effective Cost Per Mille) is the revenue earned by the publisher for displaying 1000 ads on his website.

$$\text{eCPM} = \frac{\text{sum(revenue)}}{\text{sum(impressions)}} \times 1000$$

Quick Explanation of Each Feature

- (1) Date: from the 1st of June 2022 to 31st of August 2022
- (2) Website: name of the website
- (3) Adunit: placement on a website where an ad is displayed
- (4) Size: size on the displayed ad
- (5) Device: desktop or mobile
- (6) Impressions: number of impressions
- (7) Revenue: publisher's revenue
- (8) eCPM: revenue earned for displaying 1000 ads (€/1000 ads)

b) Dataset Overview

x2252 rows

date	website	adunit	size	device	impressions	revenue	ecpm

No null value in the dataset.

c) Categorical Features Distribution

	website	adunit	size	device
<i>unique values</i>	website 1	adunit 1	120x600	desktop
	website 2	adunit 6	160x600	mobile
		adunit 9	200x600	
		adunit 10	300x250	
			300x50	
			...	
			728x90	
			800x250	
			800x600	
			970x250	
			970x90	
			native	

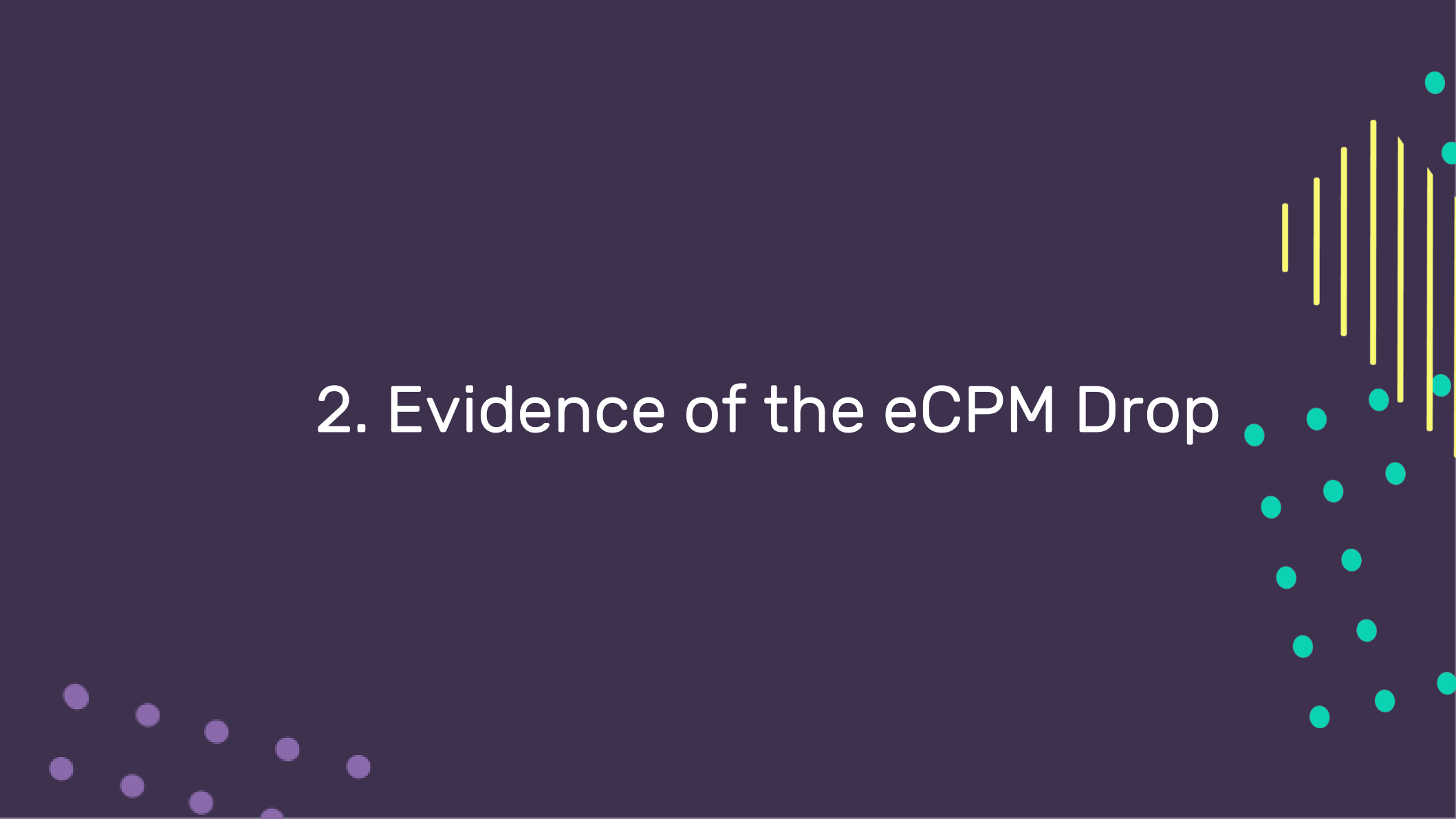
c) Categorical Features Distribution

	website	adunit	size	device
<i>unique values</i>	2	4	17	2
<i>top value</i>	website 2	adunit 1	300x600	desktop
<i>top frequency</i>	1468	844	384	1503

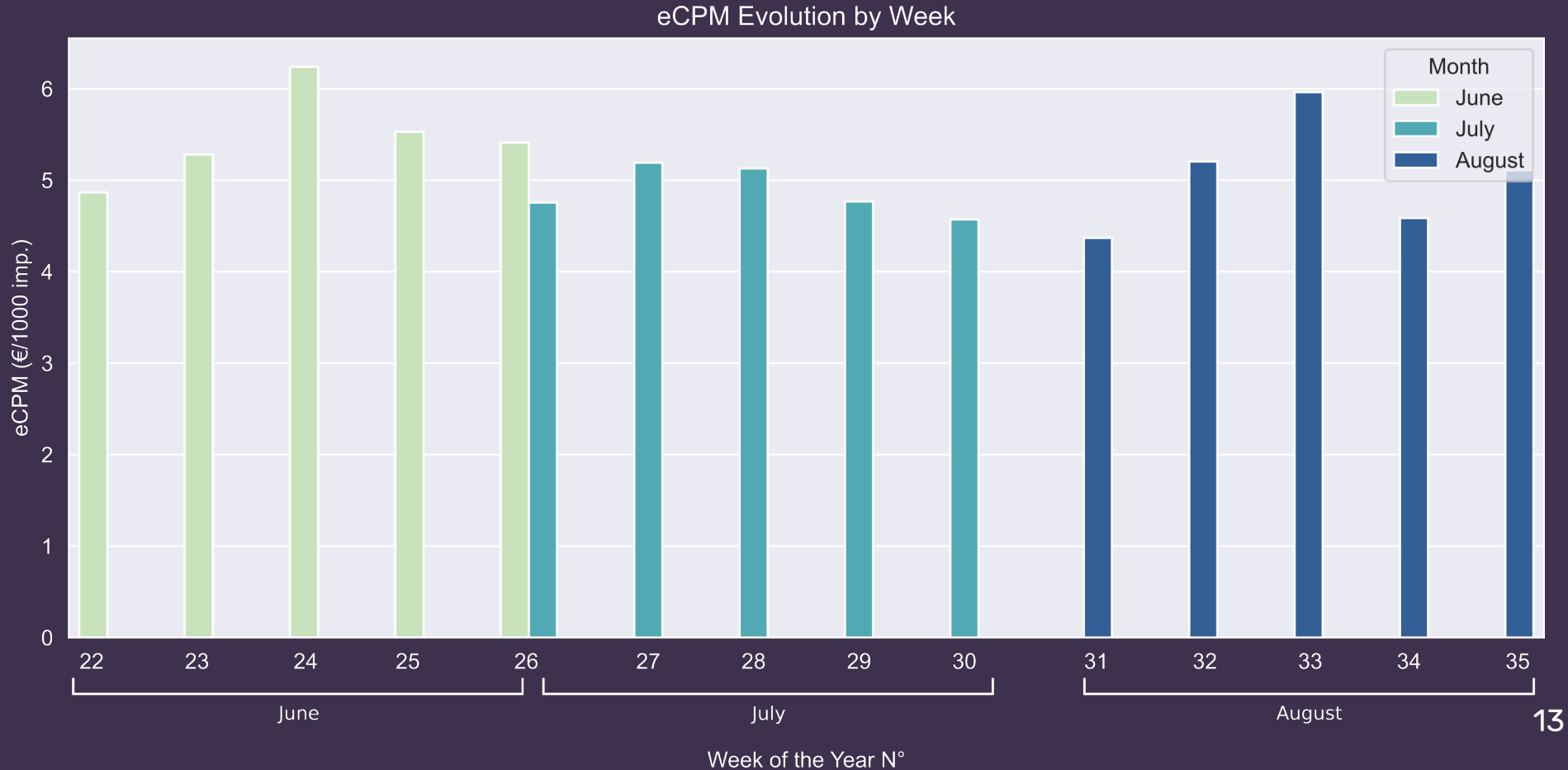
d) Numeric Features Distribution

	impressions	revenue	ecpm
<i>mean</i>	20398	146	5.14
<i>min</i>	1	0.000009	0.009
<i>25%</i>	3	0.005	0.98
<i>50%</i>	36	0.07	1.92
<i>75%</i>	8274	38.01	4.76
<i>max</i>	452 275	4747.04	69.845

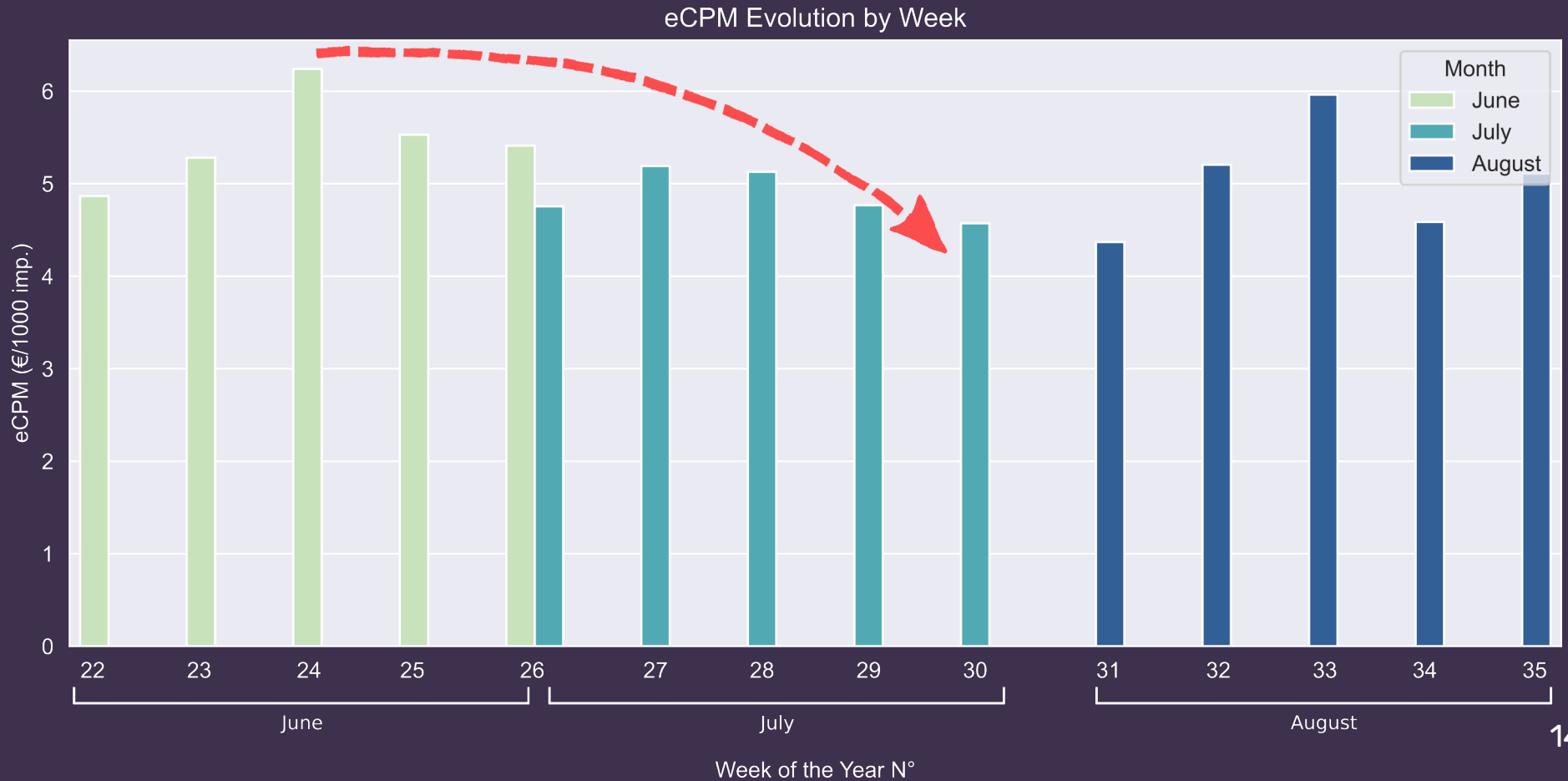
2. Evidence of the eCPM Drop



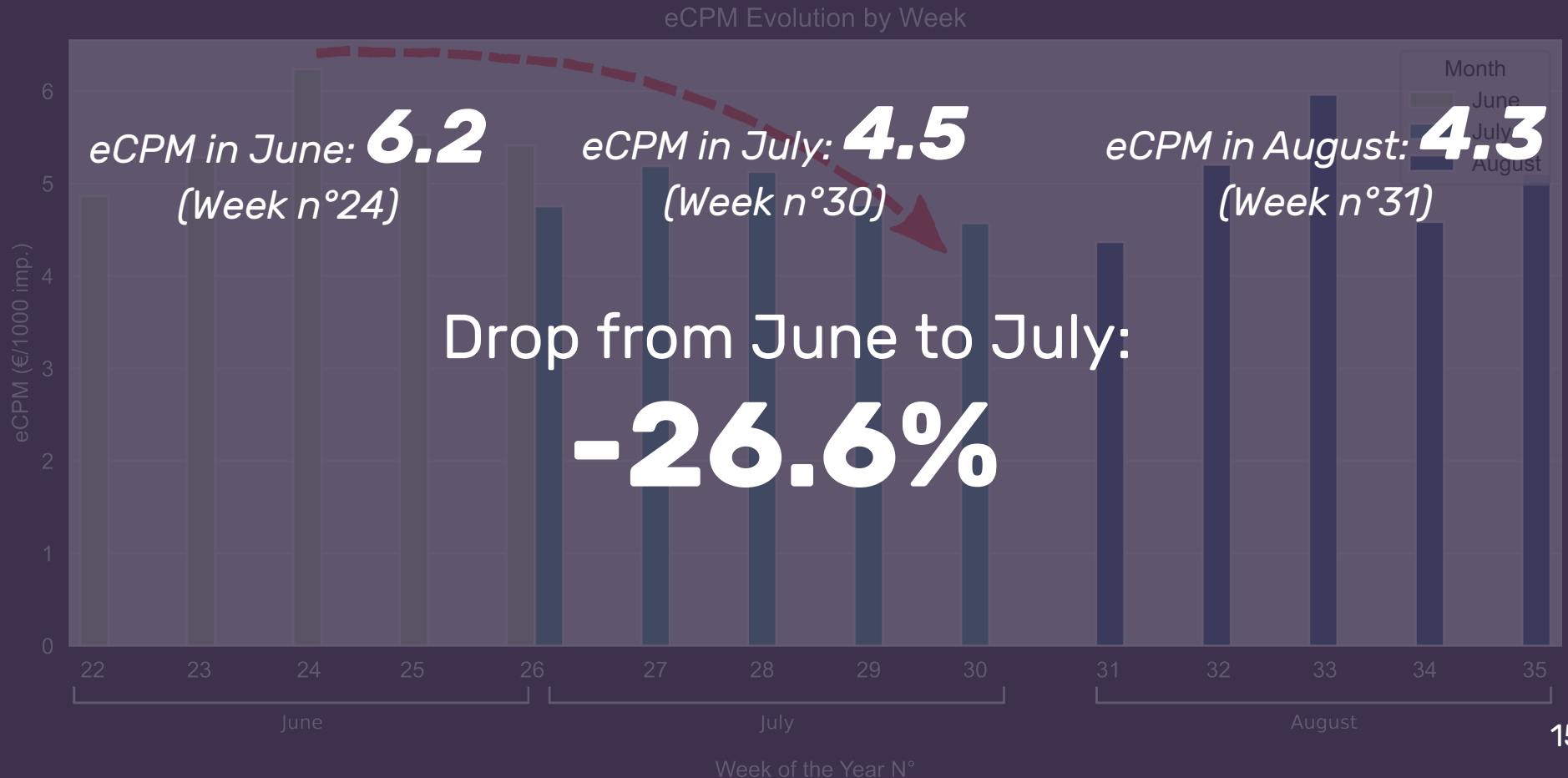
a) Quantification of the eCPM Drop



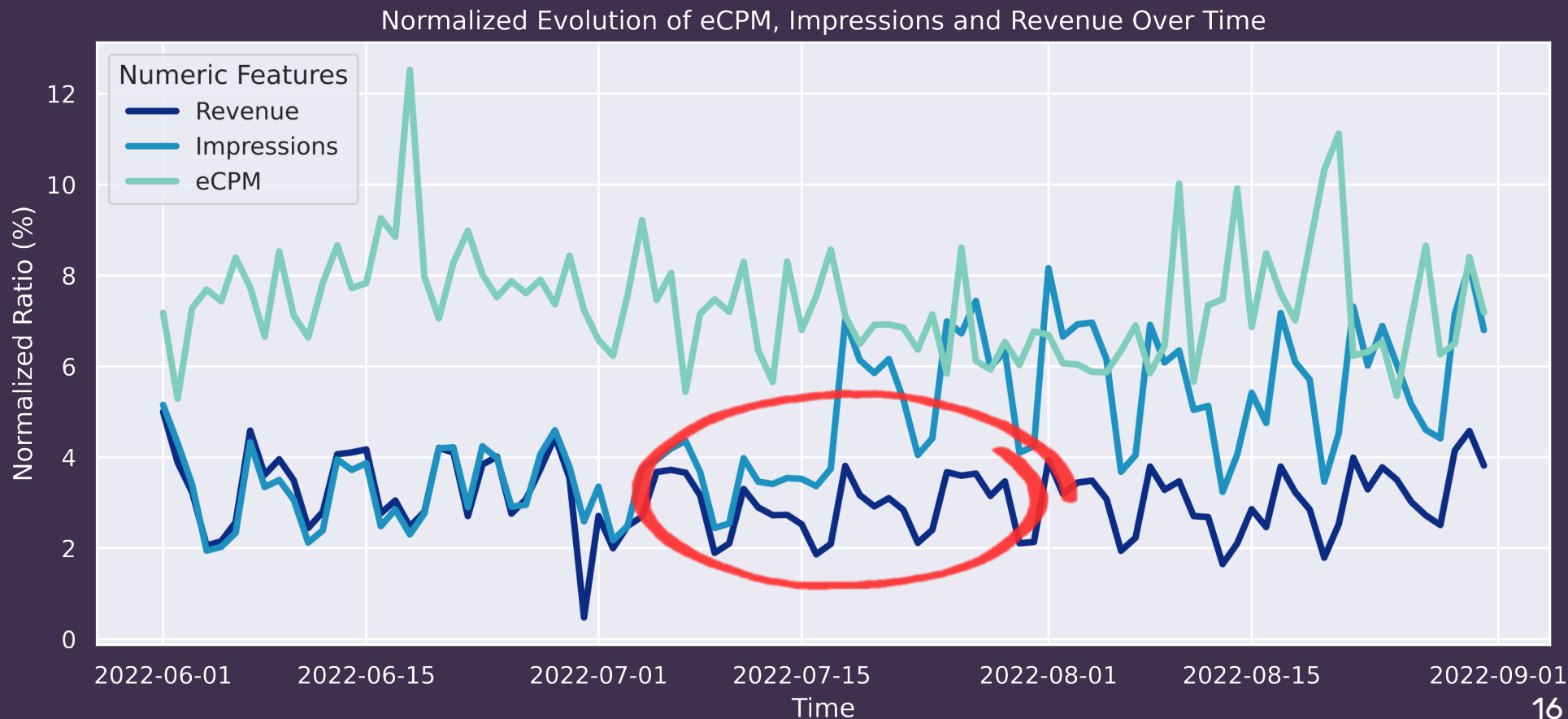
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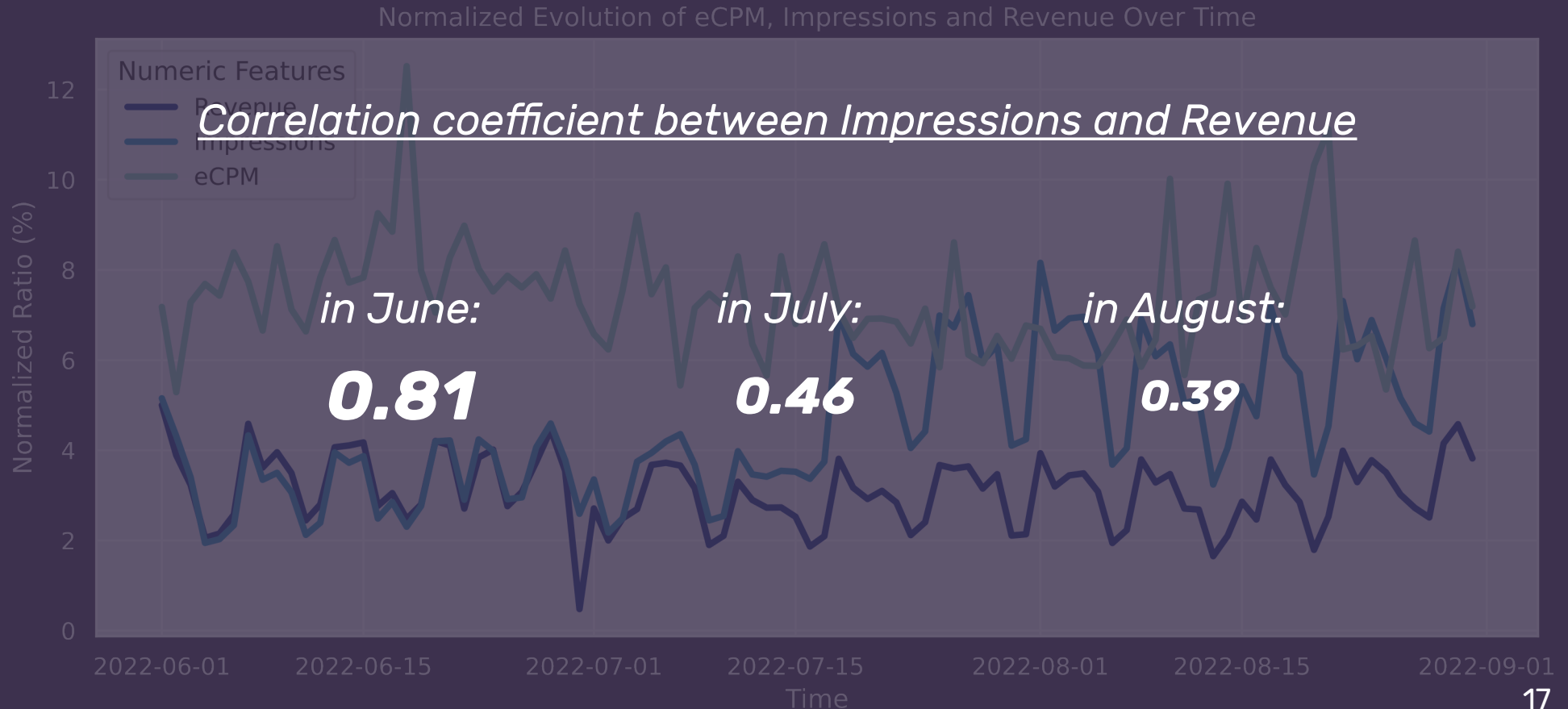
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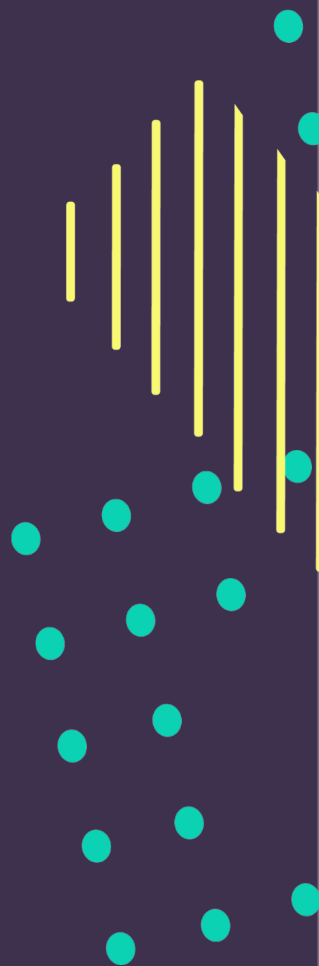
b) Separation Between Impressions and Revenue



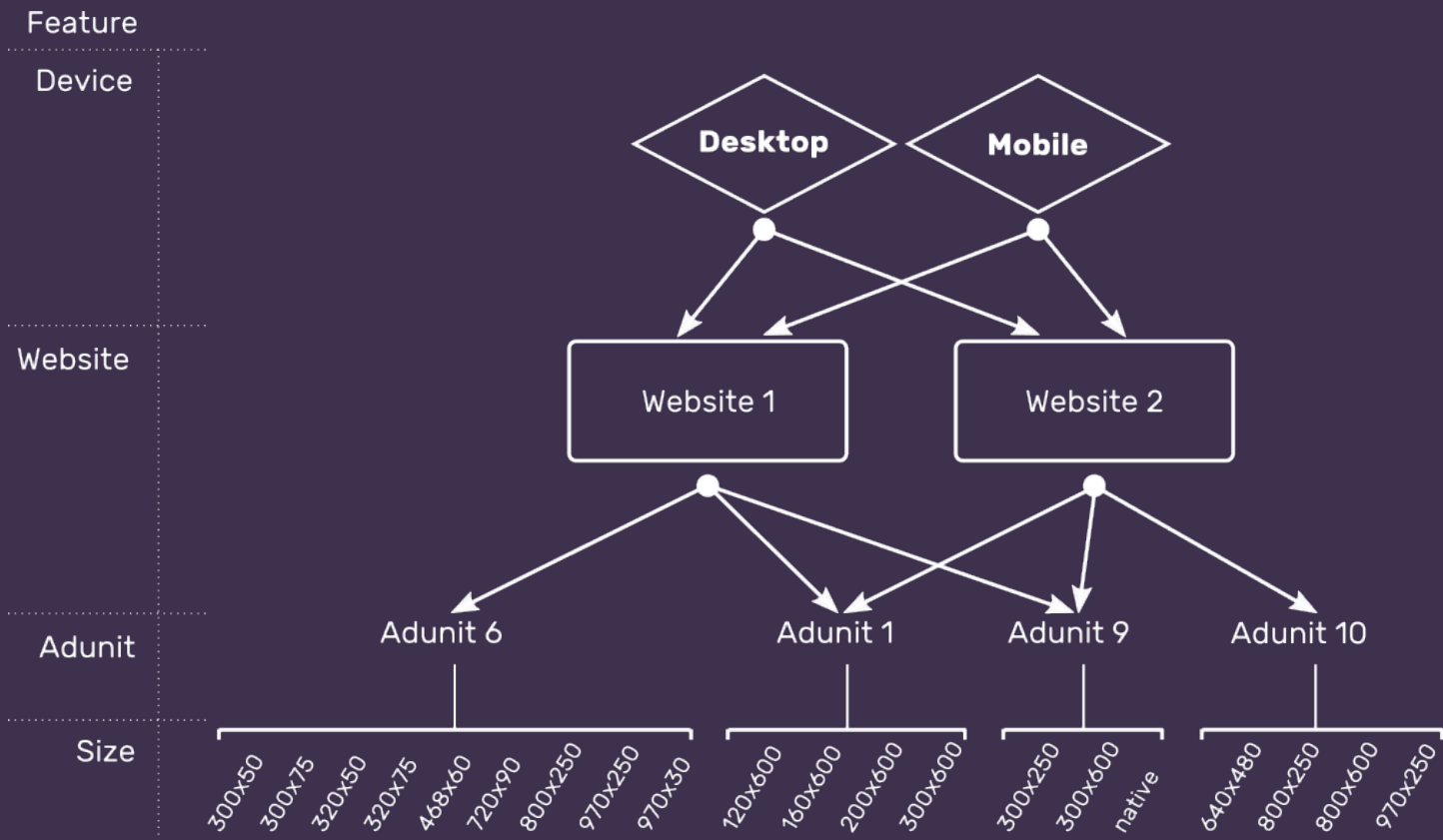
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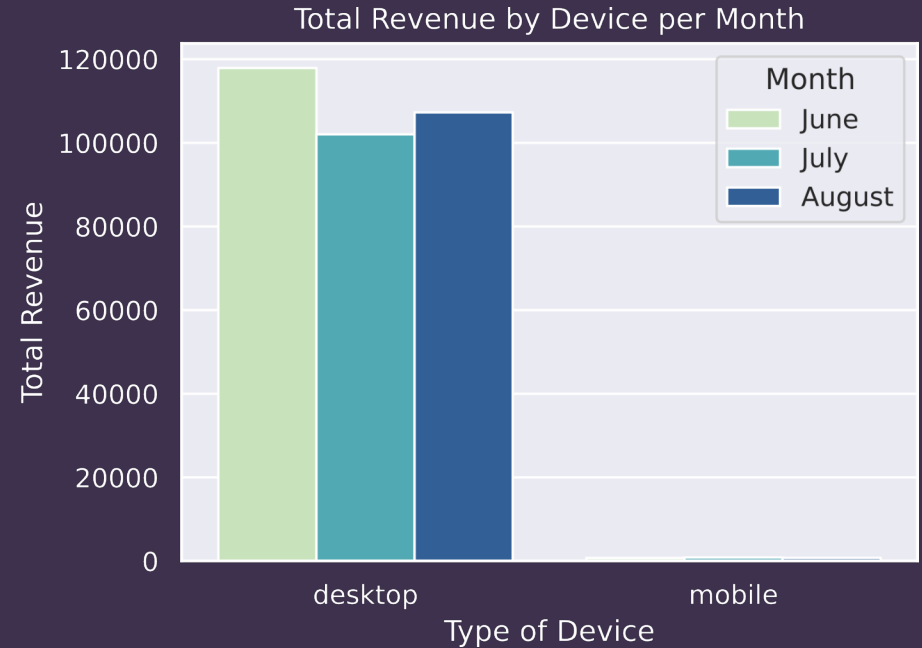
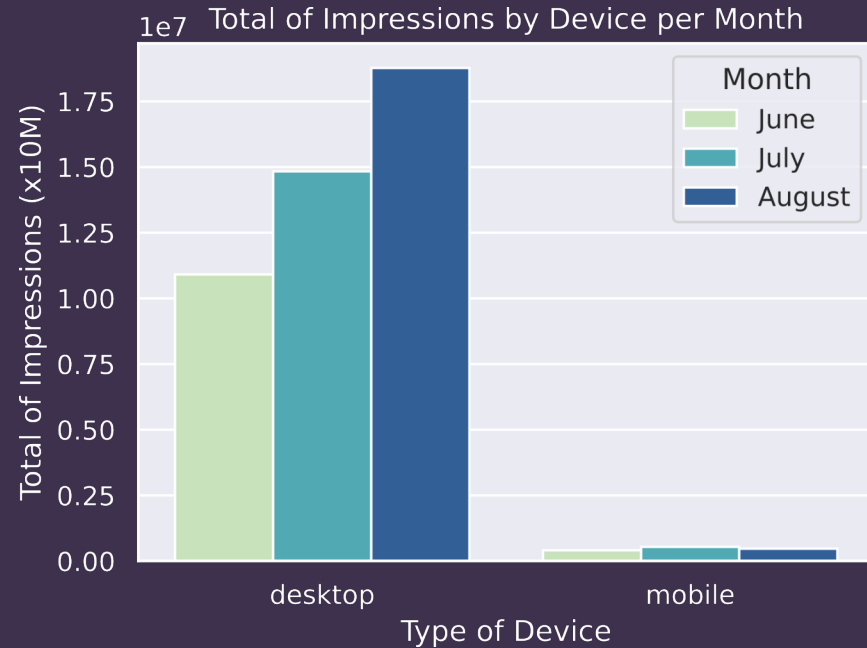
3. Bivariate Analysis



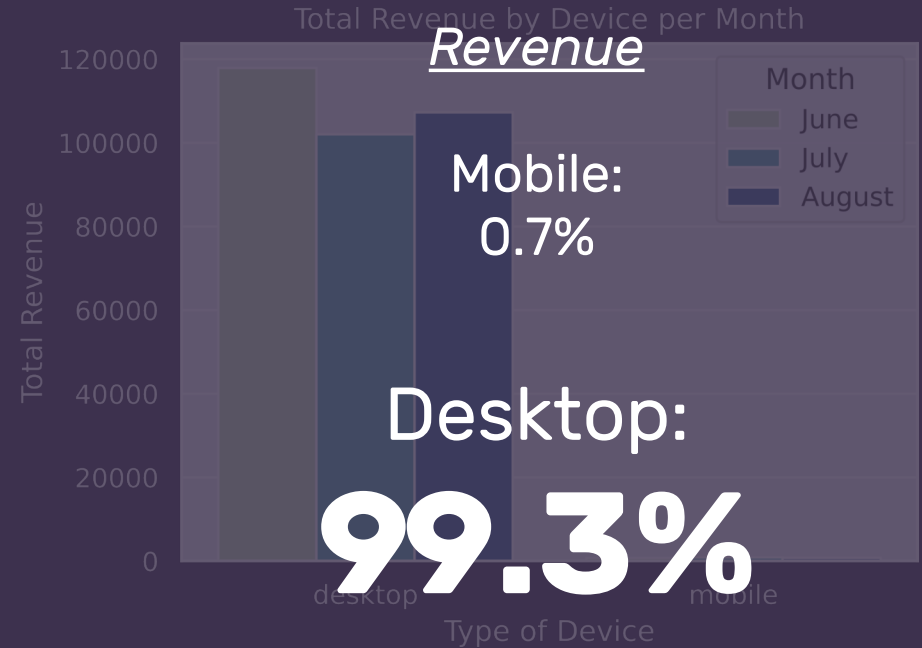
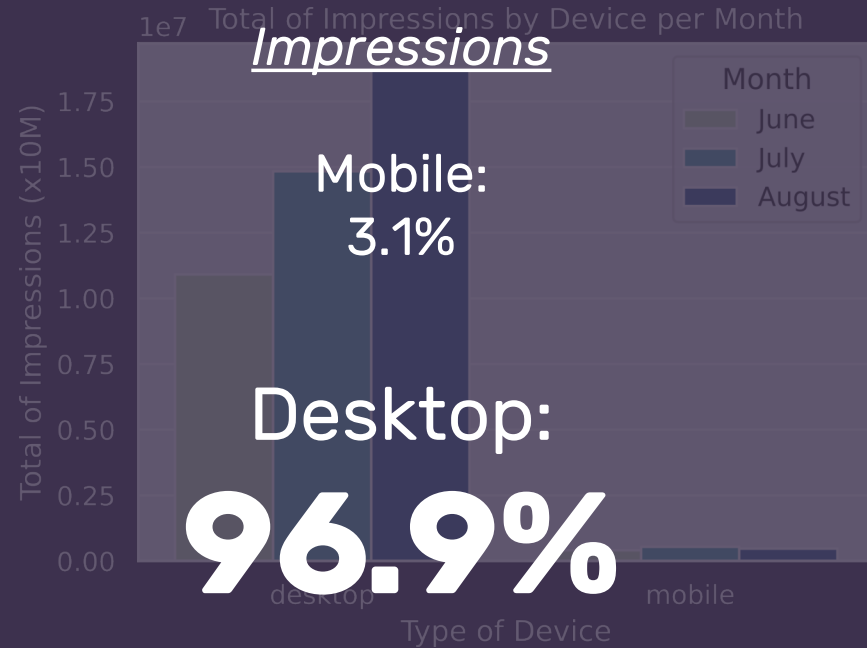
Categorical Features Granularity Overview



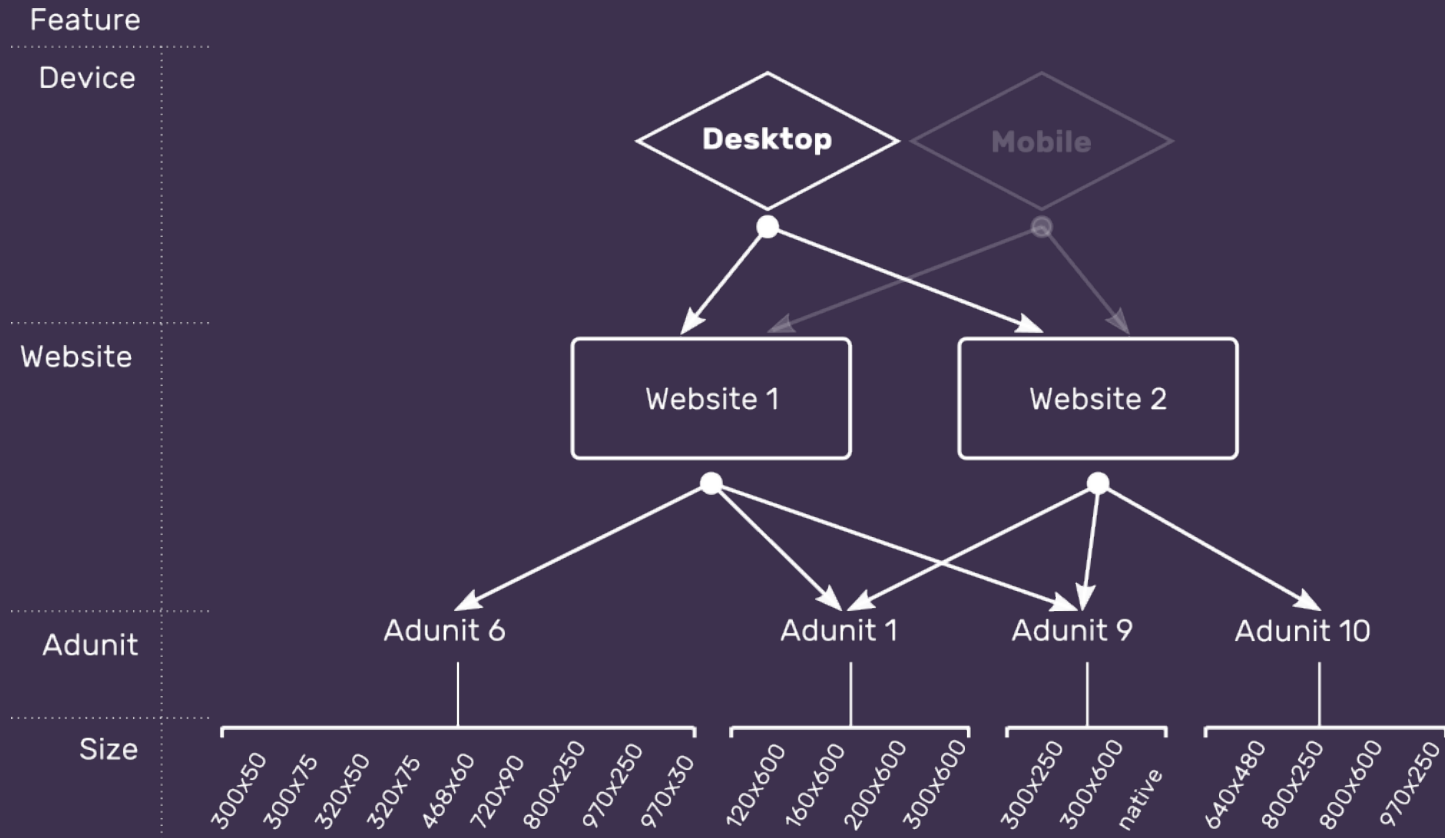
a) Devices



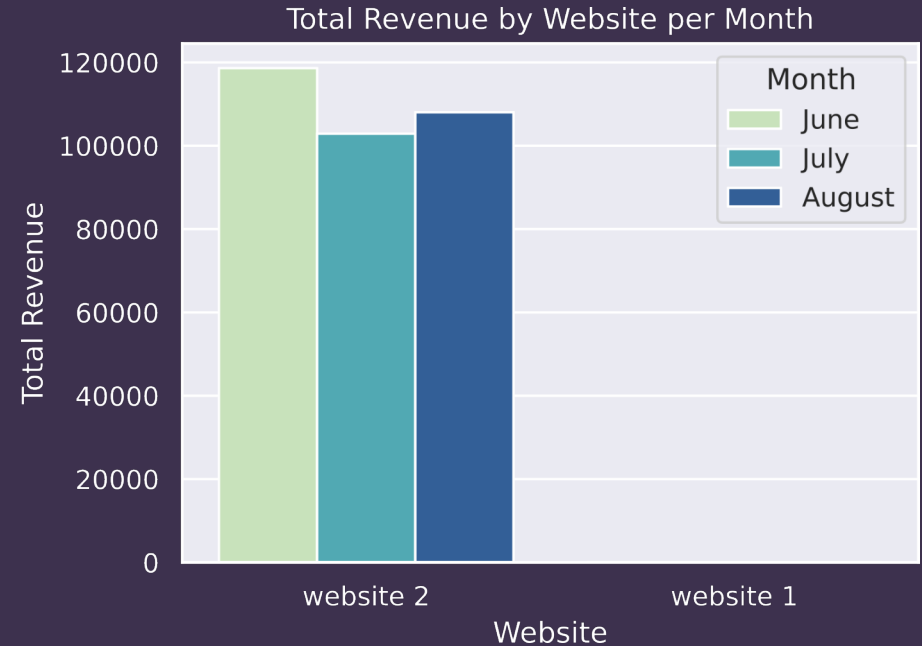
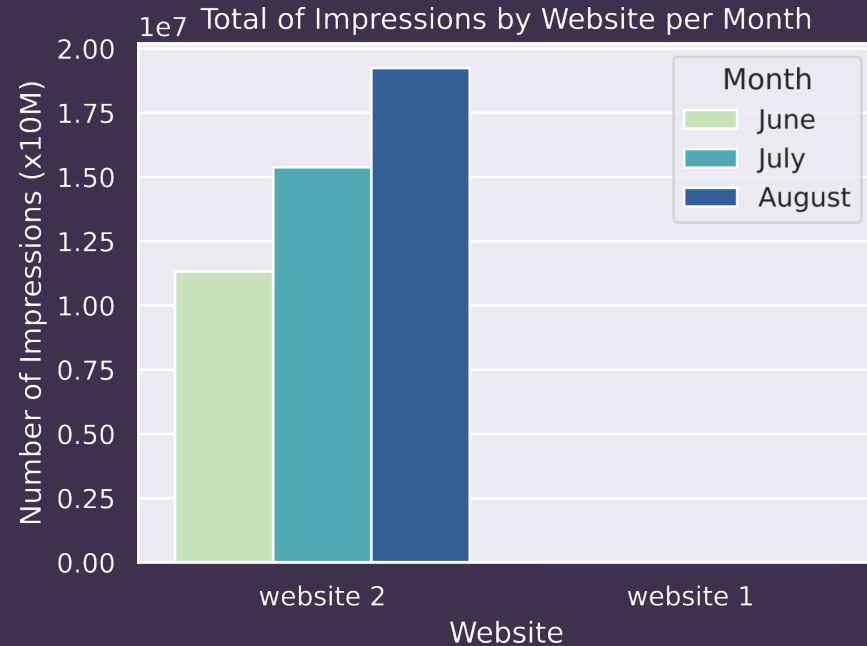
a) Devices



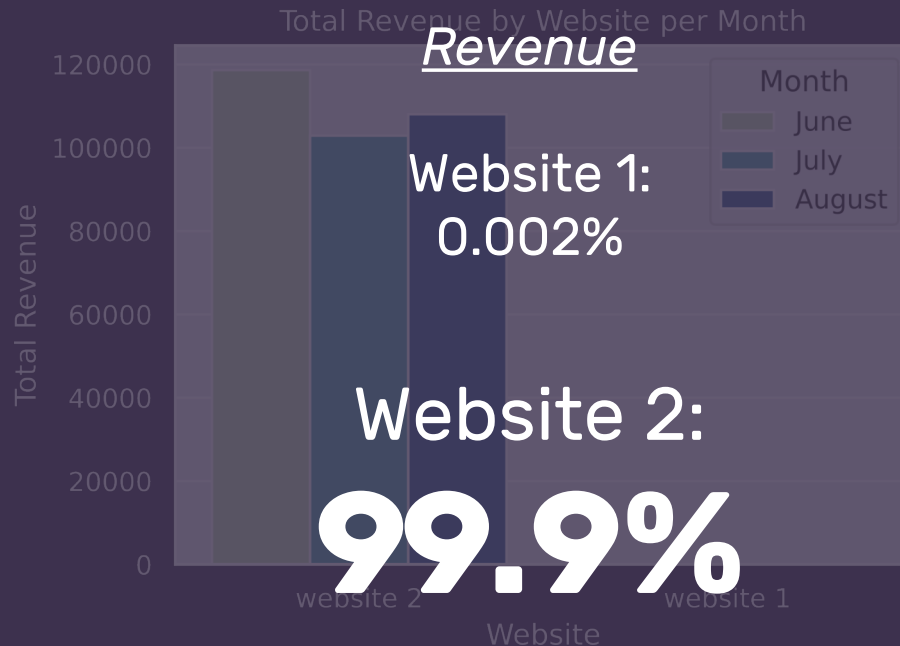
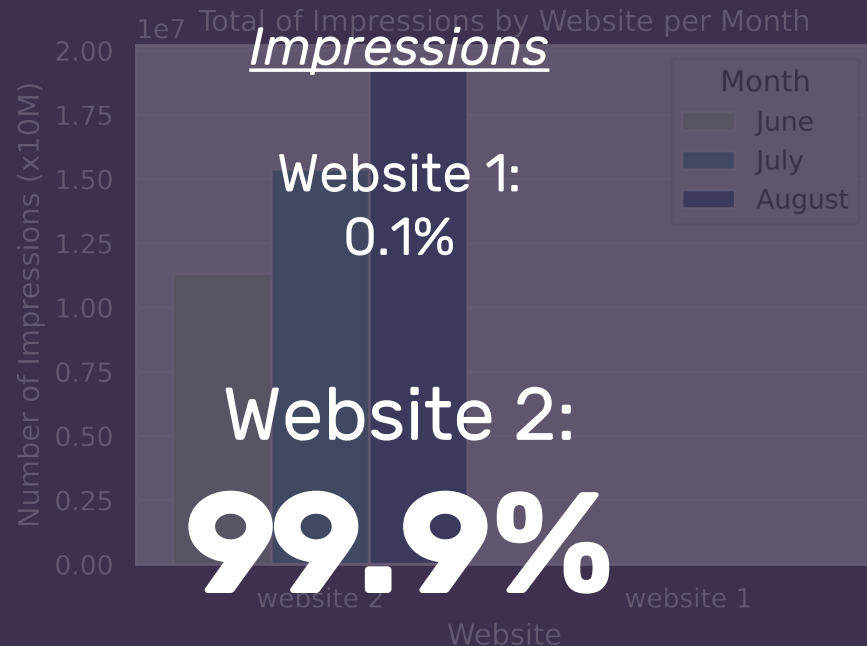
a) Devices



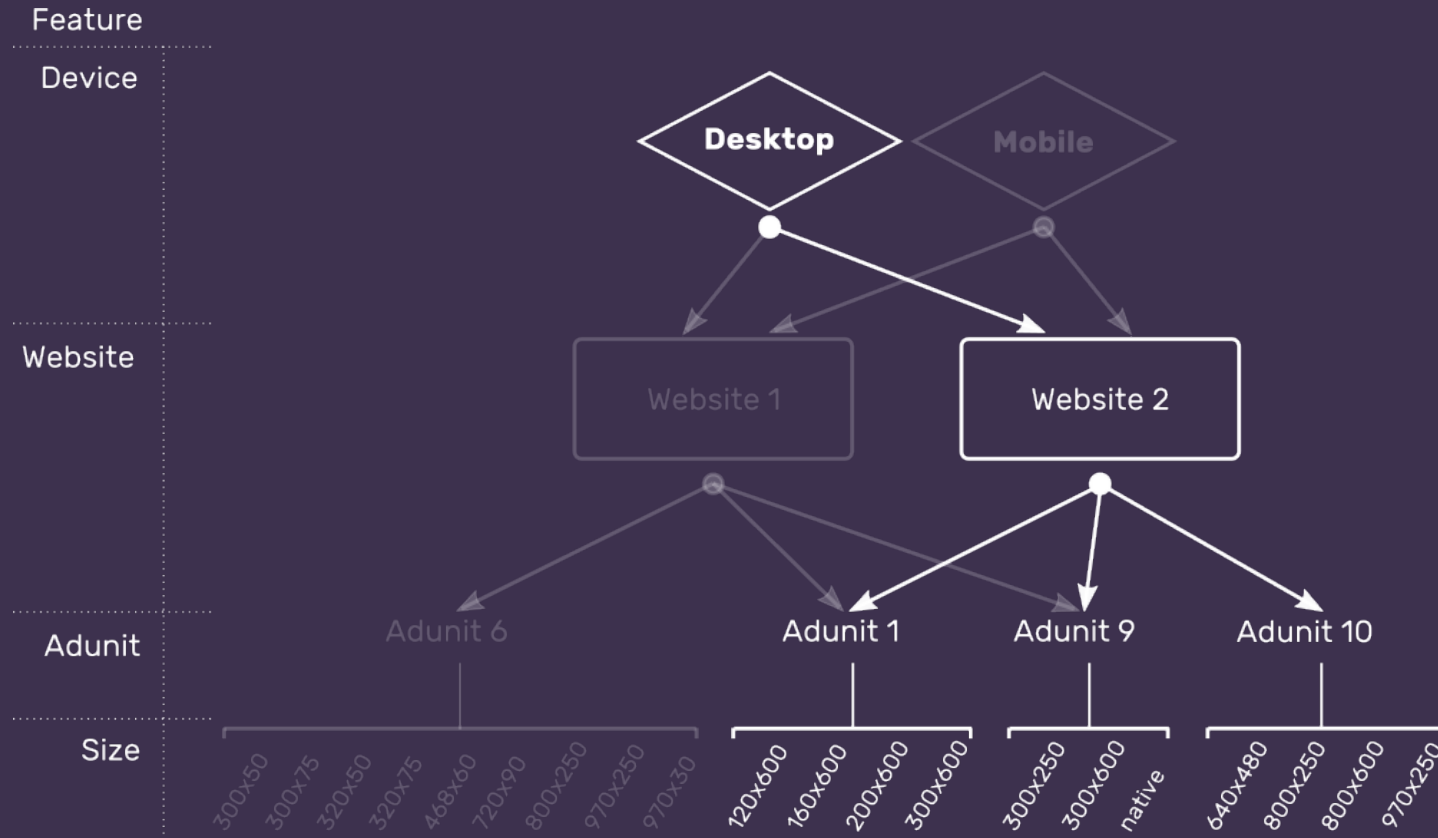
b) Websites



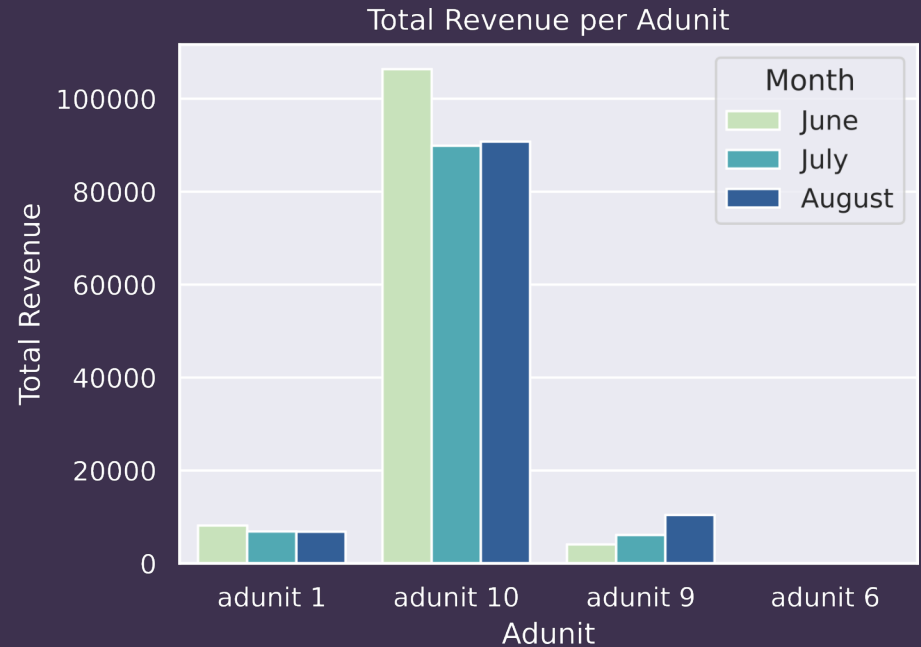
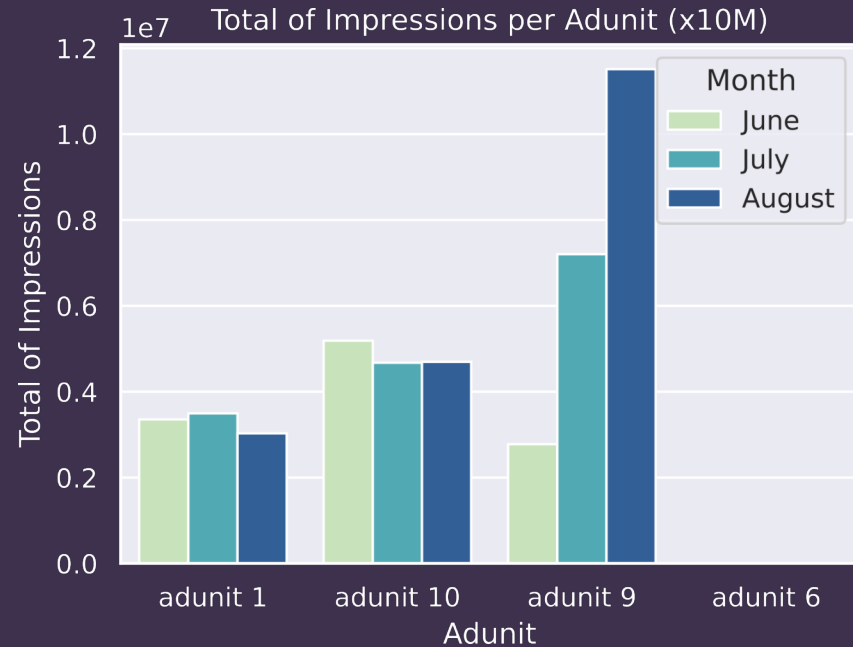
b) Websites



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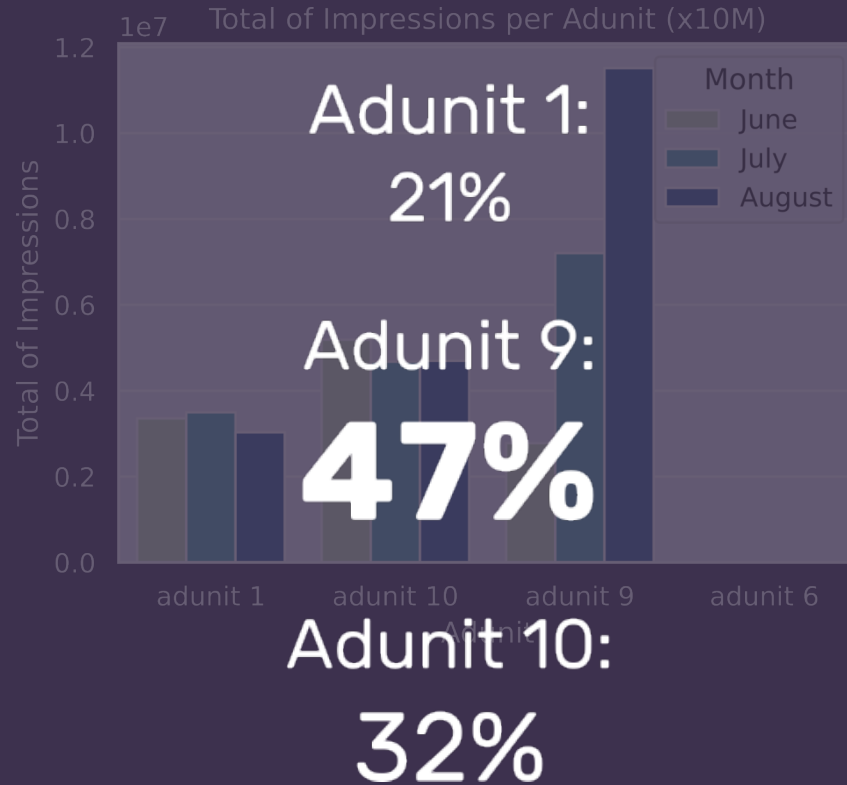


c) Ad Units

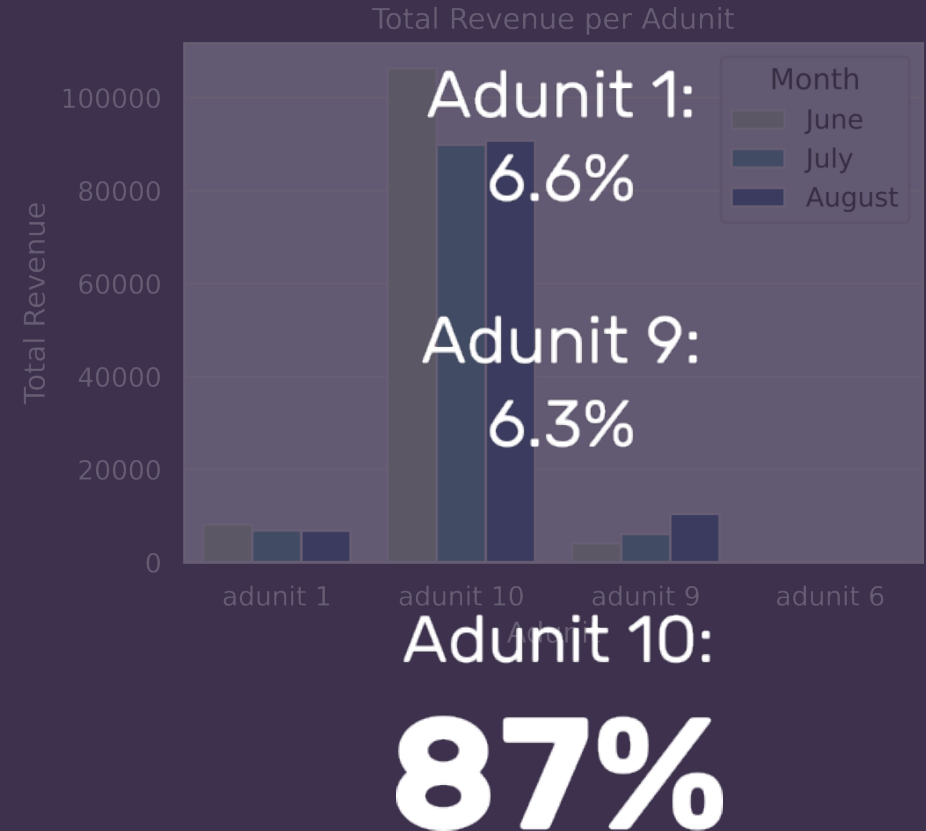


c) Ad Units

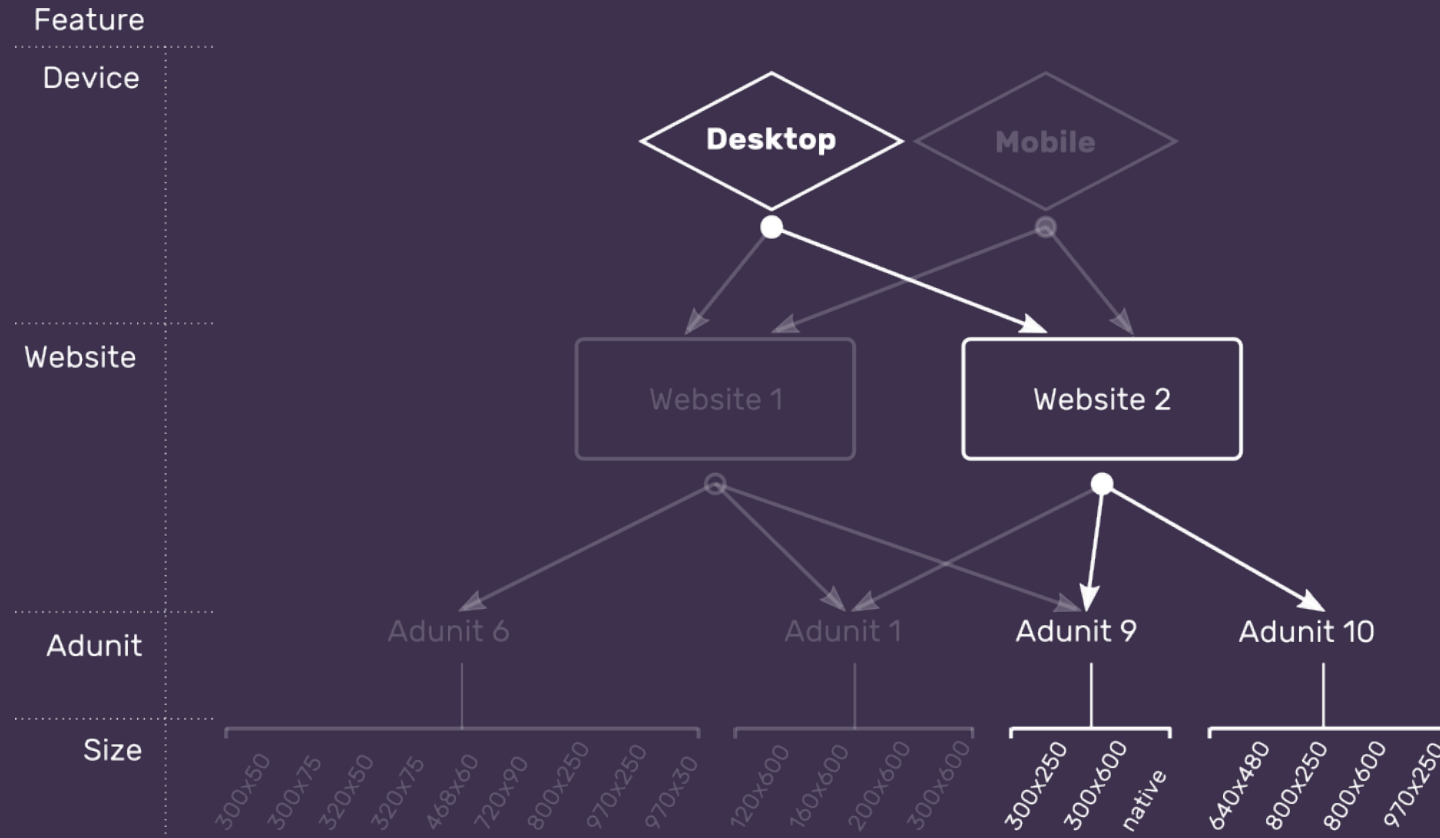
Impressions



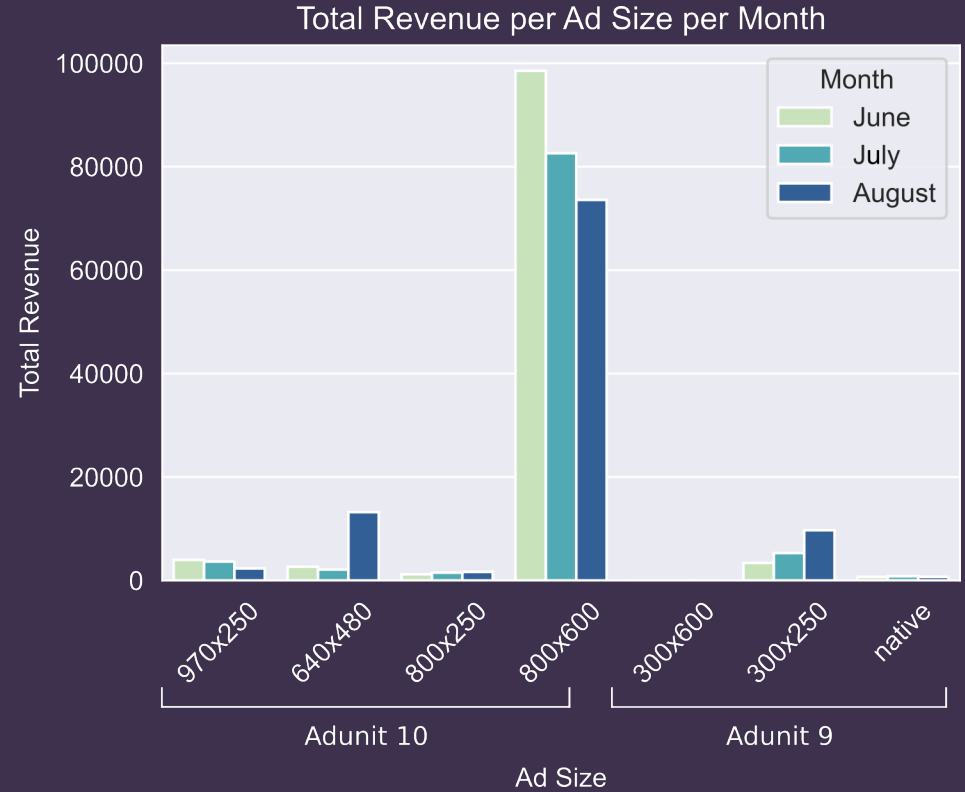
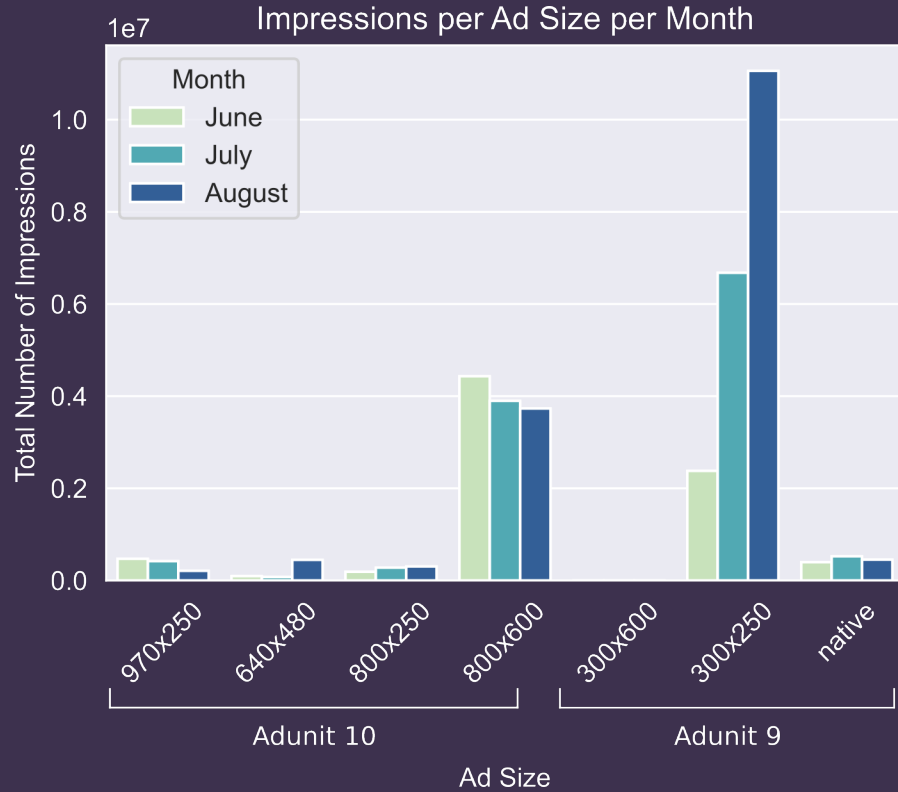
Revenue



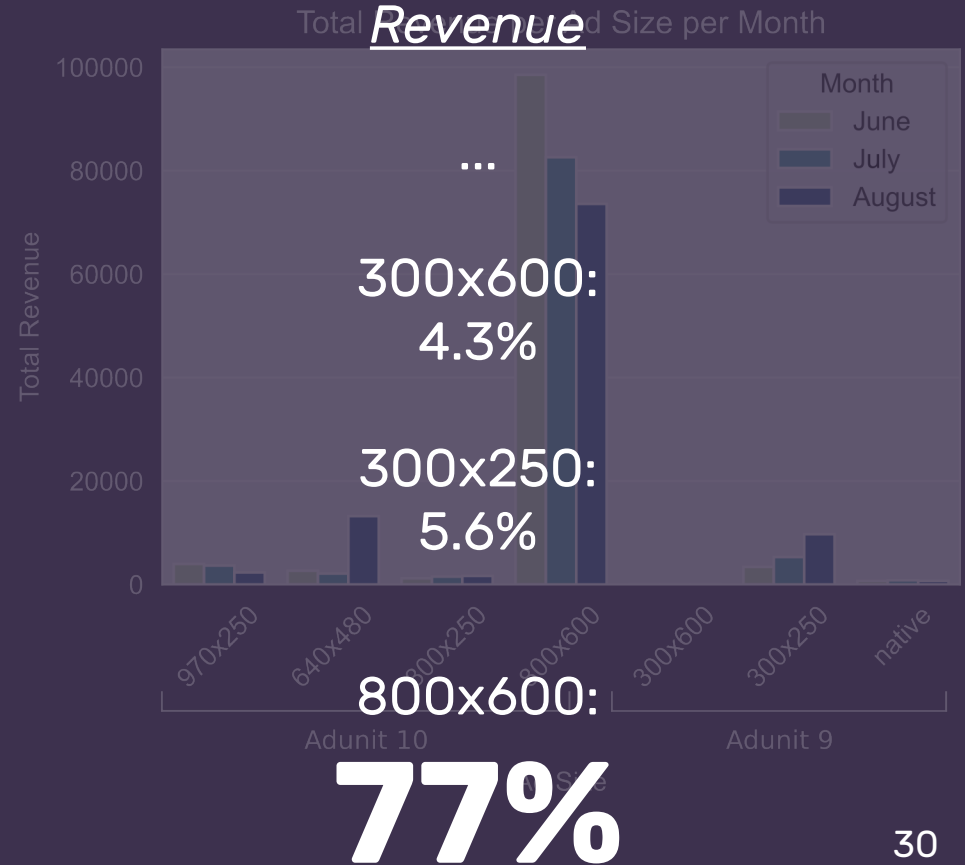
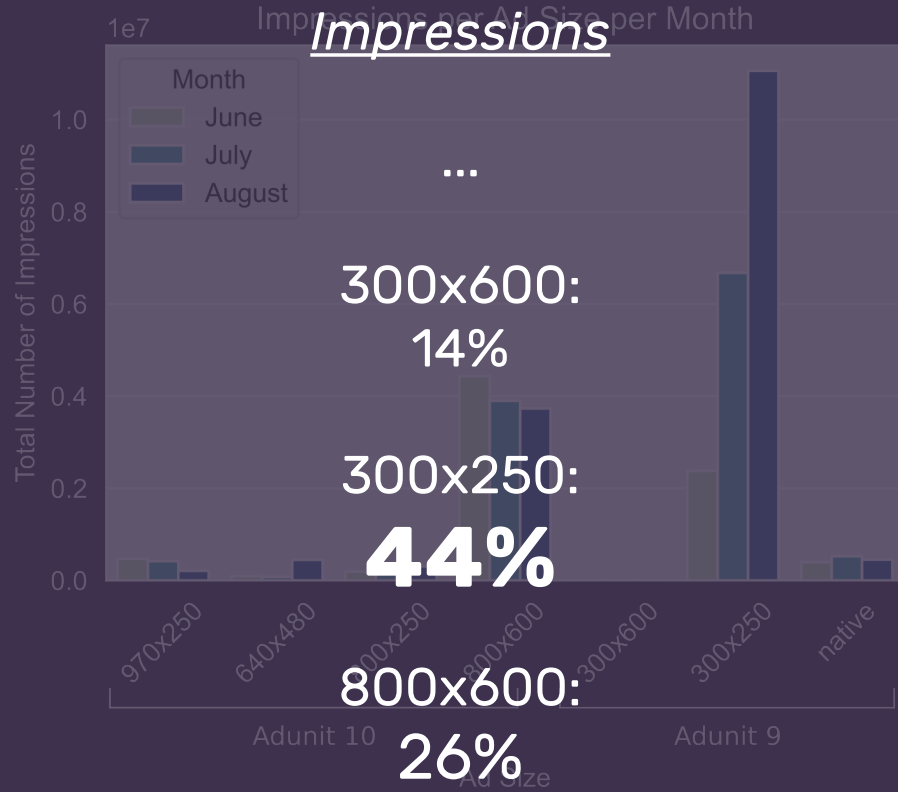
c) Ad Units



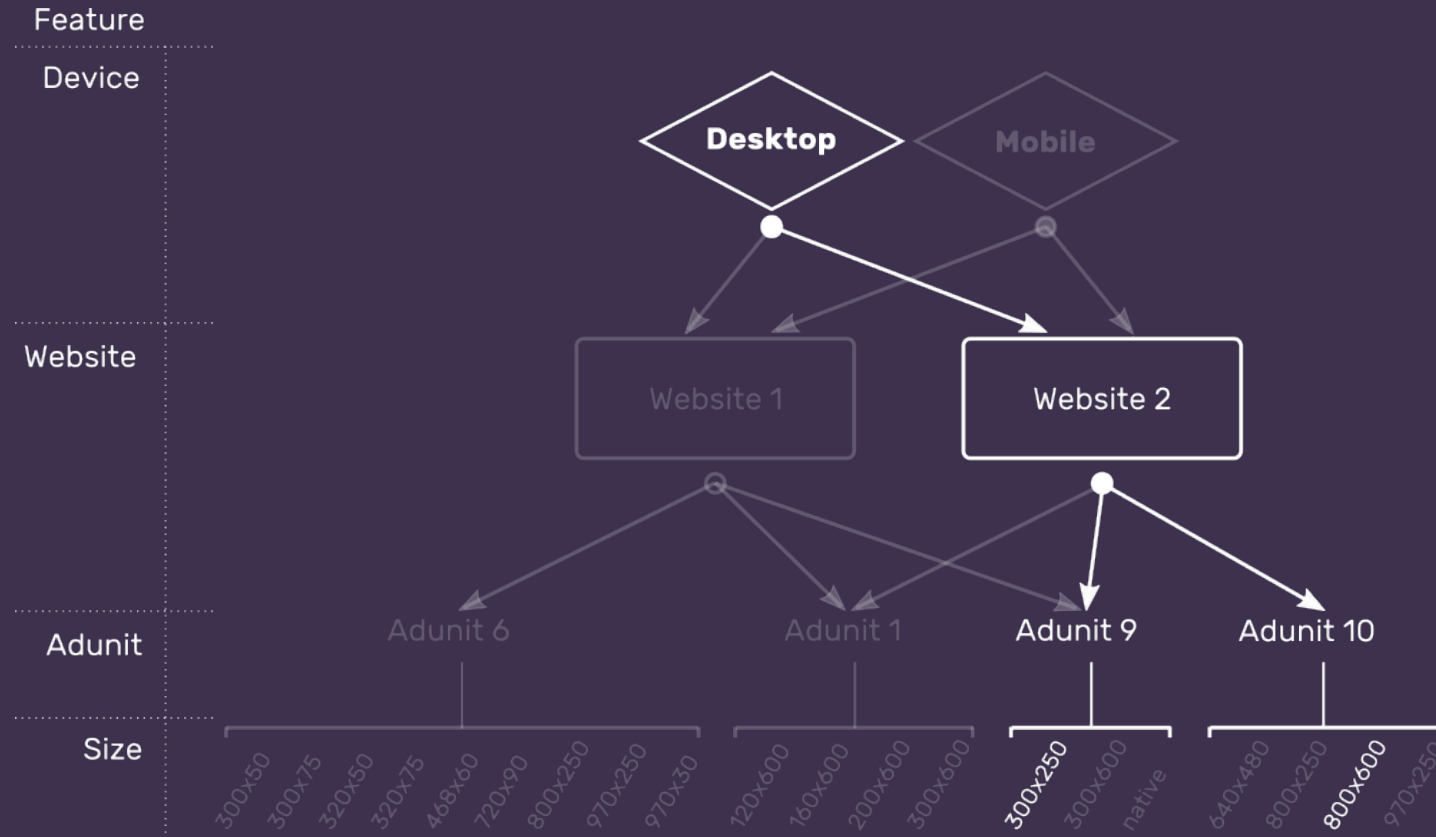
d) Sizes



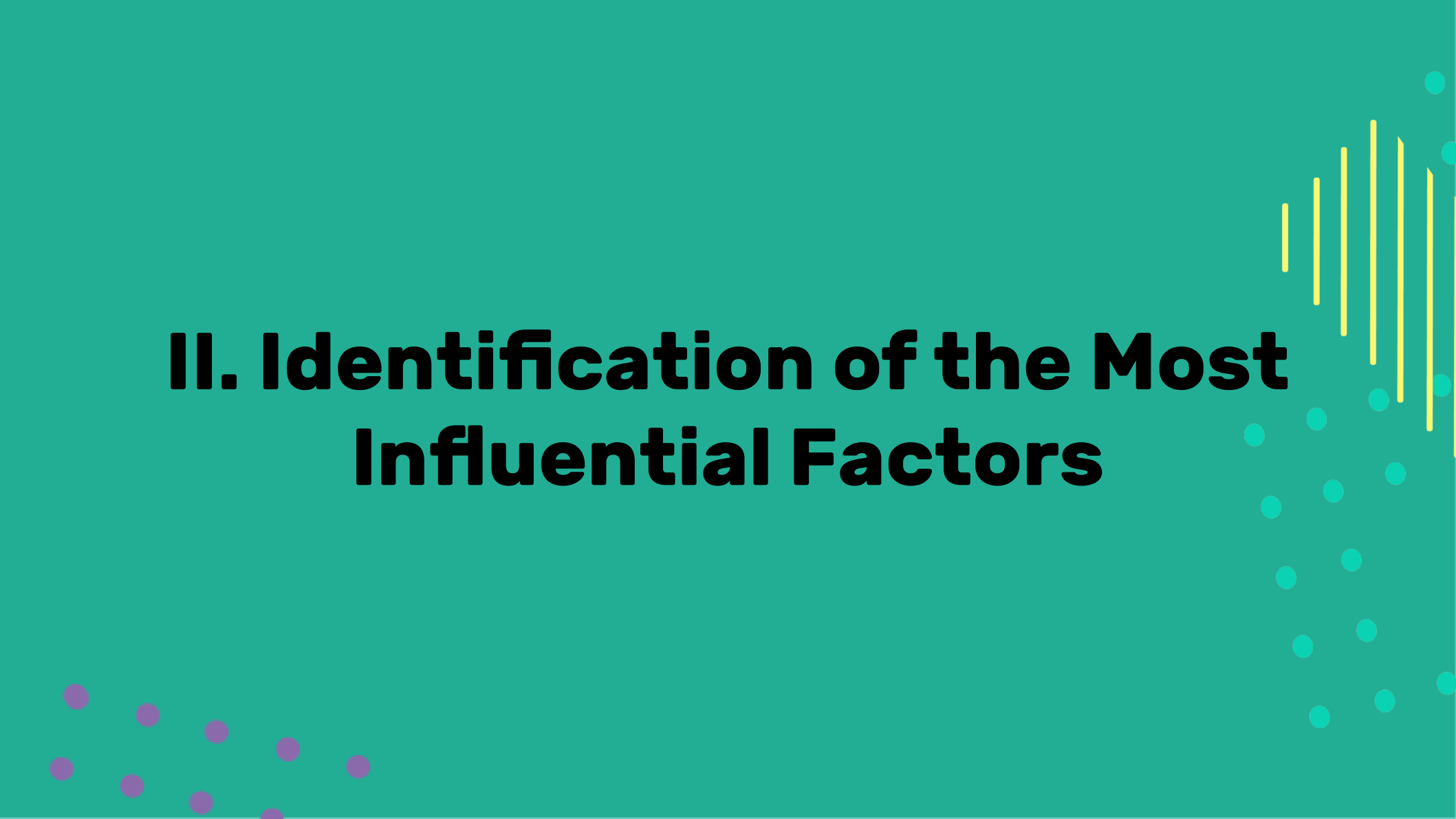
d) Sizes



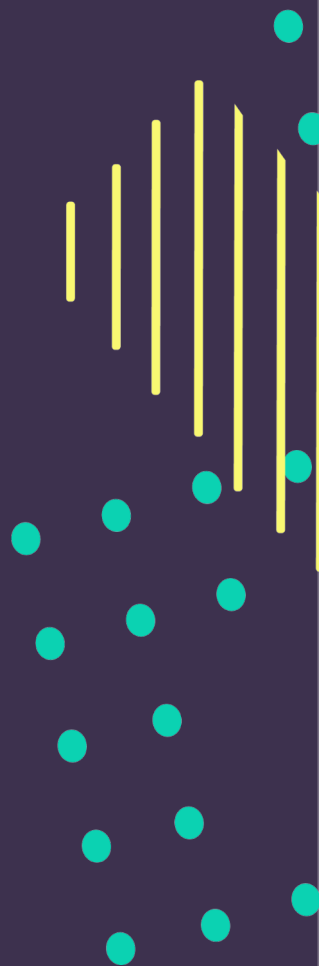
d) Sizes



II. Identification of the Most Influential Factors



1. The Most Beneficial Factor



a) Characteristics of the Most Beneficial Factor

Name: **Website 2 – Ad unit 10 – 800x600 – Desktop**

#1 in revenue yielding:

77%

#2 in number of impressions:

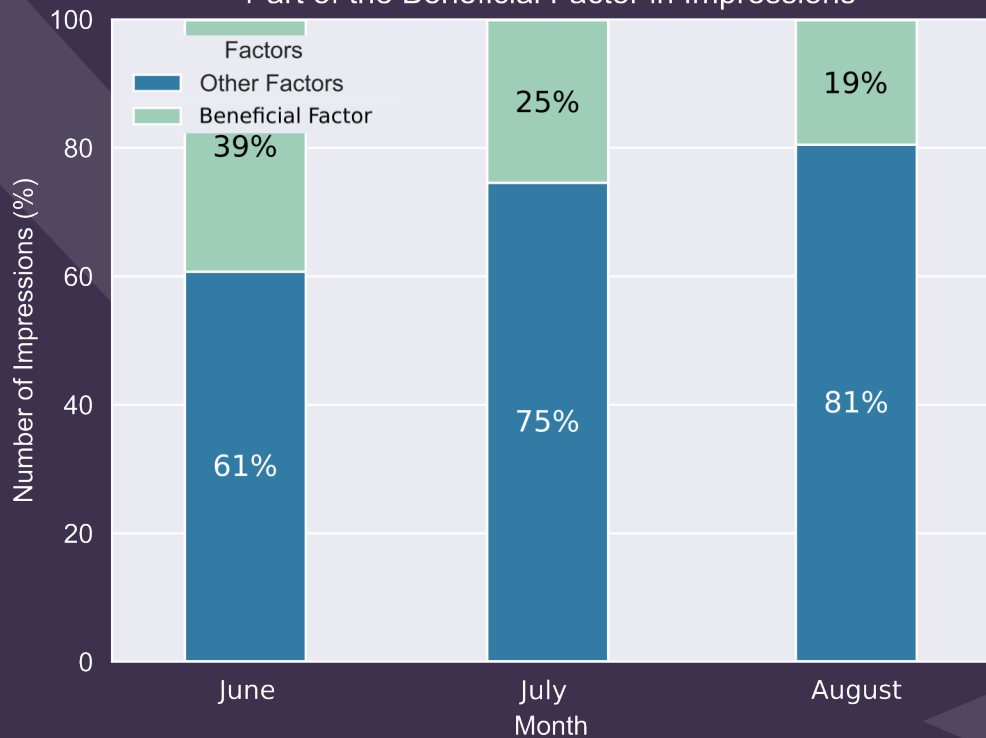
26 %

Strong eCPM:

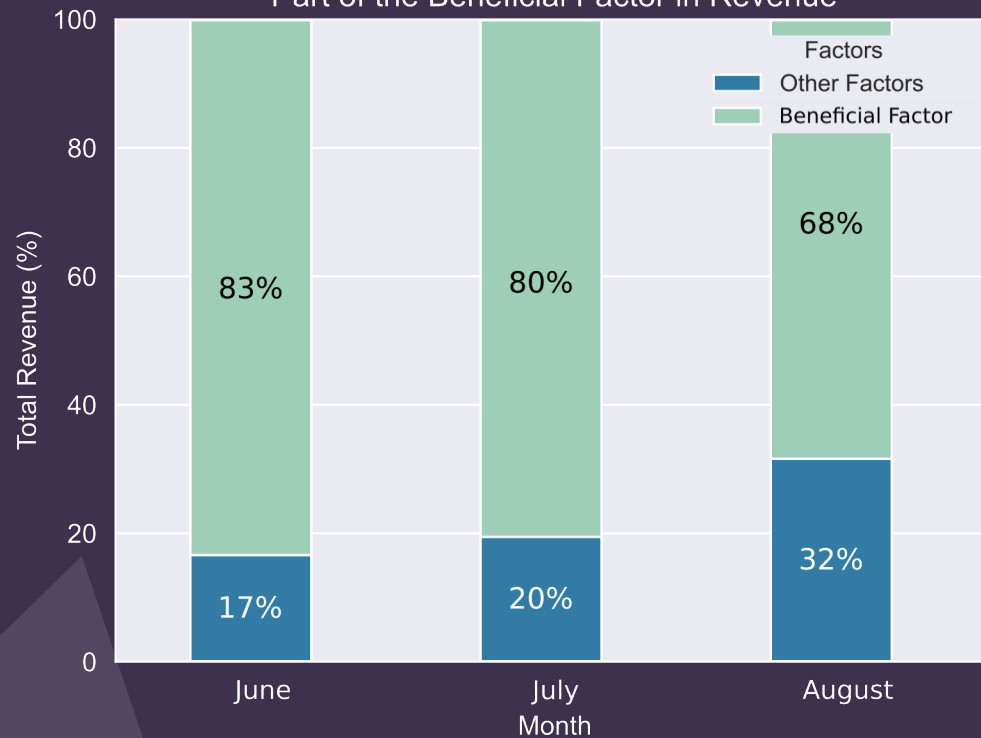
21.2

b) Drop of Influence of the Beneficial Factor

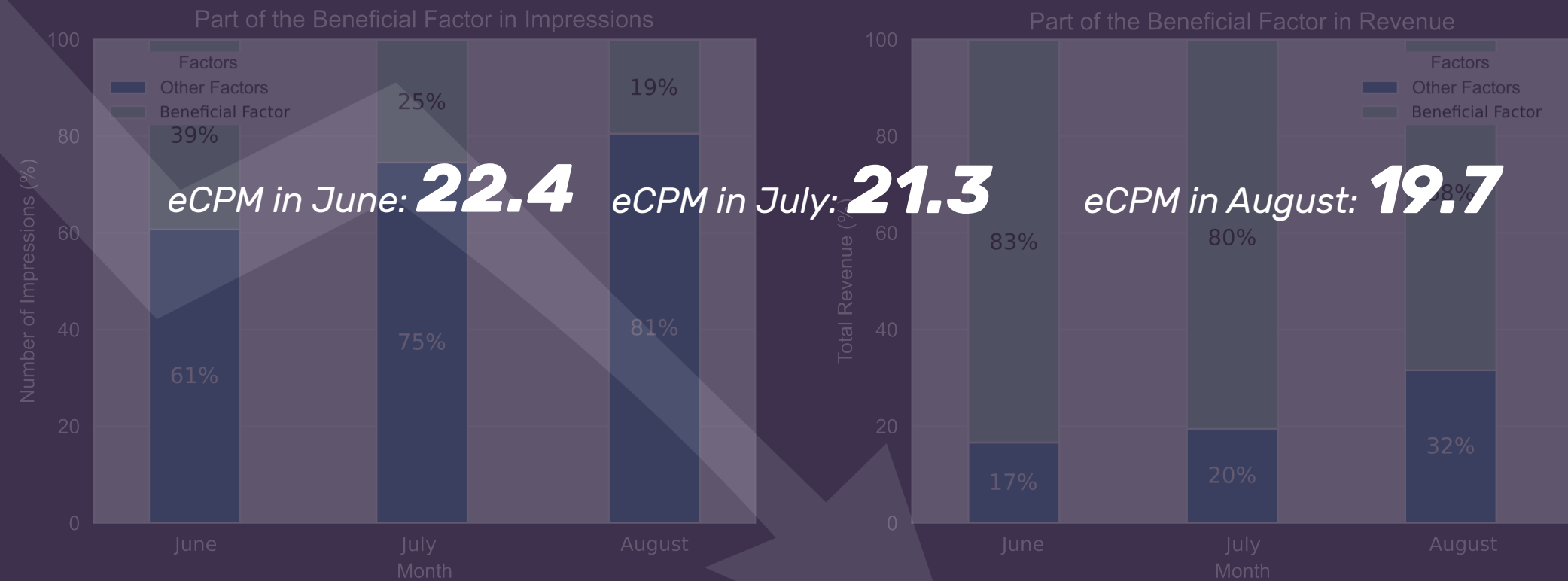
Part of the Beneficial Factor in Impressions



Part of the Beneficial Factor in Revenue



b) Drop of Influence of the Beneficial Factor



2. The Most Detrimental Factor



a) Characteristics of the Most Detrimental Factor

Name: **Website 2 – Ad unit 9 – 300x250 – Desktop**

#1 in number of impressions:

43.7%

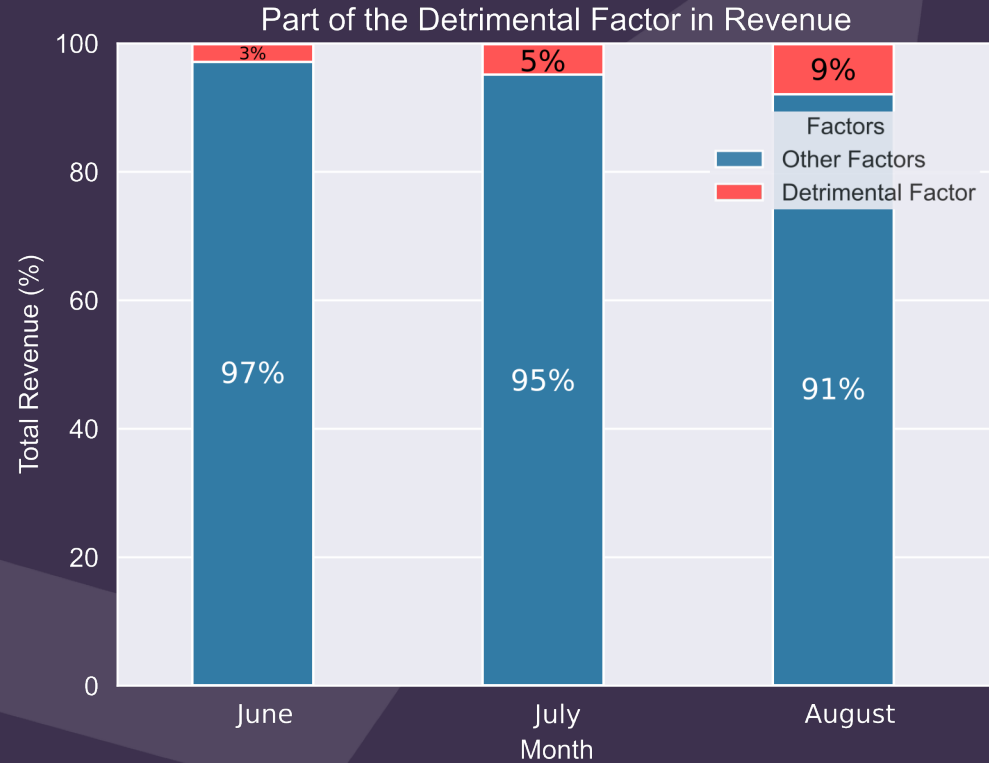
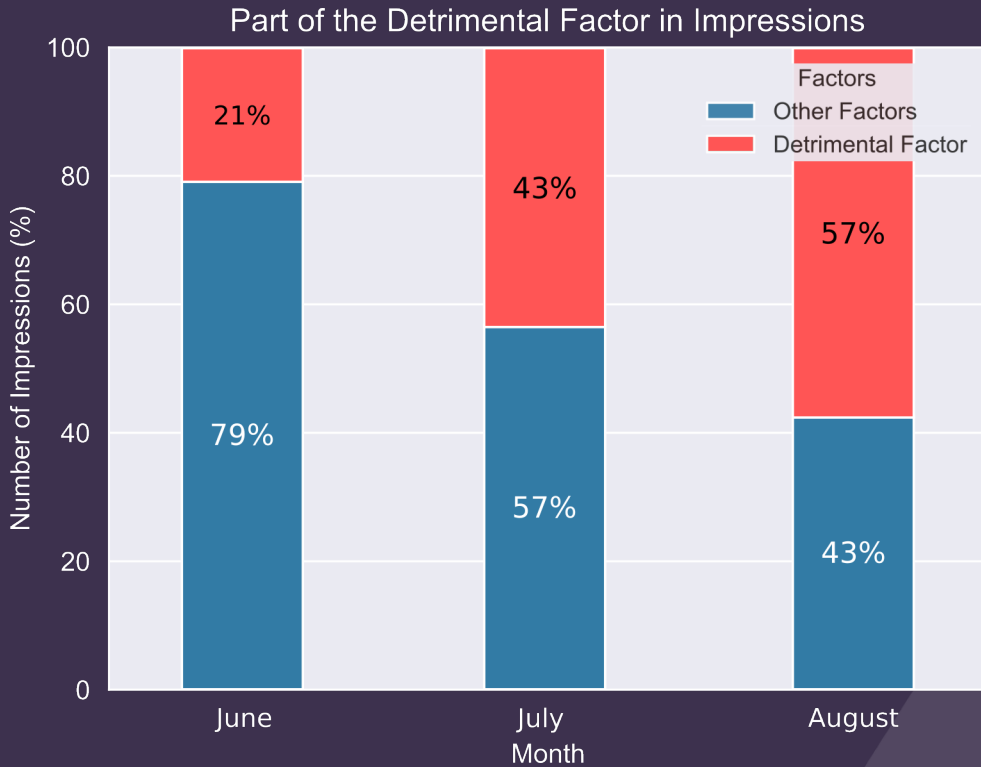
#10 in revenue yielding:

5.5%

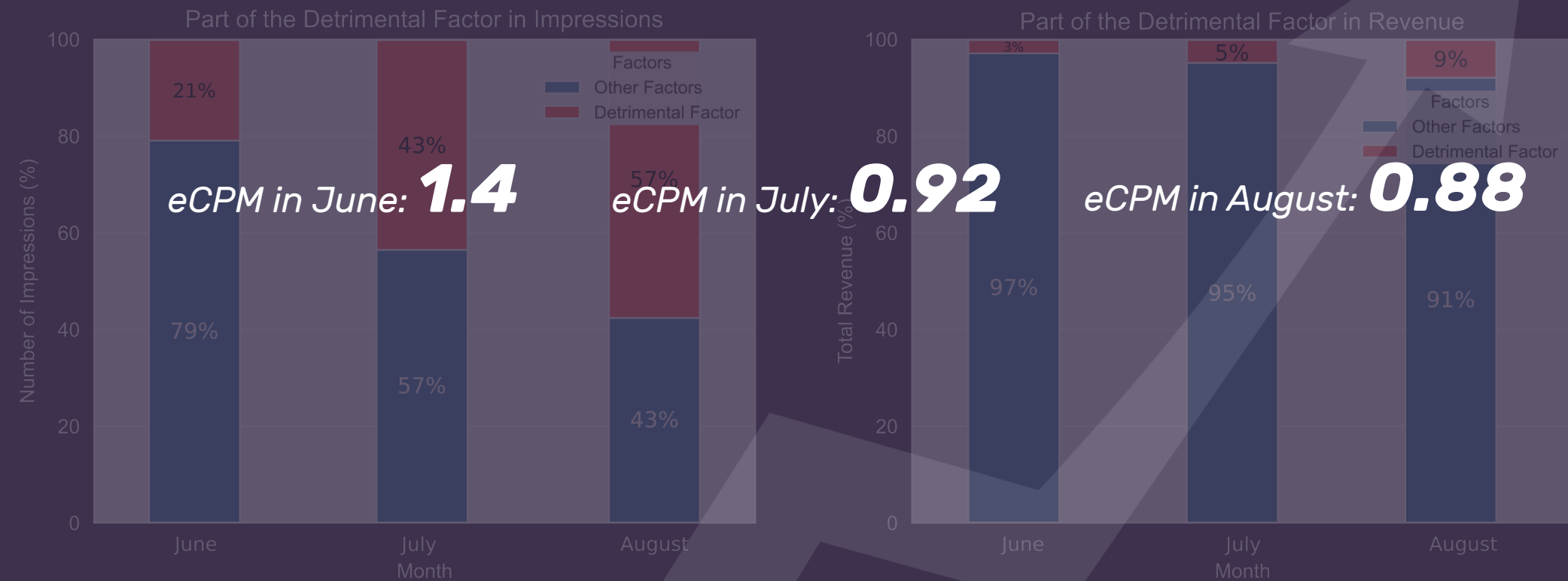
weak eCPM:

1.08

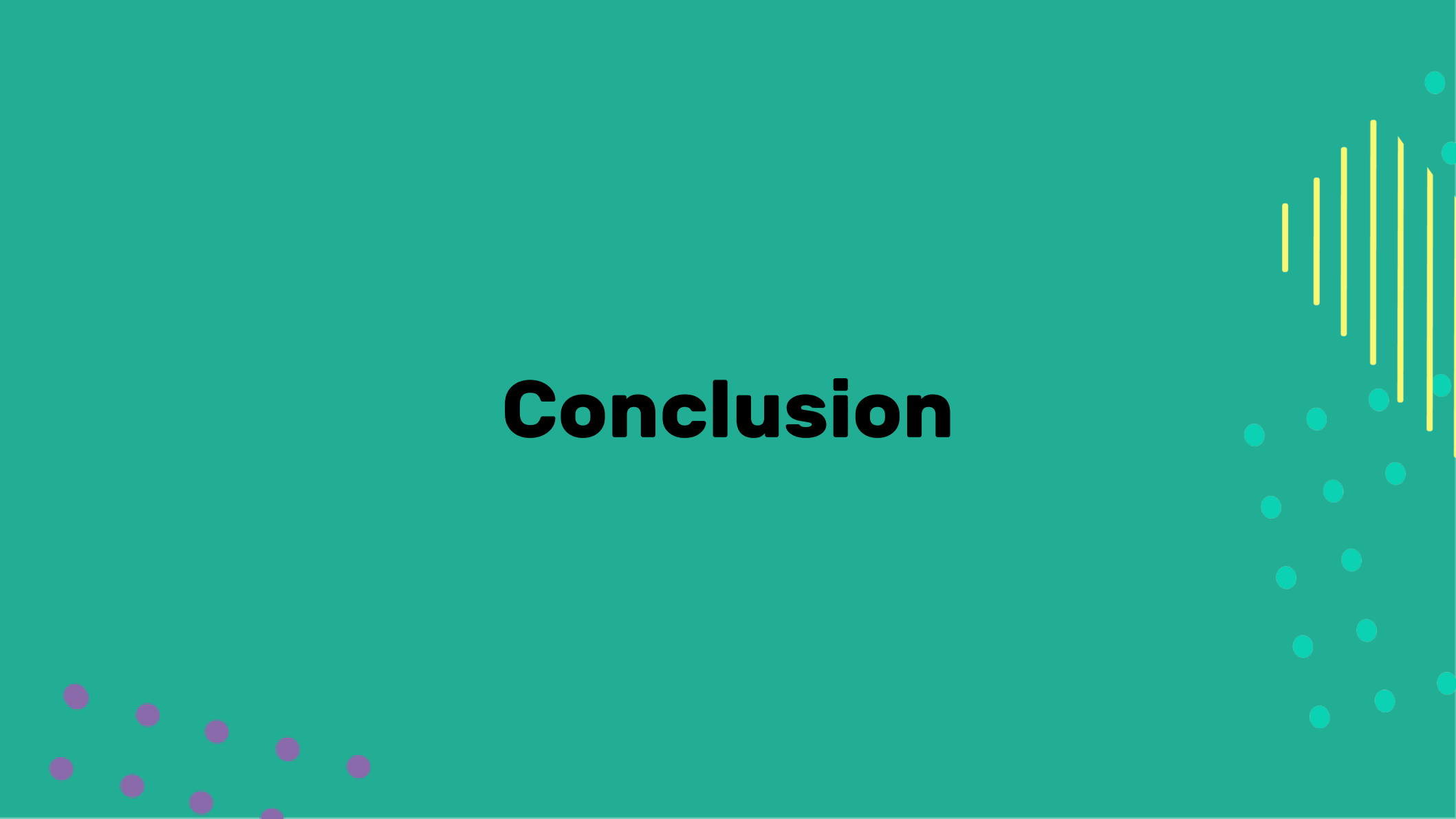
b) Rise of Influence of the Detrimental Factor



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Conclusion



Answer From this Study

The eCPM drop is due to the conjunction of two factors:

- The **most beneficial element** of the dataset sees both its impressions, its revenue and its eCPM decrease over time ;
- Simultaneously, an **element with a low eCPM** highly increases in terms of impressions.